CITY OF OREGON CITY
PLANNING COMMISSION- REVISED AGENDA

Virtual Meeting
Monday, June 28, 2021 at 7:00 PM

This meeting will be held online via Zoom; please contact planning@orcity.org for the meeting link.

CALL TO ORDER

PUBLIC COMMENT

Citizens are allowed up to 3 minutes to present information relevant to the Planning Commission but not listed as an item on the agenda. Prior to speaking, citizens shall complete a comment form and deliver it to the Chair/City Staff. The Commission does not generally engage in dialog with those making comments but may refer the issue to the City Staff. Complaints shall first be addressed at the department level prior to addressing the Commission.

PUBLIC HEARING

1. LEG-21-00002 Legislative amendment to Chapter 15.28 of the Oregon City Municipal Code, which contains the standards for signs. The amendment establishes a Public Art Mural Program and provides criteria upon which Staff, the Arts Commission and City Commission evaluate proposed art installations.

2. The North End Master Plan for the Former Rossman Landfill: GLUA 21-000016 (MAS 21-02, CU 21-01, FP 21-03, GEO 21-030)

COMMUNICATIONS

ADOPTION OF MINUTES

3. Planning Commission Minutes for October 26, 2020 and November 23, 2020

ADJOURNMENT

PUBLIC COMMENT GUIDELINES

Complete a Comment Card prior to the meeting and submit it to the City Recorder. When the Mayor/Chair calls your name, proceed to the speaker table, and state your name and city of residence into the microphone. Each speaker is given three (3) minutes to speak. To assist in tracking your speaking time, refer to the timer on the table.

As a general practice, the City Commission does not engage in discussion with those making comments.

Electronic presentations are permitted but shall be delivered to the City Recorder 48 hours in advance of the meeting.

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 at www.orcity.org 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.

CITY OF OREGON CITY

Staff Report

625 Center Street
Oregon City, OR 97045
503-bbb657-0891

To: Planning Commission **Agenda Date:** 06/28/2021

From: Planner Kelly Reid

SUBJECT:
LEG-21-00002 Legislative amendment to Chapter 15.28 of the Oregon City Municipal Code, which contains the standards for signs. The amendment establishes a Public Art Mural Program and provides criteria upon which Staff, the Arts Commission and City Commission evaluate proposed art installations.

STAFF RECOMMENDATION:

Recommend approval to the City Commission

EXECUTIVE SUMMARY:

File No. LEG-21-00002 amends Chapter 15.28 of the Oregon City Municipal Code, which contains the procedures and conditions for signage. The amendment establishes a Public Art Mural Program and provides criteria upon which Staff, the Arts Commission and City Commission evaluate proposed art installations.

The proposed amendment includes the following elements:

- Addition of definitions to support the mural program, including defining how a public art mural is different from a sign
- Criteria and standards for public art murals
- Process for approval of public art murals, which is proposed to be handled through the Arts Commission. The Arts Commission is described in Section 2.26 of the Municipal Code.
- Identification of zoning districts where public art murals will be permitted
- Language to ensure that first amendment rights are upheld (i.e. that the code remains content-neutral)

Legislative files follow a Type IV review process with the final decision made by the city Commission. The proposed code amendment is consistent with the Goals and Policies of the City's adopted Comprehensive Plan.

BACKGROUND:

File No. LEG-21-00002 amends Chapter 15.28 of the Oregon City Municipal Code, which contains the procedures and conditions for signage. The amendment establishes a Public Art Mural Program and provides criteria upon which Staff, the Arts Commission and City Commission evaluate proposed art installations.

The 2004 Comprehensive Plan calls for a review of the sign code (Policy 2.5.3). The City updated the sign code in 2015 through a robust process that resulted in numerous revisions and updates to the signage regulations. At that time, a Community Advisory Committee drafted mural program elements and associated code language, but the code was not part of the 2015 code update. The 2015 update did formally recognize all existing, legal murals in the City, but did not provide an avenue for additional murals.

The current city code does not provide for murals as a separate type of sign; instead, murals are considered wall signs and must comply with the size limitations for wall signs, which is one square foot for every linear foot of building façade length. For example, a building façade of 50 feet in width that is say 20 feet in height would be allowed a wall sign of up to 50 square feet, on a façade that has a total area of 1000 square feet. This provision limits large murals.

The intent and purpose of the proposed code language is to encourage the production of public art murals for acquisition by the City. Public art murals are a medium of expression which serves the public interest in unique ways, including, but not limited to: enhancing the aesthetics of the City; providing avenues for original artistic expression in the City; providing public edification through access to original works of public art; encouraging community participation in the creation of original works of art; and reducing the incidence of graffiti and other crime.

The proposed amendment includes the following elements:

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- Identification of zoning districts where public art murals will be permitted
- Language to ensure that first amendment rights are upheld (i.e. that the code remains content-neutral)

The Mural program provides for murals to be proposed by any individual or group. The proposed mural, if approved by the Arts Commission, would be in place for at least five years and be granted to the public through an easement.

The City Commission will also be presented with a new proposed Historic Review Board Policy to dictate when murals proposed in the historic overlay can be reviewed by staff, and when HRB review is required. See Exhibit 3 for more information about this proposed Policy.

Legislative files follow a Type IV review process with the final decision made by the city Commission. The proposed code amendment is consistent with the Goals and Policies of the City's adopted Comprehensive Plan.

OPTIONS:

1. Send the file to City Commission with a recommendation for approval
2. Send the file to the City Commission with a recommendation for denial or modification
3. Continue the hearing to a date certain

OREGON CITY

Planning Division

695 Warner Parrott Road | Oregon City OR 97045
Ph (503) 722-3789 | Fax (503) 722-3880

LEGISLATIVE STAFF REPORT AND RECOMMENDATION

A preliminary analysis of the applicable approval criteria for a legislative proposal is enclosed within the following report.

June 21, 2021

HEARING DATE: **June 28, 2021 -** Planning Commission

FILE NUMBER: **LEG-21-00002**

APPLICATION TYPE: Legislative (OCMC 17.50.170)

APPLICANT: City of Oregon City, c/o Economic Development Department
Po Box 3040, Oregon City, OR 97045
James Graham, CED, Economic Development Manager
Matthew Weintraub, Tourism Program Specialist

REQUEST: Amendments to Chapter 15.28.020 of the Oregon City Municipal Code – *Definitions*

Creation of Chapter 15.28.090 of the Oregon City Municipal Code – *Public art murals*

LOCATION(S): City Wide

I. BACKGROUND:

File No. LEG-21-00002 amends Chapter 15.28 of the Oregon City Municipal Code, which contains the procedures and conditions for signage. The amendment establishes a Public Art Mural Program and provides criteria upon which Staff, the Arts Commission and City Commission evaluate proposed art installations.

Public art murals are currently not allowed in Oregon City. Art and signage that is affixed to a building are currently regulated by Chapter 15.28 of the Oregon City Municipal Code. However, many municipalities in Oregon permit and regulate public art murals. A subsequent goal of the proposed code amendment is to provide clarity for City staff and officials on the interpretation and implementation of the City's role in the permitting process.

The City Commission directed staff to identify amendments to the Oregon City Municipal Code that would allow for the installation of and clarity around public art murals to support the existing City-adopted Tourism Strategic Plan and in support of adopted Commission Goals.

PROCESS

Adoption of the code amendments is a legislative action that requires review and recommendation from the Planning Commission prior to adoption by the City Commission following public hearings. The Economic Development Department held the following public meetings to date.

2014-2015 Sign Code Update Process – multiple public meetings

November 16, 2020 – Public Listening Session #1

November 19, 2020 – Public Listening Session #2

December 10, 2020 – Oregon City Historic Review Board Work Session

March 2, 2021 – Oregon City Historic Review Board hearing

March 9, 2021 – Oregon City Commission Work Session

April 12, 2021 – Oregon City Planning Commission Work Session

May 3, 2021 – Oregon City Citizen Involvement Committee

The mural code was initially drafted as part of the 2014-2015 sign code update. In 2020 and 2021, the following direction was provided to guide staff in further amending the code:

- The code amendments should impinge on Oregon's First Amendment protections;
- Any code change should be accompanied by a user-friendly "how-to guide";
- A desire that the code clearly differentiate between murals and signs;
- Any codes amendments or processes should ensure continued preservation of historic buildings within Oregon City;
- The permitting process should be clear and attainable;
- Inclusion of a required maintenance agreement between parties;
- That the Oregon City Historic Review Board recommends a review waiver to allow staff to re-view mural permits applications on historically designated structures;
- To exclude the Oregon City Planning Commission from any role within the process;

SUMMARY OF CODE AMENDMENTS

The intent and purpose of the proposed code language is to encourage the production of public art murals for acquisition by the City. Public art murals are a medium of expression which serves the public interest in unique ways, including, but not limited to: enhancing the aesthetics of the City; providing avenues for original artistic expression in the City; providing public edification through access to original

works of public art; encouraging community participation in the creation of original works of art; and reducing the incidence of graffiti and other crime.

The proposed amendment includes the following elements:

- Addition of definitions to support the mural program, including defining how a public art mural is different from a sign
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The Mural program provides for murals to be proposed by any individual or group. The proposed mural, if approved by the Arts Commission, would be in place for at least five years and be granted to the public through an easement.

The City Commission will also be presented with a new proposed Historic Review Board Policy to dictate when murals proposed in the historic overlay can be reviewed by staff, and when HRB review is required. See Exhibit 5 for more information about this proposed Policy.

The Legislative Process as it relates to the Oregon City Comprehensive Plan

The applicable approval criteria for a legislative action are set forth in the applicable goals and policies of the Oregon City Comprehensive Plan, and any applicable statewide planning goals.

Section 2 – *Land Use* of the 2004 Oregon City Comprehensive Plan indicates that the regular review and updated of the Comprehensive Plan should consider the following:

1. Plan implementation process.
2. Adequacy of the Plan to guide land use actions, including an examination of trends.
3. Whether the Plan still reflects community needs, desires, attitudes and conditions. This shall include changing demographic patterns and economics.
4. Addition of updated factual information including that made available to the City of regional, state and federal governmental agencies.

Oregon City Comprehensive Plan (P.16)
Regular Review and Update
Plan maintenance and updating is a continuous technical review of the Plan by the Planning staff. This review and any subsequent recommendations for Plan updating should be presented to the Neighborhood Associations, Planning Commission and City Commission for input and discussion in the same manner as requested Plan changes. The continuous review should consider:

1. Plan implementation process;

The 2004 Comprehensive Plan calls for a review of the sign code (Policy 2.5.3). The City updated the sign code in 2015 through a robust process that resulted in numerous revisions and updates to the signage regulations. At that time, a Community Advisory Committee drafted mural program elements and associated code language, but the code was not part of the 2015 code update. The 2015 update did formally recognize all existing, legal murals in the City, but did not provide an avenue for additional murals.

The current city code does not provide for murals as a separate type of sign; instead, murals are considered wall signs and must comply with the size limitations for wall signs, which is one square foot for every linear foot of building façade length. For example, a building façade of 50 feet in width that is say 20 feet in height would be allowed a wall sign of up to 50 square feet, on a façade that has a total area of 1000 square feet. This provision limits large murals.

The City Commission initiated the current code amendment process starting with a work session held on September 8, 2020. The City Commission received a progress report of the process on March 9, 2021. The feedback provided at this work session helped form the draft code amendments.

Staff presented the amendments to the Citizen Involvement Committee on May 3rd, 2021.

The first evidentiary public hearing for the proposed amendments will be held with the Planning Commission and will follow the notice procedures for a legislative action per OCMC 17.50. The City Commission public hearing will be scheduled once the Planning Commission has completed their review and provided a recommendation on the proposed amendments.

The Department of Land Conservation and Development was notified as required by ORS 197.610 – 197.625. The Staff Report will be made available at least seven days prior to the public hearing and the application will be processed according to the Legislative Hearing Process as required under Oregon City Municipal Code 17.50.170. Implementation of the Plan is discussed further in Criterion 2.

2. Adequacy of the Plan to guide land use actions, including an examination of trends.

The proposed code amendments are a response to trends and desires of the community for public art, placemaking, and tourism-supportive elements.

3. Whether the Plan still reflects community needs, desires, attitudes and conditions. This shall include changing demographic patterns and economics.

The Commission directed the filing of this legislative application to address community desires for public art, placemaking, and tourism-supportive elements.

4. Addition of updated factual information including that made available to the City by regional, state and federal governmental agencies.

There has been no update of factual information from other agencies that is related to this application.

OC2040 Comprehensive Plan Update

The city is in the process of updating the Comprehensive Plan while this legislative process is underway (www.OC2040.com). Staff anticipates that the Comprehensive Plan update will result in new goals and policies that address many of the same infrastructure and growth issues that are discussed in this Staff Report.

The OC 2040 project will update the Oregon City Comprehensive Plan to reflect the City's vision and create a guide for decision making about growth and development over the next 20 years. The plan will be implemented through goals, policies, and actions with which the development code, projects and plans must comply. However, an effective comprehensive plan needs to be much more than a policy document. It must also reflect an equitable, shared vision that supports all our community members.

Public Notice and Comments

This is a legislative action that requires public notice pursuant to OCMC 17.50.090.C. - *Notice of Public Hearing on a Legislative Proposal*. The Community Development Director provided the required Post Acknowledgement Plan Amendment (PAPA) notice to the Oregon Department of Land Conservation and Development on May 20, 2021. Notice of the June 28, 2021 Planning Commission public hearing was also provided to the Citizen Involvement Committee, Natural Resources Committee, Neighborhood Associations, and affected service districts, agencies and parties by email on June 8, 2021.

II. DECISION-MAKING CRITERIA

The remainder of this staff report provides additional findings to demonstrate that the proposed annexation code amendments are consistent with applicable approval criteria.

Chapter 17.68 - Zoning Changes and Comprehensive Plan Amendments

17.68.010 - Initiation of the amendment.

A text amendment to the comprehensive plan, or an amendment to the zoning code or map or the Comprehensive Plan map, may be initiated by:

A. A resolution request by the City Commission;

B. An official proposal by the Planning Commission;

C. An application to the Planning Division; or.

D. A Legislative request by the Planning Division.

All requests for amendment or change in this title shall be referred to the Planning Commission.

Finding: The proposal qualifies as initiated as a legislative request by the Economic Development Department at the direction of the City Commission.

17.68.015 –Procedures.

Applications shall be reviewed pursuant to the procedures set forth in Chapter 17.50.

17.50.170 - Legislative hearing process.

A. Purpose. Legislative actions involve the adoption or amendment of the city's land use regulations, comprehensive plan, maps, inventories and other policy documents that affect the entire city or large portions of it. Legislative actions which affect land use shall begin with a public hearing before the planning commission.

B. Planning Commission Review.

1. Hearing Required. The planning commission shall hold at least one public hearing before recommending action on a legislative proposal. Any interested person may appear and provide written or oral testimony on the proposal at or prior to the hearing. The community development director shall notify the Oregon Department of Land Conservation and Development (DLCD) as required by the post-acknowledgment procedures of ORS 197.610 to 197.625, as applicable.

C. City Commission Review.

1. City Commission Action. Upon a recommendation from the planning commission on a legislative action, the city commission shall hold at least one public hearing on the proposal. Any interested person may provide written or oral testimony on the proposal at or prior to the hearing. At the conclusion of the hearing, the city commission may

adopt, modify or reject the legislative proposal, or it may remand the matter to the planning commission for further consideration. If the decision is to adopt at least some form of the proposal, and thereby amend the city's land use regulations, comprehensive plan, official zoning maps or some component of any of these documents, the city commission decision shall be enacted as an ordinance.
2. Notice of Final Decision. Not later than five days following the city commission final decision, the community development director shall mail notice of the decision to DLCD in accordance with ORS 197.615(2).
Finding: This legislative action followed the procedures found in OCMC 17.50.170 including meetings with the Citizen Involvement Committee, Planning Commission, and City Commission.

17.68.020 - Criteria.
The criteria for comprehensive plan amendment or text or map amendment in the zoning code are set forth as follows:
A. The proposal shall be consistent with the applicable goals and policies of the comprehensive plan;
Finding: This legislative action is consistent with the applicable goals and policies of the comprehensive plan as detailed in the responses below. Therefore, the proposed amendments are consistent with Criterion (A).

Conformity of the proposal with the city's comprehensive plan;
Goal 1: Citizen Involvement

Goal 1.1 – Citizen Involvement Program

Policy 1.1.1 *Utilize neighborhood associations as the vehicle for neighborhood-based input to meet the requirements of the Land Conservation and Development Commission (LCDC) Statewide Planning Goal 1, Citizen Involvement. The Citizen Involvement Committee (CIC) shall serve as the officially recognized citizen committee needed to meet LCDC Statewide Planning Goal 1.*

Goal 1.4 – Community Involvement

Policy 1.4.1 *Notify citizens about community involvement opportunities when they occur.*

Finding: This proposal makes no changes to the City's citizen involvement program or public notification procedures. Residents and taxpayers within 300 feet of the proposed installation site will receive public notice of the public art mural. The public process that led to the legislative file included robust community engagement, as described in this staff report.

Comprehensive Plan Section 2 Land Use

Goal 2.2: Downtown Oregon City

Develop the Downtown area (which includes the historic downtown area, the "north end" of the downtown, Clackamette Cove, and the End of the Oregon Trail area) as a quality place for shopping, living, working, cultural and recreational activities, and social interaction. Provide walkways for foot and bicycle traffic, preserve views of Willamette Falls and the Willamette River, and preserve the natural amenities of the area.

Policies

Policy 2.2.1 *Develop and promote a vision for the economic development and redevelopment of the downtown area that solidifies the Downtown Community Plan and Waterfront Master Plan.*

Policy 2.2.2 *Target public infrastructure investments and create public/private partnerships to leverage maximum benefits from public investment and to help ensure that the regional center develops to its maximum capacity and realizes its full potential.*

Policy 2.2.3 *Encourage the development of a strong and healthy historic downtown retail, office, and residential center.*

Policy 2.2.4 *Work with major stakeholders, develop and implement a strategy to help the historic downtown area enhance its position as a retail district. Such a strategy might include funding for a "Main Street" or similar program.*

Finding: The mural program will add opportunities to create a stronger sense of place within downtown Oregon City and will support downtown revitalization and tourism development.

Goal 2.4 Neighborhood Livability

Provide a sense of place and identity for residents and visitors by protecting and maintaining neighborhoods as the basic unit of community life in Oregon City while implementing the goals and policies of the other sections of the Comprehensive Plan.

Finding: This proposal makes no changes to the Comprehensive Plan, zoning, or land use designations for lands within the Urban Growth Boundary. The mural program will add opportunities to create a stronger sense of place within Oregon City neighborhoods. One of the purposes of the proposed Sign Code is to "Maintain and enhance the scenic and other aesthetic qualities of the city," and input from a variety of citizens and groups informed the implementation of the sign code criteria and the proposed mural program to achieve this goal.

Goal 2.5 Retail and Neighborhood Commercial

Policy 2.5.3 *Review design standards and the sign code to ensure compatibility with existing neighborhoods.*

Policy 2.5.4 *Encourage the development of successful commercial areas organized as centers surrounded by higher density housing and office uses, rather than as commercial strips adjacent to low-density housing.*

Policy 2.5.5 *Encourage commercial and industrial development that enhances livability of neighborhoods through the design of attractive LEEDTM-certified buildings and environmentally responsible landscaping that uses native vegetation wherever possible, and by ensuring that development is screened and buffered from adjoining residential neighborhoods and access is provided by a variety of transportation modes.*

Finding: The Comprehensive Plan calls for a review of the sign code (Policy 2.5.3). The City updated the sign code in 2015 through a robust process that resulted in numerous revisions and updates to the signage regulations. At that time, a Community Advisory Committee drafted mural program elements and associated code language, but the code was not part of the 2015 code update. The 2015 update did formally recognize all existing, legal murals in the City, but did not provide an avenue for additional murals.

Murals are proposed to be permitted in the following zones:

- Mixed Use Downtown
- Mixed Use Corridor 1
- Mixed Use Corridor 2
- Willamette Falls Downtown District
- Institutional
- General Commercial
- Any use that is listed under permitted uses in the Institutional district in 17.39.020 but located in a non-Institutional Zone.

See Exhibit 7 for zoning map.

Goal 2.7 Oregon City Comprehensive Plan Land-Use Map

Maintain the Oregon City Comprehensive Plan Land-Use Map as the official long-range planning guide for land-use development of the city by type, density and location.

Policy 2.7.2 *Use the following 11 land-use classifications on the Oregon City Comprehensive Plan Land-Use Map to determine the zoning classifications that may be applied to parcels:*

- *Low Density Residential (LR)*
- *Mixed Use Downtown (MUD)*

- *Medium Density Residential (MR)*
- *High Density Residential (HR)*
- *Commercial (C)*
- *Mixed Use Corridor (MUC)*
- *Mixed Use Employment (MUE)*
- *Industrial (I)*
- *Public and Quasi-Public (QP)*
- *Parks (P)*
- *Future Urban Holding (FUH)*

Finding: This proposal makes no changes to the Comprehensive Plan, zoning, or land use designations for lands within the Urban Growth Boundary. The proposal will maintain the existing Oregon City Land Use Map as the official long range planning guide for land use development of the city by types, density and location (Goal 2.7).

Goal 5: Open Spaces, Scenic and Historic Areas, and Natural Resources
Goal 5.2 Scenic Views and Scenic Sites

Policy 5.2.1 *Identify and protect significant views of local and distant features such as Mt. Hood, the Cascade Mountains, the Clackamas River Valley, the Willamette River, Willamette Falls, the Tualatin Mountains, Newell Creek Canyon, and the skyline of the city of Portland, as viewed from within the city.*
Policy 5.2.2 *Maximize the visual compatibility and minimize the visual distraction of new structures or development within important viewsheds by establishing standards for landscaping, placement, height, mass, color, and window reflectivity.*

Finding: This proposal makes no changes to the existing inventories of open space, scenic and historic areas, and natural resources or the adopted maps, code and policies pertaining thereto.

Goal 5.3 Historic Resources

Policy 5.3.3 Promote the designation of qualifying properties outside Historic and Conservation Districts as historic.
Policy 5.3.8 Preserve and accentuate historic resources as part of an urban environment that is being reshaped by new development projects.

Finding: This proposal makes no changes to the existing inventories of open space, scenic and historic areas, and natural resources or the adopted maps, code and policies pertaining thereto. The proposal for a new HRB Policy will ensure that murals proposed on designated historic structures do not have an adverse effect on the structure.

Goal 9: Economic Development
Goal 9.6: Tourism Promote Oregon City as a destination for tourism.

Policy 9.6.1 *Protect historic, recreational, and natural resources as the basis for tourism, such as the historic downtown.*
Policy 9.6.2 *Ensure land uses and transportation connections that support tourism as an important aspect of the City's economic development strategy. This could include connections to the End of the Oregon Trail Interpretive Center and Train Depot.*
Policy 9.6.3 *Provide land uses in the Downtown Historic Area, 7th Street corridor, and the End of the Oregon Trail Interpretive Center that support tourism and visitor services.*

Finding: This proposal enhances goal 9, by catalyzing community, enhancing vibrancy and livability of neighborhoods, contributing to placemaking, and attracting visitation. One of the purposes of the Sign Code is to "Support the economic development of Oregon City businesses." The development of the 2015 sign code and the current proposed amendments included input from a variety of business owners that resulted in provisions to allow a variety of signage types for businesses.

Statewide Planning Goals

Finding: This proposal makes no changes to the Comprehensive Plan, zoning, or land use designations for lands within the Urban Growth Boundary. Since the City's Comprehensive Plan and its ancillary documents are already acknowledged by the Oregon Department of Land Use and Conservation (DLCD), no further analysis for consistency with Statewide Planning Goals is required.

Chapter 17.50 Administration and Procedures

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.

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.

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: Staff held the required pre-application conference meeting in September 2020, along with subsequent meetings with Economic Development staff.

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: staff presented the amendments to the Citizen Involvement Committee on May 3rd, 2021.

17.50.070 - Completeness review and one hundred twenty-day rule.

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 time line or unless State law provides otherwise. The one hundred twenty-day period, however, does not apply in the following situations:

1. Any hearing continuance or other process delay requested by the applicant shall be deemed an extension or waiver, as appropriate, of the one hundred twenty-day period.

2. Any delay in the decision-making process necessitated because the applicant provided an incomplete set of mailing labels for the record property owners within three hundred feet of the subject property shall extend the one hundred twenty-day period for the amount of time required to correct the notice defect.

3. The one hundred twenty-day period does not apply to any application for a permit that is not wholly within the City's authority and control.

4. The one hundred twenty-day period does not apply to any application for an amendment to the City's comprehensive plan or land use regulations nor to any application for a permit, the approval of which depends upon a plan amendment.

D. A one-hundred day period applies in place of the one-hundred-twenty day period for affordable housing projects where:

1. The project includes five or more residential units, including assisted living facilities or group homes;

2. At least 50% of the residential units will be sold or rented to households with incomes equal to or less than 60% 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 60 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: Legislative actions are not subject to the 120-day deadline.

III. RECOMMENDATION

Based on the findings in this report, staff recommends amendments to OCMC 15.28 for a Public Mural program. Staff will prepare an Ordinance when the matter is before the City Commission for its consideration and adoption.

EXHIBITS:

1. Proposed Amendments to Chapter 15.28
2. Applicant Narrative
3. Public input matrix
4. Proposed HRB Policy for Murals
5. Public Comment
6. Zoning Map – Proposed zones where murals are permitted
7. Proposed Mural Program Application form, fees, and guidelines
8. Map of Historic Structures in Areas where murals would be permitted

PROPOSED CODE AMENDMENT – DRAFT June 21, 2021 (Not Adopted)

Proposed amendments shown in red underline text.

Chapter 15.28 - SIGNS

Footnotes:

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Editor's note— Ord. No. 14-1003, § 1, adopted May 20, 2015, effective Nov. 1, 2015, effectively repealed Chapter 15.28, §§ 15.28.010—15.28.110, and Exhibit 1 to said ordinance enacted a new Chapter 15.28 as set out herein. The former Chapter 15.28 pertained to similar subject matter. See Ordinance List and Disposition Table for derivation.

15.28.010 - Purpose of sign regulations.

This chapter regulates the construction, placement and maintenance of signs to protect and enhance public health, safety, welfare and property. The code:

A. Allows signs compatible with the character and uses allowed in the zoning district in which they are located;

B. Maintains the effectiveness of traffic control signs throughout the city;

C. Prohibits signs, or portions thereof, that conflict with the safe movement of people and emergency services, constitute a public nuisance or hazard, are of unsafe construction, or that demand attention as a result of their dominating size or motion;

D. Maintains and enhances the scenic and other aesthetic qualities of the city;

E. Supports the economic development of Oregon City businesses;

F. Allows citizens and businesses the freedom to express their needs or views without unnecessary interference; and

G. Is not intended to regulate the content of signs in any way.

(Ord. No. 14-1003, § 1(Exh. 1), 5-20-2015)

15.28.020 - Definitions.

"Abandoned sign" means a sign structure where no sign has been in place for a continuous period of at least six months.

"A-frame sign," also known as "sandwich board" or "tent sign," means a movable steeply angled sign with two sides that meets at the top in the shape of the letter "A" and is not attached to a structure or the ground.

"Air blown sign" means a sign that is intended to be inflated by air or other gas.

"Ancillary sign" means any sign allowed by this code, with or without permit, that is not a freestanding, incidental freestanding, wall, roof or projecting sign. If allowed within the zoning designation, ancillary signs include, but are not limited to: A-frame signs, flags (excluding attention flags), and banners.

"Attention flag" also known as "flutter," "feather," "teardrop," or "blade," means a pole-supported sign made of fabric, vinyl, or other similar non-rigid material, where one side of the sign is more than three times as long as any other side.

"Banner" means a sign made of fabric, vinyl, or other similar non-rigid material.

"Banner on street light pole" means a sign made of fabric, vinyl, or other similar non-rigid material intended to be displayed in the right-of-way for a limited period of time which complies with Chapter 15.28 of the Oregon City Municipal Code and the Signs in the Right-of-Way Policy.

"Billboard" means a sign with a display area of three hundred square feet or more, including, but not limited to, outdoor advertising signs as defined in ORS 377.710(21).

"Business" means any trade, profession, occupation or pursuit of every kind conducted in the city for gain.

"Compensation" means the exchange of something of value. It includes, without limitation, money, securities, real property interest, barter of goods or services, promise of future payment, or forbearance of debt. "Compensation" does not include goodwill, or an exchange of value, that a building owner (or leaseholder with a right to possession of the wall upon which the mural is to be placed) provides to an artist, muralist, or other entity, where the compensation is only for the creation and/or maintenance of the mural on behalf of the building owner or leaseholder, and where the building owner or leaseholder fully controls the content of the art mural.

"Construct" or "constructed" means to construct, erect, build, assemble, alter, place, affix, attach, create, recreate, paint, draw or in any way bring into being or establish.

"Cross street banner" means a sign made of fabric, vinyl, or other similar non-rigid material intended to be displayed over the right-of-way for a limited period of time which complies with Chapter 15.28 of the Oregon City Municipal Code and the Signs in the Right-of-Way Policy.

"Display" means an arrangement of objects intended to decorate, advertise, entertain, or inform people about something.

"Display area" means the total size of all sign faces on a sign.

"Fence" and "fencing" mean any barrier or section thereof, other than a wall, designed to delimit a boundary or provide a visual screen.

"Flag" means a piece of fabric of distinctive design that is displayed hanging free from a staff, halyard or building to which it is attached, excluding banners.

"Freestanding sign" means a sign wholly supported from the ground by its own integral structure.

"Frontage" means the full length of a parcel of property that abuts a dedicated street, highway, or a city-approved vehicular public access easement.

"Government owned sign" means a sign owned by a government agency, but does not include a sign constructed by a third-party with grant funds obtained from a government agency.

"Incidental freestanding sign" means a sign wholly supported from the ground by its own integral structure, excluding A-frame signs. The maximum size allowed is less than that of a freestanding sign and greater than an ancillary sign.

"Maintenance" means normal care or servicing needed to keep a sign functional or perpetuate its use, such as cleaning, replacing, or repairing unusable or broken portions of the sign, and repairing defective lighting.

"Premises" means a lot or number of contiguous lots under the same ownership.

"Projecting sign" means a sign projecting more than one foot from the wall of a building.

“Public Art Mural” means an original, two-dimensional work of visual art, comprised of paint, ceramic or glass tiles, or tesserae, metal, executed by hand directly upon, or affixed directly to an exterior wall of a building, where the work of visual art has been approved by the Arts Commission and accepted by the City into its public art collection pursuant to this Chapter.

"Roof sign" means a sign constructed or maintained wholly upon or over the roof of any building with the principal support on the roof structure.

"Sign" means any sign, display message, emblem, figure, painting, drawing, placard, poster, billboard, carving or other thing that is designed, used or intended to convey a message or image and is used to inform or attract the attention of the public, and the term includes the sign structure, display surface and all other component parts of a sign; when dimensions of a sign are specified, the term includes panels and frames; and the term includes both sides of a sign of specified dimensions or display area.

"Sign face" means the total area as measured pursuant to Section 15.28.050.

"Sign official" means any person designated by the city manager to enforce the provisions of this chapter, including the review of permit applications, the interpretation of the provisions of this chapter and the issuance of permits.

"Tenant space" means the portion of a structure occupied by a single commercial lease holder, or an owner-occupied space with its own public entrance from the exterior of the building or through a shared lobby, atrium, mall, or hallway and separated from other tenant spaces by walls.

"Traffic control sign or device" means a sign approved by the public works department through the right-of-way permit process, where the sign complies with the city's street standards and/or the Manual on Uniform Traffic Control Devices (MUTCD). In addition, traffic control sign or device includes signs on private property associated with an approved traffic control plan prepared by a transportation engineer and approved by the city through a site plan and design review process that does not involve the content of a sign.

"Undeveloped lot" means a property without a building, business or valid land use approval.

"Wall sign" means a sign that is attached to the wall of a building and extends no more than twelve inches from a wall.

(Ord. No. 14-1003, § 1(Exh. 1), 5-20-2015)

15.28.030 - Scope of sign regulations.

All signs shall be constructed and maintained only as provided by this chapter, except for any of the following:

A. Signs not visible from either a right-of-way or property under different ownership, provided such signs are constructed and maintained in accordance with applicable law;

B. Signs inside a building, except for strobe lights visible from the right-of-way or other private property;

C. Signs carved into or part of materials that are an integral part of a building;

D. Signs attached to, or carried by a person;

E. Signs required by law or legal action;

F. Government owned signs within the right-of-way, government-designated parks, Metro-designated open space and at stormwater facilities;

G. City owned signs;

H. Public art murals identified on the Oregon City Existing Mural List; and

I. Traffic control signs and devices.

(Ord. No. 14-1003, § 1(Exh. 1), 5-20-2015)

15.28.040 - Permit required.

A. Permit Required. No sign shall be constructed except as provided by this chapter and after a permit has been issued by the sign official. This permit requirement applies to all signs, except those specifically exempt by a provision of this chapter.

B. Any of the following signs on private property are subject to compliance with this chapter but do not require a sign permit:

1. Changes of copy whereby the sign size and material are not changing but the message is changed; or

2. Ancillary signs (excluding banners) with no more than two faces and which do not exceed a display area of twelve square feet and a sign face of six square feet.

C. Permit Application. Application for a sign permit shall be made in writing upon forms furnished by the sign official. A permit application fee shall accompany the application. The amount of the fee shall be adopted by resolution of the city commission. The application shall include all plans and information necessary to establish that the proposed sign complies with all applicable requirements of this chapter and applicable buildings, structural and life safety codes. The permit shall be valid if the sign is constructed in compliance with the city code and to the specifications described in the approved sign permit. Any permit issued under this chapter shall be void if the sign is not constructed in accordance with any conditions of the permit and the applicable requirements of this chapter within ninety days following the date of its issuance, excluding any appeals of the city's decision. Any permit issued under this chapter shall remain in effect as long as the sign is constructed as approved in the permit and maintained as required in 15.28.140. If an applicant seeks to have the city treat its property as a premises for purposes of the sign code, then the application shall explain how the property meets the definition of premises in Section 15.28.020.

D. Appeals. Any party aggrieved by a decision of the sign official may appeal the decision to the planning commission. Any such appeal shall be in writing and be received by the city recorder no later than fourteen days after the date the challenged decision is final. The planning commission or city commission may initiate an appeal on its own motion within the fourteen-day period. The appropriate appeal fee established by resolution of the city commission shall accompany the appeal. Proceedings before the planning commission shall comply with the provisions of Chapter 17.50 of this code, including the provisions relating to city commission review of planning commission decisions involving conditional use permits.

E. In addition to this chapter, signs shall be approved by the historic review board as required by Oregon City Municipal Code Section 17.40.060. The review shall not consider the content of the sign in any way.

(Ord. No. 14-1003, § 1(Exh. 1), 5-20-2015)

15.28.050 - Measuring sign dimensions.

A. The following criteria shall be used for the purpose of determining the boundaries of a sign:

1. The sign face includes the area within a perimeter enclosing the limits of lettering, writing, representation, emblem, figure, character and lighted surface, but excluding essential sign structure, foundations or supports. Where a sign is of a three-dimensional, round, or irregular solid shape, the largest cross-section shall be used in a flat projection for the purpose of determining sign face.

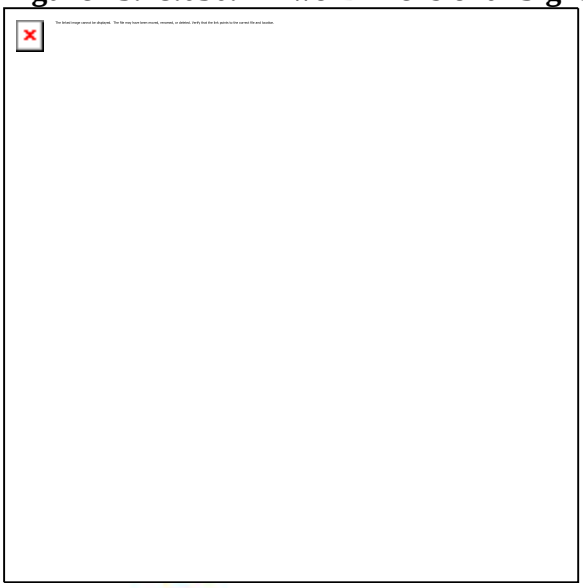
2. When signs are constructed in multiple separate pieces the sign face is calculated by measuring the area within a perimeter enclosing the limits of lettering, writing, representation, emblem, figure, character and light surface, but excluding essential sign structure, foundations or support on all pieces collectively.

B. Sign width is measured as the horizontal distance between the outermost area of sign face for wall signs and includes the supporting structure for all other sign types.

C. The height of a sign above grade is measured from the average level of the grade below the sign to the topmost point of the sign, including any supporting structure.

D. Clearance is measured from the average grade below the sign to the lowermost point of the sign.

Figure 15.28.050.A Two-Dimensional Signs



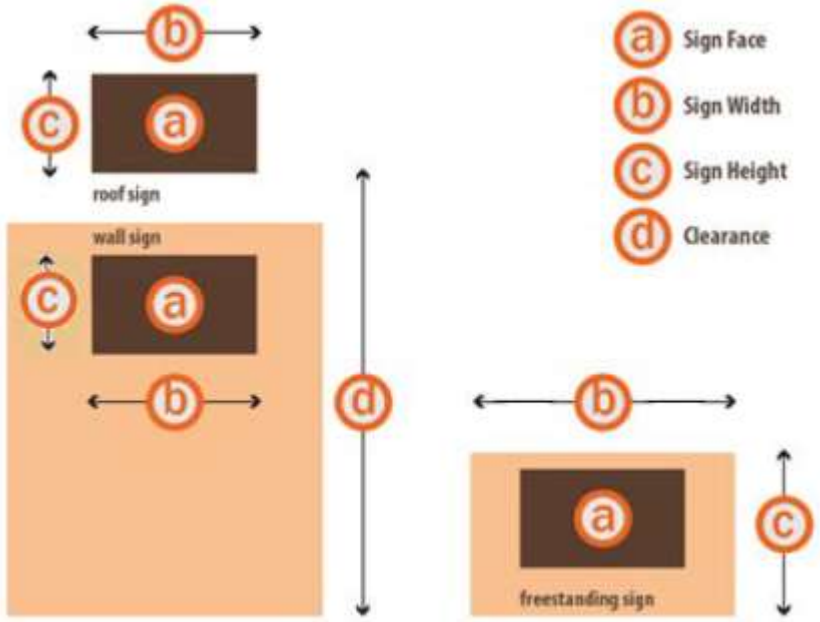
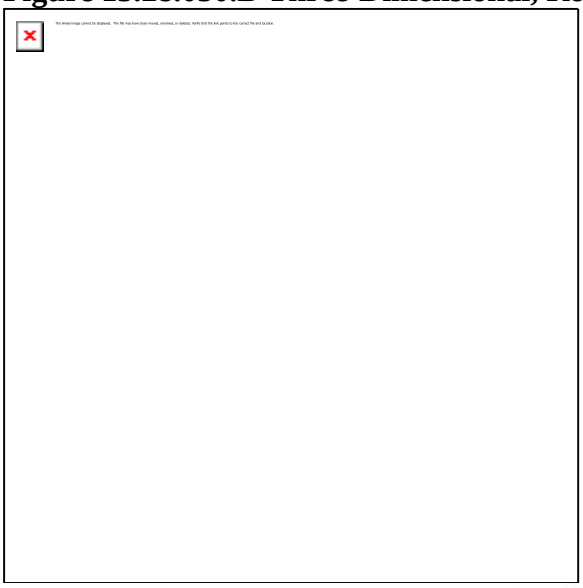
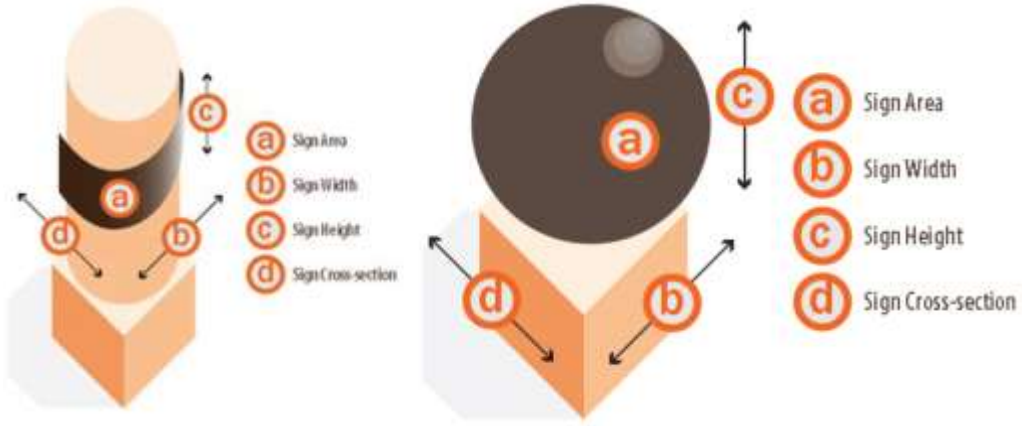


Figure 15.28.050.B Three-Dimensional, Round or Irregular Signs





(Ord. No. 14-1003, § 1(Exh. 1), 5-20-2015)

15.28.060 - Signs in residential zones (excluding multi-family).

These standards apply to the following zoning designations: "R-10" Single-Family Dwelling District, "R-8" Single-Family Dwelling District, "R-6" Single-Family Dwelling District, "R-5" Single-Family Dwelling District, and "R-3.5" Dwelling District, except for those subject to Section 15.28.070 or 15.28.100.

A. General. All of the following standards apply to all signs in residential zones (excluding multi-family):

1. A minimum of fifty percent of the sign shall be constructed of metal, wood, stone, brick, rock or any combination thereof.

2. If a sign is illuminated, the source of illumination shall be external to the sign and directed or shielded so as to not shine directly onto any neighboring structures.

3. With the exception of projecting and wall signs, signs shall not project over the right-of-way. Signs projecting into the right-of-way shall receive approval by the city engineer.

4. With the exception of wall signs, signs shall maintain a minimum clearance of ten feet above grade over pedestrian or vehicular areas, and fourteen feet above grade over areas of truck access.

B. Wall Sign. All of the following standards apply to wall signs in residential zones (excluding multi-family):

1. A maximum of one wall sign is allowed for each property frontage. A wall sign is prohibited if there is a projecting sign along the same property frontage.

2. The sign face shall not exceed twelve square feet.

3. The sign width shall not exceed five linear feet.

C. Freestanding Sign. Freestanding signs are prohibited.

D. Incidental Freestanding Signs. Incidental freestanding signs are prohibited.

E. Projecting Signs. All of the following standards apply to projecting signs in residential zones (excluding multi-family):

1. A maximum of one projecting sign is allowed for each property frontage. A projecting sign is prohibited if there is a wall sign along the same property frontage.

2. The display area shall not exceed twenty-four square feet and the sign face shall not exceed twelve square feet.

3. The sign shall not have more than two faces.

4. The projection from a building wall shall not exceed six feet and shall not project within two feet of the curb line.

5. The projection above the wall on which the sign is constructed shall not exceed one foot.

6. The visible supporting structure shall be constructed of metal, wood, stone, brick, rock or any combination thereof.

F. Roof Signs. Roof signs are prohibited.

G. Ancillary Signs. All of the following standards apply to ancillary signs in residential zones (excluding multi-family):

1. A maximum of two ancillary signs are allowed per property.

2. The sign shall not have more than two faces.

3. The display area shall not exceed twelve square feet and the sign face shall not exceed six square feet.

4. Banners are prohibited in residential zones unless approved under Section 15.28.070.

(Ord. No. 14-1003, § 1(Exh. 1), 5-20-2015)

15.28.065 - Signs in multi-family residential zones.

These standards apply to the "R-2" Multi-Family Dwelling District zoning designation, except for those subject to Section 15.28.070 or 15.28.100.

A. General. All of the following standards apply to all signs in multi-family residential zones:

1. A minimum of fifty percent of the sign shall be constructed of metal, wood, stone, brick, rock or any combination thereof.

2. If a sign is illuminated, the source of illumination shall be external to the sign and directed or shielded so as to not shine directly onto any neighboring structures.

3. With the exception of projecting and wall signs, signs shall not project over the right-of-way. Signs projecting into the right-of-way shall receive approval by the city engineer.

4. With the exception of wall signs, signs shall maintain a minimum clearance of ten feet above grade over pedestrian or vehicular areas, and fourteen feet above grade over areas of truck access.

B. Wall Sign. All of the following standards apply to wall signs in multi-family residential zones:

1. A maximum of one wall sign is allowed for each property frontage. A wall sign is prohibited if there is a projecting sign along the same property frontage.

2. The sign face shall not exceed twenty square feet.

3. The sign width shall not exceed five linear feet.

C. Freestanding Sign. All of the following standards apply to freestanding signs in multi-family residential zones:

1. A maximum of one freestanding sign for each property frontage is allowed.

2. The display area shall not exceed forty square feet and the sign face shall not exceed twenty square feet.

3. The sign width shall not exceed ten linear feet.

4. The sign height shall not exceed five feet.

D. Incidental Freestanding Signs. Incidental freestanding signs are prohibited.

E. Projecting Signs. All of the following standards apply to projecting signs in multi-family residential zones:

1. A maximum of one projecting sign is allowed for each property frontage. A projecting sign is prohibited if there is a wall sign along the same property frontage.

2. The display area shall not exceed forty square feet and the sign face shall not exceed twenty square feet.

3. The sign shall not have more than two faces.

4. The projection from a building wall shall not exceed six feet and shall not project within two feet of the curb line.

5. The projection above the wall on which the sign is constructed shall not exceed one foot.

6. The visible supporting structure shall be constructed of metal, wood, stone, brick, rock or any combination thereof.

F. Roof Signs. Roof signs are prohibited.

G. Ancillary Signs. All of the following standards apply to ancillary signs in multi-family residential zones:

1. A maximum of two ancillary signs are allowed per property.

2. The sign shall not have more than two faces.

3. The display area shall not exceed twelve square feet and the sign face shall not exceed six square feet.

4. Banners are prohibited in multi-family residential zones unless approved under Section 15.28.070.

(Ord. No. 14-1003, § 1(Exh. 1), 5-20-2015)

15.28.070 - Signs for conditional uses in residential zones.

These standards apply to all conditional uses within a residential zoning district ("R-10" Single-Family Dwelling District, "R-8" Single-Family Dwelling District, "R-6" Single-Family Dwelling District, "R-5" Single- Family Dwelling District, "R-3.5" Dwelling District, and "R-2" Multi-Family Dwelling District) unless otherwise limited in the conditional use approval. Conditional uses are identified within each applicable zoning designation. Signs within the right-of-way shall comply with Section 15.28.100.

A. General. All of the following standards apply to all signs for conditional uses in residential zones:

1. With the exception of banners, at least fifty percent of the wall sign shall be constructed of metal, wood, stone, brick, rock or any combination thereof.
2. If a sign is illuminated, the source of illumination shall be external to the sign and directed or shielded so as to not shine directly onto any neighboring structures.
3. With the exception of projecting and wall signs, signs shall not project over the right-of-way. Signs projecting into the right-of-way shall receive approval by the city engineer.
4. With the exception of wall signs, signs shall maintain a minimum clearance of ten feet above grade over pedestrian or vehicular areas, and fourteen feet above grade over areas of truck access.

B. Wall Sign. All of the following standards apply to wall signs for conditional uses in residential zones:

1. A maximum of one wall sign per frontage is allowed.
2. The sign face shall not exceed thirty-two square feet.
3. The sign width shall not exceed ten linear feet.

C. Freestanding Sign. All of the following standards apply to freestanding signs for conditional uses in residential zones:

1. A maximum of one freestanding sign per lot is allowed.
2. The display area shall not exceed sixty-four square feet and the sign face shall not exceed thirty-two square feet.
3. The sign width shall not exceed ten linear feet.
4. The sign height shall not exceed fifteen feet.

D. Incidental Freestanding Signs. Incidental freestanding signs are prohibited.

E. Projecting Signs. All of the following standards apply to projecting signs for conditional uses in residential zones:

1. A maximum of one projecting sign is allowed if there is not a freestanding or wall sign on the same frontage.
2. The display area shall not exceed sixty-four square feet and the sign face shall not exceed thirty-two square feet.
3. The sign shall not have more than two faces.
4. The projection from a building wall shall not exceed six lineal feet and shall not project within two feet of the curb line.
5. The projection above the wall on which the sign is constructed shall not exceed one foot.
6. The visible supporting structure shall be constructed of metal, wood, stone, brick, rock or any combination thereof.

F. Roof Signs. Roof signs are prohibited.

G. Ancillary Signs. All of the following standards apply to ancillary signs for conditional uses in residential zones.

1. A maximum of two ancillary signs (including banners) are allowed per property.
2. The sign shall not have more than two faces.
3. The display area shall not exceed twelve square feet and the sign face shall not exceed six square feet.
4. Additional standards for banners:
    a. For a single property, banners may be in place for up to thirty days, up to twice per year.
    b. Banners shall be securely placed against a building wall and may not project from the wall.
    c. The sign length shall not exceed six lineal feet.
    d. The sign height shall not exceed four lineal feet.
    e. Banners are prohibited within a historic district and on any property designated as a historic landmark.

(Ord. No. 14-1003, § 1(Exh. 1), 5-20-2015)

15.28.080 - Signs in office, commercial, mixed use and industrial zones.

The following standards apply to signs in office, commercial, mixed use and industrial zones which are not identified in Section 15.28.060, 15.28.065, 15.28.070, or 15.28.100 unless otherwise provided by this code.

A. General. All of the following standards apply to all signs in office, commercial, mixed use and industrial zones:
    1. With the exception of projecting or wall signs, signs shall not project over the right-of-way. Signs projecting into the right-of-way shall receive approval by the city engineer.
    2. With the exception of wall signs, signs shall maintain a minimum clearance of ten feet above grade over pedestrian or vehicular areas, and fourteen feet above grade over areas of truck access.

B. Wall Signs. All of the following standards apply to wall signs in office, commercial, mixed use and industrial zones:
    1. The number of wall signs is unlimited provided the total combined display area of wall signs, projecting signs and banners does not exceed twenty square feet for each ground floor tenant space on which the sign is constructed. For ground floor tenant spaces exceeding twenty feet of wall length on which the sign is constructed and tenant spaces not on the ground floor, signage shall not exceed one square foot per each lineal foot of the wall length of the tenant space on which the sign is constructed.
    2. Signs on structures such as awnings, canopies, false fronts and wall extensions that do not extend more than one foot from the structure are considered wall signs.

C. Freestanding Signs. All of the following standards apply to freestanding signs in office, commercial, mixed use and industrial zones:
    1. A maximum of one freestanding sign is allowed for each street frontage. On arterial streets, if a frontage exceeds a length of six hundred linear feet a second freestanding sign is allowed. In all cases, no freestanding sign shall be permitted on the same frontage where there is a projecting or roof sign.
    2. Freestanding signs on the same frontage shall be separated by a minimum of fifty feet distance.
    3. Maximum display area:

a. Where the street frontage is less than fifty feet in length, the display area shall not exceed fifty square feet and the sign face shall not exceed twenty-five square feet.

b. Where the street frontage is fifty feet or greater but less than two hundred feet in length, display area shall not exceed one hundred square feet and the sign face shall not exceed fifty square feet.

c. Where the street frontage is two hundred feet or greater in length, the display area shall not exceed three hundred square feet and the sign face shall not exceed one hundred fifty square feet.

d. In no case shall any sign have a display area in excess of three hundred square feet.

4. The sign width shall not exceed twenty linear feet.

5. Where the street frontage is two hundred feet in length or less the sign height shall not exceed twenty-five feet. Where the street frontage is more than two hundred feet in length, the sign height shall not exceed thirty feet.

D. Incidental Freestanding Signs. All of the following standards apply to incidental signs in office, commercial, mixed use and industrial zones:

1. A maximum of one incidental freestanding sign is allowed for each street frontage.

2. The display area shall not exceed sixteen square feet and the sign face shall not exceed eight square feet.

3. The sign height shall not exceed fifteen feet.

E. Projecting Signs. All of the following standards apply to projecting signs in office, commercial, mixed use and industrial zones:

1. A maximum of one projecting sign is allowed for each tenant space if there is not a freestanding or roof sign on the same frontage.

2. The total combined display area of projecting signs and wall signs shall not exceed one square foot per each lineal foot of the wall length of the tenant space on which the sign is constructed. Each ground floor tenant space may have a minimum sign face of twenty square feet, regardless of the limitation above.

3. The sign shall not have more than two faces.

4. The projection from a building wall shall not exceed six lineal feet and shall not project within two feet of the curb line.

5. The projection above the wall on which the sign is constructed shall not exceed one foot.

6. The visible supporting structure shall be constructed of metal, wood, stone, brick, rock or any combination thereof.

F. Roof Signs. All of the following standards apply to roof signs in office, commercial, mixed use and industrial zones:

1. A maximum of one roof sign is permitted for each frontage if there is no projecting sign or freestanding sign along the frontage.

2. Maximum display area:

a. Where the street frontage is less than fifty feet, the display area shall not exceed fifty square feet and the sign face shall not exceed twenty-five square feet.

b. Where the street frontage is fifty feet or greater but less than two hundred feet, the display area shall not exceed one hundred square feet and the sign face shall not exceed fifty square feet.

c. Where the street frontage is two hundred feet or greater, the display area shall not exceed three hundred square feet and the sign face shall not exceed one hundred fifty square feet.

d. In no case shall any sign have a display area in excess of three hundred square feet.

3. The sign width shall not exceed twenty feet and the sign height may not exceed ten feet.

4. Skirting is required to obscure exposed hardware used to attach the sign to the roof, as viewed from the adjacent street level perspective.

G. Ancillary Signs. All of the following standards apply to ancillary signs in office, commercial, mixed use and industrial zones:

1. A maximum of two ancillary signs (including banners) are allowed per property.

2. The sign shall not have more than two faces.

3. The maximum display area is twelve square feet and the maximum sign face is six square feet.

4. Additional standards for banners:

a. For a single property, banners may be in place for up to thirty days, up to twice per year.

b. Banners shall be securely placed against a building wall and may not project from the wall.

c. Banners shall comply with the wall sign size requirements and the sign length shall not exceed six linear feet.

d. The sign height shall not exceed four lineal feet.

e. Banners are prohibited within a historic district and on any property designated as a historic landmark.

(Ord. No. 14-1003, § 1(Exh. 1), 5-20-2015)

15.28.090 Public art murals.

A. Public Art Mural Program Intent and Purpose. The intent and purpose of this section is to encourage the production of public art murals for acquisition by the City. Public art murals are a medium of expression which serves the public interest in unique ways, including, but not limited to: enhancing the aesthetics of the City; providing avenues for original artistic expression in the City; providing public edification through access to original works of public art; encouraging community participation in the creation of original works of art; and reducing the incidence of graffiti and other crime.

B. Criteria for Public Art Murals. All of the following criteria shall be met for public art murals:

1. Public art murals shall remain in place, without alteration, for a period of not less than five (5) years, except as may be specified by a designated governing body or by the Arts Commission in the conditions of approval. Within 30 days of the end of the approval period, the public art mural shall be removed unless a new approval is granted. Alterations to an approved and/or installed mural shall receive approval by a designated governing body or the Arts Commission.

2. No public art murals shall be allowed on single-family dwellings, duplexes, 3-4 plexes, or multi-family dwellings. As used in this subsection, single-family dwellings, duplexes, 3-4 plexes, or multi-family dwellings do not include mixed-use buildings which contain a single-family dwelling, duplex, or multi-family dwellings.

3. Public art murals shall only be permitted within approved zoning districts.
    a. Approved zoning districts include:
        i. General Commercial
        ii. Mixed Use Downtown
        iii. Mixed Use Corridor 1
        iv. Mixed Use Corridor 2
        v. Willamette Falls Downtown District
        vi. Institutional
    b. Any use that is listed under permitted uses in the Institutional district in 17.39.020 but located in a non-Institutional Zone.
4. The public art mural shall be painted, or if ceramic, glass tiles, tesserae, or metal, applied directly onto the surface of a building with a paint, ceramic, glass tiles, tesserae, or metal that ensures longevity, durability, and structural and surface stability. No part of the public art mural shall exceed the height of the structure to which it is tiled, painted, or affixed.
5. No part of the public art mural shall be placed over the exterior surface of any opening of a building in a manner that prohibits use of the opening, including its windows, doors, and vents.
6. No public art mural may contain electrical components, three dimensional structural elements; employ electrical lights as part of the image, moving structural elements, flashing or sequential lighting, interior lighting elements, any automated method that causes movement, or any method that causes periodic changes in the appearance, image or message of the public art mural.
7. Public art murals shall be located in a manner that is accessible to the public.
8. The mural proposal is not mechanically reproduced, or computer generated and printed on a base that will be attached to the wall, such as, by way of illustration but not limitation, images digitally printed on vinyl.
9. The mural proposal shall include methods to mitigate the impacts of weather and vandalism and a commitment to repair the mural surface as necessary for a minimum of five years.
10. No compensation will be given or received for the display of public art murals or for the right to place the mural on another's property.
11. The approval and acceptance of each public art mural shall be contingent upon the conveyance of a public art mural easement to the City from the owner of the building upon which the mural will be located, in a form approved by the City Attorney. The terms of the easement shall grant the right to create the public art mural on the wall of the building and provide that the person granting the easement will maintain and restore the public art mural in its original condition for the period of the easement, and state that upon termination of the easement, the mural shall be removed, and the building restored to its prior condition.

C. Approval Process.
    1. Unless the Arts Commission is inactive, public art murals shall be approved by the Oregon City Arts Commission at a public hearing based on the criteria in the Oregon City Municipal Code. Notice of the application and the hearing date is published online and mailed to the applicant, recognized neighborhood association(s) and property owners within three hundred (300) feet of the proposed mural location. Notice must be issued at least twenty (20) days pre-hearing, and the staff report must be available at least seven (7) days pre-hearing. At the evidentiary hearing held before the Arts Commission, all issues must be raised and addressed. Failure to raise an issue at the hearing will preclude review on that issue.
    2. In lieu of an active Arts Commission, the Oregon City Economic Development Department will review the proposal based on the criteria in the Oregon City Municipal

Code without a public hearing. Notice of the application will be published online and mailed to the applicant, recognized neighborhood association(s) and property owners within three hundred (300) feet of the proposed mural location. There shall be a minimum twenty (20)-day public comment period. All issues must be raised and addressed during the public comment period. Failure to raise an issue will preclude review on that issue.

D. The decision is appealable to the City Commission on the record. Notice of the appeal must be received in writing by the Economic Development Department within fourteen (14) calendar days from the date the challenged decision is provided to those entitled to notice. Late filing of any appeal shall be deemed a jurisdictional defect and will result in the automatic rejection of any appeal so filed.

1. All of the following must be included as part of the notice of appeal:

   a. The City file number and date the decision to be appealed was rendered;
   b. The name, mailing address and daytime telephone number for each appellant;
   c. A statement of how each appellant has an interest in the matter and standing to appeal;
   d. A statement of the specific grounds for the appeal;
   e. The Appropriate Appeal Fee. Failure to include the appeal fee within the appeal period is deemed to be a jurisdictional defect and will result in the automatic rejection of any appeal so filed. If a City-recognized neighborhood association with standing to appeal has voted to request a fee waiver pursuant to Oregon City Municipal Code Section 17.50.290.C, no appeal fee shall be required for an appeal filed by that association. In lieu of the appeal fee, the neighborhood association shall provide a duly adopted resolution of the general membership or board approving the request for fee waiver.

2. Standing to Appeal. Only those persons or recognized neighborhood associations who have participated either orally or in writing have standing to appeal the decision. Grounds for appeal are limited to those issues raised in writing before the close of the public record. No new evidence shall be allowed.

3. Notice of the Appeal Hearing. The Economic Development Department shall issue notice of the appeal hearing to all parties who participated in writing before the close of the public record at least twenty days pre-hearing, and the staff report must be available at least seven days pre-hearing. Notice of the appeal hearing shall contain the following information:

   a. The file number and date of the decision being appealed;
   b. The time, date and location of the public hearing;
   c. The name of the applicant, owner and appellant (if different);
   d. The street address or other easily understood location of the subject property;
   e. A description of the permit requested and the applicant's mural proposal;
   f. A brief summary of the decision being appealed and the grounds for appeal listed in the notice of appeal;
   g. A statement that the appeal hearing is confined to the issues raised in the notice of appeal;
   h. A general explanation of the requirements for participation and the City's hearing procedures.

4. The City Commission decision on appeal is the City's final decision.

No person shall commence creation of any public art mural without first obtaining approval

from the City, and executing an easement pursuant to section 15.28.090.(B).11. Murals that are created without approval through the aforementioned process that are not otherwise exempt pursuant to this chapter or are inconsistent with the conditions of approval from the City's decision shall not be deemed public art murals.

15.28.100 - Signs in the right-of-way.

All of these standards apply to all signage within the city of Oregon City right-of-way and signs located in compliance with Section 15.28.100.B.1.a, except exempt signs described in Section 15.28.030.

A. Signs on the Ground Within the Right-of-Way. Signs on the ground within the right-of-way shall be permitted in the right-of-way in accordance with all of the following standards:

1. Number of Signs Permitted:

   a. A maximum of one sign within the right-of-way per property frontage not within the Mixed Use Downtown District, Willamette Falls Downtown Design District or Mixed Use Corridor 1 District zoning designations.

   b. Within the Mixed Use Downtown District, Willamette Falls Downtown Design District, or the Mixed Use Corridor 1 District, the number of signs on the ground within the right-of-way is limited to the number of operating and accessible public entrances per building or buildings on the site, up to a maximum of three signs per frontage. All properties are allowed one sign on the ground within the right-of-way per property frontage regardless of the number of building entrances. Multiple doors at one entrance are allowed one sign. Multiple individuals or entities which share the same public entrance are allowed one sign.

   c. Approved traffic control signs or devices do not count towards the number of signs permitted within the right-of-way.

2. Material, Design and Size Standards:

   a. The sign frame shall be wood, plastic or metal.

   b. The sign shall be an A-frame sandwich design.

   c. The sign may not be illuminated.

   d. The sign width shall not exceed twenty-eight inches.

   e. The sign depth shall not exceed two feet.

   f. The sign height shall not exceed three feet.

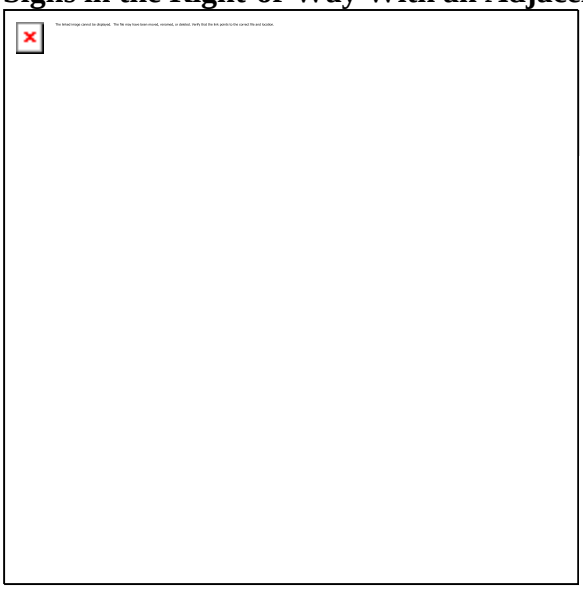
   g. The display area shall not exceed 12 square feet and the sign face shall not exceed six square feet.

3. Placement Standards:

   a. Signs shall not be placed in parking spaces, pedestrian pathways, or bicycle paths, street corners, transit stop areas, ADA accessible curb ramps, ADA accessible parking spaces, at building exits or fire escapes, or any portion of the street (automobile and bicycle travel lanes, shoulder, medians, traffic islands, and parking areas). The sign may not obstruct pedestrian or ADA access from the sidewalk to transit stop areas, designated ADA accessible parking spaces, ADA accessible ramps or building exits, including fire escapes. Signs may not impede or hinder the vision of drivers or bicyclists. The sign shall be located entirely outside of the area of a right-of-way corner that is between the curb and the lines created by extending the property line to the curb face. Signs placed within the right-of-way shall not obstruct traffic control signs or devices.

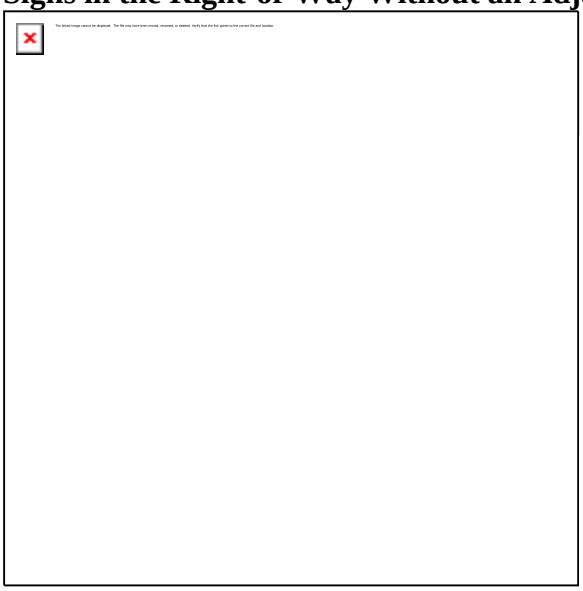
b. For signs placed within the right-of-way with an adjacent sidewalk: The sign shall be placed within six inches of the face of the curb. Four feet of clearance width shall be retained on the sidewalk.

Figure 15.28.100.A.3.b:
Signs in the Right-of-Way With an Adjacent Sidewalk



c. For signs placed in the right-of-way without an adjacent sidewalk: The sign shall be located outside of any street pavement and may not be located closer than four feet from the travel lane, turning lane, shoulder, parking lane or bicycle lane.

Figure 15.28.100.A.3.c:
Signs in the Right-of-Way Without an Adjacent Sidewalk



d. Signs placed in the right-of-way shall remain portable and shall not be attached or anchored in any manner to trees or public property, including, but not limited to, utility or light poles, parking meters, traffic control signs, the ground, or pavement.

4. Hours of Sign Placement:

   a. For signs not within residential zoning designations: Signs may be within the right-of-way between the hours of nine a.m. and ten p.m.

   b. Signs within residential zoning designations may be displayed on Thursday, Friday, Saturday, and Sunday between twelve p.m. and eight p.m. daily; and from six a.m. to one p.m. on Tuesday.

5. Approval of the adjacent property owner is required.

B. Cross Street Banners. Temporary banners which extend over a roadway shall be permitted in the right-of-way upon issuance of a permit in accordance with the requirements contained in the most recently adopted Policy for Cross Street Banners and Banners on Street Light Poles. Banners shall be installed, re-secured, and removed by the city.

C. Banners on Street Light Poles. Temporary banners on street light poles shall be permitted in the right-of-way upon issuance of a permit in accordance with the requirements contained in the most recently adopted Policy for Cross Street Banners and Banners on Street Light Poles. Banners shall be installed, re-secured, and removed by the city.

D. Signs which Project over the Right-of-Way from Private Property. With the exception of projecting signs, no sign on private property may project into the right-of-way. Signs projecting into the right-of-way shall maintain a minimum clearance of ten feet above grade over pedestrian or vehicular areas, and fourteen feet above grade over areas of truck access.

E. Who May Place the Sign. Permits for signs within the right-of-way are approved on a first-come, first-served basis.

F. Right-of-Way Sign Permit Process.

1. Signs on the Ground. For all properties not zoned residential, an annual A-frame sign within the right-of-way permit is required except on Thursday, Friday, Saturday, or Sunday between twelve p.m. and eight p.m. daily; or from six a.m.to one p.m. on Tuesday. Placement of signs subject to this exception shall meet all other applicable requirements in this chapter. An approval sticker shall be placed on each sign within the right-of-way to easily distinguish the approved signs.

2. Cross Street Banner. A cross street banner within the right-of-way permit is required each time a cross street banner is installed.

3. Banners on Light Posts. A street light banner permit is required each time a banner on a light post is installed.

4. Signs which Project over the Right-of-Way from Private Property. Approval from the city engineer is required each time a sign is installed.

5. The city commission shall establish permit fees for signs located within the right-of-way.

6. The applicant shall comply with and obtain any permits issued by any other applicable agency.

G. Liability. The sign owner shall assume all liability associated with a sign within the right-of-way regardless of whether a permit is required.

H. Removal of Signs within the Right-of-Way.

1. Existing signs that do not comply with these standards or that have not obtained a valid permit may be removed.

2. The city engineer may require signs to be modified, moved or removed if streets are widened or other improvements are made in the right-of-way that result in conditions where the sign placement will not comply with the above standards. The modification, moving or removing will be at the owner's expense.

3. The city reserves the right to change or remove the approved cross street banners or banners on light posts at any time after the installation based on operational and/or safety conditions.

(Ord. No. 14-1003, § 1(Exh. 1), 5-20-2015)

15.28.110 - Prohibited signs.

It is unlawful for any of the following signs to be constructed or maintained except as otherwise provided in this chapter:

A. A sign that interferes in any way with a traffic control sign or device or prevents clear and unobstructed views of traffic control signs or devices or approaching or merging traffic or does not comply with Chapter 10.32 or 8.08 of the Oregon City Municipal Code.

B. A sign that contains, includes or is illuminated by any flashing or revolving, rotating or moving light or moves or has any animated or moving parts which move or rotate or change more than three times per day, except as otherwise allowed within this code.

C. A sign with lighting that is not effectively shielded to prevent beams or rays of light from being directed at any portion of the right-of-way or public vehicular accessway or sign that does not comply with the lighting requirements in OCMC 17.62.065.

D. A sign located upon a tree, or painted or drawn upon a natural feature.

E. A sign that obstructs free ingress to or egress from any door, window or fire escape, alley, drive or fire lane, or is attached to a fire escape.

F. Any sign with a display area larger than twelve square feet or six square feet per sign face on an undeveloped lot or parcel of property.

G. Attention flags.

H. A-frame signs with a display area larger than twelve square feet or six square feet per sign face or taller than three feet.

I. Air blown signs.

J. Billboards.

K. Signs on fences or fencing.

L. Banners unless otherwise allowed by this chapter.

M. Abandoned signs.

N. Signs that emit any sound, vibration, or smell.

O. Flags larger than one square foot for each lineal foot in height of the flag pole or structure to which the flag is affixed.

P. Flags exceeding sixty square feet.

Q. Signs that may be confused with public traffic signs or highway identification.

R. A sign not otherwise in compliance with any provision of this code, Oregon law or the terms and conditions of any valid sign permit issued under this chapter.

(Ord. No. 14-1003, § 1(Exh. 1), 5-20-2015)

15.28.120 - Nonconforming signs.

All of the following standards apply to all nonconforming signs:

A. Signs that were lawfully constructed and otherwise lawfully existing but no longer comply with this code are allowed to remain until removed. Nothing in this section shall be deemed to prevent the maintenance of any sign, or changes of sign copy on a sign.

B. No additions or enlargements may be made to a nonconforming sign except those additions or enlargements that are required by law.

C. A sign that is moved, replaced, or structurally altered shall be brought into conformance with this chapter.

D. A nonconforming sign (including the sign structure, foundation and supports) that is damaged shall not be repaired if the estimated expense to repair the sign exceeds fifty percent of the replacement cost of the sign as of the day before the sign was damaged. A damaged nonconforming sign that cannot be repaired shall be removed within ninety days of the date the sign was damaged. Whenever a nonconforming sign is damaged and the estimated cost to repair the sign is fifty percent or less of its replacement value as of the day before the sign was damaged, it may be repaired and restored to the condition it was in before it was damaged and may continue to be used as a nonconforming sign, provided that such repairs and restoration are started within ninety days of the date the sign was damaged and are diligently pursued thereafter. Whenever repairs and restoration of a damaged nonconforming sign are not started within ninety days of the date the sign was damaged or are diligently pursued once started, the sign shall be deemed abandoned.

E. Abandoned signs shall not be deemed nonconforming signs. No nonconforming sign shall be permitted to remain unless properly repaired and maintained as provided in this chapter. A sign maintained in violation of this provision shall be considered abandoned and will be removed as provided in this chapter. Any nonconforming sign that is determined by the building official to be an unsafe sign shall be removed as provided in this chapter. Any nonconforming sign that is determined to be an abandoned sign shall be removed as provided in this chapter.

(Ord. No. 14-1003, § 1(Exh. 1), 5-20-2015)

15.28.130 - Variances.

All of the following standards apply to variances to this chapter:

A. Grounds for Variance. Upon application by an applicant, the planning commission may grant a specific variance from provisions of this chapter provided all of the following circumstances exist:

1. That the variance from the requirements is not likely to cause substantial damage to adjacent properties by reducing light, air, safe access or other desirable or necessary qualities otherwise protected by this title;

2. That the request is the minimum variance that would alleviate the hardship;

3. Granting the variance will equal or exceed the purpose of the regulation to be modified;

4. Any impacts resulting from the adjustment are mitigated;

5. No practical alternatives have been identified which would accomplish the same purpose and not require a variance; and

6. The variance conforms to the comprehensive plan and the intent of the ordinance being varied.

B. Variance Fee. At the time of application for variance from the provisions of this chapter, the applicant shall pay a fee in accordance with the fee schedule established and amended from time to time by the city commission and on file with the city recorder.

C. Procedure. A variance application shall be treated in the manner provided by Chapter 17.50 of this code with respect to zoning variances.

(Ord. No. 14-1003, § 1(Exh. 1), 5-20-2015)

15.28.140 - Maintenance.

All signs, together with all supporting structures, shall be well maintained and kept in a good state of repair. Without limiting the foregoing, all sign owners shall comply with all of the following maintenance:

A. Shall keep signs and supporting structures free from rust, dirt, debris, and chipped, cracked or peeling paint.

B. Shall remove hanging, dangling, and cracked portions from all signs and supporting structures.

C. Shall repair frayed parts on all signs and supporting structures.

D. Shall replace defective lighting on all signs and supporting structures.

E. Shall remove graffiti and unauthorized stickers from all signs and supporting structures.

(Ord. No. 14-1003, § 1(Exh. 1), 5-20-2015)

15.28.150 - Violation—Penalty.

In addition to any other provisions hereof, it is unlawful for any person to maintain a sign or advertising structure in violation of the provisions of this chapter. Violation of any provision of this chapter is subject to the code enforcement procedures of Chapters 1.16, 1.20, and 1.24.

(Ord. No. 14-1003, § 1(Exh. 1), 5-20-2015)

15.28.160 - Conflict and severability.

In the event any provision herein is found to be in conflict with any zoning, building, fire safety, health or other code provisions of the city, the provision which establishes the higher standard for the promotion and protection of the health, safety and welfare of the people shall prevail.

A finding by a court of competent jurisdiction that any part, section, subsection, paragraph, subparagraph, sentence, clause, phrase, term or word is declared invalid shall not invalidate the remaining portions. A permit issued pursuant to this chapter does not grant any authority to violate any other law or regulation that may apply. Any permit or approval issued in conflict with this chapter shall be void.

(Ord. No. 14-1003, § 1(Exh. 1), 5-20-2015)

OREGON CITY

Economic Development

625 Center Street | Oregon City OR 97045
Ph (503) 657-0891 | Fax (503) 722-3880

LEG-21-00002
APPLICATION FOR LEGISLATIVE CODE AMENDMENTS
May 12, 2021

APPLICANT: City of Oregon City, c/o Economic Development Department
625 Center St., PO Box 3040, Oregon City, OR 97045
James Graham, CED, Economic Development Manager
Matthew Weintraub, Tourism Program Specialist

REQUEST: Amendments to Chapter 15.28.020 of the Oregon City Municipal Code – *Definitions*
Creation of Chapter 15.28.090 of the Oregon City Municipal Code – *Public art murals*

APPLICATION DATE: May 12, 2021

BACKGROUND
File No. LEG-21-00002 amends Chapter 15.28 of the Oregon City Municipal Code, which contains the procedures and conditions for signage. The amendment establishes a Public Art Mural Program and provides criteria upon which Staff, the Arts Commission and City Commission evaluate proposed art installations.

Public art murals are currently not allowed in Oregon City. Art and signage that is affixed to a building are currently regulated by Chapter 15.28 of the Oregon City Municipal Code. However, many municipalities in Oregon permit and regulate public art murals. A subsequent goal of the proposed code amendment is to provide clarity for City staff and officials on the interpretation and implementation of the City's role in the permitting process

The City Commission directed staff to identify amendments to the Oregon City Municipal Code that would allow for the installation of and clarity around public art murals to support the existing City-adopted Tourism Strategic Plan and in support of adopted Commission Goals.

PROCESS
Adoption of the code amendments is a legislative action that requires review and recommendation from the Oregon City Historic Review Board, the Oregon City Planning Commission and the Oregon City Citizen Involvement Committee prior to adoption by the City Commission following public hearings.

The following direction was provided to guide staff in further amending the code:

- The code amendments should impinge on Oregon's First Amendment protections;
- Any code change should be accompanied by a user-friendly "how-to guide";
- A desire that the code clearly differentiate between murals and signs;

- Any codes amendments or processes should ensure continued preservation of historic buildings within Oregon City;
- The permitting process should be clear and attainable;
- Inclusion of a required maintenance agreement between parties;
- That the Oregon City Historic Review Board recommends a review waiver to allow staff to review mural permits applications on historically designated structures;
- To exclude the Oregon City Planning Commission from any role within the process;

SUMMARY OF CODE AMENDMENTS

For a Detailed Summary of the Amendments please refer to the attachment "Code Amendments Public Comments Matrix 5.12.21."

II. APPLICABLE REGULATIONS AND APPROVAL CRITERIA

The applicable approval criteria for a legislative action are the guidance provided in the Oregon City Comprehensive Plan, the applicable goals and policies of the Oregon City Comprehensive Plan, and any applicable statewide planning goals.

The remainder of this staff report provides findings to demonstrate that the proposed annexation code amendments are consistent with applicable approval criteria.

Section 2 – *Land Use* of the 2004 Oregon City Comprehensive Plan indicates that the regular review and updated of the Comprehensive Plan should consider the following:

1. Plan implementation process.
2. Adequacy of the Plan to guide land use actions, including an examination of trends.
3. Whether the Plan still reflects community needs, desires, attitudes and conditions. This shall include changing demographic patterns and economics.
4. Addition of updated factual information including that made available to the City of regional, state and federal governmental agencies.

Regular Review and Update

Plan maintenance and updating is a continuous technical review of the Plan by the Planning staff. This review and any subsequent recommendations for Plan updating should be presented to the Neighborhood Associations, Planning Commission and City Commission for input and discussion in the same manner as requested Plan changes. The continuous review should consider:

1. Plan implementation process;

The City Commission initiated the code amendment process starting with a work session held on September 8, 2020. The City Commission received a progress report of the process on March 9, 2021. The feedback provided at this work session helped form the draft code amendments.

Staff presented the amendments to the Citizen Involvement Committee on May 3rd, 2021.

The first evidentiary public hearing for the proposed amendments will be held with the Planning Commission and will follow the notice procedures for a legislative action per OCMC 17.50. The City Commission public hearing will be scheduled once the Planning Commission has completed their review and provided a recommendation on the proposed amendments.

The Department of Land Conservation and Development was notified as required by ORS 197.610 – 197.625. The Staff Report will be made available at least seven days prior to the public hearing and the application will be processed according to the Legislative Hearing Process as required under Oregon City Municipal Code 17.50.170. Implementation of the Plan is discussed further in Criterion 2.

2. *Adequacy of the Plan to guide land use actions, including an examination of trends.*

3. *Whether the Plan still reflects community needs, desires, attitudes and conditions. This shall include changing demographic patterns and economics.*

4. *Addition of updated factual information including that made available to the City by regional, state and federal governmental agencies.*

Chapter 17.68 - Zoning Changes and Comprehensive Plan Amendments

17.68.010 - Initiation of the amendment.
A text amendment to the comprehensive plan, or an amendment to the zoning code or map or the Comprehensive Plan map, may be initiated by:
A. A resolution request by the City Commission;
B. An official proposal by the Planning Commission;
C. An application to the Planning Division; or.
D. A Legislative request by the Planning Division.
All requests for amendment or change in this title shall be referred to the Planning Commission.

Response: The proposal qualifies as initiated as a legislative request by the Economic Development Department at the direction of the City Commission.

17.68.015 –Procedures.
Applications shall be reviewed pursuant to the procedures set forth in Chapter 17.50.

17.50.170 - Legislative hearing process.
A. Purpose. Legislative actions involve the adoption or amendment of the city's land use regulations, comprehensive plan, maps, inventories and other policy documents that affect the entire city or large

portions of it. Legislative actions which affect land use shall begin with a public hearing before the planning commission.

B. Planning Commission Review.
1. Hearing Required. The planning commission shall hold at least one public hearing before recommending action on a legislative proposal. Any interested person may appear and provide written or oral testimony on the proposal at or prior to the hearing. The community development director shall notify the Oregon Department of Land Conservation and Development (DLCD) as required by the post-acknowledgment procedures of ORS 197.610 to 197.625, as applicable.

C. City Commission Review.
1. City Commission Action. Upon a recommendation from the planning commission on a legislative action, the city commission shall hold at least one public hearing on the proposal. Any interested person may provide written or oral testimony on the proposal at or prior to the hearing. At the conclusion of the hearing, the city commission may adopt, modify or reject the legislative proposal, or it may remand the matter to the planning commission for further consideration. If the decision is to adopt at least some form of the proposal, and thereby amend the city's land use regulations, comprehensive plan, official zoning maps or some component of any of these documents, the city commission decision shall be enacted as an ordinance.
2. Notice of Final Decision. Not later than five days following the city commission final decision, the community development director shall mail notice of the decision to DLCD in accordance with ORS 197.615(2).
Response: This legislative action will follow the procedures found in OCMC 17.50.170 including meetings with the Citizen Involvement Committee, Historic Review Board Natural Resource Committee, Planning Commission, and City Commission where applicable.

17.68.020 - Criteria.
The criteria for comprehensive plan amendment or text or map amendment in the zoning code are set forth as follows:
A. The proposal shall be consistent with the applicable goals and policies of the comprehensive plan;

Applicant Response: This legislative action will be consistent with the applicable goals and policies of the comprehensive plan as detailed in the responses below. Therefore, the proposed amendments are consistent with Criterion (A).

Conformity of the proposal with the city's comprehensive plan;
Goal 1: Citizen Involvement
Goal 1.1 – Citizen Involvement Program

Policy 1.1.1 *Utilize neighborhood associations as the vehicle for neighborhood-based input to meet the requirements of the Land Conservation and Development Commission (LCDC) Statewide Planning Goal 1, Citizen Involvement. The Citizen Involvement Committee (CIC) shall serve as the officially recognized citizen committee needed to meet LCDC Statewide Planning Goal 1.*

Goal 1.4 – Community Involvement
Policy 1.4.1 *Notify citizens about community involvement opportunities when they occur.*

Response: This proposal makes no changes to the City's citizen involvement program or public notification procedures. Citizens will continue to receive notification about public art mural applications through the procedures in OCMC 17.50.170 for a legislative action. Residents and taxpayers within 300 feet of the proposed installation site will continue to receive public notice of the public art mural.

Comprehensive Plan Section 2 Land Use

Goal 2.4 Neighborhood Livability

Provide a sense of place and identity for residents and visitors by protecting and maintaining neighborhoods as the basic unit of community life in Oregon City while implementing the goals and policies of the other sections of the Comprehensive Plan.

Policy 2.4.1 *Develop local neighborhood plans to strengthen and protect residential neighborhoods and historic areas from infill development; such as development along linear commercial corridors.*

Policy 2.4.2 *Strive to establish facilities and land uses in every neighborhood that help give vibrancy, a sense of place, and a feeling of uniqueness; such as activity centers and points of interest.*

Policy 2.4.3 *Promote connectivity between neighborhoods and neighborhood commercial centers through a variety of transportation modes.*

Policy 2.4.4 *Where environmental constraints reduce the amount of buildable land, and/or where adjacent land differs in uses or density, implement Comprehensive Plan and zoning designations that encourage compatible transitional uses.*

Policy 2.4.5
Ensure a process is developed to prevent barriers in the development of neighborhood schools, senior and childcare facilities, parks, and other uses that serve the needs of the immediate area and the residents of Oregon City.

Response: This proposal makes no changes to the Comprehensive Plan, zoning, or land use designations for lands within the Urban Growth Boundary. The proposed public art mural code amendments may assist in achieving more livable neighborhoods (Goal 2.4).

Goal 5: Open Spaces, Scenic and Historic Areas, and Natural Resources

Goal 5.3 Historic Resources

Policy 5.3.8 Preserve and accentuate historic resources as part of an urban environment that is being reshaped by new development projects.

Response: This proposal makes no changes to the existing inventories of open space, scenic and historic areas, and natural resources or the adopted maps, code and policies pertaining thereto.

Goal 9: Economic Development
Goal 9.6: Tourism - Promote Oregon City as a destination for tourism.

> ***Policy 9.6.1*** *Protect historic, recreational, and natural resources as the basis for tourism, such as the historic downtown.*
>
> ***Policy 9.6.4*** *Encourage and support citywide events that would attract visitors and tie to the historic attractions of the city. Preserve tourism-related transportation services like the Oregon City Elevator and Trolley.*

Response: This proposal enhances goal 9, by catalyzing community, enhancing vibrancy and livability of neighborhoods, contributing to placemaking, and attracting visitation

Statewide Planning Goals

Response: This proposal makes no changes to the Comprehensive Plan, zoning, or land use designations for lands within the Urban Growth Boundary. Since the City's Comprehensive Plan and its ancillary documents are already acknowledged by the Oregon Department of Land Use and Conservation (DLCD), no further analysis for consistency with Statewide Planning Goals is required.

Date/Name	Topic	Issue / Comment / Concern	Staff Comment	Has this been Addressed? How?
Laura Terway, James Graham, Matthew Weintraub September 2020 Staff Meeting	Free speech protections	*"Oregon's First Amendment protections are stronger than the US Constitution's and other jurisdictions have ran into trouble when attempting to regulate this. We should review our code to ensure we are not going to run afoul of the Oregon Constitution" [conversation summary]*	Article 1, Section 8 of the Oregon Constitution states, "No law shall be passed restraining the free expression of opinion, or restricting the right to speak, write, or print freely on any subject whatever; but every person shall be responsible for the abuse of this right.—" So that the proposed code amendments do not conflict with the State constitution, staff recommend that any provisions in the code which may impinge on an individual or property owner's free speech rights, be removed or alerted.	Staff have removed the following sections for the 2015 DRAFT code, B7, B9, B11.
Laura Terway, James Graham, Matthew Weintraub, Kelly Reid September 2020 Staff Meeting Public Comment from stakeholders meeting December 2020	MZD Locations	*Questions were raised by multiple staff members and by members of the public as to which zoning districts would murals be allowed to be painted within.*	In order to alleviate concerns or confusion arising from murals in largely residential districts staff recommend that murals be restricted to several commercial-centric zoning districts. This would further have the effect of accentuating the impact on the local visitor economy that murals may have. This was later expanded to include institutionally zones properties as well.	Staff have added Section B3 to the 2021 DRAFT code to expressly stipulate which zoning districts murals would be allowed within.
Laura Terway, James Graham, Matthew Weintraub September 2020	Murals affixed over openings of buildings	*Do we need to clarify the intent of the regulation "No part of the public art mural shall be placed over the exterior surface of*	Staff acknowledge that there may be some ambiguity as to why this section exists. Depending on the property, applying art over an opening may be	Staff have added intent to the code (Section B5). It now reads "No part of the public art mural shall be placed over

Staff Meeting		*any opening of a building, including its windows, doors, and vents."?*	proposed by an applicant. Staff believe that this should be clarified.	the exterior surface of any opening of a building in a manner that prohibits use of the opening, including its windows, doors, and vents."
Public Comment from stakeholders meeting December 2020	Vandalism resistance	*Multiple members of the public were concerned that the code requiring "methods to resist vandalism"*	Staff agreed that this was a subjective requirement and hard to regulate. Acts of vandalism may occur regardless of efforts to prevent them and it should not be a requirement of mural permit applicants to address this. Staff do believe that mural permit applicants *try* to ensure that art resists acts of vandalism, but that the City cannot compel this.	Staff have updated Section B9 to remove subject language. In permit application questions/programmatic guidelines staff have included language suggesting that permitees apply a coating to the finished artwork which makes removal of graffiti easier.
Public Comment from stakeholders meeting December 2020	Issuance of permits	*Members of the public expressed interest in what mechanism the City would use to issue permits for public art murals.*	Staff developed a system where the Oregon City Arts Commission and Staff would review permit applications and approve or deny the applications. In lieu of the Arts Commission, Staff would review applications. Applications for public art murals in historic districts, or on historically designated buildings would need to be reviewed and approved by the Historic Review Board.	Staff have updated Section C1 to reflect this.

DRAFT HRB Policy #13 – Public Murals

Public Murals within the historic overlay on a non-designated structure or landmark do not require historic review.
Public Murals on designated historic structures and landmarks can be approved by staff if they meet the following:

- The mural does not cover or obscure architectural features of the building, such as cornices, trim, windows, or other decorative features.
- The mural is located on a secondary building façade.
- Installation and removal of the public art mural will not adversely affect the historic structure.

Murals on the primary façade of a designated structure or landmark, along with murals that are not eligible for staff review, require review by the HRB.

From: Kelly Reid
To: Kelly Reid
Subject: FW: Mural Email
Date: Monday, June 21, 2021 11:43:46 AM

From: Liz Hannum <liz@downtownoregoncity.org>
Sent: Tuesday, June 8, 2021 3:04 PM
To: Kattie Riggs <kriggs@orcity.org>
Subject: Fwd: Mural Email

Hey Kattie,

This is from a property owner in downtown in support of murals. Could you please add it to the packet for the commission when discussing murals? I didn't see it on any agendas coming up, but have been told by EcDev to expect it soon. Do you have a date scheduled yet?

Thanks,
Liz

---------- Forwarded message ---------
From: **Danielle Walsh** <danielledeewalsh@gmail.com>
Date: Tue, Jun 8, 2021 at 12:14 PM
Subject: Mural Email
To: Downtown Oregon City Association <liz@downtownoregoncity.org>

To Whom it May Concern:

White Rabbit Books and Black Ink Coffee are invested in allowing murals in Oregon City. Not only do murals showcase local talent and increase economic vitality, they also create more inviting and walkable areas for residents and tourists alike.

After purchasing 503 Main Street, we found that the exterior wall was actually an interior wall that would be unsafe for customers and staff in the case of an earthquake; additionally, the mural on the building was in part painted on plywood, which was cracked and peeling off. We were very surprised that after reinforcing the wall for safety (creating a second, exterior wall) that we would not be allowed to replace the mural.

Artwork connects people and drives conversations. It invites people to get out of their cars and out from behind electronics. To not have a codified process to legally have murals in our city is to stifle public art and freedom of expression, to hurt our identity as a community and as a tourism destination.

Thank you,
Danielle and Rolland Walsh

--
Danielle and Rolland Walsh, Owners
White Rabbit Books & Gifts, Black Ink Coffee
503 Main Street
Oregon City, OR 97045

--
Liz Hannum
Executive Director

Downtown Oregon City Association
814 Main Street
Oregon City, OR 97045

liz@downtownoregoncity.org
Office (503) 802-1640
Direct (503) 802-1638

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downtownoregoncity.org

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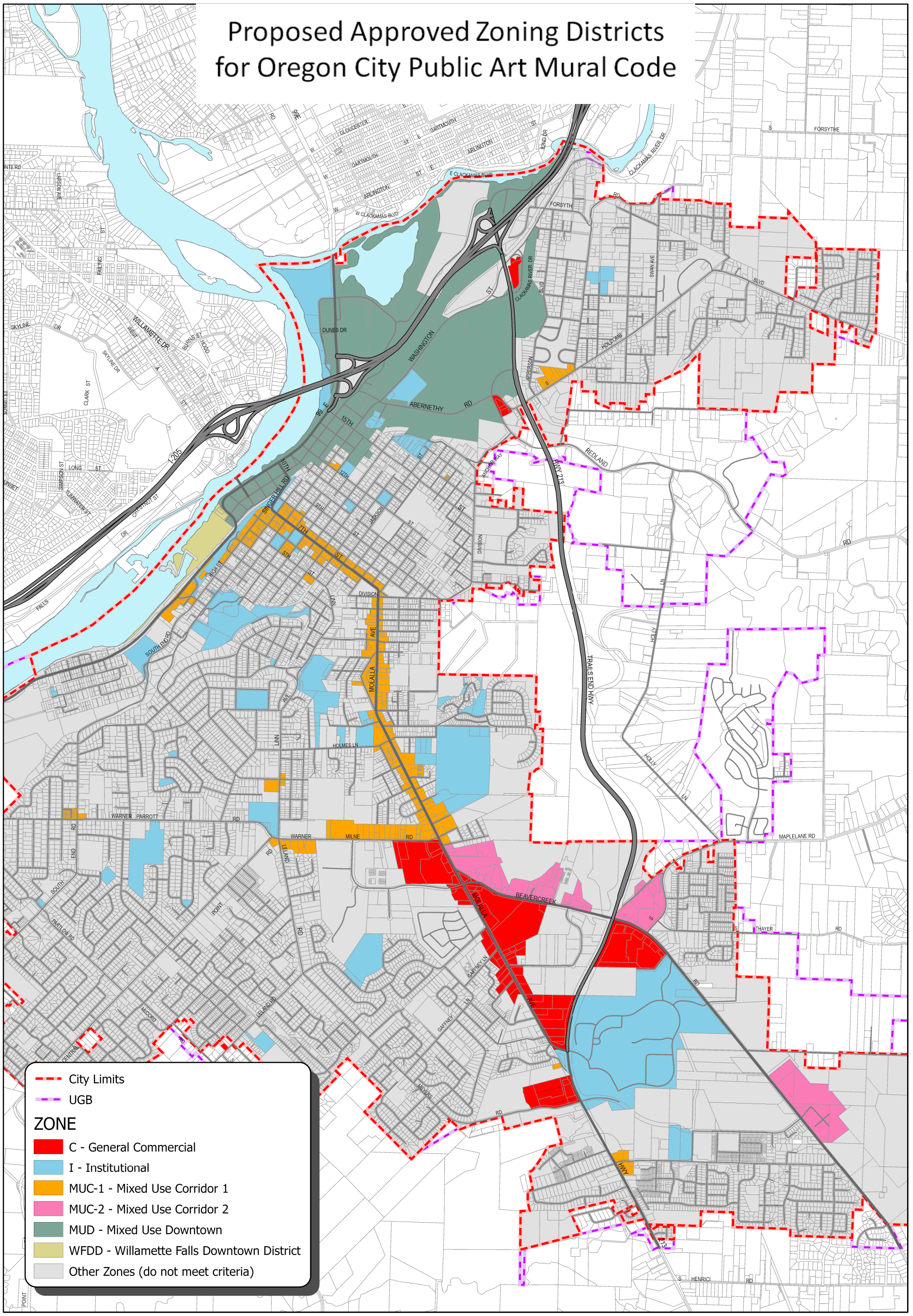
Proposed Approved Zoning Districts for Oregon City Public Art Mural Code



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N W E S

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0 5,000 Feet

City of Oregon City
P.O. Box 3040
625 Center St
Oregon City, OR 97045
503-657-0891 phone
503-657-6629 fax
www.orcity.org

OREGON CITY

Plot date: May 19 ,2021
Plot name: Murals - Zoning - 11x17P - 20210519.pdf
Map name: Mural Maps.aprx

Please recycle with colored office grade paper.

Oregon City Public Art Mural Program
Application

Name of Applicant or Sponsoring Organization
Name of Contact Person
Email
Website
Applicant's Mailing Address
City/State/Zip
Phone

Artist Information
Lead Artist's Name
Email
Website
Artists Mailing Address
City/State/Zip
Phone
Names of other participating artists

Property Information
Proposed Mural Location (building or business name)
Street Address/Intersection
Property Owner's Name
Property Owner's E-mail
Property Owner's Phone
Business Owner's Name

Project Start Date
Project Completion Date

Please Complete the Following:

1. Briefly describe the proposed mural and its relation to the building, the surrounding neighborhoods and the community served by the business or agency where the mural will be painted.

2. Describe the wall and site where the mural will be located, including the size of the mural in relation to the actual wall size, street intersection, direction the mural will face, physical condition of the wall (cracks, leaks, concrete, wood, etc.) and visibility to the public.

3. Provide a color image of the proposed mural, with dimensions and placement on the building.

4. Describe the sponsoring organization (if applicable) including a brief narrative, date established, community served and contact information.

5. Specify type of paint or other materials to be used and include technical information about the material's durability, longevity and toxicity.

6. If the mural will be attached to the wall, describe the materials and include a drawing of the attachment plan.

7. Briefly describe the lead artist's experience working as a muralist and describe collaboration with community groups (if applicable).

8. List additional artists working on the project. For each artist, provide a resume or bio, and up to 6images of the artist's work with an image list that includes the location, budget, year completed and a description of the artist's role (e.g. lead, collaborator, assistant.)
For each artist, include a waiver of the Visual Artist Rights Act (attached.)

9. Outline your safety plan for painting or installing the mural. Will you be blocking a public right of way such as a sidewalk or street? If you will use scaffolding, lifts or ladders, include a plan for maintaining access to sidewalks, streets and businesses and insuring the safety of the public and the artists.

10. Attach letters of support from community, property owner and/or surrounding businesses (optional, but highly recommended.)

11. Mural Project Budget-Please attach a budget showing:
- Income–including grants, donations and in-kind contributions. Which are confirmed?
- Expenses-materials, fees to artists, equipment rental, etc.

Signatures

Applicant Certification
I, as the public art mural applicant, certify that the information and materials provided herein are correct and true to the best of my knowledge, and I have read, understand and will abide by the City of Oregon City Public Art Murals guidelines.
Signature
Name (print)
Date
Email
Phone

Property Owner Certification:
I certify that I am the owner of the project property. I further certify that I have read, understand, and will abide by the City of Oregon City Public Art Mural Guidelines, and I give permission for the placement of the mural as presented in the application.
Signature
Name (print)
Date
Email
Phone

Confirmation of Maintenance Responsibility:
I agree to maintain the mural as required by the City of Oregon City Public Art Mural Program. I understand that the City requires an anti-graffiti coating be applied to the completed mural to help abate graffiti and vandalism. In doing the maintenance, I will comply with any relevant provisions of City of Oregon City Municipal Code Sections XX (Business Licenses), XX (Public Safety), XX (Vehicles and Parking), and XX (Murals). [INSERT CODE LINK]
Signature
Name (print)
Date
Email
Phone
Relationship to the project (artist, property owner, business owner, property manager.)

Submit materials to:

Public Art Mural Program
City of Oregon City, City Hall 625 Center St. Oregon City, OR 97045
Contact: Matthew Weintraub, Tourism Program Specialist
mweintraub@orcity.org

Overview

Public art is a powerful tool for creating a sense of place and meeting the City of Oregon City's goals. Memorable public places strengthen our community. Such places attract us to various areas of the community, enliven our neighborhoods, enhance our experiences in parks, inform us about the history and peoples of our place, and celebrate our ethnic and cultural diversity.

As recognized by Oregon City's Tourism Strategic Plan, murals can be an integral part of any public art program. Murals increase community identity, beautify the city, serve as a tourist attraction and can provide an avenue for involving youth and others in artistic expression. Murals can also provide a reduction in the incidence of graffiti and other crime. To better serve these purposes, the City of Oregon City has created the Oregon City Public Art Mural Program.

The City of Oregon City's Mural Program is administered by the Economic Development Department. Applications for new outdoor public art murals are reviewed by staff, with final approval issued by a designated governing body or the Oregon City Arts Commission, an advisory council that promotes arts and culture throughout the city.

Murals approved through this program are exempt from the City sign code.

Eligibility

Any individual or organization wishing to create an outdoor mural in the City of Oregon City must submit their application for review by the Economic Development Department, regardless of the funding source. Applicants may be:

- An individual artist or group of artists
- A business or building owner
- A not-for-profit organization, such as a neighborhood association, educational or community organization. Federal tax-exempt status 501(c)(3) is not required.

Mural Requirements

Every applicant must demonstrate that they will:

- Create a mural that is visually accessible to the public.
- Use materials that ensure mural longevity and durability.
- If they are not the owner of the building, have the legal permission of the property owner in writing to create the proposed mural.
- Paint on a surface and structure that is stable and specifically prepared for the application of paint.
- Meet standards of Oregon City Historic Overlay, if applicable.

- Have a written plan for painting the mural that ensures the safety of painters and the public, and that does not impede public access. In the event that the safety plan submitted is not being adhered to, and the City has identified a safety risk to either the artist and/or the public, the City has the right to stop work until such time that safety issues or concerns are addressed by the artist.
- Use an approved graffiti/UV coating on the finished mural that provides resistance to vandalism and weather.
- Comply with any relevant provisions of City of Oregon City Municipal Code Sections XX (Business Licenses), XX (Public Safety), XX (Vehicles and Parking) and XX (Murals) [INSERT CODE LINK]

Approval Criteria

Murals in the City of Oregon City will be approved based on the following criteria:

- a fully completed application has been submitted to the Economic Development Department;
- mural is located within an approved Municipal Zoning District;
- mural is located in a place that is viewable by the public, and applicant must certify in writing that the property owner received no compensation for the display;
- medium is approved within the existing Oregon City Code [EMBED CODE LINK];
- original work of the artist, with no violation of copyrights;
- use of high-quality materials that will last a minimum of five years, and are resistant to weather and ultraviolet deterioration; and
- shows community support, with letters from the building owner, and building tenants and/or neighbors.

Mural Process

- Applicant meets with Economic Development Department staff for an initial review of the proposed location, imagery, artist's qualifications, funding sources and building owner's approval.
- Applicant submits a fully completed Mural Program Application.
- Economic Development Department staff will communicate with the applicant on code noncompliance issues or other issues that may impact either approval or denial of the proposal.
- Economic Development Department staff will confirm in writing that there are no outstanding issues with regard to the City's Mural Art Code.

- Applications altered after initial review without staff approval and prior to public hearing will not be advance to public hearing.
- Staff and the applicant will present the proposal to the governing designated body or the Oregon City Arts Commission at a regularly scheduled meeting. If the proposal is approved, staff sends the applicant an official "Letter of Approval" and a Notice to Proceed.
- Revisions or Appeal. In the case that a mural is not approved, Economic Development Department staff will communicate to the applicant in writing the reasons for the decision of the designated governing body or Arts Commission. The applicant may address the concerns of the designated governing body or Arts Commission by submitting a revised proposal or appeal the decision to the City Commission.
- Applicant provides a copy of a signed Art Easement agreement in which the building owner commits to keep the mural unchanged and in good condition for a minimum of 5 years.
- Artist begins painting mural.
- Artist applies anti-graffiti coating to mural.
- Applicant installs the mural (if it is not painted directly on the wall.)
- Applicant contacts the Economic Development Department staff when mural is completed in accordance with the approved project timeline or on a mutually agreed upon modification of the timeline.
- Applicant provides digital images of completed mural for the City's public records.
- The City of Oregon City does not take responsibility for maintenance and preservation of murals in the city, unless placed on City-owned property.
- A mural placed on a private structure becomes the responsibility of the building/property owner.
- The property owner or the party so designated, is responsible for periodically monitoring the condition of the mural and facilitating its care and maintenance, assuming any costs associated with its maintenance, repair and/or removal. Murals not maintained properly may be subject to Code Compliance penalties and removal.
- If a mural needs to be repaired, the staff of the Oregon City Economic Development Department will contact the artist to make the repairs.
- Alterations or removal of the mural must be approved by the staff of the Economic Development Department.
- Alterations to or removal of, the mural within the first five years of the date of completion are permitted under the following circumstances:
    - The building on which mural is located is sold; or
    - The building or property is substantially remodeled or altered in way that precludes continuance of mural.

- Prior to the conclusion of the 5-year Easement Agreement, Applicant and the Economic Development Department staff will review the condition of the mural and file an extended Easement Agreement or make plans to remove the mural.

For Questions, contact:

Matthew Weintraub, *Tourism Development*, Economic Development Department
mweintraub@orcity.org

Historically Designated Structures within Compatible Zones

Historically Designated Structures

- Within McLoughlin Conservation District
- Other Historically Designated Structure

Zoning

- MUD - Mixed Use Downtown
- MUC-1 - Mixed Use Corridor 1
- MUC-2 - Mixed Use Corridor 2
- WFDD - Willamette Falls Downtown District
- Other Zones (do not meet criteria)
- City Limits
- UGB

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City of Oregon City
P.O. Box 3040
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503-657-6629 fax
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Plot date: Dec 29, 2020
Plot name: Murals - Historically Designated Structures - 11x17P - 20201229.pdf
Map name: Mural Maps.aprx

Please recycle with colored office grade paper.

CITY OF OREGON CITY

Staff Report

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

To: Planning Commission **Agenda Date:** 06/28/2021

From: Christina Robertson- Gardiner Senior Planner

SUBJECT:

The North End Master Plan for the Former Rossman Landfill: GLUA 21-000016 (MAS 21-02, CU 21-01, FP 21-03, GEO 21-030)

STAFF RECOMMENDATION:

Approval of GLUA 21-000016 (MAS 21-02, CU 21-01, FP 21-03, GEO 21-030) with conditions.

EXECUTIVE SUMMARY:

Summit Development Group is seeking approval of a mixed-use development Master (General Development) Plan at the north end of the Oregon City Downtown. The plan envisions up to a 20-year road map to redevelop the former Rossman Landfill. The Master Plan identifies the long-term vision for redevelopment, including general layout and transportation improvements. All permitted uses in the Mixed-Use Downtown District are allowed, subject to the Master Plan.

This request does not authorize construction onsite, but rather sets the framework for implementation over multiple phases through future Type II development applications.

At the June 14, 2021 Planning Commission Meeting, the Planning Commission directed staff to ensure that all parties have adequate time in presenting and speaking on the proposal and has indicates that they will be doubling all presentation and public comment time periods for this meeting.

BACKGROUND:

The North End Master Plan is a proposed to redevelop the former Rossman Landfill with a mixed-use development. This land-use application is a request to approve the General Development Plan (GDP). The GDP will be subsequently implemented through future detailed developed plans that will be guided by this Concept Master Plan. Therefore, this application does not include a request for approval of a Detailed Development Plan (DDP) or any construction at this time. Once approved, the GDP will

guide future development within the master plan area to assure long-term regulatory certainty and a high level of predictability for future tenants and developers within the master plan area as well as the community. The GDP provides a detailed framework for development within the master plan area over the next 20 years; although, according to the applicant, build-out of the site is anticipated to occur over the next 5 years or so, though the conditions of approval allow for a longer implementation period. This proposed application includes requests for the following approvals:

- **Master Plan (GDP**): The overall long-term approach to development over 5-20 years.
    - Adjustments to the following development standards:
    - OCMC Chapter 16.12.030 - Blocks—Width
    - OCMC Chapter 17.54.100.2- Retaining Walls
    - OCMC Chapter 17.62.055.D- Siting of Structures (Frontage)
    - OCMC Chapter 17.62.050.C.4 -Elevated External Stairways or Walkways

- **Conditional Use:** Request to approve Approval of a Conditional Use for tenant size (E2, S2, C2) and conditional use drive-thru locations (N1, E1,C1,S1,E5)
- **Flood Management Overlay District**: General review for feasibility of development approach.
- **Geologic Hazards Overlay District:** General review for feasibility of development approach.

The applicant, Summit Development Group, seeks approval of The North End Master Plan, a mixed-use GDP to redevelop the site with a mix of commercial, service, entertainment, residential, and retail uses as depicted in the master plan. According to the applicant, the plan envisions a transformation of the former landfill to a lively, integrated mixed-use development that will not only complement the downtown but serve as a primary gateway to the north end of the Oregon City Downtown. The master plan features treelined streets, landscaped open spaces, offices, and residences overlooking public plazas and open spaces and will feature a wide variety of shopping, dining, and entertainment spaces. Final building designs will be reviewed by the City and the public in subsequent Type I or II Detailed Development Review (DDP).

There is some flexibility built into the framework approach to the Master Plan (and its conditions) relating to the size and locations of the buildings. DDP applications that vary from the initial approval, as conditioned, will be sent back to the Planning Commission to show compliance to or receive an amendment to the adopted Master Plan.

OPTIONS:

1. Approval with Conditions of GLUA 21-000016
2. Denial of GLUA 21-000016
3. Continue GLUA 21-000016 to July 12, 2021 Planning Commission Hearing

BUDGET IMPACT:

Amount: N/A

FY(s):

Funding Source(s):

OREGON CITY

Community Development
695 Warner Parrott Road | Oregon City OR 97045
Ph (503) 722-3789 | Fax (503) 722-3880

REVISED

TYPE III STAFF RECOMMENDATION
June 24, 2021

FILE NUMBER: GLUA 21-000016 (MAS 21-02, CU 21-01, FP 21-03, GEO 21-030)

APPLICANT: Summit Development Group Attn: Seth Henderson
13221 SW 68th Parkway, Suite 401
Tigard, OR 97223

HHPR, Inc. Attn: Brad Kilby, AICP
205 SE Spokane Street, Suite 200
Portland, OR 97202

OWNER: c/o Brad Miller
Brix Law LLP 75 SE Yamhill St, Suite 202,
Portland, Oregon 97214

Application Submitted: 03/31/2021
Application Paid: 04/01/2021 Application Complete: 04/29/2021
120-Day Decision Deadline: 08/27/2021

LOCATION: 1105 Abernethy Road
Oregon City, OR 97045
Clackamas County Tax Map 22E2900902

REQUEST: Summit Development Group is seeking approval of a mixed-use development Master Plan at the north end of the Oregon City Downtown. The plan envisions a 20-year road map to redevelop the former Rossman Landfill. No concurrent development applications are being proposed with this application. If the Master Plan is approved, future development applications will be reviewed through the separate Detailed Development Plan review process found in OCMC 17.65 Master Plans and Planned Unit Developments

REVIEWER: Christina Robertson-Gardiner AICP, Senior Planner
Sang Pau, Development Engineering Associate

RECOMMENDATION: Approval with Conditions.

PROCESS: Type III decisions involve the greatest amount of discretion and evaluation of subjective approval standards, yet are not required to be heard by the city commission, except upon appeal. Applications evaluated through this process include conditional use permits. The process for these land use decisions is controlled by ORS 197.763. Notice of the application and the planning commission hearing is published and mailed to the applicant, recognized neighborhood association and property owners within three hundred feet of the subject property. Notice must be issued at least twenty days pre-hearing, and the staff report must be available at least seven days pre-hearing. At the evidentiary

hearing held before the planning commission, all issues are addressed. The decision is final unless appealed and description of the requirements for perfecting an appeal. The decision of the planning commission is appealable to the city commission within fourteen days of the issuance of the final decision. The city commission hearing on appeal is on the record and no new evidence shall be allowed. Only those persons or a city-recognized neighborhood association who have participated either orally or in writing have standing to appeal the decision of the planning commission. Grounds for appeal are limited to those issues raised either orally or in writing before the close of the public record. A city-recognized neighborhood association requesting an appeal fee waiver pursuant to OCMC 17.50.290.C must officially approve the request through a vote of its general membership or board at a duly announced meeting prior to the filing of an appeal. The city commission decision on appeal from the planning commission is the city's final decision and is appealable to the Land Use Board of Appeals (LUBA) within twenty-one days of when it becomes final.

Conditions of Approval

Planning File GLUA 21-000016 (MAS 21-02, CU 21-01, FP 21-03, GEO 21-030)

(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.

This approval sets a framework approach to implementation of the submitted plan through future staff level (Type II) review of development applications over multiple phases as directed by the applicant. Each development will be reviewed for approval to the adopted Master Plan and the 2021 Municipal Code over the life of the Master Plan, unless amended.

This approach allows staff, the applicant, and the public a clear road map for what is required, and more importantly, clearly specifies the level of review needed for design revisions and transportation improvements. All permitted uses in the Mixed-Use Downtown District are allowed within the area subject to the Master Plan. Additions to or removal of Permitted Uses listed in the Applicant's submittal shall not in themselves constitute a need for an amendment to the Master Plan unless the addition or revision makes changes to the master plan that triggers a need for an amendment through OCMC 17.65.080 Amendments to Plans.

1. Future development shall comply with the conditional approval of Planning file GLUA 21-000016 (MAS 21-02, CU 21-01, FP 21-03, GEO 21-030) and any amendments within this application. *(P & DS)*
2. The Master Plan approval is a land-use action that approves the general Master Plan layout and development approach based on the requirements set forth in OCMC 17.65 Master Plans and implemented through conditions of approval that are proportional to the proposal. Development onsite requires a public Detailed Development review process to analyze the proposed construction against the criteria in the 2021 Oregon City Municipal Code prior to

construction. The applicant may choose to enter into agreements with funding entities that may place additional requirements on the development. It is up to the applicant to determine if those requirements are consistent with the Conditions of Approval of the adopted Master Plan and submit a Master Plan amendment if needed. (P)

3. All permitted uses in the Mixed-Use Downtown District are allowed within the area subject to the Master Plan. Additions to or removal of uses listed in the Applicant's submittal shall not in themselves constitute a need for an amendment to the Master Plan unless the addition or revision triggers a need for an amendment through a Condition of Approval or OCMC 17.65.080 Amendments to Plans.
4. Unless subsequently amended by the Planning Commission, this Master Plan shall control development on the site for 20 years from the date of initial adoption of this General Development Plan. Land within the Master Plan is subject to compliance despite any future lot line adjustments or land divisions (P)
5. For each Detailed Development Plan application, the applicant may choose to utilize the 2021 Oregon City Municipal Development Code as adopted at the time of the Master Plan submittal or the Development Code that is applicable at the time a Detailed Development Plan (DDP) is applied for. (P)
6. The proposed development will be reviewed under the adopted Oregon City Municipal Code at the time of each DDP review, along with all applicable conditions. Except for the consolidated Master Plan document that is approved with the adoption of this General Development Plan, Illustrations, 3D renderings, building sections, and demonstration photos found in the submitted Master Plan application shall be considered background documentation and are not to be used as future adoption criteria. (P)
7. Except as approved by the Planning Commission, the applicant is required to show compliance with OCMC 17.65.80 - Amendments to approved plans and all applicable conditions of approval at the time of each DDP application to ensure the proposal is reviewed under the correct review process. (P)
8. The Confederated Tribes of the Umatilla Indian Reservation submitted comments relating to the need for a cultural survey for the site. A cultural survey is not a requirement found in the Municipal Code. However, the applicant is required to meet applicable state and federal laws with respect to above and below ground cultural resources. (P)
9. The applicant has indicated that all of the residential development will be part of a mixed-use development and not subject to the minimum residential density requirement of the MUD District. If the applicant chooses to build stand-alone residential, the residential density of a minimum net density of 17.4 units per acre applies to the site. (P)
10. The proposed buildings needing a Conditional Use for tenant size (E2, S2, C2) are approved for implementation through the DDP process with the following conditions:
    a. Building E2 is allowed to be used for a single tenant.
    b. Buildings S2 and C2 are subject to the following limitation:
        i. No single tenant may occupy more than 70% of leasable square footage. (P)
11. The proposed conditional use drive-thru locations (N1, E1,C1,S1,E5) are approved for implementation through the DDP process with the following conditions:
    a. At the time of the DDP, drive-thru location N1 shall be redesigned to meet OCMC 17.62 site requirements, including but not limited to ensuring direct pedestrian access from a public or private street that does not cross parking or drive aisles. This redesign may occur as a Type II DDP review if implemented if implemented as directed above and will not require a Type III amendment review. Designs that do not meet OCMC 17.62 site requirements will be reviewed as a Master Plan Amendment. All drive-thru

locations not identified in the Master Plan approval shall be reviewed through a Type III Master Plan amendment process.

b. Building E1,C1, S1, E5 are approved for a CU drive-thru and will be reviewed in accordance with the Municipal Code. (P)

12. The following adjustments to the Municipal Code are approved and subject to the conditions found in the Notice of Decision.
    a. OCMC Chapter 16.12.030 - Blocks—Width
        i. Subject to the proposed street and pedestrian connections layout found on the site circulation diagram of page 64 of the application.
    b. OCMC Chapter 17.54.100.2- Retaining Walls
        i. Retaining walls are allowed to exceed heigh limits in areas identified in an exhibit the applicant will submit prior to the June 28, 2021 Planning Commission Hearing with proportional mitigation included.
    c. OCMC Chapter 17.62.055.D- Siting of Structures (Frontage)
        i. Building frontage percentages and location on public or private streets shall meet at a minimum the footprint layout found on the District Plan Map found on page 61 of the application
    d. OCMC Chapter 17.62.050.C.4 -Elevated External Stairways or Walkways
        i. Elevated stairways are allowed within the North District.

13. The following items, shown in the submitted Master Plan and design guidelines, shall be implemented through the applicable DDP applications. Mitigation items not included in the list below, not addressed in other conditions of approval, or not required by OCMC criteria, either at the time this Master Plan was submitted or in place at the time of DDP review are not required.

    a. Construction of open space as demonstrated in the figure identified on page 98 of the submitted Master Plan. Open spaces that vary more than 10% in square footage than proposed shall be reviewed at a Type III level. All open spaces shall use a combination of hard and soft scaping.
    b. A minimum of 40% of the Central Square plaza area shall consist of a special paving material, which can include brick, precast concrete, pavers, or stone. A maximum of 50% of the plaza area can be concrete paving. A minimum of 5,000 square feet of open space shall be provided that is unimpeded by planting or site elements to create a central gathering space. The central square shall not eligible for any multi-family open space calculation.
    c. A minimum of 2 public art or interpretive elements shall be installed in each District (North, South, East, West) and be at least three cubic feet or thirty square feet in size.
    d. There shall be a differentiation of private street lighting and parking lot lighting design. Street lighting shall utilize decorated banners or flower baskets on at least 50% of the light standards.
    e. Pedestrian wayfinding signage shall be installed in all four districts directing pedestrians to offsite amenities such as End of the Oregon Trail Museum, Amtrak Station, Main Street, and Willamette River.
    f. No more than 50% of the proposed multi-family square footage can be constructed and Certificates of Occupancy given without full construction of the proposed Central Square Plaza.

g. The pedestrian connection to the End of The Oregon Trail Museum shall be constructed by the date of final occupancy of C2 within the South District obtain. The record demonstrates that there are multiple feasible alignments for that connection and the final design shall be reviewed through the Type II DDP process as long as it is consistent with the intent of providing an ADA access between the development and the EOT in the same general location as depicted in the adopted Master Plan. The pedestrian connection may utilize portions of city property at the End of the Oregon Trail Museum if allowed by a future public/private agreement and/or with an abutting private property. (P)

14. Prior to receiving approval for any building with a height greater than 45 feet, the applicant must show that the building is not located on a parcel or lot that is closer than 500 feet from the End of the Oregon Trial Museum (EOT). (P)
15. Private streets shall be designed and constructed to the standards required by the city, but those standards may be different than would apply to public streets. The street system, as proposed and conditioned in the Master Plan, can be considered street frontage for the purpose of siting standards in OCMC 17.62 Site Plan and Design Review. Building setbacks are to be taken from the back of the sidewalk (or curb if no sidewalk) along private streets. Small revisions to the street system can be approved through the DDP process if they substantially comply with the Master Plan.(P/DS)
16. The applicant has proposed a sitewide parking approach looking at the sum total of development proposed and parking provided. The parking ratios proposed in the Master Plan (GDP) fall within the minimum and maximum parking standards found in OCMC 17.52.020. At the time of each DDP submittal, the applicant is responsible to demonstrate how they are implementing parking requirements based on the proposed DDP uses. At no time shall the site be more than 25% above parking maximums or 15% below parking minimums per 17.52.020 - Number of automobile spaces required. With the following modifications:
    a. Structured parking may be completed and used before the associated use is constructed and is not subject to the limitations above. (P)
17. The Floor Area Ratio for this Master Plan is calculated based on the entire site area subject to the GDP. Each individual phase may or may not meet the minimum requirement but as part of an approved Master Plan. A phase will be permitted to develop below the required minimum as long as each phase demonstrates that the site will meet the minimum FAR requirement at full buildout. (P)
18. The developer for future DDPs shall construct all sidewalks along the frontage of the proposed development, existing and new, ADA compliant per City Standards. (DS)
19. 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. In the case of work within ODOT or Clackamas County rights-of-way, work shall be in conformance with their respective construction standards. (DS)
20. Prior to the City construction plan approval or issuance of a grading or building permit associated with the proposed development, the property and building owners shall provide written acknowledgment and statement to assume responsibility for risks associated with development on land with suspected or known contamination. The applicant shall submit a final engineering report to DEQ, the City's Building Official, and the City's Public Works Engineering Development Services for review and approval. The Engineering Investigation Report shall document the following:

a. Details, as necessary, to address DEQ requirements relative to increased leachate and landfill gas migration due to consolidation of the landfill, penetrating the landfill cap (including alternatives that allow landscaping to address water quality concerns), and limiting sub-landfill aquifer contamination via pile penetration as may be applicable.
b. Recommendations to minimize risks of negative impacts for proposed building structure, site grading, cuts and fill, foundations, seismic, utility infrastructure including connections between the underground utilities and the building structure, methane gas migration and accumulation including consideration of the gas migration through utility trenches and accumulation in utility infrastructure such as utility pipes, manholes, light pole bases, and junction boxes. (DS)

21. Each individual Detailed Development Plan (DDP) within the master plan area shall provide updated engineered drainage plan(s), drainage report(s), and design flow calculation report(s) stamped and signed by a licensed engineer addressing all items from the Section 9 of the Public Works Stormwater and Grading Design Standards. (DS)
22. Each individual DDP within the master plan area shall include with their drainage report a written modification request for the use of underground detention storage systems per Section 1.6 of the Oregon City Stormwater Grading and Design Standards where use of underground detention storage systems is proposed. (DS)
23. All stormwater facilities proposed to serve the development shall be private except the public stormwater facilities that receive stormwater runoff from the public right-of-way of Washington Street and Abernethy Road. Future DDP developers and property owner(s) shall execute an agreement providing maintenance of and giving Oregon City access to, privately-owned stormwater management facilities and pay associated recording fees. The agreement shall include a site plan identifying all privately-owned stormwater management facilities and an operation and maintenance plan for each type of stormwater facility in accordance with the Public Works Stormwater and Grading Design Standards. The agreement shall run with the land and be applicable to subsequent property owners. The agreement shall be reviewed and accepted by the City prior to occupancy of the associate building(s). (DS)
24. The developer for future DDPs shall obtain a 1200-C (NPDES) permit from the Oregon Department of Environmental Quality (DEQ) for construction activities one acre or greater prior to receiving a permit and beginning construction. (DS)
25. For construction activities requiring Oregon State Division of State Lands (DSL) and/or United States Army Corps of Engineers (USACE) permits, no work will be authorized until the city has received a copy of Oregon State DSL and/or USACE permit(s) or written documentation that no approval from the aforementioned agencies is needed. (DS)
26. For construction activities requiring Oregon State Department of Fish and Wildlife (ODFW) permits, no work will be authorized until the city has received a copy of the ODFW permit or written documentation that no approval from the aforementioned agencies is needed. (DS)
27. The developer for future DDPs shall provide an engineered grading plan prepared by a professional engineer in compliance with the submittal requirements of the Public Works Stormwater and Grading Design Standards. (DS)
28. 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. The City will not provide construction plan approval until applicable Oregon Department of Transportation and Clackamas County approvals or permits are obtained. (DS)
29. The developer for future DDPs 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)

30. To fulfill TSP project S5, the development shall provide a 12-foot-wide shared-use path running along the west side of the north-south road (proposed as Market St) which connects Washington Street and Abernethy Road. To fulfill TSP project S44, the development shall provide a 12-foot-wide shared-use path that extends from the "End of the Oregon Trail Interpretive Center" and connects to a north-south road running through the development site. The surface of all shared-use paths shall be paved with all-weather materials as approved by the City. (DS)
31. Roadway improvements, including street widening, frontage improvements and right-of-way dedication along Abernethy Road shall be per requirements of the jurisdiction that has authority over Abernethy Road at the time of construction plan approval. The future developer of DDPs shall provide a 12-foot-wide shared-use path along the site's frontage on the north side of Abernethy Road to fulfill TSP project S2 and the path may serve to fulfill the sidewalk required on the north side of Abernethy Road if approved by the jurisdiction that has authority over Abernethy Road at the time of construction plan approval. (DS)
32. All roads required to be constructed by the developer, public and private, shall have 12-foot-wide vehicular lanes unless otherwise approved by the City Engineer. (DS)
33. Street Improvements, including street widening, frontage improvements, and right-of-way dedication along Redland Road shall be per the requirements of the Oregon Department of Transportation requirements. (DS)
34. The developer of future DDPs shall provide approved plans with applicable street signs for review by the City prior to installation. All traffic control devices, such as signage, flashing lights/beacons, and traffic signals shall be designed using the MUTCD. (DS)
35. For all new site driveways and intersections that require new traffic signals, the developer of future DDPs shall provide a Traffic Signal Plan conforming to the requirements of the road authority.
36. The developer of future DDPs shall provide street lighting plans with photometric information for all internal roads, Washington Street, Abernethy Road, and Redland Road. Street lighting shall conform with all City standards, specifications, codes, and policies and be approved by Portland General Electric (PGE) prior to receiving a permit and beginning construction. (DS)
37. If it is determined through individual DDP review that transit improvements are needed, the applicant of that DDP shall provide accommodations for transit facilities along Washington Street and Abernethy Road and the new north-south road connecting Washington Street and Abernethy Road (Market Street) such as new bus stops, bus pullouts or other transit facilities within the development. (P,DS)
38. Pavement cuts or other improvements made in a City street or alley shall be done in accordance with the City of Oregon City Public Works Pavement Cut Standards and restored in accordance with the City of Oregon City Public Works Pavement Cut Standards. (DS)
39. The applicant shall submit a request to the Building Division to receive approval for new any new public or private street names and addresses onsite; only approved street names shall be included on the final construction plans. (B)
40. The developer for future DDPs shall provide pedestrian accessways with pedestrian-scale lighting with 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. (DS)
41. The developer for future DDPs shall provide public pedestrian accessways that are Americans with Disabilities Act (ADA) compliant. (DS)
42. All public accessway surfaces shall be paved with all-weather materials as approved by the City. (DS)

43. The future developer of DDPs shall provide a covenant for 24-hour public access over the pedestrian and bicycle accessways and shared use paths and be responsible for the future maintenance and liability. (DS)
44. The developer for future DDPs shall provide a 10-foot-wide public utility easement (PUE) along all property lines fronting existing or proposed public right-of-ways or provide, at a minimum, 10-foot-wide clear space between buildings and the public sidewalk. The developer for future DDPs shall also provide a 10-foot-wide public utility easement (PUE) adjacent the north-south public access road running through the development site, which extends from the Home Depot site and connects to Abernethy Road. In the event that the provision of a public utility easement would create a conflict with achieving compliance with other city codes, the location and width may be adjusted by the City Engineer. In such cases, the applicant shall obtain written acceptance from all utilities for the location and width proposed for said public utility easement. (DS)
45. The developer for future DDPs shall provide public utility easements for the public sanitary sewer mains and water main identified by subsequent conditions of approval. (DS)
46. The future developer of DDP's shall provide an easement over all roads proposed to run through the development site and provide a covenant over them for 24-hour public access and be responsible for their future maintenance and liability. (DS)
47. Improvements constructed by the future developer of DDPs shall be constructed under the inspection and approval of the City. Expenses incurred thereby shall be borne by the applicant and paid prior to final approval. The applicant's project engineer also shall inspect the construction. Inspection fees are set by City resolution; see section 16.12.014 of this report. (DS)
48. Underground utilities, waterlines, sanitary sewers, and storm drains proposed to be installed in streets shall be constructed prior to the surfacing of the streets. Stubs for service connections for underground utilities, such as storm, water, and sanitary sewer, shall be placed beyond the ten-foot-wide public utility easement within private property. (DS)
49. The future developer of DDPs shall provide As-built drawings to be filed with the City Engineer within 90 days of completing improvements. (DS)
50. Permitted hours of construction shall be set forth by the City Engineer in the pre-construction meeting. (DS)
51. All sewer mains within the development site shall be privately owned and maintained except for the first fifty feet of all sanitary sewer mains connecting to the Tri-City sewer trunk which shall be Oregon City sanitary sewer mains and terminate at an Oregon City sanitary sewer manhole. The developer shall provide capacity calculations to show that the proposed sanitary sewer system can support the full buildout of the development site. (DS)
52. The first phase of the GDP shall extend the existing public water line located within the street serving The Home Depot and loop it through the site to the existing water main within Abernethy Road, and this water main shall be public. The public main shall be protected from potential landfill contaminants in a manner approved by Oregon City. All other mains connecting to this water main shall be private. The developer shall provide capacity calculations to show that the proposed water system can support the full buildout of the development site. The future developer of DDPs shall upsize all water mains along the frontage of Abernethy Road to be 12-inch in diameter. (DS)
53. The future developer of DDPs shall place all new franchise utilities underground. The future developer of DDPs shall relocate all existing overhead utilities adjacent to the property frontage underground unless deemed infeasible by the City and franchise utilities. (DS)

54. Public improvements associated with each DDP are required to be completed and accepted by the City Engineer. Public improvements shall be constructed according to approved final engineering plans prior to occupancy. (DS)
55. The property owner(s) shall sign a Restrictive Covenant Non-Remonstrance Agreement for the purpose of making storm sewer, sanitary sewer, water, or street improvements in the future that benefit the property, and all fees associated with processing and recording the Non-Remonstrance Agreement shall be paid prior to occupancy. (DS)
56. Prior to City construction plan approval or issuance of a grading or building permit associated with the proposed development: The applicant shall submit a final geotechnical engineering report to DEQ, the City's Building Official, and the City's Public Works Engineering Development Services for review and approval. The final Geotechnical Engineering Investigation Report shall document the following:
    a. A comprehensive subsurface investigation,
    b. Settlement calculations and assumed material properties,
    c. Foundation recommendations and capacity calculations,
    d. Pavement and utility construction and maintenance recommendations,
    e. Floor slab and other flat concrete construction and maintenance recommendations,
    f. Surcharge recommendations including dimension and time criteria,
    g. Recommendations for applicable safety measures needed to minimize the risks of excessive differential building settlement, uneven settlements of the non-building areas affecting surface drainage, building and site settlements affecting gravity flow sewers, and methane accumulation and migration.
    h. Recommendations for development to be in compliance with applicable International Building Codes and Oregon Structural Specialty Code.
    i. Evaluation of impacts to the Redland Road and Highway 213 embankment from the site development and appropriate recommendations to mitigate for impacts. The City's geotechnical engineer shall provide a peer review of the final Geotechnical Engineering Report at the applicant's cost. The applicant shall have all comments and requirements from DEQ and the City addressed in the final report as applicable. (DS)
57. 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. (DS)
58. Future Detailed Development Plans shall provide scaled drawings showing cross-sections in locations with the greatest proposed cuts and/or fill and provide the approximate volume of cuts and fills. (DS)
59. The applicant shall provide a hydrology report that addresses the effect of the stormwater outfall upon the local watershed. The future developer of DDPs shall a hydrology report to address the potential impact of the proposed development on wetlands, water resources, and groundwater supply. (DS)
60. The developer's geotechnical engineer shall respond to written comments provided by the City's peer reviewer, and the City's peer reviewer shall agree with the geotechnical evaluation/investigation report submitted for the development prior to issuance of the Building permit. Costs associated with geologic hazard review of the land use application by the City's geotechnical engineer shall be paid by the developer. (DS)
61. 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 that 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 shall be installed and functional prior any soil disturbance. Temporary protective fencing shall be established adjacent to all trees and vegetation designated for protection which are within five feet of a construction area prior to any soil disturbance. (DS)

62. The detailed development plans shall include final grading plans and sections showing proposed cuts and fill relative to the existing ground and landfill. Settlement and slope stability evaluation is required for all cuts and fills. Settlement analysis shall demonstrate surcharge loads will provide the satisfactory long-term performance of proposed streets and infrastructure. (DS)
63. Within Geologic Hazard areas identified by Oregon City, future detailed development plans shall include terraced slopes or retaining walls for slopes or walls greater than seven vertical feet. The terraced slope or wall shall have a maximum vertical height of five feet and a minimum vegetated width of 3 feet between. Total cut and fill slopes shall not exceed a vertical height of fifteen feet. (DS)
64. The developer's geotechnical engineer shall certify, during construction, that the 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)
65. Construction of retaining walls over 4 feet in height and terraced walls which create total cut or fill greater than 4 feet in height shall be designed by a licensed engineer qualified for the design of such walls. The developer shall submit engineered stamped calculations for proposed retaining walls showing compliance with applicable building codes. The developer shall provide sliding, overturning, bearing capacity, and global stability design calculation for free-standing retaining walls over 4 feet in height in accordance with the Oregon Structural Specialty Code. (DS)
66. The developer shall retain the services of a licensed geotechnical engineer to conduct inspections prior to and during construction activities that involve the removal or addition of vegetation, building structures, retaining walls, or earth. The geotechnical engineer shall provide reports to confirm that standards from Section 17.44.100 are met. The geotechnical engineer record shall observe all excavations and geologic conditions exposed during construction and document that the conditions are consistent with the conditions assumed in the geotechnical hazard evaluation. If the conditions are different than assumed in the preliminary report, the effect of the new observations shall be evaluated and mitigation provided as required. Additional geologic hazards review may be required at the City's discretion. (DS)
67. The placement of existing utilities underground within areas of landfill and geologic hazards shall be reviewed and approved by the City. (DS)
68. The developer's geotechnical consultant shall review the finalized erosion control plan, construction plans, and stormwater report associated with the development and certify that they are consistent with the conclusions and recommendations stated in their geologic assessment and geotechnical report. The city's geotechnical consultant shall review the finalized erosion control plan, construction plans and stormwater report and the cost of review shall be paid by the developer. (DS)
69. Areas identified as geologic hazard by the city shall have existing vegetative cover maintained to the maximum extent practicable. (DS)
70. The developer shall submit a waiver of damages, indemnity and hold harmless agreement completed by all owners of property disturbed by the development. (DS)

71. Conditions contained in this report shall not 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. (DS)
72. 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. (DS)
73. Maintenance Guarantee equal to fifteen percent of the estimated cost for construction of public improvements as shown in city approved construction plans shall be provided prior to occupancy. 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)
74. Public services for transportation, fire, sanitary waste disposal and storm-water disposal that are needed at the time of each DDP, shall be made capable by the time each phase of the development is completed. (DS)
75. All on-street parking on private streets with public access easement will be available to the general public. As with all public streets, time restrictions can be added by the city, as needed, through coordination with Oregon City Public Works Department. (P/DS).
76. The applicant has submitted a Master Plan development approach that appears to meet the Flood Overlay District's criteria; however, future DDPs affected by the Flood Overlay District are required to apply for separate DDP submittals to show that each application can comply individually with the Flood Overlay District requirements, including demonstrating that the site can show balanced cut and fill within each application.
77. Areas located in the Natural Resource Overlay District not subject to the Type I exemption process will require review through a future Type II or Type III Natural Resource Review process when development is proposed that impacts those areas. Any development areas impacted by the Natural Resources Overlay District will be reviewed for compliance with OCMC 17.49 at or prior to the associated DDP review.(P)
78. The applicant has proposed a private street (D street) that appears to be more of a drive aisle for the adjacent parking lot and does not meet the intent of the code. OCMC 17.62.050 (B) Vehicle Access and Connectivity requires "Parking areas shall be located behind the building façade that is closest to the street, below buildings, or on one or both sides of buildings". The applicant has not requested a Master Plan amendment for D Street as part of this Master Plan; therefore, D Street shall be redesigned to meet the design intent of the proposed private Internal Road (with or without fire access) found on page 93 of the applicant's submittal. A sidewalk and street trees shall be included on both sides of D Street. Angled parking or a one-way street could be allowed if deemed safe by the Assistant City Engineer at the time of DDP review. (P)
79. The applicant shall comply with the following applicable Transportation Conditions at each DDP submittal:
    a. The applicant will be required to provide supplemental transportation analyses for each phase of the development that demonstrate the ability of the transportation system to accommodate that phase of the development. In connection with the first

detailed development plan submitted by the applicant, the applicant shall obtain new AM peak, PM peak, and mid-day Saturday traffic counts and conduct new operational analyses for the following intersections:

i. OR99E/Dunes Drive
ii. Washington Street/Home Depot – Site Access A
iii. OR213/Redland Road
iv. Redland Road/Holcomb Boulevard/Abernethy Road

b. Absent meaningful evidence to the contrary, the new counts and new analyses submitted in support of the detailed development will be presumed to supersede the traffic volume estimates and analyses submitted in the March 2021 TIA.
c. The following are a non-comprehensive set of issues that should be addressed in additional analyses:
    i. Intersection v/c and queuing must meet applicable standards with each phase. Partial development (some phases of the development) may be permissible without mitigation depending on background traffic and the status of adopted alternative mobility targets.
    ii. Where the applicant is relying on the regional center's two-tiered v/c standard (i.e. 1.10 during the peak hour and 0.99 during the second hour), the applicant will need to provide evidence that both are met. (This is particularly applicable to OR213/Redland Road and OR99E/Dunes Drive, both of which are predicted to exceed 1.10 during a peak hour.)
    iii. A phase or combination of phases that causes traffic volumes at any access point to exceed volumes in this TIA, additional analyses will be required.
    iv. The applicant will need to demonstrate the adequacy of queue storage or undertake appropriate mitigation to resolve queue storage issues at the intersection of Abernethy Road/Holcomb Boulevard/Redland Road in connection with each phase.
    v. The applicant will need to demonstrate that the intersection of OR213/Redland Road meets applicable v/c standards and provides adequate queue storage in connection with each phase.
    vi. The applicant will need to demonstrate that the intersection of OR99E/Dunes Drive meets applicable v/c standards in connection with each phase. Applicant is encouraged to explore the potential for signal timing changes with ODOT or develop other mitigation measures with ODOT.
d. With each detailed development plan, the applicant will be required to address sight distance requirements in connection with the establishment of any new access to Washington Street or Abernethy Road, including those described in this TIA.
e. With each detailed development plan, the applicant will be required to address on-site circulation issues. These include, but are not limited to, adequacy of queue storage for drive-through service windows, maneuvering of trucks at loading areas, and maneuvering in parking lots.
f. With each detailed development plan, the applicant will work with TriMet to provide appropriate sidewalks and bus stop features on or adjacent to the site.
g. With each detailed development plan, the applicant will be required to update the predicted traffic using the intersection of OR213/Beavercreek Road. The applicant should use the updated value of $380 per peak hour trip rather than the obsolete value of $219 as used in this TIA. The developer shall participate in funding of this project according to the established formula.

h. If traffic signal warrants are met and cause the installation of a traffic signal at any of the site access points on Washington Street or Abernethy Road, the applicant will bear the full cost of signal design and installation.
i. The applicant shall participate in the funding of improvements for the intersection of OR213/Redland Road (TSP Project D79) in proportion to the development's traffic volume as a percentage of the predicted 2035 traffic volume at the intersection calculated in the TSP. The 2017 TSDC Project List shows a project cost of $10,105,000. Participation shall apply to each phase of the development.
j. The applicant's final share of project costs may be modified as necessary when the detailed development plan is approved to reflect any a modification of the development's trip generation or a change in project costs resulting from revisions to project costs associated with updates to the City's Transportation System Plan or Capital Improvement Program,

76. Prior to Planning Commission approval of the Master Plan, the applicant shall submit a consolidated Master Plan figure or figures that can be the reference document for future DDP review. As there are many figures in the applicant's submittal and there may be future confusion as to what figures were or were not adopted, staff recommends that the applicant review the applicable conditions of approval and create a consolidated plan that references only the detail needed to comply with future DDP applications. A reference to this map will be added as a condition of approval.

77. Post-approval staff recommends that the applicant work with staff to create a DDP summary sheet that allows for ease of DDP review to ensure that all applicable conditions of approval are met.

I. BACKGROUND:

1. Existing Conditions

The 65.52-acre subject site is located at 1105 Abernathy Drive in Oregon City, Tax Lot Number 2-2E-29-00902. The property is currently zoned Mixed-Use Downtown and is located outside of the historic downtown overlay but is located within the Urban Renewal District. The site is located over the top of the Rossman Landfill, and includes land that is identified in the City's Natural Resource Overlay District (NROD) due to the presence of Abernethy Creek and wetlands that have been identified on the site. The site also includes areas within the Geologic Hazard Overlay Zone for the presence of slopes over 10%; and lands that are impacted by the 100-year floodplain.

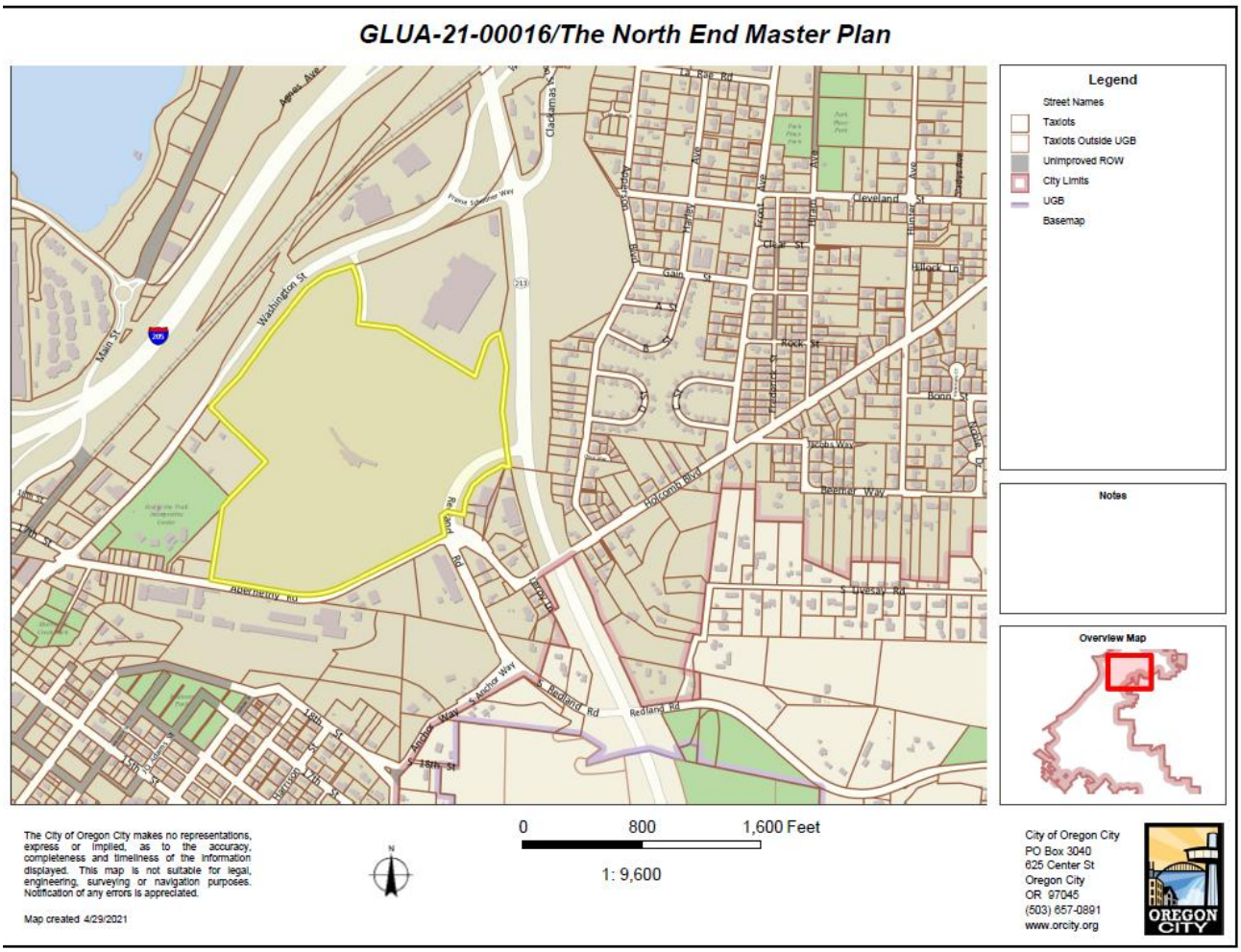


Figure 1. Vicinity Map



Figure 2: Existing Conditions – Aerial Image

2. Project Description

The North End Master Plan is a proposed master plan to redevelop the former Rossman Landfill with a mixed-use development. This land-use application is a request to approve the General Development Plan (GDP). The GDP will be subsequently implemented through future detailed developed plans that will be guided by this Concept Master Plan. Therefore, this application does not include a request for approval of a Detailed Development Plan (DDP) or any construction at this time. Once approved, the GDP guide future development within the master plan area to assure long-term regulatory certainty and a high level of predictability for future tenants and developers within the master plan area as well as the community. The GDP provides a detailed framework for development within the master plan area over the next 20 years; although, according to the applicant, build-out of the site is anticipated to occur over the next 5 years or so, though the conditions of approval allow for a longer implementation period. This proposed application includes requests for the following approvals:

- **Master Plan (GDP)**: The overall long-term approach to development over 5-20 years.
    - Adjustments to the following development standards:
    - OCMC Chapter 16.12.030 - Blocks—Width
    - OCMC Chapter 17.54.100.2- Retaining Walls
    - OCMC Chapter 17.62.055.D- Siting of Structures (Frontage)
    - OCMC Chapter 17.62.050.C.4 -Elevated External Stairways or Walkways

- **Conditional Use:** Request to approve Approval of a Conditional Use for tenant size (E2, S2, C2) and conditional use drive-thru locations (N1, E1,C1,S1,E5)
- **Flood Management Overlay District**: General review for feasibility of development approach.
- **Geologic Hazards Overlay District:** General review for feasibility of development approach.

The applicant, Summit Development Group, seeks approval of The North End Master Plan, a mixed-use GDP to redevelop the site with a mix of commercial, service, entertainment, residential, and retail uses as depicted in the master plan. According to the applicant, the plan envisions a transformation of the former landfill to a lively, integrated mixed-use development that will not only complement the downtown but serve as a primary gateway to the north end of the Oregon City Downtown. The master plan features treelined streets, landscaped open spaces, offices, and residences overlooking public plazas and open spaces and will feature a wide variety of shopping, dining, and entertainment spaces. Final building designs will be reviewed by the City and the public in subsequent Type I or II Detailed Development Review (DDP).

There is some flexibility built into the framework approach to the Master Plan (and its conditions) relating to the size and locations of the buildings. DDP applications that vary from the initial approval, as conditioned, will be sent back to the Planning Commission to show compliance to or receive an amendment to the adopted Master Plan.

All permitted uses in the Mixed-Use Downtown District are allowed within the area subject to the Master Plan. Additions to or removal of uses listed in the Applicant's submittal shall not in themselves constitute a need for an amendment to the Master Plan unless the addition or revision triggers a need for an amendment through a Condition of Approval or OCMC 17.65.080 Amendments to Plans.



Figure 3: Proposed District Site Plan

North District Area
The North District Area is approximately 17.1 Acres of the overall master plan. It is located west of the proposed "Market street" and east of Washington Street. This area is proposed to be developed with a mix of four and five story residential mixed use buildings, retail commercial uses, an entertainment center, the main pavilion, the parking garages along Washington Street, and one of the five drive-thru uses identified within the master plan. Overall, this area would include approximately 524 residential units and 632,789 square feet of building area. This district is compact, served by the main internal plaza, a series of locally placed open spaces, and makes up the most active multi-modal portion of the masterplan area. The North District Area includes four east-west street connections, depicted as 1st, 2nd, 3rd, and 4th Streets, and three north-south street connections, including A Street, B Street, and Market Street in the master plan. The area is located adjacent to Washington Street, which connects directly to the End of the Oregon Trail Interpretive Center, the Amtrak Station, and the rest of Downtown Oregon City. This portion of the site shares similar characteristics with the Oregon City downtown.

East District Area
The East District Area is approximately 16.3 Acres of the overall master plan and would be developed with a mix of small-format commercial retail uses, two drive-thru uses and one of the Anchor Retail uses on site. The area is located adjacent to the nearby Home Depot development and would consist of approximately 155,804 square feet of building area. Surface parking is provided for uses within the East District Area. The main pedestrian path that connects to the North District Area is to the anchor retail areas in the East District as well as two east-west street connections depicted on the master plan as 2nd and 3rd Streets. The East District Area also includes the primary natural resource on the site which remains set aside and protected through the master plan.

Central District
The Central District area makes up approximately 10.6 acres of the overall master plan and will be developed with a mix of small format commercial retail uses, an anchor retail pad and one drive thru use. This area is located between 3rd and 4th Streets east of Market Street. This area would consist of approximately 140,779 square feet of building area. In addition to the streets mentioned previously, this district is served by two north-south streets depicted as C Street and D Street on the master plan. Due to the difference in grades across the site, there are opportunities for lower-level retail uses along D Street at the rear of the anchor retail pad located within this district. Abernethy Road runs along the southern portion of the Central District Area and includes one of the accesses along 4th Street into the master plan site.

South District Area
The South District area makes up 12.6 acres of the overall master plan and includes the last drive thru use within the master plan, a small format grocer, an anchor retail pad and commercial retail uses along both Market Street and D Street. The building area within the South District is approximately 162,326 square feet. The South District Area includes the second access from Abernethy Road along Market Street and includes C Street and D Street as additional east-west connections. The proposed drive thru in this District is at the intersection of 4th Street and Market Street within the master plan. The pedestrian connection to the End of the Oregon Trail interpretive Center is located within the South District Area

Access

There are four proposed access points to the subject site. Proposed Market Street would provide access into the master plan at intersections with both Abernethy to the south and Washington Street to the North. Additionally, proposed 4th Street would connect to Abernethy to the east and Washington Street to the west. Proposed Market Street would satisfy the street connection called for in the Oregon City Transportation System Plan. All internal streets are proposed to be private with overlaid with public access easements and although different from the typical Oregon City Street cross-section, the internal streets will be designed to mimic and function as public streets. Proposed features include wider sidewalks, street furniture, bulb-outs at intersections, planter strips, and raised crosswalks. The proposed street sections have been designed to provide for safe and efficient connections for all modes of travel within the master plan.

The shared paths called for in the TSP through the project site are proposed to be provided as part of Market Street and through the east-west pedestrian corridor that bisects the site south of the anchor retail site located in the East District Area. These paths would connect into the frontage improvements planned along Abernethy Road, Washington Street, the End of the Oregon Trail interpretive Center, and the internal street systems providing a circuitous bike and pedestrian system that connects all of the internal uses.

Phasing

The project will be developed over several years with the first phase consisting of mass grading, padding, utilities, internal streets, shared-use paths, and frontage improvements. According to the applicant , subsequent phases would likely begin with the construction of retail anchor sites enabling for other on-site improvements and secondary retail. The remaining phases will likely include a mix of commercial retail, entertainment, and mixed-use residential uses as the market demand for those uses is realized. However, the Master plan approval is structured in more of a framework plan approach which will allow phasing to occur in whichever order is ultimately pursued by the applicant through the review of individual Detailed Development Plan applications that will review proportional improvements meeting the Master Plan conditions of approval.



Figure 1.2 Public Access Map

Figure 4: Proposed Access Plan



Figure 5: Proposed Aerial with Conceptual Elevations from Abernethy Blvd.

Staff Overview of Major Project Topics, Decisions

The applicant has submitted for a Concept Master Plan that will govern the development of the site overtime through the approval and development of future Detailed Development Plans (DDP) onsite. No development is approved as part of this application.

The applicant has submitted a proposal that generally meets the intent of the Mixed-use Downtown Zoning District and the Oregon City Municipal Code. The applicant has requested four Master Plan amendments onsite and Conditional use review for several drive-thrus onsite and allowance for larger tenant spaces in three buildings. Staff has reviewed the proposal for compliance with the applicable goals and policies, and intent of the city code sections and has identified proportional mitigation and phasing conditions that enable the project en masse to meet or exceed those goals.

This approval sets a framework approach to implementation of the plan thru future development applications at the Type I or Type II DDP level through the use of clear and objective conditions of approval and the ability to use the 2021 Municipal Code at time future DDP land use submittal. This approach allows staff, the applicant, and the public a clear road map for what is required, and more importantly, clearly specifies the level of review needed for design revisions. All permitted uses in the Mixed-Use Downtown District are allowed within the area subject to the Master Plan. Additions to or removal of uses listed in the Applicant's submittal shall not in themselves constitute a need for an amendment to the Master Plan unless the addition or revision triggers a need for an amendment through a Condition of Approval or OCMC 17.65.080 Amendments to Plans.

The Master Plan approval is a land-use action that approves the Master Plan layout and development approach based on the requirements set forth in OCMC 17.65 Master Plans and implemented through conditions of approval that are proportional to the proposal. The applicant may choose to enter into agreements with funding entities that may place additional requirements on the development. It is up to the applicant to determine if those requirements are consistent with the Conditions of Approval of the adopted Master Plan, and submit a Master Plan amendment if needed.

3. **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.

4. **Public Comment**

Public comments submitted include (Exhibit 3):

a. *General Support of the project:* Emma Fleming, DeMaris Beyl, Skip Rotticci, Joanne Gordon, Dave Frazier, Renate Mengelberg. Emma Fleming, DeMaris Beyl,Skip Rotticci, Joanne Gordon,Tonia Lordy,Dave Frazier,Renate Mengelberg,Karen Morey,Richard Ponting,List of supporters submitted by Summit Development, Nick Veroske, Marilyn Morrissey,Dan Fowler,Richard Ponting

- *Jane Troxler,* Ms. Troxler commented on traffic, questioned what buildings were to be demolished (only buildings on project site), and if the city was to be involved in funding the project.
    - Staff response: The application has been reviewed for compliance with the Oregon City Development Code and OCMC Chapter 17.65 Master Plans and Conditions of Approval have been placed on the application that have a nexus to the code and are proportional to the impact. No City funding is part of this review process, but rather to review the applicable development requirements in the Oregon City Municipal Code. The applicant may choose to enter into other agreements with funding entities that may place additional requirements on the development separate from this review.
- *Wes Rogers, Oregon City School District,* Mr. Rogers indicated that the proposal did not conflict with their interests.
- *Chris Long, Oregon City Building Division,* Mr. Long indicated that the proposal did not conflict with their interests.
- The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) submitted comments relating to the need for a cultural survey for the site.
    - Staff Response: A cultural survey is not a requirement found in the Municipal Code. However, the applicant is required to meet applicable state and federal laws relating to above and below ground cultural resources
- *Bob Swartz, Oregon Department of Environmental Quality (DEQ*), provided the following statement. “The Oregon Department of Environmental Quality regulates the closed Rossman’s Landfill through a DEQ solid waste closure permit. The landfill has been closed for 38 years. The landfill is capped with a compacted soil cover. Post-closure activities include groundwater and landfill gas monitoring. DEQ supports redevelopment of closed landfills and intends to enter into a Prospective Purchaser Agreement with two parties planning to purchase portions of the site for development. The property

proposed for acquisition is approximately 77 acres and includes two parcels. Summit OC LLC intends to purchase "Parcel I," (Tax Lot 902), covering approximately 62 acres. OCLD LLC intends to purchase "Parcel II" (Tax Lot 1200), which is approximately15 acres. Details regarding the proposed Prospective Purchaser Agreement can be found here: https://www.deq.state.or.us/Webdocs/Forms/Output/FPController.ashx?SourceIdType=11&SourceId=674&Screen=Load DEQ will work with the businesses who purchase lots on top of the closed landfill to ensure that development occurs in a safe manner that protects occupants from landfill gas or other environmental concerns associated with a closed landfill."

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

CHAPTER 12.04 STREETS, SIDEWALKS, AND PUBLIC PLACES

CHAPTER 12.08 - PUBLIC AND STREET TREES

CHAPTER 15.48 - GRADING, FILLING AND EXCAVATING

CHAPTER 16.04 GENERAL PROVISIONS AND ADMINISTRATION OF LAND DIVISIONS

CHAPTER 16.12 MINIMUM PUBLIC IMPROVEMENTS AND DESIGN STANDARDS FOR DEVELOPMENT

CHAPTER 17.34 MUD MIXED USE DOWNTOWN DISTRICT

CHAPTER 17.41 TREE PROTECTION, PRESERVATION, REMOVAL AND REPLANTING STANDARDS

CHAPTER 17.42 - FLOOD MANAGEMENT OVERLAY DISTRICT

CHAPTER 17.44 - US—GEOLOGIC HAZARDS

CHAPTER 17.49 NATURAL RESOURCES OVERLAY DISTRICT

CHAPTER 17.50 ADMINISTRATION AND PROCEDURES

CHAPTER 17.52 OFF-STREET PARKING AND LOADING

CHAPTER 17.54 SUPPLEMENTAL ZONING REGULATIONS AND EXCEPTIONS

CHAPTER 17.56 CONDITIONAL USES

CHAPTER 17.58 LAWFUL NONCONFORMING USES, LOTS, STRUCTURES, AND SITES

CHAPTER 17.62 SITE PLAN AND DESIGN REVIEW

CHAPTER 17.65 MASTER PLANS AND PLANNED UNIT DEVELOPMENTS

CHAPTER 12.04 – STREETS SIDEWALKS AND PUBLIC SPACES

12.04.005 - Jurisdiction and management of the public rights-of-way.

A. The City has jurisdiction and exercises regulatory management over all public rights-of-way within the City under authority of the City Charter and state law by issuing separate public works right-of-way permits or permits as part of issued public infrastructure construction plans. No work in the public right-of-way shall be done without the proper permit. Some public rights-of-way within the city are regulated by the State of Oregon Department of Transportation (ODOT) or Clackamas County and as such, any work in these streets shall conform to their respective permitting requirements.

C. The City has jurisdiction and exercises regulatory management over each public right-of-way whether the City has a fee, easement, or other legal interest in the right-of-way. The City has jurisdiction and regulatory management of each right-of-way whether the legal interest in the right-of-way was obtained by grant, dedication, prescription, reservation, condemnation, annexation, foreclosure or other means.

D. No person may occupy or encroach on a public right-of-way without the permission of the City. The City grants permission to use rights-of-way by franchises, licenses and permits.

E. The exercise of jurisdiction and regulatory management of a public right-of-way by the City is not official acceptance of the right-of-way, and does not obligate the City to maintain or repair any part of the right-of-way.

Finding: Applicable. The City of Oregon City has jurisdiction over Washington Street. The right of way of Abernethy Road falls under Clackamas County jurisdiction and requires permits from that agency. The right of way of Redland Road falls under ODOT jurisdiction and requires permits from that agency.

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 master plan area abuts a street where there is existing sidewalk (Washington Street). **See findings from 12.04.032 of this report.**

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: Complies with Condition. The applicant acknowledges the requirement for maintenance and repair of sidewalks along the street frontages. The developer for future DDPs shall make all sidewalk along the frontage of the proposed development, existing and new, ADA compliant per City Standards. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

12.04.050 - 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: Not Applicable. No retaining walls exist or are proposed on this project adjacent to the public sidewalk.

12.04.100 - Excavations—Restoration of pavement.
Whenever any excavation shall have been made in any pavement or other street improvement on any street or alley in the City for any purpose whatsoever under the permit granted by the engineer, it shall be the duty of the person making the excavation to restore the pavement in accordance with the City of Oregon City Public Works Pavement Cut Standard in effect at the time a right-of-way permit is granted. The City Commission may adopt and modify the City of Oregon City Public Works Pavement Cut Standards by resolution as necessary to implement the requirements of this chapter.
Finding: Complies with Condition. Pavement cuts are proposed within Washington Road due to road construction and utility service installation. Pavement cuts or other improvement made in a City street or alley 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 findings for 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, and 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 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 60 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. In the case of work within ODOT or Clackamas County rights-of-way, work shall be in conformance with their respective construction standards. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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 master plan.

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 master plan will create more than five hundred square feet of impervious surface.

C. Exemptions. The following exemptions to subsection B of this section apply:
1. An exemption to the flow control requirements of this chapter will be granted when the development site discharges to the Willamette River, Clackamas River or Abernethy Creek; and either lies within the one hundred-year floodplain or is up to ten feet above the design flood elevation as defined in OCMC 17.42, provided that the following conditions are met:
a. The project site is drained by a conveyance system that is comprised entirely of manmade elements (e.g. pipes, ditches, culverts outfalls, outfall protection, etc.) and extends to the ordinary high water line of the exempt receiving water; and
b. The conveyance system between the project site and the exempt receiving water has sufficient hydraulic capacity and erosion stabilization measures to convey discharges from the proposed conditions of the project site and the existing conditions from non-project areas from which runoff is collected.
2. Projects in the following categories are generally exempt from the water quality and flow control requirements:
a. Stream enhancement or restoration projects approved by the City.
b. Farming practices as defined by ORS 30.960 and farm use as defined in ORS 214.000; except that buildings associated with farm practices and farm use are subject to the requirements of this chapter.
c. Actions by a public utility or any other governmental agency to remove or alleviate an emergency condition.
d. Road and parking area preservation/maintenance projects such as pothole and square cut patching, surface sealing, replacing or overlaying of existing asphalt or concrete pavement, provided the preservation/maintenance activity does not expand the existing area of impervious coverage above the thresholds in subsection B of this section.
e. Pedestrian and bicycle improvements (sidewalks, trails, pathways, and bicycle paths/lands) where no other impervious surfaces are created or replaced, built to direct stormwater runoff to adjacent vegetated areas.
f. Underground utility projects that replace the ground surface with in-kind material or materials with similar runoff characteristics.
g. Maintenance or repair of existing utilities.
Finding: Not applicable. The applicant has stated that the master plan area will discharge to all three bodies listed in this section and is located partially within the 100 – year floodplain and seeks an exemption to the flow control requirements. The stormwater report, included as Appendix A to this narrative, concludes that 29.8 acres of impervious surface from the site will outfall into the Abernethy Creek tributary after being treated. The creek tributary extends approximately 520 feet south before entering joining Abernethy Creek and ultimately flowing to the Willamette River. The existing stream channel geometry was estimated based upon available topographic survey and average stream cross sections. Using Civil Tool Pro, HHPR concluded that the Abernethy Creek tributary segment has more than sufficient capacity to convey the 10-yr storm event. The applicant states that flows will remain in the existing creek channel at and downstream of the point of discharge. **Although the master plan area is adjacent to a tributary of the Abernethy Creek and can discharge to the tributary, the city code only grants exemption to development sites which discharge to the Willamette River, Clackamas River or Abernethy Creek; not their tributaries.**

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: Complies as conditioned. The applicant proposed development on land with suspected or known contamination (specifically a former landfill site). Construction on a site previously used as a landfill requires the involvement of Oregon DEQ. The applicant has stated, while the stormwater report details how the project can meet the stormwater management requirements, additional management practices will be evaluated and recommended with each subsequent DDP. Future DDP within the master plan area for uses subject to additional management practices will provide supplemental stormwater reports to address compliance with these sections.

Prior to City construction plan approval or issuance of a grading or building permit associated with the proposed development, the property and building owners shall provide written acknowledgment and statement to assume responsibility for risks associated with development on land with suspected or known contamination. The applicant shall submit a final engineering report to DEQ, the City's Building Official, and the City's Public Works Engineering Development Services for review and approval. The Engineering Investigation Report shall document the following:
a. Details, as necessary, to address DEQ requirements relative to increased leachate and landfill gas migration due to consolidation of the landfill, penetrating the landfill cap (including alternatives that allow landscaping to address water quality concerns), and limiting sub-landfill aquifer contamination via pile penetration as may be applicable.
b. Recommendations to minimize risks of negative impacts for proposed building structure, site grading, cuts and fill, foundations, seismic, utility infrastructure including connections between the underground utilities and the building structure, methane gas migration and accumulation including consideration of the gas migration through utility trenches and accumulation in utility infrastructure such as utility pipes, manholes, light pole bases, and junction boxes.
Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.

13.12.080 - Submittal requirements.
A. Applications subject to stormwater conveyance, water quality, and/or flow control requirements of this chapter shall prepare engineered drainage plans, drainage reports, and design flow calculation reports in compliance with the submittal requirements of the Public Works Stormwater and Grading Design Standards.
B. Each project site, which may be composed of one or more contiguous parcels of land, shall have a separate valid city approved plan and report before proceeding with construction.
Finding: Complies with Condition. The application package includes a preliminary stormwater report and stormwater plan sheet, prepared by a professional, licensed civil engineer that addresses each of the factors in Subsection A above. Before proceeding with construction, a separate final report will be provided for each project. **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 application package includes a preliminary stormwater report and stormwater plans, prepared by a professional, licensed civil engineer, conceptually complies with City standards. The information provided within the report demonstrates that the stormwater management design proposed with the GDP will satisfy the Public Works Stormwater and Grading Design Standards, adequately controls run-off from impervious surfaces. Specific operation and maintenance measures have been suggested and will be provided upon approval and construction of the system during review of individual DDP. New and constructed impervious surfaces will be managed per the Oregon City Stormwater and Grading Design Standards dated March 2020. However, the site is not able to utilize infiltration type facilities during design since the project site was once a landfill and has contaminated soils. Because infiltration would run the risk of mobilizing contaminates in the soils or groundwater, the project will be utilizing underground detention and mechanical treatment methods for stormwater disposal. Stormwater will be treated by proprietary treatment systems, vegetated swales, filtration raingardens and planters across the site. The public frontage improvements will be treated with filtration planters. The proposal conceptually satisfies the Public Works Stormwater and Grading Design. Each individual Detailed Development Plan (DDP) within the master plan area shall provide updated engineered drainage plan(s), drainage report(s), and design flow calculation report(s) stamped and signed by a licensed engineer addressing all items from the Section 9 of the 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.**

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: Complies as conditioned. Due to underlying landfill soils, the civil engineer has proposed an underground detention system for stormwater management. Also, the application is for a masterplan so no stormwater detention system has been proposed to be constructed until future DDP. It is likely that the City Engineer will find that the proposed design is satisfactory and complies with the intent of this

chapter; however, this type of stormwater system is considered to be an alternative design by the Oregon City Stormwater Grading and Design Standards. Each individual DDP within the master plan area shall include with their drainage report, a written modification request for the use of underground detention storage systems per Section 1.6 of the Oregon City Stormwater Grading and Design Standards where use of underground detention storage systems is proposed. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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: Complies with Condition. The drainage plan for the application was prepared by a licensed civil engineer. The applicant understands the requirements that apply should a transfer of engineering responsibility occur during construction of the project. The developer for future DDPs shall have a project engineer and both shall execute a "Developer/Engineer Agreement for Public Works Improvements" and commit to the responsibilities outlined in the agreement. (Required via findings of section 16.12.014) **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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. Public stormwater facilities are proposed with this development along Washington Street and Abernethy Road. The onsite stormwater facilities are not designed to receive water from the public right-of-way. Upon expiration of the warranty period provided by section 17.50.141, the City will maintain roadside facilities along city ROW.

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 as proposed. Public stormwater facilities are proposed with this development along Washington Street and Abernethy Road. The onsite stormwater facilities are not designed to receive water from the public right-of-way. Roadside facilities are required to be under warranty by provisions of section 17.50.141.

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 is aware of their responsibility to maintain stormwater facilities on the private property. A preliminary stormwater report is provided as Appendix A with this application package. The civil engineer has acknowledged this requirement within the report and it will be incumbent upon future DDP developers to provide supplemental stormwater reports consistent with the GDP stormwater plan and provide an operations and maintenance plan for their projects that are compliant with the Public Works Stormwater and Grading Design Standards. All stormwater facilities proposed to serve the development shall be private except the public stormwater facilities that receive stormwater runoff from the public right-of-way of Washington Street and Abernethy Road. Future DDP developers and property owner(s) shall execute an agreement providing maintenance of, and giving Oregon City access to, privately-owned stormwater management facilities and pay associated recording fees. The agreement shall include a site plan identifying all privately-owned stormwater management facilities and an operation and maintenance plan for each type of stormwater facility in accordance with the Public Works Stormwater and Grading Design Standards. The agreement shall run with the land and be applicable to subsequent property owners. The agreement shall be reviewed and accepted by the City prior to occupancy. **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 for future DDPs 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 condition. Construction activities associated with the master plan area may impact areas regulated by Oregon State Division of State Lands (DSL) and/or United States Army Corps of Engineers (USACE). For construction activities requiring Oregon State Division of State Lands (DSL) and/or United States Army Corps of Engineers (USACE) permits, no work will be authorized until the city has received a copy of Oregon State DSL and/or USACE permit(s) or written documentation that no approval from the aforementioned agencies is needed. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

C. Projects may require Oregon State Department of Fish and Wildlife (ODFW) permits. When ODFW permits are required, no work will be authorized until the receipt of a copy of the ODFW permit. ODFW is responsible for policing its own permits; however, if City personnel observe conditions that are believed to be in violation of any such permit, and cannot get corrections made, the City will bring such conditions to the attention of the appropriate ODFW representatives.
Finding: Complies as conditioned. Construction activities associated with the master plan area may impact an upstream tributary of Abernethy Creek. For construction activities requiring Oregon State Department of Fish and Wildlife (ODFW) permits, no work will be authorized until the city has received a copy of the ODFW permit or written documentation that no approval from the aforementioned agencies is needed. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

CHAPTER 15.48 – GRADING, FILLING AND EXCAVATING

15.48.030 Applicability—Grading permit required.
A. A city-issued grading permit shall be required before the commencement of any of the following filling or grading activities:
1. Grading activities in excess of ten cubic yards of earth;
2. Grading activities which may result in the diversion of existing drainage courses, both natural and man-made, from their natural point of entry or exit from the grading site;
3. Grading and paving activities resulting in the creation of impervious surfaces greater than two thousand square feet or more in area;
4. Any excavation beyond the limits of a basement or footing excavation, having an unsupported soil height greater than five feet after the completion of such a structure; or
5. Grading activities involving the clearing or disturbance of one-half acres (twenty-one thousand seven hundred eighty square feet) or more of land.
B. Those fill and grading activities proposed to be undertaken in conjunction with a land use application, including but not limited to subdivisions, planned unit developments, partitions and site plan reviews, are subject to the standards of this chapter. However, a separate grading permit is not required. Approval of

the construction plans submitted through the land use application process shall constitute the grading permit required under this chapter.
Finding: Applicable. Fill and grading activities are proposed to be undertaken in conjunction with a land use application. 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.

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. Preliminary grading plans are provided in civil sheets (C300 thru C307) to demonstrate that the project can be graded in compliance with the applicable city standards. These grading plans will be refined and submitted along with each DDP fled within the master plan. Detailed erosion control plans will be provided with construction drawings at the time of permit review. This standard is not directly applicable to the GDP as no grading permit is request with this GDP approval. The developer for future DDPs 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. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

CHAPTER 16.12 – MINIMUM PUBLIC IMPROVEMENTS AND DESIGN STANDARDS FOR DEVELOPMENT

16.12.010 - 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. The right of way of Abernethy Road falls under Clackamas County jurisdiction and requires permits from that agency. The right of way of Redland Road falls under Oregon Department of Transportation jurisdiction and requires permits from that agency. 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. The City will not provide construction plan approval until applicable Oregon Department of Transportation and Clackamas County approvals or permits are obtained. **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 3-4 plexes, single and two-family dwellings living space. Garages, carports, sheds, and porches may not be included in the calculation if these spaces are not

living spaces. Accessory dwelling units are not subject to compliance with this chapter. All applicable 3-4 plexes, single and two -family dwellings shall provide any necessary dedications, easements or agreements as identified in the transportation system plan and this chapter, subject to constitutional limitations. In addition, the street frontage shall be improved to include the following priorities for improvements:

1. Improve street pavement, construct curbs, gutters, sidewalks and planter strips; and

2. Plant street trees.

The cost of compliance with the standards identified in 16.12.011.B.1 and 16.12.011.B.2 is calculated based on the square footage valuation from the State of Oregon Building Codes Division and limited to ten percent of the total construction costs. The value of the alterations and improvements is based on the total construction costs for a complete project rather than costs of various project component parts subject to individual building permits. The entire proposed construction project cost includes engineering and consulting fees and construction costs. It does not include permit fees, recording fees, or any work associated with drafting or recording dedications or easements.

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 master plan; 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 . Please see findings in 16.12.016 for direction.

16.12.013 - Modifications.

The applicant may request and the review body may consider modification of the standards in this chapter resulting from constitutional limitations restricting the City's ability to require the dedication of property or for any other reason, based upon the criteria listed below and other criteria identified in the standard to be modified. All modifications, except for adjustments approved by the City Engineer for tree preservation purposes pursuant to 16.12.013.A, shall be processed through a Type II Land Use application and may require additional evidence from a transportation engineer or others to verify compliance. Compliance with the following criteria is required:

The applicant proposes one modification to the engineering standards of Subsection 16.12 as explained below: 1. OCMC 16.12.035.C. The standards of this section limit properties to one driveway per street frontage. The project requests approval of four driveway access points along Washington Street and two driveway access points along Abernethy Road.

A. 1. The modification meets the intent of the standard;

Finding: Complies as proposed. That applicant as stated the following: *The site is approximately 62 acres in size and includes approximately 1,091,698 square feet of new commercial, retail, entertainment, and residential uses. Driveway access, under the provisions of 16.12.035.C is limited*

to reduce conflicts with the traveling public along streets and to ensure adequate space for street improvements including curbs, gutters, sidewalks, planter strips and street trees. The project proposes four driveways along the Washington Street frontage and two additional driveways along the Abernethy Road frontage. There is approximately 1,344 lineal feet of street frontage along Washington Street and approximately 1,320 lineal feet of frontage along Abernethy Road. According to the TIA provided with this application as Appendix C, Washington Street and Abernethy Road are both classified as a Minor Arterial. Section 12.04.195 of the Oregon City Municipal Code requires that the minimum driveway spacing along a Minor Arterial is 175 feet. As proposed within the GDP, the three new site accesses proposed along Washington Street will be positioned at equal spacings of approximately 500 feet relative to the signalized intersection at Washington Street/Home Depot-Site Access "A". The two new site accesses proposed along Abernethy will be approximately 1,000 feet apart, with the closest driveway at approximately 750 feet west of the signalized Abernethy Road/Redland Road intersection. Accordingly, the access spacing proposed within the GDP will comply with the access spacing requirements of the Oregon City Municipal Code. The additional driveways do not hinder the installation of priority street improvements, such as street trees, lighting and sidewalks. This request is consistent with the intent of the driveway standards.

The City finds that the reasons provided by the applicant meets the intent of the code and concurs with the applicant.

A. 2. The modification provides safe and efficient movement of pedestrians, motor vehicles, bicyclists and freight;

Finding: Complies as proposed. That applicant as stated the following:

The proposed driveways are located along Washington Street and Abernethy Road. The site has a significant amount of frontage along these rights-of-way. The additional driveways exceed the access spacing requirements of the OCMC for streets classified as "minor arterials" in the Oregon City Transportation System Plan (TSP) as described above. Accordingly, the additional driveways will not affect the safety of pedestrians along the right-of-way. The driveways are shown on the Civil Site Plan sheets C200 to C207 of the Civil Plans provided in Appendix B. Site driveways have been located on the site and designed to meet all City requirements for sight distance, driveway spacing, and appropriate traffic control.

The City finds that the reasons provided by the applicant meets the intent of the code and concurs with the applicant.

A. 3. The modification is consistent with an adopted transportation or utility plan; and

Finding: Complies as proposed. That applicant as stated the following:

Table 16.12.035.A identifies 175 feet as the minimum driveway spacing standard for a minor arterial. As discussed previously, three new site accesses are proposed along Washington Street at equal spacings of approximately 500 feet relative to the signalized intersection at Washington Street/Home Depot-Site Access "A". The two new site accesses proposed along Abernethy will be approximately 1,000 feet apart, with the closest driveway at approximately 750 feet west of the signalized Abernethy Road/ Redland Road intersection. The driveway approaches are identified in Table 16.12.035.D and require the approaches be a minimum width of 20 feet for two way traffic and a maximum width of 40 feet for commercial and mixed uses. The proposed driveways are compliant with the minimum and maximum driveway widths established in the plan as illustrated in the civil plans (Sheets C200 through C207).

The City finds that the reasons provided by the applicant meets the intent of the code and concurs with the applicant.

A. 4. The modification is complementary with a surrounding street design; or, in the alternative;

Finding: Complies as proposed. That applicant as stated the following:

The additional driveways proposed for the development are complementary to the surrounding street design because the driveways are spaced more than 175 feet apart and located to facilitate safe connections to the surrounding streets and make circulation in and around the master plan area more efficient. Because of the large size of the site and the need to create multiple connections within the site as well as connections to the existing street grid external to the site, the driveways have been placed to maximize pedestrian, vehicle and bicycle connections as well as presenting a design that permits a coherent design for all of the related frontage and sidewalk improvements. Staff concurs with the applicant.

The City finds that the reasons provided by the applicant meets the intent of the code and concurs with the applicant.

A. 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: Not applicable.

The modifications are not being requested for constitutional reasons; therefore, this criterion is not applicable to the proposed GDP.

B. The following modifications shall be processed as a Type I modification by the City Engineer using the criteria in 16.12.13.A.

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

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

Finding: Complies as proposed. See findings from 16.12.13.A.

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 for future DDPs 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 as conditioned. The development site fronts three public streets, Washington Street, Abernethy Road, and Redland Road. The arrangement of these streets and their respective intersections is not proposed to change, nor is their location or grade. The location, widths, and grades of the proposed street system provides for the continuation or appropriate projection of existing principal streets in the surrounding area and gives access for future development of adjoining land. The development has proposed improvements along Washington Street and Abernethy Road for all modes of travel to access the subject site. A private internal street system with public access easements is proposed to serve the development and provide a convenient street system for all modes of travel, including pedestrian and bicycle through the subject site; however, it does not fulfil shared-use path projects S5 & S44 identified by the TSP. To fulfill TSP project S5, the development shall provide a 12-foot-wide shared-use path running along the west side of the north-south road (proposed as Market St) which connects Washington Street and Abernethy Road. To fulfill TSP project S44, the development shall provide a 12-foot-wide shared-use path which extends from the "End of the Oregon Trail Interpretive Center" and connects to a north-south road running through the development site. The surface of all shared-use paths shall be paved with all-weather materials as approved by the City. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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

Table 16.12.016 Street Design. To read the table select the road classification as identified in the Transportation System Plan and the Comprehensive Plan designation of the adjacent properties to find the maximum design standards for the road cross section. If the Comprehensive Plan designation for lands on either side of the street differs, the wider right-of-way standard shall apply.

Road Classification	*Comprehensive Plan Designation*	*Right-of-Way Width*	*Pavement Width*	*Public Access*	*Sidewalk*	*Landscape Strip*	*Bike Lane*	*Street Parking*	*Travel Lanes*	*Median*
Major Arterial	*Mixed Use, Commercial or*	*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.*

	Public/Quasi Public									
	Industrial	*120 ft.*	*88 ft.*	*0.5 ft.*	*5 ft.*	*10.5 ft.*	*6 ft.*	*N/A*	*(5) 14 ft. Lanes*	*6 ft.*
	Residential	*126 ft.*	*94 ft.*	*0.5 ft.*	*5 ft.*	*10.5 ft.*	*6 ft.*	*8 ft.*	*(5) 12 ft. Lanes*	*6 ft.*

Road Classification	*Comprehensive Plan Designation*	*Right-of-Way Width*	*Pavement Width*	*Public Access*	*Sidewalk*	*Landscape Strip*	*Bike Lane*	*Street Parking*	*Travel Lanes*	*Median*
Minor Arterial	*Mixed Use, Commercial or Public/Quasi Public*	*116 ft.*	*94 ft.*	*0.5 ft.*	*10.5 ft. sidewalk including 5 ft. x 5 ft. tree wells*		*6 ft.*	*8 ft.*	*(5) 12 ft. Lanes*	*6 ft.*
	Industrial	*118 ft.*	*86 ft.*	*0.5 ft.*	*5 ft.*	*10.5 ft.*	*6 ft.*	*7 ft.*	*(5) 12 ft. Lanes*	*N/A*
	Residential	*100 ft.*	*68 ft.*	*0.5 ft.*	*5 ft.*	*10.5 ft.*	*6 ft.*	*7 ft.*	*(3) 12 ft. Lanes*	*6 ft.*

Road Classification	*Comprehensive Plan Designation*	*Right-of-Way Width*	*Pavement Width*	*Public Access*	*Sidewalk*	*Landscape Strip*	*Bike Lane*	*Street Parking*	*Travel Lanes*	*Median*
Collector	*Mixed Use, Commercial or Public/Quasi Public*	*86 ft.*	*64 ft.*	*0.5 ft.*	*10.5 ft. sidewalk including 5 ft. x 5 ft. tree wells*		*6 ft.*	*8 ft.*	*(3) 12 ft. Lanes*	*N/A*
	Industrial	*88 ft.*	*62 ft.*	*0.5 ft.*	*5 ft.*	*7.5 ft.*	*6 ft.*	*7 ft.*	*(3) 12 ft. Lanes*	*N/A*
	Residential	*85 ft.*	*59 ft.*	*0.5 ft.*	*5 ft.*	*7.5 ft.*	*6 ft.*	*7 ft.*	*(3) 11 ft. Lanes*	*N/A*

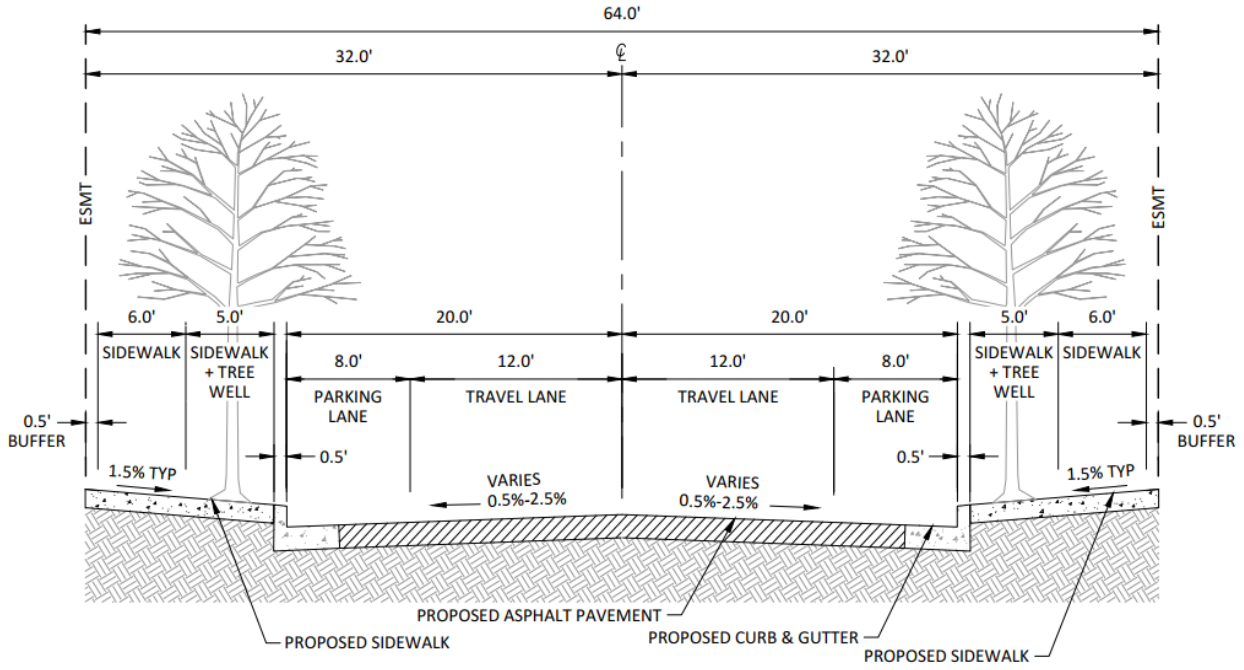
Road Classification	*Comprehensive Plan Designation*	*Right-of-*	*Pavement Width*	*Public Access*	*Sidewalk*	*Landscape Strip*	*Bike Lane*	*Street Parking*	*Travel Lanes*	*Median*

		Way Width								
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 16.12.85.

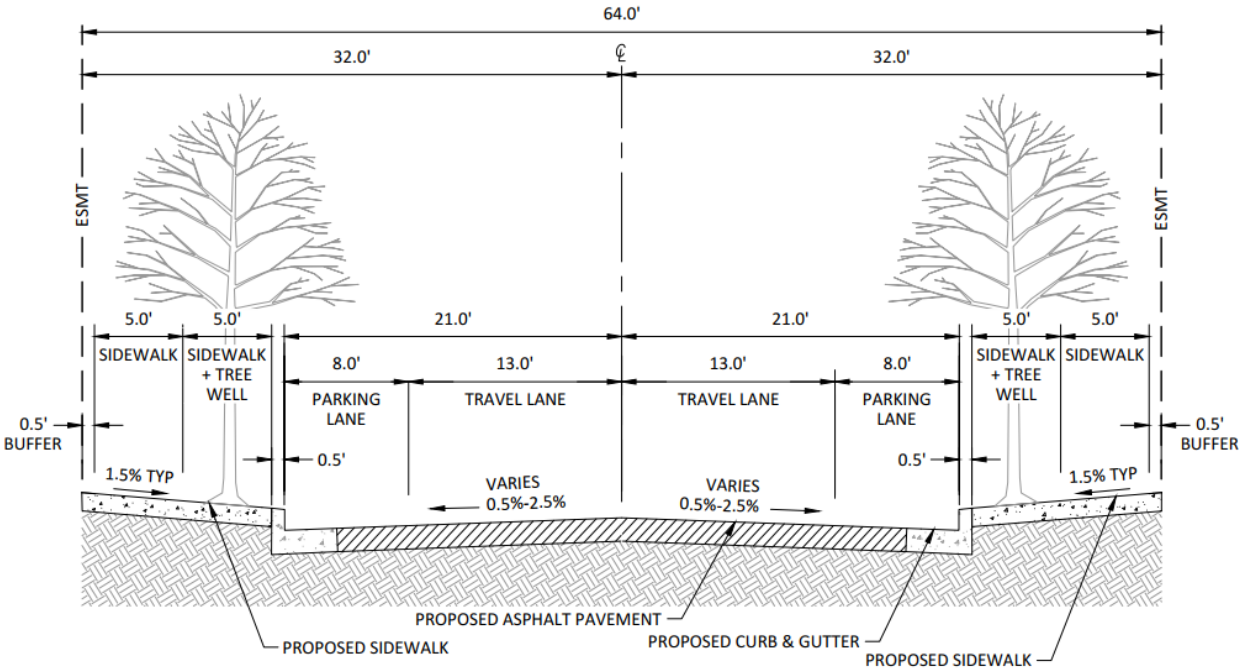
Finding: Complies with Condition. The development site fronts three public roadways: Washington Street, Abernethy Road, and Redland Road. Access into and out of the site are proposed along Washington Street and Abernethy Road. Frontage improvements along Redland Road are not proposed with the General Development Plan. Washington Street and Abernethy Road are both classified as Minor Arterials in the Oregon City TSP. All internal streets are proposed to be private and have adequate pavement width to support 2-way automobile traffic, emergency vehicles (as deemed necessary by Clackamas Fire District Number 1) and sidewalk widths which are ADA compliant.

The applicant has proposed the following street sections for private internal streets to comply with Table 16.12.016.



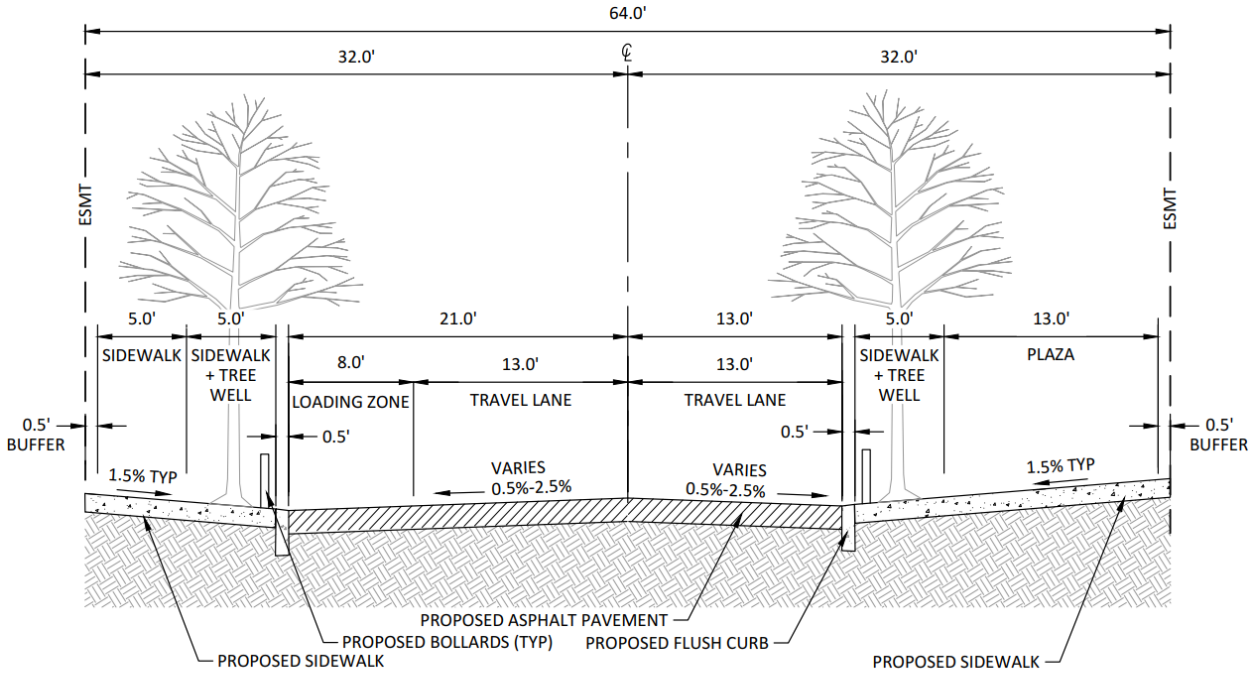
INTERNAL ROADS

N.T.S.



INTERNAL ROADS (W/ FIRE ACCESS)

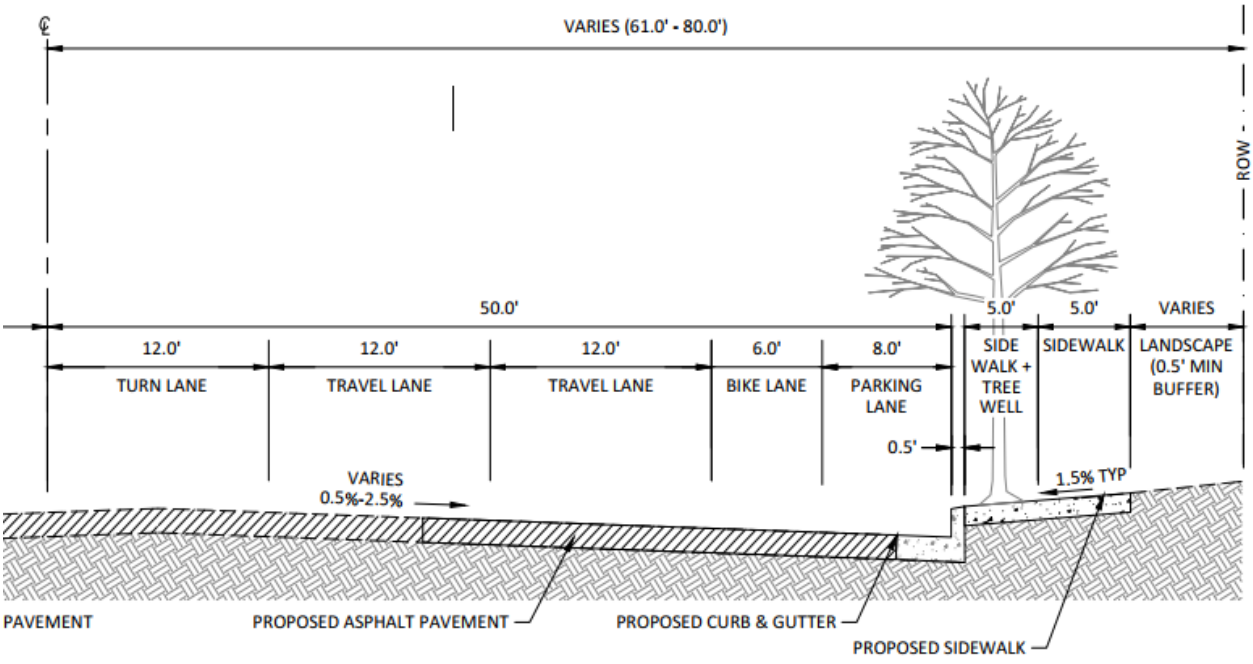
N.T.S.



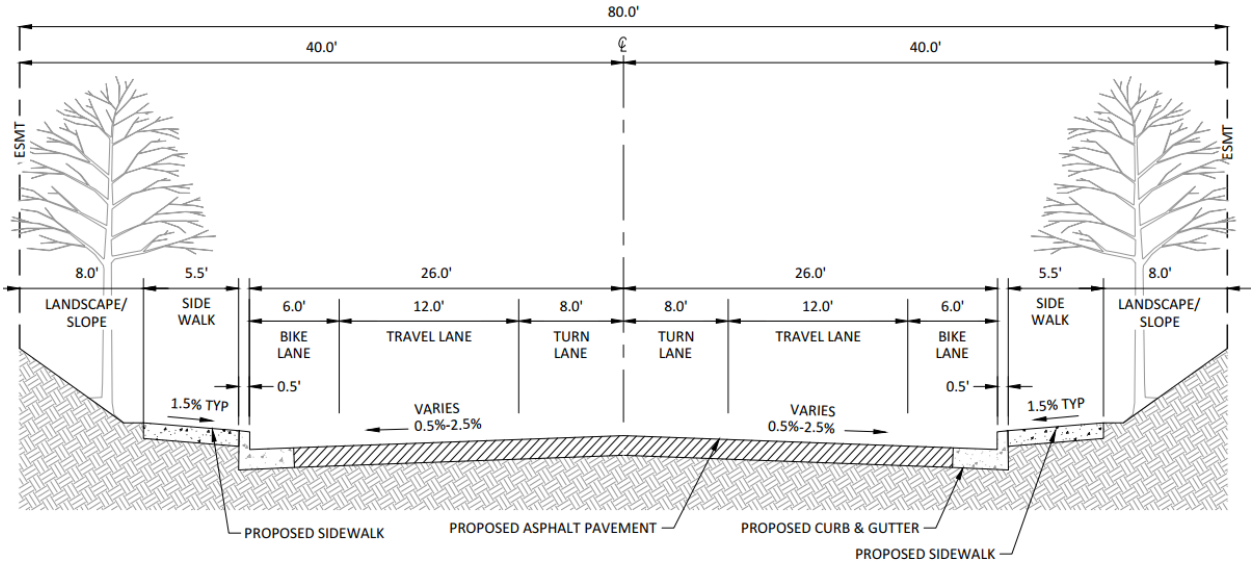
PLAZA FIRE ACCESS ROAD

N.T.S.

The applicant has proposed the following improvements for Washington Street which complies with Table 16.12.016.

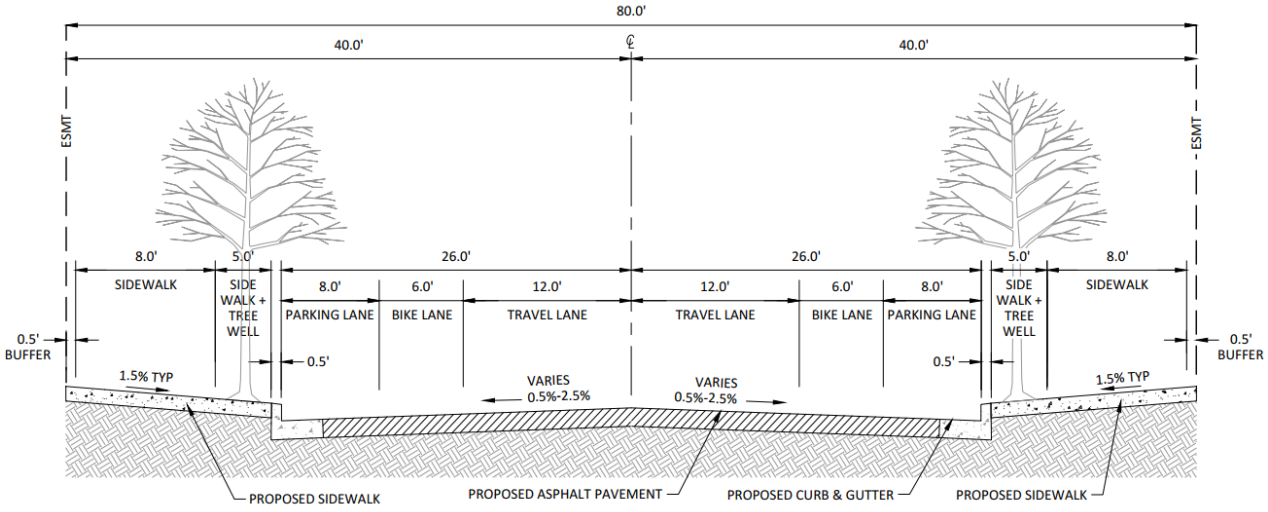


The applicant has proposed the following internal street for a the primary north-south streets connecting Washington Street and Abernethy Road



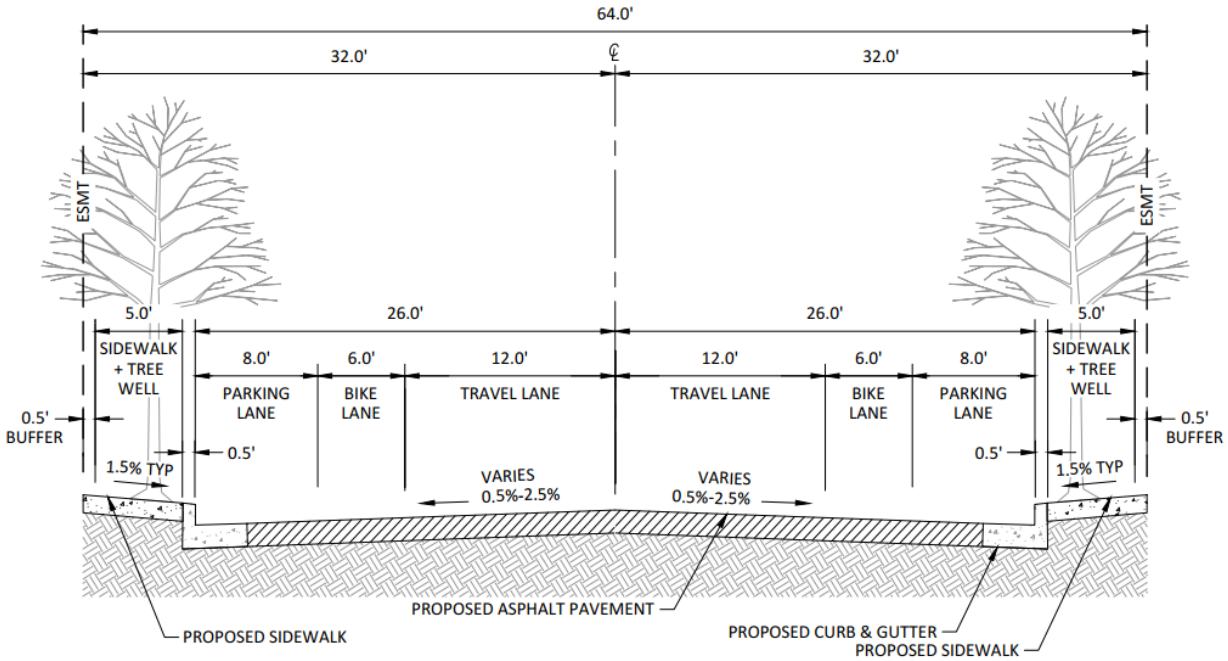
MARKET STREET (SECTION 1)

N.T.S.



MARKET STREET (SECTION 2)

N.T.S.



MARKET STREET (SECTION 3)

N.T.S.

Abernethy Road is owned and maintained by Clackamas County. Roadway improvements, including street widening, frontage improvements and right-of-way dedication along Abernethy Road shall be per requirements of the jurisdiction that has authority over Abernethy Road at the time of construction plan approval. The future developer of DDPs shall provide a 12-foot-wide shared-use path along the site's frontage on the north side of Abernethy Road to fulfill TSP project S2 and may serve to fulfill the sidewalk required on the north side of Abernethy Road if approved by the jurisdiction that has authority over Abernethy Road at the time of construction plan approval.

The development has proposed private roads with lane widths which do not match city standards (13' vs 12'). All roads required to be constructed by the developer, public and private, shall have 12-foot-wide vehicular lanes unless otherwise approved by the City Engineer.

Redland Road is owned and maintained by ODOT. Street Improvements, including street widening, frontage improvements and right-of-way dedication along Redland Road shall be per Oregon Department of Transportation requirements. See findings from 16.12.033 for related findings. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

A. Sidewalks. The applicant shall provide for sidewalks on both sides of all public streets, on any private street if so required by the decision-maker, and in any special pedestrian way within the development. Both sidewalks and curbs are to be constructed to City standards and at widths set forth above, and according to plans and specifications provided by the City Engineer. Exceptions to this requirement may be allowed in order to accommodate topography, trees or some similar site constraint. In the case of major or minor arterials, the decision-maker may approve a development without sidewalks where sidewalks are found to be dangerous or otherwise impractical to construct or are not reasonably related to the applicant's development. The decision-maker may require the applicant to provide sidewalks

concurrent with the issuance of the initial building permit within the area that is the subject of the development application. Applicants for partitions may be allowed to meet this requirement by providing the City with a financial guarantee per OCMC 16.12.110.
Finding: Complies as proposed. The applicant proposes the installation new sidewalks on both sides of all new private streets that are interior to the development and along the frontages of Washington Street and Abernethy Road where ½ street improvements have been proposed. There are no sidewalk improvements along either side of Redland Road, presumably because it does not include any access or development immediately adjacent to the facility. The proposed sidewalk improvements will be constructed to City standards and are illustrated in the civil plans attached to this application as Appendix B. **See findings from the beginning of this section for required street improvements along streets fronting this development.**

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 as proposed. Bike and Pedestrian routes are identified throughout the development and along the site's frontage with Washington Street and Abernethy Road as illustrated in sheets C110 and C111 of the civil plans attached to this application as Appendix B. All other bike lanes and pedestrian access routes are identified in Chapter 4 of the proposed Development Plan submitted by the applicant.

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. Street names provided by the applicant for the GDP are only for reference. Clackamas County maintains and operates traffic signals within Oregon City. The developer of future DDPs shall provide approved plans with applicable street signs for review by the City prior to installation. All traffic control devices, such as signage, flashing lights/beacons, and traffic signals shall be designed using the MUTCD. For all new site driveways and intersections that require traffic signals, the developer of future DDPs shall provide a Traffic Signal Plan conforming to requirements of the road authority. **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. This is an application for approval of the GDP. No actual physical improvements will be constructed with approval of this request. The applicant is aware of the requirements to install street lights consistent with City regulations. Future applications for DDP approval will be accompanied by formal street lighting plans consistent with these provisions. The developer of future DDPs shall provide street lighting plans with photometric information for all internal roads, Washington Street, Abernethy Road and Redland Road. Street lighting shall conform with all City standards, specifications, codes, and policies and be approved by Portland General Electric (PGE) 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.**

E. Any new street proposed with a pavement width of less than thirty-two feet shall be processed through OCMC 16.12.013 and meet minimum life safety requirements, which may include fire suppression devices as determined by the Fire Marshall to assure an adequate level of fire and life safety. The modified street shall have no less than a twenty-foot wide unobstructed travel lane.

Finding: Not Applicable. None of the streets within the proposed GDP include a pavement width of less than thirty-two feet. Therefore, this criterion is not applicable to the proposal.

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. Alternative Street plans were provided by staff for the public street improvements and all internal streets are proposed to be private. Vegetated planter strips are provided between the sidewalk and curb or behind the sidewalk when matching an existing public street section. Interior to the site, street trees are provided along all newly proposed streets adjacent to or within the development. 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: Not Applicable. The GDP includes a street plan and does not require vehicle and pedestrian access easements in lieu of street dedication. New private streets along with primary and secondary pedestrian access routes are provided through the site to meet provisions of the TSP. The applicant will dedicate required right-of-way when the GDP is approved and after completing the proposed ½ street improvements to the adjacent rights of way. The decision maker has not approved access easements in lieu of streets nor has dedication of a street been deemed impracticable.

H. Vehicular and pedestrian easements shall allow for public access and shall comply with all applicable pedestrian access requirements.
Finding: Complies as proposed. The applicant proposes to provide pedestrian access easements to the public for private streets and pedestrian ways included within this development.

16.12.017 - Street design—Access control.
A. A street which is dedicated to end at the boundary of the development or in the case of half-streets dedicated along a boundary shall have an access control granted to the City as a City controlled plat restriction for the purposes of controlling ingress and egress to the property adjacent to the end of the dedicated street. The access control restriction shall exist until such time as a public street is created, by dedication and accepted, extending the street to the adjacent property.
Finding: Not Applicable. No new streets with dead ends are proposed for this development. Ingress and egress from adjacent properties will be from fully dedicated streets.

B. The City may grant a permit for the adjoining owner to access through the access control.
Finding: Complies as proposed. The development site is surrounded by right-of-way on three sides. The proposed GDP provides for pedestrian connections throughout the site, to the End of the Oregon Trail Interpretive Center, and to adjacent public rights-of-way.

C. The plat shall contain the following access control language or similar on the face of the map at the end of each street for which access control is required: "Access Control (See plat restrictions)."
Finding: Not Applicable. This proposal is for the approval of the GDP. No land division is proposed with this application. Therefore, this standard does not apply.

D. Said plats shall also contain the following plat restriction note(s): "Access to (name of street or tract) from adjoining tracts (name of deed document number[s]) shall be controlled by the City of Oregon City by the recording of this plat, as shown. These access controls shall be automatically terminated upon the acceptance of a public road dedication or the recording of a plat extending the street to adjacent property that would access through those Access Controls."
Finding: Not Applicable. This proposal is for the approval of the GDP. No land division is proposed with this application. Therefore, this standard does not apply.

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 civil plans attached as Appendix B, have been designed to this standard. The proposed private street into the site will match that centerline. This new private street aligns with the existing street stubbed on the north side of the development site. 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. Currently, there is not a formal landscape plan provided with this application. The applicant and design team are aware of these requirements and are not proposing any obstructions (such as fences) within the sight lines of the accesses for those entering or exiting the public right-of-way. Future DDPs are expected to satisfy these standards with their submittal. The applicant is aware of their obligation to maintain sightline visibility.

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. All proposed intersections have been designed to intersect at a right angle to other streets as illustrated in the civil plan sheets C200 through C207 within Appendix B to this application. Intersection angles to the public right-of-way were designed to be at 90 degrees except for the connection to Washington Street which is at an existing angle of 82 degrees. There is more than 100

feet of tangent at all intersections to the public right-of-way. A minimum of 25-foot curb return is proposed to be provided at all intersections to the public right-of-way.

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. The proposed street design has been designed to meet the grades and curves to the Oregon City Street Design Standards provided by the City Engineer.

16.12.022 - Street design—Development abutting arterial or collector street.
Where development abuts or contains an existing or proposed arterial or collector street, the decision maker may require: access control; screen planting or wall contained in an easement or otherwise protected by a restrictive covenant in a form acceptable to the decision maker along the rear or side property line; or such other treatment it deems necessary to adequately protect residential properties or afford separation of through and local traffic. Reverse frontage lots with suitable depth may also be considered an option for residential property that has arterial frontage. Where access for development abuts and connects for vehicular access to another jurisdiction's facility then authorization by that jurisdiction may be required.
Finding: Complies as proposed. The development site abuts three Minor Arterials, Washington Street, Abernethy Road, and Redland Road. However, vehicular access is proposed to only Washington Street and Abernethy Road via private roads. This project is not a development that is in need of protection from through or local traffic. Vehicular access connections along the site's frontage with Abernethy Road is in Clackamas County's jurisdiction and the applicant is aware that there is a need to obtain approvals from them for new access. Redland Road is under ODOT's jurisdiction, but no new access is proposed along Redland Road. To the extent that this provision applies to future DDP's the applicant will comply.

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: Complies as proposed. All new streets and frontage improvements have been designed to be compliant with the Oregon City street design requirements as informed by City staff and located to be consistent with the Oregon City TSP. DDP for development of each phase of the project will be submitted in the future. Appendix B demonstrates that all new streets and street frontages have been designed to have crosswalks which include a large vegetated or sidewalk area which extends into the street pavement as far as practicable to provide safer pedestrian crossing opportunities.

16.12.024 - Street design—Half street.
Half streets, while generally not acceptable, may be approved where essential to the development, when in conformance with all other applicable requirements, and where it will not create a safety hazard. When approving half streets, the decision maker shall first determine that it will be practical to require the dedication of the other half of the street when the adjoining property is divided or developed. Where the decision maker approves a half street, the applicant shall construct a half street with at least twenty feet of pavement width and provide signage prohibiting street parking so as to make the half street safe

until such time as the other half is constructed. Whenever a half street is adjacent to property capable of being divided or developed, the other half of the street shall be provided and improved when that adjacent property divides or develops. Access control may be required to preserve the objectives of half streets.
When the remainder of an existing half-street improvement is completed it shall include the following items: dedication of required right-of-way, construction of the remaining portion of the street including pavement, curb and gutter, landscape strip, sidewalk, street trees, lighting and other improvements as required for that particular street. It shall also include at a minimum the pavement replacement to the centerline of the street. Any damage to the existing street shall be repaired in accordance with the City's "Pavement Cut Standards" or as approved by the City Engineer.
Finding: Not Applicable. This application does not propose any half streets.

16.12.025 - Street design—Cul-de-sacs and dead-end streets.
The City discourages the use of cul-de-sacs and permanent dead-end streets except where construction of a through street is found by the decision maker to be impracticable due to topography or some significant physical constraint such as geologic hazards, wetland, natural or historic resource areas, pre-existing dedicated open space, pre-existing development patterns, arterial access restrictions or similar situation as determined by the decision maker. This section is not intended to preclude the use of curvilinear eyebrow widening of a street where needed.
A. When permitted, access from new cul-de-sacs and permanent dead-end streets shall be limited to a maximum of twenty-five dwelling units.
Finding: Not Applicable. No cul-de-sacs or dead-end streets are proposed or required for this development.

B. Cul-de-sacs and permanent dead-end streets shall include pedestrian/bicycle accessways to meet minimum block width standards as prescribed in OCMC 16.12.030.
Finding: Not Applicable. No cul-de-sacs or dead-end streets are proposed or required for this development.

C. Cul-de-sacs shall have sufficient radius to provide adequate turn-around for emergency vehicles in accordance with fire district and city adopted street standards.
Finding: Not Applicable. No cul-de-sacs or dead-end streets are proposed or required for this development.

D. Permanent dead-end streets shall provide public street right-of-way/easements sufficient to provide a sufficient amount of turn-around space complete with appropriate no-parking signs or markings to accommodate waste disposal, sweepers, emergency and other long vehicles in the form of a hammerhead or other design to be approved by the decision maker.
Finding: Not Applicable. No cul-de-sacs or dead-end streets are proposed or required for this development.

E. In the case of dead-end stub streets that will connect to streets on adjacent sites in the future, notification that the street is planned for future extension shall be posted on the stub street until the street is extended and shall inform the public that the dead-end street may be extended in the future. A dead-end street shall include signage or barricade meeting Manual on Uniform Traffic Control Devices (MUTCD).
Finding: Not Applicable. No cul-de-sacs or dead-end streets are proposed or required for this development.

16.12.026 - Street design—Alleys.
Alleys with public access easements on private property shall be provided in the Park Place and South End concept plan areas for the following districts R-5, R-3.5, R-2, MUC-1, MUC-2 and NC zones unless other permanent provisions for private access to off-street parking and loading facilities are approved by the decision maker. All alleys intended to provide access for emergency vehicles shall be a minimum width of twenty feet. The corners of alley intersections shall have a radius of not less than ten feet and shall conform to standards approved by the City Engineer. Access easements and maintenance agreements shall be recorded on affected properties.
Finding: Not Applicable. The subject site is not located within the Park Place or South End concept plan areas, nor is it or will it be zoned R-5, R-3.5, R-2, MUC-1, MUC-2, or NC. This standard does not apply.

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: Compiles as conditioned. In response to Section 17.65, the applicant has included a complete TIA with this GDP proposal. The TIA evaluated the total impacts to the transportation system from the proposed full buildout of the GDP area and identifies the facility improvements that are recommended to serve the proposed development. The applicant adopts the recommendations and the improvements proposed in the TIA. However, the applicant has not addressed city TSP projects which might be associated with this project. Redland Road and Highway 213 are Oregon Department of Transportation (ODOT) roads and must be improved per ODOT requirements if improvements are triggered during DDP review.

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 conditioned. The applicant is proposing to install pedestrian and bicycle facilities throughout the development consistent with the Oregon City street design standards and in locations called for in the Oregon City TSP as discussed earlier. The applicant is aware that future tenants and businesses within the master plan area can benefit from transit facilities located within the development. According to the TIA provided as Appendix C, "local transit service is already provided by TriMet in the immediate site vicinity by the following two bus lines:

- TriMet Line 79 (Clackamas/Oregon City): Provides service between Clackamas Town Center and Oregon City Transit Center, with bus stops conveniently located along Washington Street right at the traffic signal with the Home Depot/site access street. Weekday and weekend service is generally provided at 40-minute headways.

- TriMet Line 154 (Willamette/Clackamas Heights): Provides service that connects the Clackamas Heights area up along Holcomb Boulevard with the Oregon City Transit Center, with additional service to the West Linn area via Willamette Falls Drive. Bus stops are conveniently located along Abernethy Road at the traffic signal with Redland Road and at the west end of the property frontage. Only weekday service is provided at 1-hour headways.

Additionally, The North End master plan site is just over three-quarters of a mile from the Oregon City Transit Center located in the downtown core of Oregon City at Main Street and 11th Street. This means that visitors, residents, and employees associated with the master plan area can walk (or use Bus Route 79) to the Oregon City Transit Center and access a variety of other bus lines that serve the area. There has not been any requests from TriMet for any easements or other transit improvements at this time. If it is determined through individual DDP review that transit improvements are needed, the applicant of that DDP shall provide accommodations for transit facilities along Washington Street and Abernethy Road and the new north-south road connecting Washington Street and Abernethy Road (Market Street) such as new bus stops, bus pullouts or other transit facilities within the development. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

16.12.029 - Excavations—Restoration of pavement.
Whenever any excavation shall have been made in any pavement or other street improvement on any street or alley in the City for any purpose whatsoever under the permit granted by the engineer, it shall be the duty of the person making the excavation to restore the pavement in accordance with the City of Oregon City Public Works Pavement Cut Standards in effect at the time the permit is granted. The City Commission may adopt and modify the City of Oregon City Public Works Pavement Cut Standards by resolution as necessary to implement the requirements of this chapter.
Finding: Complies with Condition. Underground utility extensions are proposed within Washington Street. The applicant acknowledges that it is their responsibility to restore any pavement that is damaged during the excavation process. Pavement cuts or other improvement made in a City street or alley 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 530 feet and the minimum block spacing between streets is 150 feet as measured between the right-of-way centerlines except in zones GI, CI, MUE, I, and WFDD where determining the appropriate street spacing will be determined by the City Engineer. If the maximum block size is exceeded, pedestrian accessways shall be provided every 330 feet. The spacing standards within this section do not apply to alleys.
Finding: Complies as proposed.
The applicant has provided the following Response: *The proposed GDP does not include any land division that would normally be used to create new blocks; however, the GDP does identify specific uses that require large areas of land and provides for an underlying street system that creates connectivity*

between uses both on and off site. The street plan responds to several factors including the desire for a new collector level street through the GDP area, efficient and safe connections to the external street system, topographical differences between the site and the existing surrounding street network and the desire to create a mixed use, multimodal live work environment within the project area. These unique factors atop a reclaimed landfill and within a floodplain and NROD overlay make it difficult for future land divisions to comply with these block spacing standards. However, as the street plan in Appendix B demonstrates and as discussed above, takes 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 as required by this criterion. For all these reasons, the applicant has requested a modification to the block length standards under the provisions in 17.65.070 later in this narrative.

Staff concurs with the design approach for the block width along Washington Street due to the limitations presented by the existing topography of the site. The applicant has a pedestrian accessways every 330 feet along Washington Street. Internal streets are proposed to be spaced between five hundred thirty feet and one hundred fifty feet. Some streets connecting to Abernethy Road which have more than five hundred thirty feet between centerlines. For those streets, the applicant has requested a modification per 17.65.070. Staff concurs with the design approach for the block width along Abernethy Road (see findings from 17.65.070).

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. New street names will be requested later in conjunction with future street construction and site development through the DDPs and will conform to this standard. The applicant shall submit a request to the Building Division to receive approval for new any new public or private street names and addresses onsite; only approved street names shall be included on the final construction plans. **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 330 feet of frontage; or where the lack of street continuity creates inconvenient or out of direction travel patterns for local pedestrian or bicycle trips.

Finding: Complies as Proposed. Private streets are proposed to provide internal circulation of the master plan area. All proposed street improvements along the site's frontage as well those private streets proposed internally are provided with appropriate bicycle and pedestrian improvements. In addition, the master plan includes additional shared use amenities called for in the Oregon City TSP to provide safe and convenient access within the site, to surrounding streets, and to the End of the Oregon Trail Interpretive Center. The onsite bicycle and pedestrian circulation system provide for safe and convenient connections between uses within the GDP, to open spaces, the plaza, and to the surrounding streets. Chapter 4 of the proposed development application and Appendix B, includes the pedestrian

and bicycle accessways in compliance with this standard. **See findings from 16.12.030 regarding pedestrian accessway intervals.**

A. Entry points shall align with pedestrian crossing points along adjacent streets and with adjacent street intersections.
Finding: Not applicable. There are currently no adjacent pedestrian crossing points along the site's frontage.

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. None of the proposed pedestrian and bicycle accessways are obstructed within the development and are proposed with more than the minimum vertical clearance. The width of the proposed accessway that bisects the property from east to west is 22 feet, more than the 15-foot width required by this standard. Future and site specific DDPs can accommodate a 7-foot-wide paved surface and 4-foot planter strip in compliance with this criterion.

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 as conditioned. The applicant has stated that easements are not used to provide vehicular access to lots adjacent to the subject site. However, the north-south road proposed with the development is intended to provide access to the property north of the development site. The applicant shall provide an easement over all roads proposed to run through the development site and provide a covenant over them for 24-hour public access and be responsible for their future maintenance and liability. The applicant shall provide a public access easement over all private roads and shared use paths proposed to run through the development site that allows for 24-hour public access.

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 as conditioned. No specific site lighting is proposed with the GDP. The applicant is aware of this standard and the proposed street plan and accessway plan in the GDP. The developer for future DDPs shall provide pedestrian accessways with pedestrian-scale lighting with 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 will be provided per findings from 16.12.016. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

E. Accessways shall comply with Americans with Disabilities Act (ADA).
Finding: Complies with Condition. The proposed accessways are already provided with sufficient width to meet ADA with on-site sidewalks ranging between 5 and 22 feet. All future DDP applications will provide this level of design for pedestrian walkways which comply with ADA code requirements. As

designed and located on the site, each accessway or street affords a grade and width that can satisfy ADA requirements at the time of DDP approval. The developer for future DDPs shall provide public pedestrian accessways which are Americans with Disabilities Act (ADA) compliant. **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 as Proposed. The proposed on-site access ways were designed to be compliant with these standards to ensure there was adequate space in the cross sections, as shown in the preliminary high level landscape plans, to accommodate all of these planting requirements. For example, the cross section for “Market Street” provides a width of fve feet that can easily accommodate these planting requirements. The applicant for each new DDP will further refne the design to ensure that the detailed requirements of these standards are reflected in the detailed landscape plans. Trees are proposed to be provided along the accessways except where they cross private streets, drive aisles, or interfere with parking.

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 supplemental landscape design guidelines include provisions within the master plan to ensure that the accessways are differentiated from motorized traffic with different materials and require minimum hardscape, softscape, and furniture requirements. Chapter 5 of the application provides specific details related to the landscape and material requirements. If necessary, the applicant has proposed to place bollards located to ensure that there are no unauthorized motor vehicles on the accessways.

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 conditioned. The layout of the proposed development shows pedestrian and bicycle accessways with proper materials. However, some accessways have not been provided where required by other conditions within this staff report. All public accessway surfaces shall be paved with all-weather materials as approved by the City. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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. No accessways are currently proposed in the subject areas as part of this GDP.

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. The GDP does not propose any alternative accessway designs. If such designs are later requested through a DDP application, the applicant will be required to meet this standard as well as the design guidelines that are approved with this GDP.

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 has indicated that they would provide public access easements throughout the master plan area for any private street, accessway, or sidewalk. This standard will be required to be met with individual DDP plan approval. The future developer of DDPs shall provide a covenant for 24-hour public access over the pedestrian and bicycle accessways and be responsible for the future maintenance and liability. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

16.12.033 - Mobility standards.
Development shall demonstrate compliance with intersection mobility standards. When evaluating the performance of the transportation system, the City of Oregon City requires all intersections, except for the facilities identified in subsection E below, to be maintained at or below the following mobility standards during the two-hour peak operating conditions. The first hour has the highest weekday traffic volumes and the second hour is the next highest hour before or after the first hour. Except as provided otherwise below, this may require the installation of mobility improvements as set forth in the Transportation System Plan (TSP) or as otherwise identified by the City Engineer.
A. For intersections within the regional center, the following mobility standards apply:
1. During the first hour, a maximum v/c ratio of 1.10 shall be maintained. For signalized intersections, this standard applies to the intersection as a whole. For unsignalized intersections, this standard applies to movements on the major street. There is no performance standard for the minor street approaches.
2. During the second hour, a maximum v/c ratio of 0.99 shall be maintained at signalized intersections. For signalized intersections, this standard applies to the intersection as a whole. For unsignalized intersections, this standard applies to movements on the major street. There is no performance standard for the minor street approaches.
3. Intersections located on the Regional Center boundary shall be considered within the Regional Center.
B. For intersections outside of the Regional Center but designated on the Arterial and Throughway Network, as defined in the Regional Transportation Plan, the following mobility standards apply:
1. During the first hour, a maximum v/c ratio of 0.99 shall be maintained. For signalized intersections, this standard applies to the intersection as a whole. For unsignalized intersections, this standard applies to movements on the major street. There is no performance standard for the minor street approaches.
2. During the second hour, a maximum v/c ratio of 0.99 shall be maintained at signalized intersections. For signalized intersections, this standard applies to the intersection as a whole. For unsignalized intersections, this standard applies to movements on the major street. There is no performance standard for the minor street approaches.

C. For intersections outside the boundaries of the Regional Center and not designated on the Arterial and Throughway Network, as defined in the Regional Transportation Plan, the following mobility standards apply:
1. For signalized intersections:
a. During the first hour, LOS "D" or better will be required for the intersection as a whole and no approach operating at worse than LOS "E" and a v/c ratio not higher than 1.0 for the sum of the critical movements.
b. During the second hour, LOS "D" or better will be required for the intersection as a whole and no approach operating at worse than LOS "E" and a v/c ratio not higher than 1.0 for the sum of the critical movements.
2. For unsignalized intersections outside of the boundaries of the Regional Center:
a. For unsignalized intersections, during the peak hour, all movements serving more than twenty vehicles shall be maintained at LOS "E" or better. LOS "F" will be tolerated at movements serving no more than twenty vehicles during the peak hour.
D. For the intersection of OR 213 & Beavercreek Road, the following mobility standards apply:
1. During the first, second & third hours, a maximum v/c ratio of 1.00 shall be maintained. Calculation of the maximum v/c ratio will be based on an average annual weekday peak hour.
E. Until the City adopts new performance measures that identify alternative mobility targets, the City shall exempt proposed development that is permitted, either conditionally, outright, or through detailed development master plan approval, from compliance with the above-referenced mobility standards for the following state-owned facilities:
I-205/OR 99E Interchange
State intersections located within or on the Regional Center Boundaries
1. In the case of conceptual development approval for a master plan that impacts the above references intersections:
a. The form of mitigation will be determined at the time of the detailed development plan review for subsequent phases utilizing the Code in place at the time the detailed development plan is submitted; and
b. Only those trips approved by a detailed development plan review are vested.
2. Development which does not comply with the mobility standards for the intersections identified in OCMC 16.12.033 shall provide for the improvements identified in the Transportation System Plan (TSP) in an effort to improve intersection mobility as necessary to offset the impact caused by development. Where required by other provisions of the Code, the applicant shall provide a traffic impact study that includes an assessment of the development's impact on the intersections identified in this exemption and shall construct the intersection improvements listed in the TSP or required by the Code.
Finding: Complies with Condition. John Replinger, the City's contract transportation engineer, reviewed the applicant's TIA and provided the following findings and conditions of approval in his letter dated June 17, 2021 (Exhibit 4) The relevant materials consisted of the Traffic Impact Analysis Report (TIA), dated March 23, 2021. The TIA was prepared under the direction of Brian J. Dunn, PE of Kittelson & Associates.

The TIA supports the master plan for the site west of the Home Depot, south of Washington Street and north of Abernethy Road. The development will include a mix of uses including retail and residential. A key feature is a collector-level street connecting Washington Street and Abernethy Road. Four other site access points are proposed. The TIA identifies the impacts of full development of the site predicated on build-out in 2025 and appears to demonstrate the full development can be constructed if identified mitigation measures are completed. Each phase in the development will be reviewed for compliance with transportation performance measures during detailed development plan review.

Additional transportation analyses and updated traffic data may be required during detailed development plan review as specified in the conditions of approval. Later phases of the development may be delayed if mitigation measures cannot be implemented to meet existing transportation performance standards. The TIA provides a basis upon which the master plan can be evaluated and can serve as the basis for additional analysis.

I find that the TIA provides an adequate basis upon which to assess the impacts of the proposed master plan. It will serve as a basis for subsequent analyses undertaken in support of detailed development plans for individual phases of the development.

The TIA does not, however, provide for mitigation that allows the applicant to show that the system is adequate to accommodate the development, although appropriate mitigation appears feasible. The applicant will need to undertake additional analysis in connection with the detailed development plan for each phase that demonstrates adequacy of the transportation system to accommodate each phase. This will require a commitment to mitigation measures allowing applicable performance measures, including v/c and queue storage, will be met.

It is important to note that the TIA is based on the assumption that full development will occur by 2025. If development is extended beyond that date, new analyses will be required with new background traffic associated with the new completion year.

1. The applicant shall comply with the following Transportation Conditions:
    a. The applicant will be required to provide supplemental transportation analyses for each phase of the development that demonstrate the ability of the transportation system to accommodate that phase of the development. In connection with the first detailed development plan submitted by the applicant, the applicant shall obtain new AM peak, PM peak, and mid-day Saturday traffic counts and conduct new operational analyses for the following intersections:
        i. OR99E/Dunes Drive
        ii. Washington Street/Home Depot – Site Access A
        iii. OR213/Redland Road
        iv. Redland Road/Holcomb Boulevard/Abernethy Road
    b. Absent meaningful evidence to the contrary, the new counts and new analyses submitted in support of the detailed development will be presumed to supersede the traffic volume estimates and analyses submitted in the March 2021 TIA.
    c. The following are a non-comprehensive set of issues that should be addressed in additional analyses:
        i. Intersection v/c and queuing must meet applicable standards with each phase. Partial development (some phases of the development) may be permissible without mitigation depending on background traffic and the status of adopted alternative mobility targets.
        ii. Where the applicant is relying on the regional center's two-tiered v/c standard (i.e. 1.10 during the peak hour and 0.99 during the second hour), the applicant will need to provide evidence that both are met. (This is particularly applicable to OR213/Redland Road and OR99E/Dunes Drive, both of which are predicted to exceed 1.10 during a peak hour.)

iii. A phase or combination of phases that causes traffic volumes at any access point to exceed volumes in this TIA, additional analyses will be required.
iv. The applicant will need to demonstrate the adequacy of queue storage or undertake appropriate mitigation to resolve queue storage issues at the intersection of Abernethy Road/Holcomb Boulevard/Redland Road in connection with each phase.
v. The applicant will need to demonstrate that the intersection of OR213/Redland Road meets applicable v/c standards and provides adequate queue storage in connection with each phase.
vi. The applicant will need to demonstrate that the intersection of OR99E/Dunes Drive meets applicable v/c standards in connection with each phase. Applicant is encouraged to explore the potential for signal timing changes with ODOT or develop other mitigation measures with ODOT.

d. With each detailed development plan, the applicant will be required to address sight distance requirements in connection with the establishment of any new access to Washington Street or Abernethy Road, including those described in this TIA.
e. With each detailed development plan, the applicant will be required to address on-site circulation issues. These include, but are not limited to, adequacy of queue storage for drive-through service windows, maneuvering of trucks at loading areas, and maneuvering in parking lots.

f. With each detailed development plan, the applicant will work with TriMet to provide appropriate sidewalks and bus stop features on or adjacent to the site.
g. With each detailed development plan, the applicant will be required to update the predicted traffic using the intersection of OR213/Beavercreek Road. The applicant should use the updated value of $380 per peak hour trip rather than the obsolete value of $219 as used in this TIA. The developer shall participate in funding of this project according to the established formula.
h. If traffic signal warrants are met and cause the installation of a traffic signal at any of the site access points on Washington Street or Abernethy Road, the applicant will bear the full cost of signal design and installation.
i. The applicant shall participate in the funding of improvements for the intersection of OR213/Redland Road (TSP Project D79) in proportion to the development's traffic volume as a percentage of the predicted 2035 traffic volume at the intersection calculated in the TSP. The 2017 TSDC Project List shows a project cost of $10,105,000. Participation shall apply to each phase of the development.
j. The applicant's final share of project costs may be modified as necessary when the detailed development plan is approved to reflect any a modification of the development's trip generation or a change in project costs resulting from revisions to project costs associated with updates to the City's Transportation System Plan or Capital Improvement Program,

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 and two-family dwellings*	*175 ft.*
Minor Arterial Streets	*Minimum distance from a street corner to a driveway and between driveways for all uses other than detached single and two-family dwellings*	*175 ft.*
Collector Streets	*Minimum distance from a street corner to a driveway and between driveways for all uses other than detached single and two-family dwellings*	*100 ft.*
Local Streets	*Minimum distance from a street corner to a driveway and between driveways*	*25 ft.*

The distance from a street corner to a driveway is measured along the right-of-way from the edge of the intersection (on the same side of the road) right-of-way to the nearest portion of the driveway and the distance between driveways is measured at the nearest portions of the driveway at the right-of-way.
Finding: Complies as proposed. There is approximately 1,344 lineal feet of street frontage along Washington Street and approximately 1,320 lineal feet of frontage along Abernethy Road. According to the TIA, Washington Street and Abernethy Road are both classified as a Minor Arterial. The Oregon City Municipal Code requires that the minimum driveway spacing along a Minor Arterial is 175 feet. As proposed within the GDP, the three new site accesses proposed along Washington Street will be positioned at equal spacings of approximately 500 feet relative to the signalized intersection at Washington Street/Home Depot-Site Access "A". The two new site accesses proposed along Abernethy will be approximately 1,000 feet apart, with the closest driveway at approximately 750 feet west of the signalized Abernethy Road/Redland Road intersection. Accordingly, the access spacing proposed within the GDP will comply with the minimum driveway spacing standards above.

B. All detached single and two family dwellings shall have driveways which meet the minimum distance 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 as approved by the City Engineer.
Finding: Not applicable. Detached single and two family dwellings have not been proposed and are not allowed per the zoning designation the development property.

C. Nonresidential or multi-family residential use driveways that generate high traffic volumes as determined by a traffic analysis shall be treated as intersections and shall adhere to requirements of OCMC 16.12.020.
Finding: Complies as Proposed. The development has proposed driveways will comply with the requirements of OCMC 16.12.020 which requires them to intersect with adjacent streets at right angles. This standard is met.

D. 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 for any single-family attached or detached residential property, duplex, 3- 4 plex, or property developed with an ADU or internal conversion with multiple frontages, unless otherwise approved by the City Engineer.

Finding: Complies as Proposed. The proposal would provide four new driveways along Washington Street and two new driveways from along Abernethy Road. The proposed driveways are justified by the size of the project site and the amount of traffic expected to be generated at build-out. The applicant is seeking approval of the additional driveways through modification provisions of OCMC Subsection 16.12.013.

E. 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 whenever possible 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.
Finding: Complies as Proposed. The site fronts three streets: Washington Street, Abernethy Road, and Redland Road. All three streets are classified as Minor Arterials. The GDP proposes vehicle access from both Washington Street and Abernethy Road. A modification has been requested above under 16.12.013 to allow the site to be served with more than one driveway. Both streets share the same classification in the Transportation System Plan. The additional driveways will not create a significant traffic safety hazard by leaving sufficient distance between driveways to avoid any safety concerns. Each driveway is designed to meet the design specifications of Table 16.12.035.A.

F. 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	*10 feet*		*24 feet*
Duplexes	*12 feet*		*24 feet*
3-4 Plexes	*12 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*

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 as proposed. As demonstrated on the attached site plans (sheets C200 through C207) within the civil sheets provided as Appendix B, the proposed driveways serving the site along Washington Street include two 24-foot driveways from Washington Street into the parking garages and

a private street connection for “4th Street”. The proposed driveways serving the site along Abernethy Road include two private street connections for “Market Street” and “4th Street”. The proposed widths of all new driveways fall between the minimum and maximum driveway approaches for commercial, industrial, office, institutional, mixed use, and nonresidential sites, as established in Table 16.12.035.D. Two-way traffic circulation is proposed in the parking lot design.

G. 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.

H. For all driveways, the following standards apply.
1. Each new or redeveloped curb cut shall have an approved concrete approach or asphalted street connection where there is no concrete curb and a minimum hard surface for at least ten feet back into the property as measured from the current edge of sidewalk or street pavement to provide for controlling gravel tracking onto the public street. The hard surface may be concrete, asphalt, or other surface approved by the City Engineer.
2. Any driveway approach built within public right-of-way shall be built and permitted per City requirements as approved by the City Engineer.
3. No driveway with a slope of greater than fifteen percent shall be permitted without approval of the City Engineer.
Finding: Complies as proposed. The proposed driveways can satisfy these standards as demonstrated on the attached site plans (sheet C200 through C207). The project engineer proposes asphalted approaches for each driveway, adjacent to the existing adjoining roadway. The driveways are not provided on slopes greater than fifteen percent. Furthermore, because the driveway approaches are constructed within the public right-of-way, the applicant acknowledges that they must be constructed to the City’s standards and approved by the City Engineer. The driveways were designed in compliance with City standards by a licensed civil engineer.

I. 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.*

Finding: Complies with Condition. There will be some public utilities within the development property. The developer for future DDPs shall provide public utility easements for the public sanitary sewer mains and water main identified by subsequent conditions of approval. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

2. *Specific 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 right of ways 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 5 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.*

The applicant has proposed to Utility easements with individual DDP approvals and based on locations provided within the final engineering plans. The developer for future DDPs shall provide a 10-foot-wide public utility easement (PUE) along all property lines fronting existing or proposed public right-of-ways or provide, at a minimum, 10-foot-wide clear space between buildings and the public sidewalk**.** The developer for future DDPs shall also provide a 10-foot-wide public utility easement (PUE) adjacent the north-south public access road running through the development site which extends from the Home Depot site and connects to Abernethy Road. In the event that the provision of a public utility easement would create a conflict with achieving compliance with other city codes, the location and width may be adjusted by the City Engineer. In such cases, the applicant shall obtain written acceptance from all

utilities for the location and width proposed for said public utility easement. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

B. Unusual Facilities. Easements for unusual facilities such as high voltage electric transmission lines, drainage channels and stormwater detention facilities shall be adequately sized for their intended purpose, including any necessary maintenance roads. These easements shall be shown to scale on the preliminary and final plats or maps. If the easement is for drainage channels, stormwater detention facilities or related purposes, the easement shall comply with the requirements of the Public Works Stormwater and Grading Design Standards.
Finding: Complies as proposed. The applicant has proposed to provide easements for unusual facilities with DDP approval and include any required maintenance roads.

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. Abernethy Creek runs along the east edge of the site and another natural resource area is located in the northwest edge of the site. Easements for these areas have been proposed to be provided to the responsible agency with DDP approval. No element proposed under this GDP would preclude or inhibit conformance with this standard at the time of DDP review and approval. **See findings from Chapter 17.49 of this report for additional requirements.**

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 conditioned. The applicant has stated that easements are not used to provide vehicular access to lots adjacent to the subject site. However, the north-south road proposed with the development is intended to provide access to the property north of the development site. The future developer of DDPs shall provide an easement over all roads proposed to run through the development site and provide a covenant over them for 24-hour public access and be responsible for their future maintenance and liability. The future developer of DDPs shall provide a public access easement over all private roads proposed to run through the development site that allows for 24-hour public access. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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. The applicant is aware that the Community Development Director may require easements to protect any significant natural features located within the subject site. The most

likely candidate for this protection is the Abernethy Creek riparian area. The applicant will comply with this standard at the appropriate time as determined by the applicant and the City.
See findings from Chapter 17.49 of this report for additional requirements.

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. Commencement of improvement work is further restricted by requirements of section 16.12.014. **See section 16.12.014 of this report for associated findings.**

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 applicant acknowledges that the improvements must be inspected and approved by the City Engineer and that the expenses incurred thereby shall be their responsibility. Improvements constructed by the future developer of DDPs shall be constructed under the inspection and approval of the City. Expenses incurred thereby shall be borne by the applicant and paid prior to final approval. The applicant's project engineer also shall inspect construction. Inspection fees are set by City resolution, see section 16.12.014 of this report. **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: Compiles with Condition. See findings from section 17.47, 17.49 of this report.

D. Underground utilities, waterlines, sanitary sewers and storm drains installed in streets shall be constructed prior to the surfacing of the streets. Stubs for service connections for underground utilities, such as, storm, water and sanitary sewer shall be placed beyond the ten-foot wide public utility easement within private property as defined in OCMC 16.12.85.A.2.
Finding: Compiles with Condition. Underground utilities, waterlines, sanitary sewers and storm drains proposed to be installed in streets shall be constructed prior to the surfacing of the streets. Stubs for service connections for underground utilities, such as, storm, water and sanitary sewer shall be placed beyond the ten-foot-wide public 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: The applicant acknowledges that physical and digital copies of as-built construction documents must be fled with the City Engineer upon completion of improvements on site. However, the GDP does not involve any construction activities on site. The as-builts will be provided for utilities that are constructed with approved DDP's. The future developer of DDPs shall provide As-built drawings to 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 acknowledges that the City Engineer may regulate the hours of construction and access routes for construction equipment to minimize impacts on adjoining residences or neighborhoods. Permitted hours of construction shall be set forth by the City Engineer in the pre-construction meeting. **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 as proposed. The applicant acknowledges the required contributions to the public transportation system adjacent to the project and has proposed to construct frontage improvements along the sites frontage as well as several projects listed within the TSP as described previously. Preliminary utility plans have been provided with the GDP to demonstrate that the proposed master plan can comply with City Standards for each of these facilities. See civil sheets C110, C111, and C400 thru C407 for specific details. All streets adjacent to the proposed development are being improved to provide pedestrian, vehicular, and bicycle access to the development and connecting to the surrounding streets and properties. This includes sidewalks, bike lanes, street lighting, and the required paved street width and right-of-way dedication. Stormwater facilities are shown with the preliminary public improvement plans.

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 as proposed. The development has proposed construction of storm mains along Washington Street, Abernethy Road and internal roads to support future connection of upgradient properties to the public stormwater system. See findings from section 13.12 for the design of stormwater management facilities to serve the development.

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 GDP includes a preliminary utility plan to serve the site by connections to existing sanitary sewer main within the street that currently serves The Home Depot and a Tri-City sanitary sewer truck within Abernethy Road. Sanitary facilities are proposed to be extended through the site to feed all proposed structures within the master plan. All sewer mains within the development site shall be privately owned and maintained except for the first fifty feet of all sanitary sewer mains connecting to the Tri-City sewer trunk which shall be Oregon City sanitary sewer mains and terminate at an Oregon City sanitary sewer manhole. The developer shall provide capacity calculations to show that the proposed sanitary sewer system can support full buildout of the development site. **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. As demonstrated on the preliminary utility plan provided in civil sheets (C400 thru C407) and attached as Appendix B, the project will extend an existing public water line located within the street serving The Home Depot and loop it through the site to serve all the proposed buildings within the master plan. The first phase of the GDP shall extend the existing public water line located within the street serving The Home Depot and loop it through the site to the existing water main within Abernethy Road and this water main shall be public. The public main shall be protected from potential landfill contaminants in a manner approved by Oregon City. All other mains connecting to this water main shall be private. The developer shall provide capacity calculations to show that the proposed water system can support full buildout of the development site. The future developer of DDPs shall upsize all water mains along the frontage of Abernethy Road to be 12-inch in diameter. **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: Not applicable. This application does not include a request for subdivision approval. This standard does not apply. No construction is proposed with the masterplan. Future DDP will be require to provide at least one bench mark.

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 1.0 acre of land area shall not be required to relocate existing overhead utilities unless required by the franchise utility.
c. Properties with less than 200 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 5 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 10 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. The applicant acknowledges this requirement. The project will locate new franchise utilities underground and extend them through the site. Actual utility locations will be coordinated with the utility companies and constructed with approval of individual DDPs. The future developer of DDPs shall place all new franchise utilities underground. The future developer of DDPs shall relocate all existing overhead utilities adjacent to the property frontage underground unless deemed infeasible by the City and franchise utilities. **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: Not Applicable. The public improvements associated with the GDP have been designed to City standards. The need to oversize any public facilities for this project has not been identified by staff.

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 development.

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.

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: 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.

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: There are no land divisions proposed with the GDP. This standard is not applicable. Public improvements will be constructed with individual approval of DDP's for the site. **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 as conditioned. The applicant acknowledges that the public improvements must be constructed according to the approved final engineering plans and all applicable requirements of the Oregon City Municipal Code. Those plans will be fled with individual requests for DDP approval for the site. Public improvements associated with each DDP are required to be completed and accepted by the City Engineer. Public improvements shall be constructed according to approved final engineering plans prior to occupancy. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

16.12.110 -Public improvements—Financial guarantees.
A. To ensure construction of required public improvements, the applicant shall provide the City with a performance guarantee in accordance with OCMC 17.50.140.
Finding: Please see findings from Section17.50.140 of this report.

B. After satisfactory completion of required public improvements and facilities, all public improvements not constructed by the City, shall be maintained and under warranty provided by the property owner or developer constructing the facilities until the City accepts the improvements at the end of the warranty period as prescribed in OCMC 17.50.141.
Finding: Please see findings from Section17.50.141 of this report.

16.12.120 Waiver of Remonstrance
The review authority may require a property owner to sign a waiver of remonstrance against the formation of and participation in a local improvement district where it deems such a waiver necessary to provide needed improvements reasonably related to the impacts created by the proposed development. To ensure compliance with this chapter, the review authority may require an applicant to sign or accept a legal and enforceable covenant, contract, dedication, easement, performance guarantee, or other document, which shall be approved in form by the City Attorney.
Finding: Complies with Condition. The applicant acknowledges the City's authority to require the property owner to sign a waiver of remonstrance against the formation of and participation in a local improvement district. The property owner(s) shall sign a Restrictive Covenant Non-Remonstrance Agreement for the purpose of making storm sewer, sanitary sewer, water or street improvements in the future that benefit the property, and all fees associated with processing and recording the Non-Remonstrance Agreement shall be paid prior to occupancy. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

CHAPTER 17.41 – TREE PROTECTION, PRESERVATION, REMOVAL AND REPLANTING STANDARDS

17.41.020 - Tree protection—Applicability.
1. 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.
2. For public capital improvement projects, the City Engineer shall demonstrate compliance with these standards pursuant to a Type I process.
3. 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.

4. 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.
5. A tree that has been planted pursuant to this section shall remain or shall be replaced with a new tree if removed.

Finding: Not Applicable. This is an application for approval of The North End master plan GDP, no development is being proposed for approval with this application. No tree removal is proposed with this request, and this standard is not expressly applicable to the overall GDP review. It is noted, however that this site is a reclaimed landfill and there are very few trees on the site outside of the resource areas. Requests for individual DDP's will be subject to the requirements of this chapter and be required to demonstrate conformance with these standards under a site-specific development plan conditions of approval. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

CHAPTER 17.42 – FLOOD MANAGEMENT OVERLAY DISTRICT

17.42.020 - Applicability.
A.This chapter shall apply to development in the flood management overlay district, which may also be referred to as the "floodplain overlay district" in this code. The flood management overlay district includes all areas of special flood hazards and all flood management areas within the city. The overlay district restricts the uses that are allowed in the base zone by right, with limitations, or as provisional uses.
B. The flood management areas which have been mapped include the following locations:
1. Land contained within the one hundred-year floodplain, flood area and floodway as shown on the Federal Emergency Management Agency flood insurance maps dated June 17, 2008, including areas of special flood hazard pursuant to Section 17.42.040 and the area of inundation for the February 1996 flood; and
2. Lands that have physical or documented evidence of flooding within recorded history based on aerial photographs of the 1996 flooding and/or the water quality and flood management areas maps.
C. The standards that apply to the flood management areas apply in addition to state or federal restrictions governing floodplains or flood management areas.
Finding: Applies. The North End master plan is located within the Flood Management Overlay Zone as illustrated in the figure 2.3, therefore, these standards are applicable to future development requested with DDP approval. For the purposes of this request, building locations within the GDP have been proposed based on the 1996 flood inundation lines also illustrated below so that any flooding that can be expected on site in a similar event will primarily only affect the proposed parking areas within the master plan area. For example, the areas that were flooded in 1996 along Abernethy Road are proposed to be developed with surface parking lots, and the areas within that were inundated along Washington Street will be developed with mixed-use housing that is located on top of three proposed parking structures. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**



Figure 6 Flood Overlay District.

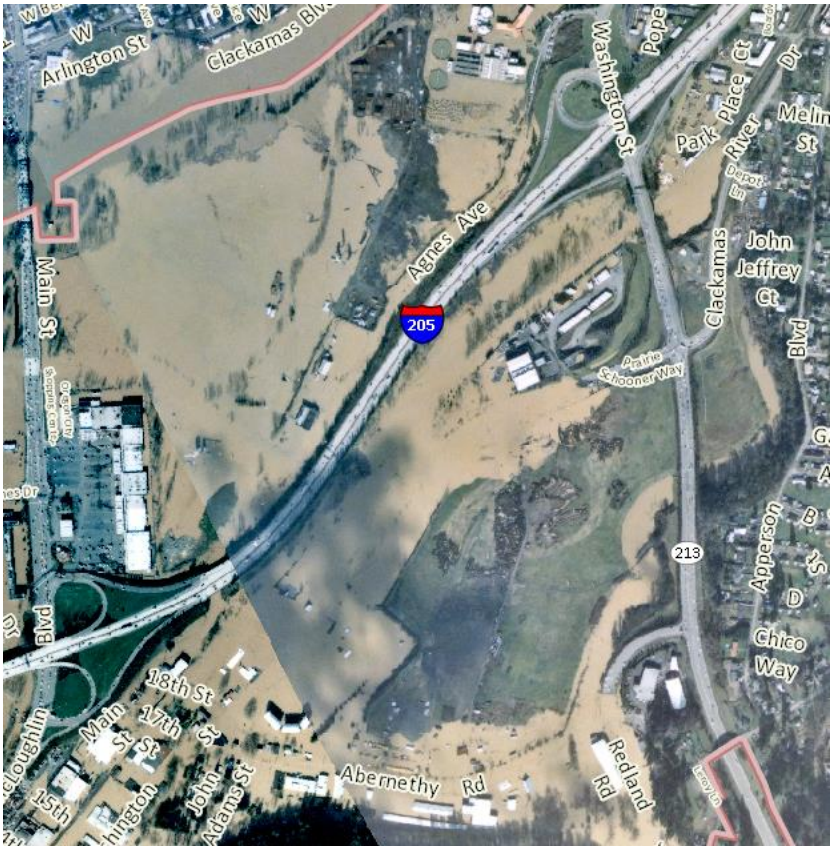


Figure 7 1996 Flood Inundation

17.42.040 - Compliance.

No structure or land shall hereafter be constructed, located, extended, converted or altered without full compliance with the terms of these floodplain regulations and other applicable regulations. Violations of the provisions of this chapter by failure to comply with any of its requirements (including violations of conditions and safeguards established in connection with conditions) shall constitute a civil infraction. Any person who violates this chapter or fails to comply with any of its requirements shall be subject to the enforcement procedures of this code per OCMC 1.20 Civil Infractions and 1.24 Code Enforcement. Nothing herein contained shall prevent the city from taking such other lawful action as is necessary to prevent or remedy.

Finding: Complies as Proposed/Conditioned. The uses proposed within the GDP are all uses that are either outright allowed in the zone or conditionally allowed within the MUD zone district in compliance with this criterion. The GDP does not propose any of the prohibited uses within the master plan area. The preliminary grading illustrated in civil sheets C300 thru C-307, attached to the staff report illustrate that based on the grading plan and the proposed development in the GDP, there will be no net increase of fill within the floodplain on site.

The Cut/Fill balance exhibits are also provided within the preliminary stormwater report. The GDP as submitted does not permit any development that would otherwise be prohibited by the floodplain overlay zone. The remaining sections of this Chapter include standards that are specific to construction, materials, and methods. The GDP does not provide a level of detail to demonstrate compliance with these standards. The applicant recognizes that all future development within the flood management overlay zone is subject to these requirements and will ensure that they are designed to meet these specific approval criteria with the submission of individual DDP's. Staff find that applicant has submitted a development approach that appears to meet the Flood Overlay District's criteria, However, future DDPs affected by the Flood Overlay District are required to apply for separate DDP submittals to show that each application can comply individually with Flood Overlay District requirements, including demonstrating that the site can show balanced cut and fill within each application. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

CHAPTER 17.44 – GEOLOGIC HAZARDS

17.44.025 *- When required; regulated activities; permit and approval requirements.*

No person shall engage in any of the following regulated activities within the adopted Oregon City Geologic Hazards Overlay Zone as defined in section 17.04.515 of the Oregon City Municipal Code without first obtaining permits or approvals as required by this chapter:

A. Installation or construction of an accessory structure greater than 500 square feet in area;

B. Development of land, construction, reconstruction, structural alteration, relocation or enlargement of any building or structure for which permission is required pursuant to the Oregon City Municipal Code;

C. Tree removal on slopes greater than 25 percent where canopy area removal exceeds 25 percent of the lot.

D. Excavation which exceeds two feet in depth, or which involves twenty-five or more cubic yards of volume;

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 North End Master Plan is a proposed master plan to redevelop the former Rossman municipal waste Landfill with a mixed-use development. The General Development Plan (GDP) application proposes a 62-acre mixed use development. The fill slopes around the perimeter of the landfill are included in the geologic hazard overlay zone due to steep slopes. The application proposes numerous structures meeting Criteria A. The proposed develop involves grading and disturbance to the site which meets criteria B. The proposed develop also involves cut and fill in excess of two feet in depth and 25 cubic yards of volume which meets criteria D. Therefore, the provisions of Chapter 17.44 are applicable. The GDP provides a framework for future development and additional permitting and geologic hazards review of detailed development plans will be required under this framework.

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 a land use permit application, review shall occur in the manner established in Chapter 17.50 for review of land use decisions.

B. Where the development is part of a limited land use permit application, review shall occur in the manner established in Chapter 17.50 for review of limited land use decisions.

C. Where the development is solely part of a grading permit or building permit, the city engineer may allow review to occur in the manner established in Title 15, Chapters 15.04 and 15.48 if the application meets Section 17.44.060 development standards.

D. For any other proposed development not otherwise subject to review as a land use or limited land use permit application, review shall occur in the manner established in Chapter 17.50 for limited land use decisions.

Finding: Complies proposed. The development is undergoing review per the applicable chapters of the Oregon City Municipal Code prior to issuance of building or site development permits.

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 twenty-five cubic yards of volume;

C. Structural alteration of any structure of less than five hundred square feet that does not involve grading as defined in this chapter;

D. Installation, construction, reconstruction, or replacement of utility lines in city right-of-way, or public easement, not including electric substations;

E. The removal or control of noxious vegetation;

F. 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 B of this section, the following requirements apply to all development proposals subject to this chapter:
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);

Finding: Complies as conditioned. The application has provided the applicable information for 17.44.050.A.1 but additional information will be required due to the underlying landfill.
Prior to City construction plan approval or issuance of a grading or building permit associated with the proposed development: The applicant shall submit a final geotechnical engineering report to DEQ, the City's Building Official, and the City's Public Works Engineering Development Services for review and approval. The final Geotechnical Engineering Investigation Report shall document the following:
a. A comprehensive subsurface investigation,
b. Settlement calculations and assumed material properties,
c. Foundation recommendations and capacity calculations,
d. Pavement and utility construction and maintenance recommendations,
e. Floor slab and other flat concrete construction and maintenance recommendations,
f. Surcharge recommendations including dimension and time criteria,
g. Recommendations for applicable safety measures needed to minimize the risks of excessive differential building settlement, uneven settlements of the non-building areas affecting surface drainage, building and site settlements affecting gravity flow sewers, and methane accumulation and migration.
h. Recommendations for development to be in compliance with applicable International Building Codes and Oregon Structural Specialty Code.
i. Evaluation of impacts to the Redland Road and Highway 213 embankment from the site development and appropriate recommendations to mitigate for impacts. The City's geotechnical engineer shall provide a peer review of the final Geotechnical Engineering Report at the applicant's cost. The applicant shall have all comments and requirements from DEQ and the City addressed in the final report as applicable.

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

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

3) Comprehensive information about site topography;

Finding: Complies as Proposed. The application has provided all of the information listed in 17.44.050.A.3

4) Opinion as to the adequacy of the proposed development from an engineering standpoint;

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

5) Opinion as to the extent that instability on adjacent properties may adversely affect the project;

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. (Also written in the finding for *17.44.050.A.4.*) **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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

7) Conclusions regarding the effect of geologic conditions on the proposed development, tree removal, or grading activity;

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. (Also written in the finding for *17.44.050.A.4.*) **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

8) Specific requirements and recommendations for plan modification, corrective grading, and special techniques and systems to facilitate a safe and stable site;

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. (Also written in the finding for *17.44.050.A.4.*) **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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. Subdrainage 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.

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. (Also written in the finding for *17.44.050.A.4.*) **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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 manmade 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. Scaled drawings provide preliminary grading for the GDP. Future Detailed Development Plans shall provide scaled drawings showing cross sections in locations with greatest proposed cuts and/or fill and provide approximate volume 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.**

11) For properties greater than 1 acre, a preliminary hydrology report, prepared by a suitably qualified and experienced hydrology expert, addressing the effect upon the watershed in which the proposed development is located; the effect upon the immediate area's stormwater drainage pattern of flow, the impact of the proposed development upon downstream areas and upon wetlands and water resources; and the effect upon the groundwater supply.

Finding: Complies with Condition. The applicant shall provide a hydrology report that addresses the effect of the stormwater outfall upon the local watershed. The future developer of DDPs shall a hydrology report to address potential impact of the proposed development on wetlands, water resources and groundwater supply. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

17.44.050.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

17.44.050.B.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 as Proposed. The application has provided all of the information listed in 17.44.050.B.2

17.44.050.B.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. The developer's geotechnical engineer shall respond to written comments provided by the City's peer reviewer and the City's peer reviewer shall agree with geotechnical evaluation/investigation report submitted for the development prior issuance of building permit. Costs associated with geologic hazard review of the land use application by the City's geotechnical engineer shall be paid by the developer. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

17.44.050.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.

17.44.060.A *All developments shall be designed to avoid unnecessary disturbance of natural topography, vegetation and soils. To the maximum extent practicable as determined by the review authority, tree and ground cover removal and fill and grading for residential development on individual lots shall be confined to building footprints and driveways, to areas required for utility easements and for slope easements for road construction, and to areas of geotechnical remediation.*

Finding: Complies as Proposed. Slopes within the proposed master plan development are existing fill slopes and natural topography is limited.

17.44.060B *All grading, drainage improvements, or other land disturbances shall only occur from May 1 to October 31. Erosion control measures shall be installed and functional prior to any disturbances. 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 in consultation with the project geotechnical 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.
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 shall be installed and functional prior any soil disturbance. Temporary protective fencing shall be established adjacent to all trees and vegetation designated for protection which are within five feet of a construction area prior to any soil disturbance. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

17.44.060.C *Designs shall minimize the number and size of cuts and fills.*
Finding: Complies with Condition. The detailed development plans shall include final grading plans and sections showing proposed cuts and fills relative to the existing ground and landfill. Settlement and slope stability evaluation is required for all cuts and fills. Settlement analysis shall demonstrate surcharge loads will provide satisfactory long-term performance of proposed streets and infrastructure. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

17.44.060.D *Cut and fill slopes, such as those for a street, driveway accesses, or yard area, greater than seven feet in height (as measured vertically) shall be terraced. Faces on a terraced section shall not exceed five feet. Terrace widths shall be a minimum of three feet and shall be vegetated. Total cut and fill slopes shall not exceed a vertical height of fifteen feet. Except in connection with geotechnical remediation plans approved in accordance with the chapter, cuts shall not remove the toe of any slope that contains a known landslide or is greater than twenty-five percent slope. The top of cut or fill slopes not utilizing structural retaining walls shall be located a minimum of one-half the height of the cut slope from the nearest property line.*
Finding: Complies with Condition. Within Geologic Hazard areas identified by Oregon City, future detailed development plans shall include terraced slopes or retaining walls for slopes or walls greater than seven vertical feet. The terraced slope or wall shall have a maximum vertical height of five feet and a minimum vegetated width of 3 feet between. Total cut and fill slopes shall not exceed a vertical height of fifteen feet. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

17.44.060.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.*
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.**

17.44.060.F *Retaining walls shall be constructed in accordance with the Oregon Structural Specialty Code adopted by the State of Oregon.*
Finding: Complies with Condition. Construction of retaining walls over 4 feet in height and terraced walls which create total cut or fill greater than 4 feet in height shall be designed by a licensed engineer qualified for the design of such walls. The developer shall submit engineered stamped calculations for proposed retaining walls showing compliance with applicable building codes. The developer shall provide sliding, overturning, bearing capacity, and global stability design calculation for free standing retaining walls over 4 feet in height in accordance with the Oregon Structural Specialty Code. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

17.44.060.G *Roads shall be the minimum width necessary to provide safe vehicle and emergency access, minimize cut and fill and provide positive drainage control. The review authority may grant a variance from the City's required road standards upon findings that the variance would provide safe vehicle and emergency access and is necessary to comply with the purpose and policy of this chapter.*
Finding: Complies as Proposed. The proposed roads shall meet the standards in OCMC 16.12

17.44.060.H *Density shall be determined as follows*

1) 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;

2) 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;

3) 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.

Finding: Complies as Proposed. Slopes greater than 25% within areas proposed for development are artificial fill slopes created to contain the landfill. The preliminary development plan shows the slopes will be regraded and supported by structures.

17.44.060.I *For properties with slopes of twenty-five to thirty-five percent between grade breaks:*

1) For those portions of the property with slopes of twenty-five to thirty-five percent, 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 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 for the placement of a housing unit shall exceed a maximum vertical height of 15 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 as Proposed. Slopes greater than 25% within areas proposed for development are artificial fill slopes created to contain the landfill. Final detailed development plans will be required to address the proposed walls structures and stability.

17.44.060.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 developer shall retain the services of a licensed geotechnical engineer to conduct inspections prior to and during construction activities which involve removal or addition of vegetation, building structures, retaining walls or earth. The geotechnical engineer shall provide reports to confirm that standards from Section 17.44.100 are met. The geotechnical engineer record shall observe all excavations and geologic conditions exposed during construction and document that the conditions are consistent with the conditions assumed in the geotechnical hazard evaluation. If the conditions are different than assumed in the preliminary report, the effect of the new observations shall be evaluated and mitigation provided as required. Additional geologic hazards review may be required at the City's discretion. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

17.44.060.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 with Condition. The developer's geotechnical engineer shall respond to written comments provided by the City's peer reviewer and the City's peer reviewer shall agree with geotechnical evaluation/investigation report submitted for the development prior issuance of building permit. 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 findings for 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.**

17.44.060.L *The review authority shall determine whether the proposed methods of rendering a known or potential hazard site safe for construction, including proposed geotechnical remediation methods, are feasible and adequate to prevent landslides or damage to property and safety. The review authority shall consult with the City's geotechnical engineer in making this determination. Costs for such consultation shall be paid by the applicant. The review authority may allow development in a known or potential hazard area as provided in this chapter if specific findings are made that the specific provisions in the design of the proposed development will prevent landslides or damage. The review authority may impose any conditions, including limits on type or intensity of land use, which it determines are necessary to assure that landslides or property damage will not occur.*

Finding: Complies with Condition. The developer's geotechnical engineer shall respond to written comments provided by the City's peer reviewer and the City's peer reviewer shall agree with geotechnical evaluation/investigation report submitted for the development prior issuance of building

permit. 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 the finding for 17.44.060.K) **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

17.44.070 *Access to Property.*

A. Shared private driveways may be required if the city engineer or principal planner determines that their use will result in safer location of the driveway and lesser amounts of land coverage than would result if separate private driveways are used.

B.Innovations in driveway design and road construction shall be permitted in order to keep grading and cuts or fills to a minimum and to achieve the purpose and policy of this chapter.

C. Points of access to arterials and collectors shall be minimized.

D. The city engineer or principal planner shall verify that adequate emergency services can be provided to the site.

Finding: Complies as Proposed. The GDP shows multiple access points and internal streets appropriate for the proposed multi-use development.

17.44.080 *Utilities.*

All new service utilities, both on-site and off-site, shall be placed underground and under roadbeds where practicable. Every effort shall be made to minimize the impact of utility construction. Underground utilities require the geologic hazards permitting and review prescribed herein.

Finding: Complies with Condition. The placement of existing utilities underground within areas of landfill and geologic hazards shall be reviewed and approved by the City. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

17.44.090 *Stormwater Drainage.*

The applicant shall submit a permanent and complete stormwater control plan. The program shall include, but not be limited to the following items as appropriate: curbs, gutters, inlets, catch basins, detention facilities and stabilized outfalls. Detention facilities shall be designed to City standards as set out in the City's drainage master plan and design standards. The review authority may impose conditions to ensure that waters are drained from the development so as to limit degradation of water quality consistent with Oregon City's Title III section of the Oregon City Municipal Code Chapter 17.49 and the Oregon City Public Works Stormwater Management Design Manual and Standards Plan or other adopted standards subsequently adopted by the City Commission. Drainage design shall be approved by the city engineer before construction, including grading or other soil disturbance, has begun.

Finding: Complies with Condition. The GDP provided a Stormwater Management Report. Final development plans will require the stormwater plans to be refined for the final proposed development. The developer's geotechnical consultant shall review the finalized erosion control plan, construction plans, and stormwater report associated with the development and certify that they are consistent with the conclusions and recommendations stated in their geologic assessment and geotechnical report. The city's geotechnical consultant shall review the finalized erosion control plan, construction plans and stormwater report and the cost of review shall be paid by the developer. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

17.44.100. *Construction Standards.*
During construction on land subject to this chapter, the following standards shall be implemented by the developer:
17.44.100.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 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 findings from 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.**

17.44.100.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.*
Finding: See findings from chapter 15.48.

17.44.100.C *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 99-1013).*
Finding: Not applicable. The application is for approval of the GDP and does not request approval for any actual construction activities. Therefore, a detailed erosion control plan or permit is not required. The applicant has proposed to provide applicable erosion control plan per requirements of the OCMC with subsequent DDP applications.

17.44.100.D *All disturbed vegetation shall be replanted with suitable vegetation upon completion of the grading of the steep slope area.*
Finding: Not applicable. The application is for approval of the GDP and does not request approval for any actual construction activities. Therefore, a detailed erosion control plan or permit is not required. The applicant has proposed to provide applicable erosion control plan per requirements of the OCMC with subsequent DDP applications.

17.44.100.E *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. Areas identified as geologic hazard by the city shall have existing vegetative cover maintained to the maximum extent practicable. **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.F *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.*

Finding: See findings from chapter 17.49 of this report.

17.44.100.G *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: Not applicable. The application is for approval of the GDP and does not request approval for any actual construction activities. Therefore, a detailed erosion control plan or permit is not required. The applicant has proposed to provide applicable erosion control plan per requirements of the OCMC with subsequent DDP applications.

17.44.100.H *All newly created lots, either by subdivision or partition, shall contain building envelopes with a slope of 35% or less.*
Finding: Complies as Proposed. The GDP does not show building envelopes with slopes of 35% or greater.

17.44.100.I *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.*
Finding: Complies with Condition. The developer shall retain the services of a licensed geotechnical engineer to conduct inspections prior to and during construction activities which involve removal or addition of vegetation, building structures, retaining walls or earth. The geotechnical engineer shall provide reports to confirm that standards from Section 17.44.100 are met. The geotechnical engineer record shall observe all excavations and geologic conditions exposed during construction and document that the conditions are consistent with the conditions assumed in the geotechnical hazard evaluation. If the conditions are different than assumed in the preliminary report, the effect of the new observations shall be evaluated and mitigation provided as required. Additional geologic hazards review may be required at the City's discretion. (Also written in findings for 17.44.060.J) **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.J *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.*
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. (Also written in findings from 17.44.060.E) **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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.*

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: Complies with Condition. Conditions contained in this report shall not 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. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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.
Finding: Not applicable. The application is for approval of the GDP and does not request approval for any actual construction activities. Therefore, a detailed erosion control plan or permit is not required. The applicant has proposed to provide applicable erosion control plan per requirements of the OCMC with subsequent DDP applications. **The entirety of this chapter is not applicable for the GDP.**

CHAPTER 17.34 MUD MIXED USE DOWNTOWN DISTRICT

17.34.020 - Permitted uses.
Permitted uses in the MUD district are defined as:
A. Banquet, conference facilities and meeting rooms;
B. Bed and breakfast/boarding houses, hotels, motels, and other lodging facilities;
C. Child care centers and/or nursery schools;
D. Indoor entertainment centers and arcades;
E. Health and fitness clubs;
F. Medical and dental clinics, outpatient; infirmary services;
G. Museums, libraries and cultural facilities;
H. Offices, including finance, insurance, real estate and government;
I. Outdoor markets, such as produce stands, craft markets and farmers markets that are operated on the weekends and after six p.m. during the weekday;
J. Postal services;
K.. Repair shops, for radio and television, office equipment, bicycles, electronic equipment, shoes and small appliances and equipment;
L. Multifamily residential, 3-4 plex residential;
M. 1 or 2 units in conjunction with a nonresidential use provided that the residential use occupies no more than 50% of the total square footage of the development;
N. Restaurants, eating and drinking establishments without a drive through;
O. Services, including personal, professional, educational and financial services; laundry and dry-cleaning;
P. Retail trade, including grocery, hardware and gift shops, bakeries, delicatessens, florists, pharmacies, specialty stores provided the maximum footprint of a freestanding building with a single store does not exceed sixty thousand square feet (a freestanding building over sixty thousand square feet is allowed as long as the building contains multiple stores);
Q. Seasonal sales;
R. Residential care facilities, assisted living facilities; nursing homes and group homes for over fifteen patients licensed by the state;
S. Studios and galleries, including dance, art, photography, music and other arts;

T. Utilities: Basic and linear facilities, such as water, sewer, power, telephone, cable, electrical and natural gas lines, not including major facilities such as sewage and water treatment plants, pump stations, water tanks, telephone exchanges and cell towers;
U. Veterinary clinics or pet hospitals, pet day care;
V. Home occupations;
W. Research and development activities;
X. Temporary real estate offices in model dwellings located on and limited to sales of real estate on a single piece of platted property upon which new residential buildings are being constructed;
Y. Transportation facilities;
Z. Live/work dwellings;
AA. After-hours public parking;
BB. Marinas;
CC. Religious institutions.
DD. Mobile food units outside of the downtown design district.

Finding: Complies as Conditioned. The proposed GDP proposes retail, office, residential and entertainment uses all of which are listed as permitted uses in the zone. The GDP includes a request to approve eight conditional uses for the site, including five drive-thru uses and three anchor retail facilities that will exceed sixty thousand square feet within a freestanding building. All of these uses are listed as permitted conditional uses and are addressed below under the applicable conditional use criteria. Please see findings in OCMC 17.56 Conditional Uses for conformance with the Conditional use criteria. All permitted uses in the Mixed-Use Downtown District are allowed within the area subject to the Master Plan. Additions to or removal of uses listed in the Applicant's submittal shall not in themselves constitute a need for an amendment to the Master Plan unless the addition or revision triggers a need for an amendment through a Condition of Approval or OCMC 17.65.080 Amendments to Plans.

17.34.030 - Conditional uses.
The following uses are permitted in this district when authorized and in accordance with the process and standards contained in OCMC 17.56.
A. Drive-through facilities;
B. Emergency services;
C. Hospitals;
D. Outdoor markets that do not meet the criteria of OCMC 17.34.020.I.;
E. Parks, playgrounds, play fields and community or neighborhood centers;
F. Parking structures and lots not in conjunction with a primary use on private property, excluding after-hours public parking;
G. Retail trade, including grocery, hardware and gift shops, bakeries, delicatessens, florists, pharmacies and specialty stores in a freestanding building with a single store exceeding a foot print of sixty thousand square feet;
H. Public facilities such as sewage and water treatment plants, water towers and recycling and resource recovery centers;
I. Public utilities and services such as pump stations and sub-stations;
J. Distributing, wholesaling and warehousing;
K. Gas stations;
L. Public and or private educational or training facilities;
M. Stadiums and arenas;
N. Passenger terminals (water, auto, bus, train), excluding bus stops;
O. Recycling center and/or solid waste facility;
P. Shelters, except within the Downtown Design District.
Finding: Finding: Complies as Conditioned. The proposed GDP proposes retail, office, residential and entertainment uses all of which are listed as permitted uses in the zone. The GDP includes a request to approve eight conditional uses for the site, including five drive-thru uses and three anchor retail facilities that will exceed sixty thousand square feet within a freestanding building. All of these uses are listed as permitted conditional uses and are addressed below under the applicable conditional use criteria.
Please see findings in OCMC 17.56 Conditional Uses for conformance with the Conditional use criteria

17.34.040 - Prohibited uses.
The following uses are prohibited in the MUD district:
A. Kennels;
B. Outdoor storage and sales, not including outdoor markets allowed in OCMC 17.34.030;
C. Self-service storage;
D. Single-Family attached and detached residential units and duplexes;
E. Motor vehicle and recreational vehicle repair/service;
F. Motor vehicle and recreational vehicle sales and incidental service;
G. Heavy equipment service, repair, sales, storage or rental[2] (including but not limited to construction equipment and machinery and farming equipment);
H. Marijuana production, processing, wholesaling, research, testing, and laboratories;
I. Mobile food units within the downtown design district unless a special event has been issued.
Finding: Compiles as Proposed. The applicant is not prosing any prohibited uses.

17.34.060 - Mixed-use downtown dimensional standards—For properties located outside of the downtown design district.

Finding: Complies as Proposed. The applicable dimensional standards for The North End master plan are met in the proposed GDP as illustrated in the table below, except where modifications have been requested under the provisions of 17.65.070. Future DDP's will be individually reviewed for compliance with the dimensional standards of the zone subject to consistency with the GDP to ensure that the overall master plan satisfies these requirements as proposed.

The applicant is aware of the 45' height limitation for properties within 500' of the End of the Oregon Trial Museum (EOT) and have design the future buildings to meet this requirement. However, this standard applies to all buildings on a property if any portion of the property is within 500'. Given that a large portion of the site is not within 500 feet of the End of the Oregon Trial Museum (EOT), the applicant plans on further dividing the site to separate out the area subject to the height limitation section of the MUD District. Prior to receiving approval for any building with a height greater than 45 feet, the applicant must show that the building is not located on a parcel or lot that is closer than 500 feet from the End of the Oregon Trial Museum (EOT).

The street system, as proposed and conditioned in the Master Plan, can be considered street frontage for the purpose of siting standards in OCMC 17.62 Site Plan and Design Review. Building setbacks are to be taken from the back of the sidewalk (or curb if no sidewalk) along private streets. Small revisions to the street system can be approved through the DDP process if they substantially comply with the Master Plan.

The applicant has indicated that all of the residential development will be part of a mixed-use development and not subject to the minimum residential density requirement of the MUD District. if the applicant chooses to build stand-alone residential, the residential density of a minimum net density of 17.4 units per acre applies to the site.

Standard	Requirement	Proposed	Notes
Min. Lot Area	None	62+ Acres	Standard met by the GDP
Min. Floor Area Ratio	0.3	0.49	Standard met by the GDP
Min. Building Height	25 feet	Varies	Standard met by the GDP
Max. Building Height	75 / 45 feet	Varies	The 45-foot height requirement applies to those portions of the site located within 500 feet of the End of the Oregon Trail Interpretive Center. A subsequent land division may be needed to separate this area from the rest of the site as the City interprets this standard to apply to the entire property as a single lot.
Min. Setbacks	None	Varies	Standard met by the GDP
Max. Setbacks	20 feet	Varies	Many of the buildings are located within this setback to an internal private street. Future land divisions within the GDP will need to locate property lines in accordance with these standards on site. The GDP locates buildings as close to the existing Washington street frontage as possible, however, buildings located along the Abernethy Road frontage are setback outside of the floodplain and a modification to this standard has been requested as allowed by the provisions in 17.65.070.
Max. Coverage	90%	~26%	Standard met by the GDP
Min. Residential Density	None		Does not apply to residential developments above retail in a mixed-use development.
Min. Landscaping	10%	~11.5%	Standard met by the GDP

17.34.080 - Explanation of certain standards.
A. Floor Area Ratio (FAR).
1. Purpose. Floor area ratios are a tool for regulating the intensity of development. Minimum FARs help to achieve more intensive forms of building development in areas appropriate for larger-scale buildings and higher residential densities.
2. Standards.
a. The minimum floor area ratios contained in OCMC 17.34.060 and 17.34.070 apply to all nonresidential and mixed-use building developments.
b. Required minimum FARs shall be calculated on a project-by-project basis and may include multiple contiguous blocks. In mixed-use developments, residential floor space will be included in the calculations of floor area ratio to determine conformance with minimum FARs.
c. An individual phase of a project shall be permitted to develop below the required minimum floor area ratio provided the applicant demonstrates, through covenants applied to the remainder of the site or project or through other binding legal mechanism, that the required density for the project will be achieved at project build out.

Finding: Complies as Conditioned. In compliance with this standard, the FAR for the GDP is calculated based on the entire site area subject to the GDP except for the Abernethy Creek NROD buffer area, which is not included in density calculations. With this site area reduction, the site area comprises 2,464,613 square feet. The development proposed under this GDP comprises 1,091,698 square feet for a total proposed FAR of 0.49:1, meeting the required minimum FAR of 0.3:1. Each individual phase may or may not meet the minimum requirement but as permitted by this section, a phase will be permitted to develop below the required minimum as long as each phase demonstrates that the site will meet the minimum FAR requirement at full buildout. This is a request for the approval of the GDP which satisfies the requirements for FAR across the overall site. The FAR requirements apply to this development under the standards above. Future applications for DDP should be consistent with the GDP approval to ensure the project remains compliant with this standard.

B. Building Height.
1. Purpose.
a. The Masonic Hall is currently the tallest building in downtown Oregon City, with a height of fifty-eight feet measured from Main Street. The maximum building height limit of fifty-eight feet will ensure that no new building will be taller than the Masonic Hall.
b. A minimum two-story (twenty-five feet) building height is established for the downtown design district overlay sub-district to ensure that the traditional building scale for the downtown area is maintained.
Finding: Complies as Proposed. The site is not located within the downtown design district. As proposed in the GDP, all development is within the allowed height limits and will demonstrate continuing compliance with the height maximums at each DDP approval. The applicant is aware of the 45' height limitation for properties within 500' of the End of the Oregon Trial Museum (EOT) and have design the future buildings to meet this requirement. However, this standard applies to all buildings on a property if any portion of the property is within 500'. Given that a large portion of the site is not within 500 feet of the End of the Oregon Trial Museum (EOT), the applicant plans on further dividing the site to separate out the area subject to the height limitation section of the MUD District. Prior to receiving approval for any building with a height greater than 45 feet, the applicant must show that the building is not located on a parcel or lot that is closer than 500 feet from the End of the Oregon Trial Museum (EOT).

CHAPTER 17.49 – NATURAL RESOURCES OVERLAY DISTRICT

17.49.040 - NROD permit and review process.
An NROD permit is required for those uses regulated under OCMC 17.49.090, Uses Allowed under Prescribed Conditions. An NROD permit shall be processed under the Type II development permit procedure, unless an adjustment of standards pursuant to OCMC 17.49.200 is requested or the application is being processed in conjunction with a concurrent application or action requiring a Type III or Type IV development permit.
Finding: Complies as Conditioned The applicant submitted two Type I NROD Permit Exemption and Boundary Verifications. 1. NROD 20-0022 (Exhibit 6) reviewed the NROD areas within the DEQ soil cap and found that the soil cap is considered impervious surface and serves to prevent erosion of soil cap (clay/silt layer) and is not viable NROD area/cannot accommodate vegetated corridor plant growth. 2.

NROD 21-0004 (Exhibit 7) exempting the existing imperious Washington Street and Abernethy Road from the Natural Resources Overlay District. Other areas identified as orange in the map below will require review though a future Type II or Type III Natural Resource Review process when development is proposed in that area. Any development areas impacted by the Natural Resources Overlay District will be reviewed for compliance with this section at the DDP level.

The applicant has also identified a wetland and or stream along Washington Street (orange area below) that could be further reduced in size and location based on a wetlands delineation or could be impacted by the development of Washington Street improvements. Any development areas impacted by the Natural Resources Overlay District will be reviewed for compliance with this section either before or at the DDP level, which could involve mitigation requirements or a notice of the delination report if a reduction or elimination is warranted through a future Type II Land Use Review.

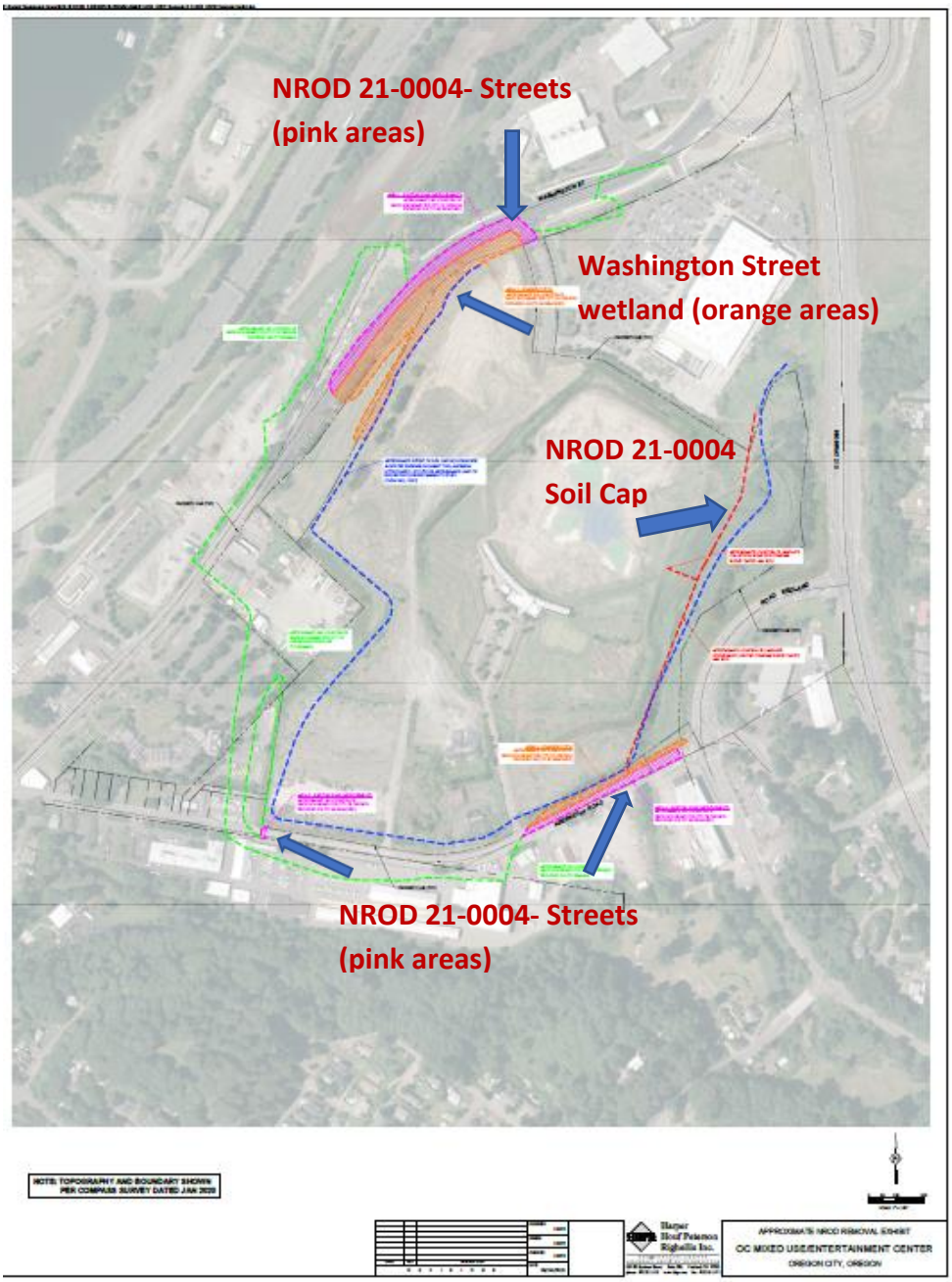


Figure 6 Natural Resource Overlay District- Type I Exemption locations

CHAPTER 17.50 – ADMINISTRATION AND PROCEDURES

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.

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 as Proposed. The applicant held a pre-application conference (PA 20-50) for this proposal on December 29, 2020.

17.50.055 - Neighborhood association meeting.

Neighborhood Association Meeting. The purpose of the meeting with the recognized neighborhood association is to inform the affected neighborhood association about the proposed development and to receive the preliminary responses and suggestions from the neighborhood association and the member residents.

A. Applicants applying for annexations, zone change, comprehensive plan amendments, conditional use, Planning Commission variances, subdivision, or site plan and design review (excluding minor site plan and design review), general development master plans or detailed development plans applications shall schedule and attend a meeting with the City-recognized neighborhood association in whose territory the application is proposed no earlier than one year prior to the date of application. Although not required for other projects than those identified above, a meeting with the neighborhood association is highly recommended.

B. The applicant shall request via email or regular mail a request to meet with the neighborhood association chair where the proposed development is located. The notice shall describe the proposed project. A copy of this notice shall also be provided to the chair of the Citizen Involvement Committee.

C. A meeting shall be scheduled within thirty days of the date that the notice is sent. A meeting may be scheduled later than thirty days if by mutual agreement of the applicant and the neighborhood association. If the neighborhood association does not want to, or cannot meet within thirty days, the applicant shall host a meeting inviting the neighborhood association, Citizen Involvement Committee, and all property owners within three hundred feet to attend. This meeting shall not begin before six p.m. on a weekday or may be held on a weekend and shall occur within the neighborhood association boundaries or at a City facility.

D. If the neighborhood association is not currently recognized by the City, is inactive, or does not exist, the applicant shall request a meeting with the Citizen Involvement Committee.

E. To show compliance with this section, the applicant shall submit a copy of the email or mail notice to the neighborhood association and CIC chair, a sign-in sheet of meeting attendees, and a summary of issues discussed at the meeting. If the applicant held a separately noticed meeting, the applicant shall submit a copy of the meeting flyer, postcard or other correspondence used, and a summary of issues discussed at the meeting and submittal of these materials shall be required for a complete application.

Finding: Complies as Proposed. The applicant met with the CIC on February 1, 2021 in lieu of meeting with the Two Rivers Neighrbhood Association as they were not able to meet in person or have the ability to hold digital meetings during COVID-19 restriction. A link to the meeting video can be found in the staff report exhibits.

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.
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.
C. Notice of Public Hearing on a Legislative Proposal. At least twenty days prior to a public hearing at which a legislative proposal to amend or adopt the city's land use regulations or comprehensive plan is to be considered, the community development director shall issue a public notice that conforms to the requirements of this subsection. Notice shall be sent to affected governmental entities, special districts, providers of urban services, including Tri-Met, Oregon Department of Transportation and Metro, any affected recognized neighborhood associations and any party who has requested in writing such notice. Notice shall also be published on the city website. Notice issued under this subsection shall include the following information:
1. The time, date and location of the public hearing;

2. The city-assigned planning file number and title of the proposal;
3. A description of the proposal in sufficient detail for people to determine the nature of the change being proposed;
4. A statement that any interested party may testify at the hearing or submit written comments on the proposal at or prior to the hearing; and
5. The name and telephone number of the planning staff person responsible for the proposal and who interested people may contact for further information.
Finding: Complies. A public notice was sent to all properties within 300 feet of the site and signs were placed on the property within 20 days of the scheduled hearing. Copies of the public notice and affidavit of sign posting are in the record.

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

17.50.140 – Financial guarantees.
When conditions of permit approval require a permitee to construct certain public improvements, the City shall require the permitee to provide financial guarantee for construction of the certain public improvements. Financial guarantees shall be governed by this section.
A. Form of Guarantee. Guarantees shall be in a form approved by the City Attorney. Approvable forms of guarantee include irrevocable standby letters of credit to the benefit of the City issued by a recognized lending institution, certified checks, dedicated bank accounts or allocations of construction loans held in reserve by the lending institution for the benefit of the City. The form of guarantee shall be specified by the City Engineer and, prior to execution and acceptance by the City shall be reviewed and approved by the City Attorney. The guarantee shall be filed with the City Engineer.
B. Performance Guarantees. A permittee shall be required to provide a performance guarantee as follows.
1. After Final Approved Design by The City: The City may request the Permittee to submit a Performance Guarantee for construction of certain public improvements. A permitee may request the option of submitting a Performance Guarantee when prepared for temporary/final occupancy. The guarantee shall be one hundred twenty percent of the estimated cost of constructing the public improvements as

submitted by the permittee's engineer. The engineer's estimated costs shall be supported by a verified engineering estimate and approved by the City Engineer.

2. Before Complete Design Approval and Established Engineered Cost Estimate: The City may request a permittee to submit a Performance Guarantee for construction of certain public improvements. A permitee may request the option of submitting a performance guarantee before public improvements are designed and completed. The guarantee shall be one hundred fifty percent of the estimated cost of constructing the public improvements as submitted by *the permittee's engineer and approved by the City Engineer. The engineer's estimated costs shall be supported by a verified engineering estimate and approved by the City Engineer.*

C. Release of Guarantee. The guarantee shall remain in effect until the improvement is actually constructed and accepted by the City. Once the City has inspected and accepted the improvement, the City shall release the guarantee to the permittee. If the improvement is not completed to the City's satisfaction within the time limits specified in the permit approval, the City Engineer may, at their discretion, draw upon the guarantee and use the proceeds to construct or complete construction of the improvement and for any related administrative and legal costs incurred by the City in completing the construction, including any costs incurred in attempting to have the permittee complete the improvement. Once constructed and approved by the City, any remaining funds shall be refunded to the permittee. The City shall not allow a permittee to defer construction of improvements by using a performance guarantee, unless the permittee agrees to construct those improvements upon written notification by the City, or at some other mutually agreed-to time. If the permittee fails to commence construction of the required improvements within six months of being instructed to do so, the City may, without further notice, undertake the construction of the improvements and draw upon the permittee's performance guarantee to pay those costs.

D. Fee-in-lieu. When conditions of approval or the City Engineer allows a permittee to provide a fee-in-lieu of actual construction of public improvements, the fee shall be one hundred fifty percent of the estimated cost of constructing the public improvements as submitted by the permittee's engineer and approved by the City Engineer. The percentage required is to ensure adequate funds for the future work involved in design, bid, contracting, and construction management and contract closeout. The engineer's estimated costs shall be supported by a verified engineering estimate and approved by the City Engineer. The fee-in-lieu shall be submitted as cash, certified check, or other negotiable instrument acceptable by the City Attorney.

Finding: Complies as conditioned. 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 the 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 as conditioned. Maintenance Guarantee equal to fifteen percent of the estimated cost for construction of public improvements as shown in city approved construction plans shall be provided prior to occupancy. The estimated costs shall be supported by a verified engineering estimate approved by the City Engineer. The guarantee shall be in a form identified in Code 17.50.140.A of the Oregon City Municipal Code. The maintenance guarantee shall warrant to the City of Oregon City that construction of public improvements will remain, for a period of twenty-four (24) months from the date of acceptance, free from defects in materials and workmanship. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

CHAPTER 17.52 OFF-STREET PARKING AND LOADING

17.52.010 - Applicability.

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

Finding: Applies. The proposal includes a Concept Master Plan for a commercial property. The standards of this chapter are applicable to the project review. The project proposes a combination of parking structures and surface parking lots to satisfy minimum off-street parking requirements of the OCMC and serve the needs of future businesses and residents in the master plan at the time of each DDP applciaotn for new development, a parking analysis will be performed. A phasing condition of approval has been added to ensure that orderly project phasing can occur that does not leave the site greatly over or under parked at phase.

17.52.020 - Number of automobile spaces required.

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

Table 17.52.020		
LAND USE	*PARKING REQUIREMENTS*	
	MINIMUM	*MAXIMUM*
Multifamily Residential	*1.00 per unit*	*2.5 per unit*
3-4 Plex Residential	*2.00*	*4*
Hotel, Motel	*1.0 per guest room*	*1.25 per guest room*
Correctional Institution	*1 per 7 beds*	*1 per 5 beds*
Senior housing, including congregate care, residential care and assisted living facilities; nursing homes and other types of group homes	*1 per 7 beds*	*1 per 5 beds*
Hospital	*2.00*	*4.00*
Preschool Nursery/Kindergarten	*2.00*	*3.00*
Elementary/Middle School	*1 per classroom*	*1 per classroom + 1 per administrative employee + 0.25 per seat in auditorium/assembly room/stadium*
High School, College, Commercial School for Adults	*0.20 per # staff and students*	*0.30 per # staff and students*
Auditorium, Meeting Room, Stadium, Religious Assembly Building, movie theater,	*.25 per seat*	*0.5 per seat*

Retail Store, Shopping Center, Restaurants	*4.10*	*5.00*
Office	*2.70*	*3.33*
Medical or Dental Clinic	*2.70*	*3.33*
Sports Club, Recreation Facilities	*Case Specific*	*5.40*
Storage Warehouse, Freight Terminal	*0.30*	*0.40*
Manufacturing, Wholesale Establishment	*1.60*	*1.67*
Light Industrial, Industrial Park	*1.3*	*1.60*

1. Multiple Uses. In the event several uses occupy a single structure or parcel of land, the total requirements for off-street parking shall be the sum of the requirements of the several uses computed separately.

Finding: Complies as Conditioned. The Master Plan (GDP) includes a mix of uses, and parking has been calculated based on the square footages for each use separately. The North End master plan is a proposed 1,091,698 square feet of mixed-use development that includes 524 residential units, (3) anchor retail facilities, and a mix of smaller retail and entertainment uses on a 62-acre site. Table 17.52.020 requires a minimum of 4.1 parking spaces per 1,000 sf of retail which includes stores, restaurants and drive thru uses; .25 spaces per seat for movie theaters; and 1 space per unit for the multi-family residential units. Based on the proposed programming in the master plan, and the requirements of Table 17.52.020, the site is required to provide a **minimum of 3,366 onsite parking spaces**. Table 17.52.020 also establishes the maximum allowed number of spaces at 5.0 parking spaces per 1,000 sf of retail which includes stores, restaurants and drive thru uses; .5 spaces per seat for movie theaters, and 2.5 spaces per unit for the multi-family residential units proposed on site. Based on the proposed programming in the master plan, the **maximum number of allowed spaces would be 5,923 spaces**.

Per 17.52.020.A.3, fractional results less than one-half are disregarded. Other results round up, requiring an additional space. The master plan proposes to provide 3,225 parking stalls within the parking structures and parking lots, and another 531 parallel parking stalls along the internal private street system for a total of **3,756 parking stalls proposed on-site**. Therefore, the master plan proposes parking that exceeds the minimum number of required parking spaces, but less than the maximum number allowed. Parking will be evaluated again with each application for DDP approval. This standard is satisfied. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

2. Requirements for types of buildings and uses not specifically listed herein shall be determined by the Community Development Director, based upon the requirements of comparable uses listed.

Finding: Complies as Proposed. A determination by the Community Development Director is not needed for this application. The parking requirements for the uses proposed within the master plan are listed in minimum and maximum parking standards of Table 17.52.020.

3. Where calculation in accordance with the above list results in a fractional space, any fraction less than one-half shall be disregarded and any fraction of one-half or more shall require one space.

Finding: Complies as Proposed. Fractions were rounded in accordance with this chapter.

4. Fleet vehicle parking shall be accommodated within the maximum parking ratio, except that in GI, CI, and MUE zones, fleet vehicle parking may be included in a parking lot in addition to the maximum number of permitted parking spaces.

Finding: Complies as Proposed. Fleet vehicle parking was not considered within the GDP. This provision is not applicable with this request but may be considered when considering applications for DDP's.

5. A change in use within an existing habitable building located in the MUD Design District or the Willamette Falls Downtown District is exempt from additional parking requirements. Additions to an existing building and new construction are required to meet the minimum parking requirements for the areas as specified in Table 17.52.020 for the increased square footage.
Finding: Complies as Proposed. This is an application for approval of a GDP for a mixed-use development. All parking has been calculated based on the sum of the requirements for all proposed uses on site. The applicant has proposed a sitewide parking approach looking at the sum total of development proposed and parking provided. At the time of each DDP submittal, the applicant is responsible to demonstrate how they are implementing the proposed parking calculations. At no time shall the site be more than 25% above parking maximums or 15% below parking minimums per 17.52.020 - Number of automobile spaces required

B. Parking requirements can be met either onsite, or offsite by meeting one or multiple of the following conditions:
1. Parking may be located on the same site as the associated use which it is supporting.

Finding: Complies as Conditioned. All proposed required parking spaces are located on the private property developed with The North End master plan. The Master Plan process reviews the parking requirements for the full site build-out and not for any specific DDP. At the time of each DDP review of a new building- the parking requirements will be reviewed based on the total parking requirements of the master plan and not for any specific development. The applicant has proposed a sitewide parking approach looking at the sum total of development proposed and parking provided. At the time of each DDP submittal, the applicant is responsible to demonstrate how they are implementing the proposed parking calculations. At no time shall the site be more than 25% above parking maximums or 15% below parking minimums per 17.52.020 - Number of automobile spaces required. Hoverer, the applicant has also proposed a serious of structured parking garages as bases for the mixed-use multifamily development above them, and mostly likely will be built as a package with phased DDP for the mixed- use development on top. To ensure that the applicant is not restricted in utilizing the built structured parking before the associated development above, structured parking associated with any use may be completed and used before the associated use is constructed and is not subject to the 15% or 25% limitation. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

2. Mixed Uses. If more than one type of land use occupies a single structure or parcel of land, the total requirements for off-street automobile parking shall be the sum of the requirements for all uses, unless it can be shown that the peak parking demands are actually less (e.g. the uses operate on different days or at different times of the day). In that case, the total requirements shall be reduced accordingly, up to a maximum reduction of fifty percent, as determined by the Community Development Director.
Finding: Complies as Proposed. This is an application for approval of a GDP for a mixed-use development. All parking has been calculated based on the sum of the requirements for all proposed uses on site. Further, the minimum requirements are exceeded as discussed above so a reduction is not necessary. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

3. Shared Parking. Required parking facilities for two or more uses, structures, or parcels of land may be satisfied by the same parking facilities used jointly, to the extent that the owners or operators show that the need for parking facilities does not materially overlay (e.g., uses primarily of a daytime versus nighttime nature), that the shared parking facility is within one thousand feet of the potential uses, and provided that the right of joint use is evidenced by a recorded deed, lease, contract, or similar written instrument authorizing the joint use.

Finding: Complies as Proposed. The applicant indicated that parking on site will be shared across the development. Individual DDP requests will include shared parking agreements and easements as required. The site includes a mix of uses, each with designated spaces. The applicant has not proposed to reduce the number of stalls onsite based on decreased peak demands due to the mix of uses onsite. The applicant has proposed a sitewide parking approach looking at the sum total of development proposed and parking provided. At the time of each DDP submittal, the applicant is responsible to demonstrate how they are implementing the proposed parking calculations. At no time shall the site be more than 25% above parking maximums or 15% below parking minimums per 17.52.020 - Number of automobile spaces required. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

4. On-Street Parking. On-street parking may be counted toward the minimum standards when it is on the street face abutting the subject land use. An on-street parking space shall not obstruct a required clear vision area and it shall not violate any law or street standard. On-street parking for commercial uses shall conform to the following standards:

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

1. Parallel parking: twenty-two feet of uninterrupted and available curb;

2. Forty-five and/or sixty-degree diagonal parking: Fifteen feet of curb;

3. Ninety-degree (perpendicular) parking: Twelve feet of curb.

4. Public Use Required for Credit. On-street parking spaces counted toward meeting the parking requirements of a specific use may not be used exclusively by that use, but shall be available for general public use at all times. Signs or other actions that limit general public use of on-street spaces are prohibited.

Finding: Complies as Conditioned. On street parking within the internal publicly accessible private streets has been included in the parking calculations above. On street parking is based on the parallel parking standard listed above. All on-street parking on private streets with public access easement will be available to the general public. As with public streets, time restriction can be added, as needed overtime, through coordination with Oregon City Public Works Department. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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

1. Downtown Parking Overlay. The minimum required number of parking stalls is reduced within the Downtown Parking Overlay by fifty percent.

2. Transit Oriented Development. For projects not located within the Downtown Parking Overlay District, the minimum required number of parking stalls is reduced up to twenty-five percent when:

a. In a commercial center (sixty thousand square feet or greater of retail or office use measured cumulatively within a five hundred foot radius) or

b. When adjacent to multi-family development with over eighty units or

c. Within 1,320 feet of an existing or planned public transit street and within 1,320 feet of the opposite use (commercial center or multi-family development with over eighty units).

3. Tree Preservation. The Community Development Director may grant an adjustment to any standard of this requirement provided that the adjustment preserves a designated heritage tree or grove so that the reduction in the amount of required pavement can help preserve existing healthy trees in an undisturbed, natural condition.

4. Transportation Demand Management. The Community Development Director shall reduce the required number of parking stalls up to twenty-five percent when a parking-traffic study prepared by a traffic engineer demonstrates alternative modes of transportation, including transit, bicycles, and walking, and/or special characteristics of the customer, client, employee or resident population will reduce expected vehicle use and parking space demand for this development, as compared to standard Institute of Transportation Engineers vehicle trip generation rates and further that the transportation demand management program promotes or achieves parking utilization lower than minimum city parking requirements.

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

Finding: Complies as Proposed. The GDP does not seek a reduction to the number of minimum automobile spaces required under these provisions.

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

Finding: Complies as Proposed. The GDP does not seek a reduction to the number of minimum automobile spaces required under these provisions.

17.52.030 - Standards for automobile parking.

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

Finding: Complies as Proposed. The layout of the parking applicant submitted a transportation study prepared by Kittleson and Associates, which indicates that the layout of vehicle parking on the proposed site provides circulation and maneuvering, which enables all vehicles to enter and exit the site in a forward motion through any one of the driveway access points along Washington Street or Abernethy Road.

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

Finding: Complies as Proposed. The applicant has proposed paved surfaces for all off-street parking spaces and access aisles. Paving is proposed for all vehicle areas on the site. Pervious asphalt/concrete are not currently proposed but are not prohibited by the master plan and could be proposed with individual DDP's. The applicant acknowledges the requirement to maintain the paved surfaces. over time. This standard will be reviewed for compliance at the time of each DDP application.

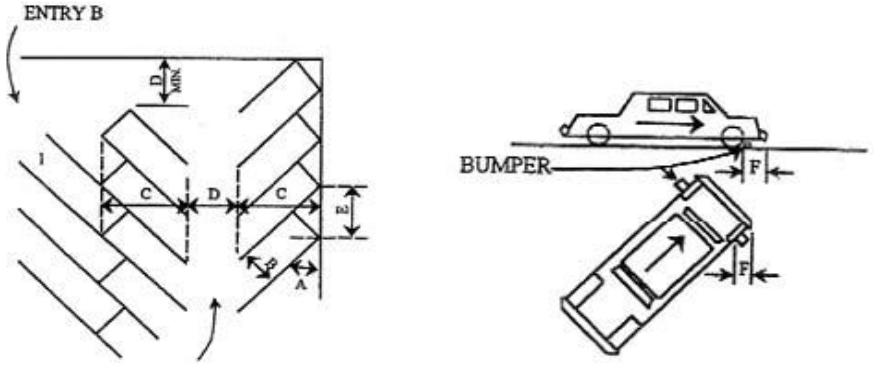
C. Drainage. Drainage shall be designed in accordance with the requirements of OCMC 13.12 and the City public works stormwater and grading design standards.
Finding: See findings from section 13.12 of this report.

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

PARKING STANDARD
PARKING ANGLE SPACE DIMENSIONS

A Parking Angle		*B Stall Width*	*C Stall to Curb*	*D Aisle Width*	*E Curb Length*	*F Overhang*
0 degrees		*8.5*	*9.0*	*12*	*20*	*0*
30 degrees	*Standard* *Compact*	*9'* *8'*	*17.3'* *14.9'*	*11'* *11'*	*18'* *16'*	
45 degrees	*Standard* *Compact*	*8.5* *8.5*	*19.8'* *17.0'*	*13'* *13'*	*12.7'* *11.3'*	*1.4*
60 degrees	*Standard* *Compact*	*9'* *8'*	*21'* *17.9'*	*18'* *16'*	*10.4'* *9.2'*	*1.7*
90 degrees	*Standard* *Compact*	*9'* *8'*	*19.0'* *16.0'*	*24'* *22'*	*9'* *8'*	*1.5*

All dimensions are to the nearest tenth of a foot.



Finding: Complies with Condition. The applicant indicates that **a**ll stalls shown on the civil site plans have been designed to meet the minimum dimensions required for standard or compact stalls. Parking is primarily angled at 90 degrees, but there are locations along the north and east edge of the development where angled parking is proposed. The civil site plans (sheets C200 through C207) attached to this application provides the dimensions for parking stalls and circulation to demonstrate that development within the master plan area can comply with these standards. DDP's may propose

compact spaces within their design provided the minimum parking requirements for the overall site are met. This standard will be reviewed for complaince at the time of each DDP application. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

2. Alternative parking/plan. Any applicant may propose an alternative parking plan. Such plans are often proposed to address physically constrained or smaller sites, however innovative designs for larger sites may also be considered. In such situations, the Community Development Director may approve an alternative parking lot plan with variations to parking dimensions of this section. The alternative shall be consistent with the intent of this chapter and shall create a safe space for automobiles and pedestrians while providing landscaping to the quantity and quality found within parking lot landscaping requirements.
Finding: Not Applicable. The project does not seek approval of an alternative parking plan. This standard is not applicable.

E. Carpool and Vanpool Parking. New developments with seventy-five or more parking spaces, excluding projects where seventy-five percent or more of the total floor area is residential , and new hospitals, government offices, group homes, nursing and retirement homes, schools and transit park-and-ride facilities with fifty or more parking spaces, shall identify the spaces available for employee, student and commuter parking and designate at least five percent, but not fewer than two, of those spaces for exclusive carpool and vanpool parking. Carpool and vanpool parking spaces shall be located closer to the main employee, student or commuter entrance than all other employee, student or commuter parking spaces with the exception of ADA accessible parking spaces. The carpool/vanpool spaces shall be clearly marked "Reserved - Carpool/Vanpool Only."
Finding: Complies with Condition. The master plan provides more than 75 parking spaces on site and this provision is applicable. The location of carpool, vanpool, and ADA spaces will be designated with individual DDP's. ADA parking has been identified within the GDP for each building to demonstrate that the site is able to comply with dimensional standards for ADA spaces, but those locations are not intended to be formally set with this request. It appears that Carpool, vanpool, and ADA spaces can be accommodated on site. This standard will be reviewed for complaince at the time of each DDP application. This standard will be reviewed for complaince at the time of each DDP application. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

17.52.040 - Bicycle parking standards.
B. Number of Bicycle Spaces Required. For any use not specifically mentioned in Table A, the bicycle parking requirements shall be the same as the use which, as determined by the Community Development Director, is most similar to the use not specifically mentioned. Calculation of the number of bicycle parking spaces required shall be determined in the manner established in OCMC 17.52.020 for determining automobile parking space requirements. Modifications to bicycle parking requirements may be made through the site plan and design, conditional use, or master plan review process.

*TABLE A Required Bicycle Parking Spaces**

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

USE	*MINIMUM BICYCLE PARKING*	*MINIMUM BICYCLE PARKING - COVERED - The following*

		percentage of bicycle parking is required to be covered
Multi-family (five or more units)	*1 per 10 units (minimum of 2)*	*50% (minimum of 1)*
Correctional institution	*1 per 15 auto spaces (minimum of 2)*	*30% (minimum of 1)*
Nursing home or care facility	*1 per 30 auto spaces (minimum of 2)*	*30% (minimum of 1)*
Hospital	*1 per 20 auto spaces (minimum of 2)*	*30% (minimum of 1)*
Park-and-ride lot	*1 per 5 auto spaces (minimum of 2)*	*50% (minimum of 1)*
Transit center	*1 per 5 auto spaces (minimum of 2)*	*50% (minimum of 1)*
Parks and open space	*1 per 10 auto spaces (minimum of 2)*	*0%*
Public parking lots	*1 per 10 auto spaces (minimum of 2)*	*50% (minimum of 1)*
Automobile parking structures	*1 per 10 auto spaces (minimum of 4)*	*80% (minimum of 2)*
Religious institutions, movie theater, auditorium or meeting room	*1 per 10 auto spaces (minimum of 2)*	*30% (minimum of 1)*
Libraries, museums	*1 per 5 auto spaces (minimum of 2)*	*30% (minimum of 1)*
Preschool, nursery, kindergarten	*2 per classroom (minimum of 2)*	*50% (minimum of 1)*
Elementary	*4 per classroom (minimum of 2)*	*50% (minimum of 1)*
Junior high and High school	*2 per classroom (minimum of 2)*	*50% (minimum of 2)*
College, business/commercial schools	*2 per classroom (minimum of 2)*	*50% (minimum of 1)*
Swimming pools, gymnasiums, ball courts	*1 per 10 auto spaces (minimum of 2)*	*30% (minimum of 1)*
Retail stores and shopping centers	*1 per 20 auto spaces (minimum of 2)*	*50% (minimum of 2)*

Retail stores handling exclusively bulky merchandise such as automobile, boat or trailer sales or rental	*1 per 40 auto spaces (minimum of 2)*	*0%*
Bank, office	*1 per 20 auto spaces (minimum of 2)*	*50% (minimum of 1)*
Medical and dental clinic	*1 per 20 auto spaces (minimum of 2)*	*50% (minimum of 1)*
Eating and drinking establishment	*1 per 20 auto spaces (minimum of 2)*	*0%*
Gasoline service station	*1 per 10 auto spaces (minimum of 2)*	*0%*

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

Finding: Complies as Conditioned All of the uses proposed within the GDP are listed in table A which prescribes the minimum number of bicycle parking spaces required for the site. The GDP does not provide the level of detail required to satisfy this standard but there is adequate space on the site to accommodate required bicycle parking. Future applications for DDP approval are expected to provide detailed plans that satisfy this requirement. This standard will be reviewed for complaince at the time of each DDP application. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

C. Design Standards.

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

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

3. All bicycle racks shall be designed so that:

a. The bicycle frame is supported horizontally at two or more places.

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

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

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

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

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

Finding: Complies as Conditioned. The GDP does not provide the level of detail required to satisfy these design standards but there is adequate space on the site to accommodate required bicycle parking and meet the design standards. Future applications for DDP approval are expected to provide detailed plans that satisfy these requirements. This standard will be reviewed for complaince at the time of each DDP application. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

17.52.060 - Parking lot landscaping.

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

Finding: Complies as Conditioned. The project is subject to parking lot landscaping standards. However, the GDP provides high level landscape drawings that show that required parking lot landscaping can generally satisfy these provisions. No modifications to the parking lot landscaping is requested with the GDP approval. Subsequent requests for DDP approval will require the applicant to provide more detailed landscape plans that meet these provisions as well as the landscape design guidelines proposed with the overall master plan. This standard will be reviewed for complaince at the time of each DDP application. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

B. Development Standards.

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

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

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

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

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

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

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

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

1. The perimeter parking lot are[a] shall include:

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

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

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

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

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

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

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

b. A minimum of 1.5 shrubs per parking space.

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

Finding: Complies as Conditioned. The plans are high level and do not get to the level of detailed design needed to demonstrate compliance with specific details; however, future applications for DDP's within the master plan area are required to meet the provisions of the OCMC as well as the landscape design standards in Chapter 5: Master Plan Design Guidelines of this application. The GDP landscape plans generally show how the landscape standards can be met with future development. Landscaping is proposed in all areas not specified for parking, maneuvering, or circulation. The landscape design guidelines reinforce the standard that all trees within the landscape are 2-inch caliper or greater. The required parking lot landscaping considered the need for 45 square feet of landscaping for each parking space and anticipates trees spaced according to the OCMC requirements listed above. Ground cover is required across the site where improvements are not constructed filling in the gaps between trees and shrubs. The plans illustrate a variety trees within a minimum 5-foot buffer around the perimeter of each parking lot and shows adequate space for hedges/shrubs. Perimeter landscaping is provided along all parking areas. The GDP high level landscape plans and preliminary design were developed by a Kurt Lango, a certified landscape architect who also authored the landscape design guidelines. Each application for DDP approval will be required to provide greater detail and satisfy both sets of requirements. This standard will be reviewed for complaince at the time of each DDP application. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

F. Alternative landscaping plan.

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

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

Finding Complies as Conditioned: Alternative landscape plans may be requested with future DDP applications, but the GDP illustrates that it is possible to satisfy these requirements. Each application for

DDP approval will be required to provide greater detail and satisfy both sets of requirements. This standard will be reviewed for complaince at the time of each DDP application.

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

Finding: Not applicable. Credit for Pervious/Low Impact Development may be requested with future DDP applications, but the GDP illustrates that it is possible to satisfy these requirements. Each application for DDP approval will be required to provide greater detail and satisfy both sets of requirements. This standard will be reviewed for complaince at the time of each DDP application.

17.52.080 - Maintenance.

The owner, tenant and their agent, if any, shall be jointly and severally responsible for the maintenance of the site including but not limited to the off-street parking and loading spaces, bicycle parking and all landscaping which shall be maintained in good condition so as to present a healthy, neat and orderly appearance and shall be kept free from refuse and debris.

All plant growth in interior landscaped areas shall be controlled by pruning, trimming, or otherwise so that:

a. It will not interfere with the maintenance or repair of any public utility;

b. It will not restrict pedestrian or vehicular access; and

c. It will not constitute a traffic hazard due to reduced visibility.

Finding: Complies as Proposed. The applicant's narrative identified that the landscaped areas will be maintained by the owner in accordance with this section.

17.52.090 - Loading areas.

B. Applicability.

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

Finding: Not applicable. The development does not propose loading areas to have service or delivery truck visits with a forty-foot or longer wheelbase, at a frequency of one or more vehicles per week.

Applicable. The development proposes loading areas to have service or delivery truck visits with a forty-foot or longer wheelbase, at a frequency of one or more vehicles per week.

C. Standards.

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

Finding: Not applicable. The development does not propose loading areas to have service or delivery truck visits with a forty-foot or longer wheelbase, at a frequency of one or more vehicles per week.

Finding: Complies as proposed. Though off-street loading space(s) are proposed, the applicant has provided accommodations for the largest vehicle that is expected without obstructing vehicles or pedestrian traffic on adjacent streets and driveways.

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

Finding: Not applicable. The development does not propose loading areas to have service or delivery truck visits with a forty-foot or longer wheelbase, at a frequency of one or more vehicles per week.

Finding: Complies as proposed. Loading space(s) are proposed outside of areas where parking is prohibited.

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

a. Short in duration (i.e., less than one hour);

b. Infrequent (less than three operations daily between 5:00 a.m. and 12:00 a.m. or all operations between 12:00 a.m. and 5:00 a.m. at a location that is not adjacent to a residential zone);

c. Does not obstruct traffic during peak traffic hours;

d. Does not interfere with emergency response services; and

e. Is acceptable to the applicable roadway authority.

Finding: Not applicable. The development does not propose loading areas adjacent to or within a street right-of-way. **Finding: Complies as proposed.** The development has proposed a loading area adjacent to or within a street right-of-way. The City Engineer and decision maker have approved a loading area adjacent to or within a street right-of-way.

The following loading and unloading operations conditions shall be met:

a. Less than one hour;
b. Less than three operations daily between 5:00 a.m. and 12:00 a.m. or all operations between 12:00 a.m. and 5:00 a.m. at a location that is not adjacent to a residential zone;
c. Does not obstruct traffic during peak traffic hours; and

d. Does not interfere with emergency response services.

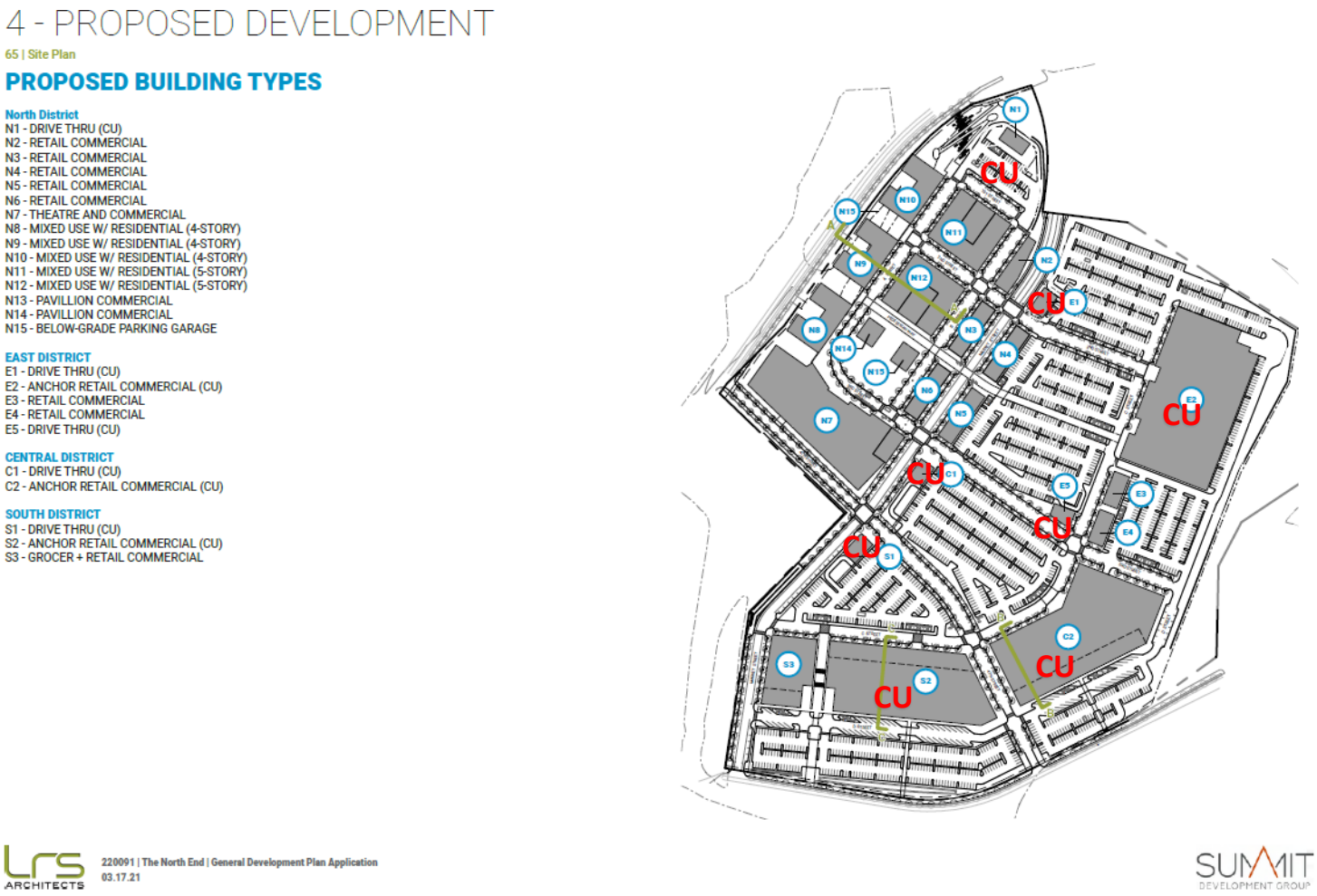
Chapter 17.54 – SUPPLEMENTAL ZONING REGULATIONS

This chapter regulates accessory structures and uses, projections from buildings, setback exceptions, fences, hedges, walls, and retaining walls, marijuana businesses, mobile food units, and home occupations. Individual developments within the master plan may propose some of the items regulated within this chapter through individual DDP requests. With the exception of section 17.54.100 that pertains to the regulation of Fences, hedges, walls, and retaining walls, those requests should be consistent with these provisions. A modification under the provisions of 17.65.070 is requested to the maximum allowed height of retaining walls to address the anticipated walls necessary to make a pedestrian connection to the End of the Oregon Trail Interpretive Center. Because of the difference in grade around the site as a result of berms and fill associated with the former Rossman Landfill, retaining walls will need to exceed the 8.5 foot height requirement. This is a condition specific to this site. The modification is discussed under Chapter 17.65.

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.

Finding: Complies with Condition. With the exception identified below, future development requests will be consistent with these provisions and reviewed at time of DDP. A modification under the provisions of 17.65.070 is requested to the maximum allowed height of retaining walls to address the anticipated walls necessary to make a pedestrian connection to the End of the Oregon Trail Interpretive Center. Because of the difference in grade around the site as a result of berms and fill associated with the former Rossman Landfill, retaining walls will need to exceed the 8.5 foot height requirement. This is a condition specific to this site. The modification is discussed under Chapter 17.65 and Conditions of Approval have been added to the staff report that addresses this request. **Staff has determined that it is**

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



1. The proposed buildings needing a Conditional Use for tenant size (E2, S2, C2) are approved for implementation through the DDP process with the following conditions:
    a. Building E2 is allowed to be used for a single tenant.
    b. Buildings S2 and C2 are subject to the following limitation:
        i. No single tenant may occupy more than 70% of leasable square footage. (P)
2. The proposed conditional use drive-thru locations (N1, E1,C1,S1,E5) are approved for implementation through the DDP process with the following conditions:
    a. At the time of the DDP, drive-thru location N1 shall be redesigned to meet OCMC 17.62 site requirements, including but not limited to ensuring direct pedestrian access from a public or private street that does not cross parking or drive aisles. This redesign may occur as a Type II DDP review if implemented if implemented as directed above and will not require a Type III amendment review. Designs that do not meet OCMC 17.62 site requirements will be reviewed as a Master Plan Amendment. All drive-thru locations not identified in the Master Plan approval shall be reviewed through a Type III Master Plan amendment process.

b. Building E1,C1, S1, E5 are approved for a CU drive-thru and will be reviewed in accordance with the Municipal Code. (P)

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

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

Finding: Complies as Condition. The North End master plan includes pads for five drive thrufacilities. It has not been determined what these drive thru uses are; however, they would likely include drive through eating and drinking facilities such as coffee stands or restaurants, or personal services like banks. The master plan also proposes three anchor retail facilities. Drive-thrus and retail trade, including grocery, hardware and gift shops, bakeries, delicatessens, florists, pharmacies and specialty stores in a freestanding building with a single store exceeding a foot print of sixty thousand square feet are permitted as Conditional Uses within the Mixed Use Downtown Zoning District according to Section 17.34.030 (A and G).

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

Finding: Complies as Condition. The North End master plan is a redevelopment of a former land fill that is approximately 62 acres in size at the north end of Oregon City. The site is large enough to accommodate the proposed uses and will be provided with all necessary public services. The location and shape of the site as well as the planned improvements also make this site suitable for the proposed development. Each of the conditional uses are located on the site in a manner that accommodates the service and mitigates any impact from the use. The larger anchor retail tenants will serve as an economic catalyst for the remainder of the retail, entertainment, and residential uses on the site. Each larger anchor will be served by a sufficient parking supply as well as a planned internal and external transportation system that can readily accommodate the trips associated with the development. The TIA identifies the trip generation from all of the proposed conditional uses and demonstrates with the new internal street system, the frontage improvements to the existing street system and recommended mitigation measures for two off-site intersections, all of the permitted uses, together with the conditional uses can be suitably and adequately accommodated on the site. Each of the drive-through pads have been located to accommodate efficient and suitable queuing and circulation so as not to interfere with other site circulation provided on site. None of the conditional uses will impact any natural features and all uses are located in a manner that will serve both on-site residents and visitors alike. The internal pedestrian, vehicular and bicycle accessways and paths have been planned and designed to connect all of these uses on site with a well-designed streetscape and intermittent open spaces and plazas. Lastly, each of these uses will be subject to the Design Guidelines adopted with this GDP further ensuring a design consistency between these uses and the permitted uses on site. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

3. Development shall demonstrate compliance with OCMC 16.12;

Finding: Complies as Condition. The TIA and the GDP plan establish a street plan that meets the requirements for public improvements and will adequately serve the proposed development. Rather

than repeating those findings here, this criteria response incorporates by reference the TIA findings above and below and the findings above related to Chapter 16.12.

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

Finding: Complies as Condition. The North End master plan will beneficially alter the character of the area by redeveloping a former landfill into a vibrant mixed-use development. All the uses proposed within the master plan are permitted outright or conditionally allowed within the underlying zone. The technical reports submitted with this application demonstrate that any impacts associated with the development are adequately mitigated and will not impact surrounding properties. In fact, the improvements to the adjacent street frontages and the new collector planned through the site will provide additional access options for adjacent properties connecting through the site to other destinations or to locations within the GDP.

The proposed drive thrus are located, or conditioned to be located on corner lots with direct pedestrian entrances and vehicle access and queues located within the proposed sitewide parking lots. This approach meets the siting requirements in OCMC 17.62 and contributes to the feel of an urban block system. The request to increase tenant space in E2 is appropriate as it is farthest away from the urban core and public streets. Building C2 an S2 are conditioned to provide additional tenant spaces within the buildings and to act more as a mixed use development with a larger tenant, rather than a standalone large anchor building proportional to the mitigation processed and had been placed closer

These improvements include multimodal access improvements such as a new pedestrian connection to the Oregon Trail museum. The character of the area has been defined largely by this former landfill. Reclaiming this landfill for beneficial and economic use will significantly benefit the character of the area in a manner that does not preclude but instead enhances the opportunities on surrounding properties. The conditional uses associated with this request will all be internal to the site, and do not preclude surrounding property owners from using their properties consistent with the Mixed-Use Downtown zoning district.

Limiting the anchor tenant percentage in Buildings C2 and S2 allows the proposed to remain consistent with the intent of the Mixed Use Downtown District to encourage a mix of uses vertically and horizontally though pedestrian scaling and entrances. *"The mixed-use downtown (MUD) district is designed to apply within the traditional downtown core along Main Street and includes the "north-end" area, generally between 5th Street and Abernethy Street, and some of the area bordering McLoughlin Boulevard. Land uses are characterized by high-volume establishments constructed at the human scale such as retail, service, office, multi-family residential, lodging or similar as defined by the community development director. A mix of high-density residential, office and retail uses are encouraged in this district, with retail and service uses on the ground floor and office and residential uses on the upper floors. The emphasis is on those uses that encourage pedestrian and transit use. This district includes a downtown design district overlay for the historic downtown area. Retail and service uses on the ground floor and office and residential uses on the upper floors are encouraged in this district. The design standards for this sub-district require a continuous storefront façade featuring streetscape amenities to enhance the active and attractive pedestrian environment.:*

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

Finding: Complies as Condition. The Oregon City Comprehensive Plan map designates The North End master plan area as Mixed-Use Downtown. It's also recognized as a Regional Center under the Metro 2040 Growth Concept Plan. While the Comprehensive plan includes by reference, the Oregon City Downtown Community Plan and Oregon City Waterfront Master Plans, neither of these plans include a discussion of detailed development concepts within the landfill area. However, within Section 2 – Land Use, Goal 2.2 of the Comprehensive Plan envisions the area, "…the End of the Oregon Trail area, as a quality place for shopping, living, working, cultural and recreational activities, and social interaction." Subsequently, the North End master plan has been zoned Mixed-Use Downtown and the zoning code implements these goals through specific provisions. Because the proposed uses are identified within the zoning code and the site is zoned for Mixed-Use Downtown, this request is consistent with the Comprehensive Plan. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

The applicant provided the following findings for compliance with the goals and policies of the city comprehensive:

SECTION 1: CITIZEN INVOLVEMENT

Goal 1.1 Citizen Involvement Program

Implement a Citizen Involvement Program that will provide an active and systematic process for citizen participation in all phases of the land-use decision making process to enable citizens to consider and act upon a broad range of issues affecting the livability, community sustainability, and quality of neighborhoods and the community as a whole.

Policy 1.1.1

Utilize neighborhood associations as the vehicle for neighborhood-based input to meet the requirements of the Land Conservation and Development Commission (LCDC) Statewide Planning Goal 1, Citizen Involvement. The Citizen Involvement Committee (CIC) shall serve as the officially recognized citizen committee needed to meet LCDC Statewide Planning Goal 1.

Response: The project was presented to the Oregon City Citizen Involvement Committee on February 1, 2021. The team went over the project and overall design objectives that had been considered as the project was developed and answered questions from the attendees. The land use process also includes an opportunity for community involvement in assuring the proposal complies with the applicable approval criteria.

Goal 1.4 Community Involvement

Provide complete information for individuals, groups, and communities to participate in public policy planning and implementation of policies.

Policy 1.4.1

Notify citizens about community involvement opportunities when they occur.

Response: The City's public hearing process meets the requirements of this Goal for citizen involvement in the land use process. Notice of the proposal will be provided to all property owners within the notice area (300 feet) and adjacent city-recognized neighborhood associations, published on the City's website,

and will also be posted on the subject property, giving interested citizens an opportunity to be involved in the process. The developer has also spent the last year reaching out to local civic groups to discuss the project. A public hearing to consider the request will be held by the Planning Commission who will make a decision on the proposal following an open public record period and hearing. Through the notice and public hearing process, all interested parties are afforded the opportunity to review the application, comment on the proposal, and participate in the decision. This process meets the requirements of this Goal for citizen involvement in the land use planning process. In accordance with the findings presented above, the proposal is consistent with Goal 1.

SECTION 2: LAND USE

Goal 2.1 Efficient Use of Land

Ensure that property planned for residential, commercial, office, and industrial uses is used efficiently and that land is developed following principles of sustainable development.

Policy 2.1.1
Create incentives for new development to use land more efficiently, such as by having minimum floor area ratios and maximums for parking and setbacks.
Policy 2.1.2
Encourage the vertical and horizontal mixing of different land-use types in selected areas of the city where compatible uses can be designed to reduce the overall need for parking, create vibrant urban areas, reduce reliance on private automobiles, create more business opportunities and achieve better places to live.

Policy 2.1.3
Encourage sub-area master planning for larger developments or parcels, including re-development, where it may be feasible to develop more mixed uses, or campus-style industrial parks, with shared parking and landscaping areas. Allow developments to vary from prescriptive standards if planned and approved under this provision.
Policy 2.1.4
Use redevelopment programs such as urban renewal to help redevelop underutilized commercial and industrial land.

Response: The North End Master Plan is located within the Mixed-Use Downtown Zoning District which has established minimum floor area ratios, and maximums for parking and setbacks. The minimum floor area is exceeded by the master plan. The proposed parking is between the established minimum and maximum parking standards. The maximum setbacks are met on all frontages except for Abernethy Road. Buildings located along the Abernethy Road frontage are setback outside of the floodplain and a modification to this standard has been requested as allowed by the provisions in the Oregon City Code section 17.65.070.

The Mixed-Use District allows for the vertical and horizontal mixing of different land uses as evidenced by the programming within the proposed master plan. The General Development Plan provides a healthy mix of uses including both commercial and residential.

Approval of the proposed master plan would allow for the development of approximately 65 acres at the north end of Downtown Oregon City. The site is the former home of the Rossman Landfill and redevelopment of the site presents a number of issues that make it difficult to develop as a normal

greenfield site would. Developments within the master plan are able to benefit from shared parking and landscaped areas. Finally, the master plan allows the development to vary from prescriptive standards when approved by the Oregon City Planning Commission.

The City has an urban renewal program that the development of this property could benefit from given the challenges associated with redeveloping a former land fill that is located within the Oregon City Downtown and envisioned under the Metro Functional Plan as a regional center intended to serve the region.

Goal 2.2 Downtown Oregon City
Develop the Downtown area, which includes the Historic Downtown Area, the "north end" of the Downtown, Clackamette Cove, and the End of the Oregon Trail area, as a quality place for shopping, living, working, cultural and recreational activities, and social interaction. Provide walkways for pedestrian and bicycle traffic, preserve views of Willamette Falls and the Willamette River, and preserve the natural amenities of the area.

Policy 2.2.4
Target public infrastructure investments and create public/private partnerships to leverage maximum benefits from public investment and to help ensure that the Regional Center develops to its maximum capacity and realizes its full potential.
Policy 2.2.5
Encourage the development of a strong and healthy Historic Downtown retail, office, cultural, and residential center.
Policy 2.2.9
Improve connectivity for vehicles, bicycles, and pedestrians within the Oregon City Downtown community and waterfront master plan areas and improve links between residential areas and the community beyond.

Response: Over the past year, Summit Development Group has worked in a very concerted manner to develop relationships with key stakeholders in the community and at the City to partner on the redevelopment of the former Rossman Landfill site at the north end of Downtown. The North End Master Plan, is a vision to redevelop the site with a mix of commercial, service, entertainment, residential, and retail uses as depicted in the General Development Plan. The plan envisions a transformation of the former landfill to a lively, integrated mixed-use development that will not only complement the downtown, but serve as a primary gateway to the north end of the Oregon City Downtown.

The master plan features tree-lined streets, landscaped open spaces, offices and residences overlooking public plazas and open spaces, and will feature a wide variety of shopping, dining, and entertainment experiences. When completed, the plan will have contributed to the expansion of infrastructure within the area by way of actual construction as well as contributions to the overall network of the existing infrastructure including sewer, water, storm, sidewalks, streets, plazas and open spaces, bikeways, street trees. Construction of the project will include completion of several of the projects currently listed within the Oregon City Transportation system Plan (TSP). Many of them are needed but not funded. Finally, the develop will contribute to the overall improvements of the larger public systems through systems development charges.

The project will complement and strengthen the downtown by providing a compact design on the west edge of the development that provides appropriate architecture, massing, and encourages a walkable environment with a downtown streetscape while maintaining a relationship to the rest of historic downtown. The east edge of the site is provided with a mix of small retail spaces integrated into larger anchor retail pads that will allow the development to balance the need for growth and economic opportunity, without compromising the comfortable, small-town roots of downtown Oregon City. For future residents and tenants, The North End master plan provides a place where they can live, work and be a part of Oregon City.

Goal 2.4 Neighborhood Livability
Provide a sense of place and identity for residents and visitors by protecting and maintaining neighborhoods as the basic unit of community life in Oregon City while implementing the goals and policies of the other sections of the Comprehensive Plan.

Policy 2.4.2
Strive to establish facilities and land uses in every neighborhood that help give vibrancy, a sense of place, and a feeling of uniqueness; such as activity centers and points of interest.
Policy 2.4.3
Promote connectivity between neighborhoods and neighborhood commercial centers through a variety of transportation modes.

Response: When fully completed, the North End Master Plan will be a complete neighborhood at the North End of Downtown Oregon City. People who live within the master plan will have all of the goods and services that downtown Oregon City has to offer. There are plazas, active open spaces and multi-modal trails to connect the master plan with the residents and visitors in Historic Downtown Oregon City. The development of the site will attract more people into downtown from the region and contribute to the vibrancy of the downtown.

Goal 2.5 Retail and Neighborhood Commercial
Encourage the provision of appropriately scaled services to neighborhoods.

Policy 2.5.4
Encourage the development of successful commercial areas organized as centers surrounded by higher density housing and office uses, rather than as commercial strips adjacent to low-density housing.
Policy 2.5.5
Encourage commercial and industrial development that enhances livability of neighborhoods through the design of attractive LEEDTM-certified buildings and environmentally responsible landscaping that uses native vegetation wherever possible, and by ensuring that development is screened and buffered from adjoining residential neighborhoods and access is provided by a variety of transportation modes.

Response: The North End Master Plan will be a complete community with a mix of uses including retail and service-oriented businesses, residences, restaurants, open spaces, and entertainment that will be appropriately scaled services to the neighborhoods and downtown.

Goal 2.7 Oregon City Comprehensive Plan Land-Use Map
Maintain the Oregon City Comprehensive Plan Land-Use Map as the official long-range planning guide for land-use development of the city by type, density and location.

Policy 2.7.2
Use the following 11 land-use classifications on the Oregon City Comprehensive Plan Land-Use Map to determine the zoning classifications that may be applied to parcels:
- *Low Density Residential (LR)*
- *Medium Density Residential (MR)*
- *High Density Residential (HR)*
- *Commercial (C)*
- *Mixed Use Corridor (MUC)*
- *Mixed Use Employment (MUE)*
- *Mixed Use Downtown (MUD)*
- *Industrial (I)*
- *Public and Quasi-Public (QP)*
- *Parks (P)*
- *Future Urban Holding (FUH)*

Response: The proposed master plan is designated as Mixed-Use Downtown (MUD) on the Oregon City Comprehensive Plan Map. The proposed General Development Plan is consistent with the applicable provisions of the Oregon City Municipal Codes that are intended to implement that designation with few exceptions. In those cases, modifications are being requested as allowed.

SECTION 5: OPEN SPACES, SCENIC AND HISTORIC AREAS, AND NATURAL RESOURCES

Goal 5.1 Open Space
Establish an open space system that conserves fish and wildlife habitat and provides recreational opportunities, scenic vistas, access to nature and other community benefits.

Policy 5.1.1
Conserve open space along creeks, urban drainage ways, steep hillsides, and throughout Newell Creek Canyon.
Policy 5.1.2
Manage open space areas for their value in linking citizens and visitors with the natural environment, providing solace, exercise, scenic views and outdoor education. Built features in open space sites should harmonize with natural surroundings.

Response: The North End Master Plan will include a comprehensive open space system that includes setting aside the Abernethy Creek riparian corridor that runs along the eastern edge of the site. The creek and its associated buffers have been delineated and are not proposed to be developed with the master plan.

Goal 5.2 Scenic Views and Scenic Sites
Protect the scenic qualities of Oregon City and scenic views of the surrounding landscape.

Policy 5.2.1
Identify and protect significant views of local and distant features such as Mt. Hood, the Cascade Mountains, the Clackamas River Valley, the Willamette River, Willamette Falls, the Tualatin Mountains, Newell Creek Canyon, and the skyline of the city of Portland, as viewed from within the city.
Policy 5.2.2

Maximize the visual compatibility and minimize the visual distraction of new structures or development within important viewsheds by establishing standards for landscaping, placement, height, mass, color, and window reflectivity.

Response: The proposed master plan does not impact any formally identified view corridors or view sheds. All proposed development is proposed to be consistent with the height requirements of the Mixed-Use Downtown (MUD) zoning designation.

Goal 5.4 Natural Resources
Identify and seek strategies to conserve and restore Oregon City's natural resources, including air, surface and subsurface water, geologic features, soils, vegetation, and fish and wildlife, in order to sustain quality of life for current and future citizens and visitors, and the long-term viability of the ecological systems.

Policy 5.4.1
Conserve and restore ecological structure, processes and functions within the city to closely approximate natural ecosystem structure, processes, and functions.
Policy 5.4.5
Ensure that riparian corridors along streams and rivers are conserved and restored to provide maximum ecological value to aquatic and terrestrial species. This could include an aggressive tree and vegetation planting program to stabilize slopes, reduce erosion, and mitigate against invasive species and stream impacts where appropriate.
Policy 5.4.8
Conserve natural resources that have significant functions and values related to flood protection, sediment and erosion control, water quality, groundwater recharge and discharge, education, vegetation and fish, and wildlife habitat.
Policy 5.4.9
Protect and enhance riparian corridors along streams in Oregon City to increase shade, reduce streambank erosion and intrusion of sediments, and provide habitat for a variety of plants, animals, and fish.
Policy 5.4.10
Encourage and promote the restoration of the hydrologic and ecological character and function of streams and wetlands that have been degraded by channeling or eliminated from the landscape by routing into culverts.
Policy 5.4.11
Maintain and enhance the function and quality of natural wetlands and create, where appropriate, wetlands or swales to moderate the quantity and velocity of water runoff entering streams during storm events and to reduce the amount of pollutants carried into streams.

Response: The proposed development would occur on the former Rossman Landfill and is directly adjacent to Abernethy Creek. The proposed development conserves the creek and its associated buffers. If there are subsequent decisions to impact the buffers as part of a detailed development plan, the City can impose appropriate mitigation and the developer will be expected to comply with those requirements. It may be necessary to remove invasive plants and replant with native species as the property is developed, but any and all work within the corridor will be permitted through the appropriate agency.

Policy 5.4.12

Use a watershed-scale assessment when reviewing and planning for the potential effects from development, whether private or public, on water quality and quantity entering streams.
Policy 5.4.16
Protect surfacewater quality by:
• providing a vegetated corridor to separate protected water features from development
• maintaining or reducing stream temperatures with vegetative shading
• minimizing erosion and nutrient and pollutant loading into water
• providing infiltration and natural water purification by percolation through soil and vegetation

Response: The master plan developer will construct an on-site storm drainage system that includes a combination of low impact bio-retention facilities and mechanical structures to treat stormwater prior to discharge. The stormwater will be treated and conveyed to the appropriate drainage basin. The entire storm system will be designed to be consistent with the Oregon City design and construction standards.

Policy 5.4.18
Encourage use of native and hardy plants such as trees, shrubs and groundcovers to maintain ecological function and reduce maintenance costs and chemical use.

Response: The master plan includes landscape design that is consistent with the Oregon City Municipal Code landscape standards and includes design guidelines that promote the use of native and hardy plants within the on-site landscape areas.

SECTION 6: QUALITY OF AIR, WATER, AND LAND RESOURCES

Goal 6.1 Air Quality
Promote the conservation, protection and improvement of the quality of the air in Oregon City.

Policy 6.1.1
Promote land-use patterns that reduce the need for distance travel by singleoccupancy vehicles and increase opportunities for walking, biking and/or transit to destinations such as places of employment, shopping and education.
Policy 6.1.2
Ensure that development practices comply with or exceed regional, state, and federal standards for air quality.
Policy 6.1.4
Encourage the maintenance and improvement of the city's tree canopy to improve air quality.

Response: The proposed master plan is provided with a transportation system that can be utilized by all modes of transportation including bicycling and walking. Post-construction emissions would come from personal vehicles traveling to the Downtown from the region and the buildings within the development. Within the Metro area, all of these vehicles are required to meet strict emissions standards. All future building construction within the master plan will be subject to the State and local energy codes.

Additionally, the master plan includes approximately 540 housing units and will allow for a variety of uses that will create opportunities for those residents and citizens within close proximity to the development to eat, shop, recreate, and obtain all of the personal services that downtown Oregon City has to offer within walking and biking distance. The site is also in close proximity to transit as well as the

Amtrak Station. Finally, over 500 new trees will be planted within the development when it is fully constructed.

Goal 6.2 Water Quality
Control erosion and sedimentation associated with construction and development activities to protect water quality.

Policy 6.2.1
Prevent erosion and restrict the discharge of sediments into surface- and groundwater by requiring erosion prevention measures and sediment control practices.
Policy 6.2.2
Where feasible, use open, naturally vegetated drainage ways to reduce stormwater and improve water quality.

Response: Future construction activities will be subject to state and local erosion control standards. As stated previously, the master plan developer will construct an on-site storm drainage system that includes a combination of low impact bio-retention facilities and mechanical structures to treat stormwater prior to discharge. The stormwater will be treated and conveyed to the appropriate drainage basin. The entire storm system will be designed to be consistent with the Oregon City design and construction standards.

Goal 6.3 Nightlighting
Protect the night skies above Oregon City and facilities that utilize the night sky, such as the Haggart Astronomical Observatory, while providing for nightlighting at appropriate levels to ensure safety for residents, businesses, and users of transportation facilities, to reduce light trespass onto neighboring properties, to conserve energy, and to reduce light pollution via use of night-friendly lighting.

Policy 6.3.1
Minimize light pollution and reduce glare from reaching the sky and trespassing onto adjacent properties.
Policy 6.3.2
Encourage new developments to provide even and energy-efficient lighting that ensures safety and discourages vandalism. Encourage existing developments to retrofit when feasible.

Response: Proposed development within the master plan area will meet the lighting standards adopted by Oregon City as well as the Oregon Energy Codes.

Goal 6.4 Noise
Prevent excessive noise that may jeopardize the health, welfare, and safety of the citizens or degrade the quality of life.

Policy 6.4.1
Provide for noise abatement features such as sound-walls, soil berms, vegetation, and setbacks, to buffer neighborhoods from vehicular noise and industrial uses.
Policy 6.4.2
Encourage land-use patterns along high-traffic corridors that minimize noise impacts from motorized traffic through building location, design, size and scale.

Response: The master plan is located at the north end of downtown Oregon City and allows the same uses that are permitted within the zoning code. There are no expected uses that will create excessive noise beyond the uses that are already permitted within the area.

SECTION 7: NATURAL HAZARDS

Goal 7.1 Natural Hazards

Protect life and reduce property loss from the destruction associated with natural hazards.

Policy 7.1.1

Limit loss of life and damage to property from natural hazards by regulating or prohibiting development in areas of known or potential hazards.

Policy 7.1.3

Reduce risk to residents and businesses by maintaining accurate information on the existence and potential of hazards.

Policy 7.1.5

Minimize the risk of loss of life and damage to property from flooding by limiting development in the 100-year floodplain and by ensuring that accepted methods of flood proofing are used.

Policy 7.1.6

Encourage the use of land and design of structures that are relatively unaffected by the periodic effects of flooding, such as parking and other uses not normally occupied by humans.

Policy 7.1.7

Prohibit uses in areas subject to flooding that would exacerbate or contribute to hazards posed by flooding by introducing hazardous materials, filling or obstructing floodways, modifying drainage channels, and other detrimental actions.

Policy 7.1.8

Provide standards in City Codes for planning, reviewing, and approving development in areas of potential landslides that will prevent or minimize potential landslides while allowing appropriate development.

Policy 7.1.9

Locate, design, and construct structures in conformance with current building codes and standards for seismic-resistant design.

Response: The proposed master plan includes areas that are located within the floodplain and geologic hazard areas. The site will be balanced so that there is no increase in flooding beyond what occurs today. The GDP intentionally proposes to site circulation and parking area within the 100-year floodplain to minimize the potential hazards associated with habitable spaces. Further, the site has been evaluated by NV5 (formerly Geo-Design) and future construction within the development areas will be subject to the standards within the Oregon City Municipal Code as well as the recommendations of the geo-technical engineer. Finally, all future development would be subject to the applicable building codes that are in effect at the time they are proposed and constructed.

SECTION 8: PARKS AND RECREATION

Goal 8.1 Developing Oregon City's Park and Recreation System

Maintain and enhance the existing park and recreation system while planning for future expansion to meet residential growth.

Policy 8.1.1

Provide an active neighborhood park-type facility and community park-type facility within a reasonable distance from residences, as defined by the Oregon City Park and Recreation Master Plan, to residents of Oregon City.
Policy 8.1.5
Identify and construct a network of off-street trails throughout the city for walking and jogging.
Policy 8.1.6
Policy 8.1.9
Emphasize retaining natural conditions and the natural environment in proposed passive recreation areas.

Response: The proposed master plan includes a system of parks and plazas strategically located throughout the master plan and connected through a circuitous pedestrian and bike system. Parks and plazas are both passive and active. The proposed development includes two pedestrian shared use connections that are identified in the Oregon City TSP.

SECTION 9: ECONOMIC DEVELOPMENT

Goal 9.1 Improve Oregon City's Economic Health
Provide a vital, diversified, innovative economy including an adequate supply of goods and services and employment opportunities to work toward an economically reasonable, ecologically sound and socially equitable economy.

Policy 9.1.1
Attract high-quality commercial and industrial development that provides stable, high-paying jobs in safe and healthy work environments, that contributes to a broad and sufficient tax base, and that does not compromise the quality of the environment.

Response: When fully developed, the North End Master Plan will provide a mix of high-quality commercial and service uses within a development intended to complement the mix of uses in downtown. It will provide residents of the development and citizens within the area to access whatever services and products they need to live, work, and recreate within Oregon City.

Goal 9.5 Retail Service
Allow a variety of retail outlets and shopping areas to meet the needs of the community and nearby rural areas.

Response: In addition to being located at the north end of downtown Oregon City, the North End Master Plan is part of a designated regional center under the Metro 2040 Functional Plan. The site is large and provides for a mix of service, entertainment, and retail uses that can assist the City in realizing the intent of this goal. With good access and transportation facilities, the downtown area will serve nearby rural areas as well as the community itself.

Goal 9.6 Tourism
Promote Oregon City as a destination for tourism.

Policy 9.6.1
Protect historic, recreational, and natural resources as the basis for tourism, such as the Historic Downtown Area.

Policy 9.6.2
Ensure land uses and transportation connections that support tourism as an important aspect of the City's economic development strategy. This could include connections to the End of the Oregon Trail Interpretive Center and the train depot.
Policy 9.6.3
Provide land uses in the Downtown Historic Area, 7th Street corridor, and the End of the Oregon Trail Interpretive Center that support tourism and visitor services.
Policy 9.6.6
Encourage private development of hotel, bed and breakfast, restaurant facilities and other visitor services.

Response: The North End Master Plan is located at the north end of downtown Oregon City and will likely attract a lot of visitors to the area. It connects directly to the End of the Oregon Trail Interpretive Center and provides street improvements along Washington Street and Abernethy that will connect the development with the rest of downtown. The proposed development includes service, retail, restaurants, entertainment, and housing that will draw a lot of additional attention to the downtown area.

Goal 9.8 Transportation System
Recognize the importance of the land use-transportation link and encourage businesses to locate in areas already served by the type of transportation system they need.

Policy 9.8.1
Through coordination with TriMet and local employers, encourage and promote the use of mass transit to travel between residential areas and employment areas.
Policy 9.8.6
Encourage the provision of multi-modal transportation to support major existing employers.
Policy 9.8.7
Assess methods to integrate the pedestrian, bicycle and elevator transportation modes into the mass transit system.

Response: The proposed master plan is within downtown and is in close proximity to a variety of transportation services for all modes of transportation. The development provides for multi-modal transportation within the development including cycling, pedestrians, and automobiles. It is at the confluence of several major transportation facilities and over the course of its development will provide transportation improvements that supplement and improve the existing system consistent with the TSP.

SECTION 10: HOUSING

Goal 10.1 Diverse Housing Opportunities
Provide for the planning, development and preservation of a variety of housing types and lot sizes.

Policy 10.1.7
Use a combination of incentives and development standards to promote and encourage well-designed single-family subdivisions and multi-family developments that result in neighborhood livability and stability.

Response: The proposed master plan will provide approximately 540 new residential housing units within a multi-family housing type that will increase the supply of housing near downtown. There will not likely be individual lots associated with these homes, but they will have access to shared open spaces, plazas, and both passive and active recreational opportunities.

SECTION 11: PUBLIC FACILITIES

Goal 11.1 Provision of Public Facilities
Serve the health, safety, education, welfare, and recreational needs of all Oregon City residents through the planning and provision of adequate public facilities.

Policy 11.1.3
Confine urban public facilities and services to the city limits except where allowed for safety and health reasons in accordance with state land-use planning goals and regulations. Facilities that serve the public will be centrally located and accessible, preferably by multiple modes of transportation.
Policy 11.1.4
Support development on underdeveloped or vacant buildable land within the city where public facilities and services are available or can be provided and where land-use compatibility can be found relative to the environment, zoning, and Comprehensive Plan goals.
Policy 11.1.5
Design the extension or improvement of any major public facility and service to an area to complement other public facilities and services at uniform levels.
Policy 11.1.6
Enhance efficient use of existing public facilities and services by encouraging development at maximum levels permitted in the Comprehensive Plan, implementing minimum residential densities, and adopting an Accessory Dwelling Unit Ordinance to infill vacant land.

Response: The proposed master plan is an underdeveloped property in close proximity to downtown Oregon City. The site is located within the UGB and the City limits. Public services are located adjacent to the master plan site and will be extended into the site with the first phase. In addition, development of the site will contribute to the overall public infrastructure system through direct improvements or indirectly through systems development charges associated with development in the master plan area.

Goal 11.2 Wastewater
Seek the most efficient and economic means available for constructing, operating, and maintaining the City's wastewater collection system while protecting the environment and meeting state and federal standards for sanitary sewer systems.

Policy 11.2.2
Plan, operate and maintain the wastewater collection system for all current and anticipated city residents within the existing Urban Growth Boundary. Plan strategically for future expansion areas.
Policy 11.2.5
Implement the City's wastewater policies through the City of Oregon City Sanitary Sewer Master Plan.

Response: The North End Master Plan is located within the existing UGB and will be served by the extension and improvement of existing sanitary sewer located adjacent to the site. The development will contribute to the improvement and maintenance of the overall wastewater system through payment of systems development charges.

Goal 11.3 Water Distribution
Seek the most efficient and economic means available for constructing, operating, and maintaining the City's water distribution system while protecting the environment and meeting state and federal standards for potable water systems.

Policy 11.3.1
Plan, operate and maintain the water distribution system for all current and anticipated city residents within its existing Urban Growth Boundary and plan strategically for future expansion areas.
Policy 11.3.2

Response: The North End Master Plan is located within the existing UGB and will be served by the extension and improvement of existing water distribution lines located adjacent to the site. The development will contribute to the improvement and maintenance of the overall water system through payment of systems development charges.

Goal 11.4 Stormwater Management
Seek the most efficient and economical means available for constructing, operating, and maintaining the City's stormwater management system while protecting the environment and meeting regional, state, and federal standards for protection and restoration of water resources and fish and wildlife habitat.

Policy 11.4.1
Plan, operate, and maintain the stormwater management system for all current and anticipated city residents within Oregon City's existing Urban Growth Boundary and plan strategically for future expansion areas.
Policy 11.4.2
Adopt "green streets" standards to reduce the amount of impervious surface and increase the use of bioswales for stormwater retention where practicable.
Policy 11.4.3
Ensure parking lot designs that mitigate stormwater impacts. Take measures to reduce waterflow and increase water absorption through the use of bioswales, vegetated landscaped islands with curb cuts to allow water inflow, and tree planting.
Policy 11.4.4
Maintain existing drainageways in a natural state for maximum water quality, water resource preservation, and aesthetic benefits.
Policy 11.4.5
Design stormwater facilities to discharge surfacewater at pre-development rates and enhance stormwater quality in accordance with criteria in City of Oregon City Public Works Stormwater and Grading Design Standards.

Response: The North End Master Plan is located within the existing UGB and will be served by the extension and improvement of existing storm facilities located adjacent to the site. Stormwater will be treated through a combination of mechanical treatment systems and low impact development facilities. The development will contribute to the improvement and maintenance of the overall wastewater system through payment of systems development charges.

Goal 11.6 Transportation Infrastructure

Optimize the City's investment in transportation infrastructure.

Policy 11.6.1
Make investments to accommodate multi-modal traffic as much as possible to include bike lanes, bus turnouts and shelters, sidewalks, etc., especially on major and minor arterial roads, and in regional and employment centers.

Response: The North End Master Plan area is adjacent to an existing system of public streets and will provide improvements to increase multi-modal access to the site and downtown. Further, the development will contribute directly to the system by construction improvements identified within the Oregon City TSP as well as indirectly through the payment of systems development charges.

Goal 11.7 Private Utility Operations
Coordinate with utilities that provide electric, gas, telephone and television cable systems, and high-speed internet connection to Oregon City residents to ensure adequate service levels.
Policy 11.7.1
Require local service lines in new subdivisions be placed underground.
Policy 11.7.2
Coordinate with private utility providers to install infrastructure during street construction and maintenance to reduce the need to repeatedly cut into newly paved streets.
Policy 11.7.3
Adopt lighting practices in streets and other public facilities, and encourage them in private development, that reduce glare, light pollution, light trespass, and energy use, while maintaining even lighting ensuring good visibility and safety for the public.

Response: All new private utilities will be placed underground and will be placed consistent with the franchise utilities standards. Lighting will be designed in accordance with City standards that are intended to implement these policies.

SECTION 12: TRANSPORTATION

Goal 12.1 Land Use-Transportation Connection
Ensure that the mutually supportive nature of land use and transportation is recognized in planning for the future of Oregon City.

Policy 12.1.1
Maintain and enhance citywide transportation functionality by emphasizing multi-modal travel options for all types of land uses.
Policy 12.1.3
Support mixed uses with higher residential densities in transportation corridors and include a consideration of financial and regulatory incentives to upgrade existing buildings and transportation systems.
Policy 12.1.4
Provide walkable neighborhoods. They are desirable places to live, work, learn and play, and therefore a key component of smart growth.

Response: The North End Master Plan fronts three public streets, Washington Street, Abernethy Road, and Redland Road. Frontage improvements, including bicycle and pedestrian improvements have been

coordinated with the Oregon City Engineering Division and are consistent with the requirements of the Oregon City TSP. The proposed GDP proposes to construct seven projects identified within the TSP that are intended to improve multi-modal travel options within the City. Required right-of-way and easements will be dedicated or provided with all of the proposed transportation improvements. The master plan is a walkable neighborhood that is connected to the community through direct connections to the existing transportation systems.

Goal 12.3 Multi-Modal Travel Options
Develop and maintain a transportation system that provides and encourages a variety of multi-modal travel options to meet the mobility needs of all Oregon City residents.
Policy 12.3.1
Provide an interconnected and accessible street system that minimizes vehiclemiles-traveled and inappropriate neighborhood cut-through traffic.4
Policy 12.3.2
Provide an interconnected and accessible pedestrian system that links residential areas with major pedestrian generators such as employment centers, public facilities, and recreational areas.
Policy 12.3.3
Provide a well-defined and accessible bicycle network that links residential areas, major bicycle generators, employment centers, recreational areas, and the arterial and collector roadway network.
Policy 12.3.4
Ensure the adequacy of pedestrian and bicycle connections to local, county, and regional trails.

Response: As stated previously, the proposed GDP proposes to construct seven projects identified within the TSP that are intended to improve multi-modal travel options within the City. Internal and adjacent to the site, there will be a mix of trails, sidewalks, streets, and bike lanes that provide good internal and efficient circulation routes that also connect to the existing public street system.

Goal 12.8 Implementation/Funding
Identify and implement needed transportation system improvements using available funding.

Policy 12.8.3
Provide incentives for private sector contributions to multi-modal transportation links and facilities, for example, establishing new standards in the zoning code.

Response: The cost of providing the transportation improvements associated with such a large site will require assistance and partnerships. The developer is pursuing access to a combination of public and private funding to ensure that all of the needed transportation system improvements are feasible. In addition to direct improvements paid for by the development, the developers within the master plan area will be contributing indirectly to the improvements of the overall transportation system through systems development charges.

SECTION 13: ENERGY CONSERVATION

Goal 13.1 Energy Sources
Conserve energy in all forms through efficient land-use patterns, public transportation, building siting and construction standards, and city programs, facilities, and activities.

Policy 13.1.2

Encourage siting and construction of new development to take advantage of solar energy, minimize energy usage, and maximize opportunities for public transit.

Response: Future development within the North End Master Plan will be required to meet applicable building codes for energy conservation. The site is located in close proximity to public transit and has been designed to be efficient and walkable.

Goal 13.2 Energy Conservation
Plan public and private development to conserve energy.

Policy 13.2.1
Promote mixed-use development, increased densities near activity centers, and home-based occupations (where appropriate).
Policy 13.2.5
Construct bikeways and sidewalks, and require connectivity of these facilities to reduce the use of petroleum-fueled transportation.

Response: The proposed master plan is a mixed use and walkable development that allows future residents within the development to live, work, and recreate within the area and downtown. The construction of bike lanes and sidewalks are a large part of the internal connectivity.

B. Permits for conditional uses shall stipulate restrictions or conditions which may include, but are not limited to, a definite time limit to meet such conditions, provisions for a front, side or rear yard greater than the minimum dimensional standards of the zoning ordinance, suitable landscaping, off-street parking, and any other reasonable restriction, condition or safeguard that would uphold the spirit and intent of the zoning ordinance, and mitigate adverse effect upon the neighborhood properties by reason of the use, extension, construction or alteration allowed as set forth in the findings of the Planning Commission.
Finding: Complies as Condition. All the proposed conditional use locations are identified within the overall master plan map. Under Subsections (B) and (C) above, all the conditional uses meet the dimensional standards of the zone with the exception of the anchor tenants and those dimensional adjustments are addressed here in this conditional use review. The entire site, including the conditional uses, will meet and exceed the landscaping and other applicable setback requirements. With the exception of traffic impacts that are proposed to be mitigated through the Plan approval, any impacts from the proposed conditional uses will be limited to the interior of the development itself and those impacts have been addressed through location within the site, the circulation plan, adequate parking and stacking and a comprehensive set of design guidelines. Subsections (D) and (E) are not triggered by this proposal. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

C. Any conditional use shall meet the dimensional standards of the zone in which it is to be located pursuant to subsection B. of this section unless otherwise indicated, as well as the minimum conditions listed below.
Finding: Complies as Proposed. None of the proposed conditional uses are proposed within fifty feet of a residential zone, and additional right of way will be dedicated and improved through the master plan approval. The remaining uses of this section are not proposed within The North End master plan.

D. In the case of a use existing prior to the effective date of the ordinance codified in this title and classified in this title as a conditional use, any change of use expansion of lot area or expansion of structure shall conform with the requirements for conditional use.
Finding: Not Applicable. No existing uses are incorporated in this application.

E. The Planning Commission may specifically permit, upon approval of a conditional use, further expansion to a specified maximum designated by the Planning Commission without the need to return for additional review.
Finding: Complies as Condition. Metrics have been added to the Conditional Use Conditions of Approval in the Master Plan that delineate when a proposal will required to return for Planning commission review either as a Type III DDP or a Master Plan Amendment.

17.56.020 - Permit—Application.
A. A property owner or authorized agent shall initiate a request for a conditional use by filing an application with the city recorder. The applicant shall submit a site plan, drawn to scale, showing the dimensions and arrangement of the proposed development. The application shall be accompanied by the filing fee listed in OCMC 17.50.080 to defray the costs of publication, investigation and processing.
B. Before the Planning Commission or City Commission may act on a conditional use application, it shall hold a public hearing thereon, following procedure as established in OCMC 17.50.
Finding: Complies. The applicant has paid for and provided notice to this application.

17.56.025 - Minor modifications to legal conditional uses.
Minor modifications to an approved conditional use permit may be permitted. If permitted, the modification shall be reviewed as a minor site plan and design review. A minor modification to an approved conditional use permit is considered one of the following:
A. Modification to a structure for the purpose of enhancing the aesthetics of the building and there is no increase in the interior usable space;
B. Except for shelters, a maximum addition of up to one thousand square feet to a commercial, office, institutional, public, multi-family, or industrial building provided that the addition is not more than thirty-five percent of the original building square footage; or
C. Revisions to parking alignment and/or related vehicle circulation patterns.
***Findings: Not applicable.** This section will be analyzed at the time of each DDP application for an approved conditional use to determine, along with any applicable Conditions of Approval, if the proposal will be reviewed as minor modification, or must be reviewed by the Planning Commission.*

17.56.040 - Criteria and standards for conditional uses.
In addition to the standards listed herein in OCMC 17.56.010, which are to be considered in the approval of all conditional uses and the standards of the zone in which the conditional use is located, the following additional standards shall be applicable:
A. Building Openings. The city may limit or prohibit building openings within fifty feet of residential property in a residential zone if the openings will cause glare, excessive noise or excessive traffic which would adversely affect adjacent residential property as set forth in the findings of the Planning Commission.
Finding: Not applicable. No buildings are proposed to abut a residential zone**.**

B. Additional Street Right-of-Way. The dedication of additional right-of-way may be required where the city plan indicates need for increased width and where the street is inadequate for its use; or where the nature of the proposed development warrants increased street width.
Finding: Complies with Condition. Needed street dedication will occur duting individual DDP review.

C. Public Utility or Communication Facility. Such facilities as a utility substation, water storage tank, radio or television transmitter, tower, tank, power transformer, pumping station and similar structures shall be located, designed and installed with suitable regard for aesthetic values. The base of these facilities shall not be located closer to the property line than a distance equal to the height of the structure. Hydroelectric generation facilities shall not exceed ninety megawatts of generation capacity.
Finding: Not Applicable. No communication facilities are part of this application.

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

17.56.070 - Periodic review of conditional use permits.
A. The City Commission may provide for the periodic review of some or all of the conditional use permits previously issued by the city, or, with regard to lands annexed by the city, those such permits issued by the county. In providing for such review, the City Commission may designate classes of such previously issued permits for which periodic review shall be undertaken.
B. Such review shall be accomplished as an administrative action under Chapter 17.50 and shall be limited to the question of whether additional conditions should be imposed on a conditional use in the light of changing circumstances and more efficient implementation of the city's comprehensive plan.
C. Notwithstanding the provisions of Chapter 17.58, any additional conditions shall be met as a requirement for continued operation of the conditional use.
Finding: Complies. The applicant is aware that the City Commission could choose to periodic review of some or all of the conditional use permits previously issued by the city in the future. No plans to pursue approach this have been identified by the City Commission at this time.

CHAPTER 17.62 – SITE PLAN AND DESIGN REVIEW

17.62.015 - Modifications that will better meet design review requirements.
The review body shall consider modification of certain site related development standards of this Chapter specified below. These modifications may be approved as part of a Type II design review process.
A. Applicability.
1. This process shall apply to modifications to:
a. Landscaping in OCMC 17.62.050.A;
b. Vehicular Connections to Adjoining Properties in OCMC 17.62.050.B.2;
c. On-site pedestrian circulation in OCMC 17.62.050.C;
d. Utility Undergrounding Requirements in OCMC 16.12.095.G;
e. Building location in OCMC 17.62.055.D;
f. Building Details in OCMC 17.62.050.B.9.055.I;
g. Windows in OCMC 17.62.050.B.10.055.JParking Lot Landscaping in OCMC 17.52.060.

B. The review body may approve requested modifications if it finds that the applicant has shown that the following approval criteria are met:
1. The modification will result in a development that better meets the applicable design guidelines; and
2. The modification meets the intent of the standard. On balance, the proposal will be consistent with the purpose of the standard for which a modification is requested.

Finding: Complies as Conditioned. The applicant has requested two adjustments as part of the Master Plan process that are regulated in this chapter (Section 17.62.055.D Siting of Structures- frontage width and Section 17.62.050.C.4- "Elevated external stairways. Findings for this request can be found in OCMC 17.65.070 Master Plans. If approved, these adjustments will be allowed for the applicable properties during the DDP process without the need for individual modification requests.

17.62.030 - When required.
Site plan and design review shall be required for all development of real property in all zones except the low and medium density residential districts, unless otherwise provided for by this title or as a condition of approval of a permit. Site plan and design review shall also apply to all conditional uses, cluster housing developments, multi-family uses, manufactured home parks, and non-residential uses in all zones. Site Plan and Design Review does not apply to activities occurring within the right-of-way except for communication facilities pursuant to OCMC 17.80.
Site plan and design review is required for a change in use between the uses in Table 17.62.030:
Table 17.62.030

Existing Use	*Proposed Use*
Residential	*Nonresidential use, including but not limited to: commercial, office, industrial, retail, or institutional*
Single-family or duplex	*3 or more dwellings*

Site plan and design review shall not alter the type and category of uses permitted in the underlying zoning districts.
The general standards of section 17.62.050 do not apply to 3-4 plex, duplex, single-family attached dwellings, single-family detached residential unit, internal conversions, live/work dwelling and accessory dwelling unit Type I applications.
Finding: Not Applicable. The applicant has submitted for a Master Plan (CDP) for a sitewide development approach for the former Rossman's landfill. No development is proposed with this application. The applicant has identified specific design modifications through the Master Plan amendment process (See OCMC 17.65 findings in this report), which will govern future DDP/Site Plan and Design Review applications. All future DDP application will be reviewed for compliance with OCMC 17.62 Site Plan and Design Review of the development along with applicable Master Plan Conditions of Approval.

CHAPTER 17.65 MASTER PLANS AND PLANNED UNIT DEVELOPMENT

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

C. When identified in the Oregon City Comprehensive Plan. The master plan regulations are required for all properties identified for master planning in the Land Use section of the Oregon City Comprehensive Plan.
D. Voluntarily. An applicant may voluntarily submit a master plan or planned unit development as part of a land use review, including for residential projects.
Finding: Applicable. The North End Master Plan meets the purpose and intent of this Chapter by developing the 62-acre former Rossman Landfill site with a large-scale mixed-use development into a complete community with commercial, retail, entertainment, and residential uses. This application is for approval of a General Development Plan(GDP). The North End Master Plan is the foundation for a thriving, mixed-use development at the north end of downtown Oregon City. It provides a framework for future development of the site by defining on site uses that are anticipated to be developed over the life of the plan, needed extensions of community infrastructure including sewer, water, and transportation, and open space to serve the development, and off-site infrastructure improvements needed to mitigate impacts associated with complete build out of the master plan.

This is a request for approval of The North End master plan GDP. The GDP identifies the proposed uses within the development as discussed below, the project boundary and proposes both public and private infrastructure such as transportation and utility service. The GDP includes a detailed analysis of the site and anticipated impacts from the development. Where applicable, the applicant's design team has proposed mitigation to off-set the impacts of the development. Although a phasing plan has not yet been developed, public and private improvements are expected to be constructed with Detailed Development Plans over the life of the master plan. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

In this instance, Summit Development Group is the applicant and prospective purchaser of the property. Summit Development Group is voluntarily requesting that the site be developed under the master plan provisions of the Oregon City Municipal Code as provided in subsection D above.

17.65.040 - Procedure.
A. Preapplication Review. Prior to filing for either general development plan or detailed development plan approval, the applicant shall file a pre-application conference pursuant to OCMC 17.50.030.
Finding Complies as Proposed: The applicant has been made aware of these procedures in two separate preapplications held with City staff over the course of the last 11 months. The first pre-app was held in March of 2020 and the second pre-app was held in December of 2020 in response to program changes for future development on the site. A meeting with the Oregon City Citizen Involvement Committee was held virtually on February 1, 2021. No concurrent DDP approval is requested with this application.

B. General Development Plan. An application for a general development plan describing the long-term buildout of the site shall be reviewed through a Type III procedure. An applicant shall have an approved general development plan before any detailed development plan may be approved, unless both are approved or amended concurrently. Amendments to an approved general development plan shall be reviewed under a Type III procedure pursuant to OCMC 17.65.080.
Finding: Complies This is a request for approval of The North End master plan GDP. The GDP identifies the proposed uses within the development as discussed below, the project boundary and proposes both public and private infrastructure such as transportation and utility service. The GDP includes a detailed analysis of the site and anticipated impacts from the development. Where applicable, the applicant's design team has proposed mitigation to off-set the impacts of the development. Although a phasing

plan has not yet been developed, public and private improvements are expected to be constructed with Detailed Development Plans over the life of the master plan. Community Development and Public Works Staff have provided conditions on infrastructure phasing in the report to provide additional guidance during individual DDP reviews.

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

Finding: No applicable. The applicant has not propose a DDP application with this review,. All future DDP will be reviewed for complaince with the this Master plan and any adopted conditions of approval or revisions.

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

Finding: Not applicable. The applicant is not proposing concurrent review.

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

Finding: Complies. All applications for the subject site have been reviewed prior to the Master Plan submittal, or will be submitted after its approval.

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

Finding: Compiles. The applicant is intending to utilize the adopted Mater Plan for the allowed 20 years. The applicant can request to close the master plan upon full build-out and show that all outstanding conditions are met.

17.65.050 - General Development Plan.

A. Existing Conditions Submittal Requirements.

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

a. Current uses of and development on the site;

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

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

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

e. Previous land use approvals within the General Development Plan boundary and related conditions of approval, if applicable;

f. Existing utilization of the site;

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

1. Physical characteristics;

2. Ownership patterns;

3. Building inventory;

4. Vehicle/bicycle parking;

5. Landscaping/usable open space;

6. FAR/lot coverage;

7. Natural resources that appear on the city's adopted Goal 5 inventory;

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

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

10. Geologic hazards pursuant to OCMC 17.44.

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

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

2. Transit routes, facilities and availability;

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

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

i. Infrastructure facilities and capacity, including the following items:

1. Water;

2. Sanitary sewer;

3. Stormwater management; and

4. Easements.

2. Maps and Plans.

a. Existing conditions site plan. Drawn at a minimum scale of one-inch equals one hundred feet (one inch=one hundred feet) that shows the following items. At least one copy shall be eight and on-half inches × eleven inches in size, and black and white reproducible.

1. Date, north point, and scale of drawing.

2. Identification of the drawing as an existing conditions site plan.

3. Proposed development boundary.

4. All parking, circulation, loading and service areas, including locations of all carpool, vanpool and bicycle parking spaces as required in Chapter 52 of this title.

5. Contour lines at two-foot contour intervals for grades zero to ten percent, and five-foot intervals for grades over ten percent.

6. A site plan or plans, to scale, for the General Development Plan site and surrounding properties containing the required information identified in OCMC 17.62.040.b. Vicinity map. Depicting the location of the site sufficient to define its location, including identification of nearest cross streets. At least one copy of the vicinity map shall be eight and one-half inches × eleven inches in size, and black and white reproducible.

c. Aerial photo. Depicting the subject site and property within two hundred fifty feet of the proposed development boundaries. At least one copy of the aerial photo shall be eight and one-half inches × eleven in size, and black and white reproducible.

Finding: Complies. The information requested within this section has been provided in Chapter 3: Existing Conditions and the accompanying drawings included in Appendix B of he applicant's submittal.

B. Proposed Development Submittal Requirements.

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

a. The proposed duration of the general development plan.

b. The proposed development boundary. May also reference submitted maps or diagrams.

c. A description, approximate location, and timing of each proposed phase of development, and a statement specifying the phase or phases for which approval is sought under the current application. May also reference submitted maps or diagrams.

d. An explanation of how the proposed development is consistent with the purposes of Section 17.65, the applicable zone district or districts, and any applicable overlay district.

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

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

1. Transportation impacts as prescribed in subsection g. below;

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

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

4. Neighborhood livability impacts;

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

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

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

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

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

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

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

2. The applicant may choose to immediately implement all required transportation safety and capacity improvements associated with the fully executed general development plan. If this option is selected, no further transportation improvements will be required from the applicant. However, if a general development plan is later amended in a manner so as to cause the projected average daily trips, the projected AM or PM peak hour trips, or the peak parking demand of the development to increase over original projections, an additional transportation impact report shall be required to be submitted during the detailed development plan review process for all future phases of the development project and additional improvements may be required.

3. The applicant may defer implementation of any and all capacity and safety improvements required for any phase until that phase of the development reaches the detailed development plan stage. If this option is selected, the applicant shall submit a table linking required transportation improvements to vehicle trip thresholds for each development phase.

j. For residential and mixed-use projects:

a. Proposed minimum lot area, width, frontage and yard requirements.

b. Proposed project density in number of units per acre.

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

a. A preliminary site circulation plan showing the approximate location of proposed vehicular, bicycle, and pedestrian access points and circulation patterns, parking and loading areas or, in the alternative, proposed criteria for the location of such facilities to be determined during detailed development plan review.

b. The approximate location of all proposed streets, alleys, other public ways, sidewalks, bicycle and pedestrian access ways and other bicycle and pedestrian ways, transit streets and facilities, neighborhood activity centers and easements on and within two hundred fifty feet of the site. The map shall identify existing subdivisions and development and un-subdivided or unpartitioned land ownerships adjacent to the proposed development site and show how existing streets, alleys, sidewalks, bike routes, pedestrian/bicycle access ways and utilities within two hundred fifty feet may be extended to and/or through the proposed development.

c. The approximate location of all public facilities to serve the proposed development, including water, sanitary sewer, stormwater management facilities.

d. The approximate location, footprint and building square footage of buildings within of each phase of proposed development, and/or proposed lot patterns for each phase of future development.

e. The approximate locations of proposed parks, playgrounds or other outdoor play areas; outdoor common areas and usable open spaces; and natural, historic and cultural resource areas or features proposed for preservation. This information shall include identification of areas proposed to be dedicated or otherwise preserved for public use and those open areas to be maintained and controlled by the owners of the property and their successors in interest for private use.

Finding: Complies with Condition. The plans and reports provided with The North End general master plan depict existing and foundational improvements to the master plan area including grading, utilities, circulation, parking areas, access locations, open spaces, a proposed range of uses, building pad locations, and vertical massing. The boundary of the master plan is illustrated in the site plans included in Appendix B. The duration of the master plan and the subsequent phasing of improvements is wholly dependent upon market demand. However, it is anticipated that a first phase will include mass grading and horizontal infrastructure followed shortly thereafter by vertical development. Depending on market

conditions, the applicant intends to reach full build out by 2025, well within the 20-year vested master plan timeline. As more specifically discussed below, the GDP has been designed to be consistent with the existing provisions of the Oregon City Municipal Code sections except where a few adjustments are discussed below.

The general master plan has been laid out in a manner that intentionally avoids impacts to the natural resources on site, and where there are impacts that are unavoidable, the expectation is that they will be mitigated for in accordance with local requirements. The NROD criteria are addressed in more detail below.

Development on the site would occur over a former landfill that is capped, and although it is unlikely that there are any archaeological resources within the project area as a result of the prior landfill activities, the State Historic Preservation Office has indicated that the project area lies within an area generally perceived to have a high probability for possessing archaeological sites and/or buried human remains. If any archaeological objects or sites are discovered during construction, development activities will cease, and the appropriate authorities will be notified.

Currently, the site is a single property, and the requirements of the Mixed-Use Downtown Zoning District standards for minimum lot area, width, frontage, and yard requirements can be satisfied by future development. It is important that future land divisions and individual detailed DDP's respect the approved concepts within the GDP. Details of how the GDP satisfies the dimensional requirements of the Mixed-Use Downtown zoning district and other applicable provisions of the OCMC are provided within this narrative. It should be noted that the GDP assumes development of 524 residential units within the North District area but that there is no minimum density requirement of the underlying zone. Instead development within the GDP is regulated by FAR. The proposed FAR, as discussed below is 0.49:1 in excess of the 0.3:1 minimum required in the zone.

The North End master plan is planned to be a well designed, compact and walkable community. Future development within the boundaries of the master plan area, under detailed development plan approval, is expected to meet City standards which include development standards that have already been adopted by the community to mitigate impacts of the proposed development on the surrounding community and neighborhood. The variety of proposed uses within the plan area allows for people to live, work, play and shop in one place, which also becomes a destination for people from the region. Where possible, the proposed master plan takes advantage of existing infrastructure extensions of existing utilities and streets. The public utility plan is contained in Appendix B. Improvements to the local transportation system are intended to be consistent with the impacts of the development but timed in accordance with a future development agreement. Ideally, improvements will be based on the individual impacts of each DDP and constructed with a combination of public and private funds. Summit Development Group, the master developer continues to diligently discuss opportunities with local agencies to assist in funding the improvements in a timely and comprehensive manner to help catalyze development within the site. A complete Transportation Impact Analysis for full buildout of the GDP is discussed in more detail below demonstrating that the development can be accommodated within the GDP based on the improvements proposed by the applicant. The plan has been prepared by Kittelson and Associates. The study determines the transportation related impacts associated with The North End master plan and was prepared in accordance with the City of Oregon City (City) Guidelines for Transportation Impact Analyses (TIA Guidelines – Reference 1). The study intersections and scope of this report were based on the TIA Guidelines and direction provided by City and Oregon Department of Transportation (ODOT) staff.

The TIA is based on the forecast trip generation of the development combined with engineering judgment and an understanding of existing and future land use and traffic conditions in the vicinity of the site. The study analyzed all site access points and intersections adjacent to the site, driveways serving properties on the opposite side of the streets fronting the development, proposed streets through the site, any intersection of streets classified as an arterial or collector where site traffic is expected to exceed 20 peak hour trips, and intersections where signal progression analysis was needed.

Overall, the traffic study analyzed 25 existing and 5 proposed new intersections within the report. The study analyzed all intersection operations over three peak hour periods. The traffic analyses reflect the peak hours of weekday morning (7:00 AM - 9:00 AM), weekday afternoon (4:00 PM - 6:00 PM), and Saturday midday (11:15 AM - 1:15 PM) conditions. The analysis evaluated the following scenarios:

- Existing land use and transportation system conditions, including intersection volume-to-capacity (v/c) ratio, control delay, and level-of service (LOS) during the weekday AM and PM peak hours, as well as the Saturday midday peak hour.
- Year 2025 background conditions (without the master plan), including intersection v/c ratio, control delay, level-of-service and 95th percentile queues during all three peak hour analysis periods.
- Year 2025 total traffic conditions (with the master plan), including intersection v/c ratio, control delay, level-of-service and 95th percentile queues during all three peak hour analysis periods.

Additionally, the traffic study analyzed existing conditions, future conditions, adjacent land uses and transportation facilities including bicycle and pedestrian facilities, and nearby transit facilities. Finally, the analysis evaluates traffic safety and crash history for the study intersections. Based on the analyses of these characteristics, the TIA compares the impacts of the proposed development on the transportation system considering background traffic conditions, other developments that are in process and expected to contribute to the system, and traffic expected to be generated from build out of the proposed master plan.

John Replinger, the City's contract transportation engineer, reviewed the applicant's TIA and provided the following findings and conditions of approval in his letter dated June 17, 2021 (Exhibit 4) The relevant materials consisted of the Traffic Impact Analysis Report (TIA), dated March 23, 2021. The TIA was prepared under the direction of Brian J. Dunn, PE of Kittelson & Associates.

The TIA supports the master plan for the site west of the Home Depot, south of Washington Street and north of Abernethy Road. The development will include a mix of uses including retail and residential. A key feature is a collector-level street connecting Washington Street and Abernethy Road. Four other site access points are proposed. The TIA identifies the impacts of full development of the site predicated on build-out in 2025 and appears to demonstrate the full development can be constructed if identified mitigation measures are completed. Each phase in the development will be reviewed for compliance with transportation performance measures during detailed development plan review.

Additional transportation analyses and updated traffic data may be required during detailed development plan review as specified in the conditions of approval. Later phases of the development may be delayed if mitigation measures cannot be implemented to meet existing transportation

performance standards. The TIA provides a basis upon which the master plan can be evaluated and can serve as the basis for additional analysis.

I find that the TIA provides an adequate basis upon which to assess the impacts of the proposed master plan. It will serve as a basis for subsequent analyses undertaken in support of detailed development plans for individual phases of the development.

The TIA does not, however, provide for mitigation that allows the applicant to show that the system is adequate to accommodate the development, although appropriate mitigation appears feasible. The applicant will need to undertake additional analysis in connection with the detailed development plan for each phase that demonstrates adequacy of the transportation system to accommodate each phase. This will require a commitment to mitigation measures allowing applicable performance measures, including v/c and queue storage, will be met.

It is important to note that the TIA is based on the assumption that full development will occur by 2025. If development is extended beyond that date, new analyses will be required with new background traffic associated with the new completion year.

1. The applicant shall comply with the following Transportation Conditions:
    a. The applicant will be required to provide supplemental transportation analyses for each phase of the development that demonstrate the ability of the transportation system to accommodate that phase of the development. In connection with the first detailed development plan submitted by the applicant, the applicant shall obtain new AM peak, PM peak, and mid-day Saturday traffic counts and conduct new operational analyses for the following intersections:
        i. OR99E/Dunes Drive
        ii. Washington Street/Home Depot – Site Access A
        iii. OR213/Redland Road
        iv. Redland Road/Holcomb Boulevard/Abernethy Road
    b. Absent meaningful evidence to the contrary, the new counts and new analyses submitted in support of the detailed development will be presumed to supersede the traffic volume estimates and analyses submitted in the March 2021 TIA.
    c. The following are a non-comprehensive set of issues that should be addressed in additional analyses:
        i. Intersection v/c and queuing must meet applicable standards with each phase. Partial development (some phases of the development) may be permissible without mitigation depending on background traffic and the status of adopted alternative mobility targets.
        ii. Where the applicant is relying on the regional center's two-tiered v/c standard (i.e. 1.10 during the peak hour and 0.99 during the second hour), the applicant will need to provide evidence that both are met. (This is particularly applicable to OR213/Redland Road and OR99E/Dunes Drive, both of which are predicted to exceed 1.10 during a peak hour.)
        iii. A phase or combination of phases that causes traffic volumes at any access point to exceed volumes in this TIA, additional analyses will be required.
        iv. The applicant will need to demonstrate the adequacy of queue storage or undertake appropriate mitigation to resolve queue storage issues at the

intersection of Abernethy Road/Holcomb Boulevard/Redland Road in connection with each phase.

v. The applicant will need to demonstrate that the intersection of OR213/Redland Road meets applicable v/c standards and provides adequate queue storage in connection with each phase.

vi. The applicant will need to demonstrate that the intersection of OR99E/Dunes Drive meets applicable v/c standards in connection with each phase. Applicant is encouraged to explore the potential for signal timing changes with ODOT or develop other mitigation measures with ODOT.

d. With each detailed development plan, the applicant will be required to address sight distance requirements in connection with the establishment of any new access to Washington Street or Abernethy Road, including those described in this TIA.

e. With each detailed development plan, the applicant will be required to address on-site circulation issues. These include, but are not limited to, adequacy of queue storage for drive-through service windows, maneuvering of trucks at loading areas, and maneuvering in parking lots.

f. With each detailed development plan, the applicant will work with TriMet to provide appropriate sidewalks and bus stop features on or adjacent to the site.

g. With each detailed development plan, the applicant will be required to update the predicted traffic using the intersection of OR213/Beavercreek Road. The applicant should use the updated value of $380 per peak hour trip rather than the obsolete value of $219 as used in this TIA. The developer shall participate in funding of this project according to the established formula.

h. If traffic signal warrants are met and cause the installation of a traffic signal at any of the site access points on Washington Street or Abernethy Road, the applicant will bear the full cost of signal design and installation.

i. The applicant shall participate in the funding of improvements for the intersection of OR213/Redland Road (TSP Project D79) in proportion to the development's traffic volume as a percentage of the predicted 2035 traffic volume at the intersection calculated in the TSP. The 2017 TSDC Project List shows a project cost of $10,105,000. Participation shall apply to each phase of the development.

j. The applicant's final share of project costs may be modified as necessary when the detailed development plan is approved to reflect any a modification of the development's trip generation or a change in project costs resulting from revisions to project costs associated with updates to the City's Transportation System Plan or Capital Improvement Program.

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

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

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

Finding*: Complies with Conditions.* As stated at the beginning of the Chapter, the purpose and intent of a master plan is to, "foster the growth of major institutions, phased residential, commercial or mixed-

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

This GDP is a major mixed-use development located at the north end of the Oregon City downtown in a very visible location at the confluence of two major transportation facilities. The master plan will facilitate a purposeful and efficient redevelopment of a former landfill. The master plan has been developed consistent with this purpose statement over the course of the past 11 months by a team of design professionals on behalf of the applicant to be as consistent with the requirements of the Comprehensive Plan and Municipal Code as practical. Compliance with OCMC chapters 12.04 16.12, 17.62 is discussed throughout this narrative. As proposed and modified through this process, future development within the master plan area can comply with OCMC and meet the approval requirements for a GDP. The proposed GDP proposes a plan to foster the growth of a mixed use. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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

Finding: See findings from sections 12.04 16.12, 17.62 and 16.08 of this report.

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

Finding: Complies as conditioned. Public services and utilities are available to the site as demonstrated in the attached plans and reports per Appendix B of the application. The plans and reports all demonstrate that it is feasible to provide services to the development proposed in the GDP consistent with the provisions of this code, including water, sewer, stormwater and transportation services. Future detailed development plans are expected to meet the applicable standards of the 2021 Oregon City Municipal Code and the design guidelines that are included with this document are intended to supplement those regulations. The site is already served by the Oregon City Police and Fire Services. Open spaces and plazas are provided within the development for both the public and residents. The School District will have an opportunity to provide comments on the development to speak to any capacity issues associated with the development. The applicant has not proposed a phasing plan and expects to constructed public infrastructure with Detailed Development Plans over the life of the master plan.

No public parks have been identified or planned for the subject site. Open spaces and plazas, maintained by the applicant, are provided within the development for both the public and residents. The Oregon City School District (Wes Rogers, Exhibit 3a) indicated, they did not have a conflict with the proposal . Clackamas Fire District #1 participated in the pre-application conference to provide general direction and will be involved with each development. Public services for transportation, fire, sanitary waste disposal and storm-water disposal that are needed at the time of each DDP, shall be made capable by the time each phase of the development is completed. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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

Finding: Complies with Conditions. The applicant has the locations of the Natural Resource Overlay District onsite. The proposed layout does not proposed to impact the vegetative corridor of Abernethy Creek. Future detailed development plans are expected to meet the applicable standards of the 2021 Oregon City Municipal Code as it pertains to the protection and development of these resources. The most significant natural resource on site, Abernethy Creek, is intended to be preserved with approval of the GDP. Impacts to other resources on the west side of the development, east of Washington Street may be impacted for street improvements and other onsite development. Any impacts to those resources from future development on site will be mitigated for pursuant to the applicable chapters of this code. A final natural resources report will be submitted with each DDP to ensure that future development meets the requirements of the Natural Resources Overlay District on the property. The GDP demonstrates through its master site plan that the GDP does not preclude or prohibit future compliance with the NROD.

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

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

Finding: Complies with Conditions. The GDP anticipates impacts to the public systems and the surrounding community and proposes to mitigate impacts to the transportation system through future traffic improvements that have been identified within the City's Transportation System Plan (TSP), to the utility system by making the necessary extensions to serve the site and the payment of Systems Development Charges SDC's, to the public parks system through the payment of SDC's and to surrounding properties through compliance with the applicable standards of the OCMC.
with the applicable provisions of the 2021 Oregon City Municipal Code. The Civil drawings in Appendix B illustrate the site and utility plans, which includes information from the TIA, in conformance with this requirement. Staff has prepared recommended conditions of approval to address the need to mitigate impacts associated with the Master Plan and each detailed development plan. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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

Finding: Complies with Conditions The comprehensive plan embodied by this request include, contain urban development, promote redevelopment, protect natural resources, foster economic vitality, provide efficient and cost-effective services, and ensure a sense of history and place. These are core tenets are reflected within the proposed GDP. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

The site is zoned Mixed Use Downtown (MUD) and the proposed development will develop consistent with the provisions of that district and the requirements of the OCMC except where allowed to be modified by this chapter. The community's **Municipal Code** is intended to implement the goals and policies of the Comprehensive Plan as it relates to the development of land. Development of this site through the master plan process will result in a compact and efficient mixed-use development within the existing urban growth boundary, served by existing or new public infrastructure. The TSP, utility master plans, and community concept plans also help to fulfill the goals and policies of the Comprehensive Plan. This master plan and the GDP has been developed considering each one of these documents and future DDP's are required to meet the same standards of those documents as they are being designed and constructed. The GDP is consistent with the applicable regulations for development as explained in this narrative. The applicant has prepared extensive responses to applicable Oregon City Comprehensive Plan Goals and Policies in Chapter 17.56 Conditions Uses, which are also applicable and shall be cross refenced to this section. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

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

Finding: Complies with Conditions. This proposed GDP is consistent with the underlying zoning district as well as the purpose and standards of all applicable overlay zone requirements, as shown below under the narrative response to Oregon City Municipal Code Chapter 17.34. Approval of the GDP does not permit any development on site. Future development on the site can only occur with the approval of DDP's that are consistent with the applicable provisions of the OCMC, with the GDP, and the supplemental design guidelines adopted with this plan. There are no concept plans that apply to this area. The GDP and accompanying documents have been predicated upon compliance with the 2021 Oregon City Municipal Code and include plans demonstrating the feasibility that future development under this plan can comply with the applicable requirements of these districts except where standards are allowed to be modified. There are a number of modifications to those standards requested with the approval of this plan which are reviewed in the applicable sections of the staff report. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

8. For projects with a residential use component, the proposed general development plan includes common open space for the recreational needs of the development's residents.

a. Required open space shall be located either on-site or off-site within one-quarter mile of the development.

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

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

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

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

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

Finding: Complies with Condition. The North End master plan includes a residential component and illustrates common open spaces provided for residents of the development This GDP illustrates that these standards can be satisfied with future development of the site consistent with this plan. The master plan will accommodate 524 residential units. Based on this number of units, the development is required to provide 52,400 square feet of open space. Within the immediate vicinity of the multi-family buildings, the plan calls for 45,600 square feet of private open space, and within a quarter-mile there are other on-site parks, open spaces, and public plazas. As detailed development plans are prepared for the residential portions of the site, compliance with the applicable standards and supplemental design guidelines is expected by the prospective developers of those areas through individual DDP review. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

9. For projects with a residential use component, the proposed general development plan includes a mix of residential uses such that no single residential use exceeds 75 percent of the total proposed units. The mix of residential uses shall provide variety of dwelling types and sizes that are integrated throughout the site, rather than isolated from one another, with smooth transitions between residential types including appropriate setbacks, landscaping or screening as necessary, while maintaining street and pedestrian connectivity between all residential uses. Tenancy (i.e. ownership versus rental) shall not be a consideration in determination of the mix of residential use. For the purposes of this section, residential uses include single family detached, single family attached, duplex, 3-4 plex, and multifamily.

Finding: Complies with Condition. The proposed GDP does include a residential component and satisfies this standard through the provision of a variety of unit sizes, and entry types (i.e. ground floor walk-up, elevator for units located above elevators) within a multi-family/multistory format. As detailed development plans are prepared for the residential portions of the site, compliance with the applicable standards and supplemental design guidelines is expected by the prospective developers of those areas though individual DDP review.

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.h1. 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 Chapter 17.62, 17.52, 16.12, and 16.08 unless adjusted as provided in OCMC 17.65.070.

Finding: ***Not applicable.*** *This application is for the approval of a Concept Development Master Plan for the site. Once approved, the applicant intend to submit for development approval though the DDP process in phases. Relevant conditions of approval from the Concept Mater Plan will be implemented though the applicable DDP application review and approval process.*

17.65.070 - Adjustments to development standards.

A. Purpose. In order to implement the purpose of the city's master plan or planned unit development process, which is to foster the growth of major institutions, major residential, commercial or mixed-use development, and other large-scale development, while identifying and mitigating their impacts on surrounding properties and public infrastructure, an applicant may request one or more adjustments to the applicable development regulations as part of the master planning or planned unit development process, and are not required to go through the Variance process pursuant to OCMC Chapter 17.60.

B. Procedure. Requests for adjustments shall be processed concurrently with a general development plan. An adjustment request at the detailed development plan review shall cause the detailed development plan to be reviewed as a Type III application.

Finding: Complies with Condition. This application for GDP approval requests four adjustments to standards listed in subsection C below that are permitted to be adjusted through the city's master plan process. Any future adjustments not identified within the GDP will be reviewed as a Type III application

C. Regulations That May be Adjusted. Adjustments may be allowed for the following items:

1. Dimensional standards of the underlying zone of up to 20 percent, except the perimeter of the development shall meet the underlying zone's setbacks when adjacent to residentially zoned property.
2. Site plan and design standards.
3. Residential design standards.
4. Increase in allowed maximum residential density of up to 10 percent.
5. Standards for land division approval.
6. Additional uses allowed with residential projects, or residential component of projects:
a. Notwithstanding the use provisions of the underlying zones, neighborhood commercial uses as defined in Chapter 17.24.020, including restaurants and eating and drinking establishments without a drive-through, retail trade, and services, are permitted on up to 10 percent of the net developable area. The neighborhood commercial uses shall be planned and constructed so as to support and be compatible with the entire development and shall not alter the character of the surrounding area so as to substantially preclude, impair or limit the use of surrounding properties for the primary uses listed in the underlying district.
b. Public or private parks and playgrounds, community buildings, and/or outdoor recreational facilities, such as swimming pools and tennis courts;
c. Indoor recreational facilities, such as racquetball or tennis courts, fitness centers or swimming pools;
d. Common public and private open space including trails.
e. Primary or accessory uses that are not identified as a permitted or conditional use in the underlying zone but which are defined in the code.
Finding: Complies with Conditions. The applicant has identified the following four adjustments. Compliance with the approval criteria are discussed below.

- **16.12.030 - Blocks—Width**. Adjustments to the Land Division standards for approval are permitted through the master plan process under 17.65.070.C.5.
- **17.54.100(2 and 3)** - **Fences, hedges, walls, and retaining walls.** Requesting retaining walls be allowed to exceed heigh limits in areas identified in the master plan. Adjustments to the site plan and design standards are permitted through the master plan process under 17.65.070.C.2. This would be an adjustment to a design standard that applies to all zones within the City
- **17.62.055(D) - Institutional, office, multi-family, retail, and commercial building standards**. Building frontage percentages and location on public or private streets. Adjustments to the site plan and design standards are permitted through the master plan process under 7.65.070.C.2.
- **17.62.050(C)(4) – General Standards**. Elevated External Stairways or Walkways. Elevated stairways to be allowed within the North District. Adjustments to the site plan and design standards are permitted through the master plan process under 17.65.070.C.2.

D. Regulations That May Not be Adjusted. Adjustments are prohibited for the following items:
1. To allow a primary or accessory use that is not identified as a permitted, or conditional use in the underlying zone, with the exception of the additional uses permitted under OCMC 17.65.070.C.6 above; ;
2. To any regulation that contains the word "prohibited";
3. As an exception to a threshold review, such as a Type III review process; and
4. Minimum density for residential sites may not be reduced.
Finding: Complies. None of the regulations listed above are adjusted with approval of the GDP.

E. Approval Criteria. A request for an adjustment to one or more applicable development regulations under this section shall be approved if the review body finds that the applicant has shown the following criteria to be met.

1. Granting the adjustment will equally or better meet the purpose of the regulation to be modified;
Finding: Complies with Conditions

Adjustment #1
Chapter 16.12.030 - Blocks—Width states, "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." Although a land division is not proposed with this application, we are fairly certain that any land division of this site would not satisfy the requirement given the proposed uses within the master plan and that the master plan area will be served by a series of internal private streets as opposed to local streets.

The purpose of block length and width standards are to make a neighborhood more walkable and connected. They are intended to create neighborhoods with grid traffic patterns to make it easier to get from place to place for multiple modes of transportation and provide opportunities for additional routes throughout the City or neighborhood. Larger blocks, on the other hand discouraged because they can't adequately disperse or calm traffic. Block length standards promote connectivity to the rest of the community. The code recognizes that block length standards are not ideal in all instances as the code allows the city engineer to determine the block length in some zones within the City.

In this instance, the east side of the development includes larger format retail uses and three commercial pads greater than 100,000 square feet in size intended to serve anchor retail facilities and associated parking and circulation aisles that when or if the land is divided will likely exceed the maximum block length, width, and spacing requirements of this section.

Existing development and the presence of Abernethy Creek make it difficult for the development to connect to the north and east. However, the proposed master plan, with this adjustment equally meets the purpose of the standard in 16.12.030 by providing a continuous and well connected multi-modal transportation system that includes private streets, sidewalks, and shared use paths to connect uses within the development as well as to the surrounding transportation system. The developer is requesting that the City defer to the layout of the general master plan and adjust these maximum standards in favor of the proposed circulation system and block width proposal.

See the combined mitigation Analysis and proposed condition at the end of this section.

Adjustment #2
Section 17.54.100.2 states that, "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."

Section 17.54.100.3 states that, "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." This particular chapter is not provided with a purpose statement, but the chapter in general sets out the requirements for accessory structures, projections, exceptions, marijuana businesses and mobile food units, which would lead one to believe that the purpose of these standards are to regulate operations and aesthetics of particular circumstances that relate to specific uses. A wall of any height can be constructed provided it's engineered properly, but, most communities put regulations limiting the height of walls in place to discourage and break up large blank surfaces on the landscape.

Given the significant difference in height between the master plan area, the adjacent properties at the south and west property lines, and Washington Street, it may be necessary to design and construct retaining walls that are higher than 8.5 feet from the finished grade. In some instances, buildings foundations will be utilized in place of walls (which is not regulated by this section of the code), but that's not the case along the proposed streets and sidewalk system. For example, the difference in height between the subject property and the End of the Oregon Trail Interpretive Center is approximately 29 feet. The applicant is requesting that the City adjust this height requirement given the known grade differences. The purpose of this standard can be equally or better met through thoughtful design of those retaining walls by utilizing different colors and materials or landscaping that climb the walls. The applicant is willing to accept conditions related to the design of the walls.

See the combined mitigation analysis and proposed condition at the end of this section.

Adjustment #3
Section 17.62.055.D Siting of Structures. States, "On sites with one hundred feet or more of frontage at least sixty percent of the site frontage width shall be occupied by buildings placed within five feet of the property line... Multifamily developments shall be placed no farther than twenty feet from the front property line…" The code allows larger front yard setbacks to be approved through site plan and design review if the setback area incorporates elements such as tables, benches, art, fountains, additional landscaping, enhanced landscaping, and other elements approved by the Community Development Director that can
meet the intent of the section.

The purpose statement for this section is to, "…provide a range of design choices that promote creative, functional, and cohesive development that is compatible with surrounding areas. Buildings approved in compliance with these standards are intended to serve multiple tenants over the life of the building, and are not intended for a one-time occupant. The standards encourage people to spend time in the area, which also provides safety through informal surveillance. Finally, this section is intended to promote the design of an urban environment that is built to human scale by creating buildings and streets that are attractive to pedestrians, create a sense of enclosure, provide activity and interest at the intersection of public and private spaces while also accommodating vehicular movement."

The proposed development has over one hundred feet of frontage along both Abernethy Road and Washington Street. As stated earlier, the difference in grade between the development site and the surrounding streets are significant given that this was a former land fill. The grade along Washington

Street is taken up by the building foundations of the proposed parking garages beneath the multi-family housing. The setbacks proposed along Washington Street vary from 1.9 to 23 feet behind the right of way, and over 230 feet along the site's frontage along Abernethy Road. The applicant is requesting this adjustment due to the unique shape of the site and the presence of the floodplain along Abernethy Road. To the extent possible, the applicant would prefer to keep all occupied buildings outside of the floodplain. In order to accomplish this, the buildings along Abernethy Road would be replaced with surface parking. The developer is requesting that the City allow this standard to be adjusted and provide deference to the proposed layout of the GDP as currently proposed.

This adjustment will allow the development to equally meet the purpose of the regulation by providing pedestrian amenities and enhanced landscaping along Abernethy Road and Washington Street. Further, the applicant is proposing a private commercial street, ("D" Street) between the buildings and Abernethy Road and places the buildings within five feet of that proposed street. These buildings will serve multiple tenants over their lifetime by providing separate retail spaces that are daylighted below the larger retail spaces above that will front ("C Street). With retail uses fronting both private internal streets, there will be opportunities for added activity and surveillance on both sides of the retail buildings.

See the combined mitigation Analysis and proposed condition at the end of this section.

Adjustment #4
Section 17.62.050.C.4 states, "Elevated external stairways or walkways shall not extend beyond the building facade except for external stairways or walkways located in, or facing interior courtyard areas that are not visible from the street or a public access easement…" According to the code, "The purposes of site plan and design review are to: Encourage site planning in advance of construction; protect lives and property from potential adverse impacts of development; consider natural or manmade hazards which may impose limitations on development; conserve the city's natural beauty and visual character and minimize adverse impacts of development on the natural environment as much as is reasonably practicable; assure that development is supported with necessary public facilities and services; ensure that structures and other improvements are properly related to their sites and to surrounding sites and structure; and implement the city's comprehensive plan and land use regulations with respect to development standards and policies." There is not a separate purpose statement for the section proposed to be adjusted.

The applicant is requesting an adjustment to this standard to allow pedestrians to walk between the plaza area and Washington Street. Because of the grade difference in this location, it would be difficult to provide a direct pedestrian route without providing a stairwell that projects beyond the building façade. The proposed stairwell is not located in or facing an internal courtyard. The idea behind this stairwell is to provide an attractive pedestrian alternative to connect the site to development in a more direct manner. This adjustment equally meets the purpose statement of the Site Plan and Design Review Chapter by considering a man-made hazard (grade difference) between the public street and the development. It will also add visual interest and character to the site's frontage with Washington Street by providing an artistic feature that also serves a practical purpose and creative solution to pedestrian connectivity. Details of the stairwell would be provided with the appropriate DDP

Combined Modification/Amendment Mitigation Analysis and Proposed Condition of Approval

The applicant has proposed four Master Plan Amendments and a package of mitigation submitted as part application. Staff finds the proposed modifications are reasonable and also finds that the mitigation proposed is proportional to the request by continuing to break up the site with pedestrian scale access and amenities.

To ensure clarity of implementation through the Type I or II DDP process, staff has identified the following items shown in the submitted Master Plan and design guidelines that shall be implemented through the applicable DDP applications. Mitigation items not included in the list below, not addressed in other conditions of approval, or not required by the adopted Municipal Code are not required.

The following items, shown in the submitted Master Plan and design guidelines, shall be implemented through the applicable DDP applications. Mitigation items not included in the list below, not addressed in other conditions of approval, or not required by OCMC criteria, either at the time this Master Plan was submitted or in place at the time of DDP review are not required.

- Construction of open space as demonstrated in the figure identified on page 98 of the submitted Master Plan. Open spaces that vary more than 10% in square footage than proposed shall be reviewed at a Type III level. All open spaces shall use a combination of hard and soft scaping.
- A minimum of 40% of the Central Square plaza area shall consist of a special paving material, which can include brick, precast concrete, pavers, or stone. A maximum of 50% of the plaza area can be concrete paving. A minimum of 5,000 square feet of open space shall be provided that is unimpeded by planting or site elements to create a central gathering space. The central square shall not eligible for any multi-family open space calculation.
- A minimum of 2 public art or interpretive elements shall be installed in each District (North, South, East, West) and be at least three cubic feet or thirty square feet in size.
- There shall be a differentiation of private street lighting and parking lot lighting design. Street lighting shall utilize decorated banners or flower baskets on at least 50% of the light standards.
- Pedestrian wayfinding signage shall be installed in all four districts directing pedestrians to offsite amenities such as End of the Oregon Trail Museum, Amtrak Station, Main Street, and Willamette River.
- No more than 50% of the proposed multi-family square footage can be constructed and Certificates of Occupancy given without full construction of the proposed Central Square Plaza (P)
- The pedestrian connection to the End of The Oregon Trail Museum shall be constructed by the date of final occupancy of C2 within the South District obtain. The record demonstrates that there are multiple feasible alignments for that connection and the final design shall be reviewed through the Type II DDP process as long as it is consistent with the intent of providing an ADA access between the development and the EOT in the same general location as depicted in the adopted Master Plan. The pedestrian connection may utilize portions of city property at the End of the Oregon Trail Museum if allowed by a future public/private agreement and/or with an abutting private property

  The following amendments to the Municipal Code are approved and subject to the conditions found in the Notice of Decision.
  - OCMC Chapter 16.12.030 - Blocks—Width

i. Subject to proposed street and pedestrian connections layout found on the site circulation diagram of page 64 of the application.

- OCMC Chapter 17.54.100.2- Retaining Walls
  i. Retaining walls are allowed to exceed heigh limits in areas identified in an exhibit the applicant will submit prior to the June 28, 2021 Planning Commission Hearing with proportional mitigation included.
- OCMC Chapter 17.62.055.D- Siting of Structures (Frontage)
  i. Building frontage percentages and location on public or private streets shall meet at a minimum the footprint layout found on the District Plan Map found on page 61 of the application.
- OCMC Chapter 17.62.050.C.4 -Elevated External Stairways or Walkways
  i. Elevated stairways are allowed within the North District.

2. If more than one adjustment is being requested, the cumulative effect of the adjustments results in a project that is still consistent with the overall purpose of the zone;

Finding: Complies with Conditions. More than one adjustment is being requested with this application. The cumulative effect of the adjustments continues to satisfy the overall purpose of the MUD zone by providing a high-quality, vibrant mixed-use development with a variety of retail and service uses on the ground floors and residential on the upper floors. It creates an urban and intense development on the west side of the development and will attract more people into downtown Oregon City with a mix of larger retail uses that tend to serve the larger reason. The site will be well connected to the community and transit through a comprehensive and circuitous circulation plan. Each of the adjustments are necessary to respond to unique and specific site conditions not typically found on other sites. The impact of the adjustments is to create that high-quality walkable environment while navigating significant changes in grade. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

3. City-designated Goal 5 resources are protected to the extent otherwise required by Title 17;

Finding: Complies with Condition. The proposed adjustments do not impact City-designated Goal 5 resources on the site, which will be reviewed for specific compliance to Title 17 at the time of each DDP. The sit is not located with conservation or historic districts, nor are there any individually designated resources subject to OCCM 17.40 onsite. The 30 foot Barlow Road visual corridor abuts the site on Abernethy Road; however, no changes to the visual corridor are proposed for this application. The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) submitted comments relating to the need for a cultural survey for the site. A cultural survey is not a requirement found in the Municipal Code. However, the applicant is required to meet at applicable state and federal laws relating to above and below ground cultural resources. If the applicant is proposing construction that will include the disturbance of native soils, or has a high likelihood of containing archeological evidence, as confirmed by the State Historic Preservation Office, the applicant will be required submit and adhere to an inadvertent discovery plan that, depending on the proposed action, and as recommended by SHPO, could include archeological monitoring during times of site disturbance. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

4. Any impacts resulting from the adjustment are mitigated such that the development does not create significant adverse impacts on adjacent properties;
Finding: Complies with Conditions. The proposed adjustments do not impact any of the adjacent properties. The site is immediately adjacent to three properties and bound by public streets and Abernethy Creek. Conditions of approval that implement proportional mitigation to any identified impact have been addressed throughout the staff report. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

5. If an environmental zone, the proposal has as few significant detrimental environmental impacts on the resource and resource values as is practicable; and.
Finding: Complies. None of the proposed adjustments would significantly impact the environmental resources on the master plan site and will be individually reviewed for compliance with COMC 17.49 Natural Resource Overlay District at the time of each DDP application.

6. The proposed adjustment is consistent with the Oregon City Comprehensive Plan and a concept plan if applicable .
Finding: Complies with Conditions. The GDP is consistent with the applicable regulations for development. The applicant has prepared extensive responses to applicable Oregon City Comprehensive Plan Goals and Policies in Chapter 17.56 Conditions Uses, which are also applicable and shall be cross-referenced to this section. The subject property is not located within a concept plan, and the adjustments are generally consistent, and specifically, do not conflict with any of the applicable Oregon City Comprehensive Plan goals and policies. The proposed adjustments equally meet the purpose statements of the regulations that are being adjusted and satisfy the standards of the MUD zoning district. Approval of these adjustments is consistent with the land use designations for the site and does not preclude the development from meeting the applicable goals and policies of the Oregon City Comprehensive Plan. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

17.65.80 - Amendments to approved plans.
A. When Required. An amendment to an approved General Development Plan or detailed development plan is required for any use or development that is not in conformance with the applicable plan, as provided below. The approval criteria contained in OCMC 17.65.050 will apply to general development plan amendments, the approval criteria contained in OCMC 17.65.060 will apply to detailed development plan amendments. The thresholds and procedures for amendments are stated below.
B. Type III Procedure. Unless the approved general development plan or detailed development plan specifically provides differently, amendments to either plan that require a Type III procedure are:
. 1. A proposed expansion of the approved boundary;
2. A proposed reduction in the approved boundary that affects a condition of approval, or takes the site out of conformance, or further out of conformance, with a development standard;
3. Proposals that increase the amount, frequency, or scale of a use over ten percent of what was approved (examples include the number of students, patients or members; the number of helicopter flights; the number or size of special events; transportation impacts);
4. New uses not covered in the plan that will increase vehicle trips to the site greater than 10 percent of the original amount approved;
5. Increases or decreases in overall floor area of development on the site or number of residential units of over ten percent;

6. A increases/decrease greater than ten percent in the amount of approved or required parking; and
7. Proposed uses or development which were reviewed, but were denied because they were found not to be in conformance with an approved plan.
C. Type II Procedure. Unless an approved plan specifically provides otherwise, amendments to a general development plan or detailed development plan not specifically stated in Subsection B or D are processed through a Type II procedure.
D. Type I Procedure. Unless an approved plan specifically provides otherwise, the following amendments to a general development plan or detailed development plan shall be processed through a Type I procedure:
1. Accessory uses and structures that meet applicable development regulations;
2. Reconfiguration of approved parking or landscape designs that do not alter the points of ingress or egress, and do not change the number of parking spaces required, so long as the reconfiguration meets applicable development regulations; and
3. Structures for approved uses that do not exceed one thousand five hundred square feet in size and that meet applicable development regulations.
Finding: Complies with Condition. All DDPs will be reviewed by the above criteria and administered though the applicable land use review process.

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Community Development – Planning
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17.65.090 - Regulations that apply.
An applicant is entitled to rely on land use regulations in effect on the date its general development plan application was initially submitted, pursuant to ORS 227.178(3), as that statute may be amended from time to time. After a general development plan is approved, and so long as that General Development Plan is in effect, an applicant is entitled to rely on the land use regulations in effect on the date its general development plan application was initially submitted, as provided above, when seeking approval of detailed development plans that implement an approved general development plan. At its option, an applicant may request that a detailed development plan be subject to the land use regulations in effect on the date its detailed development plan is initially submitted.
Finding: Complies with Condition. The Applicant, Summit Development Group, is formally requesting that future development within site, including all DDPs, be vested under the applicable provisions of the 2021 Oregon City Municipal Code land use regulations with the approval of the Master Plan (GDP). This will afford future developers and tenants within the master plan area with long-term regulatory certainty and predictability. Unless further amended and extended by the Planning Commission, this Master Plan shall control development on the site for 20 years from the date of initial adoption. Subsequent land divisions may occur onsite, but all parcels shall remain subject to the Master Plan and its implementing Conditions of Approval unless amended through the Master Plan amendment process. The Applicant has requested and is approved to utilize the 2021 Oregon City Municipal Municipal Code as adopted at the time of the Master Plan submittal for the life of the Master Plan. The applicant may also choose to use the current code year at a future DDP application, though only one code year can be used for each DDP submittal. **Staff has determined that it is possible, likely and reasonable that the applicant can meet this standard through the Conditions of Approval.**

CONCLUSION AND DECISION:

Based on the analysis and findings as described above, Staff concludes that the proposed Master Plan located at 1105 Abernethy Road, Oregon City, OR 97045 , Clackamas County Tax Map 22E2900902 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 21-000016 (MAS 21-02, CU 21-01, FP 21-03, GEO 21-030) based upon the findings and exhibits contained in this staff report.

EXHIBITS:

2. Vicinity Map (onfile)
3. Applicant's Narrative and Plans
    a. General Development Plan Application
    b. Stormwater Plan
    c. Civil General Development Plan Set
    d. Geotechnical Report
    e. NROD Removals Exhibit

   f. Transportation Impact Analysis
   g. Transportation Impact Analysis- Appendix
   h. Comprehensive Plan Goals and Policies
4. Public Comments
   a. Jane Troxler,
   b. Wes Rogers, Oregon City School District,
   c. Chris Long, Oregon City Building Division
   d. The Confederated Tribes of the Umatilla Indian Reservation (CTUIR)
   e. Bob Swartz, Oregon Department of Environmental Quality (DEQ),
   f. Emma Fleming
   g. DeMaris Beyl
   h. Skip Rotticci
   i. Joanne Gordon
   j. Dave Frazier
   k. Renate Mengelberg
   l. Karen Morey
   m. Richard Ponting
   n. List of supporters submitted by Summit Development
   o. Nick Veroske
   p. Marilyn Morrissey
   q. Dan Fowler
   r. Richard Ponting
5. Transportation Review
   a. June 17, 2021 Memo from John Replinger PE, Replinger and Associates
   b. June 18, 2021 ODOT Comments
6. February 1, 2021 Citizen Involvement Committee Agenda and Video
7. NROD 20-0022 (Type I Exemption)
8. NROD 21-0004 (Type I Exemption)

OREGON CITY

Community Development/Development Services

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Changes to Conditions of Approvals for: GLUA 21-000016 (MAS 21-02, CU 21-01, FP 21-03, GEO 21-030)

The following amended conditions of approval have been incorporated in the Revised (June 24, 2021) Staff Report. Changes made to the Conditions of Approval for GLUA 21-000016 are intended to further clarify the condition or correct a formatting error and do not change the requirements of the conditions. The corrections have been highlighted in red below for reference.

Language added is shown in red.
Language removed is in red and ~~crossed out~~.

Conditions of Approval

Planning File GLUA 21-000016 (MAS 21-02, CU 21-01, FP 21-03, GEO 21-030)

(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.

13. The following items, shown in the submitted Master Plan and design guidelines, shall be implemented through the applicable DDP applications. Mitigation items not included in the list below, not addressed in other conditions of approval, or not required by OCMC criteria, either at the time this Master Plan was submitted or in place at the time of DDP review are not required.

a. Construction of open space as demonstrated in the figure identified on page 98 of the submitted Master Plan. Open spaces that vary more than 10% in square footage than proposed shall be reviewed at a Type III level. All open spaces shall use a combination of hard and soft scaping.
b. A minimum of 40% of the Central Square plaza area shall consist of a special paving material, which can include brick, precast concrete, pavers, or stone. A maximum of 50% of the plaza area can be concrete paving. A minimum of 5,000 square feet of open space shall be provided that is unimpeded by planting or site elements to create a central gathering space. The central square shall not eligible for any multi-family open space calculation.
c. A minimum of 2 public art or interpretive elements shall be installed in each District (North, South, East, West) and be at least three cubic feet or thirty square feet in size.

d. There shall be a differentiation of private street lighting and parking lot lighting design. Street lighting shall utilize decorated banners or flower baskets on at least 50% of the light standards.
e. Pedestrian wayfinding signage shall be installed in all four districts directing pedestrians to offsite amenities such as End of the Oregon Trail Museum, Amtrak Station, Main Street, and Willamette River.
f. No more than 50% of the proposed multi-family square footage can be constructed and Certificates of Occupancy given without full construction of the proposed Central Square Plaza. ~~(P)~~

~~a.~~ g. The pedestrian connection to the End of The Oregon Trail Museum shall be constructed by the date of final occupancy of C2 within the South District obtain. The record demonstrates that there are multiple feasible alignments for that connection and the final design shall be reviewed through the Type II DDP process as long as it is consistent with the intent of providing an ADA access between the development and the EOT in the same general location as depicted in the adopted Master Plan. The pedestrian connection may utilize portions of city property at the End of the Oregon Trail Museum if allowed by a future public/private agreement and/or with an abutting private property. (P)

31. Roadway improvements, including street widening, frontage improvements and right-of-way dedication along Abernethy Road shall be per requirements of the jurisdiction that has authority over Abernethy Road at the time of construction plan approval. The future developer of DDPs shall provide a 12-foot-wide shared-use path along the site's frontage on the north side of Abernethy Road to fulfill TSP project S2 and the path may serve to fulfill the sidewalk required on the north side of Abernethy Road if approved by the jurisdiction that has authority over Abernethy Road at the time of construction plan approval. (DS)

32. All roads required to be constructed by the developer, public and private, shall have 12-foot-wide vehicular lanes unless otherwise approved by the City Engineer ~~(E.G., wider lanes where 26-foot clear width is needed on roads that have fire hydrants)~~. (DS)

35. For all new site driveways and intersections that require traffic signals, the developer of future DDPs shall provide a Traffic Signal Plan conforming to the requirements of the road authority.

36. The developer of future DDPs shall provide street lighting plans with photometric information for all internal roads, Washington Street, Abernethy Road, and Redland Road. Street lighting shall ~~which~~ conform~~s~~ with all City standards, specifications, codes, and policies and ~~is~~ be approved by Portland General Electric (PGE) prior to receiving a permit and beginning construction. (DS)

54. Public improvements associated with each DDP are required to be completed and accepted by the City Engineer. Public improvements shall be constructed according to approved final engineering plans prior to occupancy. (DS)

63. Within Geologic Hazard areas identified by Oregon City, future detailed development plans shall include terraced slopes or retaining walls for slopes or walls greater than seven vertical feet. The terraced slope or wall shall have a maximum vertical height of five feet and a minimum vegetated width of 3 feet between. Total cut and fill slopes shall not exceed a vertical height of fifteen feet. (DS)

74. Public services for transportation, fire, sanitary waste disposal and storm-water disposal that are needed at the time of each DDP, shall be made capable by the time each phase of the development is completed. (DS)

THE NORTH END | GENERAL DEVELOPMENT PLAN APPLICATION

PA 20-11



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PROJECT DESCRIPTION

OCLD, LLC
Master Plan Concept
Planning Project Number: PA 20-11
Address: 1105 Abernethy Road
Map Number(s): 2-2E-29
Tax Lot(s): 00902
Property Size: 62.2 Ac

Zoning: Mixed Use Downtown (MUD)
Overlay Districts: Natural Resource, Geologic Hazard, and Flood Management
Proposal Summary:
Summit Development Group is seeking approval of a vibrant mixed-use development at the north end of the Oregon City Downtown. The plan envisions a 20-year road map to redevelop the former Rossman Landfill with a complete live-work neighborhood connected to the downtown.

PROJECT TEAM

OWNER - Summit Development Group

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1 - PROJECT INTRODUCTION

Introduction

The North End Master Plan is a proposed master plan to redevelop the former Rossman Landfill with a mixed-use development. The plan has been carefully designed to promote a sense of place at the north end of the Oregon City Downtown. This land use application is a request to approve the General Development Plan (GDP). The GDP will be subsequently implemented through future discretionary reviews that will be guided by this development plan.

Therefore, this application does not include a request for approval of a Detailed Development Plan (DDP) currently. Once approved, the GDP will vest future development within the master plan area under the current code provisions to assure long term regulatory certainty and a high level of predictability for future tenants and developers within the master plan area.

The GDP provides a detailed framework for development within the master plan area over the next 20 years; although build out of the site is anticipated to occur over the next 5 years or so. The plan has been developed under the applicable chapters of the 2021 version of the Oregon City Municipal Code as discussed in **Chapter 2: Narrative Response**.

Because the GDP vests development for the 20-year life of the GDP, future DDP requests will also be reviewed under the 2021 code and the supplemental design guidelines and conditions of approval of the GDP.

This balanced approach ensures that the quality of the architecture, including massing, forms, and materials, will contribute to a distinctive design that creates the overall identity for the project. Landscaping, site amenities, lighting, and wayfinding will be unified throughout the site to support the project's sense of place.

Existing Conditions and Background

The subject site is located at 1105 Abernathy Drive in Oregon City, Tax Lot Number 2-2E-29-00902. The property is currently zoned Mixed-Use Downtown and is located outside of the historic downtown overlay but is located within the Urban Renewal District. The site is located over the top of the Rossman Landfill, and includes land that is identified in the City's Natural Resource Overlay District (NROD) due to the presence of Abernethy Creek and wetlands that have been identified on the site. The site also includes areas within the Geologic Hazard Overlay Zone for the presence of slopes over 10%; and lands that are impacted by the 100-year floodplain. These and other relevant conditions are discussed in **Chapter 3: Existing Conditions** of this document.

Proposed Development

Summit Development Group seeks approval of The North End Master Plan, a mixed-use GDP to redevelop the site with a mix of commercial, service, entertainment, residential, and retail uses as depicted in the master plan. The plan envisions a transformation of the former landfill to a lively, integrated mixed-use development that will not only complement the downtown, but serve as a primary gateway to the north end of the Oregon City Downtown. The master plan features tree-lined streets, landscaped open spaces, offices and residences overlooking public plazas and open spaces, and will feature a wide variety of shopping, dining, and entertainment experiences. The North End Master Plan and Design Guidelines are intended to integrate design elements of downtown Oregon City into the development are discussed in detail in **Chapter 4: Proposed Development** and **Chapter 5: Master Plan Design Guidelines**.

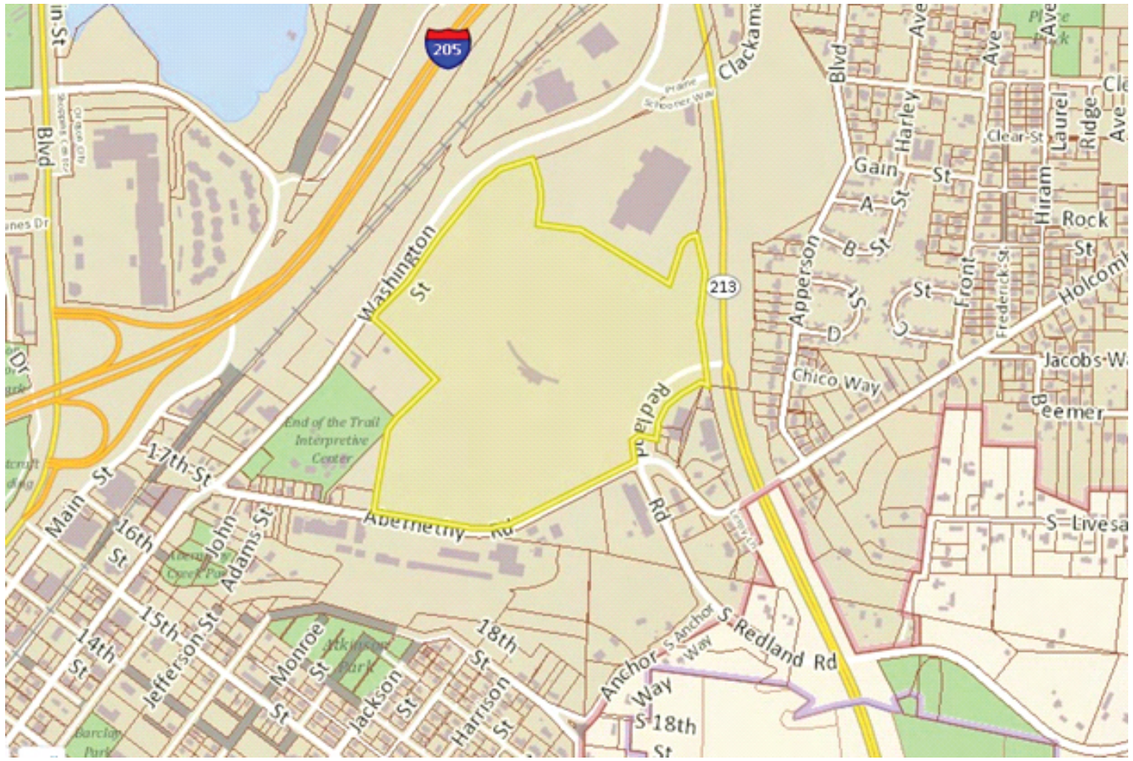

Figure 1.1 - Vicinity/Tax Map of the Subject Site from Oregon City GIS website

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THE NORTH END

2 - NARRATIVE RESPONSE

5 |



2 - NARRATIVE RESPONSE

Chapter 17.65: Master Plans and Planned Unit Development

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

Response:
The North End Master Plan meets the purpose and intent of this Chapter by developing the 62-acre former Rossman Landfill site with a large-scale mixed-use development into a complete community with commercial, retail, entertainment, and residential uses. This application is for approval of a GDP (GDP). The North End Master Plan is the foundation for a thriving, mixed-use development at the north end of downtown Oregon City. It provides a framework for future development of the site by defining on site uses that are anticipated to be developed over the life of the plan, needed extensions of community infrastructure including sewer, water, and transportation, and open space to serve the development, and off-site infrastructure improvements needed to mitigate impacts associated with complete build out of the master plan.

17.65.020: What is Included in a Master Plan or Planned Unit Development
A. A master plan or planned unit development is a two-step process that includes a General Development Plan and a detailed development plan. A General Development Plan incorporates the entire area where development is planned for up to the next twenty years from the date of final approval, including the identification of one or more development phases. The General Development Plan may encompass land that is not currently under the applicant's control, but which eventually may be controlled by the applicant during the duration of the master plan. The plan shall have no effect for lands not currently controlled by the applicant. "Controlled" shall be defined as leased or owned by the applicant. A detailed development plan is the phase or phases of the General Development Plan that are proposed for development within two years.
B. A master plan or planned unit development identifies the current and proposed uses of the development, proposed project boundaries, and proposed public and private infrastructure needed to serve the development. If approved, the General Development Plan may be used to allow existing legal non-conforming uses. If conditions of approval from a previous land use decision have not been completed, they shall be modified through the General Development Plan or completed with new development.
C. A master plan or planned unit development identifies future development impacts, thresholds for mitigation and mitigation improvements and implementation schedules. A threshold for mitigation is the point that determines when or where a mitigation improvement will be required. Examples of "thresholds" include vehicle trips, square feet of impervious surface area, water usage measured in gallons per minute, construction of a building within a General Development Plan and construction of a building within a certain distance of a residential lot.

Response:
This is a request for approval of The North End master plan GDP. The GDP identifies the proposed uses within the development as discussed below, the project boundary and proposes both public and private infrastructure such as transportation and utility service. The GDP includes a detailed analysis of the site and anticipated impacts from the development. Where applicable, the applicant's design team has proposed mitigation to off-set the impacts of the development. Although a phasing plan has not yet been developed, public and private improvements are expected to be constructed with Detailed Development Plans over the life of the master plan.

17.65.030: Applicability
A. Required for Large Institutional Uses. If the boundaries of an institutional development exceed ten acres in size, the proposed development shall be master planned using the regulations of this chapter. No land use review other than a Type I or II Minor Site Plan and Design Review shall be issued for any institutional development in excess of ten acres in total acreage unless it is accompanied by or preceded by a master plan approval under this chapter. This requirement does not apply to modifications to existing institutional developments unless the modification results in a cumulative square footage increase of over ten thousand total building square feet in an existing institutional development over ten acres.
B. When Required as Part of Previous Land Use Review. The master plan or planned unit development regulations may be used to fulfill a condition of approval from a previous land use decision-requiring master planning for a development.
C. When identified in the Oregon City Comprehensive Plan. The master plan regulations are required for all properties identified for master planning in the land use section of the Oregon City Comprehensive Plan.
D. Voluntarily. An applicant may voluntarily submit a master plan or planned unit development as part of a land use review, including for residential projects.

Response:
In this instance, Summit Development Group is the applicant and prospective purchaser of the property. Summit Development Group is voluntarily requesting that the site be developed under the master plan provisions of the Oregon City Development Code as provided in subsection D above.

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 has been made aware of these procedures in two separate pre-applications held with City staff over the course of the last 11 months. The first pre-app was held in March of 2020 and the second pre-app was held in December of 2020 in response to program changes for future development on the site. The December pre-application conference notes are attached to this application as **Appendix F**. A meeting with the Oregon City Citizen Involvement Committee was held virtually on February 1, 2021. No concurrent DDP approval is requested with this application.

17.65.050 - General Development Plan.
A. Existing Conditions Submittal Requirements.
1. Narrative Statement. An applicant shall submit a narrative statement that describes the following:
a. Current uses of and development on the site;
b. For institutions, history or background information about the mission and operational characteristics of the institution that may be helpful in the evaluation of the General Development Plan, and information about current programs or services;

2 - NARRATIVE RESPONSE

7 | Chapter 17.65: Master Plans and Planned Unit Development (Cont.)

c. A vicinity map showing the location of the General Development Plan boundary relative to the larger community, along with affected major transportation routes, transit, and parking facilities. At least one copy of the vicinity map shall be eight and one-half inches by eleven inches in size, and black and white reproducible;
d. Land uses that surround the development site. This may also reference submitted maps, diagrams or photographs;
e. Previous land use approvals within the General Development Plan boundary and related conditions of approval, if applicable;
f. Existing utilization of the site;
g. Site description, including the following items. May also reference submitted maps, diagrams or photographs:
i. Physical characteristics;
ii. Ownership patterns;
iii. Building inventory;
iv. Vehicle/bicycle parking;
v. Landscaping/usable open space;
vi. FAR/lot coverage;
vii. Natural resources that appear on the city's adopted Goal 5 inventory;
viii. Cultural/historic resources that appear on the city's adopted Goal 5 inventory;
ix. Location of existing trees six inches in diameter or greater when measured four feet above the ground. The location of single trees shall be shown. Trees within groves may be clustered together rather than shown individually; and
x. Geologic hazards pursuant to OCMC 17.44.
h. Existing transportation analysis, including the following items. May also reference submitted maps, diagrams or photographs.
i. Existing transportation facilities, including highways, local streets and street classifications, and pedestrian and bicycle access points and ways;
ii. Transit routes, facilities and availability;
iii. Alternative modes utilization, including shuttle buses and carpool programs; and
iv. Baseline parking demand and supply study (may be appended to application or waived if not applicable).
i. i. Infrastructure facilities and capacity, including the following items:
i. Water;
ii. Sanitary sewer;
iii. Stormwater management; and
iv. Easements.
2. Maps and Plans.
a. Existing conditions site plan. Drawn at a minimum scale of one-inch equals one hundred feet (one inch equals one hundred feet) that shows the following items. At least one copy shall be eight and one-half inches x eleven inches in size, and black and white reproducible.
i. Date, north point, and scale of drawing.
ii. Identification of the drawing as an existing conditions site plan.
iii. Proposed development boundary.
iv. All parking, circulation, loading and service areas, including locations of all carpool, vanpool and bicycle parking spaces as required in Chapter 52 of this title.
v. Contour lines at two-foot contour intervals for grades zero to ten percent, and five-foot intervals for grades over ten percent.
b. A site plan or plans, to scale, for the General Development Plan site and surrounding properties containing the required information identified in OCMC 17.62.040.b, Vicinity map. Depicting the location of the site sufficient to define its location, including identification of nearest cross streets. At least one copy of the vicinity map shall be eight and one-half inches by eleven inches in size, and black and white reproducible.
c. Aerial photo. Depicting the subject site and property within two hundred fifty feet of the proposed development boundaries. At least one copy of the aerial photo shall be eight and one-half inches by eleven in size, and black and white reproducible.

Response:
The information requested within this section has been provided within this document in **Chapter 3: Existing Conditions** and the accompanying drawings included in **Appendix B**.

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

Response:
The plans and reports provided with The North End general master plan depict existing and foundational improvements to the master plan area including grading, utilities, circulation, parking areas, access locations, open spaces, a proposed range of uses, building pad locations, and vertical massing. The boundary of the master plan is illustrated in the site plans included in **Appendix B**. The duration of the master plan and the subsequent phasing of improvements is wholly dependent upon market demand. However, it is anticipated that a first phase will include mass grading and horizontal infrastructure followed shortly thereafter by vertical development. Depending on market conditions, the applicant intends to reach full build out by 2025, well within the 20-year vested master plan timeline. As more specifically discussed below, the GDP has been designed to be consistent with the existing provisions of the Oregon City Municipal Code sections except where a few adjustments are discussed below.

The general master plan has been laid out in a manner that intentionally avoids impacts to the natural resources on site, and where there are impacts that are unavoidable, the expectation is that they will be mitigated for in accordance with local requirements. The NROD criteria are addressed in more detail below.

Development on the site would occur over a former landfill that is capped, and although it is unlikely that there are any archaeological resources within the project area as a result of the prior landfill activities, the State Historic Preservation Office has indicated that the project area lies within an area generally perceived to have a high probability for possessing archaeological sites and/or buried human remains. If any archaeological objects or sites are discovered during construction, development activities will cease, and the appropriate authorities will be notified.

The North End master plan will be a high-quality, compact and walkable community. Future development within the boundaries of the master plan area, under detailed development plan approval, is expected to meet City standards which include development standards that have already been adopted by the community to mitigate impacts of the proposed development on the surrounding community and neighborhood. The variety of proposed uses within the plan area allows for people to live, work, play and shop in one place, which also becomes a destination for people from the region. Where possible, the proposed master plan takes advantage of existing infrastructure extensions of existing utilities and streets. The public utility plan is contained in **Appendix B**.

Improvements to the local transportation system are intended to be consistent with the impacts of the development but timed in accordance with a future development agreement. Ideally, improvements will be based on the individual impacts of each DDP and constructed with a combination of public

Response to 17.65.050.B Cont.:
and private funds. Summit Development Group, the master developer continues to diligently discuss opportunities with local agencies to assist in funding the improvements in a timely and comprehensive manner to help catalyze development within the site. A complete Transportation Impact Analysis for full buildout of the GDP is discussed in more detail below demonstrating that the development can be accommodated within the GDP based on the improvements proposed by the applicant.

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

Response:
A detailed traffic study based on the uses proposed within the general master plan has been prepared by Kittelson and Associates and is included as **Appendix C** to this application ("TIA"). The study determines the transportation related impacts associated with The North End master plan and was prepared in accordance with the City of Oregon City (City) Guidelines for Transportation Impact Analyses (TIA Guidelines – Reference 1). The study intersections and scope of this report were based on the TIA Guidelines and direction provided by City and Oregon Department of Transportation (ODOT) staff.

The TIA is based on the forecast trip generation of the development combined with engineering judgment and an understanding of existing and future land use and traffic conditions in the vicinity of the site. The study analyzed all site access points and intersections adjacent to the site, driveways serving properties on the opposite side of the streets fronting the development, proposed streets through the site, any intersection of streets classified as an arterial or collector where site traffic is expected to exceed 20 peak hour trips, and intersections where signal progression analysis was needed.

Overall, the traffic study analyzed 25 existing and 5 proposed new intersections within the report. The study analyzed all intersection operations over three peak hour periods. The traffic analyses reflect the peak hours of weekday morning (7:00 AM - 9:00 AM), weekday afternoon (4:00 PM - 6:00 PM), and Saturday midday (11:15 AM - 1:15 PM) conditions.

The analysis evaluated the following scenarios:
- Existing land use and transportation system conditions, including intersection volume-to-capacity (v/c) ratio, control delay, and level-of-service (LOS) during the weekday AM and PM peak hours, as well as the Saturday midday peak hour.
- Year 2025 background conditions (without the master plan), including intersection v/c ratio, control delay, level-of-service and 95th percentile queues during all three peak hour analysis periods.
- Year 2025 total traffic conditions (with the master plan), including intersection v/c ratio, control delay, level-of-service and 95th percentile queues during all three peak hour analysis periods.

Additionally, the traffic study analyzed existing conditions, future conditions, adjacent land uses and transportation facilities including bicycle and pedestrian facilities, and nearby transit facilities. Finally, the analysis evaluates traffic safety and crash history for the study intersections.

Based on the analyses of these characteristics, the TIA compares the impacts of the proposed development on the transportation system considering background traffic conditions, other developments that are in process and expected to contribute to the system, and traffic expected to be generated from build out of the proposed master plan.

Finally, considering the findings of the analysis and all locally planned improvements to the system, the study assesses the overall impacts from the development on the system and proposes mitigation measures to ensure that the system operates at within acceptable state and local levels of service. The findings and recommendations will be integrated into the conditions associated with approval of the master plan.

The TIA mitigation recommendations are detailed under the narrative response to Oregon City Municipal Code Chapter 16.12.033 below.

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

Response:
Currently, the site is a single property, and the requirements of the Mixed-Use Downtown Zoning District standards for minimum lot area, width, frontage, and yard requirements can be satisfied by future development. It is important that future land divisions and individual detailed DDP's respect the approved concepts within the GDP. Details of how the GDP satisfies the dimensional requirements of the Mixed-Use Downtown zoning district and other applicable provisions of the OCMC are provided within this narrative. It should be noted that the GDP assumes development of 524 residential units within the North District area but that there is no minimum density requirement of the underlying zone. Instead development within the GDP is regulated by FAR. The proposed FAR, as discussed below is 0.49:1 in excess of the 0.3:1 minimum required in the zone.

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

2 - NARRATIVE RESPONSE

Response:
In **Chapter 4: Proposed Development** and the accompanying drawings included in **Appendix B**, the GDP includes plans and diagrams that provide the information requested in this section. Conceptual descriptions of circulation, site improvements, public infrastructure, building locations and sizes, and proposed open spaces are provided throughout the master plan document and discussed in detail in the narrative below. More detailed programming for on-site open spaces and specific building design will be provided with DDP's and are expected to meet current Oregon City standards except as modified below in combination with the design guidelines that accompany this document.

C. Approval Criteria for a General Development Plan. The planning commission may approve an application for General Development Plan only upon finding that the following approval criteria are met:

1. *The proposed General Development Plan is consistent with the purposes of OCMC 17.65.*
2. *Development shall demonstrate compliance with OCMC 12.04 16.12, 17.62, if applicable, and 16.08, if applicable.*

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

This GDP is a major mixed-use development located at the north end of the Oregon City downtown in a very visible location at the confluence of two major transportation facilities. The master plan will facilitate a purposeful and efficient redevelopment of a former landfill. The master plan has been developed consistent with this purpose statement over the course of the past 11 months by a team of design professionals on behalf of the applicant to be as consistent with the requirements of the Comprehensive Plan and Development Code as practical. Compliance with OCMC chapters 12.04 16.12, 17.62 is discussed throughout this narrative. As proposed and modified through this process, future development within the master plan area can comply with OCMC and meet the approval requirements for a GDP. The proposed GDP proposes a plan to foster the growth of a mixed use community while providing long term certainty that vests the development in the 2021 Oregon City Code. Consistent with the purpose statement, the GDP also identifies all impacts related to the development and proposes a plan for mitigation of those impacts on public infrastructure.

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

Response:
Public services and utilities are available to the site as demonstrated in the attached plans and reports. See **Appendix B**. The plans and reports all demonstrate that it is feasible to provide services to the development proposed in the GDP consistent with the provisions of this code, including water, sewer, stormwater and transportation services. Future detailed development plans are expected to meet the applicable standards of the 2021 Oregon City Municipal Code and the design guidelines that are included with this document are intended to supplement those regulations. The site is already served by the Oregon City Police and Fire Services. Open spaces and plazas are provided within the development for both the public and residents. Systems Development Charges are paid at the time of development to assist the community in maintaining some of these services and facilities as well. The School District will have an opportunity to provide comments on the development to speak to any capacity issues associated with the development.

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

Response:
The GDP indicates the locations of the known natural and historic resources within the proposed development boundary and identifies the probable impacts to those resources when the plan is fully realized. Future detailed development plans are expected to meet the applicable standards of the 2021 Oregon City Municipal Code as it pertains to the protection and development of these resources. The most significant natural resource on site, Abernethy Creek, is intended to be preserved with approval of the GDP. Impacts to other resources on the west side of the development, east of Washington Street may be impacted for street improvements and other on-site development. Any impacts to those resources from future development on site will be mitigated for pursuant to the applicable chapters of this code. A final natural resources report will be submitted with each DDP to ensure that future development meets the requirements of the Natural Resources Overlay District on the property. The GDP demonstrates through its master site plan that the GDP does not preclude or prohibit future compliance with the NROD.

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

Response:
The GDP anticipates impacts to the public systems and the surrounding community and proposes to mitigate impacts to the transportation system through future traffic improvements that have been identified within the City's Transportation System Plan (TSP), to the utility system by making the necessary extensions to serve the site and the payment of Systems Development Charges SDC's, to the public parks system through the payment of SDC's and to surrounding properties through compliance with the applicable standards of the OCMC. The applicant is prepared to mitigate impacts associated with each detailed development plan approval consistent with the applicable provisions of the 2021 Oregon City Municipal Code. The Civil drawings in **Appendix B** illustrate the site and utility plans, which includes information from the TIA, in conformance with this requirement.

6. *The proposed General Development Plan is consistent with the Oregon City Comprehensive Plan.*

Response:
The Comprehensive Plan is adopted and acknowledged. The principles within the comprehensive plan embodied by this request include, contain urban development, promote redevelopment, protect natural resources, foster economic vitality, provide efficient and cost-effective services, and ensure a sense of history and place. These are core tenets are reflected within the proposed GDP.

The site is zoned Mixed Use Downtown (MUD) and the proposed development will develop consistent with the provisions of that district and the requirements of the OCMC except where allowed to be modified by this chapter. The community's development code is intended to implement the goals and policies of the Comprehensive Plan as it relates to the development of land. Development of this site through the master plan process will result in a compact and efficient mixed-use development within the existing urban growth boundary, served by existing or new public infrastructure. The TSP, utility master plans, and community concept plans also help to fulfill the goals and policies of the Comprehensive Plan. This master plan and the GDP has been developed considering each one of these documents and future DDP's are required to meet the same standards of those documents as they are being designed and constructed. The GDP is consistent with the applicable regulations for development as explained in this narrative.

2 - NARRATIVE RESPONSE

10 | Chapter 17.65: Master Plans and Planned Unit Development (Cont.)

7. The proposed General Development Plan is consistent with the underlying zoning district(s) and any applicable overlay zone or concept plans.

Response:
This proposed GDP is consistent with the underlying zoning district as well as the purpose and standards of all applicable overlay zone requirements, as shown below under the narrative response to Oregon City Municipal Code Chapter 17.34. Approval of the GDP does not permit any development on site. Future development on the site can only occur with the approval of DDP's that are consistent with the applicable provisions of the OCMC, with the GDP, and the supplemental design guidelines adopted with this plan. There are no concept plans that apply to this area. The GDP and accompanying documents have been predicated upon compliance with the 2021 Oregon City Municipal Code and include plans demonstrating the feasibility that future development under this plan can comply with the applicable requirements of these districts except where standards are allowed to be modified. There are few modifications to those standards requested with the approval of this plan. They are discussed in detail below.

8. For projects with a residential use component, the proposed General Development Plan includes common open space for the recreational needs of the development's residents.
a. Required open space shall be located either on-site or off-site within one-quarter mile of the development.
b. Minimum required open space shall be one hundred square feet per residential unit in the development.
c. The open space area may be in private ownership or proposed for public dedication, at the city's discretion whether to accept.
d. The open space shall be developed with a unified design to provide for a mix of passive and active uses. Passive uses include, but are not limited to sitting benches, picnicking, reading, bird watching and natural areas. Active uses include, but are not limited to playgrounds, sports fields and courts, running and walking areas.
e. Land area to be used for the open space area that is required in this section shall not include required setback areas, required landscaping, streets, rights-of-way, driveways, or parking spaces.
f. Unless dedicated to the public, the applicant shall also provide an irrevocable legal mechanism for the maintenance of the open space and any related landscaping and facilities. The applicant shall submit, for city review and approval, all proposed deed restrictions or other legal instruments used to reserve open space and maintenance of open space and any related landscaping and facilities.

Response:
The North End master plan does in fact include a residential component and illustrates common open spaces provided for residents of the development. As detailed development plans are prepared for the residential portions of the site, compliance with the applicable standards and supplemental design guidelines is expected by the prospective developers of those areas. This GDP illustrates that these standards can be satisfied with future development of the site consistent with this plan. The master plan will accommodate 524 residential units. Based on this number of units, the development is required to provide 52,400 square feet of open space. Within the immediate vicinity of the multi-family buildings, the plan calls for 45,600 square feet of private open space and within a quarter mile there are other on-site parks, open spaces, and public plazas. Open spaces are intended to be both passive and active. See **Chapter 4: Proposed Development** and **Chapter 5: Master Plan Design Guidelines**.

9. For projects with a residential use component, the proposed General Development Plan includes a mix of residential uses such that no single residential use exceeds seventy-five percent of the total proposed units. The mix of residential uses shall provide variety of dwelling types and sizes that are integrated throughout the site, rather than isolated from one another, with smooth transitions between residential types including appropriate setbacks, landscaping or screening as necessary, while maintaining street and pedestrian connectivity between all residential uses. Tenancy (i.e. ownership versus rental) shall not be a consideration in determination of the mix of residential use. For the purposes of this section, residential uses include single-family detached, single-family attached, duplex, 3—4 plex, and multi-family.

Response:
The proposed GDP does include a residential component and satisfies this standard through the provision of a variety of unit sizes, and entry types (i.e. ground floor walk-up, elevator for units located above elevators) within a multi-family/multistory format.

17.65.070 - Adjustments to development standards.
A. Purpose. In order to implement the purpose of the city's master plan or planned unit development process, which is to foster the growth of major institutions, major residential, commercial or mixed-use development, and other large-scale development, while identifying and mitigating their impacts on surrounding properties and public infrastructure, an applicant may request one or more adjustments to the applicable development regulations as part of the master planning or planned unit development process, and are not required to go through the variance process pursuant to OCMC Chapter 17.60.

Response:
This application for GDP approval requests four adjustments to standards listed in subsection C below that are permitted to be adjusted through the city's master plan process.

B. Procedure. Requests for adjustments shall be processed concurrently with a General Development Plan. An adjustment request at the detailed development plan review shall cause the detailed development plan to be reviewed as a Type III application.

Response:
The applicant is aware that future adjustments not identified within the GDP will be reviewed as a Type III application.

C. Regulations That May be Adjusted. Adjustments may be allowed for the following items:
1. Dimensional standards of the underlying zone of up to twenty percent, except the perimeter of the development shall meet the underlying zone's setbacks when adjacent to residentially zoned property.
2. Site plan and design standards.
3. Residential design standards.
4. Increase in allowed maximum residential density of up to ten percent.
5. Standards for land division approval.
6. Additional uses allowed with residential projects, or residential component of projects:
a. Notwithstanding the use provisions of the underlying zones, neighborhood commercial uses as defined in Chapter 17.24.020, including restaurants and eating and drinking establishments without a drive-through, retail trade, and services, are permitted on up to ten percent of the net developable area. The neighborhood commercial uses shall be planned and constructed so as to support and be compatible with the entire development and shall not alter the character of the surrounding area so as to substantially preclude, impair or limit the use of surrounding properties for the primary uses listed in the underlying district.
b. Public or private parks and playgrounds, community buildings and/or outdoor recreational facilities, such as swimming pools and tennis courts.
c. Indoor recreational facilities, such as racquetball or tennis courts, fitness centers or swimming pools.
d. Common public and private open space including trails.
e. Primary or accessory uses that are not identified as a permitted or conditional use in the underlying zone but which are defined in the code.

Response:
In preparation of the GDP and thinking forward towards implementation, the design team has identified the following four adjustments. Compliance with the approval criteria are discussed below.

1. 16.12.030 - Blocks—Width. Adjustments to the Land Division standards for approval are permitted through the master plan process under 17.65.070.C.5.
2. 17.54.100(2 and 3) - Fences, hedges, walls, and retaining walls. Adjustments to the site plan and design standards are permitted through the master plan process under 17.65.070.C.2. This would be an adjustment to a design standard that applies within to all zones within the City.
3. 17.62.055(D) - Institutional, office, multi-family, retail, and commercial building standards. Adjustments to the site plan and design standards are permitted through the master plan process under 17.65.070.C.2.
4. 17.62.050(C)(4) – General Standards. Adjustments to the site plan and design standards are permitted through the master plan process under 17.65.070.C.2.

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

process; and
4. Minimum density for residential sites may not be reduced.

Response:
None of the regulations listed above are adjusted with approval of the GDP.

E. Approval Criteria. A request for an adjustment to one or more applicable development regulations under this section shall be approved if the review body finds that the applicant has shown the following criteria to be met:
1. Granting the adjustment will equally or better meet the purpose of the regulation to be modified;

Response:
Adjustment #1
Chapter 16.12.030 - Blocks—Width states, "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."

Although a land division is not proposed with this application, we are fairly certain that any land division of this site would not satisfy the requirement given the proposed uses within the master plan and that the master plan area will be served by a series of internal private streets as opposed to local streets.

The purpose of block length and width standards are to make a neighborhood more walkable and connected. They are intended to create neighborhoods with grid traffic patterns to make it easier to get from place to place for multiple modes of transportation and provide opportunities for additional routes throughout the City or neighborhood. Larger blocks, on the other hand discouraged because they can't adequately disperse or calm traffic. Block length standards promote connectivity to the rest of the community. The code recognizes that block length standards are not ideal in all instances as the code allows the city engineer to determine the block length in some zones within the City.

In this instance, the east side of the development includes larger format retail uses and three commercial pads greater than 100,000 square feet in size intended to serve anchor retail facilities and associated parking and circulation aisles that when or if the land is divided will likely exceed the maximum block length, width, and spacing requirements of this section. Existing development and the presence of Abernethy Creek make it difficult for the development to connect to the north and east.

However, the proposed master plan, with this adjustment equally meets the purpose of the standard in 16.12.030 by providing a continuous and well-connected multi-modal transportation system that includes private streets, sidewalks, and shared use paths to connect uses within the development as well as to the surrounding transportation system. The developer is requesting that the City defer to the layout of the general master plan and adjust these maximum standards in favor of the proposed circulation system and block width proposal.

Adjustment #2
Section 17.54.100.2 states that, "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."

Section 17.54.100.3 states that, "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."

This particular chapter is not provided with a purpose statement, but the chapter in general sets out the requirements for accessory structures, projections, exceptions, marijuana businesses and mobile food units, which would lead one to believe that the purpose of these standards are to regulate operations and aesthetics of particular circumstances that relate to specific uses. A wall of any height can be constructed provided it's engineered properly, but, most communities put regulations limiting the height of walls in place to discourage and break up large blank surfaces on the landscape.

Given the significant difference in height between the master plan area, the adjacent properties at the south and west property lines, and Washington Street, it may be necessary to design and construct retaining walls that are higher than 8.5 feet from finished grade.

In some instances, buildings foundations will be utilized in place of walls but that's not the case along the proposed streets and sidewalk system. For example, the difference in height between the subject property and the End of the Oregon Trail Interpretive Center is approximately 29 feet. The applicant is requesting that the City adjust this height requirement given the known grade differences. The purpose of this standard can be equally or better met through thoughtful design of those retaining walls by utilizing different colors and materials or landscaping that climb the walls. The applicant is willing to accept conditions related to the design of the walls.

Adjustment #3
Section 17.62.055.D Siting of Structures. States, "On sites with one hundred feet or more of frontage at least sixty percent of the site frontage width shall be occupied by buildings placed within five feet of the property line... Multi-family developments shall be placed no farther than twenty feet from the front property line…"

The code allows larger front yard setbacks to be approved through site plan and design review if the setback area incorporates elements such as tables, benches, art, fountains, additional landscaping, enhanced landscaping, and other elements approved by the Community Development Director that can meet the intent of the section.

The purpose statement for this section is to, "…provide a range of design choices that promote creative, functional, and cohesive development that is compatible with surrounding areas. Buildings approved in compliance with these standards are intended to serve multiple tenants over the life of the building, and are not intended for a one-time occupant. The standards encourage people to spend time in the area, which also provides safety through informal surveillance. Finally, this section is intended to promote the design of an urban environment that is built to human scale by creating buildings and streets that are attractive to pedestrians, create a sense of enclosure, provide activity and interest at the intersection of public and private spaces while also accommodating vehicular movement."

The proposed development has over one hundred feet of frontage along both Abernethy Road and Washington Street. As stated earlier, the difference in grade between the development site and the surrounding streets are significant given that this was a former land fill. The grade along Washington Street is taken up by the building foundations of the proposed parking garages beneath the multi-family housing. The setbacks proposed along Washington Street vary from 1.9 to 23 feet behind the right of way, and over 230 feet along the site's frontage along Abernethy Road. The applicant is requesting this adjustment due to the unique shape of the site and the presence of the floodplain along Abernethy Road. To the extent possible, the applicant would prefer to keep all occupied buildings outside of the floodplain. In order to accomplish this, the buildings along Abernethy Road would be replaced with surface parking. The developer is requesting that the City allow this standard to be adjusted and provide deference to the proposed layout of the GDP as currently proposed.

This adjustment will allow the development to equally meet the purpose of the regulation by providing pedestrian amenities and enhanced landscaping along Abernethy Road and Washington Street. Further, the applicant is proposing a private commercial street, ("D" Street) between the buildings and Abernethy Road and places the buildings within five feet of that proposed street. These buildings will serve multiple tenants over their lifetime by providing separate retail spaces that are daylighted below the larger retail spaces above that will front ("C Street). With retail uses fronting both private internal streets, there will be opportunities for added activity and surveillance on both sides of the retail buildings.

2 - NARRATIVE RESPONSE

Response to 17.65.070.E.1 Cont. :
Adjustment #4
Section 17.62.050.C.4 states, "Elevated external stairways or walkways shall not extend beyond the building facade except for external stairways or walkways located in, or facing interior courtyard areas that are not visible from the street or a public access easement…"

According to the code, "The purposes of site plan and design review are to: Encourage site planning in advance of construction; protect lives and property from potential adverse impacts of development; consider natural or man-made hazards which may impose limitations on development; conserve the city's natural beauty and visual character and minimize adverse impacts of development on the natural environment as much as is reasonably practicable; assure that development is supported with necessary public facilities and services; ensure that structures and other improvements are properly related to their sites and to surrounding sites and structure; and implement the city's comprehensive plan and land use regulations with respect to development standards and policies." There is not a separate purpose statement for the section proposed to be adjusted.

The applicant is requesting an adjustment to this standard to allow pedestrians to walk between the plaza area and Washington Street. Because of the grade difference in this location, it would be difficult to provide a direct pedestrian route without providing a stairwell that projects beyond the building façade. The proposed stairwell is not located in or facing an internal courtyard. The idea behind this stairwell is to provide an attractive pedestrian alternative to connect the site to development in a more direct manner. This adjustment equally meets the purpose statement of the Site Plan and Design Review Chapter by considering a man-made hazard (grade difference) between the public street and the development. It will also add visual interest and character to the site's frontage with Washington Street by providing an artistic feature that also serves a practical purpose and creative solution to pedestrian connectivity. Details of the stairwell would be provided with the appropriate DDP.

2. If more than one adjustment is being requested, the cumulative effect of the adjustments results in a project that is still consistent with the overall purpose of the zone;

Response:
More than one adjustment is being requested with this application. The cumulative effect of the adjustments continues to satisfy the overall purpose of the MUD zone by providing a high quality vibrant mixed-use development with a variety of retail and service uses on the ground floors and residential on the upper floors. It creates an urban and intense development on the west side of the development and will attract more people into downtown Oregon City with a mix of larger retail uses that tend to serve the larger reason. The site will be well connected to the community and transit through a comprehensive and circuitous circulation plan. Each of the adjustments are necessary to respond to unique and specific site conditions not typically found on other sites. The impact of the adjustments is to create that high quality walkable environment while navigating significant changes in grade.

3. City-designated Goal 5 resources are protected to the extent otherwise required by Title 17;

Response:
The proposed adjustments do not impact City-designated Goal 5 resources on the site.

4. Any impacts resulting from the adjustment are mitigated such that the development does not create significant adverse impacts on adjacent properties;

Response:
The proposed adjustments do not impact any of the adjacent properties. The site is immediately adjacent to three properties and bound by public streets and Abernethy Creek. Any impacts from the retaining wall height at the southwest edges of the master plan site, can be mitigated through selection of materials and landscaping to break up the mass of the wall, if necessary.

5. If an environmental zone, the proposal has as few significant detrimental environmental impacts on the resource and resource values as is practicable; and

Response:
Although there are environmental resources on the master plan site, none of the proposed adjustments would significantly impact those resources.

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

Response:
The subject property is not located within a concept plan and the adjustments do not affect any of the Oregon City Comprehensive Plan goals and policies which are implemented through the City's development code. As stated above, the proposed adjustments equally meet the purpose statements of the regulations that are being adjusted and satisfy the standards of the MUD zoning district. Approval of these adjustments is consistent with the land use designations for the site and do not preclude the development from meeting the applicable goals and policies of the Oregon City Comprehensive Plan.

17.65.090 - Regulations that apply.
An applicant is entitled to rely on land use regulations in effect on the date its GDP application was initially submitted, pursuant to ORS 227.178(3), as that statute may be amended from time to time. After a General Development Plan is approved, and so long as that General Development Plan is in effect, an applicant is entitled to rely on the land use regulations in effect on the date its General Development Plan application was initially submitted, as provided above, when seeking approval of detailed development plans that implement an approved General Development Plan. At its option, an applicant may request that a detailed development plan be subject to the land use regulations in effect on the date its detailed development plan is initially submitted.

Response:
Summit Development Group is formally requesting that future development within the site, including all DDPs, be vested under the applicable provisions of the 2021 Oregon City Municipal Code land use regulations with approval of the GDP. This will afford future developers and tenants within the master plan area with long term regulatory certainty and predictability.

Chapter 12.04: Streets, Sidewalks, and Public Spaces

Response:
Chapter 12.04.170 requires that all development be in conformance with the city's public facility master plans, public works policies, standard drawings, and engineering specifications. All streets must be reviewed and approved by the city engineer prior to construction and when we are connecting, if at all, to another jurisdiction's' right of way, that jurisdiction must also review the right of way as a condition of site plan or plat review, if required by code or intergovernmental agreement.

The GDP has been designed to meet the current Oregon City requirements for all adjacent public streets, sidewalks, and public spaces as found in the city's public facility plans, public works policies and engineering specifications in compliance with these criteria. The proposed street plan is illustrated within the GDP provided with this narrative in **Chapter 4: Proposed Development.**

With this approval, frontage improvements will occur along Abernethy Road and Washington Street, both of which have been designed consistent with the City/County standards as shown on the Civil Plans attached to this narrative as **Appendix B.**

Internal streets will be private and provided with public access easements to ensure that the general public has access throughout the master plan in the same manner as future residents and tenants. Internal sidewalks will be designed to meet or exceed city standards. For example, Civil Sheets C110 and C111 attached with **Appendix B** to this narrative shows the sidewalk cross sections ranging between 5 and 12 feet depending upon the street. Although the private streets proposed within the GDP vary from the typical Oregon City Street cross section, they are designed to mimic and function as public streets. Proposed features include wider sidewalks, street furniture, bulb outs at intersections, planter strips, and raised crosswalks.

There are differences in the grades between existing street frontages and the proposed development. The reclaimed landfill sits much higher than the existing streets and surrounding properties. The street network was created to navigate these grade changes and make the desired connections to adjacent streets and provide vehicular connectivity through the plan area.

The following projects are identified within the current Oregon City TSP and are proposed to be either constructed with the first phase of the GDP (**Bolded**) or in response to impacts associated with future DDP approvals. The timing of the improvements will be memorialized within a subsequent development agreement with the City or as conditions of approval to this GDP review.

2 - NARRATIVE RESPONSE

Response to Chapter 12.04 Cont. :

S44 Project
Description: Construction of a shared use path from Abernethy Road to east of the Abernethy Road-Washington Street extension. Find in TSP document (Page 90).

S5 Project
Description: Construction of a shared-use path from Abernethy Road to Clackamas River Drive. Find in TSP document (Page 87)

S2 Project
Description: Construction of a shared use path from Main Street to Redland Road. Find in TSP document (Page 87)

D63 Project
Description: Street connection from Washington Street to Abernethy Road. Find in TSP document (Page 54)

B8 Project
Description: Abernethy Road. Bike Lanes from Washington Street to Redland Rd. Find in TSP document (Page 83)

W5 Project
Description: Washington Street sidewalk infill from Washington Street to Abernethy Road. Find in TSP document (Page 55)

D79 Project (with future phases)
Description: capacity improvements at the intersection of OR 213/Redland Road. Find in TSP document (Page 78)

A Traffic Impact Analysis ("TIA") was also completed for this GDP review and is addressed in detail below. The TIA identifies all of the on-site and off-site transportation improvements that will be completed upon full buildout of this proposal.

12.04.005 - Jurisdiction and management of the public rights-of-way.
A. The City has jurisdiction and exercises regulatory management over all public rights-of-way within the City under authority of the City Charter and state law by issuing separate public works right-of-way permits or permits as part of issued public infrastructure construction plans. No work in the public right-of-way shall be done without the proper permit. Some public rights-of-way within the city are regulated by the State of Oregon Department of Transportation (ODOT) or Clackamas County and as such, any work in these streets shall conform to their respective permitting requirements.
C. The City has jurisdiction and exercises regulatory management over each public right-of-way whether the City has a fee, easement, or other legal interest in the right-of-way. The City has jurisdiction and regulatory management of each right-of-way whether the legal interest in the right-of-way was obtained by grant, dedication, prescription, reservation, condemnation, annexation, foreclosure or other means.
D. No person may occupy or encroach on a public right-of-way without the permission of the City. The City grants permission to use rights-of-way by franchises, licenses and permits.
E. The exercise of jurisdiction and regulatory management of a public right-of-way by the City is not official acceptance of the right-of-way, and does not obligate the City to maintain or repair any part of the right-of-way.

Response:
The applicant acknowledges the City permitting requirements for work in the rights-of –way. The project team will comply with OCMC standards and permitting requirements for any work or use of the right-of-way.

12.04.025 - Driveways.
Driveways shall be reviewed in accordance with OCMC 16.12.035. Driveway requirements may be modified through the procedures in OCMC 16.12.013.

Response:
The GDP provides six access locations into the site as described below. There are two proposed accesses along Abernethy Road and four new proposed driveways along Washington Street.

Proposed "Market Street" would provide access into the master plan at intersections with both Abernethy Road to the south and Washington Street to the North. Additionally, proposed 4th Street would connect to Abernethy to the east and Washington Street to the west. Proposed Market Street would satisfy the street connection called for in the Oregon City Transportation System Plan. The driveways differentiate the private street entrances from the surrounding public streets.

The applicant seeks a modification below for the limitation of one driveway per frontage under OCMC 16.12.035. A modification is requested through the process outlined in OCMC Section 16.12.013. All other aspects of the project driveways will be designed in accordance with OCMC 16.12.035.

12.04.030 - Maintenance and repair.
The owner of land abutting the street where a sidewalk has been constructed shall be responsible for maintaining said sidewalk and abutting curb, if any, in good repair.

Response:
The applicant acknowledges the requirement for maintenance and repair of sidewalks along the street frontages.

12.04.032 - Required sidewalk repair.

Response:
The applicant acknowledges the requirement for maintenance and repair of sidewalk along the street frontage.

12.04.050 - Retaining walls—Required.

Response:
The applicant acknowledges the requirement for retaining walls on private property, when necessary, to prevent soil or earth from sliding or failing into the street. Except for the retaining walls that provide the proposed pedestrian access to the End of the Oregon Trail Interpretive Center from the master plan site, all retaining walls will be constructed on the inside of a property line.

12.04.100 - Excavations—Restoration of pavement.

Response:
The applicant acknowledges the requirement to restore pavement in excavated areas of the street during construction.

12.04.120 - Obstructions—Permit required.

Response:
The applicant will obtain the appropriate permits required for permanent and temporary obstructions prior to construction activities.

12.04.150 - Street and alley vacations—Cost.

Response:
Street and alley vacations are not associated with this development. This requirement is not applicable to the GDP.

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:
The drawings associated with public street access, vehicle circulation and street frontage improvements were prepared by a professional, licensed civil engineer in compliance with City standards, except where approved as an engineering modification. See civil sheets C110 and C111 in **Appendix B** to this narrative. As stated previously the application includes a modification request to OCMC 16.12.035, which limits driveways to one per frontage. The project requests approval of two driveways along Abernethy Road and four driveways along Washington Street. That modification is discussed in detail later in this narrative. All design requirements for driveway width, spacing and sight line vision are in compliance with City standards.

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:
The applicant acknowledges this requirement. Workmanship and materials performed under permits will comply with these specifications and standards.

Chapter 12.08: Public and Street Trees

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.

Response:
The GDP includes a street plan with street trees proposed along all public and private streets within and adjacent to the development in compliance with 12.08.015. As called for in the Landscape Design Guidelines in **Chapter 5: Master Plan Design Guidelines**, street trees within Detailed Development Plans (DDP) for individual phases of development will be planted and spaced according to these provisions. Tree spacing will be evenly distributed to meet the clearance requirements of 15 feet from streetlights, 5 feet from fire hydrants, 20 feet from intersections and 5 feet from all public utilities in compliance with 12.08.015.B.

The proposed GDP Design Guidelines, included here as **Chapter 5: Master Plan Design Guidelines**, further ensures compliance with the Oregon City Municipal Code (OCMC) standards through mandatory language that requires development within the project to meet or exceed the requirements of Chapter 12.08. For example, design guideline 5 requires street trees to be planted and spaced in accordance with Chapter 12.08 and requires selected street trees to have a minimum 40 foot height and a 40-foot canopy spread at the time of planting. The Design Guidelines also require the same clearance distances be maintained when street trees are planted within the development. All the provisions of this Chapter are met or exceeded with approval of the GDP because the street plan has been designed to accommodate all of the spacing requirements upon a specific DDP application.

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.

Response:
Stormwater generated from the developed site area in the master plan will be collected, detained, and treated consistent with the Oregon City Stormwater and Grading Design Standards. A preliminary stormwater management report was prepared by Daniel Loss, P.E., a professional and licensed engineer for the master plan development and is included as **Appendix A**. Under the master plan approval, the site's new and reconstructed impervious surfaces will be managed per the Oregon City Stormwater and Grading Design Standards dated March 2020. Because of the landfills clay cap, all new and redeveloped impervious surfaces within the master plan site will be treated by a combination of proprietary treatment systems and Low Impact Development (LID) facilities such as vegetated swales, filtration raingardens and planters.

The mechanical filters are sized for the onsite stormwater runoff. Specific details of the proposed stormwater management system and the methods utilized to design the system are laid out in detail in the Stormwater Management report, and as proposed, the stormwater system satisfies these provisions of the OCMC.

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.

Response:
The project is partially located within a water quality resource area and creates more than 5,000 square feet of new impervious surface. Water quality and flow control except as discussed below can be provided for portions of the site that are located within these areas with future DDP review and approval.

C. Exemptions. The following exemptions to subsection B of this section apply:
1. An exemption to the flow control requirements of this chapter will be granted when the development site discharges to the Willamette River, Clackamas River or Abernethy Creek; and either lies within the one hundred-year floodplain or is up to ten feet above the design flood elevation as defined in OCMC 17.42, provided that the following conditions are met:
a. The project site is drained by a conveyance system that is comprised entirely of manmade elements (e.g. pipes, ditches, culverts outfalls, outfall protection, etc.) and extends to the ordinary high water line of the exempt receiving water; and
b. The conveyance system between the project site and the exempt receiving water has sufficient hydraulic capacity and erosion stabilization measures to convey discharges from the proposed conditions of the project site and the existing conditions from non-project areas from which runoff is collected.
2. Projects in the following categories are generally exempt from the water quality and flow control requirements:
a. Stream enhancement or restoration projects approved by the City.
b. Farming practices as defined by ORS 30.960 and farm use as defined in ORS 214.000; except that buildings associated with farm practices and farm use are subject to the requirements of this chapter.
c. Actions by a public utility or any other governmental agency to remove or alleviate an emergency condition.
d. Road and parking area preservation/maintenance projects such as pothole and square cut patching, surface sealing, replacing or overlaying of existing asphalt or concrete pavement, provided the preservation/maintenance activity does not expand the existing area of impervious coverage above the thresholds in subsection B of this section.
e. Pedestrian and bicycle improvements (sidewalks, trails, pathways, and bicycle paths/lands) where no other impervious surfaces are created or replaced, built to direct stormwater runoff to adjacent vegetated areas.
f. Underground utility projects that replace the ground surface with in-kind material or materials with similar runoff characteristics.
g. Maintenance or repair of existing utilities.

Response:
The master plan area will discharge to all three bodies listed in this section and is located partially within the 100 – year floodplain which means that it qualifies for an exemption to the flow control requirements. The stormwater report, included as **Appendix A** to this narrative, concludes that 29.8 acres of impervious surface from the site will outfall into the Abernethy Creek tributary after being treated. The creek tributary extends approximately 520 feet south before entering joining Abernethy Creek and ultimately flowing to the Willamette River.

The existing stream channel geometry was estimated based upon available topographic survey and average stream cross sections. Using Civil Tool Pro, HHPR concluded that the Abernethy Creek tributary segment has more than sufficient capacity to convey the 10-yr storm event. Flows will remain in the existing creek channel at and downstream of the point of discharge.

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Response to 13.12.050.C Cont. :
Areas of the project contributing to the Kelly Field drainage basin will include 30.8 acre of disturbed land. The project will ultimately discharge into a 36" concrete culvert pipe. The existing 36" pipe extends west under Washington Street before out falling west to the Clackamas River delta approximately 1500 feet downstream. Current topographic survey is underway to confirm existing pipe slopes, sizes, and configuration. Downstream analysis will be conducted during individual DDP development and documented in the final stormwater report to ensure that this criterion is satisfied prior to redevelopment. However, based on the expert studies referenced above and attached as **Appendix A**, the redevelopment of the site can conform to all the water quality and flow control standards..

The stormwater report concludes that no adverse impacts to the downstream system are anticipated due to runoff from this project.

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:
The GDP lays out the general plan to develop the prior Rossman Landfill, which corresponds to items 3, 7, 8, and 9. While the stormwater report details how the project can meet the stormwater management requirements, additional management practices will be evaluated and recommended with each subsequent DDP. Future development within the master plan area for uses subject to additional management practices will provide supplemental stormwater reports to address compliance with these sections.

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 application package includes a preliminary stormwater report and stormwater plan sheet, prepared by a professional, licensed civil engineer that addresses each of the factors in Subsection A above. Before proceeding with construction, a separate final report will be provided for each project. See **Appendix A.**

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 application package includes a preliminary stormwater report and stormwater plans, prepared by a professional, licensed civil engineer, in compliance with City standards. The information provided within the report demonstrates that the stormwater management design proposed with the GDP will satisfy the Public Works Stormwater and Grading Design Standards, adequately controls run-off from impervious surfaces, and prescribes improvements that will protect streambanks associated with Abernethy Creek from erosion. Specific operation and maintenance measures have been suggested and will be provided upon approval and construction of the system during review of individual DDP's.

New and constructed impervious surfaces will be managed per the Oregon City Stormwater and Grading Design Standards dated March 2020. However, the site is not able to utilize infiltration type facilities during design since the project site was once a landfill and has contaminated soils. Because infiltration would run the risk of mobilizing contaminates in the soils or groundwater, the project will be utilizing underground detention and mechanical treatment methods for stormwater disposal. Stormwater will be treated by proprietary treatment systems, vegetated swales, filtration raingardens and planters across the site. The public frontage improvements will be treated with filtration planters.

Based on the measures proposed within the report, the stormwater management plan will achieve pollutant removal to the maximum extent practicable via biofiltration designed to target pollutants expected with a commercial development. The proposed private facilities satisfy the City of Oregon City water quality and quantity requirements, and as designed, this project will not create any adverse impacts to the downstream storm system.

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 understands the proposal of alternative materials or methods are subject to review and authorization by the City engineer. The project proposes to employ low impact development facilities for water quality treatment and flow control across the site as previously discussed.
The civil engineer has designed the proposed stormwater system to be consistent with the Oregon City Stormwater Grading and Design Standards. Finally, the report also included an investigation of the downstream conveyance system and did not find any obstructions. Each subsequent DDP will be required to ensure that the stormwater from the development is managed consistent with the Public Works Stormwater and Grading Design Standards, reaffirm the findings of the preliminary storm report, and obtain any necessary approvals from the City Engineer prior to utilizing an alternative method or design.

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 drainage plan for the application was prepared by a licensed civil engineer. The applicant understands the requirements that apply should a transfer of engineering responsibility occur during construction of the project.

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 project is designed to comply with City standards and specifications. During construction, workmanship and materials will be required to comply with the approved drawings demonstrating the standards and specifications.

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.

Response:
Public stormwater facilities are proposed with this development along Washington Street and Abernethy Road. The onsite stormwater facilities are not designed to receive water from the public right-of-way. Easements, when necessary, will be provided to the City for access maintenance to any public facility.

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.

Response:
The applicant understands this requirement and will comply with this standard during the DDP and construction phases of the project.

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:
Noted. The applicant is aware of this requirement and will comply.

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:
The property owner is aware of their responsibility to maintain stormwater facilities on the private property. A preliminary stormwater report is provided as **Appendix A** with this application package. The civil engineer has acknowledged this requirement within the report and it will be incumbent upon future DDP developers to provide supplemental stormwater reports consistent with the GDP stormwater plan and provide an operations and maintenance plan for their projects that are compliant with the Public Works Stormwater and Grading Design Standards.

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.

Response:
The applicant acknowledges this requirement and each DDP is expected to comply with these standards.

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.

Response:
The applicant acknowledges this requirement and is in the process of reviewing the NROD designation along the northwest edge of the property through a separate Type I process with the City. No physical development is proposed with the GDP. If it is subsequently found that these permits are needed during design of individual DDP's, the applicant and subsequent developers within the master plan will comply.

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:
To the applicant's knowledge, this requirement is not applicable to the GDP or any subsequent DDP. If it is subsequently found that review by the Oregon State Department of Fish and Wildlife is warranted during design of individual DDP's, the applicant and subsequent developers within the master plan will comply.

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.

Response:
Grading for the site will be required. On-site grading within The North End master plan is complicated by the presence of the clay soil cap that's used in the landfill reclamation. The project team includes Ryan Lawrence, a geotechnical engineer with NV-5; Eric Aronson, an environmental consultant and hydrogeologist with Aronson Environmental which is responsible for overseeing the Rossman Landfill remediation plan; and Daniel Loss, a professional licensed Civil Engineer. Each one of these professionals have been employed to consult on all grading and development activity that is planned to occur within the overall master plan and make informed decisions about the methods and designs that are to be employed during those activities to ensure that the integrity of the clay cap is not compromised.

Preliminary grading plans are provided within the civil plan set to comply with the applicable provisions of the Oregon City Municipal Code related to grading. See sheets C300-C307 in **Appendix B**. Preliminary and final grading plans will be provided with individual DDP's. The first DDP will be applied for once the GDP is approved and is expected to include mass grading of the site,

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Response to 15.48.030 Cont. :
for the purposes of installing internal streets, utilities, and frontage improvements along Washington Street and Abernethy road. The preliminary grading plans have been prepared in accordance with this chapter and the applicant acknowledges that no grading can occur on site until the City reviews and approves a specific mass grading permit.

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:
The applicant acknowledges the grading permit exemptions listed above. However, a grading permit is required per the requirements established in OMC 15.48.030. The exceptions listed above are not applicable to the project.

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.

Response:
Given the size of the site, the proposal will exceed the thresholds for an Abbreviated Grading Plan as established in OMC 15.48.090.A. As such, the applicant has prepared an Engineered Grading Plan that is included in the attached plan set as sheets C300 through C307 in **Appendix B**. Further, a geotechnical report meeting the standards above has been prepared for the site and is included as **Appendix D**. Approval of the current GDP will not result in the creation of any new residential lots or provide access to an existing residential lot; For this reason, the application does not include a Residential Lot Grading Plan.

Chapter 16.08: Land Divisions Process and Standards

Response:
Since no land divisions are proposed with approval of the GDP this chapter is not applicable. However, the applicant does acknowledge that a land division may be required to divide the portion of the site subject to maximum height requirements adjacent to the End of the Oregon Trail Interpretive Center from the rest of the site, and expects that future tenants may want to further divide the land to ensure that their assets and lease areas are located on separate lots. Further, it is recognized that the block length standards of 530 feet required within Chapter 16.12 will be difficult to comply with given the proposed programming within North End master plan. A modification to block length standards is requested with the GDP and is discussed in Chapter 17.65.070 below. All other provisions of the land division standards will be addressed and satisfied upon future land divisions within the master plan area. The site size and configuration of uses in the GDP does not preclude or prohibit compliance with any future application of the land division standards.

Chapter 16.12: Minimum Public Improvements and Design Standards

16.12.010 - Purpose and general provisions.
All development shall be in conformance with the policies and design standards established by this chapter and with applicable standards in the City's public facility master plans and City design standards and specifications. In reviewing applications for development, the City Engineer shall take into consideration any approved development and the remaining development potential of adjacent properties. All street, water, sanitary sewer, storm drainage and utility plans associated with any development shall be reviewed and approved by the City Engineer prior to construction. All streets, driveways or storm drainage connections to another jurisdiction's facility or right-of-way shall be reviewed by the appropriate jurisdiction as a condition of the preliminary plat and when required by law or intergovernmental agreement shall be approved by the appropriate jurisdiction.

Response:
All street, water, sanitary sewer, storm drainage and utility plans associated with any development will be specifically reviewed and approved by the City Engineer prior to construction and subsequent to approval of a DDP. The proposed GDP includes a street network that conforms with the City's street standards for both the internal street network as well as the adjacent and surrounding street system. **Appendix B** includes the proposed street design and the related cross sections demonstrating that the proposed street system meets the City's design standards except where modification is requested under this GDP proposal. The proposed water, sanitary sewer, storm drainage and utility plans are also included in the **Appendix B** of the GDP proposal. These exhibits demonstrate that any of the proposed development in the GDP can satisfy the respective design standards for that utility at the time a DDP application is submitted for review and 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. Minor Site Plan and Design Review applications shall not be subject to this chapter unless improvements are proposed within the right-of-way, or as otherwise provided in this chapter.
B. Compliance with this chapter is also required for new construction or additions which exceed fifty percent of the existing square footage of all 3-4 plexes, single and two-family dwellings living space. Garages, carports, sheds, and porches may not be included in the calculation if these spaces are not living spaces. Accessory dwelling units are not subject to compliance with this chapter. All applicable 3-4 plexes, single and two -family dwellings shall provide any necessary dedications, easements or agreements as identified in the transportation system plan and this chapter, subject to constitutional limitations. In addition, the street frontage shall be improved to include the following priorities for improvements:
1. Improve street pavement, construct curbs, gutters, sidewalks and planter strips; and
2. Plant street trees.
The cost of compliance with the standards identified in 16.12.011.B.1 and

16.12.011.B.2 is calculated based on the square footage valuation from the State of Oregon Building Codes Division and limited to ten percent of the total construction costs. The value of the alterations and improvements is based on the total construction costs for a complete project rather than costs of various project component parts subject to individual building permits. The entire proposed construction project cost includes engineering and consulting fees and construction costs. It does not include permit fees, recording fees, or any work associated with drafting or recording dedications or easements.

Response:
The proposal is for a GDP. Therefore, consistent with 16.12.011.A above, Chapter 16.12 applies to the proposed development. The following narrative and appendices demonstrate that the GDP is compliant with the Minimum Public Improvements and Design Standards.

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.

Response:
The applicant acknowledges that Oregon City has jurisdiction and exercises regulatory management over all public rights-of-way as defined and outlined in Chapter 12.04 of the Oregon City Municipal Code. The development site fronts three public streets: Washington Street, Abernethy Road, and Redland Road. All required/proposed improvements for these frontages have been coordinated with Oregon City and the applicant and the proposed upgrades to these adjacent rights of way have been included in the TIA.

16.12.013 - Modifications.
The applicant may request and the review body may consider modification of the standards in this chapter resulting from constitutional limitations restricting the City's ability to require the dedication of property or for any other reason, based upon the criteria listed below and other criteria identified in the standard to be modified. All modifications, except for adjustments approved by the City Engineer for tree preservation purposes pursuant to 16.12.013.A, shall be processed through a Type II Land Use application and may require additional evidence from a transportation engineer or others to verify compliance. Compliance with the following criteria is required:

Response:
The GDP requires one modification to the engineering standards of Subsection 16.12 as explained below:

1. OCMC 16.12.035.C. The standards of this section limit properties to one driveway per street frontage. The project requests approval of four driveway access points along Washington Street and two driveway access points along Abernethy Road.

A. The modification meets the intent of the standard;

Response:
The site is approximately 62 acres in size and includes approximately 1,091,698 square feet of new commercial, retail, entertainment, and residential uses. Driveway access, under the provisions of 16.12.035.C is limited to reduce conflicts with the traveling public along streets and to ensure adequate space for street improvements including curbs, gutters, sidewalks, planter strips and street trees.

The project proposes four driveways along the Washington Street frontage and two additional driveways along the Abernethy Road frontage. There is approximately 1,344 lineal feet of street frontage along Washington Street and approximately 1,320 lineal feet of frontage along Abernethy Road. According to the TIA provided with this application as **Appendix C**, Washington Street and Abernethy Road are both classified as a Minor Arterial. Section 12.04.195 of the Oregon City Municipal Code requires that the minimum driveway spacing along a Minor Arterial is 175 feet. As proposed within the GDP, the three new site accesses proposed along Washington Street will be positioned at equal spacings of approximately 500 feet relative to the signalized intersection at Washington Street/Home Depot-Site Access "A". The two new site accesses proposed along Abernethy will be approximately 1,000 feet apart, with the closest driveway at approximately 750 feet west of the signalized Abernethy Road/Redland Road intersection. Accordingly, the access spacing proposed within the GDP will comply with the access spacing requirements of the Oregon City Municipal Code. The additional driveways do not hinder the installation of priority street improvements, such as street trees, lighting and sidewalks. This request is consistent with the intent of the driveway standards.

B. The modification provides safe and efficient movement of pedestrians, motor vehicles, bicyclists and freight;

Response:
The proposed driveways are located along Washington Street and Abernethy Road. The site has a significant amount of frontage along these rights-of-way. The additional driveways exceed the access spacing requirements of the OCMC for streets classified as "minor arterials" in the Oregon City Transportation System Plan (TSP) as described above. Accordingly, the additional driveways will not affect the safety of pedestrians along the right-of-way. The driveways are shown on the Civil Site Plan sheets C200 to C207 of the Civil Plans provided in **Appendix B**. Site driveways have been located on the site and designed to meet all City requirements for sight distance, driveway spacing, and appropriate traffic control.

C. The modification is consistent with an adopted transportation or utility plan; and

Response:
Table 16.12.035.A identifies 175 feet as the minimum driveway spacing standard for a minor arterial. As discussed previously, three new site accesses are proposed along Washington Street at equal spacings of approximately 500 feet relative to the signalized intersection at Washington Street/Home Depot-Site Access "A". The two new site accesses proposed along Abernethy will be approximately 1,000 feet apart, with the closest driveway at approximately 750 feet west of the signalized Abernethy Road/Redland Road intersection.

The driveway approaches are identified in Table 16.12.035.D and require the approaches be a minimum width of 20 feet for two way traffic and a maximum width of 40 feet for commercial and mixed uses. The proposed driveways are compliant with the minimum and maximum driveway widths established in the plan as illustrated in the civil plans (Sheets C200 through C207).

D. The modification is complementary with a surrounding street design; or, in the alternative;

Response:
The additional driveways proposed for the development are complementary to the surrounding street design because the driveways are spaced more than 175 feet apart and located to facilitate safe connections to the surrounding streets and make circulation in and around the master plan area more efficient. Because of the large size of the site and the need to create multiple connections within the site as well as connections to the existing street grid external to the site, the driveways have been placed to maximize pedestrian, vehicle and bicycle connections as well as presenting a design that permits a coherent design for all of the related frontage and sidewalk improvements.

E. If a modification is requested for constitutional reasons, the applicant shall demonstrate the constitutional provision or provisions to be avoided by the modification and propose a modification that complies with the state or federal constitution. The City shall be under no obligation to grant a modification in excess of that which is necessary to meet its constitutional obligations.

Response:
The modifications are not being requested for constitutional reasons; therefore, this criterion is not applicable to the proposed GDP.

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:

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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:
The development site fronts three public streets, Washington Street, Abernethy Road, and Redland Road. The arrangement of these streets and their respective intersections is not proposed to change, nor is their location or grade. Frontage improvements have been coordinated with the Oregon City Engineering Division and are consistent with the requirements within the OCMC as discussed below. In addition, the proposed GDP approval proposes to construct seven projects identified within the TSP as discussed on pages 11 and 12 of this narrative. Those improvements will be constructed with the appropriate phase of development. Required right-of-way and easements will be dedicated or provided with each of those proposed improvements.

Based on the TIA completed for the project, the following improvements will be constructed adjacent to and through the site:

Frontage improvements proposed along Washington Street will consist of the required half-street improvements, per the City's Minor Arterial street design standards. This will include additional pavement width, where needed, to support the transition of the roadway from five lanes to three lanes southbound, including the extension of a continuous left-turn lane. Frontage improvements will also support respective bike lanes, planter strip and sidewalk treatments as required by the City's design standards, and on-street parking where required by the City Engineer.

Frontage improvements proposed along Abernethy Road will consist of the required half-street improvements consistent with the City's Minor Arterial street design standards. This will include additional pavement width, where needed, to support the existing three-lane cross-section with a continuous left-turn lane. Frontage improvements will also support respective bike lanes, planter strip and sidewalk treatments as required by the City's design standards, and on-street parking where required by the City Engineer.

A new collector-level street will extend through the site, starting from the current street terminus just south of the signalized Washington Street/Home Depot access intersection and include bike lanes and a shared-use facility, per the City's TSP.

A second shared-use facility will be constructed on the site, per the City's TSP. The two shared-use facilities will be fully interconnected with a system of pedestrian facilities that extend to every building, pedestrian plaza, and other pedestrian destination on the site.

The master plan envisions a total of six external site access points. These accesses, including proposed traffic control measures are as follows:

- Washington St./Home Depot-Site Access "A": Existing access with no proposed changes.
- Washington St./Site Access "B": This is a new private driveway leading into a parking structure. Improvements include stop-control on the minor approach, with a single egress lane for shared left- and right-turn movements. This access will rely on the presence of a continuous left-turn lane on Washington Street to allow for left-turn ingress.
- Washington St./Site Access "C": This access is identical to Site Access "B".
- Washington St./Site Access "D": This is a new private street connection leading into the site. Improvements include stop-control on the minor approach, with separate left- and right-turn egress lanes. This access will rely on the presence of a continuous left-turn lane on Washington Street to allow for left-turn ingress.
- Abernethy Rd./Site Access "E": This is a new private street connection leading into the site. Improvements include stop-control on the minor approach, with a single egress lane for shared left- and right-turn movements. This access will rely on the presence of a continuous left-turn lane on Abernethy Road to allow for left-turn ingress.
- Abernethy Rd./Site Access "F": This is part of the new collector-level street leading into the site. Improvements include signalization, with separate left- and right-turn egress lanes. This access will rely on a left-turn lane on Abernethy Road to allow for left-turn ingress. Improvements also include the construction of a westbound right-turn lane from Abernethy into the site.

With these improvements, the GDP conforms to these approval criteria.

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.

Response:
Alternative street plans that were different from table 16.12.016 were provided by City Staff at the pre-application conference and the proposed street sections have been discussed over the course of the last year. The development site fronts three public roadways: Washington Street, Abernethy Road, and Redland Road. Access into and out of the site are proposed along Washington Street and Abernethy Road. Frontage improvements along Redland Road are not proposed with the General Development Plan. Washington Street and Abernethy Road are both classified as Minor Arterials in the Oregon City TSP. All internal streets are proposed to be private. Below, is an analysis of the proposed street sections.

Abernethy Road (Minor Arterial)
Abernethy Road is a Clackamas County Facility. Along Abernethy Road, there is a 400-foot section of sidewalk that extends west along the site frontage from the signalized intersection and crosswalks at Redland Road, with the remaining property frontage having no sidewalk. Further west beyond the site frontage, sidewalk is lacking for most of the distance to the next traffic signal at Washington Street. According to Oregon City Staff, the maximum street section that the City may require is as follows:

Maximum Street Section city code may require on the development's side of centerline

Road Classification	Zoning	R.O.W. width	Road Width	Public Access	Sidewalk	Landscape Strip & Curb	Bike Lane	Street parking	Travel Lanes	Median
Minor Arterial	MUD	58'	47'	0.5'	10'	0.5' (5'x5' tree wells within sidewalk)	6'	8'	(2.5) 12'	6'

The project proposes to construct ½ street improvements that exceed what the City may require along Abernethy Road within 43 feet of right of way from the centerline. Right of way improvements include a 7-foot turn lane, a 12-foot travel lane, a 6-foot bike lane, curb, a 5-foot landscape strip a 12-foot sidewalk and .5 feet of buffer behind the edge of sidewalk. All the proposed improvements will be located within a 43-foot-wide half street right of way and meet or exceed the City's requirements for ½ Street improvements along Abernethy Road.

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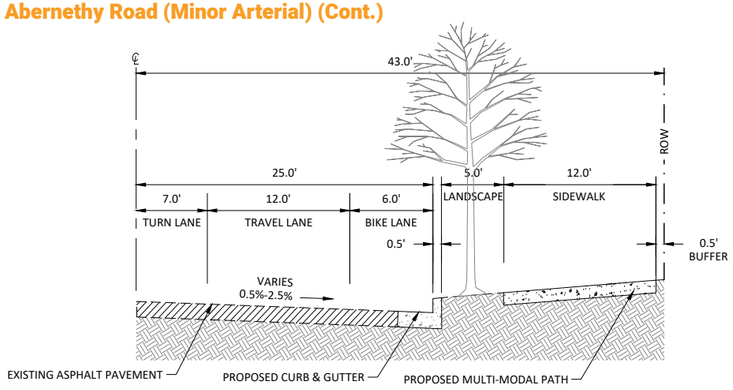
Abernethy Road (Minor Arterial) (Cont.)



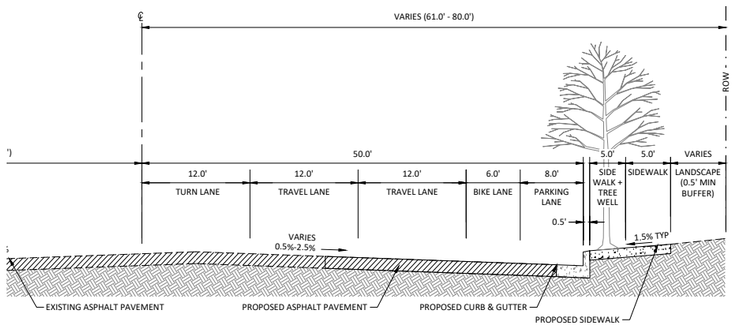
Washington Street (Minor Arterial)

Washington Street is a City owned and managed facility but is also classified as a Minor Arterial. The portion of the development site fronting Washington Street does not include any curb, gutter, planter strips, or street trees. It is paved and improved with a separated, meandering, and narrow sidewalk for pedestrians. According to City staff, the maximum street section that the City may require is as follows:

Maximum Street Section city code may require on the development's side of centerline

Road Classification	Zoning	R.O.W. width	Road Width	Public Access	Sidewalk	Landscape Strip & Curb	Bike Lane	Street parking	Travel Lanes	Median
Minor Arterial	MUD	58'	47'	0.5'	10'	0.5' (5'x5' tree wells within sidewalk)	6'	8'	(2.5) 12'	6'

As proposed and illustrated below, Washington Street is proposed to be constructed ½ street improvements including a 12-foot turn lane, two 12-foot travel lanes, a 6-foot wide bike lane, an 8-foot wide parking lane, curb, a 5-foot planter strip, a 5 foot sidewalk, and a varying width landscape buffer within a right of way that varies between 61 and 80 feet. Additional right of way dedications and easements will be provided where necessary. The proposed ½ street section was confirmed by City staff prior to being designed.



Redland Road (Minor Arterial)

Redland Road is also classified as a Minor Arterial but is an ODOT owned facility and does not currently include any frontage improvements for cyclists or pedestrians. The applicant is not proposing direct access onto Redland Road. The TIA suggests improvements at the intersection of OR213/Redland Road and at Abernethy Road/Redland Road based on the analysis performed. The future improvements will likely be required through conditions of approval on individual DDP's that trigger the improvements.

Market Street

All internal streets, including "Market Street" are proposed to be constructed as private facilities within public access easements overlaid. "Market Street" is expected to function like a Collector Street. As proposed, the "Market Street" improvements will vary through the development as illustrated below. Right of way width will vary between 64 and 80 feet. Section 1 detail begins at the north end of the site where the street will tie in with the existing street improvements adjacent to The Home Depot. Section 2 runs through the middle of the site and Section 3 runs between proposed "4th Street" along the sites shared property line with the End of the Oregon Trail Interpretive Center to Abernethy road. In all three sections, travel and turn lanes are proposed to be 12 feet wide, bike lanes, where provided will be constructed on both sides of the street and be a minimum of 6 feet wide. Where provided parking lanes will be 8 feet wide, sidewalks and landscaping will vary.

Within Section 1, the landscaping and street trees will be located within an area that is 13.5 feet behind the edge of sidewalk. In Sections 2 and 3, the proposed sidewalks vary between 11 and 13 feet with 5-foot tree wells. Section 2, the portion of the street that runs through the heart of the development, is provided with parking and bike lanes on both sides of the street.

Other interior streets vary based on function and location within the development. They are still private but intend to be like local streets within a minimum right of way width of 64 feet. The specific private street sections are provided in Sheets C110 and C111 of the Civil Plan set located in **Appendix B** to this application.

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.

Response:

The applicant proposes the installation new sidewalks on both sides of all new private streets that are interior to the development and along the frontages of Washington Street and Abernethy Road where ½ street improvements have been proposed. There are no sidewalk improvements along either side of Redland Road, presumably because it does not include any access or development immediately adjacent to the facility. The proposed sidewalk improvements will be constructed to City standards and are illustrated in the civil plans attached to this application as **Appendix B**.

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.

Response:

Bike and Pedestrian routes are identified throughout the development and along the site's frontage with Washington Street and Abernethy Road as illustrated in sheets C110 and C111 of the civil plans attached to this application as **Appendix B**. All other bike lanes and pedestrian access routes are identified **Chapter 4: Proposed Development**.

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.

Response:

Street names for the GDP are only for reference. Street names that honor the history of Oregon City will be selected at a later date. There are no proposed changes to the existing street name signs or traffic control devices. The applicant acknowledges that new signage and traffic control devices will be warranted based on the impacts of additional traffic generated from development of the site and consistent with the TIA. All future street name signs and traffic control devices warranted by the TIA will be consistent with applicable city regulations and standards and subject to approval by the City engineer at the time of DDP review and 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.

Response:

This is an application for approval of the GDP. No actual physical improvements will be constructed with approval of this request. The applicant is aware of the requirements to install street lights consistent with City regulations. Future applications for DDP approval will be accompanied by formal street lighting plans consistent with these provisions.

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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.

Response:
None of the streets within the proposed GDP include a pavement width of less than thirty-two feet. Therefore, this criterion is not applicable to the proposal.

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.

Response:
Alternative Street plans were provided by staff for the public street improvements and all internal streets are proposed to be private. Vegetated planter strips are provided between the sidewalk and curb or behind the sidewalk when matching an existing public street section. Interior to the site, street trees are provided along all newly proposed streets adjacent to or within the development. Washington Street and Abernethy Road are classified as minor arterials within the Oregon City TSP.

For Abernethy Road, a five-foot-wide vegetated planter strip is located between the curb and sidewalk. Along Washington Street, the vegetated planter strip varies in width and is located behind the sidewalk. In this case, street trees are provided within 5-foot tree wells. Section 1 of "Market Street" includes vegetated planter strips and street trees behind the sidewalk. Along all other interior streets, five-foot-wide tree wells are provided to allow for more active and wider sidewalks. Street trees are not proposed along the site's frontage with Redland Road as this is an ODOT facility, and it does not appear that there would be room to widen the right-of-way without impacting the Abernethy Creek NROD. Further, the proposed master plan does not propose any direct access or improvements to Redland Road or Hwy 213.

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.

Response:
The GDP includes a street plan and does not require vehicle and pedestrian access easements in lieu of street dedication. New private streets along with primary and secondary pedestrian access routes are provided through the site to meet provisions of the TSP. The applicant will dedicate required right-of-way when the GDP is approved and after completing the proposed ½ street improvements to the adjacent rights of way.

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

Response:
All proposed private streets and pedestrian ways included within this development will be provided with pedestrian access easements to the public. These connections will provide access into and out of the site from one of proposed driveways and include sidewalks that connect at those same locations. There are other pedestrian locations proposed along both Abernethy Road and Washington street that are separated from the streets. See the civil site plan (Sheets C200 thru C207) in **Appendix B**.

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.

Response:
The street plan and improvements associated with the street network will require dedications along Washington Street and Abernethy Road. Each of these dedications will be provided to the City under this standard and concurrently with each DDP that triggers that frontage improvement and related dedication.

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

Response:
The applicant is aware of this requirement. The development site is surrounded by right-of-way on three sides. The proposed GDP provides for pedestrian connections throughout the site, to the End of the Oregon Trail Interpretive Center, and to adjacent public rights-of-way; If it is subsequently determined that an adjacent owner requires access for a legitimate purpose, the applicant will comply with this standard.

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)."

Response:
This proposal is for the approval of the GDP. No land division is proposed with this application. Therefore, this standard does not apply.

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:
This proposal is for the approval of the GDP. No land division is proposed with this application. Therefore, this standard does not apply.

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.

Response:
The civil plans attached as **Appendix B**, have been designed to this standard. The location where this standard is triggered is at the continuation of "Market Street" from the Home Depot access road. The proposed private street into the site will match that centerline.

16.12.019 - Traffic sight obstructions.
All new streets shall comply with the Traffic Sight Obstructions in Chapter 10.32.

Response:
The sight line standards established in OMC 10.32.030 state that:
"A clear vision area shall contain no vegetation or fences or other artificial obstruction exceeding three feet in height measured from the top of the curb or, where no curb exists, from the established street center line grade, except that trees exceeding this height may be located in this area provided all branches and foliage are removed to a height of eight feet above the grade."

Currently, there is not a formal landscape plan provided with this application. The applicant and design team are aware of these requirements and are not proposing any obstructions (such as fences) within the sight lines of the accesses for those entering or exiting the public right-of-way. Future DDP's are expected to satisfy these standards with their submittal. The applicant is aware of their obligation to maintain sightline visibility.

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

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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:
All proposed intersections have been designed to intersect at a right angle to other streets as illustrated in the civil plan sheets C200 through C207 within **Appendix B** to this application. Intersection angles to the public right-of-way were designed to be at 90 degrees except for the connection to Washington Street which is at an existing angle of 82 degrees. There is more than 100 feet of tangent at all intersections to the public right-of-way. A minimum of 25-foot curb return is proposed to be provided at all intersections to the public right-of-way.

16.12.021 - Street design—Grades and curves.
Grades and center line radii shall conform to standards approved by the City Engineer.

Response:
The proposed street design has been designed to meet the grades and curves to the Oregon City Street Design Standards provided by the City Engineer.

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.

Response:
The development site abuts three Minor Arterials, Washington Street, Abernethy Road, and Redland Road. However, vehicular access is proposed to only Washington Street and Abernethy Road. This project is not a development that is in need of protection from through or local traffic. Vehicular access connections along the site's frontage with Abernethy Road is in Clackamas County's jurisdiction and the applicant is aware that there is a need to obtain approvals from them for new access. Redland Road is under ODOT's jurisdiction, but no new access is proposed along Redland Road. To the extent that this provision applies to future DDP's the applicant will comply.

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.

Response:
The applicant acknowledges that the City Engineer may impose additional requirements for pedestrian and bicycle safety during the application review process. All new streets and frontage improvements have been designed to be compliant with the Oregon City street design requirements as informed by City staff and located to be consistent with the Oregon City TSP. Pedestrian and bicycle safety improvements have been considered in the proposed design of new streets intended to serve the master plan area. . The applicant will later submit a DDP for development of each phase of the project. While **Appendix B** demonstrates that all new streets and street frontages have been designed to meet City standards, the applicant understands that the City Engineer could consider corner extensions in the DDP process.

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.

Response:
The applicant is proposing ½ street improvements along both Washington Street and Abernethy Road. The proposed ½ street improvements for both rights of way are provide a pavement width greater than 20-feet and provide dedication of required right-of-way, construction of curb and gutter, landscape strips, sidewalks, street trees, lighting and other improvements as informed and discussed with City staff. Pavement is provided from the centerline of the respective right-of-way. Finally, no construction activities are proposed with approval of the GDP. See the street sections for Washington Street and Abernethy Road on sheet C110 of the civil plan set attached to this narrative with **Appendix B**.

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.

Response:
The proposed GDP does not provide for any cul-de-sacs or permanent dead-end streets. This standard is not applicable.

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.

Response:
The applicant is not proposing any alterations to the existing cul-de-sac south of the subject site with this application. This standard does not apply.

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.

Response:
The applicant is not proposing any cul-de-sacs with this application. This standard does not apply.

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.

Response:
There are no proposed cul-de-sacs or dead-end street proposed within the GDP. This standard is not applicable.

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

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street shall include signage or barricade meeting Manual on Uniform Traffic Control Devices (MUTCD).

Response:
The proposed GDP does not propose any dead-end stub streets to connect to adjacent properties. This standard is not applicable.

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.

Response:
The subject site is not located within the Park Place or South End concept plan areas, nor is it or will it be zoned R-5, R-3.5, R-2, MUC-1, MUC-2, or NC. This standard does not apply.

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.

Response:
The project proposes frontage improvements to Washington Street and Abernethy Road consistent with City and County requirements for those facilities and sufficient to achieve conformance with standards required to serve the proposed development. As discussed in more detail above under Section 17.65, the applicant has included a complete TIA with this GDP proposal. The TIA evaluated the total impacts to the transportation system from the proposed full buildout of the GDP area and identifies the facility improvements that are recommended to serve the proposed development. The applicant adopts the recommendations and the improvements proposed in the TIA. Proposed street improvements were discussed previously in OCMC Subsection 16.12.016, Street Design.

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.

Response:
The applicant is proposing to install pedestrian and bicycle facilities throughout the development consistent with the Oregon City street design standards and in locations called for in the Oregon City TSP as discussed earlier. The applicant is aware that future tenants and businesses within the master plan area can benefit from transit facilities located within the development. According to the TIA provided as **Appendix C**, "local transit service is already provided by TriMet in the immediate site vicinity by the following two bus lines:

- TriMet Line 79 (Clackamas/Oregon City): Provides service between Clackamas Town Center and Oregon City Transit Center, with bus stops conveniently located along Washington Street right at the traffic signal with the Home Depot/site access street. Weekday and weekend service is generally provided at 40-minute headways.
- TriMet Line 154 (Willamette/Clackamas Heights): Provides service that connects the Clackamas Heights area up along Holcomb Boulevard with the Oregon City Transit Center, with additional service to the West Linn area via Willamette Falls Drive. Bus stops are conveniently located along Abernethy Road at the traffic signal with Redland Road and at the west end of the property frontage. Only weekday service is provided at 1-hour headways.

Additionally, The North End master plan site is just over three-quarters of a mile (approximately 17 minute walk) from the Oregon City Transit Center located in the downtown core of Oregon City at Main Street and 11th Street. This means that visitors, residents, and employees associated with the master plan area can walk (or use Route 79) to the Oregon City Transit Center and access a variety of other bus lines that serve the area. There has not been any requests from TriMet for any easements or other transit improvements, but if it is determined through individual DDP review that they are needed, the applicant of that DDP is expected to comply with the relevant standards.

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 acknowledges that it is their responsibility to restore any pavement that is damaged during the excavation process.

16.12.030 - Blocks—Width.
The width of blocks shall ordinarily be sufficient to allow for two tiers of lots with depths consistent with the type of land use proposed. The length, width and shape of blocks shall take into account the need for adequate building site size, convenient motor vehicle, pedestrian, bicycle and transit access, control of traffic circulation, and limitations imposed by topography and other natural features.

All new streets shall be designed as local streets unless otherwise designated as arterials and collectors in the current adopted Transportation System Plan. The maximum block spacing between streets is 530 feet and the minimum block spacing between streets is 150 feet as measured between the right-of-way centerlines except in zones GI, CI, MUE, I, and WFDD where determining the appropriate street spacing will be determined by the City Engineer. If the maximum block size is exceeded, pedestrian accessways shall be provided every 330 feet. The spacing standards within this section do not apply to alleys.

Response:
The proposed GDP does not include any land division that would normally be used to create new blocks; however, the GDP does identify specific uses that require large areas of land and provides for an underlying street system that creates connectivity between uses both on and off site. The street plan responds to several factors including the desire for a new collector level street through the GDP area, efficient and safe connections to the external street system, topographical differences between the site and the existing surrounding street network and the desire to create a mixed use, multimodal live work environment within the project area. These unique factors atop a reclaimed landfill and within a floodplain and NROD overlay make it difficult for future land divisions to comply with these block spacing standards. However, as the street plan in **Appendix B** demonstrates and as discussed above, takes 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 as required by this criterion. For all these reasons, the applicant has requested a modification to the block length standards under the provisions in 17.65.070 later in this narrative.

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:
New street names will be requested later in conjunction with future street construction and site development through the DDPs and will conform to this standard.

16.12.032 – Public off-street pedestrian and bicycle accessways.
Pedestrian/bicycle accessways are intended to provide direct, safe and convenient connections between residential areas, retail and office areas, institutional facilities, industrial parks, transit streets, neighborhood activity

centers, rights-of-way, and pedestrian/bicycle accessways which minimize out-of-direction travel, and transit-orientated developments where public street connections for automobiles, bicycles and pedestrians are unavailable. Pedestrian/bicycle accessways are appropriate in areas where public street options are unavailable, impractical or inappropriate. Pedestrian and bicycle accessways are required through private property or as right-of-way connecting development to the right-of-way at intervals not exceeding 330 feet of frontage; or where the lack of street continuity creates inconvenient or out of direction travel patterns for local pedestrian or bicycle trips.

Response:
Public streets are readily available along Washington Street and Abernethy Road. Private streets are proposed to provide internal circulation of the master plan area. All proposed street improvements along the site's frontage as well those private streets proposed internally are provided with appropriate bicycle and pedestrian improvements. In addition, the master plan includes additional shared use amenities called for in the Oregon City TSP to provide safe and convenient access within the site, to surrounding streets, and to the End of the Oregon Trail Interpretive Center. The onsite bicycle and pedestrian circulation system provides for safe and convenient connections between uses within the GDP, to open spaces, the plaza, and to the surrounding streets. **Chapter 4: Proposed Development** and **Appendix B** includes the pedestrian and bicycle accessways in compliance with this standard.

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

Response:
Acknowledged by the applicant. There are currently no adjacent pedestrian crossing points along the site's frontage. This standard is not applicable to this proposal.

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.

Response:
None of the proposed pedestrian and bicycle accessways are obstructed within the development and are proposed with more than the minimum vertical clearance. The width of the proposed accessway that bisects the property from east to west is 22 feet, more than the 15-foot width required by this standard. Future and site specific DDP's will be required to design this adequate 22-foot width with at least the 7-foot wide paved surface and 4-foot planter strip in compliance with this criterion. Because the 22-foot proposed width easily accommodates these design features the GDP is consistent with this standard.

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.

Response:
In compliance with this standard, all planned accessways are direct and can meet this visibility standard as shown on the civil site plans (C200 thru C207) in **Appendix B**. The specific design of the onsite pedestrian and bicycle amenities will be further reviewed and approved by the City in subsequent DDPs. None of the proposed accessways intersect with the public streets unless they are approved as part of the sidewalk system and connecting to either Washington Street or Abernethy Road. In these instances, on street parking will not be permitted and is not planned within 15 feet of the intersection of any accessway and public street to preserve safe sight distance.

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.

Response:
No specific site lighting is proposed with the GDP. The applicant is aware of this standard and the proposed street plan and accessway plan in the GDP can easily accommodate these lighting standards at the time of DDP approval.

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

Response:
The proposed accessways are already provided with sufficient width to meet ADA with on-site sidewalks ranging between 5 and 22 feet. All future DDP applications are will provide this level of design for pedestrian walkways which comply with ADA code requirements. The GDP itself proposes an access plan composed of both private and public streets and internal pathways. As designed and located on the site, each accessway or street affords a grade and width that can satisfy ADA requirements at the time of DDP 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.

Response:
The proposed on-site access ways were designed to be compliant with these standards to ensure there was adequate space in the cross sections, as shown in the preliminary high level landscape plans, to accommodate all of these planting requirements. For example, the cross section for "Market Street" provides a width of five feet that can easily accommodate these planting requirements. The applicant for each new DDP will further refine the design to ensure that the detailed requirements of these standards are reflected in the detailed landscape plans. Trees are proposed to be provided along the accessways except where they cross private streets, drive aisles, or interfere with parking.

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

Response:
The supplemental landscape design guidelines include provisions within the master plan to ensure that the accessways are differentiated from motorized traffic with different materials and require minimum hardscape, softscape, and furniture requirements. See **Chapter 5: Master Plan Design Guidelines** for specific details related to the landscape and material requirements for each district. If necessary, bollards will be located to ensure that there are no unauthorize motor vehicles on the accessways.

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.

Response:
Compliance with this standard is illustrated in sheets (C300 thru C308) for grading, materials, and stormwater provided with **Appendix B** in addition to the GDP preliminary site plans and Design Guidelines attached to this narrative in **Chapter 4: Proposed Development** and **Chapter 5: Master Plan Design Guidelines** respectively. In sum, all accessway surfaces will be paved with all-weather surfaces and have been designed to drain stormwater runoff to the side of the accessway. The cross slopes are all a minimum of 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.

Response:
No accessways are currently proposed in the subject areas as part of this GDP. If such an accessway is later proposed in a DDP, the specific DDP application will have to demonstrate compliance with this criterion.

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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.

Response:
The GDP does not propose any alternative accessway designs. If such designs are later requested through a DDP application, the applicant will be required to meet this standard as well as the design guidelines that are approved with this GDP.

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:
The applicant has indicated that they would provide public access easements throughout the master plan area for any private street, accessway, or sidewalk. This standard will be required to be met with individual DDP plan 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 & Beavercreek Road, the following mobility standards apply:
1. During the first, second & third hours, a maximum v/c ratio of 1.00 shall be maintained. Calculation of the maximum v/c ratio will be based on an average annual weekday peak hour.
E. Until the City adopts new performance measures that identify alternative mobility targets, the City shall exempt proposed development that is permitted, either conditionally, outright, or through detailed development master plan approval, from compliance with the above-referenced mobility standards for the following state-owned facilities:
I-205/OR 99E Interchange
State intersections located within or on the Regional Center Boundaries
1. In the case of conceptual development approval for a master plan that impacts the above references intersections:
a. The form of mitigation will be determined at the time of the detailed development plan review for subsequent phases utilizing the Code in place at the time the detailed development plan is submitted; and
b. Only those trips approved by a detailed development plan review are vested.
2. Development which does not comply with the mobility standards for the intersections identified in OCMC 16.12.033 shall provide for the improvements identified in the Transportation System Plan (TSP) in an effort to improve intersection mobility as necessary to offset the impact caused by development. Where required by other provisions of the Code, the applicant shall provide a traffic impact study that includes an assessment of the development's impact on the intersections identified in this exemption and shall construct the intersection improvements listed in the TSP or required by the Code.

Response:
The TIA prepared by Phill Worth and Brian Dunn, P.E. of Kittelson and Associates is attached to this submittal as **Appendix C** . Kittelson analyzed the mobility standards on the studied intersections consistent with these criteria. You can find his analysis beginning on page 9 of the TIA. The TIA addresses the impacts of the project related to traffic generation and transportation conditions at 25 existing and the 5 new intersections proposed within the GDP. The trip generation calculations show 984 AM peak hour trips and 2727 PM peak hour trips, for a total of 3,711 trips each weekday. Table 1: Applicable Mobility Standards for All Study Intersections found on page 11 of the TIA (**Appendix C**) and provided below for reference, illustrates the mobility standards for each of the study intersections expected to be impacted by proposed development of The North End master plan.
The TIA found that when the master plan is fully developed, all but two of the 25 existing study intersections operate at levels that meet the mobility standards of the governing agency. The TIA recommends the following mitigation measures to offset those impacts:

1. OR 213/Dunes Road – Further document how signal timing/phasing optimization can improve intersection operations.
2. OR 213/Redland Road – To address operational and vehicle queue deficiencies, evaluate the construction of a third southbound travel lane on OR 213 through the intersection with taper transition back to two lanes prior to the Holcomb Boulevard overcrossing. This improvement would also include 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 lanes prior to the sign bridge across OR 213.
3. Abernethy Road/Redland Road – To address queue deficiencies, research installation of a right-turn overlap signal phasing on the southbound approach of Redland Road. As necessary, evaluate the construction of a second eastbound left-turn lane on Abernethy Road and retiming of the traffic signal to minimize vehicle queues.
4. Abernethy Road/Site Access “F” - Evaluate signal warrants and increased multimodal benefits under a scenario that includes a traffic signal at this primary access to Abernethy Road.

In addition to the other frontage improvements and new internal street network proposed by the GDP to carry the traffic associated with this development, the applicant is committed to ensuring that the impacts from the development are mitigated consistent with the applicable requirements of the OCMC. Thus, the applicant will continue to work with the City Engineer on these recommended off-site mitigation measures to mitigate mobility impacts at the two identified intersections. It is assumed that the appropriate timing for constructing the recommended mitigation measures will be informed by the trip generation data identified within the TIA.

Response to 16.12.033 Cont. :
With the TIA, proposed frontage improvements and on site new street network and the recommended mobility impact recommendations, this standard is satisfied.

	Study Intersection	Jurisdiction	Area Location/ Facility Designation	Operating Requirement
1	OR 99E / River Rd.-Arlington St.	ODOT	Corridor	0.99 v/c 1st hour, then 0.99 v/c 2nd hour
2	OR 99E / Dunes Dr.	ODOT	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
3	OR 99E / I-205 SB Ramp	ODOT	Regional Center	Exempt from mobility standards by City municipal code*
4	OR 99E / I-205 NB Ramp	ODOT	Regional Center	Exempt from mobility standards by City municipal code*
5	OR 99E / 14th St.	ODOT	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
6	OR 99E / 12th St.	ODOT	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
7	OR 99E / 10th St.	ODOT	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
8	Washington St. / Clackamas River Dr.	City	Outside Regional Center, but on Arterial and Throughway Network	0.99 v/c 1st hour, then 0.99 v/c 2nd hour
9	Washington St. / Prairie Schooner Wy.	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
10	Washington St./ Home Depot-Site Access A	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
11	Washington St. / Abernethy Rd.	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
12	Washington St. / 15th St.	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
13	Washington St. / 14th St.	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
14	Washington St. / 12th St.	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
15	Washington St. / 7th St.	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
16	Redland Rd. / Abernethy Rd.-Holcomb Blvd.	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
17	Redland Rd. / Anchor Wy.	City	Outside Regional Center, but on Arterial and Throughway Network	0.99 v/c 1st hour, then 0.99 v/c 2nd hour
18	Redland Rd. / Holly Ln.	City	Outside Regional Center, but on Arterial and Throughway Network	0.99 v/c 1st hour, then 0.99 v/c 2nd hour
19	I-205 SB Off-Ramp / OR 213	ODOT	Regional Center	Exempt from mobility standards by City municipal code**
20	OR 213 / Clackamas River Dr.	ODOT	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
21	OR 213 / Redland Rd.	ODOT	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
22	OR 213 / Beavercreek Rd.	ODOT	Principal Arterial Route	v/c ratio of 1.0 for 1st, 2nd, and 3rd peak hours***
23	OR 213 / Molalla Ave.	City	Principal Arterial Route	0.99 v/c 1st hour, then 0.99 v/c 2nd hour
24	Molalla Ave. / Beavercreek Rd.	City	Outside Regional Center, but on Arterial and Throughway Network	0.99 v/c 1st hour, then 0.99 v/c 2nd hour
25	Maplelane Rd. / Beavercreek Rd.	City	Outside Regional Center, but on Arterial and Throughway Network	0.99 v/c 1st hour, then 0.99 v/c 2nd hour
26	Washington St. / Site Access B (proposed)	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
27	Washington St. / Site Access C (proposed)	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
28	Washington St. / Site Access D (proposed)	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
29	Abernethy Rd / Site Access E (proposed)	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
30	Abernethy Rd / Site Access F (proposed)	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour

OR 99E/I-205 ramp terminal intersections are exempt from meeting state mobility targets, as per Oregon City Municipal Code Section 16.12.033.
* OR 213/I-205 SB ramp terminal intersection is exempt from meeting state mobility targets, as per the 2013 Oregon City TSP (see page 38).
** Per a 2018 amendment to the Oregon Highway Plan (OHP).

16.12.035 - Driveways.
A. All new development and redevelopment shall meet the minimum driveway spacing standards identified in Table 16.12.035.A.

Table 16.12.035.A Minimum Driveway Spacing Standards

Street Functional Classification	*Minimum Driveway Spacing Standards*	*Distance*
Major Arterial Streets	*Minimum distance from a street corner to a driveway for all uses other than detached single and two-family dwellings*	*175 ft*
Minor Arterial Streets	*Minimum distance from a street corner to a driveway for all uses other than detached single and two-family dwellings*	*175 ft*
Collector Streets	*Minimum distance from a street corner to a driveway for all uses other than detached single and two-family dwellings*	*100 ft*
Local Streets	*Minimum distance from a street corner to a driveway for all uses other than detached single and two-family dwellings*	*25 ft*

The distance from a street corner to a driveway is measured along the right-of-way from the edge of the intersection (on the same side of the road) right-of-way to the nearest portion of the driveway and the distance between driveways is measured at the nearest portions of the driveway at the right-of-way.

Response:
As discussed previously, the GDP proposes four driveways along the Washington Street frontage and two additional driveways on the Abernethy Road frontage. There is approximately 1,344 lineal feet of street frontage along Washington Street and approximately 1,320 lineal feet of frontage along Abernethy Road. According to the TIA, Washington Street and Abernethy Road are both classified as a Minor Arterial. Section 12.04.195 of the Oregon City Municipal Code requires that the minimum driveway spacing along a Minor Arterial is 175 feet. As proposed within the GDP, the three new site accesses proposed along Washington Street will be positioned at equal spacings of approximately 500 feet relative to the signalized intersection at Washington Street/Home Depot-Site Access "A". The two new site accesses proposed along Abernethy will be approximately 1,000 feet apart, with the closest driveway at approximately 750 feet west of the signalized Abernethy Road/Redland Road intersection. Accordingly, the access spacing proposed within the GDP will comply with the minimum driveway spacing standards above.

B. Nonresidential or multi-family residential driveways that generate high traffic volumes shall be treated as intersections and shall adhere to requirements of OCMC 16.12.020.

Response:
As stated earlier in this narrative, the proposed driveways will comply with the requirements of OCMC 16.12.020 which requires them to intersect with adjacent streets at right angles. This standard is met.

C. One driveway may be allowed per frontage, unless otherwise restricted. In no case shall more than two driveways be allowed for any single-family attached or detached residential property, duplex, 3-4 plex, or property developed with an ADU or internal conversion with multiple frontages, unless otherwise approved by the City Engineer.

Response:
The proposal would provide four new driveways along Washington Street and two new driveways from along Abernethy Road. The proposed driveways are justified by the size of the project site and the amount of traffic expected to be generated at build-out. The applicant is seeking approval of the additional driveways through modification that was discussed in detail under the provisions of OCMC Subsection 16.12.013 earlier in this narrative.

D. When a property fronts multiple roads, access shall be provided from the road with the lowest classification in the Transportation System Plan whenever possible to minimize points of access to arterials and collectors. At the discretion of the City Engineer, properties fronting a collector or arterial road may be allowed a second driveway, for the creation of a circulation pattern that eliminates reverse maneuvers for vehicles exiting a property if applied for and granted through procedures in OCMC 16.12.013. All lots proposed with a driveway and lot orientation on a collector or minor arterial shall combine driveways into one joint access per two or more lots unless the City Engineer determines that:
1. No driveway access may be allowed since the driveway(s) would cause a significant traffic safety hazard; or
2. Allowing a single driveway access per lot will not cause a significant traffic safety hazard.

Response:
The site fronts three streets: Washington Street, Abernethy Road, and Redland Road. All three streets are classified as Minor Arterials. The GDP proposes vehicle access from both Washington Street and Abernethy Road. A modification has been requested above under 16.12.013 in order to allow the site to be served with more than one driveway. Both streets share the same classification in the Transportation System Plan. The additional driveways will not create a significant traffic safety hazard. In this case the site is atypically large, leaving sufficient distance between driveways to avoid any safety concerns. Each driveway is designed to meet the design specifications of the City Engineer and each driveway has confirmed sight distance to ensure safe operations.

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E. All driveway approaches shall be limited to the dimensions identified in Table 16.12.035.D.

Table 16.12.035.D Driveway Approach Size Standards

Property Use	*Minimum Driveway Approach Width*	*Maximum Driveway Approach Width*
Single-Family Attached	*10 feet*	*12 feet*
Single-Family Attached in R-5 & R-3.5	*10 feet*	*12 feet*
Single-Family Detached in R-10, R-8, & R-6	*12 feet*	*24 feet*
Duplexes	*12 feet*	*24 feet*
3 - 4 plexes	*12 feet*	*24 feet*
Multi-Family	*18 feet*	*30 feet*
Commercial, Industrial, Office, Institutional, Mixed Use, and/or Nonresidential	*One-way 12 feet Two-way 20 feet*	*40 feet*

Driveway widths shall match the width of the driveway approach where the driveway meets sidewalk or property line but may be widened onsite (for example between the property line and the entrance to a garage). Groups of more than four parking spaces shall be so located and served by driveways so that their use will not require backing movements or other maneuvering within a street right-of-way other than an alley.

Response:
As demonstrated on the attached site plans (sheets C200 through C207) within the civil sheets provided as **Appendix B**, the proposed driveways serving the site along Washington Street include a 36-foot driveway at the end of the existing street that provides access to The Home Depot, two 24-foot driveways from Washington Street into the parking garages, and one 40-foot driveway from Washington Street to proposed “4th Street”. The proposed driveways serving the site along Abernethy Road include one 40-foot driveway at the intersection of Abernethy Road and “Market Street” and one 40-foot driveway at the intersection of Abernethy Road and “4th Street”. The proposed widths of all new driveways fall between the minimum and maximum driveway approaches for commercial, industrial, office, institutional, mixed use, and nonresidential sites, as established in Table 16.12.035.D. Two-way traffic circulation is proposed in the parking lot design. This standard is satisfied by the GDP.

F. The City Engineer reserves the right to require a reduction in the number and size of driveway approaches as far as practicable for any of the following purposes:
1. To provide adequate space for on-street parking;
2. To facilitate street tree planting requirements;
3. To assure pedestrian and vehicular safety by limiting vehicular access points; and
4. To assure that adequate sight distance requirements are met.
a. Where the decision maker determines any of these situations exist or may occur due to the approval of a proposed development for non-residential uses or attached or multi-family housing, a shared driveway shall be required and limited to twenty-four feet in width adjacent to the sidewalk or property line.

Response:
The applicant acknowledges the City Engineer’s authority to alter the number of driveways for the reasons listed in subsections (1) – (4) above. As discussed previously, the TIA establishes that adequate visibility and stopping distance are available to safely accommodate traffic flow from the proposed driveways. Sufficient curb length remains to accommodate on-street parking around the driveway access points where permitted. In addition, the project provides street trees along all public and private streets within and adjacent to the development.

G. For all driveways, the following standards apply.
1. Each new or redeveloped curb cut shall have an approved concrete approach or asphalted street connection where there is no concrete curb and a minimum hard surface for at least ten feet back into the property as measured from the current edge of sidewalk or street pavement to provide for controlling gravel tracking onto the public street. The hard surface may be concrete, asphalt, or other surface approved by the City Engineer.
2. Any driveway approach built within public right-of-way shall be built and permitted per City requirements as approved by the City Engineer.
3. No driveway with a slope of greater than fifteen percent shall be permitted without approval of the City Engineer.

Response:
The proposed driveways can satisfy these standards as demonstrated on the attached site plans (sheet C200 through C207). The project engineer proposes asphalted approaches for each driveway, adjacent to the existing adjoining roadway. The driveways are not provided on slopes greater than fifteen percent. Furthermore, because the driveway approaches are constructed within the public right-of-way, the applicant acknowledges that they must be constructed to the City’s standards and approved by the City Engineer. The driveways were designed in compliance with City standards by a licensed civil engineer.

H. Exceptions. The City Engineer reserves the right to waive these standards or not allow driveway access, if the driveway(s) would cause a significant traffic safety hazard. Narrower driveway widths may be considered where field conditions preclude use of recommended widths. When larger vehicles and trucks will be the predominant users of a particular driveway, turning templates may be utilized to develop a driveway width that can safely and expeditiously accommodate the prevalent type of ingress and egress traffic.

Response:
The applicant acknowledges that the City Engineer reserves the right to waive development standards if they suspect that the proposed design will result in dangerous scenarios. As stated above, none of these scenarios are presented by the proposed design and the applicant is not requesting narrower driveway widths. Further, larger vehicles are not the predominant users of this mixed-use site and therefore all planned turning templates are sufficient to accommodate the nature of the traffic generated by this proposed GDP.

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:
The applicant acknowledges that the building grading shall conform to the State of Oregon Structural Specialty Code, Title 18, and the requirements established in OCMC 13.12, 15.48, 16.12, 17,47, and the Public Works Stormwater and Grading Design Standards. Where applicable, the building grading is designed to comply with these standards. Preliminary grading plans are provided in sheets C300 thru C307 of the civil plan set attached as **Appendix B** to this narrative.

16.12.085 - Easements.
The following shall govern the location, improvement and layout of easements:
A. Utilities. Utility easements shall be required where necessary as determined by the City Engineer. Insofar as practicable, easements shall be continuous and aligned from block-to-block within the development and with adjoining subdivisions or partitions. Specific utility easements for water, sanitary or storm drainage shall be provided based on approved final engineering plans.

Response:
Utility easements will be provided with approval of individual DDP approvals and will be based on locations provided within the final engineering plans.

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.

Response:
Easements for unusual facilities will be provided with DDP approval and will be adequately sized for their intended purposes including any required maintenance roads.

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.

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Response:
Abernethy Creek runs along the east edge of the site and another natural resource area with a shape similar to a lobster claw is located in the northwest edge of the site. Easements for the proposed maintenance and control will be provided to the responsible agency with DDP approval. This standard is not applicable to the GDP. No element proposed under this GDP would preclude or inhibit conformance with this standard at the time of DDP review and approval.

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.

Response:
Easements are not used to provide vehicular access to lots adjacent to the subject site. This standard does not apply.

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:
The applicant is aware that the Community Development Director may require easements to protect any significant natural features located within the subject site. The most likely candidate for this protection is the Abernethy Creek riparian area. The applicant will comply with this standard at the appropriate time as determined by the applicant and the City.

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.

Response:
The applicant acknowledges that improvement work cannot commence until construction plans have been reviewed and approved by the City Engineer or other responsible authority.

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.

Response:
The applicant acknowledges that the improvements must be inspected and approved by the City Engineer and that the expenses incurred thereby shall be their responsibility.

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.

Response:
This request for approval of the GDP does not approve any actual construction activities for the site; therefore, detailed erosion control plans consistent with the applicable requirements of the OCMC will be provided with applications for DDP approval.

D. Underground utilities, waterlines, sanitary sewers and storm drains installed in streets shall be constructed prior to the surfacing of the streets. Stubs for service connections for underground utilities, such as, storm, water and sanitary sewer shall be placed beyond the ten-foot wide franchise utility easement within private property.

Response:
The applicant acknowledges this requirement and will place all utilities underground consistent with these provisions during construction of approved DDP's on the site.

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

Response:
The applicant acknowledges that physical and digital copies of as-built construction documents must be filed with the City Engineer upon completion of improvements on site. However, the GDP does not involve any construction activities on site. The as-builts will be provided for utilities that are constructed with approved DDP's.

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 acknowledges that the City Engineer may regulate the hours of construction and access routes for construction equipment to minimize impacts on adjoining residences or neighborhoods.

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.

Response:
The applicant acknowledges the required contributions to the public transportation system adjacent to the project and has proposed to construct frontage improvements along the sites frontage as well as several projects listed within the TSP as described previously. Preliminary utility plans have been provided with the GDP to demonstrate that the proposed master plan can comply with City Standards for each of these facilities. See civil sheets C110, C111, and C400 thru C407 for specific details.

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:
This standard is met. The stormwater plan for the GDP is unique to this location due to presence of the former landfill. The proposed stormwater management plan will achieve pollutant removal to the maximum extent practicable via biofiltration designed to target pollutants expected with a commercial development. The proposed private facilities satisfy the City of Oregon City water quality and quantity requirements. As designed, this project will not create any adverse impacts to the downstream storm system. Specific details on the proposed stormwater management system can be found in the Storm Report provided as **Appendix A.**

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.

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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.

Response:
This standard is met. The GDP includes a preliminary utility plan to serve the site by connections to existing services within Washington Street and Abernethy Road. Sanitary sewer service is connected along both frontages as well as within the street that currently serves The Home Depot. As proposed, the sewer extensions have been designed to meet all jurisdictional requirements. Sanitary facilities are proposed to be extended through the site to feed all proposed structures within the master plan. Specific details of the sewer system can be found in the utility plan sheets (C400 thru C407) attached as **Appendix B.**

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:
This standard is met. As demonstrated on the preliminary utility plan provided in civil sheets (C400 thru C407) and attached as **Appendix B**, the project will extend an existing public water line located within the street serving The Home Depot and loop it through the site to serve all of the proposed buildings within the master plan. As proposed, the water extension has been designed to meet all jurisdictional requirements.

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

Response:
Refer to the responses to OCMC 12.08.

F. Bench Marks. At least one bench mark shall be located within the subdivision boundaries using datum plane specified by the City Engineer.

Response:
This application does not include a request for subdivision approval. This standard does not apply.

G. Other Utilities. The applicant shall make all necessary arrangements with utility companies or other affected parties for the installation of underground lines and facilities. Existing and new electrical lines and other wires, including but not limited to communication, street lighting and cable television, shall be placed underground.

Response:
The applicant acknowledges this requirement. The project will locate new franchise utilities underground and extend them through the site. Actual utility locations will be coordinated with the utility companies and constructed with approval of individual DDP's.

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.

Response:
As demonstrated throughout this document and the appendices, public improvements associated with the GDP have been designed to City standards. The need to oversize any public facilities for this project has not been identified by staff.

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:
Preliminary grading plans are provided in civil sheets (C300 thru C307) to demonstrate that the project can be graded in compliance with the applicable city standards. These grading plans will be refined and submitted along with each DDP filed within the master plan. Detailed erosion control plans will be provided with construction drawings at the time of permit review. This standard is not directly applicable to the GDP as no grading permit is request with this GDP approval.

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.

Response:
This standard does not apply. A private internal street system with public access easements is proposed to serve the development. There are also existing abutting public streets that will be improved as part of the GDP and subsequent DDPs. These streets are already dedicated to the public.

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.

Response:
The applicant is not proposing to create any new public streets with this application. This standard does 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.

Response:
There are no land divisions proposed with the GDP. This standard is not applicable. Public improvements will be constructed with individual approval of DDP's for the site.

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:
The applicant acknowledges that the public improvements must be constructed according to the approved final engineering plans and all applicable requirements of the Oregon City Municipal Code. Those plans will be filed with individual requests for DDP approval for the site.

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.

Response:
The applicant acknowledges their responsibility to provide a performance guarantee for public improvements in compliance with OCMC 17.50.140 and will provide those in association with the construction of individual DDP's.

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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:
The applicant acknowledges that the required public improvements and facilities shall be maintained and under warranty until the City accepts the improvements as prescribed in OCMC 17.50.141 once they have been constructed.

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:
The applicant acknowledges the City's authority to require the property owner to sign a waiver of remonstrance against the formation of and participation in a local improvement district.

Chapter 17.34: Mixed Use Downtown

17.34.010 - Designated
The mixed-use downtown (MUD) district is designed to apply within the traditional downtown core along Main Street and includes the "north-end" area, generally between 5th Street and Abernethy Street, and some of the area bordering McLoughlin Boulevard. Land uses are characterized by high-volume establishments constructed at the human scale such as retail, service, office, multi-family residential, lodging or similar as defined by the community development director. A mix of high-density residential, office and retail uses are encouraged in this district, with retail and service uses on the ground floor and office and residential uses on the upper floors. The emphasis is on those uses that encourage pedestrian and transit use. This district includes a downtown design district overlay for the historic downtown area. Retail and service uses on the ground floor and office and residential uses on the upper floors are encouraged in this district. The design standards for this sub-district require a continuous storefront façade featuring streetscape amenities to enhance the active and attractive pedestrian environment.

Response:
The North End master plan is located within the Mixed-Use Downtown (MUD) district but outside of the downtown design district. This is a request for GDP approval for the master plan. The GDP has been prepared over the course of the last 12 months to ensure that it can meet the applicable standards of this Chapter. Subsequent applications for DDP should be based on the preliminary layout of buildings and uses within the approved GDP. All future development will continue to be subject to the provisions of this chapter except where modifications have been proposed through the GDP.

The GDP proposes land uses are characterized by high-volume establishments constructed at the human scale such as retail uses both large and small scale, office uses, multi-family residential, and permitted entertainment uses. The code encourages a mix of high-density residential, office and retail uses with retail and service uses on the ground floor and residential uses on the upper floors. The emphasis is on those uses that encourage pedestrian and transit use. The proposed GDP directly reflects all of these urban use objectives by proposing a combination of mixed use residential oriented around and near a pedestrian scale Market Street as well as a series of anchor retail and entertainment uses that serve residents and visitors alike in compliance with this designation within a street plan and open space network that accommodated multi-modal travel.

17.34.020 Permitted Uses

Response:
The proposed GDP proposes retail, office, residential and entertainment uses all of which are listed as permitted uses in the zone.

USE	DESCRIPTION
Banquet, conference facility, and meeting rooms	
Lodging facilities	Including bed and breakfasts, boarding houses, hotels, motels, and other related facilities
Child care centers and nursery schools	
Indoor entertainment centers and arcades	
Health and fitness clubs	
Medical and dental clinics	Including outpatient and infirmary services
Museums, libraries, and cultural facilities	
Offices	Including finance, insurance, real estate, government, and other related services
Outdoor markets	Including produce stands, craft markets, farmers markets that operate on the weekend and after 6pm on the weekdays
Postal services	
Repair shops	Including those for radio and television, office equipment, bicycles, electronic equipment, shoes, and small appliances and equipment
Multi family residential	
Restuarants	Eating and drinking establishments without a drive-through
Services	Including personal, professional, educational, and financial services, and laundry and dry-cleaning
Retail trade	Including grocery, hardware and gift shops, bakeries, delicatessens, florists, pharmacies, specialty stores
Seasonal sales	
Residential care facilities	Including assisted living facilities, nursing homes, and group homes for over 15 patients licensed by the state
Studios and galleries	Including dance, art, photography, music, and other arts
Utilities	Basic and linear facilities, such as water, sewer, power, telephone, cable, electrical and natural gas lines, not including major facilities such as sewage and water treatment plants, pump stations, water tanks, telephone exchanges and cell towers
Vetrinary clinics or pet hospitals	Including pet day care facilities
Home occupations	
Research and development activities	
Temporary real estate offices in model dwellings	
Transporation facilities	
Live/work dwellings	
After-hours public parking	
Religious institutions	
Mobile food units out	Subject to the provisions of the Oregon City Municipal Code

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17.34.030 - Conditional uses
The following uses are permitted in this district when authorized and in accordance with the process and standards contained in OCMC 17.56:
A. Drive-through facilities;
B. Emergency services;
C. Hospitals;
D. Outdoor markets that do not meet the criteria of OCMC 17.34.020.I;
E. Parks, playgrounds, play fields and community or neighborhood centers;
F. Parking structures and lots not in conjunction with a primary use on private property, excluding after-hours public parking;
G. Retail trade, including grocery, hardware and gift shops, bakeries, delicatessens, florists, pharmacies and specialty stores in a freestanding building with a single store exceeding a foot print of sixty thousand square feet;
H. Public facilities such as sewage and water treatment plants, water towers and recycling and resource recovery centers;
I. Public utilities and services such as pump stations and sub-stations;
J. Distributing, wholesaling and warehousing;
K. Gas stations;
L. Public and or private educational or training facilities;
M. Stadiums and arenas;
N. Passenger terminals (water, auto, bus, train), excluding bus stops;
O. Recycling center and/or solid waste facility;
P. Shelters, except within the downtown design district.

Response:
The GDP includes a request to approve eight conditional uses for the site including five drive through uses and three anchor retail facilities that will exceed sixty thousand square feet within a freestanding building. All of these uses are listed as permitted conditional uses and are addressed below under the applicable conditional use criteria.

USE	DESCRIPTION
Drive-through facilities	
Emergency services	
Hospitals	
Outdoor markets	Only those not meeting the required criteria of a permitted outdoor market
Parks, playgrounds, play fields and community or neighborhood centers	
Parking structures and lots not in conjunction with a primary use on private property	Excluding after-hours public parking
Retail trade	Including grocery, hardware, gift shops, bakeries, delicatessens, florists, pharmacies, and specialty stores in a freestanding building with a single store exceeding a footprint of 60,000 square feet
Public facilities	
Public utilities and services	Including pump stations and sub-stations
Distributing, wholesaling and warehousing	
Gas stations	
Public and private educational or training facilities	
Passenger terminals, excluding bus stops	
Shelters	

17.34.040 - Prohibited uses

Response:
The GDP approval requested with this application does not include any of the uses prohibited in the MUD district. Individual applications for DDP will be subject to a separate review of their proposed uses and will be subject to the same prohibitions.

USE	DESCRIPTION
Kennels	
Outdoor storage and sale	Not including outdoor markets allowed as a permitted use
Self-service storage	
Single-family attached and detached residential units and duplexes	
Motor vehicle and recreational vehicle repair and services	
Motor vehicle and recreational vehicle sales and incidental services	
Heavy equipment service, repair, sales, storage or rental	Including but not limited to construction equipment and machinery and farming equipment
Marijuana facilities	Including production, processing, wholesaling, research, testing, and laboratories
Mobile food units within the downtown design district	Unless a special event has been issued

17.34.060 - Mixed-use downtown dimensional standards—For properties located outside of the downtown design district
A. Minimum lot area: None.
B. Minimum floor area ratio: 0.30.
C. Minimum building height: Twenty-five feet or two stories except for accessory structures or buildings under one thousand square feet.
D. Maximum building height: Seventy-five feet, except for the following location where the maximum building height shall be forty-five feet:
1. Properties between Main Street and McLoughlin Boulevard and 11th and 16th streets;
2. Property within five hundred feet of the End of the Oregon Trail Center property; or

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3. Property abutting single-family detached or attached units.
E. Minimum required setbacks, if not abutting a residential zone: None.
F. Minimum required interior side yard and rear yard setback if abutting a residential zone: Fifteen feet, plus one additional foot in yard setback for every two feet in height over thirty-five feet.
G. Maximum Allowed Setbacks.
1. Front yard: Twenty feet.
2. Interior side yard: No maximum.
3. Corner side yard abutting street: Twenty feet.
4. Rear yard: No maximum.
5. Rear yard abutting street: Twenty feet.
H. Maximum site coverage including the building and parking lot: Ninety percent.
I. Minimum landscape requirement (including parking lot): Ten percent.
J. Residential minimum net density of 17.4 units per acre, except that no minimum net density shall apply to residential uses proposed above nonresidential uses in a vertical mixed-use configuration or to live/work dwellings.

Response:
The applicable dimensional standards for The North End master plan are met in the proposed GDP as illustrated in the table below except where modifications have been requested under the provisions of 17.65.070. Future DDP's will be subject to consistency with the GDP to ensure that the overall master plan satisfies these requirements as proposed.

Standard	Requirement	Proposed	Notes
Min. Lot Area	None	62+ Acres	Standard met by the GDP
Min. Floor Area Ratio	0.3	0.49	Standard met by the GDP
Min. Building Height	25 feet	Varies	Standard met by the GDP
Max. Building Height	75 / 45 feet	Varies	The 45-foot height requirement applies to those portions of the site located within 500 feet of the End of the Oregon Trail Interpretive Center. A subsequent land division may be needed to separate this area from the rest of the site as the City interprets this standard to apply to the entire property as a single lot.
Min. Setbacks	None	Varies	Standard met by the GDP
Max. Setbacks	20 feet	Varies	Many of the buildings are located within this setback to an internal private street. Future land divisions within the GDP will need to locate property lines in accordance with these standards on site. The GDP locates buildings as close to the existing Washington street frontage as possible, however, buildings located along the Abernethy Road frontage are setback outside of the floodplain and a modification to this standard has been requested as allowed by the provisions in 17.65.070.
Max. Coverage	90%	~26%	Standard met by the GDP
Min. Residential Density	None		Does not apply to residential developments above retail in a mixed-use development.
Min. Landscaping	10%	~11.5%	Standard met by the GDP

17.34.080 - Explanation of certain standards.
A. Floor Area Ratio (FAR).
1. Purpose. Floor area ratios are a tool for regulating the intensity of development. Minimum FARs help to achieve more intensive forms of building development in areas appropriate for larger-scale buildings and higher residential densities.
2. Standards.
a. The minimum floor area ratios contained in OCMC 17.34.060 and 17.34.070 apply to all nonresidential and mixed-use building developments.
b. Required minimum FARs shall be calculated on a project-by-project basis and may include multiple contiguous blocks. In mixed-use developments, residential floor space will be included in the calculations of floor area ratio to determine conformance with minimum FARs.
c. An individual phase of a project shall be permitted to develop below the required minimum floor area ratio provided the applicant demonstrates, through covenants applied to the remainder of the site or project or through other binding legal mechanism, that the required density for the project will be achieved at project build out.

Response:
In compliance with this standard, the FAR for the GDP is calculated based on the entire site area subject to the GDP except for the Abernethy Creek NROD. With this site area reduction, the site area comprises 2,464,613 square feet. The development proposed under this GDP comprises 1,091,698 square feet for a total proposed FAR of 0.49:1, meeting the required minimum FAR of 0.3:1. Each individual phase may or may not meet the minimum requirement but as permitted by this section, a phase will be permitted to develop below the required minimum as long as each phase demonstrates through a binding mechanism that the site will meet the minimum FAR requirement at full buildout. This is a request for the approval of the GDP which satisfies the requirements for FAR across the overall site. The FAR requirements apply to this development under the standards above. Future applications for DDP should be consistent with the GDP approval to ensure the project remains compliant with this standard.

B. Building Height.
1. Purpose.
a. The Masonic Hall is currently the tallest building in downtown Oregon City, with a height of fifty-eight feet measured from Main Street. The maximum building height limit of fifty-eight feet will ensure that no new building will be taller than the Masonic Hall.
b. A minimum two-story (twenty-five feet) building height is established for the downtown design district overlay sub-district to ensure that the traditional building scale for the downtown area is maintained.

Response:
The site is not located within the downtown design district. As proposed in the GDP, all development is within the allowed height limits and will demonstrate continuing compliance with the height maximums at each DDP approval.

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.

Response:
This is an application for approval of The North End master plan GDP. No tree removal is proposed with this request and this standard is not expressly applicable to the GDP review. It is noted however that this site is a reclaimed landfill and there are very few trees on the site outside of the resource areas. For any required tree removal within a proposed development footprint, on-site mitigation is preferred and proposed to be integrated into the overall site landscaping consistent with the proposed design guidelines provided as **Chapter 5: Master Plan Design Guidelines** of this application. Requests for individual DDP's will be subject to the requirements of this chapter and be required to demonstrate conformance with these standards under a site-specific development plan.

Chapter 17.42: Flood Management Overlay Zone

17.42.010 - Purpose—Findings.
A. There is established in the city a flood management overlay district. The flood management overlay district is an overlay zone classification defining areas subject to periodic flooding or inundation which can result in property harm or loss, disruption of public services, hazards for public health, or added expense for public services. All conditions and restrictions of land use established by this chapter of the city's zoning ordinance shall be in addition to such restrictions and conditions as may be imposed and established in underlying zoning districts.

2 - NARRATIVE RESPONSE

B. It is the purpose of this chapter to promote the public health, safety and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provisions designed:
1. To protect human life and health;
To minimize expenditure of public money and costly flood control projects;
To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
2. To minimize prolonged business interruptions;
3. To minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets and bridges located in areas of special flood hazard;
4. To help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future flood blight areas;
5. To ensure that potential buyers are notified that property is in an area of special flood hazard;
6. To ensure that those who occupy the areas of special flood hazard assume responsibility for their actions; and
7. To protect flood management areas, which provide the following functions:
a. Protect life and property from dangers associated with flooding;
b. Flood storage, reduction of flood velocities, reduction of flood peak;
c. Flows and reduction of wind and wave impacts;
d. Maintain water quality by reducing and sorting sediment loads;
e. Processing chemical and organic wastes and reducing nutrients, recharge, store and discharge groundwater; and
f. Provide plant and animal habitat, and support riparian ecosystems.

17.42.020 - Applicability.
A. This chapter shall apply to development in the flood management overlay district, which may also be referred to as the "floodplain overlay district" in this code. The flood management overlay district includes all areas of special flood hazards and all flood management areas within the city. The overlay district restricts the uses that are allowed in the base zone by right, with limitations, or as provisional uses.
B. The flood management areas which have been mapped include the following locations:
1. Land contained within the one hundred-year floodplain, flood area and floodway as shown on the Federal Emergency Management Agency flood insurance maps dated June 17, 2008, including areas of special flood hazard pursuant to Section 17.42.040 and the area of inundation for the February 1996 flood; and
2. Lands that have physical or documented evidence of flooding within recorded history based on aerial photographs of the 1996 flooding and/or the water quality and flood management areas maps.
C. The standards that apply to the flood management areas apply in addition to state or federal restrictions governing floodplains or flood management areas.

Response:
The North End master plan is located within the Flood Management Overlay Zone as illustrated in the figure 2.3, therefore, these standards are applicable to future development requested with DDP approval. For the purposes of this request, building locations within the GDP have been proposed based on the 1996 flood inundation lines also illustrated below so that any flooding that can be expected on site in a similar event will primarily only affect the proposed parking areas within the master plan area. For example, the areas that were flooded in 1996 along Abernethy Road are proposed to be developed with surface parking lots, and the areas within that were inundated along Washington Street will be developed with mixed use housing that is located on top of three proposed parking structures.

17.42.160 - Flood management area standards.
A. Uses Permitted Outright:
1. Excavation and fill required to plant any new trees or vegetation.
2. Restoration or enhancement of floodplains, riparian areas, wetland, upland and streams that meet federal and state standards provided that any restoration project which encroaches on the floodway complies with the requirements of Section 17.42.190 (Floodways).
B. Provisional Uses.
1. All uses allowed in the base zone or existing flood hazard overlay zone are allowed in the flood management overlay district subject to compliance with the development standards of this section.
C. Prohibited Uses.
1. Any use prohibited in the base zone;
2. Uncontained areas of hazardous materials as defined by the Department of Environmental Quality.

Response:
The uses proposed within the GDP are all uses that are either outright allowed in the zone or conditionally allowed within the MUD zone district in compliance with this criterion. The GDP does not propose any of the prohibited uses within the master plan area. The preliminary grading illustrated in civil sheets C300 thru C-307, attached within **Appendix B** illustrate that based on the grading plan and the proposed development in the GDP, there will be no net increase of fill within the floodplain on site. The Cut/Fill balance exhibits are provided within the preliminary stormwater report attached as **Appendix A** to this application. The GDP therefore does not permit any development that would otherwise be prohibited by the floodplain overlay zone.

The remaining sections of this Chapter include standards that are specific to construction, materials, and methods. The GDP does not provide a level of detail to demonstrate compliance with these standards. The applicant recognizes that all future development within the flood management overlay zone is subject to these requirements and will ensure that they are designed to meet these specific approval criteria with the submission of individual DDP's.



Figure 2.3 - FEMA 100-yr floodplain and the 1996 Flood Inundation

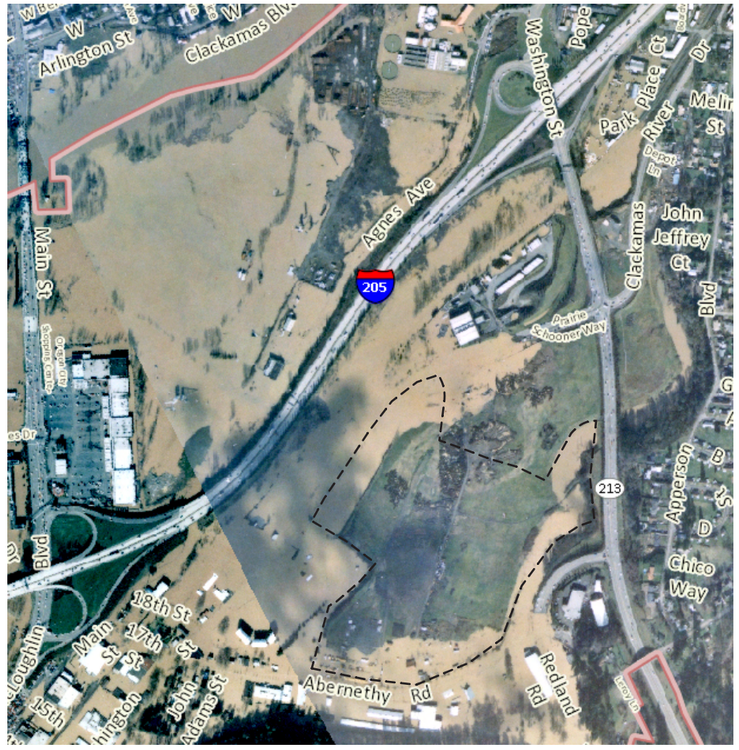

Figure 2.4 - Aerial showing extent of 1996 Flood on the North End site

Chapter 17.44: Geologic Hazards Overlay Zone

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:
There are areas within The North End master plan area that are identified within the Geologic Hazards Overlay Zone as illustrated in the figure below. The master plan area topography was artificially created to cover the prior landfill that was located on site.

Brett Shipton P.E., a Principal Engineer with NV5 (formerly GeoDesign), has provided a geotechnical report that is attached as an **Appendix D** to this application. That report provides a detailed level of review of the soils and geologic conditions on site along with identifying recommended construction practices to ensure that risks associated with development on properties within geologic hazards on site are mitigated by proposed development.

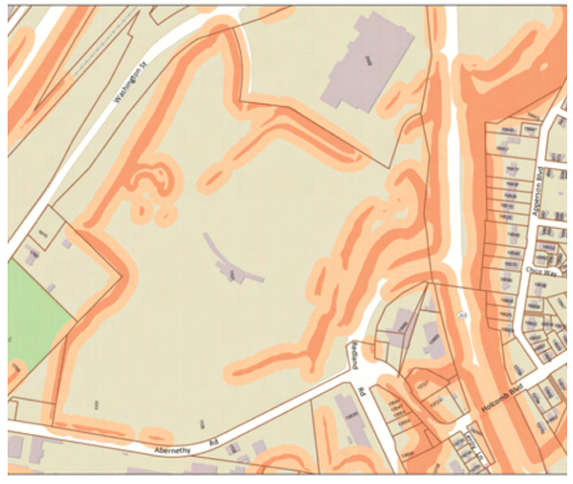

Figure 2.5 Oregon City Geologic Hazards Map - Steep Slopes

17.44.025 - When required; regulated activities; permit and approval requirements.
No person shall engage in any of the following regulated activities within the adopted Oregon City Geologic Hazards Overlay Zone as defined in section 17.04.515 of the Oregon City Municipal Code without first obtaining permits or approvals as required by this chapter:
A. Installation or construction of an accessory structure greater than 500 square feet in area;
B. Development of land, construction, reconstruction, structural alteration, relocation or enlargement of any building or structure for which permission is required pursuant to the Oregon City Municipal Code;
C. Tree removal on slopes greater than 25 percent where canopy area removal exceeds 25 percent of the lot.
D. Excavation which exceeds two feet in depth, or which involves twenty-five or more cubic yards of volume;
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:
Future construction projects within the GDP will result in development, tree removal, and excavation. Therefore, these requirements are applicable to development within the master plan area. Future applications for DDP's will be required to conform with the recommendations of the NV5 report and supplement that information with their own specific analysis and design. Any DDP that includes land identified within a designated Geologic Hazard Overlay Zone is expected to comply with the applicable provisions of the Oregon City Municipal Code. The NV5 report demonstrates that based on the proposed preliminary grading plan and the development locations, the site development under each DDP can feasibly satisfy the requirements of the Geologic Hazard Overlay Zone.

17.44.050 - Development—Application requirements and review procedures and approvals.
Except as provided by subsection B. of this section, the following requirements apply to all development proposals subject to this chapter:
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);
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. Subdrainage 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.
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, 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 preliminary Geotech report has been prepared by Brett Shipton P.E., a Principal Engineer with NV5 (formerly GeoDesign). The preliminary report is attached to this application as **Appendix D**. The preliminary Geotech report is a comprehensive report that provides a review of the soils, geologic conditions, surface and subsurface conditions, an analysis of geologic hazards. The report also provides design recommendations for foundations, pavement, retaining walls, and drainage. Finally, the report provides recommendations for construction activities including site preparation, excavation, structural fill, erosion control, and wet weather construction. on site along with identifying recommended construction practices to ensure that the hazards on site are mitigated by future development.

The report provides a general overview of the geotechnical conditions on site for the GDP. However, while future applications for detailed development plans can rely upon the findings and recommendations of the NV5 report, they must provide their own analysis and design based on building types, final grading, and locations.

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.

Response:
With the exception of the Abernethy Creek corridor on the eastern edge of the master plan site, there is not native topography, vegetation, or soils. That corridor is proposed to be preserved through approval of the GDP.

B. All grading, drainage improvements, or other land disturbances shall only occur from May 1 to October 31. Erosion control measures shall be installed and functional prior to any disturbances. 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 in consultation with the project geotechnical 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.

Response:
The applicant acknowledges these requirements and expects all subsequent applications for development within the master plan area to comply with this standard prior to any on-site development activity.

C. Designs shall minimize the number and size of cuts and fills.

Response:
Preliminary grading plans have been provided in the civil plan set, sheets C300 thru C307 in **Appendix B**. Areas that are proposed to be developed on site will minimize the amount of cut and fill, but a minimal amount of cut will be necessary in order to construct streets, utilities, and buildings. Competing interests such as utility systems that rely on gravity to function (i.e. wet utilities) and compliance with the Americans with Disabilities Act largely dictate the amount of grading required on site. Because this is a reclaimed landfill site and there is a remediation cap in place, there will be careful consideration developing within these areas. The preliminary grading plan and stormwater management plan address these cut and fill and cap issues as detailed above. Based on all of these considerations, the GDP minimizes the number of on-site cuts and fills.

D. Cut and fill slopes, such as those for a street, driveway accesses, or yard area, 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.

Response:
No cuts are required by the GDP development plans that would remove the toe of a slope and the GDP calls for the location of structural retaining walls where they may be required as shown on sheets C300 thru C307 of the civil plan sheets. Future development can feasibly comply with this standard. The GDP itself does not provide the level of construction detail to demonstrate specific compliance with this standard.

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.

Response:
The GDP does not dictate the need for any structural fill. If such fill is required to develop improvements consistent with the approved GDP, the DDP review will be required to demonstrate conformance with this standard.

F. Retaining walls shall be constructed in accordance with the Oregon Structural Specialty Code adopted by the State of Oregon.

Response:
Any retaining walls required by a DDP will demonstrate compliance with this standard, but it should be recognized that the GDP does not propose site design element that would preclude an applicant for a DDP from complying with this standard.

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.

Response:
Streets proposed within the master plan area are proposed to be private and have been designed to provide safe access for all modes of transportation including vehicles, bicycles, and pedestrians. A variance is not necessary to the road standards with approval of the GDP. The preliminary grading plan and stormwater management plan addressed above demonstrate that minimum cut and fill is proposed for the street system and positive drainage control is achieved.

2 - NARRATIVE RESPONSE

H. Density shall be determined as follows:
1. 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;
2. 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;
3. 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.

Response:
Subsection (H)(1) applies. The allowed density in the GDP area is a minimum of .3:1 FAR. The GDP maintains a density of .49:1 in compliance with the density permitted by the underlying zoning district.

I. For properties with slopes of twenty-five to thirty-five percent between grade breaks:
1. For those portions of the property with slopes of twenty-five to thirty-five percent, 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 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 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.

Response:
According to the geotechnical reports, the steepest slopes were artificially created to either serve as a landfill berm on the perimeter of the site or to construct the golf driving range within the interior of the site. The report identifies possible evidence of slope instability, caused either naturally or at the time these slopes were constructed. These artificial slopes in the master plan area are man-made and range between 35 and 80 percent. The GDP shows preliminary grading plans that will grade those slopes for future development.

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.

Response:
The applicant acknowledges this requirement. Future applications for DDP review will provide their own geotechnical analysis and the geotechnical engineer of record will be responsible for reviewing the final grading, drainage, and foundation plans as specified in this standard. No actual development activity is authorized with approval of the GDP. However, the GDP includes a preliminary grading plan demonstrating that the GDP can be built out in conformance with applicable geotechnical specifications.

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.

Response:
The applicant is aware that the City may require peer review of the geotechnical reports associated with development.

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:
The applicant is aware that the cost for the peer review of the geotechnical reports provided by the City's consulting engineer is paid by the applicant and that additional conditions could be imposed on the development to assure that landslides and property damage do occur in compliance with this criteria.

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:
Access to the master plan area is proposed in several locations through the GDP. The applicant has requested a modification to allow the site to have more than one access. The proposed access locations are onto two designated minor arterials but have been located so that they meet or exceed the access spacing standards. For the size of this development, the proposed access locations are intentional and proposed in a way to efficiently move traffic in and out of the development without burdening any single facility.

17.44.080 - Utilities.
All new service utilities, both on-site and off-site, shall be placed underground and under roadbeds where practicable. Every effort shall be made to minimize the impact of utility construction. Underground utilities require the geologic hazards permitting and review prescribed herein.

Response:
The applicant is aware of the requirement to provide all new service utilities underground as required.

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 Public Works Stormwater Management Design Manual and Standards Plan or other adopted standards subsequently adopted by the city commission. Drainage design shall be approved by the city engineer before construction, including grading or other soil disturbance, has begun.

Response:
A preliminary stormwater report is provided as **Appendix A** to this application along with a set of utility plans demonstrating that stormwater form the site can be collected, treated, and detained prior to being released into an approved system consistent with City standards. Specific details of the system have been discussed previously in this narrative and illustrated within the accompanying plan sets. Future applications for DDP approval will require these plans to be refined to respond to the actual proposed development.

2 - NARRATIVE RESPONSE

Chapter 17.47: Erosion and Sediment Control

17.47.010 - Purpose.
A. The purpose of this chapter is to require erosion prevention measures and sediment control practices for all development during construction to prevent and restrict the discharge of sediments, and to require final permanent erosion prevention measures, which may include landscaping, after development is completed. Erosion prevention techniques shall be designed to protect soil particles from the force of water and wind and other mechanical means so that they will not be transported from the site. Sediment control measures shall be designed to capture soil particles after they have become dislodged by erosion and attempt to retain the soil particles on-site.
B. The objective of these measures is to control, at the source, waterborne and airborne erosion and the air and water pollution that results from such erosion mechanisms. This chapter recognizes that all non-point discharges eventually end up in surface water bodies. This chapter is intended to control water quality degradation from construction and development activities and it applies in addition to any other applicable provision of this Code, state or federal law. This chapter is not intended to serve as a guideline for stormwater management control measures for already constructed developments.
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:
This is a proposal for approval of the GDP associated with The North End master plan. Preliminary construction plans are provided as appendices to this plan for the purposes of illustrating that the master plan can be constructed in conformance with City standards. Construction activities are not permitted through the GDP approval. Separate DDP's will be filed for new development within the master plan area once the GDP is approved. Construction associated with approval of individual DDP's for the site will be required to meet the provisions of this chapter before the City will issue development permits.

Chapter 17.49: Natural Resource Overlay Zone

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.

Response:
The applicant has submitted a Type I NROD Permit Exemption and Boundary Verification for Area 4 indicated on the attached **Appendix E** which would, if approved, modify the boundary of the NROD along the northern site frontage adjacent to Washington Street and exempt the existing imperious Washington Street improvements from NROD permits.

The applicant has also submitted a Type I NROD Permit Exemption for Area 5 indicated on the attached **Appendix E**. This area contains the impervious soil cap.

The Type I application will likely be reviewed during the completeness review for this GDP application process. If the areas are removed under the Type I procedure, the NROD approval criteria for that area of the site will be inapplicable to this GDP application. The applicant understands, however, that it may be required to supplement the GDP application narrative with responses to the NROD approval criteria for Areas 4 and 5.

17.49.060 – Consistency and relationship to other regulations.

Response:
The proposed project will result in the elimination of Roadside Ditch 1. As such, the project will obtain necessary permits and approvals from the Oregon Department of State Lands (DSL) and/or the U.S. Corps of Engineers. The project will also require permits from the Oregon Department of Environmental Quality (ODEQ). The Applicant is aware that an NROD permit does not become valid prior to obtaining other agency approvals or those agencies indicate that such approvals are not required.

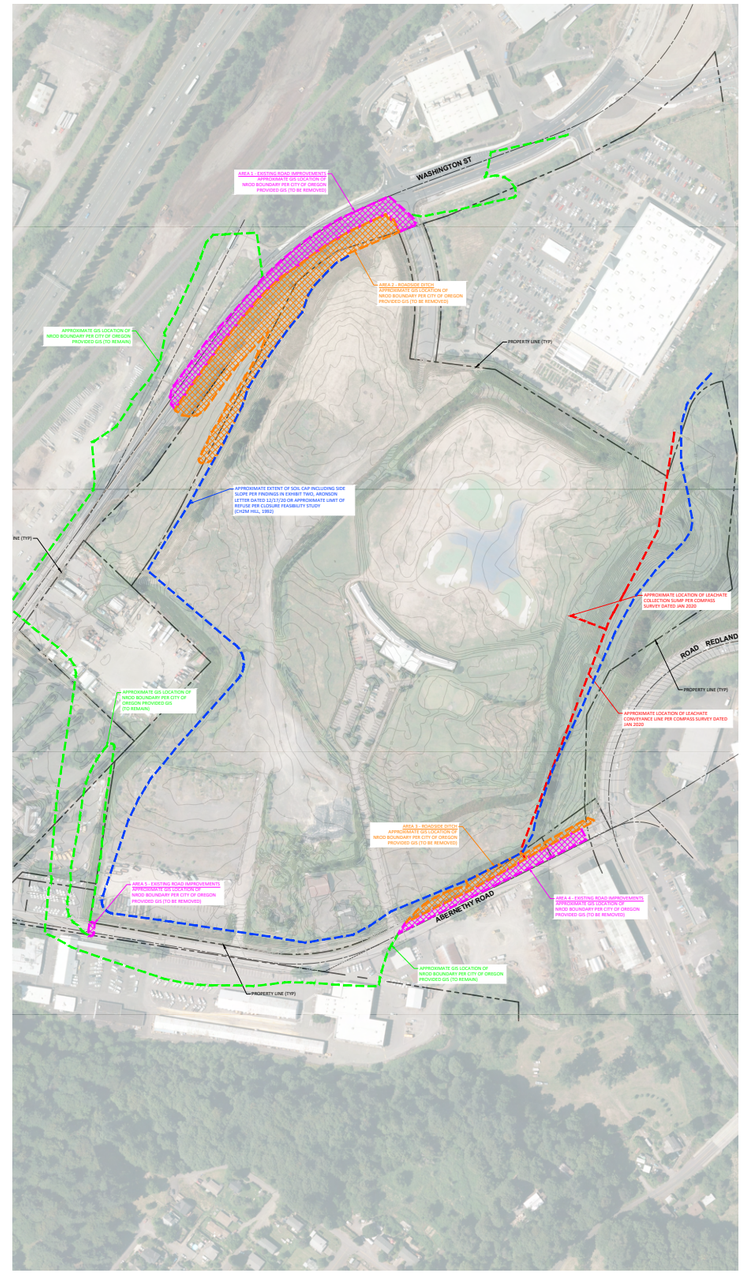

Figure 2.6 - NROD Permit Exemption and Boundary Verification Plan

2 - NARRATIVE RESPONSE

17.49.080 – Uses allowed outright (exempted)
J. Replacement, additions, alterations and rehabilitation of existing structures, roadways, utilities, etc., where the ground level impervious surface area is not increased.

Response:
The applicant will replace existing impervious surface area associated with Washington Street and Abernethy Road for the required half street improvements. This portion of the proposed development within the VC associated with Roadside Ditch 1 and Tributary 1 and Associated Wetlands is exempt from review pursuant to Section 17.49.080.J.

17.49.090 – Uses allowed under prescribed conditions.
F. New roadways, bridges/creek crossings, utilities or alterations to such facilities when not exempted by Section 17.49.080.

Response:
The required half street improvements for Washington Street and Abernethy Road will increase the ground level impervious surface area beyond the limits of existing development. These portions of the required half street improvements within the NROD (78,462 square feet) are subject to Section 17.49.150 described below.

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 ways (subject to Section 17.49.150), trails (subject to Section 17.49.170), utility lines (subject to Section 17.49.140), land divisions (subject to Section 17.49.160), and mitigation projects (subject to Section 17.49.180 or 17.49.190):
A. Native trees may be removed only if they occur 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:
Standard is met. The trees proposed for removal within the NROD are all within 10 feet of proposed permanent development. A tree survey of the project area is needed and will be included with future DDP submittals.

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:
Standard does not apply. No landscaping requirements of the base zone will be met within the NROD.

C. All vegetation planted in the NROD shall be native and listed on the Oregon City Native Plant List;

Response:
The vegetation proposed to be planted within the NROD will be native and listed on the Oregon City Native Plant List.

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

Response:
Proposed erosion control measures required by the City of Oregon City will be installed prior to site mobilization and grading activities.

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:
Standard does not apply. Minimum setback reductions prescribed in the MUD zone are not being requested.

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:
Maximum setback increases are being requested through the provisions of 17.65.070 and are not related to the location of the NROD on site.

G. Fences are allowed only within the disturbance area;

Response:
Standard is met. Fences are not proposed within the undisturbed NROD with the GDP. Subsequent applications for individual DDP's will be required to satisfy the applicable standards of this chapter at the time they are submitted.

H. Incandescent lights exceeding two hundred watts (or other light types exceeding the brightness of a two hundred watt incandescent light) shall be placed or shielded so that they do not shine directly into resource areas;
Response:
The applicant is aware of these standards. Lights are not currently proposed for any portion of the site. When individual DDP's are applied for the applicant will be required to satisfy these standards. Any lights adjacent to the NROD will be shielded so that they do not shine directly into resource areas.

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

Response:
Standard is met. Development will occur within the one hundred year floodplain. As such, the FEMA floodplain standards of Chapter 17.42 will be required to be satisfied with future development and as stated within that section, the proposed GDP will comply with those standards.

J. Mitigation of impacts to the regulated buffer is required, subject to Section 17.49.180 or 17.49.190.

Response:
Mitigation of impacts will be provided subject to Section 17.49.180, Mitigation Planting Option 2.

17.49.150 – Standards for vehicular or pedestrian paths and roads.
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.

Response:
This standard does not apply. Stream crossings are not proposed for the development.

B. Where the right-of-way or private road crosses a stream the crossing shall be by bridge or a bottomless culvert;

Response:
This standard does not apply. Stream crossings are not proposed within the development.

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;

Response:
Approval from DSL and the Corps will be obtained for the elimination of Roadside Ditch 1. Copies of the permits or approvals will be provided to the City prior to concurrent with the Oregon City grading permit application.

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;
Response:
Approval from DSL and the Corps will be obtained for the elimination of Roadside Ditch 1. Copies of the permits or approvals will be provided to the City prior to concurrent with the Oregon City grading permit application.

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

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Response:
Standard will be met. If required, work within Roadside Ditch 1 will either be conducted between June 1 and August 31 or an In-Water Work Variance will be approved by the Oregon Department of Fish and Wildlife.

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

Response:
Mitigation for the 78,462 square feet (1.8 acres) of total impacts associated with the required half street improvements will be provided as required and detailed in the response to Section 17.49.180.

17.49.180 – Mitigation standards.

Response:
The applicant will provide mitigation for project-related impacts pursuant to the standards of this section using Mitigation Planting Option 2.

A. Mitigation shall occur at a two-to-one ratio of mitigation area to proposed NROD disturbance area […].

Response:
Standard is met. The proposed disturbance area, excluding disturbance to existing impervious surface areas is 78,462 square feet (1.8 acres), which requires 156,924 square feet of mitigation. The proposed mitigation area is 156,924 square feet (3.6 acres), located in the eastern portion of the project parcel adjacent to Tributary 1 and Associated Wetlands.

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;

Response:
Mitigation is proposed for the eastern portion of the Tax Lot 902 adjacent to Tributary 1 and Associated Wetlands. This standard will be met.

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

Response:
The proposed mitigation location is on the project parcel.

3. An easement that allows access to the mitigation site for monitoring and maintenance shall be provided as part of the mitigation plan.

Response:
The applicant will provide an easement to the mitigation site allowing for monitoring and maintenance as required.

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.

Response:
The proposed mitigation location is on the project parcel within the existing NROD adjacent to Tributary 1 and Associated Wetlands.

D. Invasive and nuisance vegetation shall be removed within the mitigation area.

Response:
Invasive vegetation listed on the Oregon City Nuisance Plant List including, but not limited to Himalayan blackberry, thistle, reed canarygrass, spotted cat's ear, and common teasel will 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 groundcover shall be selected from the Oregon City Native Plant List.

Response:
Mitigation Planting Option 2 will be used because the impact area is larger than 1 acre. All trees, shrubs, and herbaceous (groundcover) selected for the mitigation plan are from the Oregon City Native Plant List. The plant species listed in Table 4 are subject to adjustment based on site conditions and plant availability at the time of planting. However, no more than one-third of the trees will be of the same genus, and shrubs will consist of at least three different species.

Table 4: Proposed Plant List for Mitigation Planting

Botanical Name	Common Name
TREES (minimum of 785 plantings)	
Acer macrophyllum	*Big-leaf maple*
Alnus rubra	*Red alder*
Fraxinus latifolia	*Oregon Ash*
Pseudotsuga menziesii	*Douglas-fir*
Salix scouleriana	*Scouler's willow*
SHRUBS (minimum of 3,923 plantings)	
Acer circinatum	*Vine maple*
Amelanchier alnifolia	*Western serviceberry*
Berberis aquifolium	*Tall Oregon grape*
Crataegus douglasii	*Black hawthorn*
Ribes sanguineum	*Red flowering currant*
Spiraea douglasii	*Douglas' spirea*
Symphoricarpos albus	*Snowberry*
HERBACEOUS	
Agrostis exerata	*Spike bentgrass*
Bromus carinatus	*California brome*
Deschampsia cespitosa	*Tufted hairgrass*

2. Mitigation Planting Option 2.

Response:
The mitigation planting quantity is based on the disturbance area within the NROD. Seven-hundred and eighty-five (785) replacement trees and three-thousand, nine-hundred and twenty-three (3,923) replacement shrubs will be planted according to the size, spacing, and diversity standards of this section. Bare ground will be planted or seeded with native grasses and ground cover species. New plantings will be mulched and planting areas will be watered for a minimum of three years following planting.

F. Monitoring and Maintenance.

Response:
The proposed mitigation will be monitored and maintained for a minimum of five years, with approved annual progress reports submitted to the City's planning division. Mulching and irrigation will be applied in the amounts necessary to ensure eighty percent survival at the end of the required five-year monitoring period. The mitigation area will be inspected annually during the active growing season. During site monitoring, survival rates of planted trees and shrubs and invasive plant species cover will be documented. This information, along with photo-documentation of the mitigation area, will be used to inform the annual progress report. Should survival rate drop below 80 percent or invasive plant coverage exceed 10 percent at any time during the maintenance period, immediate remedial action will be taken. Monitoring and maintenance is the on-going responsibility of the property owner, assign, or designee.

G. Covenant or Conservation Easement. 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.

Response:
The applicant will record a restrictive covenant or conservation easement in the form provided by the City that will require owners and assigns of the property to comply with the applicable mitigation requirements. The covenant or easement will run with the land and permit the City to complete mitigation work in the event of default by the responsible party. Should the city need to complete the mitigation work, such cost will be borne by the owner. The covenant or conservation easement is the responsibility of the property owner, assign, or designee.

H. 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:
A financial guarantee will be provided to the city prior to development within the NROD disturbance area. The financial guarantee is the responsibility of the property owner, assign, or designee.

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.

Response:
As approved in NROD-20-00022, the portion of the City-mapped NROD on the landfill refuse soil cap is not viable NROD. This area has been removed from the NROD within the parcel. The removed NROD area on the west side of the landfill refuse soil cap contained the entirety of an area mapped as upland habitat and a portion of the associated VC. Because the mapped upland habitat is not viable NROD, it is assumed that the NROD Significance Rating does not apply to the portion of the VC associated with the mapped upland habitat that is west of and outside of the limits of the landfill refuse soil cap.

Chapter 17.52: Off-Street Parking and Loading

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

Response:
The standards of this chapter are applicable to the project review. The project proposes a combination of parking structures and surface parking lots to satisfy minimum off-street parking requirements of the OCMC and serve the needs of future businesses and residents in the master plan.

17.52.015 - Planning commission adjustment of parking standards.
A. Purpose: The purpose of permitting a Planning Commission adjustment to parking standards is to provide for flexibility in modifying parking standards in all zoning districts, without permitting an adjustment that would adversely impact the surrounding or planned neighborhood. Adjustments provide flexibility to those uses which may be extraordinary, unique, or provide greater flexibility for areas that can accommodate a denser development pattern based on existing infrastructure and ability to access the site by means of walking, biking or transit. An adjustment to a minimum parking standard may be approved based on a determination by the Planning Commission that the adjustment is consistent with the purpose of this Code, and the approval criteria can be met.
B. Procedure: A request for a Planning Commission parking adjustment shall be initiated by a property owner or authorized agent by filing a land use application. The application shall be accompanied by a site plan, drawn to scale, showing the dimensions and arrangement of the proposed development and parking plan, the extent of the adjustment requested along with findings for each applicable approval criteria. A request for a parking adjustment shall be processed as a Type III application as set forth in Chapter 17.50.

Response:
The applicant is not requesting approval of an adjustment to parking standards. The parking proposed complies with the minimum requirements of the OCMC, as discussed in subsection 17.52.20, below.

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

Response:
The North End master plan is a proposed 1,091,698 square feet of mixed-use development that includes 524 residential units, (3) anchor retail facilities, and a mix of smaller retail and entertainment uses on a 62-acre site. Table 17.52.020 requires a minimum of 4.1 parking spaces per 1,000 sf of retail which includes stores, restaurants and drive thru uses; .25 spaces per seat for movie theaters; and 1 space per unit for the multi-family residential units. Based on the proposed programming in the master plan, and the requirements of Table 17.52.020, the site is required to provide a minimum of 3,366 onsite parking spaces.

Table 17.52.020 also establishes the maximum allowed number of spaces at 5.0 parking spaces per 1,000 sf of retail which includes stores, restaurants and drive thru uses; .5 spaces per seat for movie theaters, and 2.5 spaces per unit for the multi-family residential units proposed on site. Based on the proposed programming in the master plan, the maximum number of allowed spaces would be 5,923 spaces. See the table below:

Parking Requirements				
Land Use	**Floor Area (SF)**	**Min. Requirement**	**Max. Requirement**	**Proposed**
Drive Thru Restaurant	3,800	15.7	19.1	
Retail	170,800	700.2	853.9	
Multi-Family Housing	524	524	???	
Theatre (seats)*	1000	250	2500	
Total - North District		1489.9	3635	**1354**
Drive Thru Restaurant (s)	7,200	29.5	35.9	
Retail	149,100	611.4	745.6	
Total - East District		634	773	**973**
Drive Thru Restaurant	3,300	13.5	16.5	
Retail	137,500	563.7	687.42	
Total - Central District		577	704	**452**
Drive Thru Restaurant	4,000	16.4	20.0	
Retail	158,300	649.1	791.6	
Total - South District		665	811	**446**

** The theatre space may need further analysis given the presence of the bowling alley, but the other uses would generally be considered ancillary to the primary use and not necessarily require they're own separate parking.*

2 - NARRATIVE RESPONSE

Response to 17.52.020.A Cont.:
Per 17.52.020.A.3, fractional results less than one-half are disregarded. Other results round up, requiring an additional space. The master plan proposes to provide 3,225 parking stalls within the parking structures and parking lots, and another 531 parallel parking stalls along the internal private street system for a total of 3,756 parking stalls on-site. Therefore, the master plan proposes parking that exceeds the minimum number of required parking spaces, but less than the maximum number allowed. Parking will be evaluated again with each application for DDP approval. This standard is satisfied.

1. Multiple Uses. In the event several uses occupy a single structure or parcel of land, the total requirements for off-street parking shall be the sum of the requirements of the several uses computed separately.

Response:
The master plan would include a mix of uses and parking has been calculated based on the square footages for each use separately. This standard is satisfied.

2. Requirements for types of buildings and uses not specifically listed herein shall be determined by the Community Development Director, based upon the requirements of comparable uses listed.

Response:
A determination by the Community Development Director is not needed for this application. The parking requirements for the uses proposed within the master plan are listed in minimum and maximum parking standards of Table 17.52.020.

3. Where calculation in accordance with the above list results in a fractional space, any fraction less than one-half shall be disregarded and any fraction of one-half or more shall require one space.

Response:
Parking requirements for the proposed GDP utilized this methodology for dealing with fractional spaces and provides enough parking to satisfy the minimum parking requirement for the site without exceeding the maximum allowed parking.

4. Fleet vehicle parking shall be accommodated within the maximum parking ratio, except that in GI, CI, and MUE zones, fleet vehicle parking may be included in a parking lot in addition to the maximum number of permitted parking spaces.

Response:
Fleet vehicle parking was not considered within the GDP. This provision is not applicable with this request but may be considered when considering applications for DDP's.

5. A change in use within an existing habitable building located in the MUD Design District or the Willamette Falls Downtown District is exempt from additional parking requirements. Additions to an existing building and new construction are required to meet the minimum parking requirements for the areas as specified in Table 17.52.020 for the increased square footage.

Response:
The site is located within the MUD zone but this application does not propose conversion of an existing building. The GDP is proposing to meet the minimum parking requirements for the uses proposed.

B. Parking requirements can be met either onsite, or offsite by meeting one or multiple of the following conditions:
1. Parking may be located on the same site as the associated use which it is supporting.

Response:
All proposed required parking spaces are located on the private property developed with The North End master plan. This standard is met.

2. Mixed Uses. If more than one type of land use occupies a single structure or parcel of land, the total requirements for off-street automobile parking shall be the sum of the requirements for all uses, unless it can be shown that the peak parking demands are actually less (e.g. the uses operate on different days or at different times of the day). In that case, the total requirements shall be reduced accordingly, up to a maximum reduction of fifty percent, as determined by the Community Development Director.

Response:
This is an application for approval of a GDP for a mixed-use development. All parking has been calculated based on the sum of the requirements for all proposed uses on site. Further, the minimum requirements are exceeded as discussed above so a reduction is not necessary.

3. Shared Parking. Required parking facilities for two or more uses, structures, or parcels of land may be satisfied by the same parking facilities used jointly, to the extent that the owners or operators show that the need for parking facilities does not materially overlay (e.g., uses primarily of a daytime versus nighttime nature), that the shared parking facility is within one thousand feet of the potential uses, and provided that the right of joint use is evidenced by a recorded deed, lease, contract, or similar written instrument authorizing the joint use.

Response:
Parking on site will be shared across the development. Individual DDP requests will include shared parking agreements and easements as required.

4. On-Street Parking. On-street parking may be counted toward the minimum standards when it is on the street face abutting the subject land use. An on-street parking space shall not obstruct a required clear vision area and it shall not violate any law or street standard. On-street parking for commercial uses shall conform to the following standards:
a. Dimensions. The following constitutes one on-street parking space:
1. Parallel parking: twenty-two feet of uninterrupted and available curb;
2. Forty-five and/or sixty-degree diagonal parking: Fifteen feet of curb;
3. Ninety-degree (perpendicular) parking: Twelve feet of curb.
4. Public Use Required for Credit. On-street parking spaces counted toward meeting the parking requirements of a specific use may not be used exclusively by that use, but shall be available for general public use at all times. Signs or other actions that limit general public use of on-street spaces are prohibited.

Response:
On street parking within the internal private streets has been included in the parking calculations above. On street parking is based on the parallel parking standard listed above. All on-street parking will be available on a first come, first serve basis to anyone patronizing the master plan development. Individual applications for DDP are expected to be subject to these standards as well.

C. Reduction of the Number of the Minimum Automobile Spaces Required. Any combination of the reductions below is permitted unless otherwise noted.
1. Downtown Parking Overlay. The minimum required number of parking stalls is reduced within the Downtown Parking Overlay by fifty percent.
2. Transit Oriented Development. For projects not located within the Downtown Parking Overlay District, the minimum required number of parking stalls is reduced up to twenty-five percent when:
a. In a commercial center (sixty thousand square feet or greater of retail or office use measured cumulatively within a five hundred foot radius) or
b. When adjacent to multi-family development with over eighty units or
c. Within 1,320 feet of an existing or planned public transit street and within 1,320 feet of the opposite use (commercial center or multi-family development with over eighty units).
3. Tree Preservation. The Community Development Director may grant an adjustment to any standard of this requirement provided that the adjustment preserves a designated heritage tree or grove so that the reduction in the amount of required pavement can help preserve existing healthy trees in an undisturbed, natural condition.
4. Transportation Demand Management. The Community Development Director shall reduce the required number of parking stalls up to twenty-five percent when a parking-traffic study prepared by a traffic engineer demonstrates alternative modes of transportation, including transit, bicycles, and walking, and/or special characteristics of the customer, client, employee or resident population will reduce expected vehicle use and parking space demand for this development, as compared to standard Institute of Transportation Engineers vehicle trip generation rates and further that the transportation demand management program promotes or achieves parking utilization lower than minimum city parking requirements.
A transportation demand management (TDM) program shall be developed to include strategies for reducing vehicle use and parking demand generated by the development and will be measured annually. If, at the annual assessment, the City determines the plan is not successful, the plan may be revised. If the City determines that no good-faith effort has been made to implement the plan, the City may take enforcement actions.
5. The minimum required number of stalls may be reduced by up to ten percent when the subject property is adjacent to an existing or planned fixed public transit route or within one thousand feet of an existing or planned transit stop.

2 - NARRATIVE RESPONSE

Response:
The GDP does not seek a reduction to the number of minimum automobile spaces required under these provisions.

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

Response:
This standard is met by the GDP. The layout of vehicle parking on the proposed site provides circulation and maneuvering which enables all vehicles to enter and exit the site in a forward motion through any one of the driveway access points along Washington Street or Abernethy Road.

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

Response:
This standard is met by the GDP. Paving is proposed for all vehicle areas on the site. Pervious asphalt/concrete are not currently proposed, but are not prohibited by the master plan and could be proposed with individual DDP's. The applicant acknowledges the requirement to maintain the paved surfaces over time.

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

Response:
Parking and circulation area were all considered in the preliminary storm design for the master plan site. As discussed under the findings for Chapter 13.12, Stormwater Management, the project will comply with the Oregon City Stormwater Grading and Design Standards as proposed.

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

Response:
This standard is met. All stalls shown on the civil site plans have been designed to meet the minimum dimensions required for standard or compact stalls. Parking is primarily angled at 90 degrees, but there are locations along the north and east edge of the development where angled parking is proposed. The civil site plans (sheets C200 through C207) attached in **Appendix B** to this application provides the dimensions for parking stalls and circulation to demonstrate that development within the master plan area can comply with these standards. DDP's may propose compact spaces within their design provided the minimum parking requirements for the overall site are met.

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

Response:
The project does not seek approval of an alternative parking plan. This standard is not applicable.

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

Response:
The master plan provides more than 75 parking spaces on site and this provision is applicable. The location of carpool, vanpool, and ADA spaces will be designated with individual DDP's. ADA parking has been identified within the GDP for each building to demonstrate that the site is able to comply with dimensional standards for ADA spaces, but those locations are not intended to be formally set with this request. Carpool, vanpool, and ADA spaces can be accommodated on site.

17.52.040 - Bicycle parking standards.
B. Number of Bicycle Spaces Required. For any use not specifically mentioned in Table A, the bicycle parking requirements shall be the same as the use which, as determined by the Community Development Director, is most similar to the use not specifically mentioned. Calculation of the number of bicycle parking spaces required shall be determined in the manner established in OCMC 17.52.020 for determining automobile parking space requirements. Modifications to bicycle parking requirements may be made through the site plan and design, conditional use, or master plan review process.
Where two options for a requirement are provided, the option resulting in more bicycle parking applies. Where a calculation results in a fraction, the result is rounded up to the nearest whole number.

Response:
All of the uses proposed within the GDP are listed in table A which prescribes the minimum number of bicycle parking spaces required for the site. The GDP does not provide the level of detail required to satisfy this standard but there is adequate space on the site to accommodate required bicycle parking. Future applications for DDP approval are expected to provide detailed plans that satisfy this requirement.

C. Design Standards.
1. Bicycle parking facilities shall be in the form of a lockable enclosure onsite, secure room in a building onsite, a covered or uncovered rack onsite, or within the adjacent right-of-way.
2. Bicycle parking areas shall be clearly marked or visible from on-site buildings or the street. If a bicycle parking area is not plainly visible from the street or main building entrance, a sign shall be posted indicating the location of the bicycle parking area. Indoor bicycle parking areas shall not require stairs to access the space. If sites have more than one building, bicycle parking shall be distributed as appropriate to serve all buildings.
3. All bicycle racks shall be designed so that:
a. The bicycle frame is supported horizontally at two or more places.
b. The frame and at least one wheel of the bicycle can be locked to the rack with a standard
c. The user is not required to lift the bicycle onto the bicycle rack.
d. Each bicycle parking space is accessible without moving another bicycle.
e. It is a minimum of thirty inches tall and eighteen inches wide between the two points of contact.
f. Provides an area of six feet by two feet per bicycle.
g. All bicycle racks and lockers shall be securely anchored to the ground or to a structure.

Response:
The GDP does not provide the level of detail required to satisfy these design standards but there is adequate space on the site to accommodate required bicycle parking and meet the design standards. Future applications for DDP approval are expected to provide detailed plans that satisfy these requirements.

2 - NARRATIVE RESPONSE

43 | Chapter 17.52: Off-Street Parking and Loading (Cont.)

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

Response:
The project is subject to parking lot landscaping standards. However, the GDP provides high level landscape drawings that show that required parking lot landscaping can generally satisfy these provisions. No modifications to the parking lot landscaping is requested with the GDP approval. Subsequent requests for DDP approval will require the applicant to provide more detailed landscape plans that meet these provisions as well as the landscape design guidelines proposed with the overall master plan.

B. Development Standards.
1. The landscaping shall be located in defined landscaped areas that are uniformly distributed throughout the parking or loading area.
2. All areas in a parking lot not used for parking, maneuvering, or circulation shall be landscaped.
3. Parking lot trees shall be a mix of deciduous shade trees and coniferous trees. The trees shall be evenly distributed throughout the parking lot as both interior and perimeter landscaping.
4. Required landscaping trees shall be of a minimum two-inch minimum caliper size (though it may not be standard for some tree types to be distinguished by caliper), planted according to American Nurseryman Standards, and selected from the Oregon City Street Tree List or approved by an arborist;
5. At maturity, all of the landscaped area shall be planted in ground cover plants, which includes grasses. Mulch (as a ground cover) shall only be allowed underneath plants at full growth and within two feet of the base of a tree and is not a substitute for ground cover.
6. Landscaped areas shall include irrigation systems unless an alternate plan is submitted, and approved by the Community Development Director, that can demonstrate adequate maintenance;
7. All landscaping shall be installed according to accepted planting procedures, according to American Nurseryman Standards.
C. Perimeter Parking Lot Landscaping and Parking Lot Entryway/Right-of-Way Screening. Parking lots and associated drive aisles shall include a five-foot wide landscaped buffer where the parking lot abuts the right-of-way and/or adjoining properties. In order to provide connectivity between non-single-family sites, the Community Development Director may approve an interruption in the perimeter parking lot landscaping for a single driveway where the parking lot abuts property designated as multi-family, commercial or industrial. Shared driveways and parking aisles that straddle a lot line do not need to meet perimeter landscaping requirements.
1. The perimeter parking lot are[a] shall include:
a. Trees spaced a maximum of thirty feet apart (minimum of one tree on either side of the entryway is required). When the parking lot is adjacent to a public right-of-way, the parking lot trees shall be offset from the street trees;
b. An evergreen hedge screen of thirty to forty-two inches high or shrubs spaced no more than four feet apart on average. The hedge/shrubs shall be parallel to and not nearer than two feet from the right-of-way line. The required screening shall be designed to allow for free access to the site and sidewalk by pedestrians. Visual breaks, no more than five feet in width, shall be provided every thirty feet within evergreen hedges abutting public right-of-ways.
D. Parking Area/Building Buffer. Except for parking lots with fewer than five parking stalls, parking areas (excluding drive aisles with no adjacent parking) shall be separated from the exterior wall of a structure, exclusive of pedestrian entranceways or loading areas, by one of the following:
1. Minimum five-foot wide landscaped planter strip (excluding areas for pedestrian connection) meeting the standards for perimeter parking lot area landscaping; or:
2. Minimum seven foot sidewalks with shade trees spaced a maximum of thirty feet apart in three-foot by five-foot tree wells.
E. Interior Parking Lot Landscaping. Surface parking lots with more than five parking stalls shall include at least forty-five square feet of interior parking lot landscaping per parking stall to improve the water quality, reduce storm water runoff, and provide pavement shade. Pedestrian walkways or any impervious surface in the landscaped areas are not to be counted in the percentage. Fractions shall be rounded up when calculating the required number of plantings.
Interior parking lot landscaping shall include:
a. A minimum of one tree per four parking spaces.
b. A minimum of 1.5 shrubs per parking space.
c. No more than eight contiguous parking spaces shall be created without providing an interior landscape strip between them. Landscape strips shall be provided between rows of parking shall be a minimum of six feet in width and a minimum of ten feet in length.
F. Alternative landscaping plan.
Any applicant may propose an alternative landscaping plan. Such plans are often proposed to address physically constrained or smaller sites, however innovative designs for larger sites may also be considered. Alternative plans may include the use of low impact development techniques and minimized landscaping requirements. In such situations, the Community Development Director may approve variations to the landscaping standards of OCMC 17.52.060 in accordance with A and/or B below.
1. General Review Standard. The alternative shall meet the standards in OCMC 17.62.015- Modifications that will better meet design review requirements.
2. Credit for Pervious/Low Impact Development. The Community Development Director may count up to fifty percent of the square footage of any pervious hardscaped landscape material within a parking lot that is designed and approved pursuant to the City's adopted stormwater and low impact development design standards toward minimum landscaping requirements for the site. (This includes porous pavement detention, open celled block pavers, porous asphalt, porous concrete pavement, porous turf, porous gravel, etc.).

Response:
The GDP provides an overall general landscape plan that was designed based on these standards. The plans are high level and do not get to the level of detailed design needed to demonstrate compliance with specific details; however, future applications for DDP's within the master plan area are required to meet the provisions of the OCMC as well as the landscape design standards in **Chapter 5: Master Plan Design Guidelines** of this application.

The GDP landscape plans generally show how the landscape standards can be met with future development. Landscaping is proposed in all areas not specified for parking, maneuvering, or circulation. The landscape design guidelines reinforce the standard that all trees within the landscape are 2-inch caliper or greater. The required parking lot landscaping considered the need for 45 square feet of landscaping for each parking space and anticipates trees spaced according to the OCMC requirements listed above. Ground cover is required across the site where improvements are not constructed filling in the gaps between trees and shrubs. The plans illustrate a variety trees within a minimum 5-foot buffer around the perimeter of each parking lot and shows adequate space for hedges/shrubs. Perimeter landscaping is provided along all parking areas.

The GDP high level landscape plans and preliminary design were developed by a Kurt Lango, a certified landscape architect who also authored the landscape design guidelines. Each application for DDP approval will be required to provide greater detail and satisfy both sets of requirements. Alternative landscape plans may be requested with future DDP applications, but the GDP illustrates that it is possible to satisfy these requirements.

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

Response:
The applicant acknowledges this requirement and understands that maintenance of the site is their responsibility.

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

2 - NARRATIVE RESPONSE

C. Standards.
1. The off-street loading space shall be large enough to accommodate the largest vehicle that is expected to serve the use without obstructing vehicles or pedestrian traffic on adjacent streets and driveways. Applicants are advised to provide complete and accurate information about the potential need for loading spaces because the City Engineer or decision maker may restrict the use of other public right-of-way to ensure efficient loading areas and reduce interference with other uses.
2. Where parking areas are prohibited between a building and the street, loading areas or drive isles are also prohibited.
3. The City Engineer and decision maker, through site plan and design review, may approve a loading area adjacent to or within a street right-of-way when all of the following loading and unloading operations conditions are met:
a. Short in duration (i.e., less than one hour);
b. Infrequent (less than three operations daily between 5:00 a.m. and 12:00 a.m. or all operations between 12:00 a.m. and 5:00 a.m. at a location that is not adjacent to a residential zone);
c. Does not obstruct traffic during peak traffic hours;
d. Does not interfere with emergency response services; and
e. Is acceptable to the applicable roadway authority.

Response:
The standards of this section are applicable as the mixed-use master plan includes anchor retail as well as a mix of other smaller retail uses on site. These uses will require loading areas; however, the exact location of loading will be dependent upon the individual developer or tenant. The GDP site plan (Civil Sheets C200 thru C207) illustrates some opportunities for loading associated with the anchor retail and some of the smaller retail uses around the site, but again, these locations are not formalized with this request and will need to be confirmed with applications for DDP approval.

Chapter 17.54 – Supplemental Zoning Regulations

Response:
This chapter regulates accessory structures and uses, projections from buildings, setback exceptions, fences, hedges, walls, and retaining walls, marijuana businesses, mobile food units, and home occupations. Individual developments within the master plan may propose some of the items regulated within this chapter through individual DDP requests. With the exception of section 17.54.100 that pertains to the regulation of Fences, hedges, walls, and retaining walls, those requests should be consistent with these provisions.

A modification under the provisions of 17.65.070 is requested to the maximum allowed height of retaining walls to address the anticipated walls necessary to make a pedestrian connection to the End of the Oregon Trail Interpretive Center. Because of the difference in grade around the site as a result of berms and fill associated with the former Rossman Landfill, retaining walls will need to exceed the 8.5 foot height requirement. This is a condition specific to this site. The modification is discussed under Chapter 17.65.

Chapter 17.56 – Conditional Uses

17.56.010 - Permit—Authorization—Standards—Conditions.
A conditional use listed in this title may be permitted, enlarged or altered upon authorization of the planning commission in accordance with the standards and procedures of this title. A conditional use permit listed in this section may be permitted, enlarged or altered upon authorization of the planning commission or city commission in accordance with the standards and procedures of this section. Any expansion to, alteration of, or accessory use to a conditional use shall require planning commission or city commission approval of a modification to the original conditional use permit unless authorized in this chapter.
A. Conditional uses, because of their public convenience and necessity and their effect upon the neighborhood shall be permitted only upon the approval of the planning commission or city commission after due notice and public hearing, according to procedure as provided in OCMC 17.50. The applicant shall provide evidence substantiating that all the requirements of this title relative to the proposed use are satisfied, and demonstrate that the proposed use also satisfies the following criteria:
1. The use is listed as a conditional use in the underlying district;
2. The characteristics of the site are suitable for the proposed use considering size, shape, location, topography, existence of improvements and natural features;
3. Development shall demonstrate compliance with OCMC 16.12;
4. The proposed use will not alter the character of the surrounding area in a manner which substantially limits, impairs or precludes the use of surrounding properties for the primary uses listed in the underlying district;
5. The proposal satisfies the goals and policies of the city comprehensive plan which apply to the proposed use.

Response:
1. The North End master plan includes pads for five drive through facilities. It has not been determined what these drive through uses are; however, they would likely include drive through eating and drinking facilities such as coffee stands or restaurants, or personal services like banks. The master plan also proposes three anchor retail facilities. Drive-throughs and Retail trade, including grocery, hardware and gift shops, bakeries, delicatessens, florists, pharmacies and specialty stores in a freestanding building with a single store exceeding a foot print of sixty thousand square feet are permitted as Conditional Uses within the Mixed Use Downtown Zoning District according to Section 17.34.030 (A and G).
2. The North End master plan is a redevelopment of a former land fill that is approximately 62 acres in size at the north end of Oregon City. The site is large enough to accommodate the proposed uses and will be provided with all necessary public services. The location and shape of the site as well as the planned improvements also make this site suitable for the proposed development. Each of the conditional uses are located on the site in a manner that accommodates the service and mitigates any impact from the use. The larger anchor retail tenants will serve as an economic catalyst for the remainder of the retail, entertainment, and residential uses on the site. Each larger anchor will be served by a sufficient parking supply as well as a planned internal and external transportation system that can readily accommodate the trips associated with the development. The TIA identifies the trip generation from all of the proposed conditional uses and demonstrates with the new internal street system, the frontage improvements to the existing street system and recommended mitigation measures for two off-site intersections, all of the permitted uses, together with the conditional uses can be suitably and adequately accommodated on the site. Each of the drive-through pads have been located to accommodate efficient and suitable queuing and circulation so as not to interfere with other site circulation provided on site. None of the conditional uses will impact any natural features and all uses are located in a manner that will serve both on-site residents and visitors alike. The internal pedestrian, vehicular and bicycle accessways and paths have been planned and designed to connect all of these uses on site with a well-designed streetscape and intermittent open spaces and plazas. Lastly, each of these uses will be subject to the Design Guidelines adopted with this GDP further ensuring a design consistency between these uses and the permitted uses on site.
3. The TIA and the GDP plan establish a street plan that meets the requirements for public improvements and will adequately serve the proposed development. Rather than repeating those findings here, this criteria response incorporates by reference the TIA findings above and below and the findings above related to Chapter 16.12.
4. The North End master plan will beneficially alter the character of the area by redeveloping a former landfill into a vibrant mixed-use development. All the uses proposed within the master plan are permitted outright or conditionally allowed within the underlying zone. The technical reports submitted with this application demonstrate that any impacts associated with the development are adequately mitigated and will not impact surrounding properties. In fact, the improvements to the adjacent street frontages and the new collector planned through the site will provide additional access options for adjacent properties connecting through the site to other destinations or to locations within the GDP. These improvements include multimodal access improvements such as a new pedestrian connection to the Oregon Trail museum. The character of the area has been defined largely by this former landfill. Reclaiming this landfill for beneficial and economic use will significantly benefit the character of the area in a manner that does not preclude but instead enhances the opportunities on surrounding properties. The conditional uses associated with this request will all be internal to the site, and do not preclude surrounding property owners from using their properties consistent with the Mixed-Use Downtown zoning district.

2 - NARRATIVE RESPONSE

Response to 17.56.010.A Cont.:

5. The Oregon City Comprehensive Plan map designates The North End master plan area as Mixed-Use Downtown. It's also recognized as a Regional Center under the Metro 2040 Growth Concept Plan. While the Comprehensive plan includes by reference, the Oregon City Downtown Community Plan and Oregon City Waterfront Master Plans, neither of these plans include a discussion of detailed development concepts within the landfill area. However, within Section 2 – Land Use, Goal 2.2 of the Comprehensive Plan envisions the area, "…the End of the Oregon Trail area, as a quality place for shopping, living, working, cultural and recreational activities, and social interaction." Subsequently, the North End master plan has been zoned Mixed-Use Downtown and the zoning code implements these goals through specific provisions. Because the proposed uses are identified within the zoning code and the site is zoned for Mixed-Use Downtown, this request is consistent with the Comprehensive Plan.

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

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

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

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

Response:

All the proposed conditional use locations are identified within the overall master plan map. Under Subsections (B) and (C) above, all the conditional uses meet the dimensional standards of the zone with the exception of the anchor tenants and those dimensional adjustments are addressed here in this conditional use review. The entire site, including the conditional uses, will meet and exceed the landscaping and other applicable setback requirements. With the exception of traffic impacts that are proposed to be mitigated through the Plan approval, any impacts from the proposed conditional uses will be limited to the interior of the development itself and those impacts have been addressed through location within the site, the circulation plan, adequate parking and stacking and a comprehensive set of design guidelines. Subsections (D) and (E) are not triggered by this proposal.

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

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

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

Response:

None of the proposed conditional uses are proposed within fifty feet of a residential zone, and additional right of way will be dedicated and improved through the master plan approval. The remaining uses of this section are not proposed within The North End master plan.

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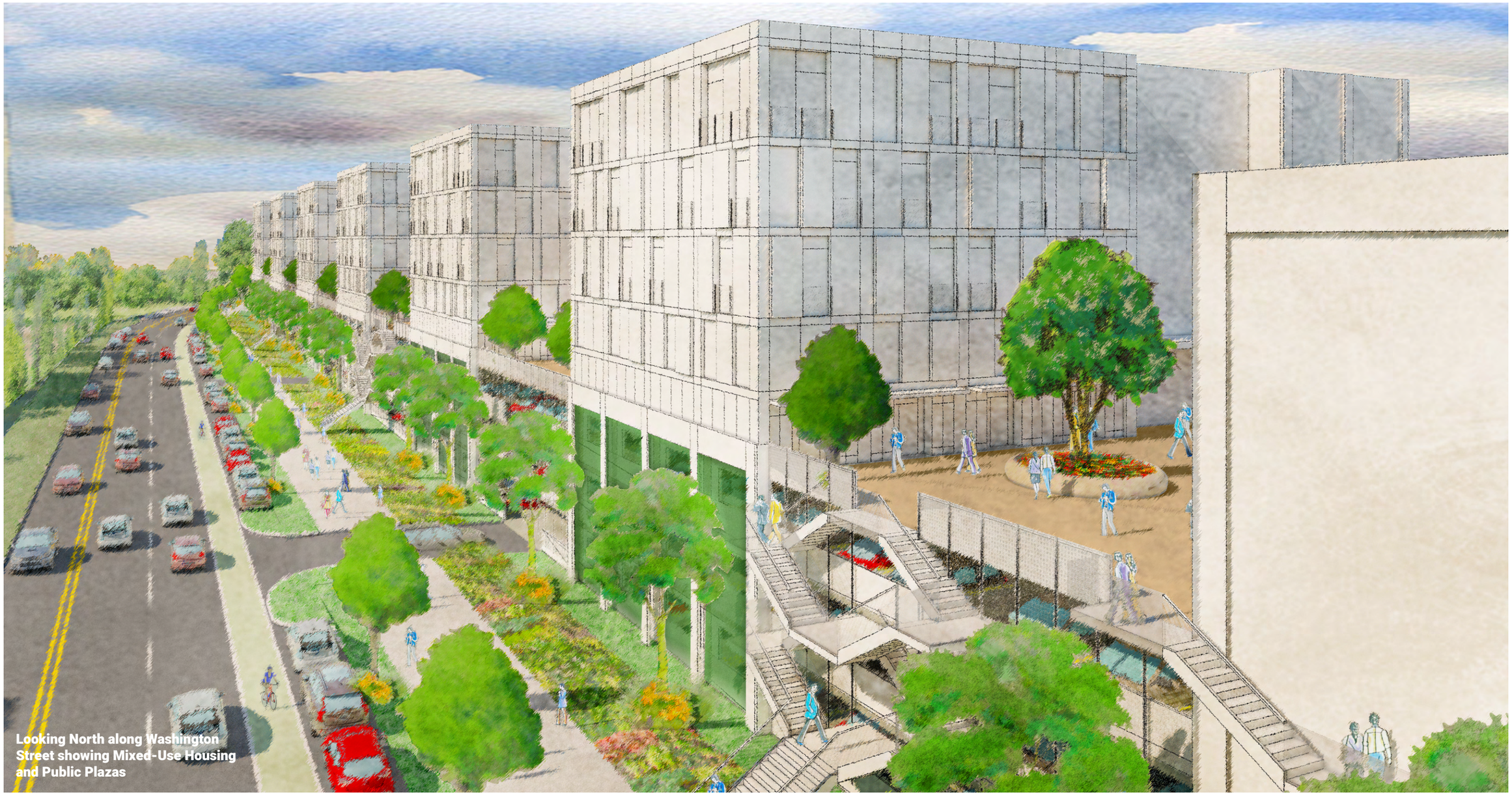
THE NORTH END

3 - EXISTING CONDITIONS



Looking North along Washington Street showing Mixed-Use Housing and Public Plazas

3 - EXISTING CONDITIONS

Existing Conditions and Background
The subject site is located at 1105 Abernathy Drive in Oregon City, Tax Lot Number 2-2E-29-00902. The property is currently zoned Mixed-Use Downtown and is located outside of the historic downtown overlay but is located within the Urban Renewal District. Abernethy Creek runs along the northeast portion of the site and the Creek and its environs will be preserved within the master plan.

The site is located over the top of the Rossman Landfill, and includes land that is identified in the City's Natural Resource Overlay District (NROD) due to the presence of Abernethy Creek and wetlands that have been identified on the site. The site also includes areas within the Geologic Hazard Overlay Zone for the presence of slopes over 10%; and lands that are impacted by the 100-year floodplain.

The Rossman Landfill was established in 1969 and accepted approximately 60% of the municipal waste generated in the Portland Metropolitan area until it closed in late 1980. A closure permit was approved in 1990 which included remediation that intended to seal the waste and any associated leachate with a clay soil layer cap. The closure plan includes on-going monitoring for groundwater contamination and landfill related gasses. Home Depot and other commercial uses have been constructed over the top of the reclaimed landfill since 2000. The site is currently developed with outdoor equipment storage and the Trails End Driving Range which includes event space as well as eating and drinking facilities. Both of these uses are accessed from Abernethy Road. Below is a vicinity map of the area with the subject site outlined in yellow.

Regional Importance
The proposed master plan is within one of eight areas designated as a regional center in the Metro 2040 Growth Concept Plan. According to the Concept Plan, "Regional centers are hubs of commerce and local government services serving hundreds of thousands of people. They are characterized by two- to four- story, compact employment and housing development served by high-quality transit."

The challenges with developing this particular site are complex and should be afforded specific attention. Summit Development envisions a complete community intended to add diversity and appropriately scaled intensity that will build upon and contribute to the overall character of Downtown Oregon City. The master plan is dependent upon partnerships with the City and an appropriate mix of anchor and smaller scale retail with the other proposed uses in order to offset the high costs of developing this former landfill with public infrastructure and street improvements that will deliver a new sense of identity and place for residents and visitors.



Figure 3.1 - Site Map of Natural Resources Overlay Zone, Floodplain Management Zone, and Geologic Hazard Overlay Zone from Oregon City GIS website

Figure 3.2 - Regional Center Designation on the Metro 2040 Growth Concept Plan shown in Purple.



3 - EXISTING CONDITIONS

49 | Vicinity Map



3 - EXISTING CONDITIONS

50 | Existing and Demo Site Plan

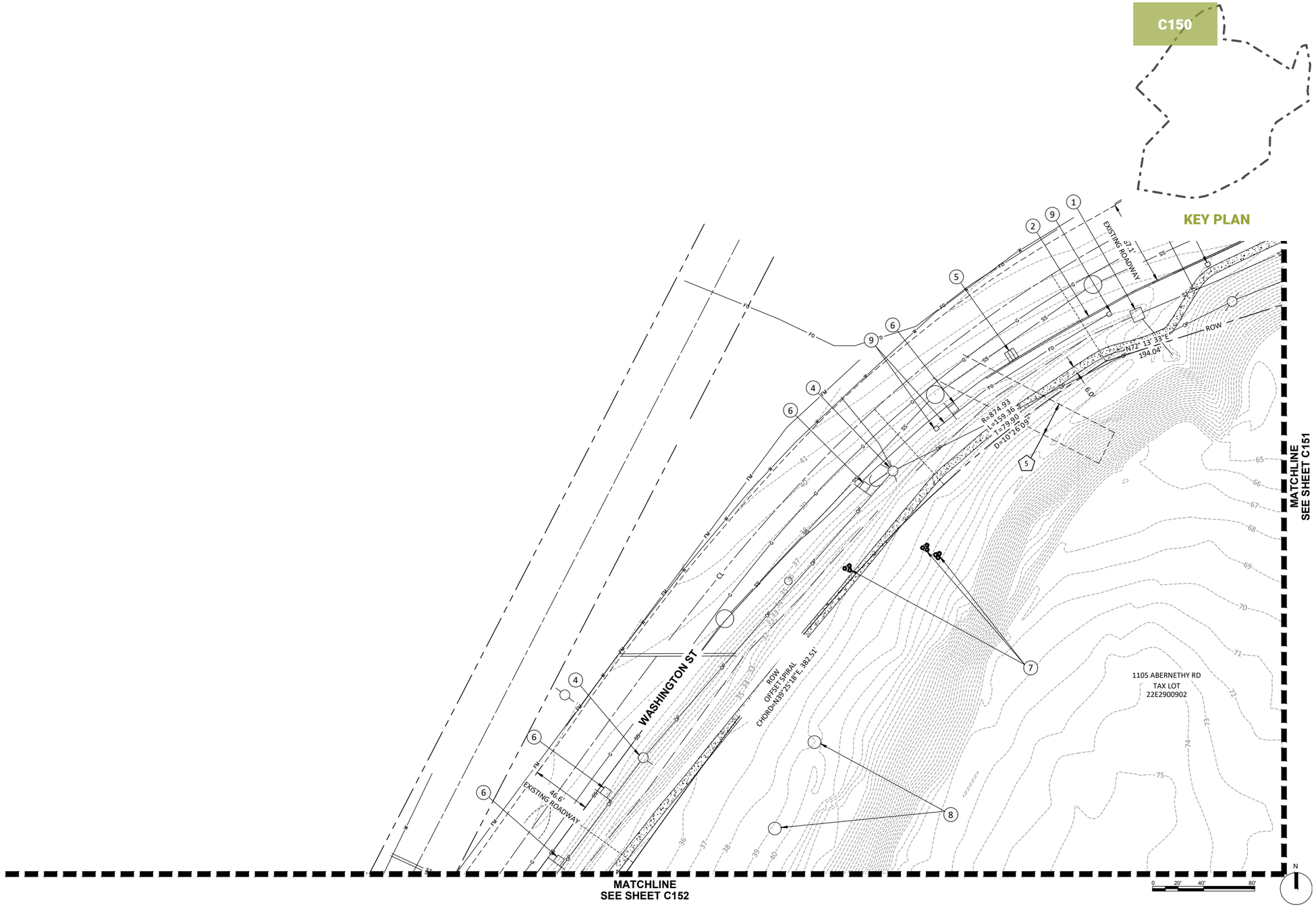
CONSTRUCTION NOTES:

1. EXISTING DITCH INLET TO BE REMOVED.
2. EXISTING CURB TO BE REMOVED. SEE SHEET SERIES C200 FOR LIMITS OF REMOVAL.
3. EXISTING SIDEWALK TO BE REMOVED. SEE SHEET SERIES C200 FOR LIMITS OF REMOVAL.
4. EXISTING POWER POLE TO BE RELOCATED.
5. EXISTING CATCH BASIN TO BE REMOVED.
6. EXISTING SIGN AND POST TO BE RELOCATED.
7. EXISTING METHANE GAS STANDPIPE AND BOLLARDS TO BE REMOVED.
8. EXISTING METHANE GAS MANHOLE TO BE REMOVED.
9. EXISTING FRANCHISE UTILITY TO BE RELOCATED. COORDIANTE WITH UTILITY.
10. EXISTING FRANCHISE UTILITY TO REMAIN. PROTECT IN PLACE.

LEGEND

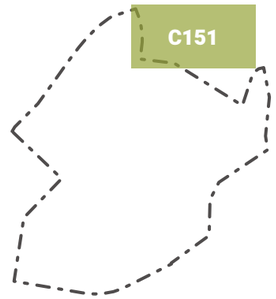
- RIGHT-OF-WAY
- PROPERTY LINE
- CENTERLINE
- DITCH
- CURB
- EDGE OF PAVEMENT
- FENCE LINE
- OVERHEAD POWER LINE
- UNDERGROUND POWER LINE
- NATURAL GAS LINE
- STORM SEWER LINE
- SANITARY SEWER LINE
- WATER LINE
- PROPERTY BOUNDARY
- FOUND MONUMENT
- STORM MANHOLE
- CATCH BASIN
- CLEANOUT
- SANITARY MANHOLE
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- SIGN
- STREET LIGHT
- LB — LIGHT BOX
- JB — STORM JUNCTION BOX
- POWER POLE
- TB — TRAFFIC SIGNAL BOX
- MON. WELL — MONITORING WELL

SEE SHEET C102 FOR EASEMENT INFORMATION



3 - EXISTING CONDITIONS

51 | Existing and Demo Site Plan



KEY PLAN

CONSTRUCTION NOTES:

11 EXISTING STREET LIGHT BOX AND POLE TO REMAIN. PROTECT IN PLACE.

12 EXISTING CURB TO REMAIN. PROTECT IN PLACE.

13 EXISTING SIDEWALK TO REMAIN. PROTECT IN PLACE.

14 EXISTING SIGNAL POLE TO REMAIN. PROTECT IN PLACE.

LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- CENTERLINE
- DITCH
- CURB
- EDGE OF PAVEMENT
- FENCE LINE
- OVERHEAD POWER LINE
- UNDERGROUND POWER LINE
- NATURAL GAS LINE
- STORM SEWER LINE
- SANITARY SEWER LINE
- WATER LINE
- PROPERTY BOUNDARY
- FOUND MONUMENT
- STORM MANHOLE
- CATCH BASIN
- CLEANOUT
- SANITARY MANHOLE
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- SIGN
- STREET LIGHT
- LB LIGHT BOX
- JB STORM JUNCTION BOX
- POWER POLE
- TB TRAFFIC SIGNAL BOX
- MON. WELL MONITORING WELL

SEE SHEET C102 FOR EASEMENT INFORMATION

SEE SHEET C150 MATCHLINE

WASHINGTON ST

CL

ROW

PL

N72° 13' 33"E
194.04'

S21° 53' 28"E
26.90'

D=2°50'48"
R=560.05'
L=284.55'
T=142.42'

47.1'
EX. ACCESS ROAD

9.2' EX. PLANTER

7.0' EX. SIDEWALK

1105 ABERNETHY RD
TAX LOT
22E2900902

S07° 13' 19"W
86.37'

S82° 46' 41"E
264.43'

S58° 03' 39"E
620.53'

HOME DEPOT

2002 WASHINGTON ST
TAX LOT
22E2900906

MATCHLINE
SEE SHEET C153

N

0 20' 40' 80'

3 - EXISTING CONDITIONS

52 | Existing and Demo Site Plan

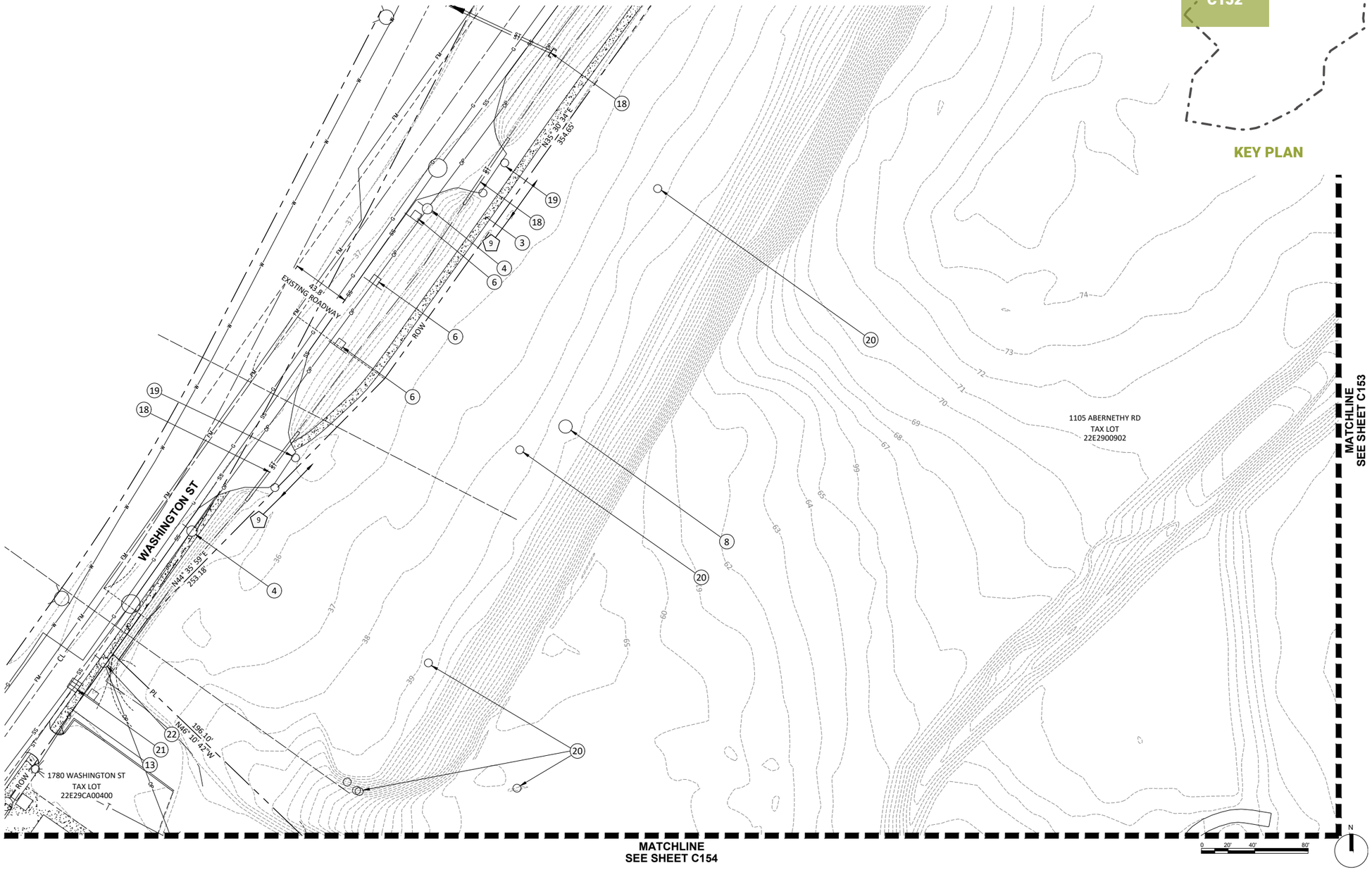
CONSTRUCTION NOTES:

3. EXISTING SIDEWALK TO BE REMOVED. SEE SHEET SERIES C200 FOR LIMITS OF REMOVAL.
4. EXISTING POWER POLE TO BE RELOCATED.
6. EXISTING SIGN AND POST TO BE RELOCATED.
8. EXISTING METHANE GAS MANHOLE TO BE REMOVED.
13. EXISTING SIDEWALK TO REMAIN. PROTECT IN PLACE.
18. EXISTING CULVERT AND HEADWALL TO BE REMOVED.
19. EXISTING FENCE AND GATE TO BE REMOVED.
20. EXISTING METHANE GAS RISER(S) TO BE REMOVED.
21. EXISTING CATCH BASIN TO REMAIN. PROTECT IN PLACE.
22. EXISTING POWER POLE TO REMAIN. PROTECT IN PLACE.

LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- CENTERLINE
- DITCH
- CURB
- EDGE OF PAVEMENT
- FENCE LINE
- OVERHEAD POWER LINE (OP)
- UNDERGROUND POWER LINE (UGP)
- NATURAL GAS LINE (G)
- STORM SEWER LINE (ST)
- SANITARY SEWER LINE (SS)
- WATER LINE (W)
- PROPERTY BOUNDARY
- FOUND MONUMENT
- STORM MANHOLE
- CATCH BASIN
- CLEANOUT
- SANITARY MANHOLE
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- SIGN
- STREET LIGHT
- LB LIGHT BOX
- JB STORM JUNCTION BOX
- POWER POLE
- TB TRAFFIC SIGNAL BOX
- MON. WELL MONITORING WELL

SEE SHEET C102 FOR EASEMENT INFORMATION



3 - EXISTING CONDITIONS

53 | Existing and Demo Site Plan

CONSTRUCTION NOTES:

15 EXISTING ARTIFICIAL TURF DRIVING RANGE TO BE REMOVED.

16 EXISTING POWER POLE TO BE REMOVED.

17 EXISTING LEACHATE FORCE MAIN TO REMAIN. ADJUST TO PROPOSED GRADES AS NECESSARY.

LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- CENTERLINE
- DITCH
- CURB
- EDGE OF PAVEMENT
- FENCE LINE
- OP — OVERHEAD POWER LINE
- UGP — UNDERGROUND POWER LINE
- G — NATURAL GAS LINE
- ST — STORM SEWER LINE
- SS — SANITARY SEWER LINE
- W — WATER LINE
- PROPERTY BOUNDARY
- FOUND MONUMENT
- STORM MANHOLE
- CATCH BASIN
- CLEANOUT
- SANITARY MANHOLE
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- SIGN
- STREET LIGHT
- LB — LIGHT BOX
- JB — STORM JUNCTION BOX
- POWER POLE
- TB — TRAFFIC SIGNAL BOX
- MON. WELL — MONITORING WELL

SEE SHEET C102 FOR EASEMENT INFORMATION

SEE SHEET C152 MATCHLINE

2002 WASHINGTON ST
TAX LOT
22E2900906

PL
S58° 03' 39"E
620.53'

1105 ABERNETHY RD
TAX LOT
22E2900902

PL
N18° 11' 22"E
216.87'

15

16

17

MATCHLINE
SEE SHEET C155

KEY PLAN

C153

N

0 20' 40' 80'

3 - EXISTING CONDITIONS

54 | Existing and Demo Site Plan

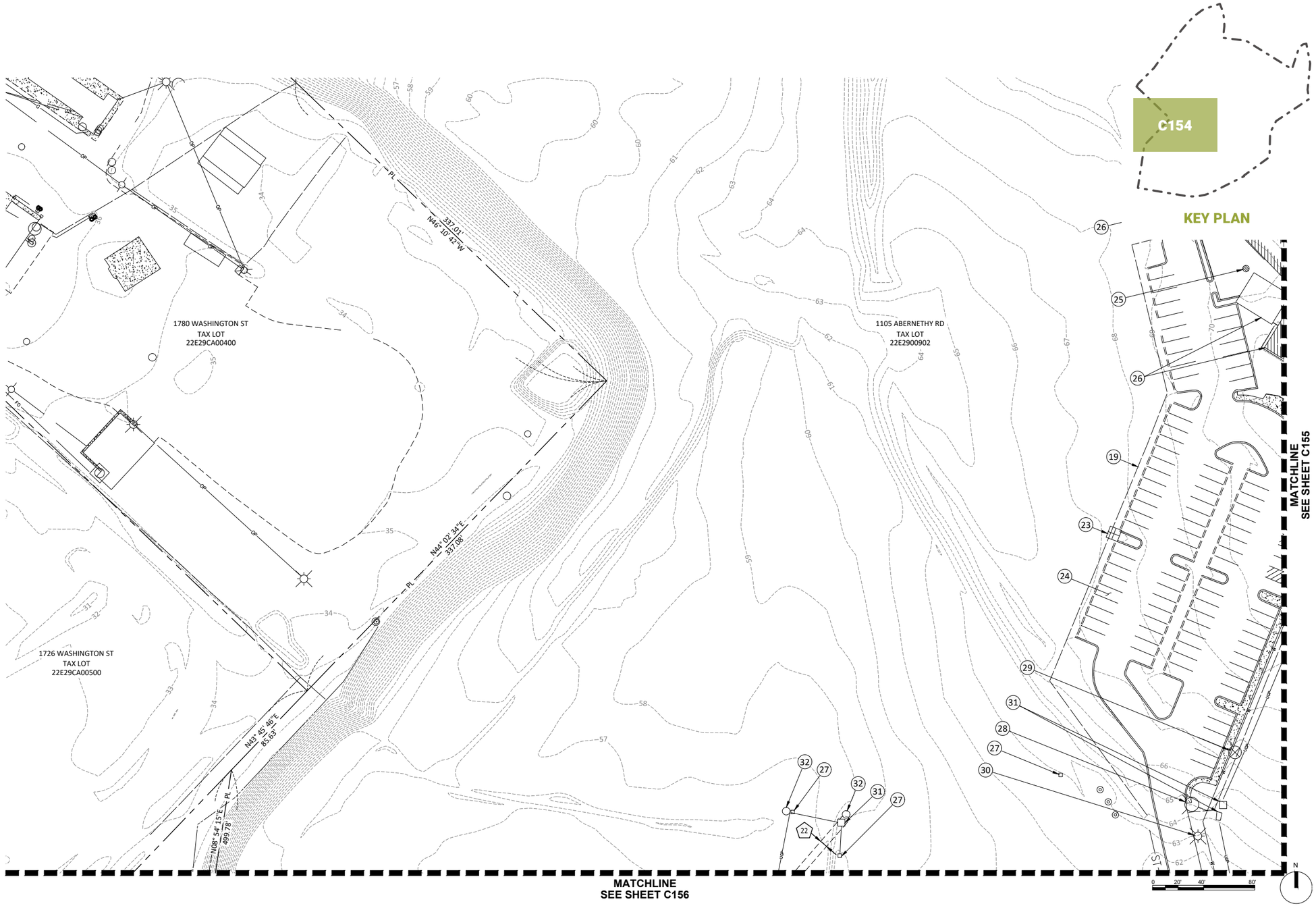
CONSTRUCTION NOTES:

19. EXISTING FENCE AND GATE TO BE REMOVED.
23. EXISTING WATER METER TO BE REMOVED.
24. EXISTING ASPHALT PARKING LOT BE REMOVED. REMOVAL TO INCLUDE ALL PARKING LOT ASSOCIATED CURB, SIDEWALK, PLANTERS, TREES, AND WHEEL STOPS.
25. EXISTING AREA DRAIN TO BE REMOVED.
26. EXISTING BUILDING TO BE REMOVED.
27. EXISTING ELECTRICAL RISER TO BE REMOVED.
28. EXISTING HYDRANT AND LATERALS TO BE REMOVED.
29. EXISTING WATER VALVE(S) TO BE REMOVED.
30. EXISTING STREET LIGHT AND POLE TO BE REMOVED.
31. EXISTING POWER VAULT AND UNDERGROUND CONDUITS TO BE REMOVED.
32. EXISTING WATER FAUCET TO BE REMOVED.

LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- CENTERLINE
- DITCH
- CURB
- EDGE OF PAVEMENT
- FENCE LINE
- OP — OVERHEAD POWER LINE
- UGP — UNDERGROUND POWER LINE
- G — NATURAL GAS LINE
- ST — STORM SEWER LINE
- SS — SANITARY SEWER LINE
- W — WATER LINE
- PROPERTY BOUNDARY
- FOUND MONUMENT
- STORM MANHOLE
- CATCH BASIN
- CLEANOUT
- SANITARY MANHOLE
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- SIGN
- STREET LIGHT
- LB — LIGHT BOX
- JB — STORM JUNCTION BOX
- POWER POLE
- TB — TRAFFIC SIGNAL BOX
- MON. WELL — MONITORING WELL

SEE SHEET C102 FOR EASEMENT INFORMATION



KEY PLAN

3 - EXISTING CONDITIONS

55 | Existing and Demo Site Plan

CONSTRUCTION NOTES:

(15) EXISTING ARTIFICIAL TURF DRIVING RANGE TO BE REMOVED.

(19) EXISTING FENCE AND GATE TO BE REMOVED.

(22) EXISTING POWER POLE TO REMAIN. PROTECT IN PLACE.

(23) EXISTING WATER METER TO BE REMOVED.

(24) EXISTING ASPHALT PARKING LOT BE REMOVED. REMOVAL TO INCLUDE ALL PARKING LOT ASSOCIATED CURB, SIDEWALK, PLANTERS, TREES, AND WHEEL STOPS.

(26) EXISTING BUILDING TO BE REMOVED.

(27) EXISTING ELECTRICAL RISER TO BE REMOVED.

(28) EXISTING HYDRANT AND LATERALS TO BE REMOVED.

(29) EXISTING WATER VALVE(S) TO BE REMOVED.

(33) EXISTING ADA PARKING SIGN AND POLE TO BE REMOVED.

(35) EXISTING SANITARY SERVICE TO BE REMOVED.

LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- CENTERLINE
- DITCH
- CURB
- EDGE OF PAVEMENT
- FENCE LINE
- OHP — OVERHEAD POWER LINE
- UGP — UNDERGROUND POWER LINE
- G — NATURAL GAS LINE
- ST — STORM SEWER LINE
- SS — SANITARY SEWER LINE
- W — WATER LINE
- PROPERTY BOUNDARY
- FOUND MONUMENT
- STORM MANHOLE
- CATCH BASIN
- CLEANOUT
- SANITARY MANHOLE
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- SIGN
- STREET LIGHT
- LB — LIGHT BOX
- JB — STORM JUNCTION BOX
- POWER POLE
- TB — TRAFFIC SIGNAL BOX
- MON. WELL — MONITORING WELL

SEE SHEET C102 FOR EASEMENT INFORMATION

SEE SHEET C154 MATCHLINE

1105 ABERNETHY RD
TAX LOT
22E2900902

REDLAND RD

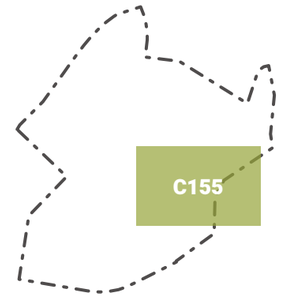
EXISTING ROADWAY

70.9'

151.34'
S27° 36' 05"W

277.76'
S01° 18' 28"W

MATCHLINE
SEE SHEET C157



KEY PLAN

0 20' 40' 80'

N

3 - EXISTING CONDITIONS

56 | Existing and Demo Site Plan

CONSTRUCTION NOTES:

(2) EXISTING CURB TO BE REMOVED. SEE SHEET SERIES C200 FOR LIMITS OF REMOVAL.
(4) EXISTING POWER POLE TO BE RELOCATED.
(5) EXISTING CATCH BASIN TO BE REMOVED.
(6) EXISTING SIGN AND POST TO BE RELOCATED.
(7) EXISTING METHANE GAS STANDPIPE AND BOLLARDS TO BE REMOVED.
(8) EXISTING METHANE GAS MANHOLE TO BE REMOVED.
(9) EXISTING FRANCHISE UTILITY TO BE RELOCATED. COORDIANTE WITH UTILITY.
(16) EXISTING POWER POLE TO BE REMOVED.
(23) EXISTING WATER METER TO BE REMOVED.
(24) EXISTING ASPHALT PARKING LOT BE REMOVED. REMOVAL TO INCLUDE ALL PARKING LOT ASSOCIATED CURB, SIDEWALK, PLANTERS, TREES, AND WHEEL STOPS.
(26) EXISTING BUILDING TO BE REMOVED.
(30) EXISTING STREET LIGHT AND POLE TO BE REMOVED.
(34) EXISTING FENCE TO REMAIN. PROTECT IN PLACE.
(36) EXISTING MANHOLE TO BE ADJUSTED TO PROPOSED GRADES. PROTECT IN PLACE.
(37) EXISTING TRANSFORMER TO BE ADJUSTED TO PROPOSED GRADES. PROTECT IN PLACE.

LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- CENTERLINE
- DITCH
- CURB
- EDGE OF PAVEMENT
- FENCE LINE
- OVERHEAD POWER LINE
- UNDERGROUND POWER LINE
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- STORM SEWER LINE
- SANITARY SEWER LINE
- WATER LINE
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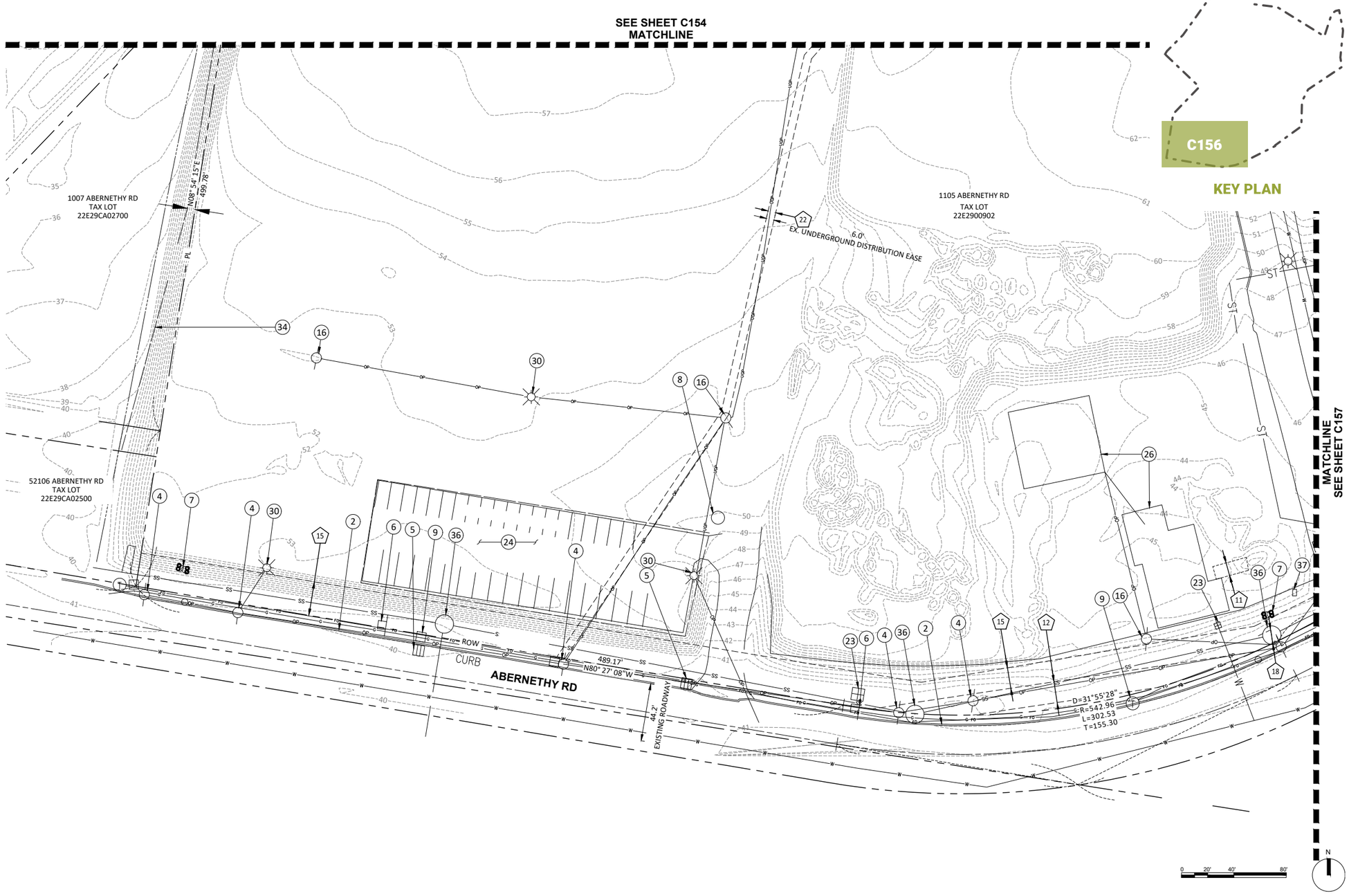
- STORM MANHOLE
- CATCH BASIN
- CLEANOUT
- SANITARY MANHOLE
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- SIGN
- STREET LIGHT
- LB LIGHT BOX
- JB STORM JUNCTION BOX
- POWER POLE
- TB TRAFFIC SIGNAL BOX
- MON. WELL MONITORING WELL

SEE SHEET C102 FOR EASEMENT INFORMATION

SEE SHEET C154
MATCHLINE



C156

KEY PLAN

3 - EXISTING CONDITIONS

57 | Existing and Demo Site Plan

CONSTRUCTION NOTES:

2. EXISTING CURB TO BE REMOVED. SEE SHEET SERIES C200 FOR LIMITS OF REMOVAL.
3. EXISTING SIDEWALK TO BE REMOVED. SEE SHEET SERIES C200 FOR LIMITS OF REMOVAL.
4. EXISTING POWER POLE TO BE RELOCATED.
5. EXISTING CATCH BASIN TO BE REMOVED.
12. EXISTING CURB TO REMAIN. PROTECT IN PLACE.
16. EXISTING POWER POLE TO BE REMOVED.
19. EXISTING FENCE AND GATE TO BE REMOVED.
22. EXISTING POWER POLE TO REMAIN. PROTECT IN PLACE.
23. EXISTING WATER METER TO BE REMOVED.
29. EXISTING WATER VALVE(S) TO BE REMOVED.
30. EXISTING STREET LIGHT AND POLE TO BE REMOVED.
35. EXISTING SANITARY SERVICE TO BE REMOVED.
36. EXISTING MANHOLE TO BE ADJUSTED TO PROPOSED GRADES. PROTECT IN PLACE.
38. EXISTING WATER SERVICE AND VAULT TO BE REMOVED.
39. EXISTING SIGN TO BE REMOVED.
40. EXISTING JUNCTION BOX TO BE RELOCATED.
41. EXISTING WATER VAULT TO BE ADJUSTED TO PROPOSED GRADES. PROTECT IN PLACE.
42. EXISTING HYDRANT TO BE ADJUSTED TO PROPOSED GRADES. PROTECT IN PLACE

LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- CENTERLINE
- DITCH
- CURB
- EDGE OF PAVEMENT
- FENCE LINE
- OP — OVERHEAD POWER LINE
- UGP — UNDERGROUND POWER LINE
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- ST — STORM SEWER LINE
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- PROPERTY BOUNDARY
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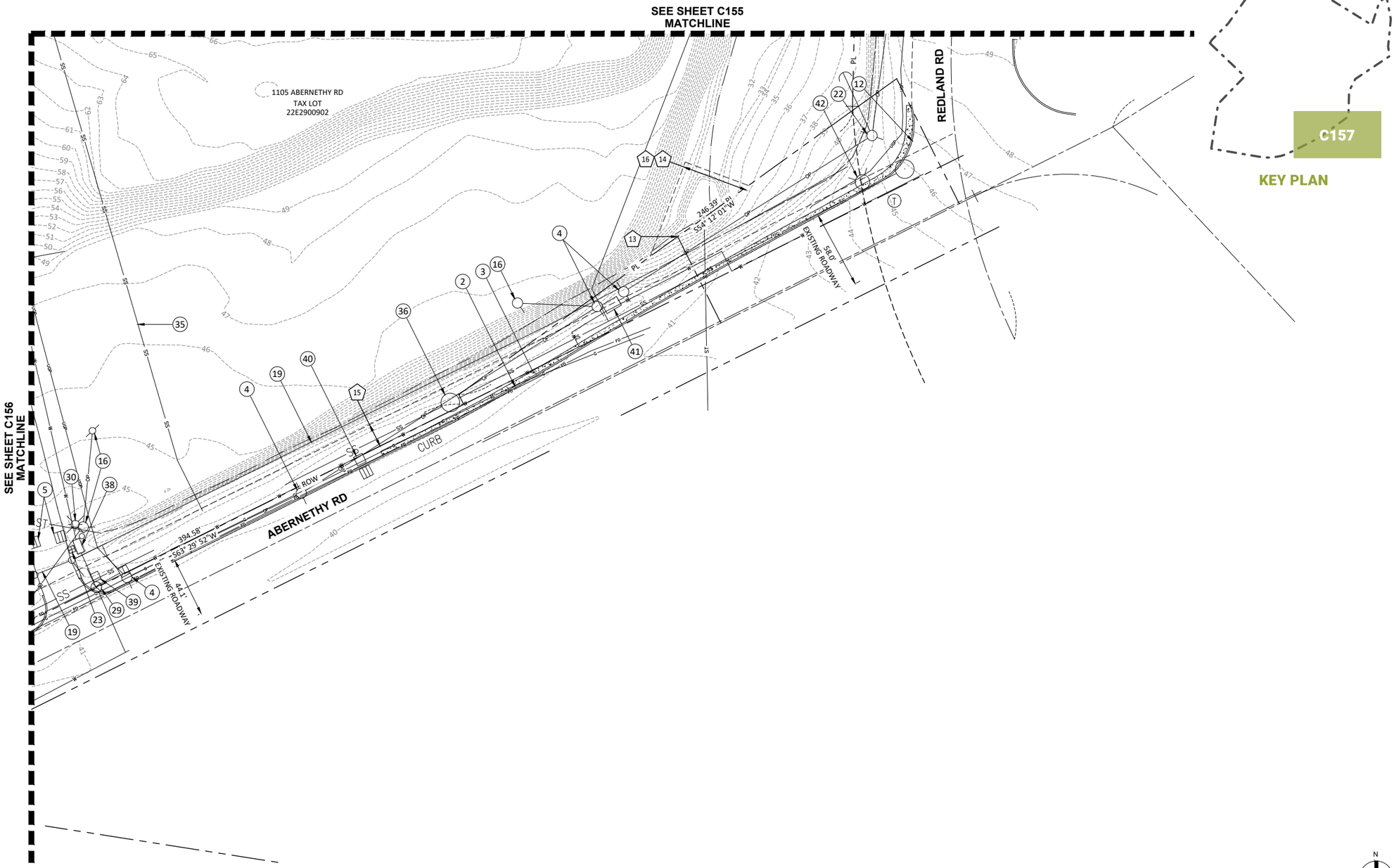

KEY PLAN

0 20' 40' 80'

N

3 - EXISTING CONDITIONS

58 | Aerial Photos



1944



1974



2019

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THE NORTH END

4 - PROPOSED DEVELOPMENT



Looking South along ‘A Street’ showing the typical pedestrian experience

4 - PROPOSED DEVELOPMENT

Project Description
Summit Development Group seeks approval of The North End Master Plan, a mixed-use GDP to redevelop the site with a mix of commercial, service, entertainment, residential, and retail uses as depicted in the master plan. The plan envisions a transformation of the former landfill to a lively, integrated mixed-use development that will not only complement the downtown, but serve as a primary gateway to the north end of the Oregon City Downtown. The master plan features tree-lined streets, landscaped open spaces, offices and residences overlooking public plazas and open spaces, and will feature a wide variety of shopping, dining, and entertainment experiences.

The compact design on the west edge of the development provides appropriate architecture and massing, and the walkable environment of a downtown streetscape while maintaining a human scale. The east edge of the site is provided with a mix of small retail spaces integrated into larger anchor retail pads that will allow the development to balance the need for growth and economic opportunity, without compromising the comfortable, small-town roots of downtown Oregon City. For future residents and tenants, The North End master plan provides a place where they can live, work and be a part of Oregon City.

The North End architecture and design guidelines are intended to integrate design elements of downtown Oregon City into the development.

The proposed development includes the creation of a comprehensive circulation system comprised of streets, sidewalks, shared paths, and on-street bike lanes that connect the proposed uses on-site to each other, to internal plazas and open spaces, and to the greater community through connections along Washington Street, Abernethy Road, and the End of the Oregon Trail Interpretive Center.

The proposed master plan is located at a key entrance to the north end of Downtown Oregon City near the intersections of Interstate 205 and Highway 213. Streets have been named within this submittal for the purposes of organization only. The names are intended to be placeholders for review and description and are planned to be formally named later. The master plan is divided into four distinct “Districts” as described below:

North District Area
The North District Area is approximately 17.1 Acres of the overall master plan. It is located west of the proposed “Market street” and east of Washington Street. This area is proposed to be developed with a mix of four and five story residential mixed use buildings, retail commercial uses, an entertainment center, the main pavilion, the parking garages along Washington Street, and one of the five drive thru uses identified within the master plan. Overall, this area would include approximately 524 residential units and 632,789 square feet of building area. This district is compact, served by the main internal plaza, a series of locally placed open spaces, and makes up the most active multi-modal portion of the masterplan area. The North District Area includes four east-west street connections, depicted as 1st, 2nd, 3rd, and 4th Streets and three north-south street connections including A Street, B Street, and Market Street in the master plan. The area is located adjacent to Washington Street which connects directly to the End of the Oregon Trail Interpretive Center, the Amtrak Station, and the rest of Downtown Oregon City. This portion of the site shares similar characteristics with the Oregon City downtown.

East District Area
The East District Area is approximately 16.3 Acres of the overall master plan and would be developed with a mix of small format commercial retail uses, two drive thru uses and one of the Anchor Retail uses on site. The area is located adjacent to the nearby Home Depot development and would consist of approximately 155,804 square feet of building area. Surface parking is provided for uses within the East District Area. The main pedestrian path that connects to the North District Area is to the anchor retail areas in the East District as well as two east-west street connections depicted on the master plan as 2nd and 3rd Streets. The East District Area also includes the primary natural resource on the site which remains set aside and protected through the master plan.



Figure 1.1. District Plan Map

4 - PROPOSED DEVELOPMENT

Central District

The Central District area makes up approximately 10.6 acres of the overall master plan and will be developed with a mix of small format commercial retail uses, an anchor retail pad and one drive thru use. This area is located between 3rd and 4th Streets east of Market Street. This area would consist of approximately 140,779 square feet of building area. In addition to the streets mentioned previously, this district is served by two north-south streets depicted as C Street and D Street on the master plan. Due to the difference in grades across the site, there are opportunities for lower level retail uses along D Street at the rear of the anchor retail pad located within this district. Abernethy Road runs along the southern portion of the Central District Area and includes one of the accesses along 4th Street into the master plan site.

South District Area

The South District area makes up 12.6 acres of the overall master plan and includes the last drive thru use within the master plan, a small format grocer, an anchor retail pad and commercial retail uses along both Market Street and D Street. The building area within the South District is approximately 162,326 square feet. The South District Area includes the second access from Abernethy Road along Market Street and includes C Street and D Street as additional east-west connections. The proposed drive thru in this District is at the intersection of 4th Street and Market Street within the master plan. The pedestrian connection to the End of the Oregon Trail interpretive Center is located within the South District Area.

Access

There are four proposed access points to the subject site. Proposed Market Street would provide access into the master plan at intersections with both Abernethy to the south and Washington Street to the North. Additionally, proposed 4th Street would connect to Abernethy to the east and Washington Street to the west. Proposed Market Street would satisfy the street connection called for in the Oregon City Transportation System Plan.

All internal streets are proposed to be private with overlaid with public access easements and although different from the typical Oregon City Street cross section, the internal streets will be designed to mimic and function as public streets. Proposed features include wider sidewalks, street furniture, bulb outs at intersections, planter strips, and raised crosswalks. The proposed street sections are shown on **sheets XXXXXXXX** of the master plan and have been designed to provide for safe and efficient connections for all modes of travel within the master plan.

The shared paths called for in the TSP through the project site are proposed to be provided as part of Market Street and through the east-west pedestrian corridor that bisects the site south of the anchor retail site located in the East District Area. These paths would connect into the frontage improvements planned along Abernethy Road, Washington Street, the End of the Oregon Trail interpretive Center, and the internal street systems providing a circuitous bike and pedestrian system that connects all of the internal uses.

Phasing

The project will be developed over several years with the first phase consisting of mass grading, padding, utilities, internal streets, shared use paths, and frontage improvements. Subsequent phases would likely begin with the construction of anchor retail sites enabling for other on-site improvements and secondary retail. The remaining phases will likely include a mix of commercial retail, entertainment, and mixed-use residential uses as the market demand for those uses is realized.

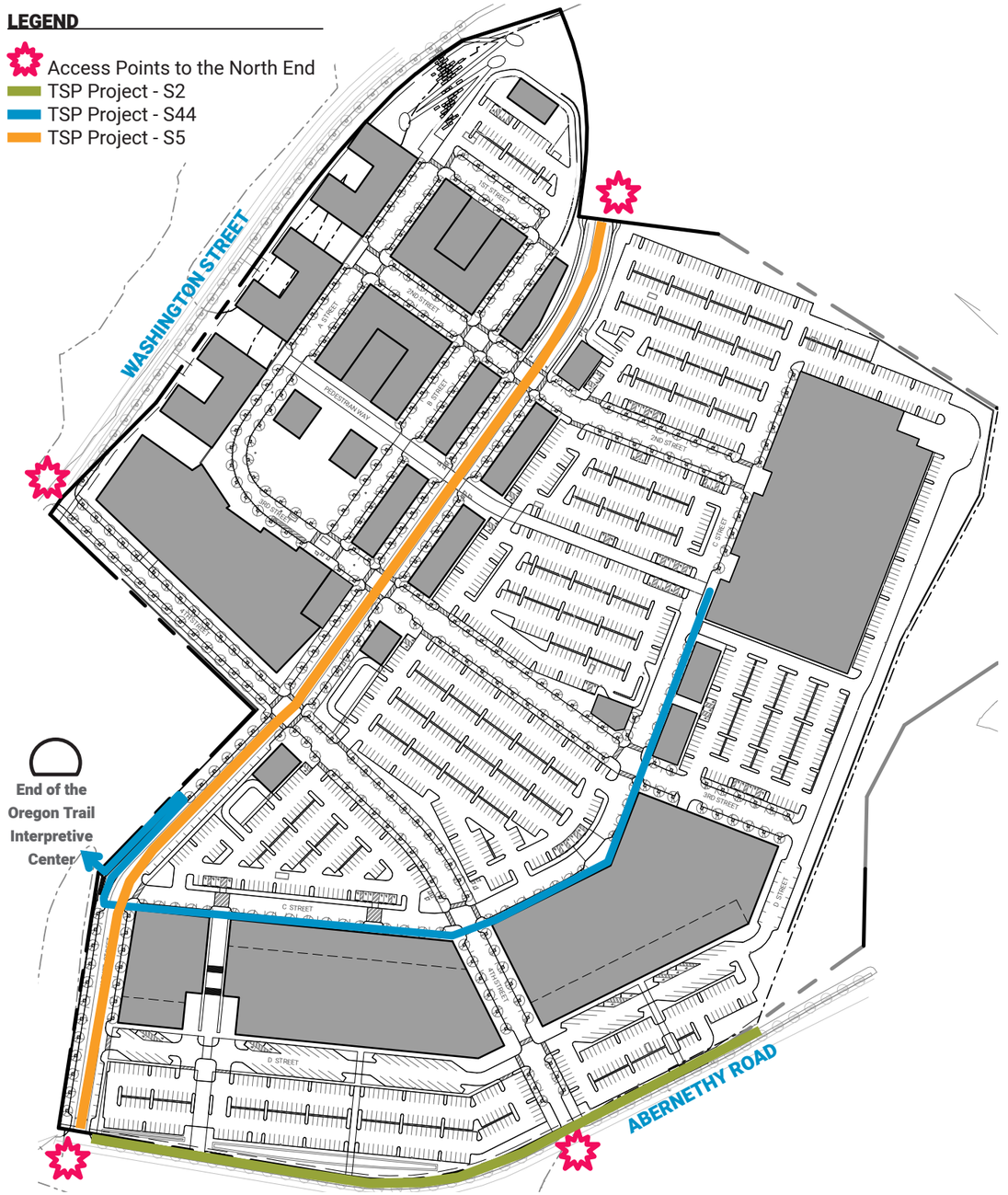


Figure 1.2 Public Access Map

4 - PROPOSED DEVELOPMENT



Looking West along the Pedestrian Way showing the activated breezeway at the Market Street Crossing

4 - PROPOSED DEVELOPMENT

64 | Site Circulation Diagrams



Figure 1.3 Vehicular Access Diagram



Figure 1.4 Pedestrian and Cyclist Access Diagram

4 - PROPOSED DEVELOPMENT

65 | Site Plan

PROPOSED BUILDING TYPES

North District
N1 - DRIVE THRU (CU)
N2 - RETAIL COMMERCIAL
N3 - RETAIL COMMERCIAL
N4 - RETAIL COMMERCIAL
N5 - RETAIL COMMERCIAL
N6 - RETAIL COMMERCIAL
N7 - THEATRE AND COMMERCIAL
N8 - MIXED USE W/ RESIDENTIAL (4-STORY)
N9 - MIXED USE W/ RESIDENTIAL (4-STORY)
N10 - MIXED USE W/ RESIDENTIAL (4-STORY)
N11 - MIXED USE W/ RESIDENTIAL (5-STORY)
N12 - MIXED USE W/ RESIDENTIAL (5-STORY)
N13 - PAVILLION COMMERCIAL
N14 - PAVILLION COMMERCIAL
N15 - BELOW-GRADE PARKING GARAGE

EAST DISTRICT
E1 - DRIVE THRU (CU)
E2 - ANCHOR RETAIL COMMERCIAL (CU)
E3 - RETAIL COMMERCIAL
E4 - RETAIL COMMERCIAL
E5 - DRIVE THRU (CU)

CENTRAL DISTRICT
C1 - DRIVE THRU (CU)
C2 - ANCHOR RETAIL COMMERCIAL (CU)

SOUTH DISTRICT
S1 - DRIVE THRU (CU)
S2 - ANCHOR RETAIL COMMERCIAL (CU)
S3 - GROCER + RETAIL COMMERCIAL

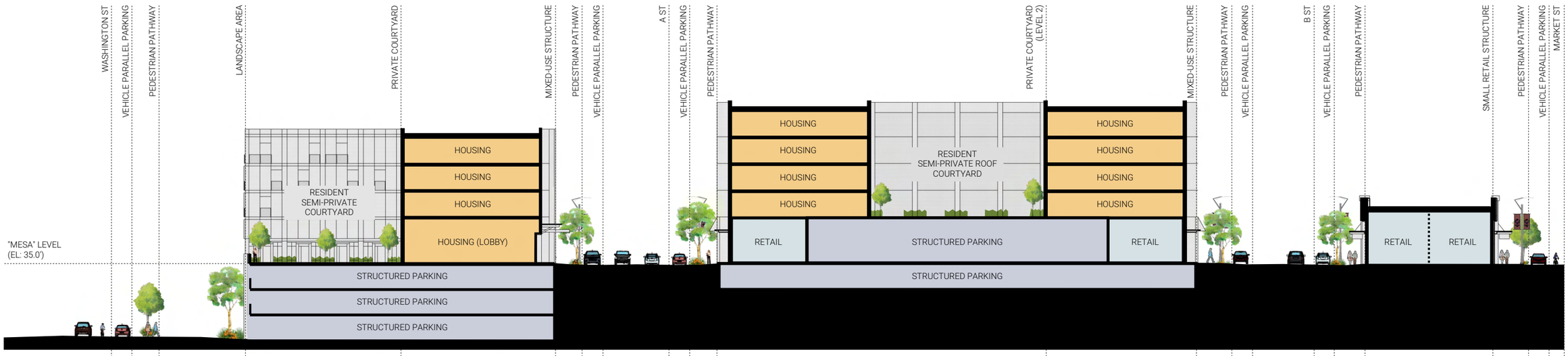


4 - PROPOSED DEVELOPMENT

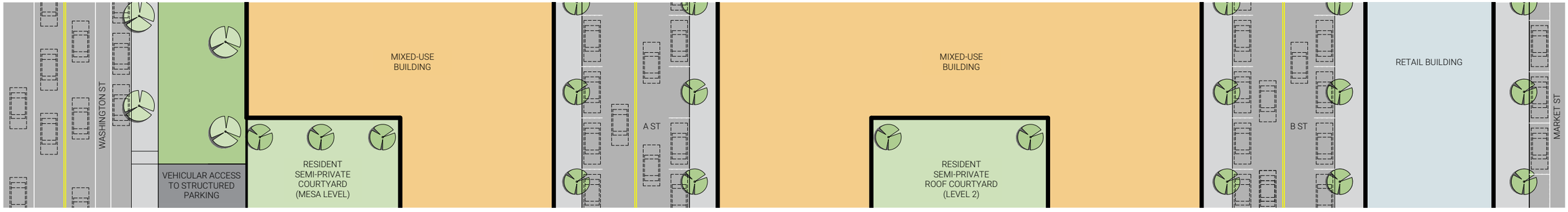
66 | Site Sections

SITE SECTION A-A

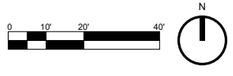




SITE SECTION



SITE PLAN (EXCERPT)

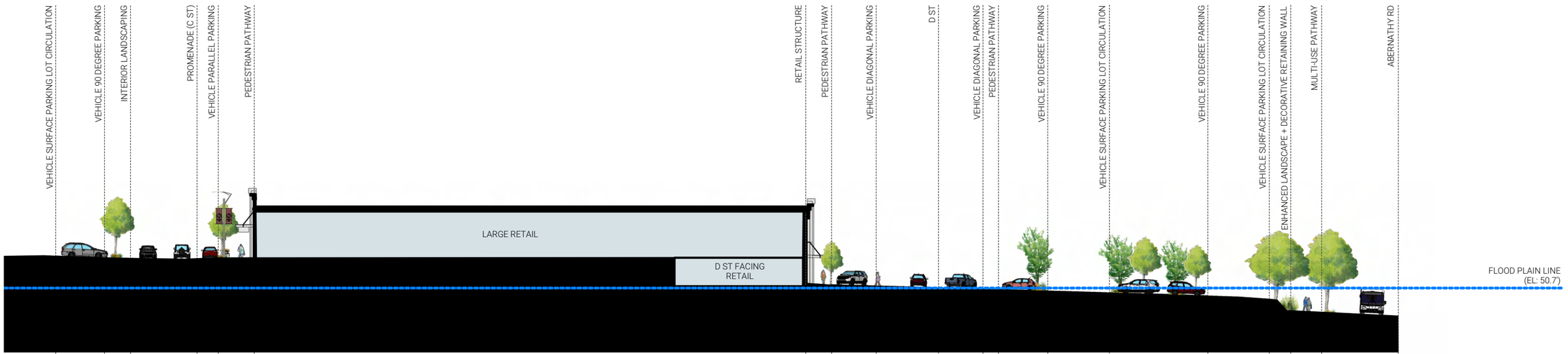


4 - PROPOSED DEVELOPMENT

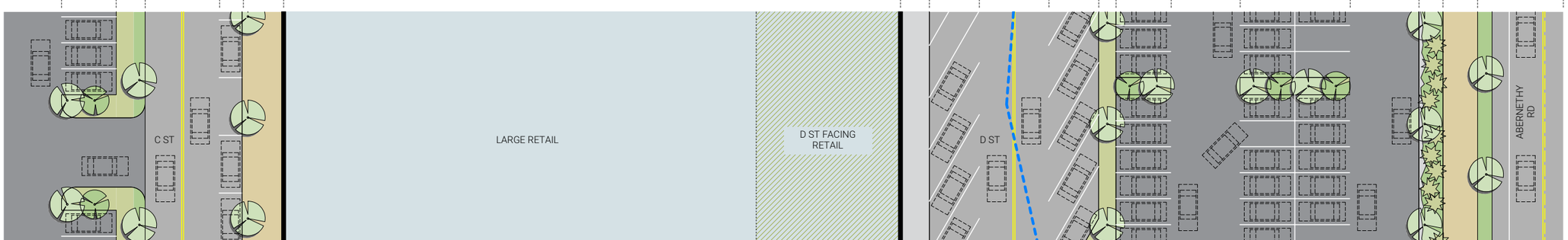
67 | Site Sections

SITE SECTION B-B

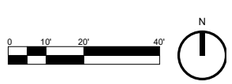




SITE SECTION



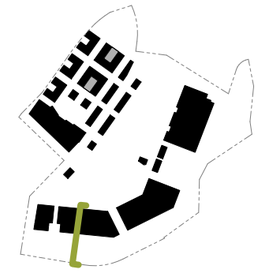
SITE PLAN (EXCERPT)

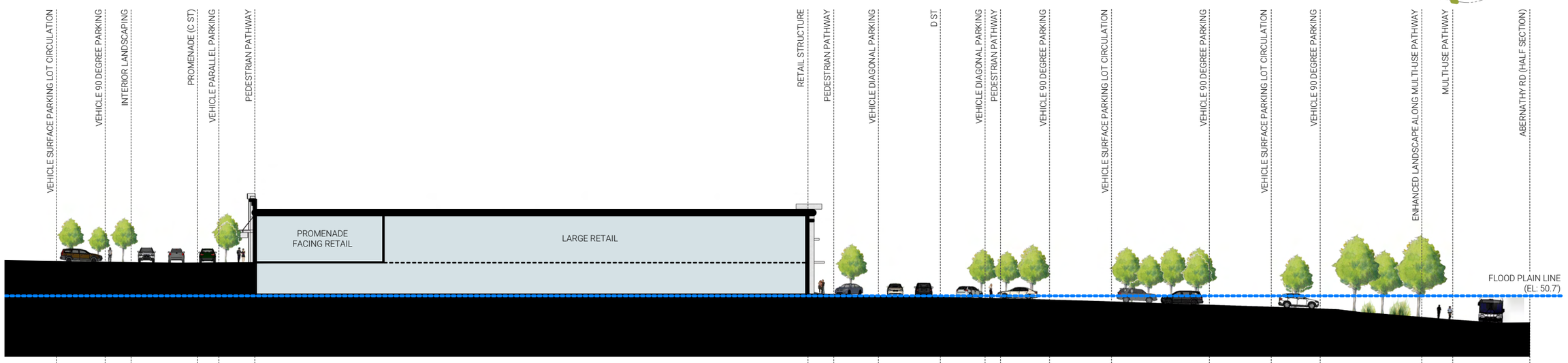


4 - PROPOSED DEVELOPMENT

68 | Site Sections

SITE SECTION C-C





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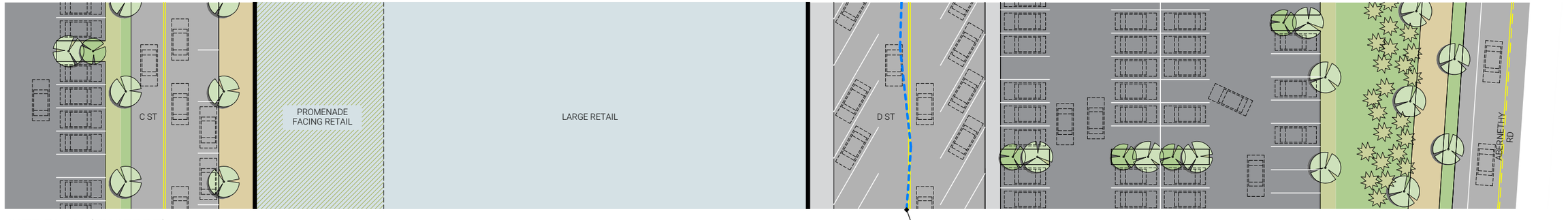
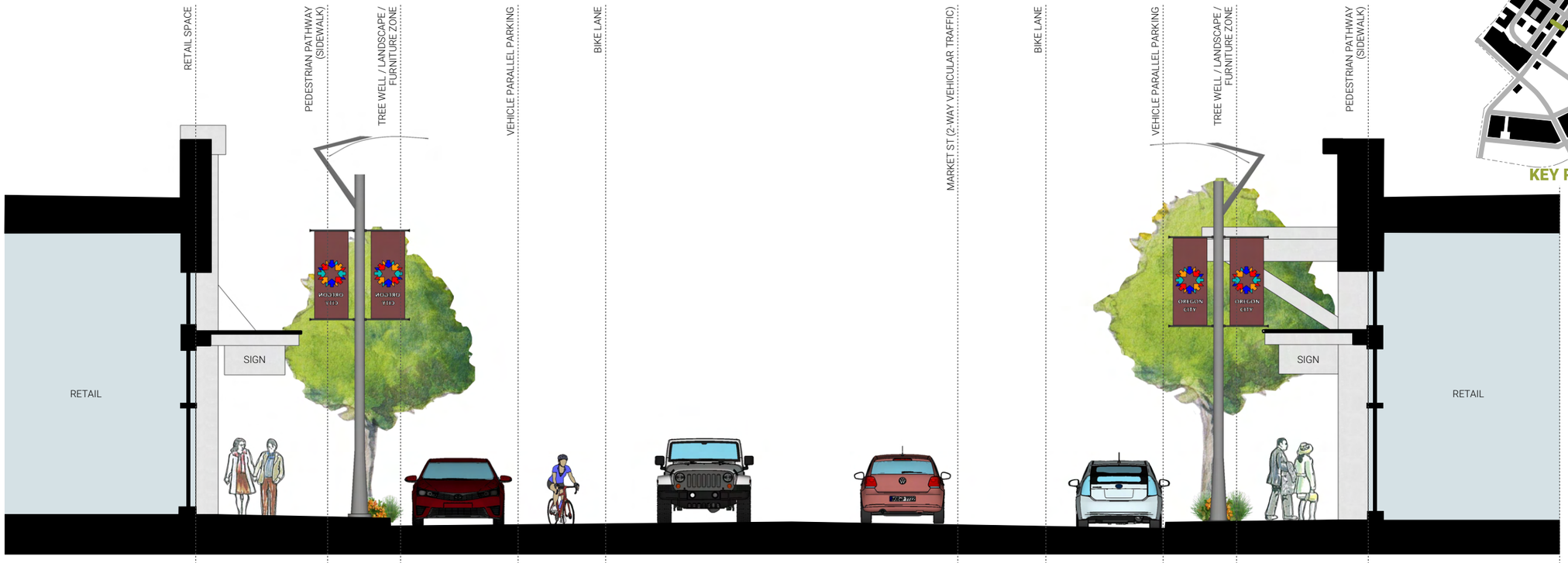


SITE PLAN (EXCERPT)

4 - PROPOSED DEVELOPMENT

69 | Enlarged Site Section @ Market Street



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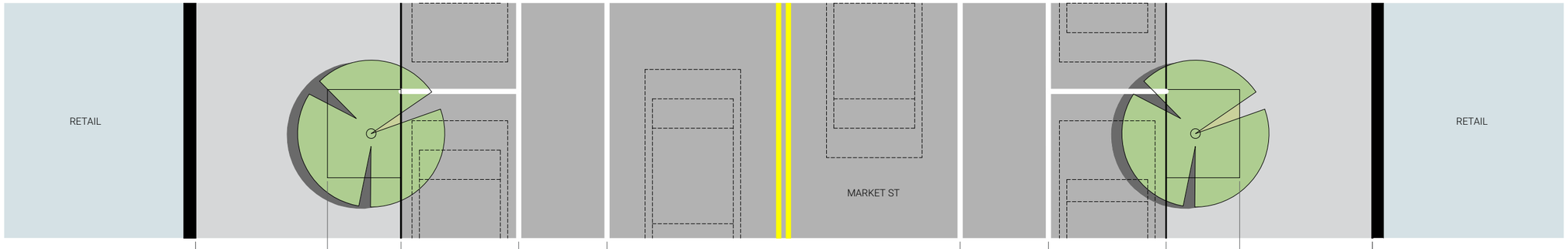
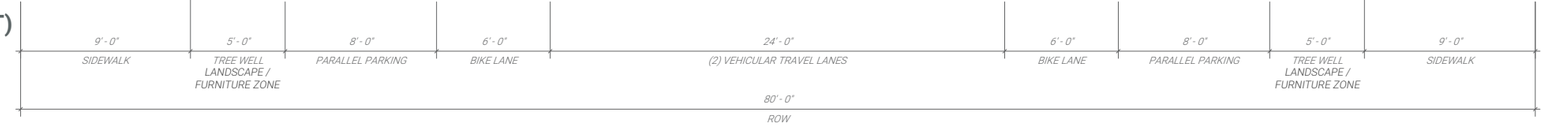
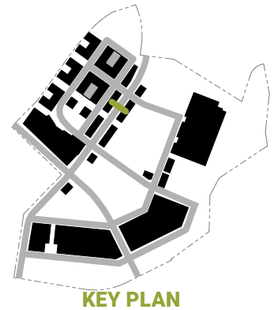
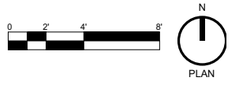


SITE PLAN (EXCERPT)

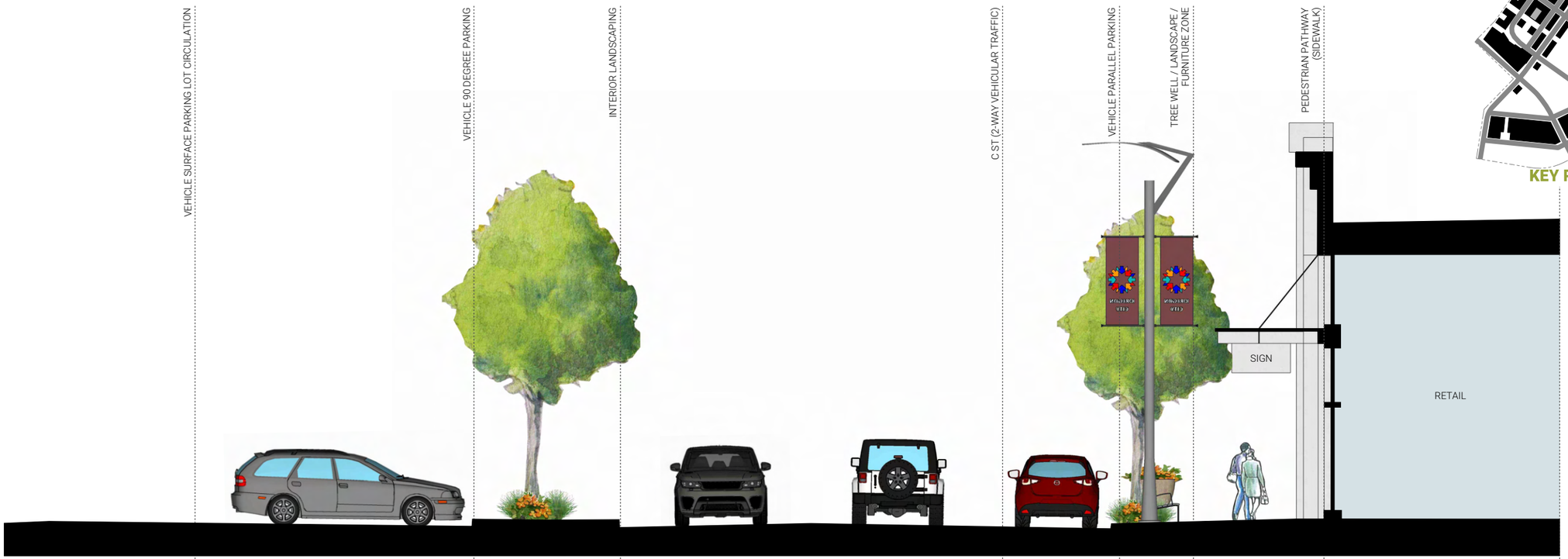




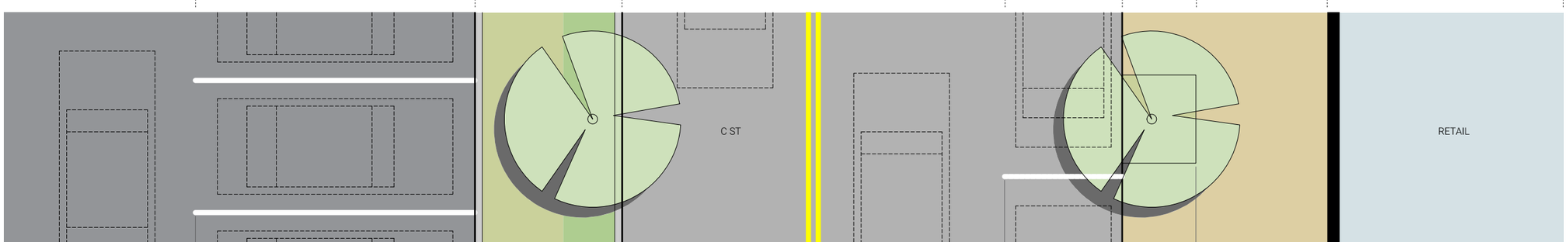


4 - PROPOSED DEVELOPMENT

70 | Enlarged Site Section @ the Promenade



STREETSCAPE SECTION



SITE PLAN (EXCERPT)

19' - 0"	10' - 0"	26' - 0"	8' - 0"	5' - 0"	9' - 0"
VEHICLE 90 DEGREE PARKING	INTERIOR LANDSCAPING	(2) VEHICULAR TRAVEL LANES	PARALLEL PARKING	TREE WELL LANDSCAPE / FURNITURE ZONE	SIDEWALK (PROMENADE)

48' - 0"
ROW



0 2' 4' 8'

N

PLAN

4 - PROPOSED DEVELOPMENT



Looking Southwest along the Promenade showing the street and pedestrian experience along anchor retail buildings

4 - PROPOSED DEVELOPMENT

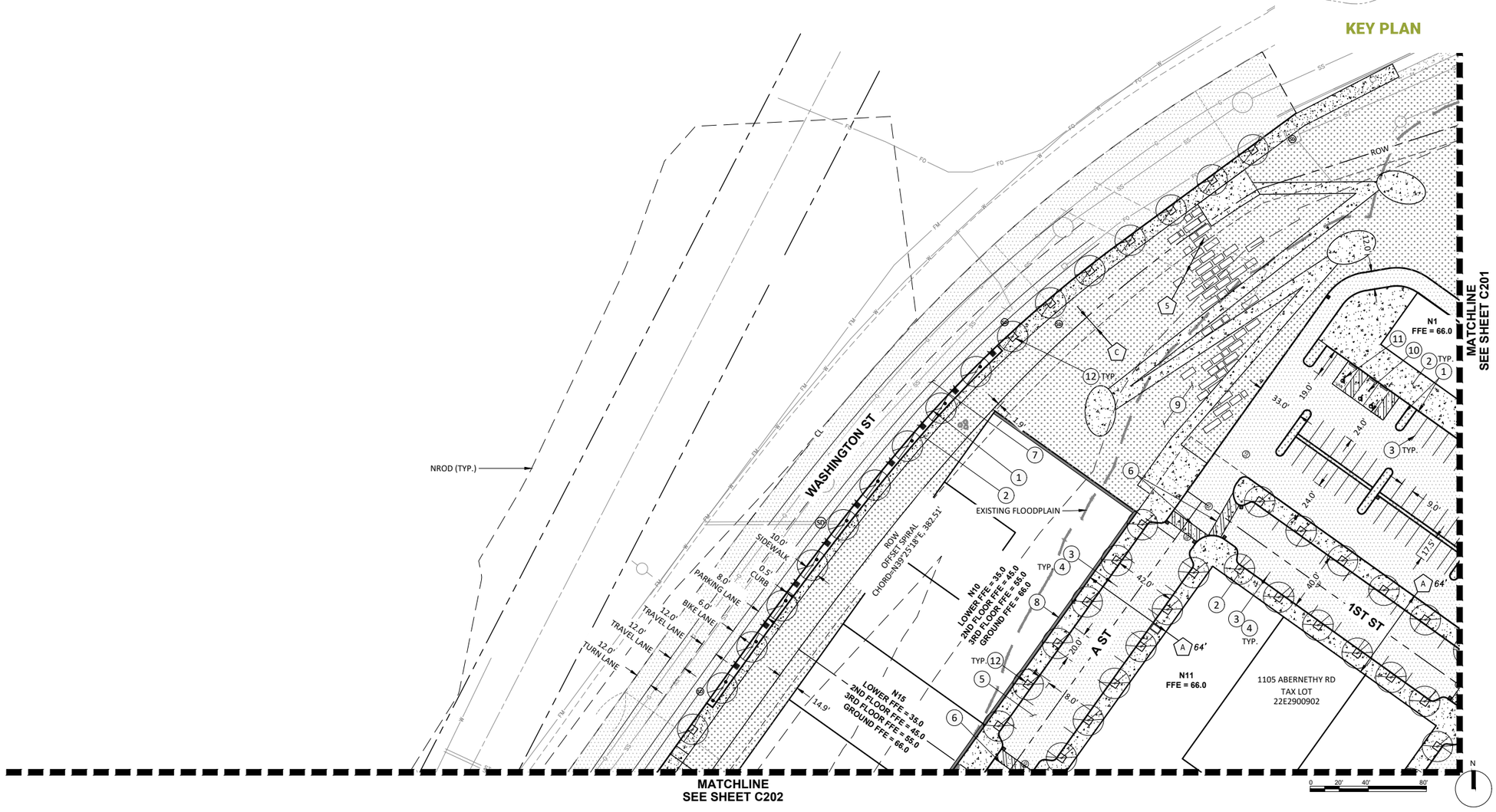
72 | Proposed Site Plan

CONSTRUCTION NOTES:

1. CONSTRUCT STANDARD CURB PER OREGON CITY STANDARD DETAIL 510.
2. CONSTRUCT SIDEWALK PER OREGON CITY STANDARD DETAIL 508.
3. PROPOSED PARKING STALL STRIPING.
4. PROPOSED PARALLEL PARKING STALL.
5. CONSTRUCT ASPHALT PAVEMENT. SEE GRADING PLANS FOR PROPOSED GRADING.
6. CONSTRUCT CONCRETE PEDESTRIAN CROSSING AND STRIPING.
7. CONSTRUCT STREET SECTION AND STRIPING. SEE TYPICAL SECTIONS FOR INFORMATION.
8. PROPOSED WALL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
9. LANDSCAPE AREA. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
10. PROPOSED ADA ACCESSIBLE PARKING STALL, WHEEL STOP, AND SIGNAGE.
11. PROPOSED VAN ACCESSIBLE PARKING STALL, WHEEL STOP, AND SIGNAGE.
12. PROPOSED TREE WELL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.



KEY PLAN



SEE SHEET C102 FOR EASEMENT INFORMATION

4 - PROPOSED DEVELOPMENT

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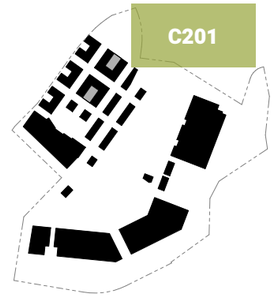

KEY PLAN

CONSTRUCTION NOTES:

1. CONSTRUCT STANDARD CURB PER OREGON CITY STANDARD DETAIL 510.
2. CONSTRUCT SIDEWALK PER OREGON CITY STANDARD DETAIL 508.
3. PROPOSED PARKING STALL STRIPING.
5. CONSTRUCT ASPHALT PAVEMENT. SEE GRADING PLANS FOR PROPOSED GRADING.
6. CONSTRUCT CONCRETE PEDESTRIAN CROSSING AND STRIPING.
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13. PROPOSED GUARDRAIL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.

SEE SHEET C102 FOR EASEMENT INFORMATION

4 - PROPOSED DEVELOPMENT

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CONSTRUCTION NOTES:

1. CONSTRUCT STANDARD CURB PER OREGON CITY STANDARD DETAIL 510.
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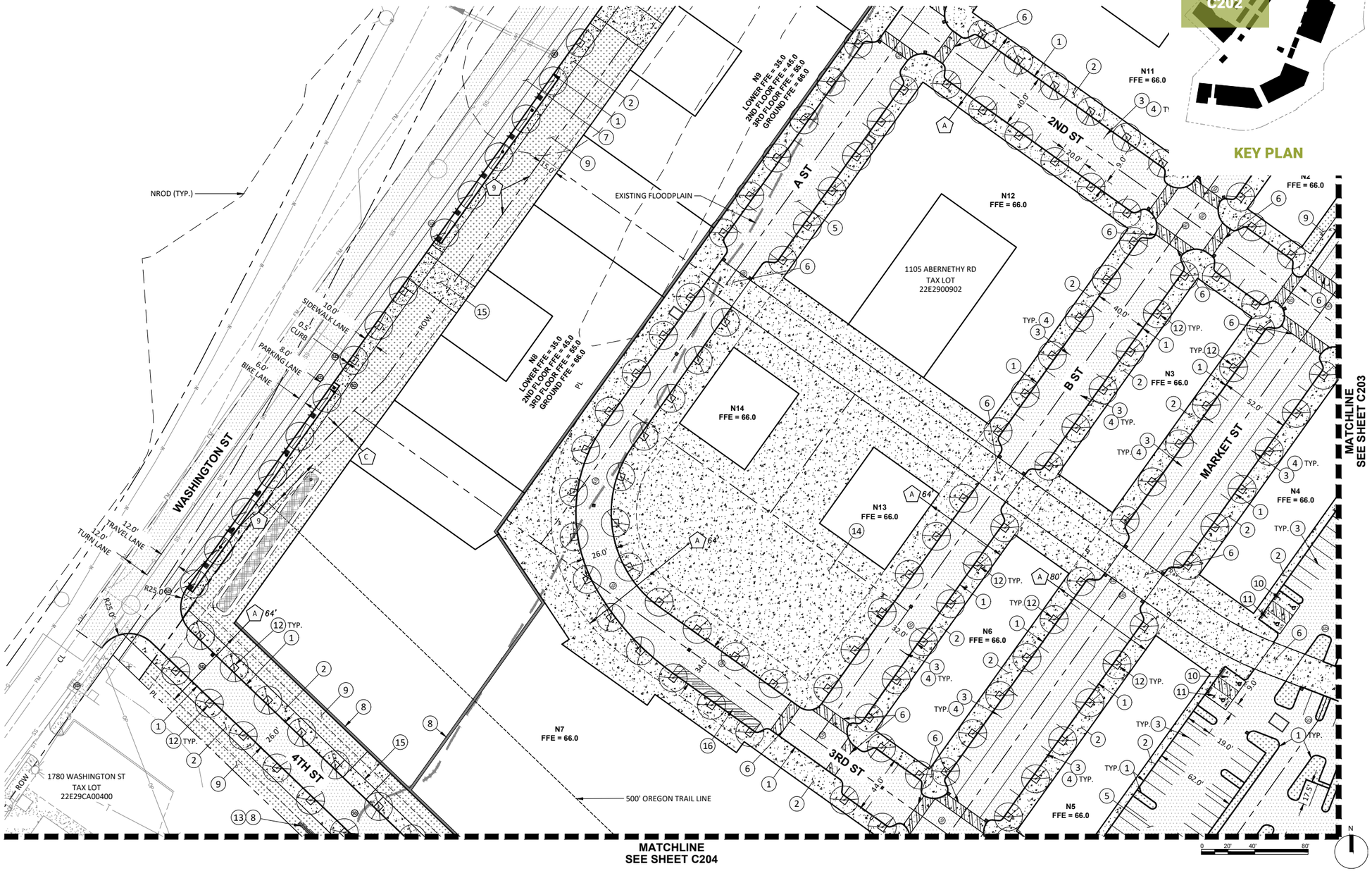
13. PROPOSED GUARDRAIL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
14. CONSTRUCT PRIVATE HARDSCAPE. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR MATERIALS, COLOR, SCORING AND FINISH.
15. CONSTRUCT COMMERCIAL DRIVEWAY PER OREGON CITY STANDARD DETAIL 505.
16. PROPOSED LOADING ZONE STRIPING.



4 - PROPOSED DEVELOPMENT

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CONSTRUCTION NOTES:

1. CONSTRUCT STANDARD CURB PER OREGON CITY STANDARD DETAIL 510.
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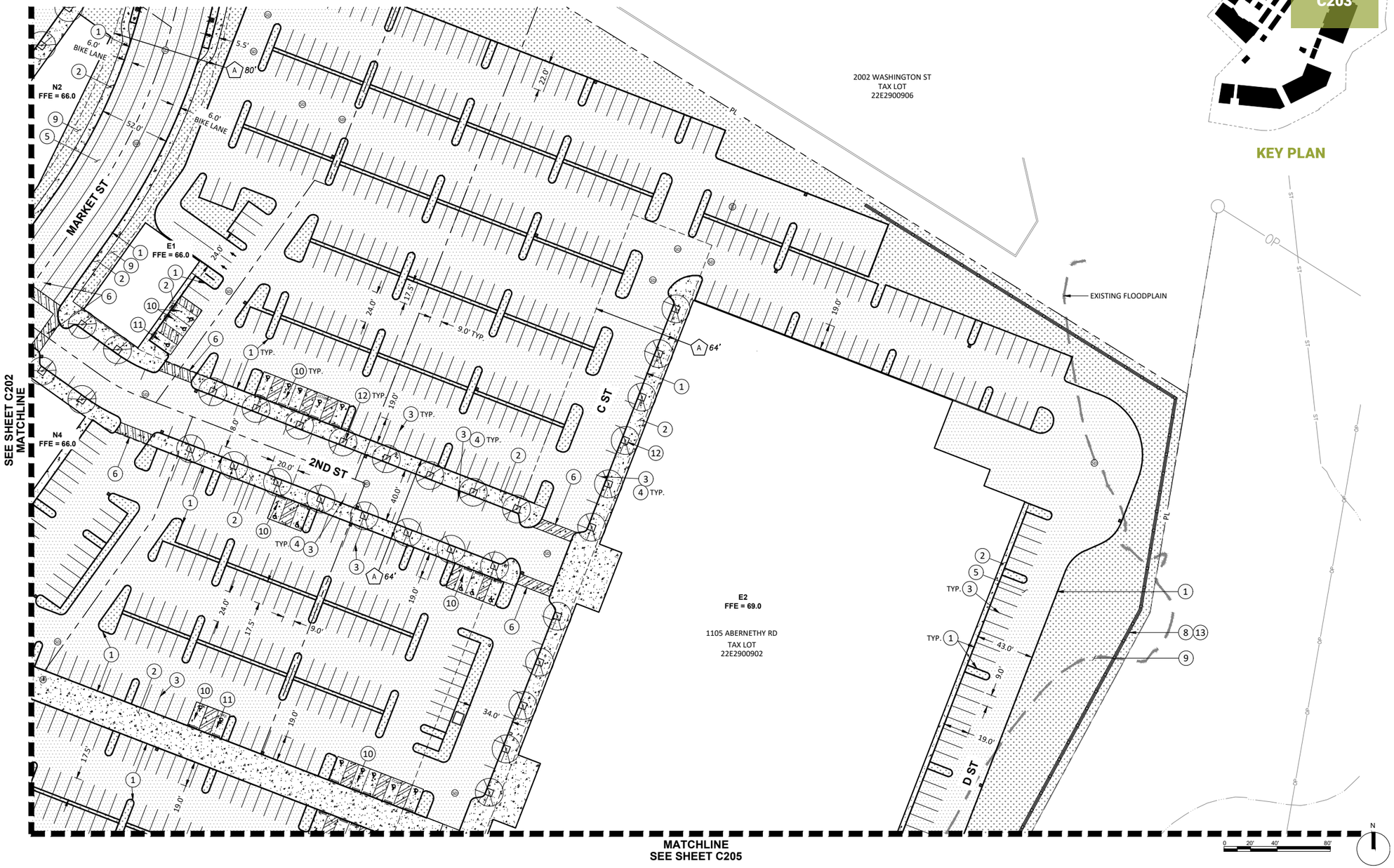

KEY PLAN

4 - PROPOSED DEVELOPMENT

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CONSTRUCTION NOTES:

1. CONSTRUCT STANDARD CURB PER OREGON CITY STANDARD DETAIL 510.
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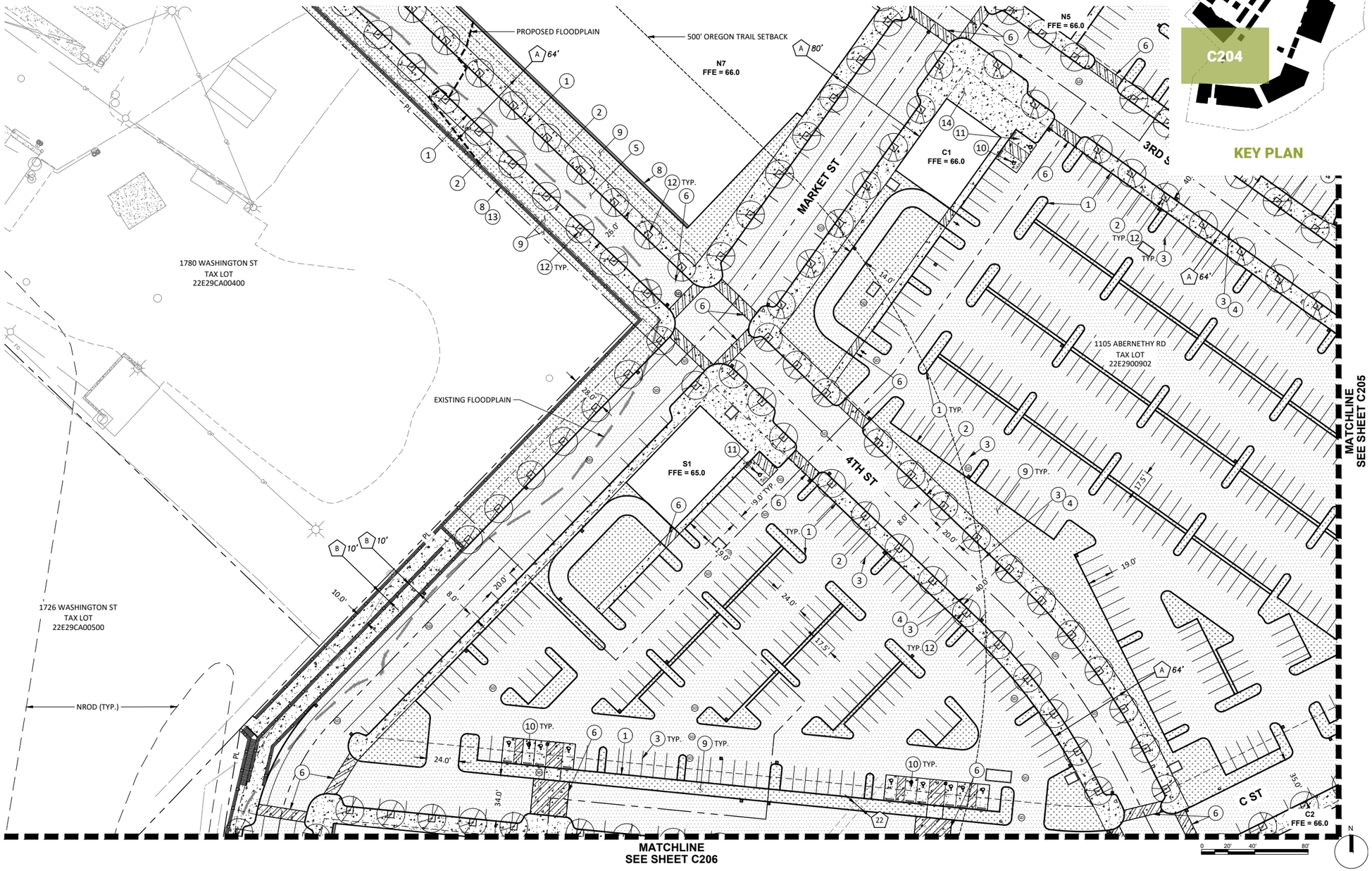

4 - PROPOSED DEVELOPMENT

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CONSTRUCTION NOTES:

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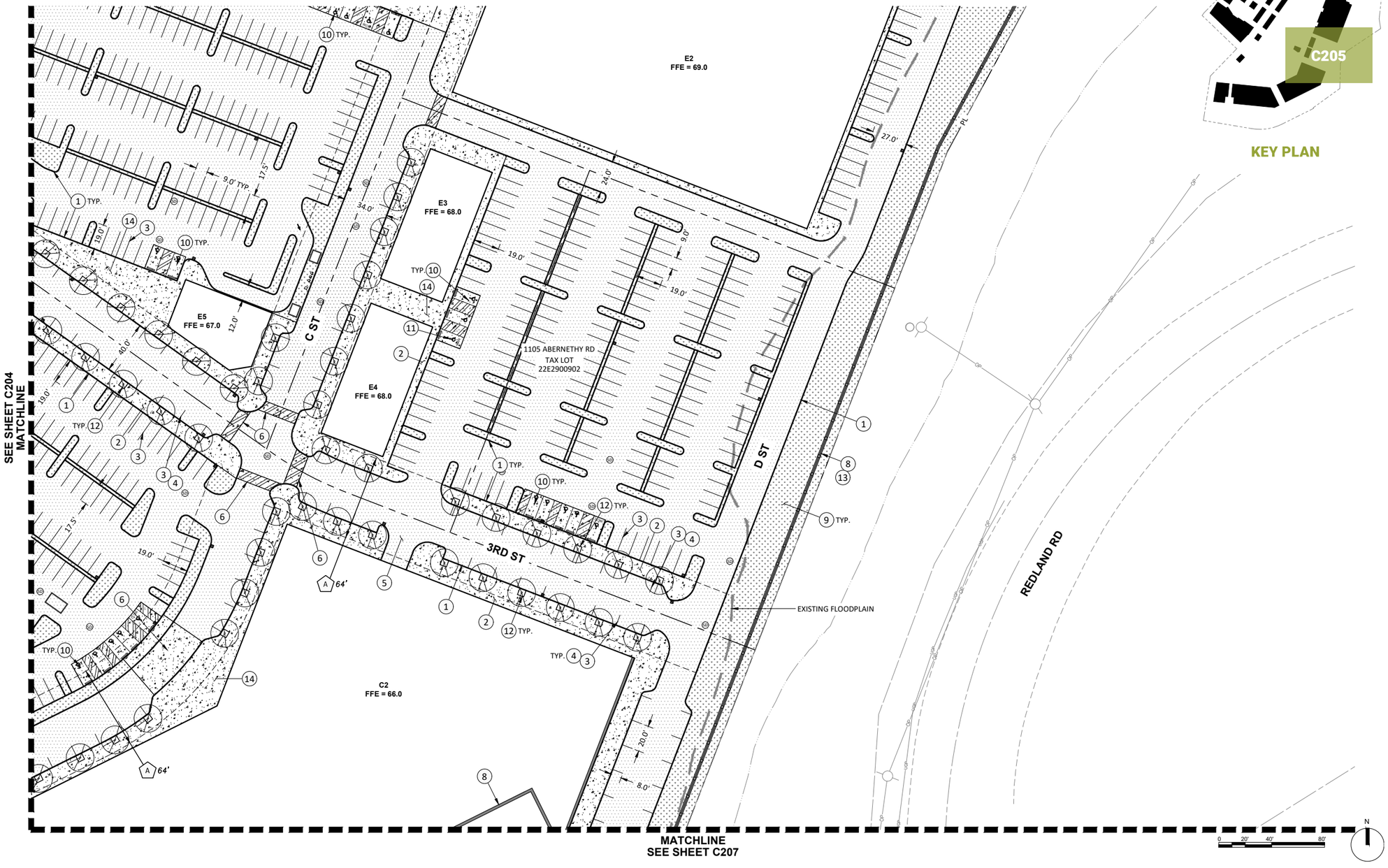

KEY PLAN

4 - PROPOSED DEVELOPMENT

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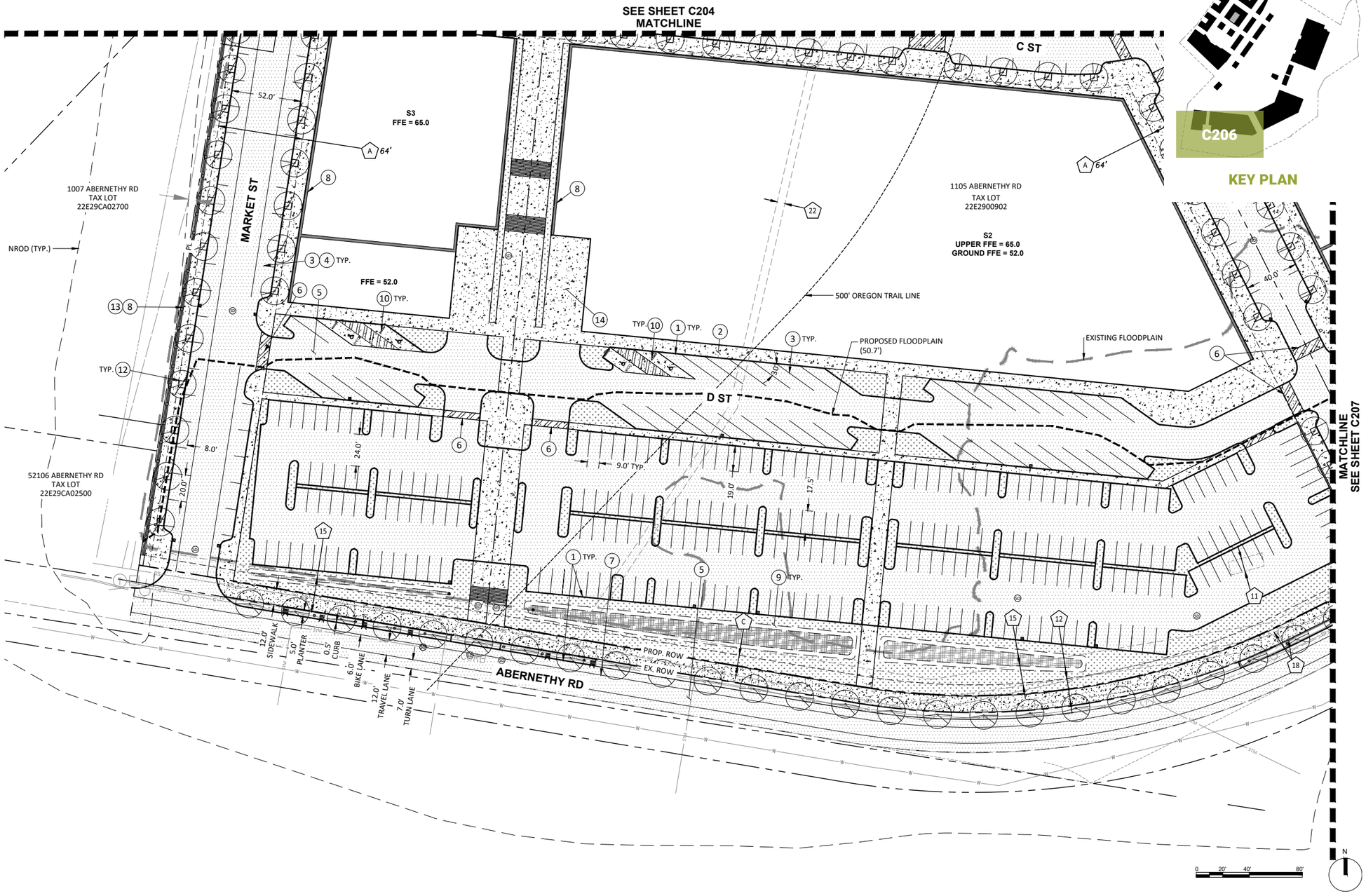

KEY PLAN

4 - PROPOSED DEVELOPMENT

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CONSTRUCTION NOTES:

1. CONSTRUCT STANDARD CURB PER OREGON CITY STANDARD DETAIL 510.
2. CONSTRUCT SIDEWALK PER OREGON CITY STANDARD DETAIL 508.
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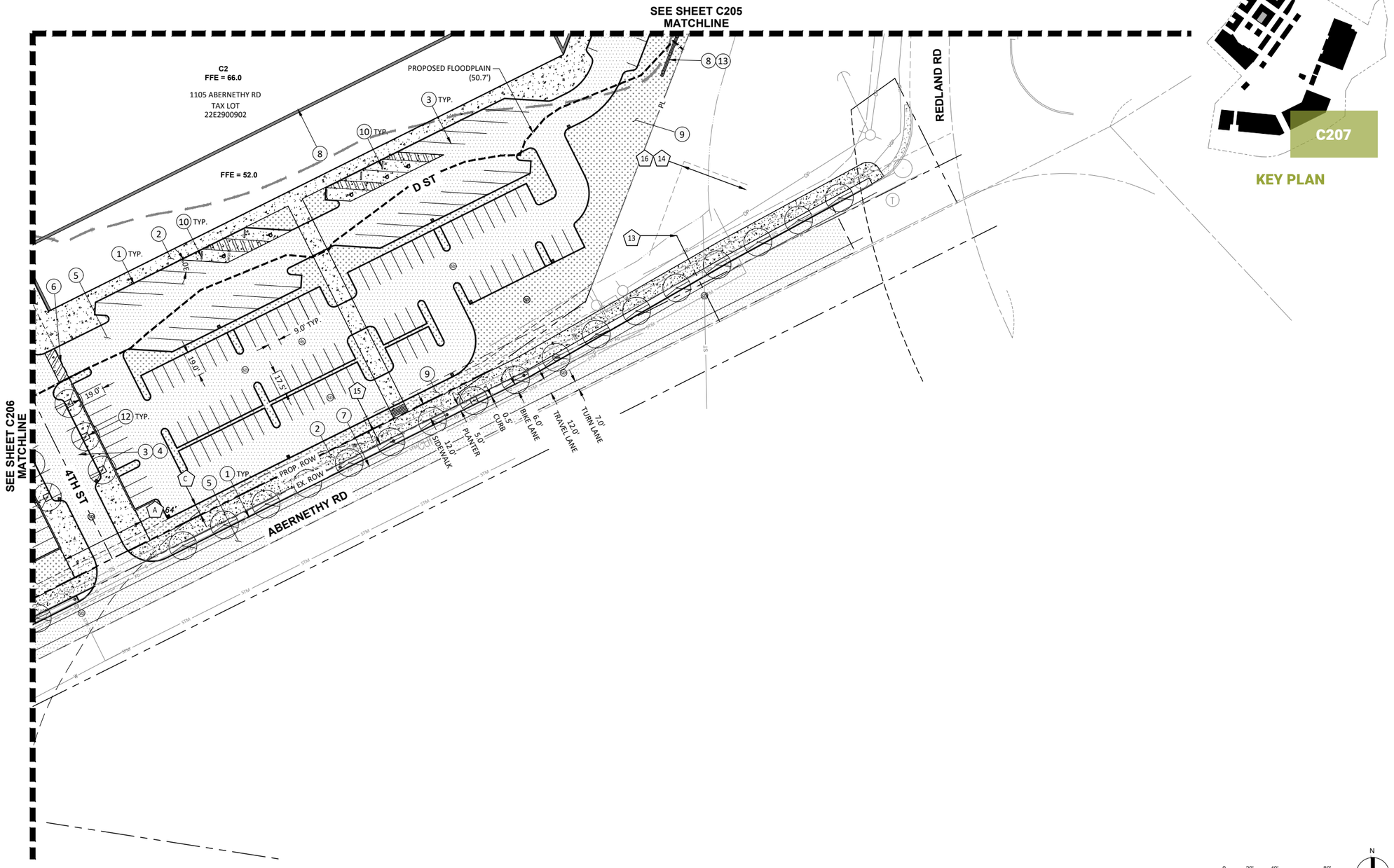

KEY PLAN

0 20' 40' 80'

N

4 - PROPOSED DEVELOPMENT

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STORM NOTES:

2. PROPOSED 48" STANDARD STORM MANHOLE.
3. PROPOSED STORM INLET.
4. PROPOSED STORM PIPE. SLOPE AT 0.5% MIN.
6. INSTALL 48" STORM MANHOLE OVER EXISTING STORM LINE.
7. PROPOSED BAYFILTER WATER QUALITY TREATMENT VAULT.
12. PROPOSED PUBLIC STORMWATER CURB PLANTER WITH CURB CUTS, TYP.
14. PROPOSED 5.0' DIAM. BARREL ADS STORMWATER DETENTION SYSTEM.
15. PROPOSED CONNECTION TO EXISTING CULVERT.
16. PROPOSED OVERFLOW INLET.
17. PROPOSED CONCRETE CURB INLET.
18. PROPOSED 6" PERFORATED STORM PIPE. SLOPE AT 1.0% MIN.

SANITARY NOTES:

2. PROPOSED SANITARY CLEANOUT.
6. PROPOSED SANITARY SEWER PIPE.

WATER NOTES:

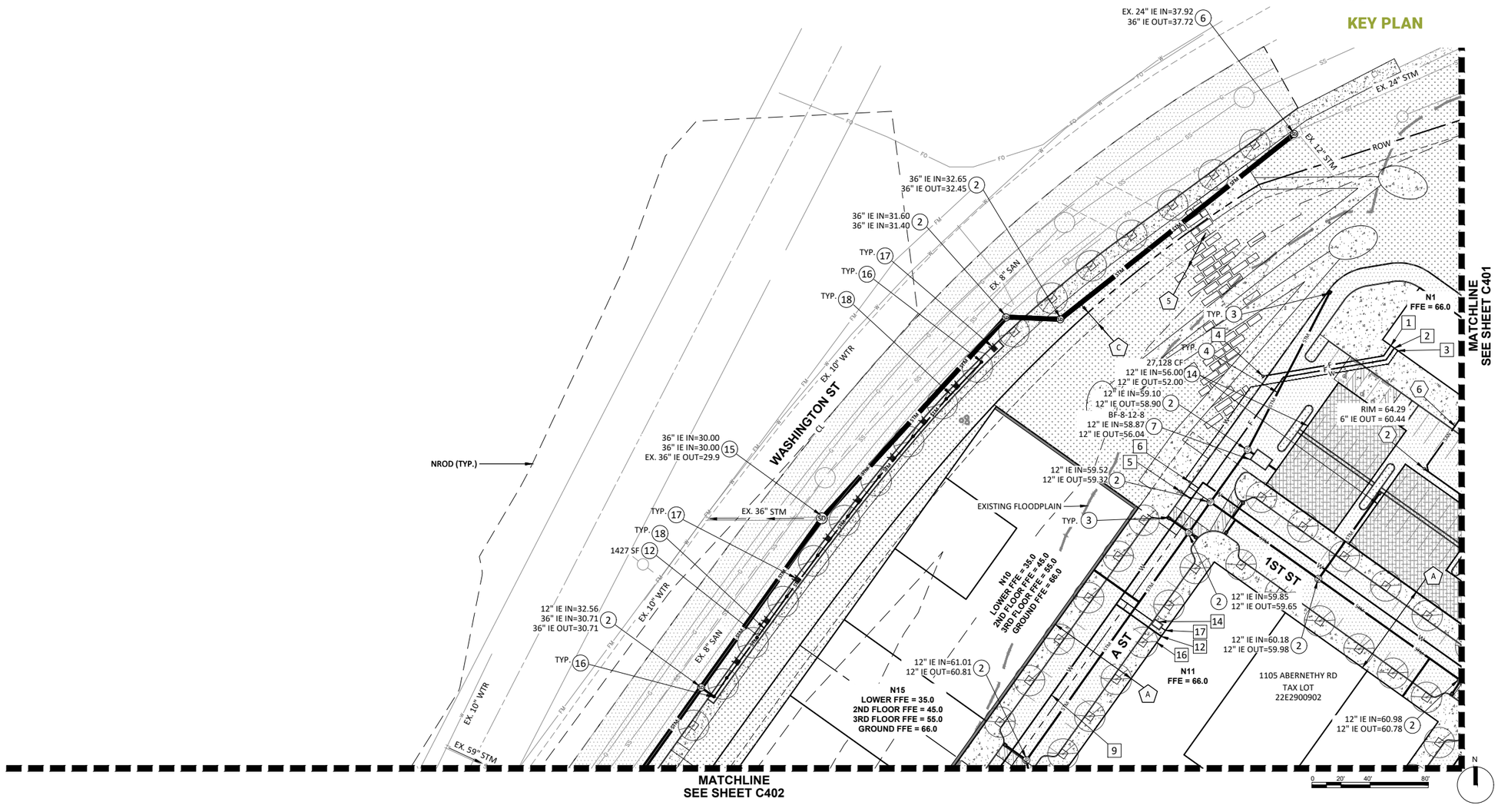
1. PROPOSED FDC LINE BUILDING CONNECTION.
2. PROPOSED FIRE SERVICE BUILDING CONNECTION.
3. PROPOSED DOMESTIC WATER SERVICE BUILDING CONNECTION.
4. PROPOSED FIRE DEPARTMENT CONNECTION (FDC).
5. PROPOSED FIRE HYDRANT.
6. PROPOSED 1" DOMESTIC WATER METER VAULT.
9. PROPOSED 8" PUBLIC WATER MAIN.
12. PROPOSED FIRE SERVICE BUILDING CONNECTION. PROPOSED DCDA TO BE INSTALLED ON THE IMMEDIATE INSIDE WALL OF BUILDING.
14. PROPOSED 3" DOMESTIC WATER METER VAULT.
16. PROPOSED WALL-MOUNTED FDC.
17. PROPOSED DOMESTIC WATER SERVICE BUILDING CONNECTION. PROPOSED DCVA TO BE INSTALLED ON THE IMMEDIATE INSIDE WALL OF BUILDING.

LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- STORM LINE
- WATER LINE
- FIRE LINE
- SANITARY LINE
- EXISTING FLOODPLAIN
- PROPOSED FLOODPLAIN
- 500' OREGON TRAIL LINE
- CATCH BASIN
- STORM MANHOLE
- SANITARY MANOLE
- CLEANOUT
- FIRE HYDRANT
- FDC



KEY PLAN



4 - PROPOSED DEVELOPMENT

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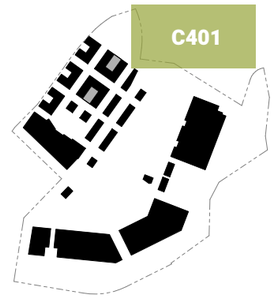


KEY PLAN

STORM NOTES:

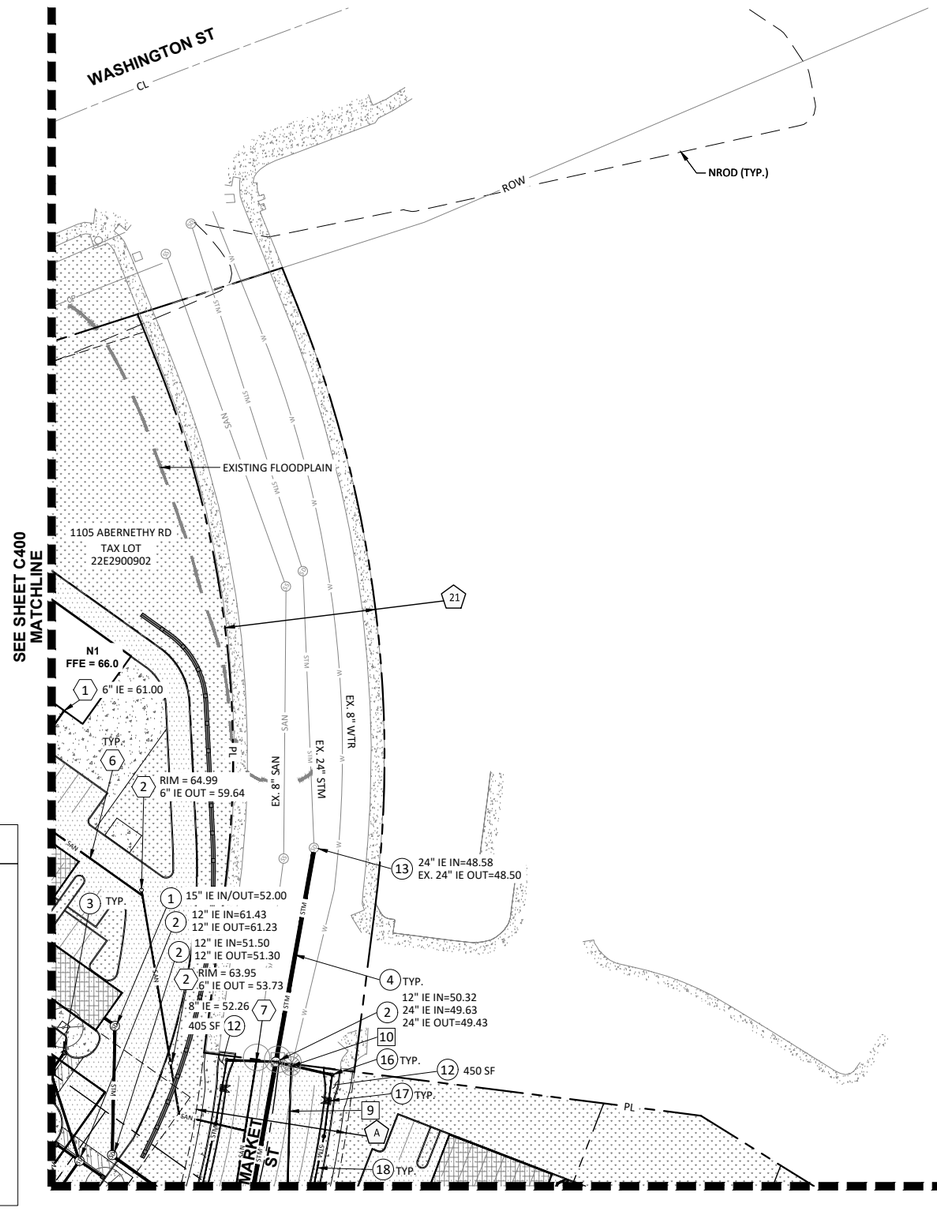
1. PROPOSED 60" FLOW CONTROL MANHOLE.
2. PROPOSED 48" STANDARD STORM MANHOLE.
3. PROPOSED STORM INLET.
4. PROPOSED STORM PIPE. SLOPE AT 0.5% MIN.
12. PROPOSED PUBLIC STORMWATER CURB PLANTER WITH CURB CUTS, TYP.
13. PROPOSED CONNECTION TO EXISTING MANHOLE.
16. PROPOSED OVERFLOW INLET.
17. PROPOSED CONCRETE CURB INLET.
18. PROPOSED 6" PERFORATED STORM PIPE. SLOPE AT 1.0% MIN.

SANITARY NOTES:

1. PROPOSED SANITARY BUILDING CONNECTION.
2. PROPOSED SANITARY CLEANOUT.
6. PROPOSED SANITARY SEWER PIPE.
7. PROPOSED CONNECTION TO EXISTING SANITARY MANHOLE.

WATER NOTES:

9. PROPOSED 8" PUBLIC WATER MAIN.
10. PROPOSED CONNECTION TO EXISTING PUBLIC WATER MAIN.



LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
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- CATCH BASIN
- STORM MANHOLE
- SANITARY MANOLE
- CLEANOUT
- FIRE HYDRANT
- FDC

4 - PROPOSED DEVELOPMENT

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STORM NOTES:

1. PROPOSED 60" FLOW CONTROL MANHOLE.
2. PROPOSED 48" STANDARD STORM MANHOLE.
3. PROPOSED STORM INLET.
4. PROPOSED STORM PIPE. SLOPE AT 0.5% MIN.
7. PROPOSED BAYFILTER WATER QUALITY TREATMENT VAULT.
8. PROPOSED LINED RAIN GARDEN.
10. PROPOSED 4.0' DIAM. BARREL ADS STORMWATER DETENTION SYSTEM.
12. PROPOSED PUBLIC STORMWATER CURB PLANTER WITH CURB CUTS, TYP.
14. PROPOSED 5.0' DIAM. BARREL ADS STORMWATER DETENTION SYSTEM.
15. PROPOSED CONNECTION TO EXISTING CULVERT.
16. PROPOSED OVERFLOW INLET.
17. PROPOSED CONCRETE CURB INLET.
18. PROPOSED 6" PERFORATED STORM PIPE. SLOPE AT 1.0% MIN.
19. INSTALL 48" STORM MANHOLE OVER EXISTING CATCHBASIN. CONNECT TO EXISTING STORM LINE.

SANITARY NOTES:

1. PROPOSED SANITARY BUILDING CONNECTION.
2. PROPOSED SANITARY CLEANOUT.
3. PROPOSED SANITARY MANHOLE.
6. PROPOSED SANITARY SEWER PIPE.

WATER NOTES:

3. PROPOSED DOMESTIC WATER SERVICE BUILDING CONNECTION.
5. PROPOSED FIRE HYDRANT.
6. PROPOSED 1" DOMESTIC WATER METER VAULT.
9. PROPOSED 8" PUBLIC WATER MAIN.
12. PROPOSED FIRE SERVICE BUILDING CONNECTION. PROPOSED DCDA TO BE INSTALLED ON THE IMMEDIATE INSIDE WALL OF BUILDING.
13. PROPOSED 2" DOMESTIC WATER METER VAULT.
14. PROPOSED 3" DOMESTIC WATER METER VAULT.
15. PROPOSED 6" DOMESTIC WATER METER VAULT.
16. PROPOSED WALL-MOUNTED FDC.
17. PROPOSED DOMESTIC WATER SERVICE BUILDING CONNECTION. PROPOSED DCVA TO BE INSTALLED ON THE IMMEDIATE INSIDE WALL OF BUILDING.

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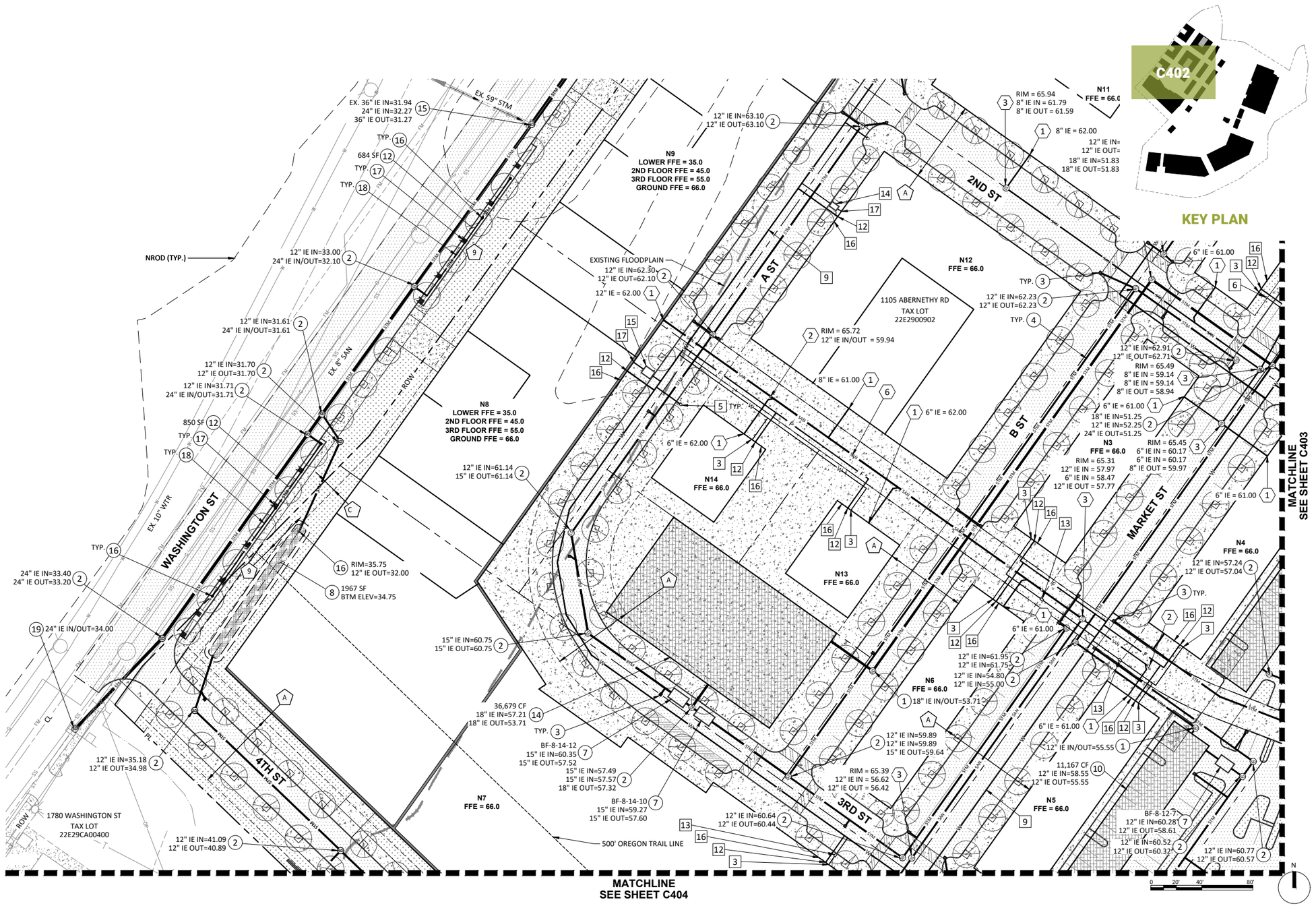
- FIRE HYDRANT
- FDC



4 - PROPOSED DEVELOPMENT

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STORM NOTES:

1. PROPOSED 60" FLOW CONTROL MANHOLE.
2. PROPOSED 48" STANDARD STORM MANHOLE.
3. PROPOSED STORM INLET.
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14. PROPOSED 5.0' DIAM. BARREL ADS STORMWATER DETENTION SYSTEM.

SANITARY NOTES:

1. PROPOSED SANITARY BUILDING CONNECTION.
3. PROPOSED SANITARY MANHOLE.
6. PROPOSED SANITARY SEWER PIPE.

WATER NOTES:

1. PROPOSED FDC LINE BUILDING CONNECTION.
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13. PROPOSED 2" DOMESTIC WATER METER VAULT.
16. PROPOSED WALL-MOUNTED FDC.

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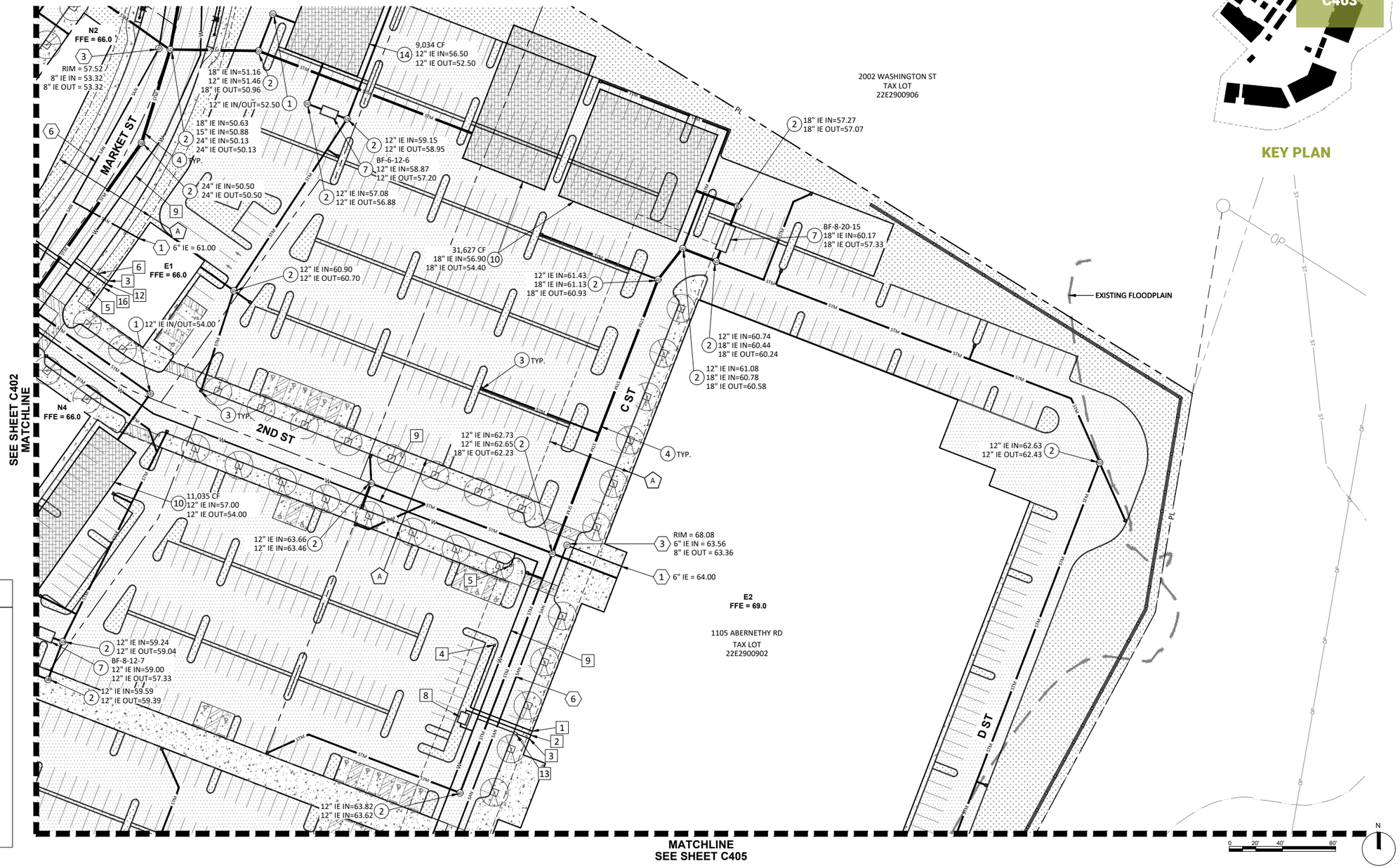

KEY PLAN

4 - PROPOSED DEVELOPMENT

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STORM NOTES:

1. PROPOSED 60" FLOW CONTROL MANHOLE.
2. PROPOSED 48" STANDARD STORM MANHOLE.
3. PROPOSED STORM INLET.
7. PROPOSED BAYFILTER WATER QUALITY TREATMENT VAULT.
10. PROPOSED 4.0' DIAM. BARREL ADS STORMWATER DETENTION SYSTEM.
11. PROPOSED 3.0' DIAM. BARREL ADS STORMWATER DETENTION SYSTEM.

SANITARY NOTES:

1. PROPOSED SANITARY BUILDING CONNECTION.
3. PROPOSED SANITARY MANHOLE.
6. PROPOSED SANITARY SEWER PIPE.

WATER NOTES:

1. PROPOSED FDC LINE BUILDING CONNECTION.
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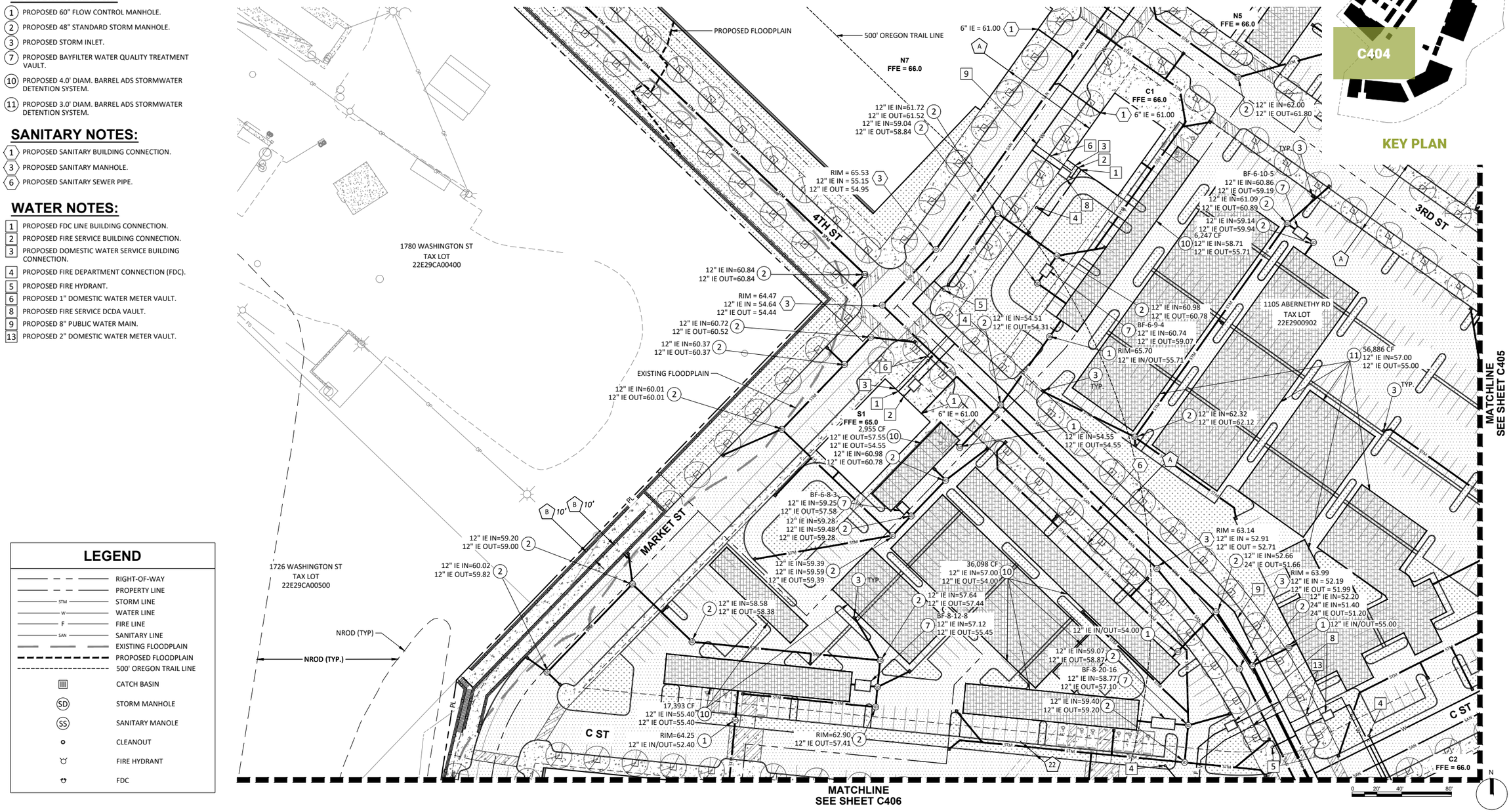
13. PROPOSED 2" DOMESTIC WATER METER VAULT.



LEGEND

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- SANITARY LINE
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- PROPOSED FLOODPLAIN
- 500' OREGON TRAIL LINE
- CATCH BASIN
- STORM MANHOLE
- SANITARY MANOLE
- CLEANOUT
- FIRE HYDRANT
- FDC

4 - PROPOSED DEVELOPMENT

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STORM NOTES:

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SANITARY NOTES:

1. PROPOSED SANITARY BUILDING CONNECTION.
3. PROPOSED SANITARY MANHOLE.
5. PROPOSED PUBLIC SANITARY SEWER MAIN.

WATER NOTES:

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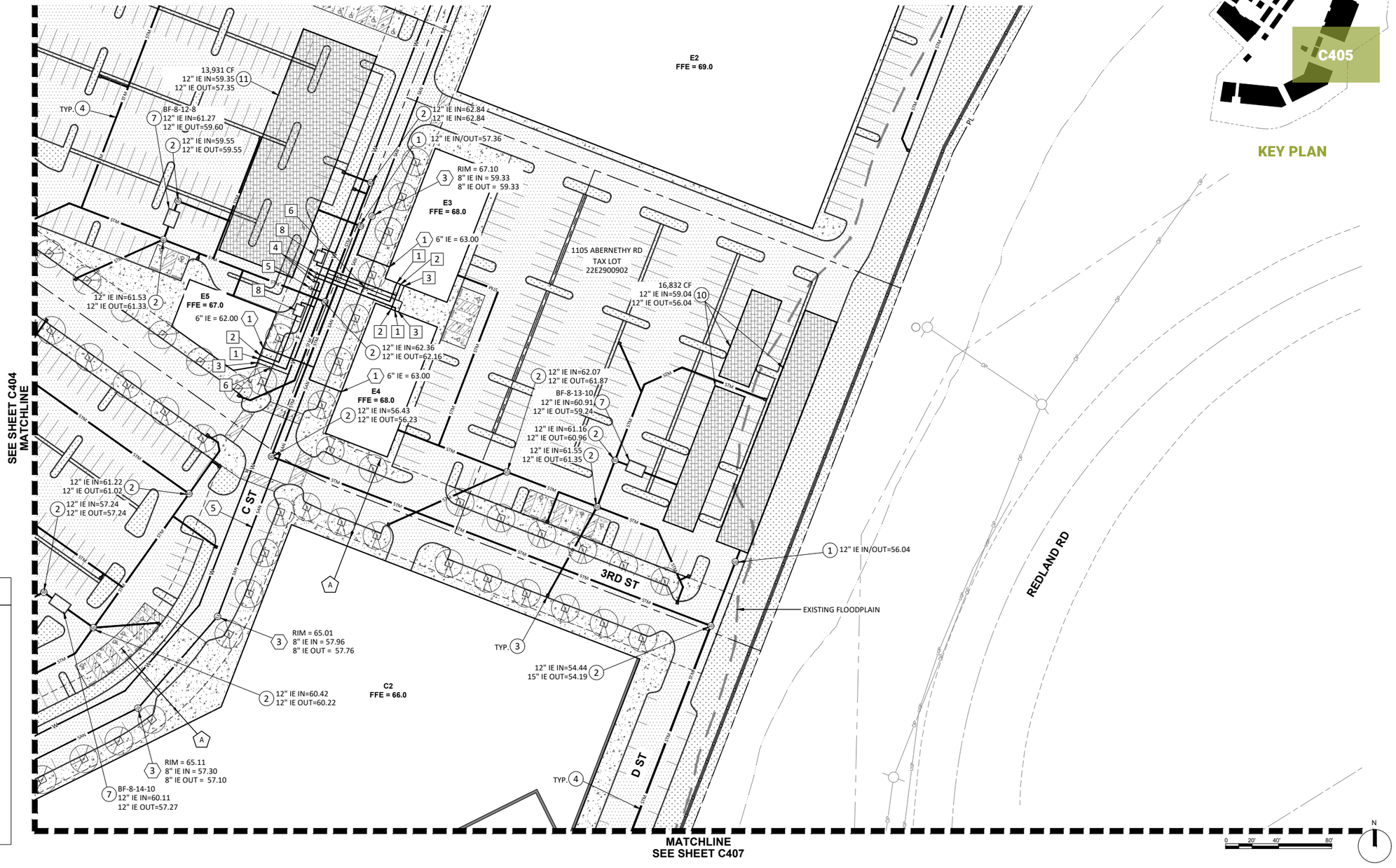
8. PROPOSED FIRE SERVICE DCDA VAULT.



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- WATER LINE
- FIRE LINE
- SANITARY LINE
- EXISTING FLOODPLAIN
- PROPOSED FLOODPLAIN
- 500' OREGON TRAIL LINE
- CATCH BASIN
- STORM MANHOLE
- SANITARY MANOLE
- CLEANOUT
- FIRE HYDRANT
- FDC

4 - PROPOSED DEVELOPMENT

86 | Utility Plan

STORM NOTES:

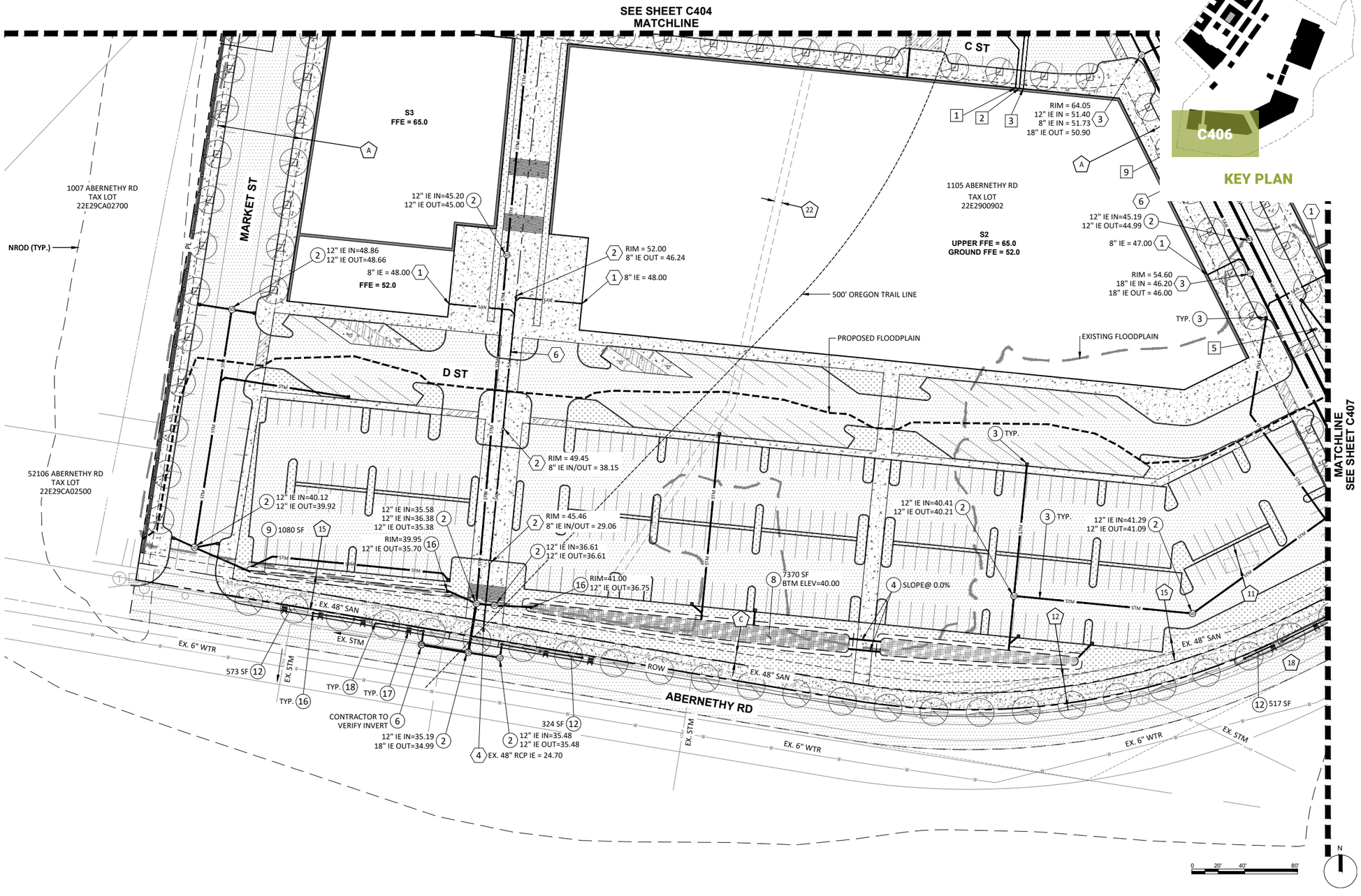
2. PROPOSED 48" STANDARD STORM MANHOLE.
3. PROPOSED STORM INLET.
4. PROPOSED STORM PIPE. SLOPE AT 0.5% MIN.
6. INSTALL 48" STORM MANHOLE OVER EXISTING STORM LINE.
8. PROPOSED LINED RAIN GARDEN.
9. PROPOSED LINED STORMWATER TREATMENT SWALE.
12. PROPOSED PUBLIC STORMWATER CURB PLANTER WITH CURB CUTS, TYP.
16. PROPOSED OVERFLOW INLET.
17. PROPOSED CONCRETE CURB INLET.
18. PROPOSED 6" PERFORATED STORM PIPE. SLOPE AT 1.0% MIN.

SANITARY NOTES:

1. PROPOSED SANITARY BUILDING CONNECTION.
2. PROPOSED SANITARY CLEANOUT.
3. PROPOSED SANITARY MANHOLE.
4. PROPOSED CONNECTION TO EXISTING SANITARY LINE.
6. PROPOSED SANITARY SEWER PIPE.

WATER NOTES:

1. PROPOSED FDC LINE BUILDING CONNECTION.
2. PROPOSED FIRE SERVICE BUILDING CONNECTION.
3. PROPOSED DOMESTIC WATER SERVICE BUILDING CONNECTION.
5. PROPOSED FIRE HYDRANT.
9. PROPOSED 8" PUBLIC WATER MAIN.



LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- STORM LINE
- WATER LINE
- FIRE LINE
- SANITARY LINE
- EXISTING FLOODPLAIN
- PROPOSED FLOODPLAIN
- 500' OREGON TRAIL LINE
- CATCH BASIN
- STORM MANHOLE
- SANITARY MANOLE
- CLEANOUT
- FIRE HYDRANT
- FDC

4 - PROPOSED DEVELOPMENT

87 | Utility Plan

STORM NOTES:

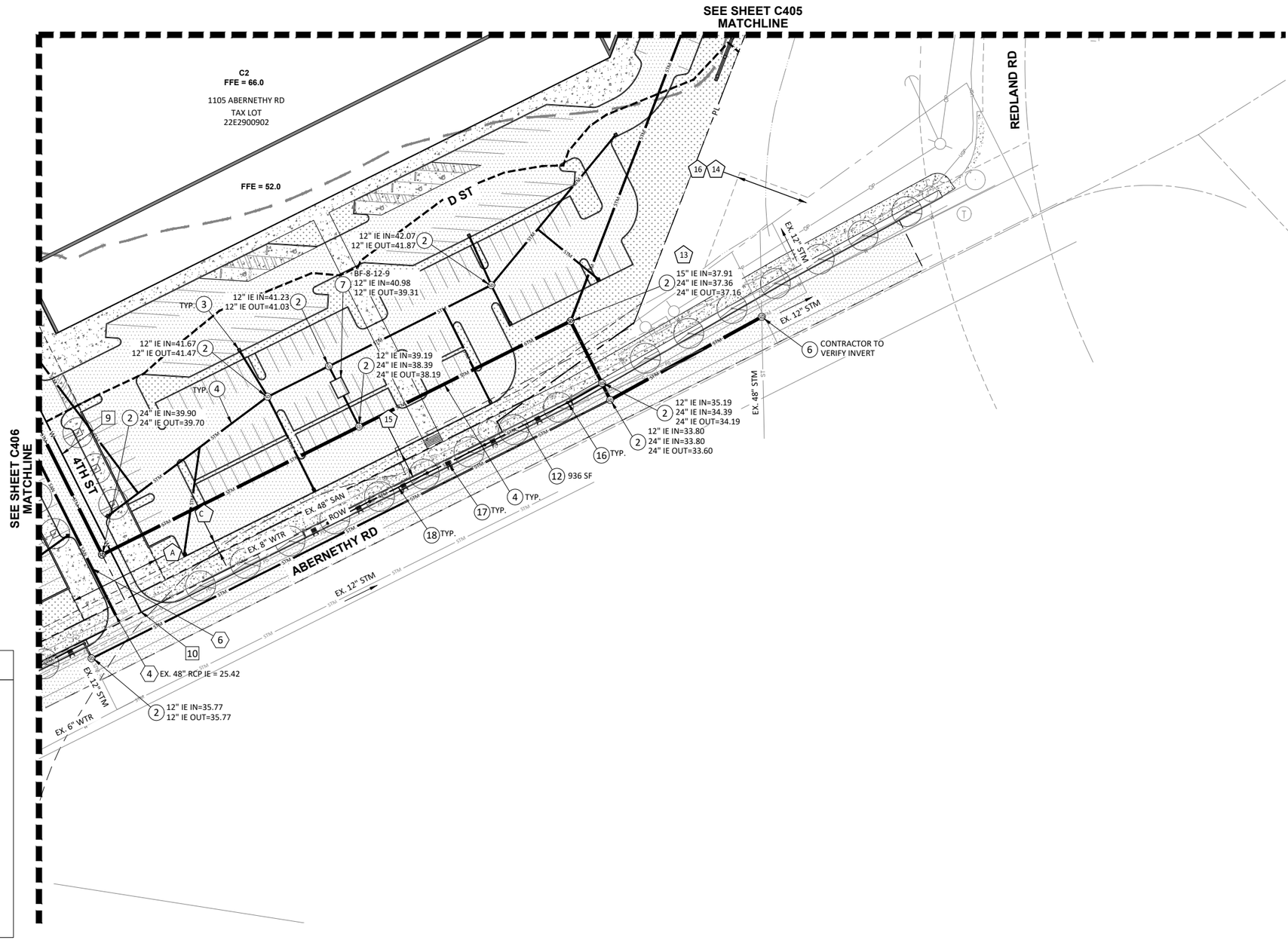
2. PROPOSED 48" STANDARD STORM MANHOLE.
3. PROPOSED STORM INLET.
4. PROPOSED STORM PIPE. SLOPE AT 0.5% MIN.
6. INSTALL 48" STORM MANHOLE OVER EXISTING STORM LINE.
7. PROPOSED BAYFILTER WATER QUALITY TREATMENT VAULT.
12. PROPOSED PUBLIC STORMWATER CURB PLANTER WITH CURB CUTS, TYP.
16. PROPOSED OVERFLOW INLET.
17. PROPOSED CONCRETE CURB INLET.
18. PROPOSED 6" PERFORATED STORM PIPE. SLOPE AT 1.0% MIN.

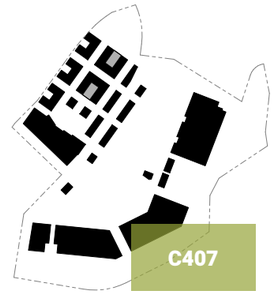
SANITARY NOTES:

4. PROPOSED CONNECTION TO EXISTING SANITARY LINE.
6. PROPOSED SANITARY SEWER PIPE.

WATER NOTES:

9. PROPOSED 8" PUBLIC WATER MAIN.
10. PROPOSED CONNECTION TO EXISTING PUBLIC WATER MAIN.





KEY PLAN

LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- STORM LINE
- WATER LINE
- FIRE LINE
- SANITARY LINE
- EXISTING FLOODPLAIN
- PROPOSED FLOODPLAIN
- 500' OREGON TRAIL LINE
- CATCH BASIN
- STORM MANHOLE
- SANITARY MANOLE
- CLEANOUT
- FIRE HYDRANT
- FDC

0 20' 40' 80'

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THE NORTH END

MASTER PLAN DESIGN GUIDELINES



Looking South along Market Street showing the primary Pedestrian Crossing

INTRODUCTION

Using the Guidelines
These guidelines are based upon the Oregon City Municipal Code and all applicable State and Federal Building Codes as of March 2021. This is the framework for which projects submitting Detailed Development Plans under this GDP shall be reviewed.

Where no direct guidance is provided in these guidelines, the base zoning code shall apply. In the event of a future conflict between the provisions of the Oregon City Municipal Code and the GDP, the Design Guidelines and framework approved and established under this GDP shall be applied.

A Major Modification to the master plan is any proposal that would alter the plan's proposed development by more than 25% such as a decrease in open space or required parking.

Minor modifications are proposals that do not substantially alter the plan's proposed development such as: facade treatments (i.e. material or color), character/design detail of public spaces, or minor variations to street furniture or landscaping. (i.e. tree or shrub type). A modification of any type should be consistent with the intent of the applicable design guidelines within the master plan. Any request for a modification to the master plan must be approved by the developer (Summit Development Group) prior to being submitted to Oregon City.

STREET DESIGN GUIDELINES

All street designs shall comply with the City of Oregon City standards (Chapter 12.04 - dated 07.03.2019), as well as the following standards:

Half-Street Improvements along **ABERNETHY ROAD** shall include the following:

-
- (1) 7'-0" turn lane
- (1) 12'-0" travel lane
- (1) 6'-0" bike lane
- (1) 5'-0" landscape
- (1) 5’-0” landscape strip
- (1) 12’-0” Multi-Modal Path

Half-Street Improvements along **WASHINGTON STREET** shall include the following:

- (1) 12’-0” turn lane
- (2) 12’-0” travel lane
- (1) 6'-0" bike lane
- (1) 8'-0" parking lane
- (1) 10'-0" sidewalk zone with 5’-0” wide tree wells

MARKET STREET shall connect to the existing road extension from Washington St and be covered by a 80’-0” public access easement. The design varies slightly across the site in response to the existing road alignment and topography. Design features shall include:

- (2) 12'-0" travel lane
- (2) 6'-0" bike lane
- (1) 12-0" turn lane from Washington St to 2nd Street
- (2) 8'-0" parking lane where occurs, see Site Plan
- (2) Various sidewalks zones with 5’-0” tree wells where occurs, see Site Plan
- North of 2nd Street the remainder of the ROW shall be landscaped

All internal **FIRE ACCESS STREETS** shall be covered be a 64’-0” public access easement and have 13’-0” wide travel lanes. Additional design features shall include:

- (2) 8'-0" parking lane
- (2) 11'-0" sidewalk zone with 5’-0” wide tree wells

All **NON-FIRE ACCESS INTERNAL STREETS** shall be covered be a 64’-0” public access easement and have 12’-0” wide travel lanes. Additional design features shall include:

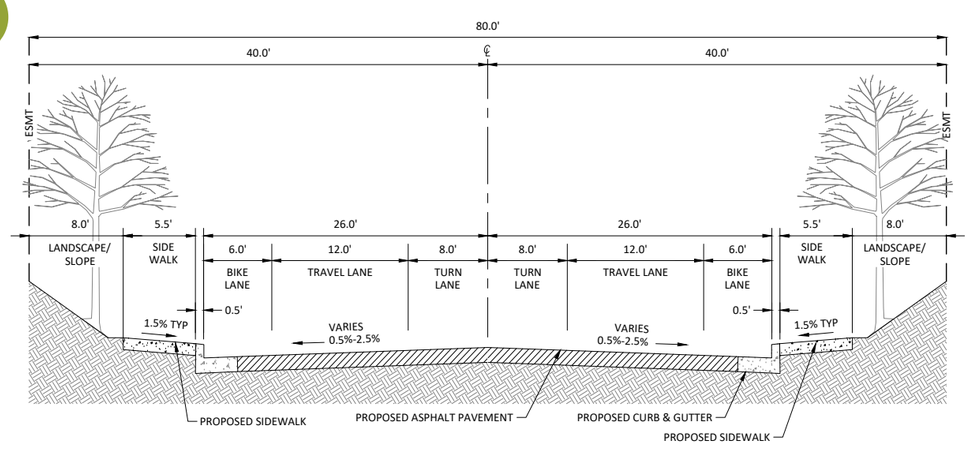
- (2) 8'-0" parking lane
- (2) 12'-0" sidewalk zone with 5’-0” wide tree wells

Refer to site plan and enlarged sections on pages 60-61 for details.



5 - MASTER PLAN DESIGN GUIDELINES

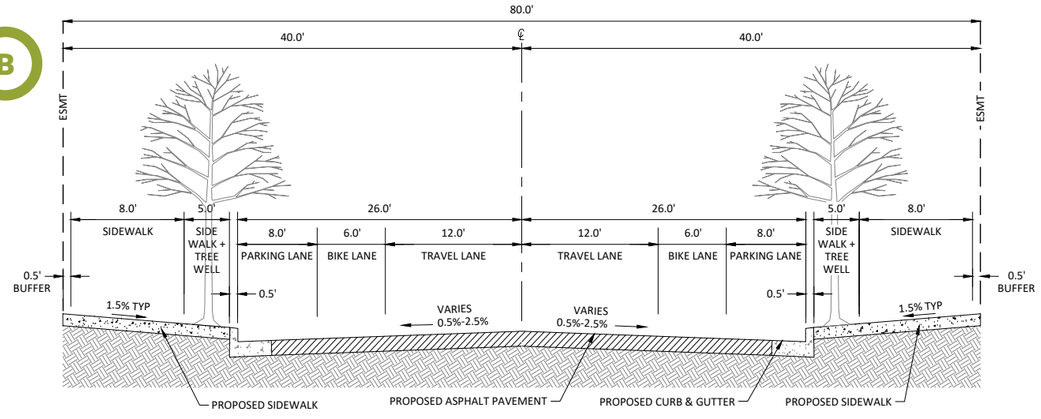
A



MARKET STREET (SECTION 1)

N.T.S.

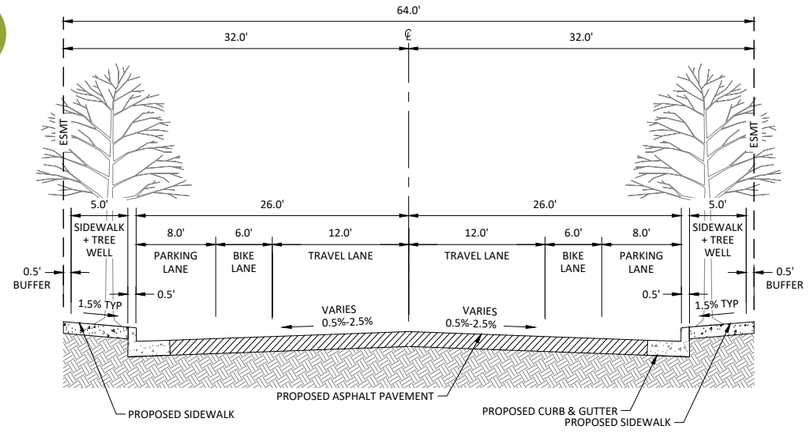
B



MARKET STREET (SECTION 2)

N.T.S.

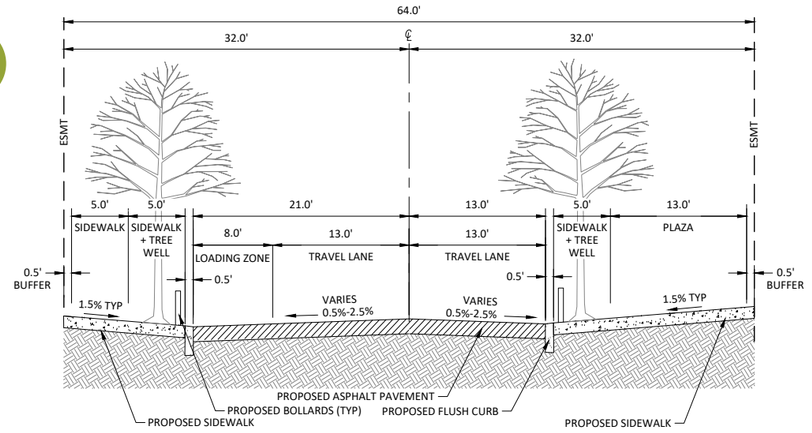
C



MARKET STREET (SECTION 3)

N.T.S.

D

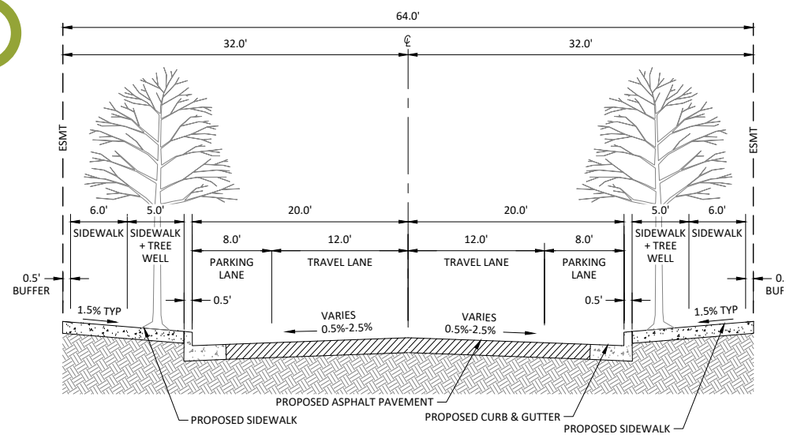


PLAZA FIRE ACCESS ROAD

N.T.S.

5 - MASTER PLAN DESIGN GUIDELINES

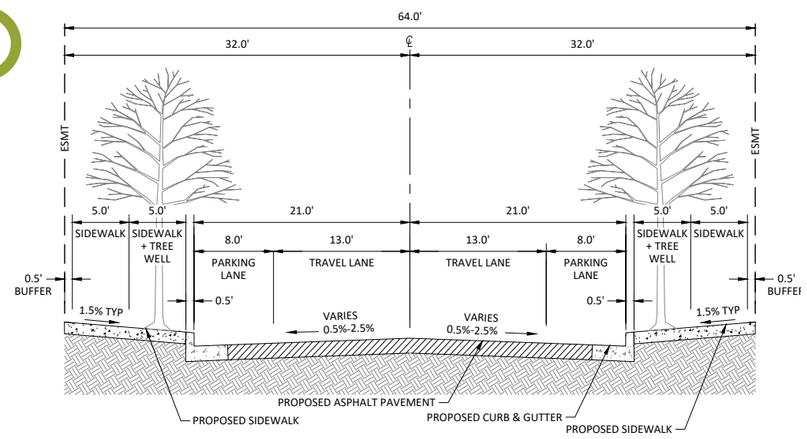
E



INTERNAL ROADS

N.T.S.

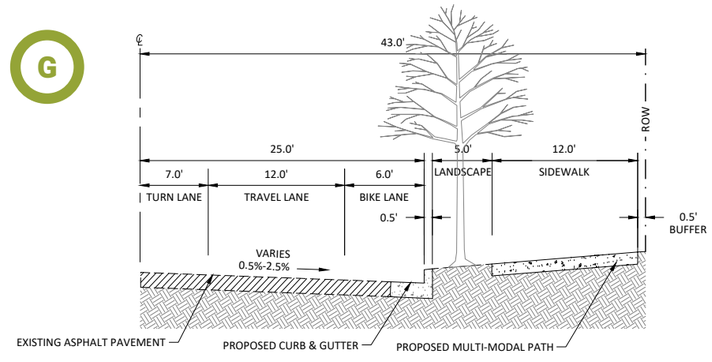
F



INTERNAL ROADS (W/ FIRE ACCESS)

N.T.S.

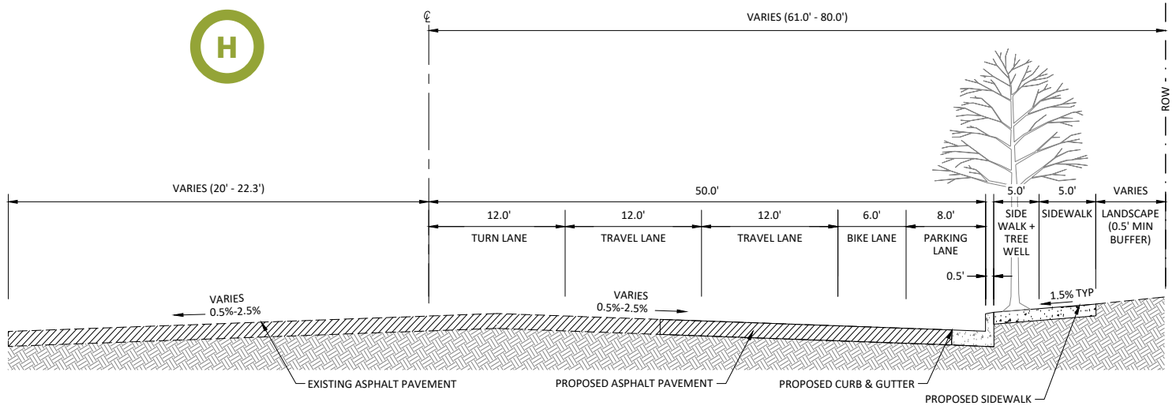
G



ABERNETHY ROAD (HALF-STREET)

N.T.S.

H



WASHINGTON STREET (HALF-STREET)

N.T.S.

LANDSCAPE GUIDELINES

The proposed site plan offers a variety of uses overlaid on to an expansive site, which has been carefully broken down into a series of individual districts by way of a network of streets and pedestrian ways. The landscape provides an opportunity to further differentiate these districts and contribute to the distinct character of each area and further enhance the pedestrian experience. A landscape palette should be developed for each type of outdoor space – parking lots, streetscapes, parks and plazas, and pedestrian ways - to create a planting hierarchy across the site. Plants should be selected for seasonal interest, drought-tolerance, and low maintenance while reinforcing the design of the outdoor spaces and architecture of the site.

1. The intent of all landscape areas will be to meet the General Design standards set forth in Oregon City's Site Plan and Design Review standards (Section 17.62).
2. Section 17.34.060.I and 17.62.050.A.4: The mixed-use downtown dimensional standards for this site require that each property have a minimum landscape of 10% (including parking lot landscaping). All landscape plans shall include a mix of vertical (trees and shrubs) and horizontal elements (grass, groundcover, etc.) that within three years will cover one hundred percent of the landscape area.

1 | General Planting

In selecting plant material, consideration should be given to support the visual character and ecological functions of the site within the context of Oregon City and the greater Willamette Valley. Native plants are recommended as they are suited for the climate of the region, require less watering and maintenance, and provide habitat for wildlife. Heritage plants, such as the Oregon White Oak, are not only native but are important contributors to the area's sense of place and should be considered where appropriate. Variety in plant selection is encouraged to promote a diverse and resilient plant community. Individual site conditions should be evaluated carefully prior to plant selection to choose the appropriate specie, while prioritizing the health, safety, and welfare of site users. Any code-required landscape areas shall meet City standards.

2 | Stormwater

As stated by the City of Oregon City, stormwater management is a key element in maintaining and enhancing livability within the city. Stormwater shall be viewed as a valuable natural resource that is managed through a variety of green infrastructure in order to improve the water quality for the City and the greater Oregon City watershed. Green infrastructure for stormwater management shall emphasize low-impact development practices, manage higher pollutant generating activities at the source, erosion and sediment control, and long-term operation and management of this infrastructure once implemented. On-site infiltration, retention, treatment, and utilization of rainwater on-site shall be prioritized where feasible.

3 | Maintenance

To help promote healthy and enduring exterior spaces all materials shall be chosen with long-term maintenance in mind. Hardscape materials and site furnishings shall be durable and easy to maintain and the selection of drought tolerant, low-maintenance plant materials should be prioritized. Permanent automatic irrigation systems that are water-efficient shall be used in landscape areas to encourage healthy and enduring plant materials



MASTER PLAN DESIGN GUIDELINES

4 | Parking Lots

The landscape areas within and surrounding parking lots are intended to improve and soften the appearance of the parking; reduce the visual impact of parking areas from sidewalks, streets; shade and cool parking areas; reduce the amount and rate of stormwater runoff from vehicle areas; and improve air quality. The parking lot landscape should be informed by the adjacent streetscapes and pedestrian ways to further strengthen the identity of the development's different districts and assist with wayfinding.

The parking lot landscaping shall meet the requirements of the City of Oregon City Municipal Code (Section 17.52.060 - Parking lot landscaping) as a base standard. In addition, the following landscape requirements must be met:

1. The tree planting types shall be unique to each District within the development. For the parking areas, each district parking area shall have a minimum of 3 tree types with a total 20% of the trees being evergreen.
2. All trees must be chosen from the adopted Oregon City Tree List.
3. All trees shall reach a mature height of 30-feet with a minimum 30-foot canopy spread.
4. For shrubs and groundcover within the parking area and perimeter planting, a total of 40% must be evergreen.
5. All shrubs and groundcover must be at least one-gallon container size.

LEGEND

- NORTH DISTRICT
- SOUTH DISTRICT
- EAST DISTRICT
- CENTRAL DISTRICT



MASTER PLAN DESIGN GUIDELINES

5 | Street Trees

Street trees clean our air, give us shade, limit storm water runoff, reduce energy costs, increase property values, enhance business districts, and make our community more inviting to visitors. They also help unify the development's buildings with the adjacent streetscape and help lend a pedestrian scale to the site. In addition to the selecting trees appropriate for the site's climate and planting conditions, trees should be selected to help differentiate streets and adjacent development while accentuating entrances, intersections, and other key development features. Consideration should be given to maintaining a diverse population of trees that will help ensure a healthy urban forest.

All street trees for public and private frontages shall meet the requirements in the Oregon City Municipal Code Chapter 12.08 Public and Street Trees. In addition, the following requirements must be met:

1. Each street shall have a consistent tree type that is unique to that street.
2. Street trees along Main Street shall have a minimum 40-foot height and 40-foot canopy spread.
3. At the designer's discretion, large canopy trees (trees that reach a minimum 40-foot height) may be used to demarcate street corners.
4. Trees shall be spaced according to Oregon City street tree standards.
5. If trees cannot be added within the ROW due to conflicts with utilities, or otherwise, trees shall be placed on-site within ten feet of the right-of-way as street trees. A covenant shall be recorded identifying the tree(s) as subject to the protections and replacement requirements in this chapter.
6. In addition to the standards above, trees shall be backfilled with the original soil that was excavated from the site, unless more soil is needed or the soil is compacted or very poorly drained. Soil used to fill the planting hole shall be reasonably clear of rocks, roots, debris, weeds, ash, cement, concrete, tar, and all other foreign matter. Soil shall not be frozen when backfilling.

6 | Streetscape Furnishing Zones

Site Furnishings:

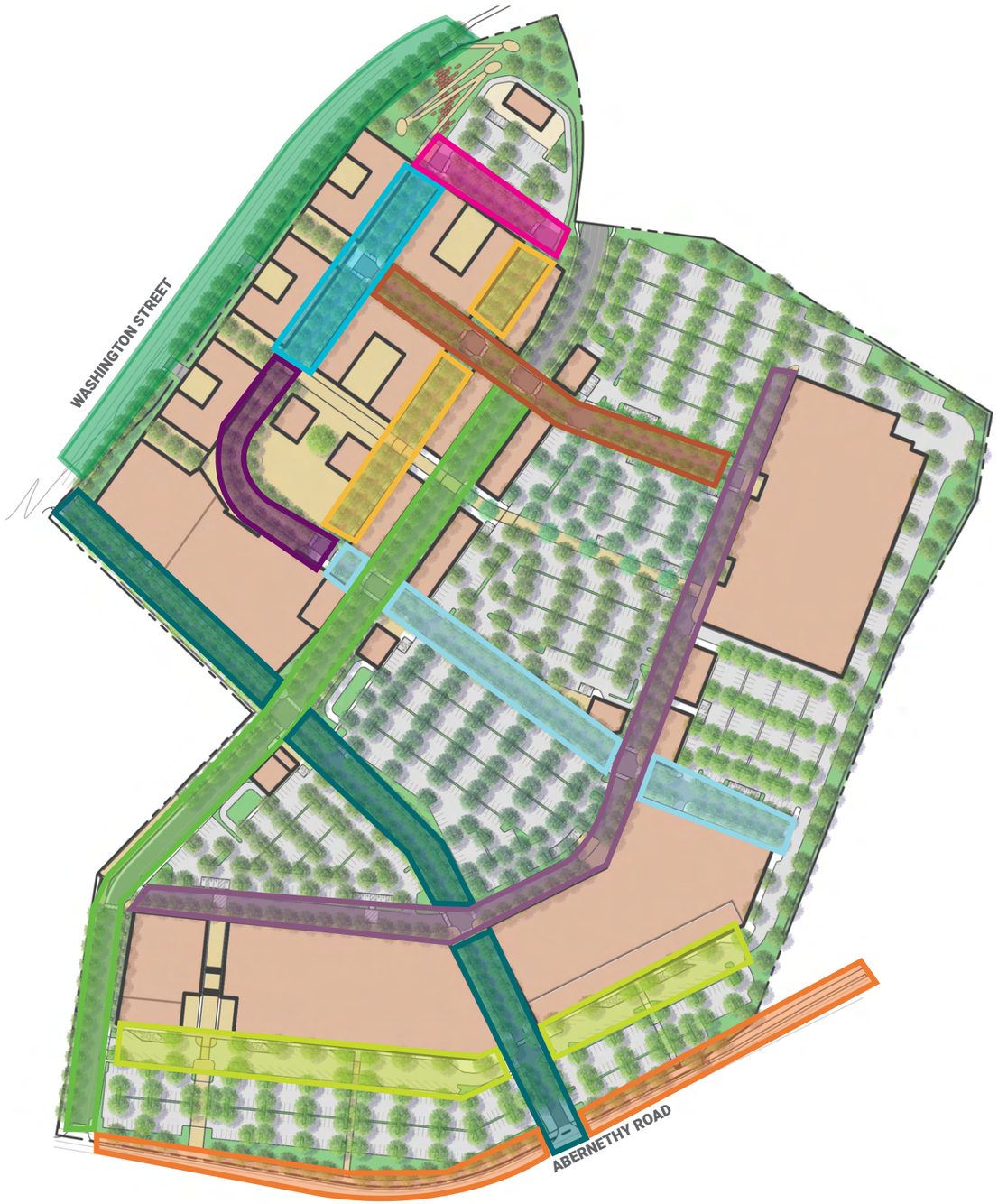
A minimum of 2 standard benches per approximately 200 linear feet shall be provided within the furnishing zone. Benches shall be centered between street trees to the maximum extent practicable. The standard bench for the accessways shall be the '59" Backed Neocombo' by Landscape Forms.

1-7 bike racks per block in furnishing zone or as per direction of the City Engineer. Bike racks shall be grouped to the maximum extent practicable. The standard bike rack within the streetscapes shall be the 'Bola' by Landscape Forms.

3 planters shall be placed within every 100 linear feet of furnishing zone. Planters may be grouped. Raised planters shall not inhibit the flow of pedestrian traffic or conflict with adjacent vehicular parking area or development. The standard planter for the furnishings zone shall be the DS-23 planter by Kornegay Design.

LEGEND

- ABERNETHY ROAD
- WASHINGTON STREET
- A STREET
- B STREET
- C STREET
- D STREET
- 1ST STREET
- 2ND STREET
- 3RD STREET
- 4TH STREET
- CENTRAL SQUARE
- MARKET STREET



MASTER PLAN DESIGN GUIDELINES



Looking Southwest into the Central Square showing the connection to the Pedestrian Way and pedestrian experience throughout

OPEN SPACE GUIDELINES

1 | Parks and Plazas

Parks and open spaces are integral to the development and the pedestrian experience within. These are the public places that encourage gathering and provide flexibility for a variety of uses and activities. These spaces should be designed in the context of providing a valuable resource for both the development and larger Oregon City region. The unique geography of Oregon City, its distinction as “the end of the Oregon Trail,” and its setting as a nexus for numerous Native American groups contributes to a strong sense of place that should be reflected in the design of each park and plaza. They should be well integrated with the adjacent buildings and easily accessible from all parts the development. They should link to other open spaces, parks, and pedestrian ways to create a cohesive network that enhances the pedestrian experience. Plantings, site furnishings, and paving in these areas should be consistent across the development to further enhance the continuity of the outdoor spaces.

LEGEND

- CENTRAL SQUARE
- VERTICAL PARK
- PARKLETS
- PEDESTRIAN WAY
- NORTH ACCESS WAYS
- SOUTH ACCESS WAYS
- MULTI-FAMILY COURTYARDS



MASTER PLAN DESIGN GUIDELINES

2 | Central Square

The Central Square is located at the core of the mixed-use area and unifies the adjacent commercial and residential development by providing a flexible urban space. It should be an iconic space for the development that brings people together from the new development and the surrounding neighborhood alike. The central square shall be designed to both encourage every-day use, informal gathering, and accommodate large-scale events: it should function as the development's living room. Minimal plantings should be used to enhance the open nature of the site while a mix of paving materials and seating elements shall be used to create visual interest. A lawn provides a flexible and soft area conducive to informal gathering and recreation as well as events. Sufficient space should be provided to allow a stage and viewing area. In addition to meeting minimum light level requirements, exterior lighting should be incorporated to foster evening activities and sufficient power should be provided for a variety of events.

Hardscape:
A minimum of 40% of the plaza area shall consist of a special paving material, which can include brick, precast concrete, pavers, or stone. A maximum of 50% of the plaza area can be concrete paving. A minimum of 5,000 square feet of open space shall be provided that is unimpeded by planting or site elements to create a central gathering space. The material of the roadway shall be consistent with the hardscape material throughout the plaza and be flush with the finish grade of the plaza. Bollards, light poles, or other materials that meet current guidelines for pedestrian crossings and accessibility standards shall be integrated to differentiate the roadway from the plaza.

Softscape:
10% of plaza area shall be used to create a contiguous lawn space. Trees within the plaza shall be planted in 4-feet by 6-feet tree wells with tree grates. An electrical duplex shall be provided at each tree grate to allow for holiday lighting. A specimen tree at 6" caliper shall be provided between the two retail pavilions. The tree shall be deciduous and reach a height of 40-60 feet at maturity. The tree shall be planted in a landscape area with minimum dimensions of 10-feet by 10-feet. The designer can add additional trees and landscape areas at their discretion.

Site Furnishings:
A minimum of 10 standard benches shall be located throughout the plaza. Custom benches can be used in addition to this minimum requirement. The standard bench for the Central Square shall be the '69" Backed Neoliviano' by Landscape Forms. A minimum of 20 standard bike racks shall be provided. The standard bike rack for the Central Square shall be the 'Bola' by Landscape Forms. The standard tree grate shall be 'Corona' by Iron Age Designs. A minimum of 2 trash and 2 recycling receptacle shall be provided in the Central Square. The standard receptacle for the Central Square shall be the 'Collect Litter-Side Open' by Landscape Forms.

Art:
The designer is encouraged to integrate art within the plaza, whether through hardscape design, custom benches, lighting, or stand-alone pieces

LEGEND

CENTRAL SQUARE



MASTER PLAN DESIGN GUIDELINES

100 | Open Space Guidelines

3 | Vertical Park

The primary park space of the development functions as a pedestrian gateway into the site, a visual landmark from off-site, and a key recreational zone for the area. The park will need to navigate a significant change in elevation from Washington Street into the site while taking advantage of the views afforded by this location. To do so, an accessible pathway system with a series of nodes with seating elements should be implemented. The planting design of this area shall be visually engaging to establish the park as a key landmark and accentuate the entrance into the site.

Hardscape:
The design shall provide an ADA accessible walkway with a slope that shall not exceed 4.5-percent. The walkway shall navigate the slope by switchback from the entrance on Washington Street to an overlook located at the top of the park. An entry plaza shall be located at the bottom and the top of the walkway and shall each be a minimum of 900 square feet. The designer shall locate periodic gathering areas along the walk with opportunities for seating. Natural materials, such as wood timbers or stone boulders, shall be used to create a cascading scramble and seating area that is integrated with the pathway system. The scramble shall be a minimum of 3600 square feet.

Softscape:
The designer shall use a variety of plant material and trees to create a vibrant and dynamic landscape reflective of the natural surroundings.

Site Furnishings:
A minimum of 6 standard benches shall be located throughout the vertical park. Custom benches can be used in addition to this minimum standard. The standard bench for the Central Square shall be the '59" Backed Neocombo' by Landscape Forms. A minimum of 1 trash and 1 recycling receptacle shall be provided in the Vertical Park.The standard receptacle for the Central Square shall be the 'Collect Litter-Side Open' by Landscape Forms.

4 | Parklets

There are several parklets located throughout the site that are pedestrian focused and provide moments of respite for passersby. Located in conjunction with adjacent commercial spaces these parklets provide opportunities for an outdoor extension of the building and informally programmed activities. They should be designed as gathering places that are adaptable for a number of activities and shall be visually linked to the other parklets through use of cohesive hard and softscape materials and site furnishings. Specialty paving, such as stone or concrete pavers, should be considered to distinguish these areas.

LEGEND

VERTICAL PARK

PARKLETS



MASTER PLAN DESIGN GUIDELINES

101 | Open Space Guidelines

5 | Pedestrian Way

The key to the pedestrian experience within the site are the pedestrian ways that link together the different districts of the development. This network should function as a linear park in which pedestrians can safely navigate through the site while having the opportunity to stop and enjoy the different facets of each district. The pedestrian way should be large enough to accommodate shared bicycle and pedestrian traffic and include a consistent palette of hardscape materials, site furnishings, and plantings to create a cohesive network. Large shade trees shall be utilized to create an informal canopy and ornamental plantings shall be used strategically to emphasize entries and nodes along the pedestrian ways.

Hardscape:
Paving material shall be entirely a specialty material, including brick, precast concrete, pavers, or stone.

Softscape:
Trees shall be planted in 4-feet by -feet tree wells with tree grates at 30-feet on center. An electrical duplex shall be provided at each tree grate to allow for holiday lighting. All trees shall reach a mature height of 30-feet with a minimum 30-foot canopy spread. Trees shall be consistent throughout the pedestrian way.

Site Furnishings:
The standard tree grate shall be ‘Corona’ by Iron Age Designs.

6 | North Access Ways

The three access ways along Washington Street shall function as welcoming plaza spaces that are seamlessly integrated with the surrounding development and provide safe and accessible entry into the site. These entries should be emphasized through a balanced use of specialty paving, plantings, and seating. Plantings along Washington Street shall be used strategically to blend the scale of the retaining structures with the adjacent landscape and pedestrian walkway.

Hardscape:
A minimum of 40% of each access way area shall consist of a special material, which can include brick, precast concrete, pavers, or stone. A maximum of 40% of plaza area can be concrete paving.

Softscape:
A minimum of 20% of each access way shall be landscape area, which shall consist of a mix of trees, shrubs, and groundcover. Lawn is not permitted.

Site Furnishings:
A minimum of 10 standard benches or an equivalent length of custom benches shall be incorporated in each access way. The standard bench for the access ways shall be the ‘59” Backed Neocombo’ by Landscape Forms.

LEGEND

PEDESTRIAN WAY

NORTH ACCESS WAYS



MASTER PLAN DESIGN GUIDELINES

102 | Open Space Guidelines

7 | South Access Ways

The three access ways along Washington Street shall function as welcoming plaza spaces that are seamlessly integrated with the surrounding development and provide safe and accessible entry into the site. These entries should be emphasized through a balanced use of specialty paving, plantings, and seating. Plantings along Washington Street shall be used strategically to blend the scale of the retaining structures with the adjacent landscape and pedestrian walkway.

Hardscape:
A minimum of 40% of each access way area shall consist of a special material, which can include brick, precast concrete, pavers, or stone. A maximum of 40% of plaza area can be concrete paving.

Softscape:
A minimum of 20% of each access way shall be landscape area, which shall consist of a mix of trees, shrubs, and groundcover. Lawn is not permitted.

Site Furnishings:
A minimum of 10 standard benches or an equivalent length of custom benches shall be incorporated in each access way. The standard bench for the access ways shall be the '59" Backed Neocombo' by Landscape Forms.

8 | Oregon Trail Interpretive Center Access

Located to the east of the site is the historic End of the Oregon Trail Interpretive Center, a significant site for the development of Oregon City and the larger Pacific Northwest. Providing an enhanced connection to the Interpretive Center from the development site is critical to integrating the site with the history of Oregon City and enhancing the sense of place. Due to a substantial difference in grade along the property line between the two sites the plans propose a series of retaining walls and ramps to navigate the steep slopes and provide an accessible pedestrian connection. The ramp shall be a minimum of 10'-wide and meet ADA requirements for providing an accessible walkway. Where feasible, planting shall be used to help soften the visual impact of the retaining walls.

LEGEND

SOUTH ACCESS WAYS

OREGON TRAIL INTERPRETIVE CENTER ACCESS



SITE LIGHTING GUIDELINES

1 | General Lighting Guidelines

The overall goal of the outdoor lighting for the OCMU project is to provide safety and personal security in an aesthetically pleasing manner that helps create interest in the overall development during the hours of darkness. The luminares selected are intended to be visually appealing during daylighting hours, or be generally hidden from sight. The luminaires will be chosen to control glare and excessive brightness. With few exceptions, cut off style luminaires is a requirement of the following lighting design standards. The exceptions to this are limited to pedestrian scale pole mounted luminaires, landscape lighting, and some decorative building mounted lighting. Light trespass to properties abutting the OCMU project will be less than 0.5 footcandles outside of the OCMU development. LED lamps are currently the most energy efficient technology in the market place, and will continue to be for the foreseeable future. Luminaires with LED lamping will be required for all outdoor lighting associated with this project. The lighting will comply with the latest version of the Oregon State Energy Code (OSEC). The OSEC is a very stringent standard, and will provide the project with low operating costs for outdoor lighting in and of itself. The lighting design will direct the illumination where it is useful, such as for security and accent some of the architectural features of the buildings. Misdirected light equals wasted energy. One of the added benefits of a mindful illumination strategy that places the light only where desired, is that in addition to minimizing light pollution, it saves energy.

2 | General Exterior Lighting Guidelines

1. All exterior lighting will be an LED source, and have a color temperature of 4000K, with the exception of luminaires intended to architecturally highlight specific finishes may be changed to enhance the specific finish. For example, illumination of brick or natural wood surfaces may be changed to 3000K to enhance the warmth of the materials.
2. Photometric calculations will be required to show compliance with the lighting design standards as well as city requirements.
3. A minimum of 3 footcandles is required at building entrances per city code.
4. Building canopy lighting will be either fully recessed, or shielded by the canopy structure.
5. Free standing open structures may have employ the use of other lighting strategies provided they do not produce excessive glare.

3 | Street Lighting Guidelines

1. Private street lighting will meet the minimum lighting levels and uniformity prescribed in IESNA RP-8-14. This is the same standard for public street lighting in Oregon City.
2. Light fixtures and poles shall meet city standards

4 | Parking Area Guidelines

1. General parking lot illumination will be full cut off style luminaires mounted on 30 foot poles that are installed on 3 foot tall concrete pole bases where physical protection is required. (code max is 35’ mounting height for lots 5 acres and larger). Pole finish shall be black.
2. Parking lot lighting levels will be illuminated to a minimum of 1 foot candle.

5 | Pedestrian Connection Lighting Guidelines

1. Decorative luminaires will be mounted on decorative poles will be used to help define the pedestrian connection paths. Non-cut off luminaires may be used to help clearly identify people and other objects and create a localized glow when compared to the areas illuminated with cut off style luminaires such as the retail parking areas. Care will be used to limit the light output of pedestrian lighting to avoid excessive glare.
2. Pedestrian connection lighting will meet the minimum lighting levels and uniformity prescribed in IESNA RP-8-14 for public pedestrian areas.
3. Illuminated bollards will be used where the path intersects private streets.

6 | Multifamily Outdoor Space Lighting Guidelines

Multifamily areas are generally all bordered by private streets, and pedestrian connectors. Lighting will be designed to be consistent, and carry the theme of the adjacent street and pedestrian lighting into the Multifamily building areas.

7 | Plaza Lighting Guidelines

Various lighting strategies may be employed in the Plaza areas.

1. Generally one or two taller poles with multiple decorative luminaires on the poles will be installed in a plaza area to provide general illumination.
2. Pedestrian scale poles may be used to illuminate smaller spaces within the plazas, and to help connect them to other areas of the project.
3. Illuminated bollards may be used to help delineate drivable surfaces from pedestrian surfaces.
4. Festival catenary may be used in all plaza areas.
5. Accent lighting will be employed to highlight architectural design elements, hardscape areas and adjacent structures.
6. Light levels will create a safe and inviting outdoor plaza spaces while minimizing needless glare.

BUILDING GUIDELINES

1 | Mechanical and Service Equipment Guidelines

Development throughout the site shall include the following measures to minimize the visual and acoustic impact of mechanical, service, and utility equipment on the site and adjacent buildings. The standard does not apply to solar energy panels, photo-voltaic equipment, wind power generating equipment, pipes, vents, and chimneys.

Roof Top Equipment in:

Zone A (See Fig 1.2a) -

- Shall be set back from the face of the buildings by a minimum of 10'-0"
- Shall not extend past a line drawn at a 19 degree angle from the top of parapet or exterior roof edge
  OR
  be fully screened by a sight-obscuring enclosure that is designed to blend into the adjacent roof surface.

Zone B (See Fig 1.2b) -

- Shall be set back from the face of the buildings by a minimum of 10'-0"
- Shall be screened by a sight-obscuring enclosure that:
  a. Uses the building materials from the primary facade of the building
  b. Extends a minimum of 8'-0" above the roof plane

Wall mounted equipment and Utility Meters in:

Zone A -

- Shall not be located on the Primary building facade
- Shall be screened from view by one of the following:
  a. sight-obscuring enclosures constructed of one of the materials used on the primary facade of the structure
  b. sight-obscuring fences
  c. trees or shrubs that block at least eighty percent of the equipment from view
  d. painting the units to match the building.

Zone B -

- Shall not be located on the Primary building facade
- Shall be fully enclosed, located within the building footprint and accessible directly to the exterior from the adjacent ROW
  OR
  be located in an exterior screened alcove.

Exceptions -

Vents and Wall-mounted mechanical equipment that extends six inches or less from the outer building wall shall be exempt from this standards if designed to blend in with the color and architectural design of the subject building.

Ground-mounted above-grade mechanical equipment in:

Zone A -

Shall be screened by ornamental fences, screening enclosures, trees, or shrubs that block at least eighty percent of the view from the public right-of-way.

Zone B -

Is prohibited

2 | Refuse and Recycling Enclosure Guidelines

On-site waste management and collection facilities shall be located in fully enclosed and visually screened enclosures that are designed to be efficient, safe and convenient. In addition to meeting all the standards laid out in 17.62.085, refuse and recycling enclosures in:

Zone A-

Shall be located within the building envelope, immediately adjacent to the public right-of-way, No collection access shall be provided on C Street.

OR

Shall be free-standing enclosures that are not be located on a primary roadway. Free standing enclosures shall be designed to match the associated building's materials and architectural language.

Zone B -

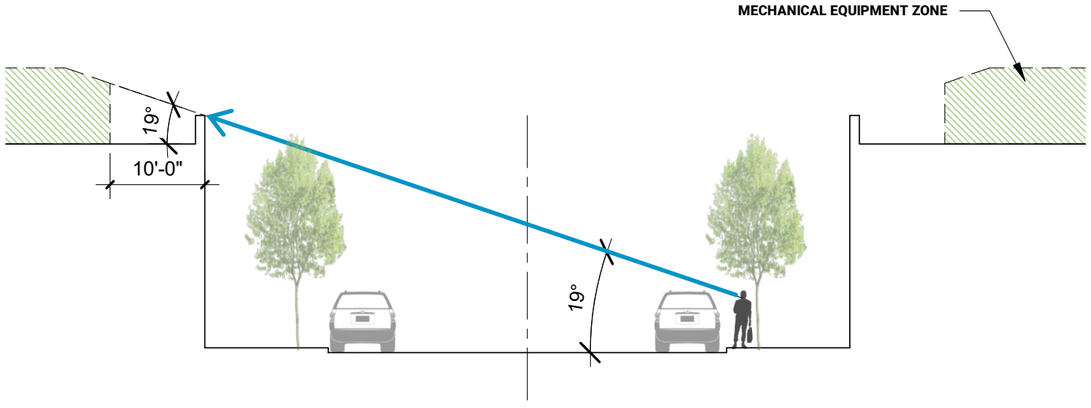
Shall be located within the building envelope, immediately adjacent to the public right-of-way. No collection access shall be provided on Market Street.



Figure 1.1 - MECHANICAL EQUIPMENT ZONES

5 - MASTER PLAN DESIGN GUIDELINES

105 | Building Guidelines (Cont.)

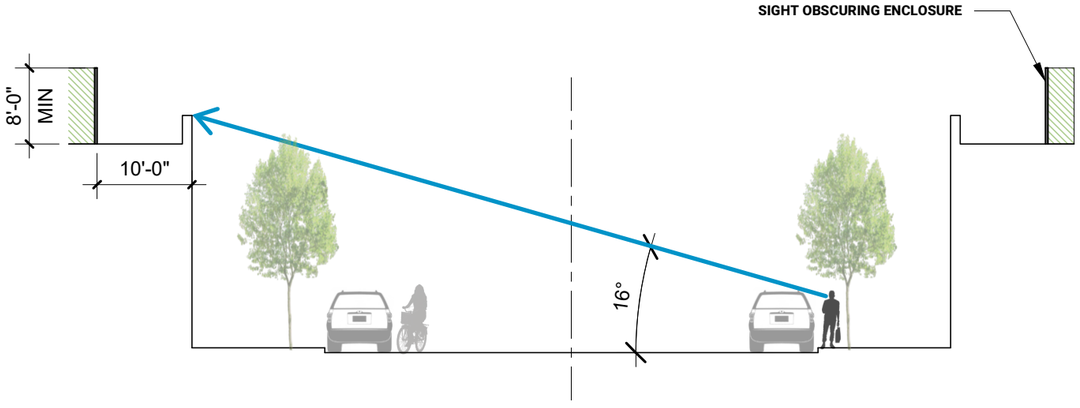


C STREET @ SMALL SCALE RETAIL

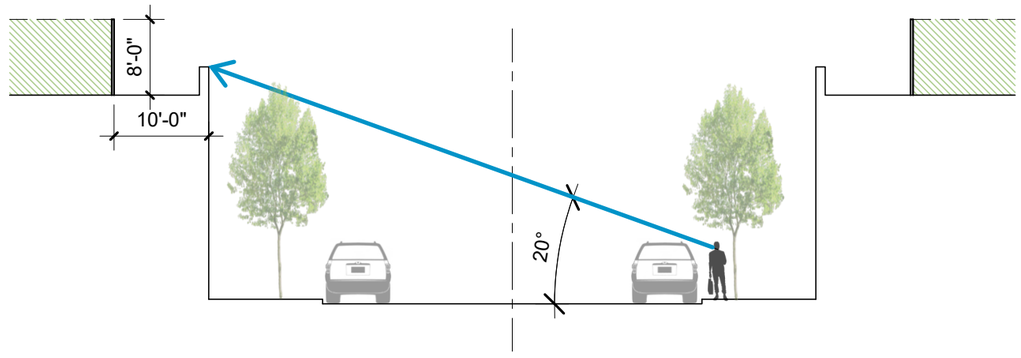


C STREET @ PROMENADE AND PARKING

Figure 1.2a - ROOFTOP EQUIPMENT ZONE A



MARKET STREET



B STREET

Figure 1.2b - ROOFTOP EQUIPMENT ZONE B

5 - MASTER PLAN DESIGN GUIDELINES

106 | Building Guidelines (Cont.)

3 | Building Material Guidelines

The intent of this development is to be a memorable and purposeful destination within the heart of Oregon City which seeks to represent the site in its place, historically and physically. The site materials were chosen to produce a modern Pacific Northwest style, highlighting the refined industrial nature of a region built on river trade and the timber industry. To that end, the building materials are limited to develop a character that is cohesive across all the future development on site.

The development hopes to tap into the joy of living in Oregon by emphasizing natural light and connection to the outdoors. High-quality exterior materials will create a sense of timelessness, permanence, and emphasize the pedestrian experience throughout the site. These materials should be thoughtfully detailed to contribute to a well-articulated building facade.

General Material Guidelines

All structures on site shall provide one or more of the following as their primary facade materials, >50% of total facade square footage minus the glazing area:

- Heavy Timber
- Brick
- Wood
- Stone

Additional acceptable materials include pre-finished architectural metal panels, premium prefinished cement composite siding, board form concrete, stucco finishes and split or ground-faced concrete block. Plain concrete may be used no more than three feet above the finished grade level.

The following materials are not allowed on site, vinyl or plywood siding, glass block, highly tinted* or reflective glass, corrugated fiberglass, and highly reflective sheet metal.

Based on Oregon State Energy Code requirements light tinting or fritting may be used to meet code compliance and glazing requirements.



CONSISTENT VERTICAL AND HORIZONTAL PLANES



INTEGRATE BUILDING MATERIALS IN TO GLAZING



USE OF MATERIALS TO ARTICULATE FACADE



INTEGRATE GROUND FLOOR WITH UPPER STORIES

5 - MASTER PLAN DESIGN GUIDELINES

4 | Building Massing Guidelines

All structures in the development shall front directly on at least one roadway frontage. Buildings facades shall be within five feet of the sidewalk. Up to 15% of the building facade can be up to ten feet from the sidewalk to allow for architectural interest and emphasis on primary entries. Buildings that use the 15% shall provide enhanced paving and approved public seating in these areas.

Exception:
Buildings that are inside or front Plazas are not limited in the roadway setback limit. Plazas shall conform to Open space guidelines on page: **XXX**

Primary Entries
Buildings shall have their Primary Entries located on the Primary Facade as indicated in Fig 1.2. Primary entries shall be designed to:

- Provide Protection from the weather. All entries shall be protected by a hard or soft cover that extend at least 3 feet past the face of the facade.
- Provide Visual interest through architectural projections or recess, height changes at the parapet or roof level, and material variation from the primary building material.

Architectural Projections
Where canopies or awnings are placed on a building facade, they must comply with the following:

- The bottom of canopy or awning shall be a minimum of 12'-0" above finished pedestrian sidewalk surface.
- The depth of the canopy or awning shall be a minimum of 4'-0" measured from face of the building.

More generous depths of cover than described above are encouraged at building corners and ground floor entries.

Pedestrian Focused Facades
At the Ground Level along the Pedestrian Way, larger ground level openings and overhead doors are encouraged to provide a better pedestrian experience and connection for those walking and occupying the buildings.

LEGEND

- Primary Facade Locations
- Additional Pedestrian Focus
- Site / Building Plaza Areas





Harper
Houf Peterson
Righellis Inc.

Oregon City Mixed Use

LRS-20

Stormwater Management Report

March 2021

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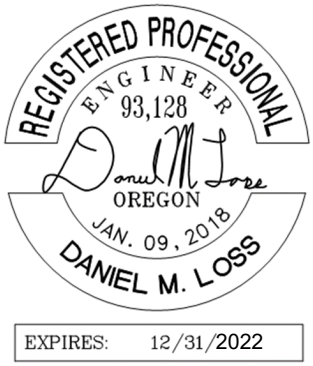
ENGINEERS ◆ PLANNERS
LANDSCAPE ARCHITECTS ◆ SURVEYORS

Designer's Certification Statement

I hereby certify that this Stormwater Management Report for the Oregon City Mixed Use Commercial project has been prepared by me or under my supervision and meets minimum standards of the City of Oregon City and normal standards of engineering practice. I hereby acknowledge and agree that the jurisdiction does not and will not assume liability for the sufficiency, suitability, or performance of the drainage facilities designed by me.



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Introduction

Project Description

The proposed project is located in between Washington Street and Abernethy Road in Oregon City, Oregon. The site is approximately 1000' NE of the intersection at Trails End Hwy and S Beavercreek Rd.

The project proposes the construction of commercial buildings, surface parking areas, landscape, recreational areas, pedestrian walkways, utility connections and new stormwater facilities. This project also includes public improvements to Abernethy Road and Washington Street.

The project will disturb approximately 60.5 acres total. There are half street public improvements required for the development and public stormwater facilities will be required for new or modified impervious areas. The private development will propose a mixture of surface low impact development (LID) stormwater facilities (i.e Rain Garden Filtration, Vegetated Swale and Planter Filtration) and underground detention pipe with proprietary water quality treatment facilities.

Existing Site Conditions

The existing site (Tax Lot 32E04C 01400) is 56.2 acres in size. The existing site was once an operating landfill, until the landfill was closed and covered with clay soil layer cap. The site largely consists of grassy vegetation and trees with buried trash below.

A portion of the existing site slopes west to an existing drainage ditch located along Washington Street. This drainage ditch conveyance collects flows from the "Kelly Field" drainage basin and drains via a 36-inch culvert to the Clackamas River to the west. This drainage system discharges into the Clackamas River delta via a 48-inch pipe, just before the Clackamas River meets the Willamette River. The proposed site improvements will impact the existing stormwater infrastructure. This report will include design for public Washington Street frontage improvements.

A portion of the existing site slopes southeast to an existing stream located along the east side of the proposed development. This stream flows southwest, crossing Abernethy Road through a 48-inch culvert before draining into Abernethy Creek.

The existing conveyance system within Abernethy Road is part of the "Abernethy" drainage basin. A portion of the existing project site draining into the existing conveyance system in Abernethy Road, before discharging via a 12-inch pipe into Abernethy Creek. This report will include design for public Abernethy Road frontage improvements.

There is currently no known stormwater flow control or treatment facilities on the site or within the public frontage improvements.

Methodology

The site's new and reconstructed impervious surfaces will be managed per the Oregon City Stormwater and Grading Design Standards dated March 2020. The development may not utilize infiltration type facilities during design since the project site was once a landfill. The site has contaminated soils. Infiltration would run the risk of mobilizing contaminates in the soils or groundwater. Stormwater management facilities would be located on fill. The water quality/quantity requirements are as follows:

- Detention Based Stormwater Quality Control – Volume of the 1.0 in, 24-hour storm
- Rate Based Stormwater Quality Control – Peak Flow Rate of the 1.0 in, 24-hour storm
- Quantity Control/Flow Control – Peak Flow Duration matching between 42% of the 2-year up to the 10-year storm event.
- Conveyance Design – 10-year, 24-hour storm

The water quantity requirements are also per the Oregon City Stormwater and Grading Design Standards dated March 2020. The WES BMP calculator was used for sizing or verifying the stormwater facilities using the City specific guidelines. The BMP tool confirms peak flow duration matching for flows ranging from 42% of the 2-year peak flow to the 10-year peak flow.

This project will be utilizing underground detention and mechanical treatment methods for stormwater disposal. In order to comply with City requirements, the underground detention systems were first modeled in Hydraflow Hydrographs. The stage/storage/discharge data was extracted and entered into the BMP detention pond tool to verify that the facility size suffices with agency WQ requirements.

Soils Characteristics

The Natural Resources Conservation Service (NRCS) with the United States Department of Agriculture (USDA) has classified the soils within Clackamas County in the Web Soil Survey. Soils are categorized into Hydrologic Soil Group based on estimated runoff from precipitation. These groupings assume the soils are saturated and receive precipitation from long-duration storms. This rainfall to runoff relationship is complex and includes drainage and permeability characteristics of the soil.

The soils for the site are listed as urban land since the existing landfill site resulted in minimal intact native soil. Infiltration will not be used as a means of disposal for design. All proposed stormwater management facilities will be lined and located in strategic areas to avoid disturbing the buried garbage. Refer to Appendix A for available depth between proposed finished ground to surveyed trash elevations. Soil type D will be used for this design.

Existing (E) and Proposed (P) Soil Assumptions:

Curve Numbers =	(P) 98 for Impervious Areas
	(E) 79 for Woods in Fair Condition (Soil Type D)
	(P) 77 for Woods in Good Condition (Soil Type D)
Sheet Flow Mannings “n” =	0.011 for pavement
	0.013 for pipe
	0.150 for short prairie grass and lawn
Shallow Concentrated Flow “Cp” =	16.135 for unpaved surfaces
	20.32 for paved surfaces

Proposed Improvements

Proposed onsite surface area will consist of parking lots, hardscape, landscape and buildings. The public improvement surface area will consist of asphalt paving, hardscape and landscape. The City requires stormwater management for the improved site area and any contributing area runoff. Refer to Appendix A for basin delineation. For clarity and analysis, the design is broken down into public and private area contributions. The 56.2-acre site will be categorized as private and the 4.3 acre frontage improvements will be labeled as public.

Pollutants of concern related to commercial development include sediment, nutrients, pesticides, herbicides, fungicides, metals (zinc, copper, lead, etc.), oil, grease, and other petroleum.

Stormwater Quality Treatment

The new and redeveloped impervious surfaces on the private development will be treated by proprietary treatment systems, a vegetated swale, filtration raingardens and planters. The public frontage improvements will be treated with filtration planters. The City of Oregon City requires treatment using the peak flow rate for the 1.0 inch, 24-hour storm. Refer to Appendix B for rainfall intensities.

All stormwater facilities were sized or verified using the WES BMP Sizing Tool. The WES BMP Tool assumes existing conditions is forest. Table 1 below provides a summary of the private water quality LID facilities.

Basin A will treat all surfaces through a vegetated filtration swale. Basin A was sized using the BMP tool for treatment only. Due to the proposed treatment swale, the time of concentration within the proposed basin A increases to 14.6 minutes. Time of concentration calculations are provided in Appendix B of this report. No detention is proposed for Basin A. Refer to flow control section of this report for flow control design. The proposed treatment swale will meet City design elements and has the following characteristics:

- Length of treatment swale: 150 feet
- Longitudinal slope: 0.5%,
- Bottom Width: 2 foot flat
- Side slope ratio: 3V:1H
- Ponding depth: 12 inches
- Growing Media: 18 inches
- Drain rock and separation layer: 15 inches
- Freeboard: 6 inches
- Lined Swale with 30 MIL PVC or equivalent
- 6-inch perforated underdrain pipe
- Orifice Controlled

Basin B and Basin R will both treat all surfaces within the basin through vegetated filtration rain gardens. Basin B and Basin R were sized using the BMP tool to meet both treatment and flow control requirements. The proposed rain gardens have the following characteristics:

- Side slope ratio: 3V:1H
- Ponding depth: 12 inches
- Growing Media: 18 inches
- Drain rock and separation layer: 21 inches
- Freeboard: 4 inches
- Lined Raingarden with 30 MIL PVC or equivalent
- 6-inch perforated underdrain pipe
- Orifice controlled

Basin U and Basin V will both treat all surfaces within the basin through vegetated filtration planters. Due to proposed road grades resulting from the existing filled site, the proposed planters will require check dams. Basin U and Basin V were sized using the BMP tool. To meet BMP modeling requirements, all cells within the proposed planters will be flat with a minimum of 12 inches of ponding within each cell.

As both basin planters U and V require check dams, impervious liner will be installed vertically at each check dam to promote surface storage in each cell to the maximum extent. All check dams will be 12 inches tall. The 6” perforated pipe on the planters will only be located within the lowest cell of the planter. As designed, soil media filtration will occur in each cell. Despite the impervious liner, filtered water will slowly find its way to the perorated underdrain in the bottom cell within the sloped facility. Refer to Appendix C for orifice sizes and planter details. The proposed rain gardens have the following characteristics:

- Side slopes: 3V:1H
- Ponding depth: 12 inches
- Growing Media: 18 inches
- Drain rock and separation layer: 15 inches
- Freeboard: 4 inches

- Lined Raingarden with 30 MIL PVC or equivalent
- 6-inch perforated underdrain pipe
- Orifice controlled

Table 1 – Private LID Treatment Requirements

Basin	Impervious Area Used in Design (AC) (1)	Treatment Area Required (sf)	Treatment Facility Used	Provided Treatment Area (sf)	Orifice Size (in)
A	1.27	1,082	Vegetated Filtration Swale	1,250	1.5
B	2.84	6,046	Vegetated Filtration Raingarden	7,370	4.0
R	0.79	1,946	Vegetated Filtration Raingarden	1,966	2.4
U	0.22	405	Vegetated Filtration Planter	405	1.4
V	0.24	441	Vegetated Filtration Planter	450	1.4

1. Impervious area used is total impervious area (new and modified) within the proposed basin.

Mechanical Treatment

Basins, where vegetated facilities are not a feasible option due to site constraints, will utilize proprietary stormwater treatment facilities for pollution reduction. Some site constraints include elevation constraints, steep slopes greater than 25%, high seasonal groundwater and existing contaminated soils. The proposed peak flows for each drainage basin and proposed stormwater treatment facilities were calculated using the Hydraflow Hydrograph Program's Santa Barbara Method (SBUH).

All proposed proprietary systems will treat all surfaces with BayFilter cartridges. These filters have been approved for General Use Level Designation (GULD) by the Washington Department of Ecology (WDOE). Oregon City relies on City of Portland Environmental Service's established list of approved manufactured stormwater treatment technology. Bayfilter vaults with enhanced media cartridges for all cartridge series are within this approved list.

The proposed cartridges are effective at targeting all pollutants of concern discussed above in the proposed improvements and impervious surfaces section. The BayFilter enhanced media cartridges provide treatment rates of 22.5 gpm per BayFilter 522 cartridge series and 45.0 gpm per BayFilter 545 cartridge series. BayFilter cartridges have been proven to achieve 80 percent TSS removal. Refer to Appendix C for WES Sizing Report and WQ proprietary treatment flow calculations. Runoff from proprietary facilities will overflow to approved underground detention facilities to meet the detention requirements.

Table 2 – Private Mechanical Treatment Requirements

Basin	Impervious Area Used in Design (AC) (1)	WQ Flow Required (2)	Treatment Facility Used	Required Cartridges	WQ Flow Provided
C	2.00	0.409	Bayfilter 522 w/ Cartridges	9	0.45
D	1.90	0.389	Bayfilter 522 w/ Cartridges	8	0.40
E	3.89	0.796	Bayfilter 522 w/ Cartridges	16	0.80
F	0.71	0.145	Bayfilter 522 w/ Cartridges	3	0.15
G	5.88	1.204	Bayfilter 545 w/ Cartridges	13	1.30
H	2.28	0.467	Bayfilter 522 w/ Cartridges	10	0.50
I	1.84	0.377	Bayfilter 522 w/ Cartridges	8	0.40
J	6.91	1.415	Bayfilter 545 w/ Cartridges	15	1.50

K	0.77	0.158	Bayfilter 522 w/ Cartridges	4	0.20
L	1.60	0.328	Bayfilter 522 w/ Cartridges	7	0.35
M	1.67	0.342	Bayfilter 522 w/ Cartridges	7	0.35
N	1.39	0.285	Bayfilter 522 w/ Cartridges	6	0.30
O	7.88	1.613	Bayfilter 545 w/ Cartridges	17	1.70
P	3.56	0.729	Bayfilter 545 w/ Cartridges	8	0.80

1. Impervious area used is total impervious area (new and modified) within the proposed basin.
2. WQ peak flow for all surfaces (impervious and pervious) within proposed basin
3. Converted from 22.5 GPM per cartridge for the 522 series and 45.0 GPM per cartridge for the 545 series (Refer to calculations in Appendix C for calculations)

As designed, all proposed impervious area will be treated before being discharged into the public system.

Water Quantity

The 56.2-acre project site drains to two different downstream bodies or water, the Willamette River and Clackamas River delta. In the pre-developed condition, approximately 31.0 acre drains southwest to Abernethy Creek before ultimately discharging into the Willamette River. The remaining 25.2 acre of the project site is conveyed north before discharging into the Clackamas River delta. The discharge location into the Clackamas River is directly before the river mouth, where the Clackamas River flows into the Willamette River.

The proposed conditions will impact existing drainage patterns. In the post-development condition, approximately 3.0 acres of additional area will contribute to the Kelly Field drainage basin that discharges into the Clackamas River. Additionally, the proposed site will have a large increase in impervious area.

Due to topographic constraints, runoff from portions of the development site are unable to be detained. The cumulative release from all proposed project basins, including these unmitigated areas, will meet City of Oregon City flow control standards. The post-developed rates will not exceed the pre-developed runoff rates for the project. Unmitigated basins include Basins A, C, Q, S, T and W.

As previously discussed, Basin B, R, U, and V all have proposed LID stormwater facilities that were sized with the BMP sizing tool for both treatment and detention. These facilities were modeled in Hydraflow using the SBUH method for conveyance capacity check only.

Basins D, E, F, G, H, I, J, K, L, M, N, O and P will include the construction of underground detention pipe systems to mitigate the increase of peak flow runoff from the post-development condition. These underground detention facilities were oversized to accommodate for unmitigated areas for the project. The underground detention were first modeled in Hydraflow Hydrographs. Stage/storage/discharge data was extracted and entered into the BMP tool to verify that the facility size suffices agency WQ requirements.

All proposed underground detention systems will be HDPE N-12 pipe with a design life of at least 100 years. Due to existing ground water elevations and contaminated soils onsite, all detention facilities will be designed as watertight. Infiltration was not used as a means of disposal as all facilities were modeled as lined. Each detention facility will require a flow control manhole with orifice and weir control. All underground detention systems can accommodate the 100-yr storm peak flows. The peak flow runoff for the existing and proposed conditions are summarized in Tables 3 on the following page. All flows reported in Table 3 are detained flows. In addition, calculations for the detention design can be found in Appendix C of this report. Refer to Appendix A for overall basin contribution and delineation.

Table 3 – Private Detention Summary

Private Onsite Project Limits	2-Yr Storm Event	10 -Yr Storm Event
Abernethy Basin Pre-developed Flow (cfs)	6.49	10.66
Kelly Field Basin Pre-Developed Flow (cfs)	5.40	8.83
Total Pre-developed Flow (cfs)	**11.89**	**19.49**
Abernethy Post-Developed Flow (cfs)	3.49	6.12
Kelly Field Post-Developed Flow (cfs)	2.54	5.79
Total Post-developed Flow (cfs)	**5.94**	**11.91**
Decrease of Peak Flow (cfs)	5.95	7.58
Percent Decrease of Peak Flow	50%	39%

Despite the increase in total area draining to the Kelly Field drainage basin, the post-developed peak 2-yr flow is still less than half the 2-yr pre-developed peak flow rate. Additionally, the total private project site meets all Oregon City flow control requirements for the project.

Public Water Quality and Detention

The proposed public frontage improvement will impact the existing drainage ditch along Washington Street, triggering water quality and detention requirements. Similarly, the sidewalk addition along Abernethy Road will require water quality and flow control devices.

The public runoff generated from the contributing area along Washington Street and Abernethy Road will be routed to LID stormwater planters before connecting to the existing conveyance system. These planters will filter the runoff through the 18” amended soil media mix and require orifice control devices. All proposed public planters were sized using BMP Tool and meet all Oregon City treatment and detention requirements. Refer to Appendix C for stormwater planter details and sizing.

Table 4 – Public Water Quality/Quantity Treatment Requirements

Basin	Impervious Area Used in Design (AC) (1)	Treatment Area Required (sf)	Treatment Facility Used	Provided Treatment Area (sf)	Orifice Size (in)
1	0.59	845	Vegetated Filtration Planter	850	1.9
2	0.39	684	Vegetated Filtration Planter	688	1.8
3	0.85	1,427	Vegetated Filtration Planter	1,427	2.5
4	0.24	551	Vegetated Filtration Planter	572	1.2
5	0.23	335	Vegetated Filtration Planter	324	1.2
6	0.36	516	Vegetated Filtration Planter	520	1.5
7	0.60	936	Vegetated Filtration Planter	940	2.0

1. Impervious area used is total impervious area (new and modified) within the proposed basin.

Conveyance

Stormwater pipes will be designed to convey the 10-year Rational Method storm event flows. Storm pipes will be analyzed at critical locations depending on size, slope and upstream basin size. Refer to Appendix D for conveyance calculations and Appendix A for upstream conveyance basin delineation.

Downstream Analysis

As designed, peak flows will decrease during all storm events; therefore, there is no negative impact to any existing downstream storm sewer systems.

All stormwater upstream drainage basins assume no detention. The assumed impervious area was determined based on the land use designation for the drainage basins. All upstream drainage basins were modeled using the SBUH method.

A thorough analysis of the existing conveyance system shall be conducted downstream of each proposed discharge location. The downstream collection systems include both closed conduits and open channels immediately downstream of the proposed discharge points. The design flow rate for pipes and open channel segments were analyzed at significant locations. Refer to Appendix A exhibits for discharge location identification and Appendix D for hydrographs and supporting documentation.

The project limits, both public and private, contributing to the Abernethy Creek drainage basin will include 29.8 acre of disturbed land. The project will ultimately outfall into Abernethy Creek tributary. The creek tributary extends approximately 520 feet south before entering joining Abernethy Creek and ultimately flowing to the Willamette River.

The existing stream channel geometry was estimated based upon available topographic survey and average stream cross sections. Using Civil Tool Pro, HHPR has concluded that the Abernethy Creek tributary segment has more than sufficient capacity to convey the 10-yr storm event. Flows will remain in the existing creek channel at and downstream of the point of discharge. Refer to Appendix D for as-builts and Abernethy Creek tributary capacity flow calculations.

The project limits contributing to the Kelly Field drainage basin will include 30.8 acre of disturbed land. The project will ultimately discharge into a 36” concrete culvert pipe. The existing 36” pipe extends west under Washington Street before outfalling west to the Clackamas River delta approximately 1500 feet downstream. Current topographic survey is underway to confirm existing pipe slopes, sizes and configuration. Downstream analysis will be conducted during the final design phase and documented in the final stormwater report.

No adverse impacts to the downstream system are anticipated due to runoff from this project. Refer to Appendix D for pipe and creek capacity calculations.

Operations and Maintenance

Mechanical treatment vaults, detention facilities are privately owned and to be maintained by the property owner. Due to the grading and site constraints, portion of private property are treated and managed on other properties of the site. All property owners will enter into a maintenance and access easement agreement with the City for inspection purposes.

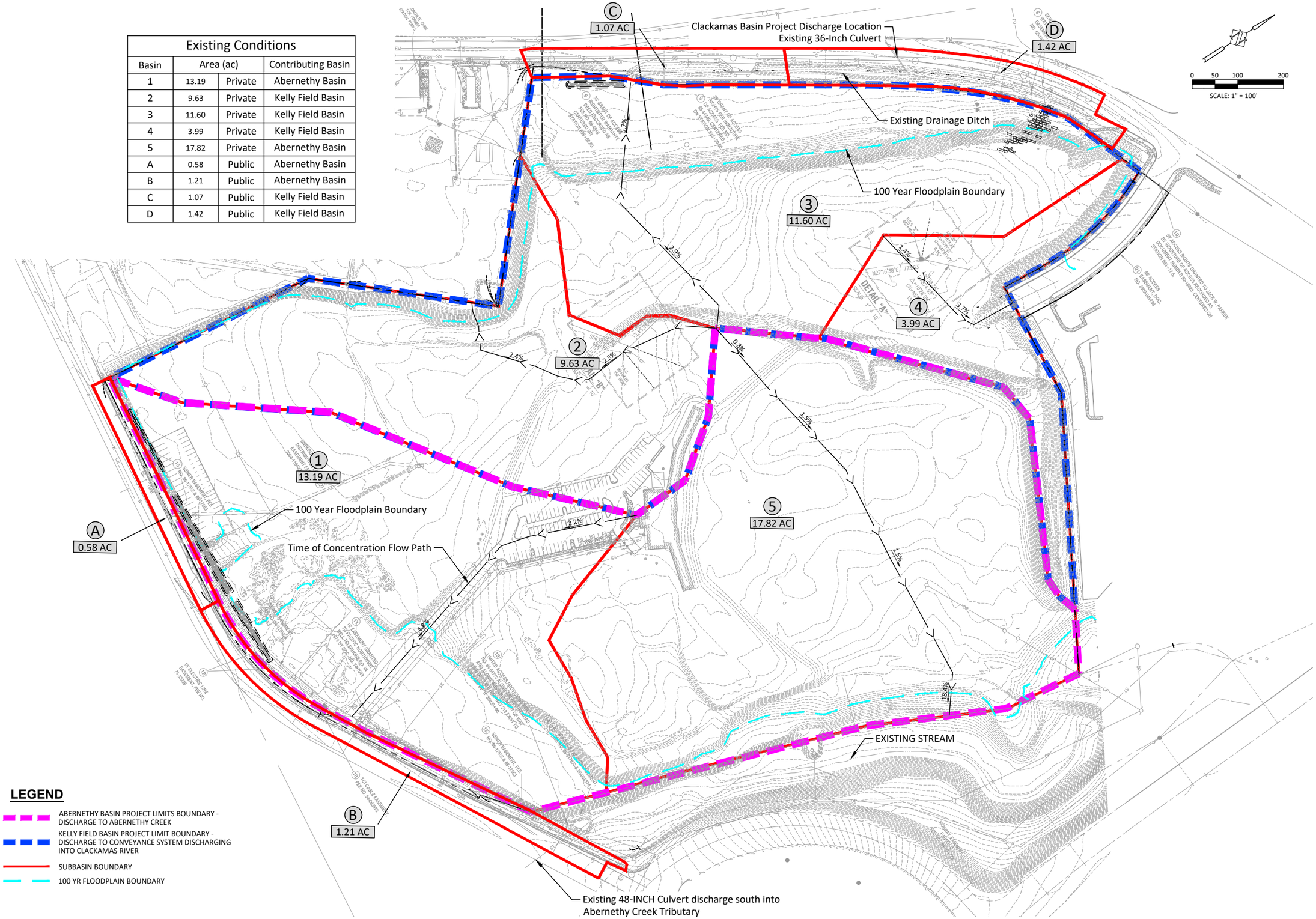
Proposed public planters managing either Washington Street or Abernethy Road stormwater runoff are publicly owned. These planters will be maintained by Oregon City. See Appendix E for facility operations and maintenance guidance.

Conclusion

The proposed stormwater management plan will achieve pollutant removal to the maximum extent practicable via biofiltration designed to target pollutants expected with a commercial development. The proposed private facilities satisfy the City of Oregon City water quality and quantity requirements. As designed, this project shall not create any adverse impacts to the downstream storm system.

APPENDIX A - MAPS

Existing Conditions			
Basin	Area (ac)		Contributing Basin
1	13.19	Private	Abernethy Basin
2	9.63	Private	Kelly Field Basin
3	11.60	Private	Kelly Field Basin
4	3.99	Private	Kelly Field Basin
5	17.82	Private	Abernethy Basin
A	0.58	Public	Abernethy Basin
B	1.21	Public	Abernethy Basin
C	1.07	Public	Kelly Field Basin
D	1.42	Public	Kelly Field Basin



LEGEND

- ABERNETHY BASIN PROJECT LIMITS BOUNDARY - DISCHARGE TO ABERNETHY CREEK
- KELLY FIELD BASIN PROJECT LIMIT BOUNDARY - DISCHARGE TO CONVEYANCE SYSTEM DISCHARGING INTO CLACKAMAS RIVER
- SUBBASIN BOUNDARY
- 100 YR FLOODPLAIN BOUNDARY

PRE-DEVELOPED BASIN

OC MIXED-USE COMMERCIAL

OREGON CITY, OR

Harper Houf Peterson Righellis Inc.
ENGINEERS ◆ PLANNERS
LANDSCAPE ARCHITECTS ◆ SURVEYORS
205 SE Spokane Street, Suite 200, Portland, OR 97202
phone: 503.221.1131 www.hhpr.com fax: 503.221.1171

DESIGNED:	DRAWN:	CHECKED:	DATE:
HHPR	HHPR	HHPR	MARCH 2021

REVISIONS

DATE	NO.	DESCRIPTION

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1

JOB NO.

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POST-DEVELOPED STORMWATER EXHIBIT
OC MIXED-USE COMMERCIAL
OREGON CITY, OR

Proposed Conditions		
Contributing Area	Area (ac)	
Abernethy Basin	28	Private
Abernethy Basin	2.5	Public
Kelly Field Basin	28.2	Private
Kelly Field Basin	1.8	Public

WASHINGTON ST

Clackamas Basin Project Discharge Location
Existing 36-Inch Culvert

PIPE 1
PIPE 2
PIPE 3
PIPE 4
PIPE 5
PIPE 6
PIPE 7
PIPE 8
PIPE 9

1 0.69 AC
2 0.60 AC
3 1.23 AC
4 0.28 AC
5 0.26 AC
6 0.42 AC
7 0.79 AC
A 1.78 AC
B 3.83 AC
C 2.27 AC
D 2.10 AC
E 4.04 AC
F 0.82 AC
G 6.56 AC
H 2.59 AC
I 1.90 AC
J 7.13 AC
K 0.97 AC
L 1.71 AC
M 1.80 AC
N 1.51 AC
O 8.31 AC
P 3.74 AC
Q 0.31 AC
R 1.30 AC
S 1.15 AC
T 0.36 AC
U 0.36 AC
V 0.39 AC
W 1.13 AC

100 Year Proposed
Floodplain Boundary

EXISTING STREAM

ABERNETHY ROAD
REDLAND ROAD
HIGHWAY 213

BP: 0+00.00
EP: 2+44.83

0 50 100 200
SCALE: 1" = 100'

ABERNETHY BASIN PROJECT LIMITS BOUNDARY - DISCHARGE TO ABERNETHY CREEK

KELLY FIELD BASIN PROJECT LIMIT BOUNDARY - DISCHARGE TO CONVEYANCE SYSTEM DISCHARGING INTO CLACKAMAS RIVER

SUBBASIN BOUNDARY

100 YR FLOODPLAIN BOUNDARY

PROPOSED STORM SEWER PIPE

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Private WQ Facilities		
Basin	WQ Facility	Area (sf) or Cartridge
A	Swale	1,250
B	Raingarden	7,370
C	BF-8-12-9	9 Cartridges - 522 Series
D	BF-8-12-8	8 Cartridges - 522 Series
E	BF-8-20-16	16 Cartridges - 522 Series
F	BF-6-8-3	3 Cartridges - 522 Series
G	BF-8-18-13	13 Cartridges - 545 Series
H	BF-8-13-10	10 Cartridges - 522 Series
I	BF-8-12-8	8 Cartridges - 522 Series
J	BF-8-20-15	15 Cartridges - 545 Series
K	BF-6-9-4	4 Cartridges - 522 Series
L	BF-8-12-7	7 Cartridges - 522 Series
M	BF-6-9-4	4 Cartridges - 522 Series
N	BF-6-8-3	3 Cartridges - 522 Series
O	BF-8-20-17	17 Cartridges - 545 Series
P	BF-8-12-8	8 Cartridges - 545 Series
R	Raingarden	1,966
U	Planter	405
V	Planter	450

Public WQ Facilities		
Basin	WQ Facility	Area (sf)
1	Planter	850
2	Planter	688
3	Planter	1,427
4	Planter	572
5	Planter	324
6	Planter	520
7	Planter	940



WQ STORMWATER EXHIBIT

OC MIXED-USE COMMERCIAL

OREGON CITY, OR

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	REVISIONS	

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JOB NO.

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Ultimate Downstream Discharge Location for Abernethy Creek @ Willamette River

Ultimate Downstream Discharge Location of Kelly Filed @ Clackamas River

Kelly Field Project Discharge Location Existing 36-Inch Culvert

0 50 100 200
SCALE: 1" = 100'

K1
15.0 AC

K2
50.9 AC

A1
236.2 AC

Existing Conveyance Stream

Abernethy Drainage Basin Discharge Location Existing drainage stream

Upstream Drainage Basins

Upstream Basin	Total Area (ac)	City Land Use Designation	% Assumed Impervious	Soil Group
K1	15.0	I -Institutional	85%	A
K2	50.9	GI - General Industrial	72%	D
A1	236.2	R6, R8, R10 - Low Density Residential	38%	C

ABERNETHY DISCHARGE BASIN BOUNDARY - DISCHARGE TO ABERNETHY CREEK

KELLY FIELD DRAINAGE BASIN BOUNDARY - DISCHARGE TO EXISTING CONVEYANCE SYSTEM

UPSTREAM BASIN MAP
OC MIXED-USE COMMERCIAL
OREGON CITY, OR

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FLOODPLAIN EARTHWORK EXHIBIT
OC MIXED-USE COMMERCIAL
OREGON CITY, OR

WASHINGTON ST

FILL 7
6,200 CY

CUT 3
16,800 CY

LOWER FFE 35.0
2ND FLOOR FFE 45.0
3RD FLOOR FFE 55.0
GROUND FFE 66.0

CUT 2
2,100 CY

FILL 6
3,100 CY

CUT 4
1,300 CY

FLOODPLAIN ELEVATION
(50.7')

FFE 66.0

FILL 5
5,800 CY

FFE 65.0

FFE 52.0

CUT 1
24,000 CY

UPPER FFE 65.0
GROUND FFE 52.0

FFE 67.0

FFE 68.0

PROPOSED BUILDING
FFE 69.0

FILL 2
6,250 CY

FILL 1
8,000 CY

FILL 3
5,500 CY

FILL 4
700 CY

FLOODPLAIN EARTHWORK

RAW CUT = 44,200 CY
RAW FILL = 35,550 CY
TOTAL EARTHWORK IN FLOODPLAIN = 8,650 CY CUT

ABERNETHY ROAD

REDLAND ROAD

HIGHWAY 213

0 50 100 200
SCALE: 1" = 100'

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JOB NO.

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\\HHPR-SVR-04\Projects\01-Portland\LRS (LRS Architects)\LRS-20 (OC Entertainment)\LRS20-DWGS\C3D\ANALYSIS\ TRASH ANALYSIS.dwg

LEGEND

- TRASH (0' - 2' BELOW FS)
- TRASH (2' - 5' BELOW FS)
- TRASH (5' - 10' BELOW FS)
- TRASH (10' - 15' BELOW FS)
- TRASH (15' - 30' BELOW FS)

NOTES

1.) TOP OF TRASH ELEVATIONS PROVIDED FROM THE RIVERS AT OREGON CITY EXISTING CONDITIONS/BORINGS EXHIBIT DATED 10/12/07

(8) SEWER AND WATER LINE EASEMENT, FEE NO. 68-16355

(10) 50' ACCESS RIGHTS GRANTED TO JACK W. PARKER BY INDENTURE OF ACCESS RECORDED AS DOCUMENT NUMBER 82-18423. CENTERED ON STATION 683+17.5.

(21) 80' ACCESS EASEMENT, DOC. NO. 2002-049788

WASHINGTON ST

LOWER FFE 35.0
2ND FLOOR FFE 45.0
3RD FLOOR FFE 55.0
GROUND FFE 66.0

(9) 35' GRANT OF ACCESS RIGHTS PER INDENTURE OF ACCESS FEE NO. 85-44740. CENTERED ON STATION 693+30.00.

(9) 35' GRANT OF ACCESS RIGHTS PER WARRANTY DEED RECORDED AS FEE NO. 69-4918 CENTERED ON STATION 696+00.00.

FFE 66.0
FFE 65.0
FFE 52.0
FFE 67.0
FFE 68.0
PROPOSED BUILDING FFE 69.0

UPPER FFE 65.0
GROUND FFE 52.0

(22) UNDERGROUND DISTRIBUTION LINE EASEMENT FEE NO. 2003-110133

(13) LIMITED ACCESS PROVISIONS PER FEE NO. 84-04777 ALONG HWY 213 RIGHT OF WAY AND ALONG WESTERLY RIGHT OF WAY LINE OF STATE HIGHWAY NO. 213 EXISTING TO THE EAST OF "H" 30025+00.

(14) (16) DRAINAGE FACILITY EASEMENT, FEE NO. 86-017677 & 86-036374

(15) SEWER EASEMENT, FEE NO. 86-17652 & 86-17653

(11) 10' EASEMENT GRANTED TO PACIFIC NORTHWEST BELL TELEPHONE CO. BY 1974 BY DOC. NO. 74-7043

(12) SEWER EASEMENT, FEE NO. 86-17652 & 86-17653

SEWER EASEMENT, FEE NO. 86-17652 & 86-17653

(18) TCI CABLE EASEMENT, FEE NO. 94-063875

REDLAND ROAD

HIGHWAY EASEMENT PARCEL 3 FEE NO. 84-0477

N57°59'05"E 469.55'

PI="H" 30022+ (AHEAD STATIO

ABERNETHY ROAD

0 30 60 120
SCALE: 1" = 60'

JOB NO.	SHEET NO.
LRS-20	

DESCRIPTION	DESIGNED:	DRAWN:	CHECKED:	DATE:
R E V I S I O N S	HHPR	HHPR	HHPR	2/02/2021

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TRASH COMPARISON STUDY

OREGON CITY MIXED USE

OREGON CITY, OR

APPENDIX B – SOILS AND BASIN DATA

Soil Map—Clackamas County Area, Oregon
(OC Mixed Use Commercial)



Map Scale: 1:4,920 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Clackamas County Area, Oregon
Survey Area Data: Version 16, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 13, 2019—Jul 25, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
67	Newberg fine sandy loam	0.5	0.8%
76B	Salem silt loam, 0 to 7 percent slopes	0.8	1.3%
82	Urban land	56.8	91.6%
84	Wapato silty clay loam	1.0	1.6%
92F	Xerochrepts and Haploxerolls, very steep	3.0	4.8%
Totals for Area of Interest		**62.1**	**100.0%**

Clackamas County Area, Oregon

82—Urban land

Map Unit Setting

National map unit symbol: 227g
Elevation: 50 to 400 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Data Source Information

Soil Survey Area: Clackamas County Area, Oregon
Survey Area Data: Version 16, Jun 11, 2020

Table 2-2a Runoff curve numbers for urban areas [1/]

Cover description: Cover type and hydrologic condition	Average percent impervious area [2/]	Curve numbers for hydrologic soil group: 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
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation) [5/]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

Proposed Conditions

[1] Average runoff condition, and $I_a = 0.2S$.

[2] The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

[3] CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

[4] Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

[5] Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Table 2-2c Runoff curve numbers for other agricultural lands [1/]

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range—continuous forage for grazing. [2/]	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element. [3/]	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30 [4/]	48	65	73
Woods—grass combination (orchard or tree farm). [5/]	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods. [6/]	Poor	45	66	77	83
	Fair	36	60	73 Existing Conditions	79
	Good	30 [4/]	55	70	77 Proposed Conditions
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

1 Average runoff condition, and $I_a = 0.2S$.

2 *Poor:* <50%) ground cover or heavily grazed with no mulch.
Fair: 50 to 75% ground cover and not heavily grazed.
Good: > 75% ground cover and lightly or only occasionally grazed.

3 *Poor*: <50% ground cover.
Fair: 50 to 75% ground cover.
Good: >75% ground cover.

4 Actual curve number is less than 30; use CN = 30 for runoff computations.

5 CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.

6 *Poor:* Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
Fair: Woods are grazed but not burned, and some forest litter covers the soil.
Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

Oregon City Mixed Use

Precipitation rates governing water quality and detention

Prepared by Harper Houf Peterson Righellis Inc.

Job No. LRS-20

February 2021

Rainfall Depth in Oregon City

Event	Precip (in/hr)
WQ	1.00
2-yr:	2.8
10-yr:	3.5
25-yr:	4.0
50-yr:	4.4
100-yr:	4.5

OC Mixed use

Time of Concentration Break Down

Prepared by Harper Houf Peterson Righellis Inc.
Job No. LRS-20
March 2021

Notes: Time of Concentration (tc) calculated to the treatment discharge location
2-Year, 24-Hour Rainfall = 2.8 inches

EXISTING

1		2		3		4		5	
t_c sheet flow:		t_c sheet flow:		t_c sheet flow:		t_c sheet flow:		t_c sheet flow:	
L =	75 ft	L =	76 ft	L =	70 ft	L =	34 ft	L =	25 ft
S =	2.2 %	S =	2.3 %	S =	2.9 %	S =	1.4 %	S =	0.8 %
n =	0.150 short grass	n =	0.150 short grass	n =	0.150 short grass	n =	0.150 short grass	n =	0.150 short grass
t_{c1} =	**0.14 Min**	**t_{c1} =**	**0.14 Min**	**t_{c1} =**	**0.12 Min**	**t_{c1} =**	**0.09 Min**	**t_{c1} =**	**0.09 Min**
t_c Shallow Concentrate flow:		t_c Shallow Concentrate flow:		t_c Shallow Concentrate flow:		t_c Shallow Concentrate flow:		t_c Shallow Concentrate flow:	
L =	710 ft	L =	570 ft	L =	560 ft	L =	346 ft	L =	900 ft
S =	4.80 %	S =	2.40 %	S =	5.70 %	S =	3.70 %	S =	1.50 %
C_p =	16.13 Unpaved	C_p =	16.13 Unpaved	C_p =	16.13 Unpaved	C_p =	16.13 Unpaved	C_p =	16.13 Avg.
V =	3.53 fps	V =	2.50 fps	V =	3.85 fps	V =	3.10 fps	V =	1.98 fps
t_{c2} =	**3.35 Min**	**t_{c2} =**	**3.80 Min**	**t_{c2} =**	**2.42 Min**	**t_{c2} =**	**1.86 Min**	**t_{c2} =**	**7.59 Min**
t_c Pipe flow:		t_c Pipe flow:		t_c Pipe flow:		t_c Shallow Concentrate flow:		t_c Shallow Concentrate flow:	
L =	0 ft	L =	0 ft	L =	0 ft	L =	-5 ft	L =	95 ft
S =	1.5 %	S =	0.0 %	S =	0.5 %	S =	14.50 %	S =	18.40 %
n =	0.013 Pipe	n =	0.013 Pipe	n =	0.013 Pipe	C_p =	16.13 Unpaved	C_p =	16.13 Avg.
D =	15 in	D =	15 in	D =	48 in	V =	6.14 fps	V =	6.92 fps
V =	6.42 fps	V =	0.00 fps	V =	8.05 fps	**t_{c3} =**	**-0.01 Min**	**t_{c3} =**	**0.23 Min**
t_{c3} =	**0.00 Min**	**t_{c3} =**	**0.00 Min**	**t_{c3} =**	**0.00 Min**				
t_c Open Channel flow:		t_c Open Channel flow:		t_c Open Channel flow:		t_c Open Channel flow:		t_c Open Channel flow:	
L =	0 ft	L =	0 ft	L =	0 ft	L =	0 ft	L =	0 ft
K =	1.64 ft/sec for gravel	K =	1.64 ft/sec for gravel	K =	1.64 ft/sec for gravel	K =	1.64 ft/sec for gravel	K =	1.64 ft/sec for gravel
i =	0.005 ft/ft	i =	0.005 ft/ft	i =	0.005 ft/ft	i =	0.005 ft/ft	i =	0.005 ft/ft
n =	0.33 average for gravel	n =	0.33 average for gravel	n =	0.33 average for gravel	n =	0.33 average for gravel	n =	0.33 average for gravel
V_{pore} =	0.025 ft/sec	V_{pore} =	0.025 ft/sec	V_{pore} =	0.025 ft/sec	V_{pore} =	0.025 ft/sec	V_{pore} =	0.025 ft/sec
t_{c4} =	**0.00 Min**	**t_{c4} =**	**0.00 Min**	**t_{c4} =**	**0.00 Min**	**t_{c4} =**	**0.00 Min**	**t_{c4} =**	**0.00 Min**
$t_c = t_{c1} + t_{c2} + t_{c3}$ =	**3.5 Min**	**$t_c = t_{c1} + t_{c2} + t_{c3}$ =**	**3.9 Min**	**$t_c = t_{c1} + t_{c2} + t_{c3}$ =**	**2.5 Min**	**$t_c = t_{c1} + t_{c2} + t_{c3}$ =**	**1.9 Min**	**$t_c = t_{c1} + t_{c2} + t_{c3}$ =**	**7.9 Min**

PROPOSED

A	
t_c sheet flow:	
L =	227 ft
S =	6.0 %
n =	0.011 Paved
t_{c1} =	**0.03 Min**
t_c Shallow Concentrate flow:	
L =	0 ft
S =	1.0 %
C_p =	16.13 Unpaved
V =	1.61 fps
t_{c2} =	**0.00 Min**
t_c Pipe flow:	
L =	250 ft
S =	0.5 %
n =	0.013 Pipe
D =	12 in
V =	3.32 fps
t_{c3} =	**1.26 Min**
t_c Open Channel flow:	
L =	151 ft
S =	0.5 %
n =	0.25 veg swale
d =	0.43 ft
B =	2 ft
Cross Slope =	0 %
R =	0.22
V =	0.19 fps
t_{c4} =	**13.33 Min**
$t_c = t_{c1} + t_{c2} + t_{c3}$ =	**14.6 Min**

5.0 Minute Minimum used for all existing and proposed basins

Oregon City Mixed Use

Basin Characteristics

Prepared by Harper Houf Peterson Righellis Inc.
Job No. LRS-20
February 2021

NRCS Curve Numbers (CN) used:

Ground Cover	D	Condition
Woods (Fair Condition)	79	Existing
Woods (Good Condition)	77	Proposed Landscaped Areas
Impervious	98	Proposed

Hydrologic Group: D

Private Pre-Developed Conditions:

Basin	Total Area (SF)	Total Area (AC)	Impervious Area (SF)	Impervious Area (AC)	Pervious Area (SF)	Pervious Area (AC)	t_c (min)	Conveyance Basin	2 YR Peak Flow (cfs)	10 YR Peak Flow (cfs)
1	574687	13.19	0	0.00	574687	13.19	5.0	Abernethy Basin	2.83	4.62
2	419559	9.63	0	0.00	419559	9.63	5.0	Kelly Field Basin	2.06	3.37
3	505119	11.60	0	0.00	505119	11.60	5.0	Kelly Field Basin	2.49	4.06
4	173660	3.99	0	0.00	173660	3.99	5.0	Kelly Field Basin	0.86	1.40
5	776273	17.82	0	0.00	776273	17.82	7.9	Abernethy Basin	3.66	6.04
Total	**2449298**	**56.23**	**0**	**0**	**2449298**	**56.23**			**11.89**	**19.49**

Private Proposed Conditions:

Basin	Total Area (SF)	Total Area (AC)	Impervious Area (SF)	Impervious Area (AC)	Pervious Area (SF)	Pervious Area (AC)	t_c (min)	Conveyance Basin	Detained 2 YR Flows (cfs)	10 YR Undetained Peak Flow (cfs)
A	77585	1.78	62252	1.43	14083	0.32	14.6	Abernethy Basin	0.878	1.132
B	166622	3.83	132267	3.04	26985	0.62	5.0	Abernethy Basin	0.714	2.674
C	98703	2.27	87317	2.00	11386	0.26	5.0	Abernethy Basin	1.342	1.715
D	91563	2.10	82810	1.90	8753	0.20	5.0	Abernethy Basin	0.025	1.616
E	175793	4.04	169257	3.89	6536	0.15	5.0	Abernethy Basin	0.025	3.231
F	35873	0.82	30914	0.71	4959	0.11	5.0	Abernethy Basin	0.070	0.614
G	285904	6.56	256058	5.88	29846	0.69	5.0	Abernethy Basin	0.032	5.021
H	113018	2.59	99178	2.28	13840	0.32	5.0	Abernethy Basin	0.109	1.962
I	82695	1.90	80020	1.84	2675	0.06	5.0	Abernethy Basin	0.063	1.525
J	310622	7.13	300842	6.91	9780	0.22	5.0	Kelly Field Basin	0.597	5.726
K	42359	0.97	33728	0.77	8631	0.20	5.0	Abernethy Basin	0.032	0.69
L	74694	1.71	69608	1.60	5086	0.12	5.0	Kelly Field Basin	0.081	1.346
M	78462	1.80	72865	1.67	5597	0.13	5.0	Kelly Field Basin	0.085	1.407
N	65574	1.51	60569	1.39	5005	0.11	5.0	Kelly Field Basin	0.078	1.171
O	361844	8.31	343196	7.88	18648	0.43	5.0	Kelly Field Basin	0.677	6.583
P	162947	3.74	155167	3.56	7780	0.18	5.0	Kelly Field Basin	0.126	2.97
Q	13548	0.31	5330	0.12	8218	0.19	5.0	Kelly Field Basin	0.11	0.155
R	56683	1.30	34469	0.79	20248	0.46	5.0	Kelly Field Basin	0.238	0.783
S	50103	1.15	0	0.00	50103	1.15	5.0	Kelly Field Basin	0.206	0.354
T	22790	0.52	0	0.00	22790	0.52	5.0	Kelly Field Basin	0.093	0.16
U	15570	0.36	9557	0.22	5609	0.13	5.0	Kelly Field Basin	0.074	0.219
V	16916	0.39	10595	0.24	5871	0.13	5.0	Kelly Field Basin	0.085	0.235
W	49430	1.13	0	0.00	49430	1.13	5.0	Abernethy Basin	0.203	0.347
Total	**2449298**	**56.23**	**2075847**	**47.65**	**280949**	**6.45**			**5.94**	**41.64**

Public Proposed Frontage Improvement Conditions:

Basin	Total Area (SF)	Total Area (AC)	Impervious Area (SF)	Impervious Area (AC)	Pervious Area (SF)	Pervious Area (AC)	t_c (min)	Conveyance Basin	10 YR Undetained Peak Flow (cfs)
1	30128	0.69	25537	0.59	3741	0.09	5	Kelly Field Basin	0.51
2	25928	0.60	17125	0.39	8115	0.19	5	Kelly Field Basin	0.38
3	53592	1.23	36830	0.85	15335	0.35	5	Kelly Field Basin	0.80
4	12394	0.28	10522	0.24	1299	0.03	5	Abernethy Basin	0.21
5	11488	0.26	9801	0.23	1363	0.03	5	Abernethy Basin	0.20
6	18326	0.42	15756	0.36	2053	0.05	5	Abernethy Basin	0.31
7	34238	0.79	26259	0.60	7043	0.16	5	Abernethy Basin	0.54
Total	**186094**	**4.27**	**141830**	**3.26**	**38949**	**0.89**			**2.94**

Upstream Conveyance Basin Condtions:

Upstream Basin	Total Area (SF)	Total Area (AC)	Impervious Area (SF)	Impervious Area (AC)	Pervious Area (SF)	Pervious Area (AC)	Drainage Basin	Soil Group	10 YR Undetained Peak Flow (cfs)
K1	653873	15.01	555792	12.76	98081	2.25	Kelly Field Basin	A	10.45
K2	2216961	50.89	1596211.92	36.64	620749	14.25	Kelly Field Basin	D	34.86
A1	10289971	236.23	3910189	89.77	6379782	146.46	Abernethy Basin	C	105.33
Total	**13160805**	**302.13**	**6062193**	**139.17**	**7098612**	**162.96**			**150.64**

APPENDIX C – WATER QUALITY / WATER QUANTITY

WES BMP Sizing Software Version 1.6.0.2, May 2018

WES BMP Sizing Report

Project Information

Project Name	Oregon City Mixed-Use
Project Type	Commercial
Location	
Stormwater Management Area	11440
Project Applicant	Summit Development Group
Jurisdiction	OutofDistrict

Drainage Management Area

Name	Area (sq-ft)	Pre-Project Cover	Post-Project Cover	DMA Soil Type	BMP
A - Impervious	62,252	Forested	ConventionalConcrete	D	Vegetated Swale - Basin A
A - Pervious	14,083	Forested	LandscapeDsoil	D	Vegetated Swale - Basin A
B -Impervious	132,267	Forested	ConventionalConcrete	D	Raingarden - Basin B
B - Pervious	26,985	Forested	LandscapeDsoil	D	Raingarden - Basin B
R - Impervious	34,469	Forested	ConventionalConcrete	D	Raingarden - Basin R
R - Pervious	20,248	Forested	LandscapeDsoil	D	Raingarden - Basin R
U - Impervious	9,557	Forested	ConventionalConcrete	D	Planter - Basin U
U - Pervious	5,609	Forested	LandscapeDsoil	D	Planter - Basin U
V - Impervious	10,595	Forested	ConventionalConcrete	D	Planter - Basin V
V - Pervious	5,871	Forested	LandscapeDsoil	D	Planter - Basin V

LID Facility Sizing Details

LID ID	Design Criteria	BMP Type	Facility Soil Type	Minimum Area (sq-ft)	Planned Areas (sq-ft)	Orifice Diameter (in)
Raingarden - Basin B	FlowControlAndTreatment	Rain Garden - Filtration	Lined	6,046.3	7,370.0	4.0

Raingarden - Basin R	FlowControlAndTreatment	Rain Garden - Filtration	Lined	1,945.7	1,966.0	2.3
Planter - Basin U	FlowControlAndTreatment	Stormwater Planter - Filtration	Lined	404.5	405.0	1.4
Planter - Basin V	FlowControlAndTreatment	Stormwater Planter - Filtration	Lined	441.1	450.0	1.4
Vegetated Swale - Basin A	WaterQuality	Vegetated Swale - Filtration	Lined	1,081.7	1,250.0	1.5

Pond Sizing Details

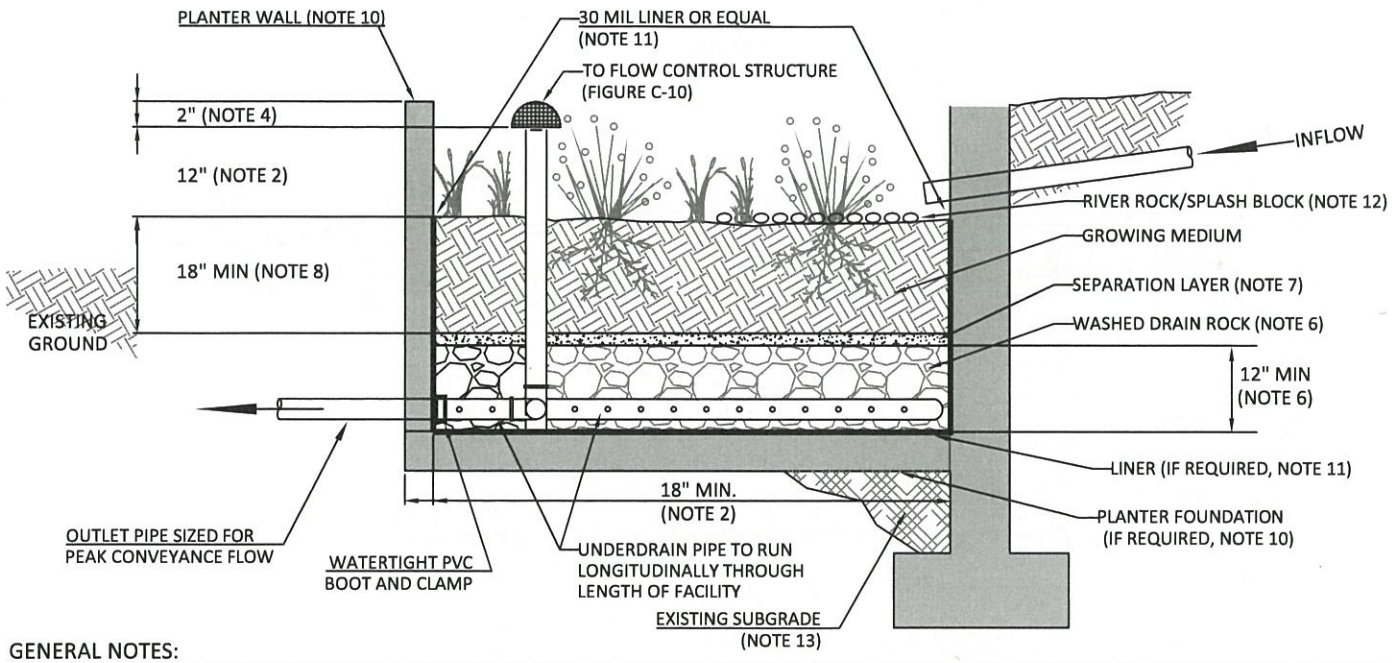
1. FCWQT = Flow control and water quality treatment, WQT = Water quality treatment only

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.

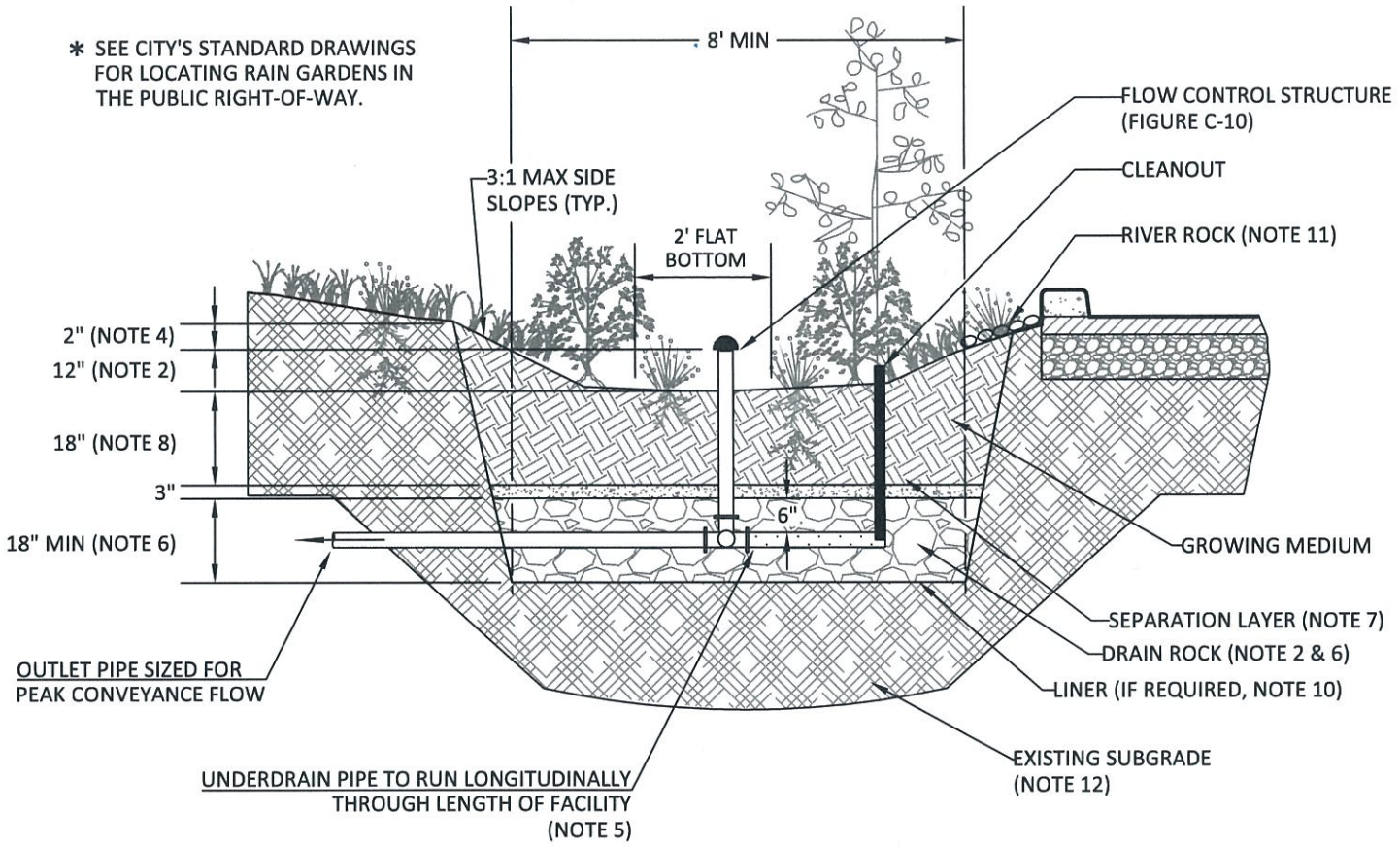
* SEE CITY'S STANDARD DRAWINGS FOR LOCATING PLANTERS IN THE PUBLIC RIGHT-OF-WAY.



GENERAL NOTES:

1. **PROVIDE PROTECTION** FROM ALL VEHICLE TRAFFIC, EQUIPMENT STAGING, AND FOOT TRAFFIC IN PROPOSED INFILTRATION AREAS PRIOR TO, DURING AND AFTER CONSTRUCTION.
2. **DIMENSIONS:**
   -WIDTH: 18" MINIMUM
   -DEPTH OF PLANTER (FROM TOP OF GROWING MEDIUM TO OVERFLOW ELEVATION): 12"
   -SLOPE OF PLANTER: 0.5% OR LESS
3. **SETBACKS**
   -PLANTERS MUST BE MINIMUM OF 5 FEET FROM PROPERTY LINE.
4. **OVERFLOW:**
   -INLET ELEVATION MUST ALLOW FOR 2" OF FREEBOARD, MINIMUM. PROTECT FROM DEBRIS AND SEDIMENT WITH STRAINER OR GRATE.
   -IDENTIFY EMERGENCY OVERFLOW ROUTE ON THE STORMWATER MANAGEMENT PLAN.
5. **PIPING:**
   -PERFORATED UNDERDRAIN PIPING: SHALL BE ABS SCH. 40, DUCTILE IRON, OR PVC SCH.40, 6" MINIMUM DIAMETER. PIPING MUST HAVE 1% GRADE AND FOLLOW THE UNIFORM PLUMBING CODE. PVC NOT ALLOWED ABOVE GROUND.
   -OVERFLOW PIPING: SHALL BE ABS SCH.40, DUCTILE IRON, OR PVC SCH.40 AND SHALL NOT BE PERFORATED. MIMIMUM DIAMETER IS 6". PIPING MUST HAVE 1% GRADE AND FOLLOW THE UNIFORM PLUMBING CODE. PVC NOT ALLOWED ABOVE GROUND.
6. **DRAIN ROCK:**
   -SIZE FOR FLOW-THROUGH PLANTER: 1 1/2" - 3/4" WASHED
   -DEPTH: 12" MINIMUM
7. **SEPARATION** BETWEEN DRAIN ROCK AND GROWING MEDIUM: SHALL BE A 3" LAYER OF 3/4" - 1/4" OPEN GRADED AGGREGATE.
8. **GROWING MEDIUM:**
   -DEPTH: 18" MINIMUM
   -SEE APPENDIX A FOR SPECIFICATION OR USE SAND/LOAM/COMPOST 3-WAY MIX.
   -FACILITY SURFACE AREA MAY BE REDUCED BY 20% WHEN GROWING MEDIA DEPTH IS INCREASED TO 30" OR MORE.
9. **VEGETATION:** FOLLOW LANDSCAPE PLANS OR REFER TO PLANTING REQUIREMENTS IN APPENDIX A.
10. **PLANTER FOUNDATION AND WALLS:**
    -MATERIALS SHALL BE 4" REINFORCED CONCRETE, STONE, BRICK, OR OTHER DURABLE MATERIAL.
    -CONCRETE, BRICK, OR STONE WALLS SHALL BE INCLUDED ON FOUNDATION PLANS.
    -INSTALL INVERTED CURB AS NEEDED BETWEEN PLANTER AND ROAD SUBGRADE.
    -WALL HEIGHTS GREATER THAN 24" ABOVE GRADE REQUIRE HANDRAIL.
11. **WATERPROOF LINER (IF REQUIRED):**
    -LINER SHALL BE 30 MIL PVC OR EQUIVALENT, FOR FLOW THROUGH FACILITIES.
    -A WATERPROOF LINER IS NOT REQUIRED IF THE FOUNDATION OR WALL MATERIAL IS WATERPROOF REINFORCED CONCRETE OR APPROVED EQUAL.
12. **INSTALL RIVER ROCK** SPLASH PAD TO TRANSITION FROM INLET TO GROWING MEDIUM. SIZE OF ROCK SHALL BE 1" - 3".
13. **SEASONAL HIGH GROUNDWATER SEPARATION:**
    -SEPARATION DISTANCE AS REQUIRED BY THE CITY.
14. **SUBMIT RETAINING WALL DESIGN** IN ACCORDANCE WITH APPLICABLE STRUCTURAL CODES FOR REVIEW AND APPROVAL.

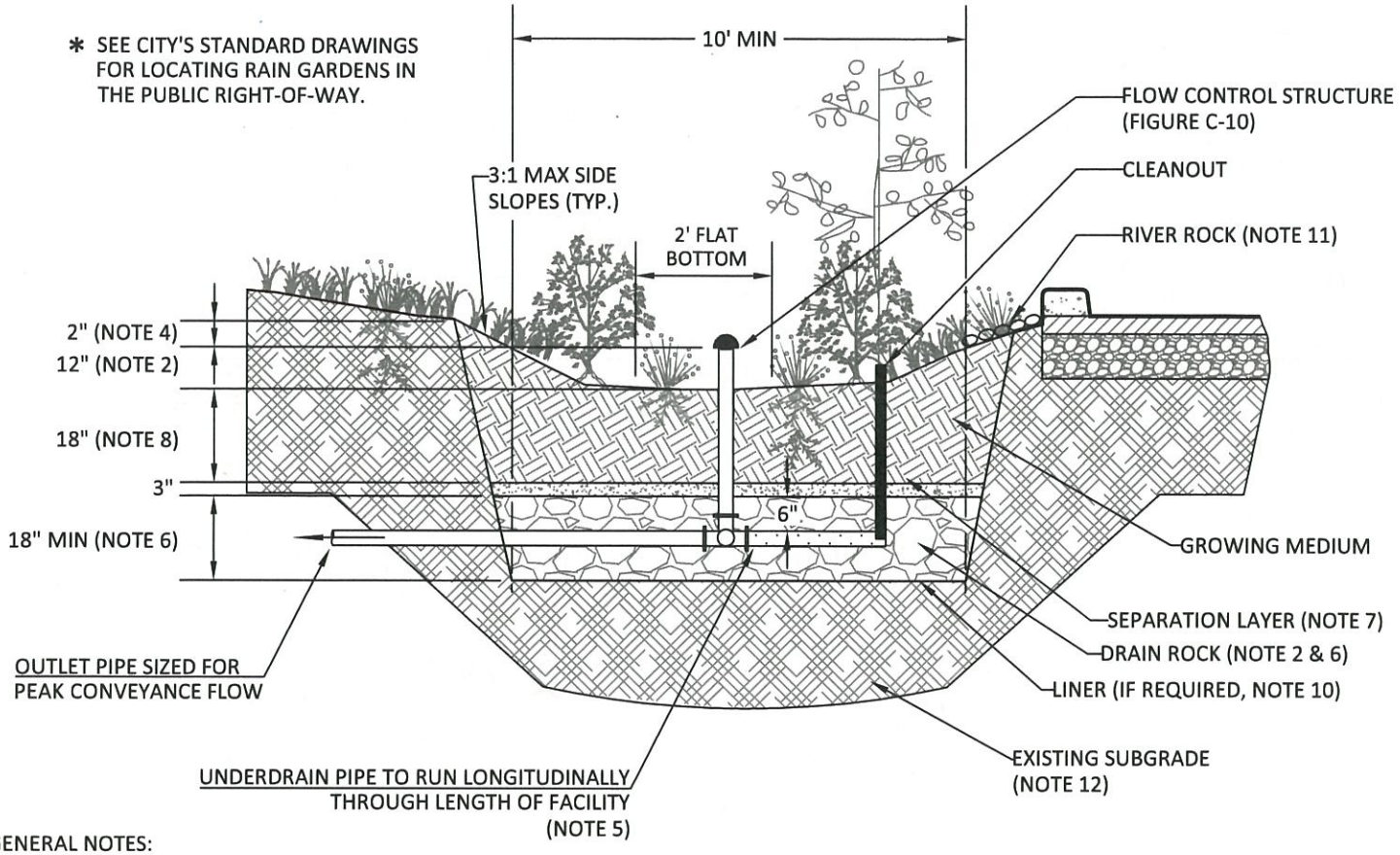
Stormwater Planter - Filtration
Figure C-1



GENERAL NOTES:

1. **PROVIDE PROTECTION** FROM ALL VEHICLE TRAFFIC, EQUIPMENT STAGING, AND FOOT TRAFFIC IN PROPOSED INFILTRATION AREAS PRIOR TO, DURING AND AFTER CONSTRUCTION. UNLESS REQUIRED BY SITE CONDITIONS, UNLINED RAIN GARDENS ARE PREFERRED TO MAXIMIZE ONSITE INFILTRATION.
2. **DIMENSIONS:**
   -DEPTH OF BASIN (FROM TOP OF GROWING MEDIUM TO OVERFLOW ELEVATION): 12"
   -FLAT BOTTOM WIDTH: 2' MINIMUM
   -SIDE SLOPES OF BASIN: 3:1 MAXIMUM
   -SLOPE OF RAIN GARDEN: 0.5% OR LESS
   -FACILITY AREA SHALL BE MEASURED AT THE DEEPEST SECTION (DRAIN ROCK) OF FACILITY
3. **SETBACKS:**
   -FILTRATION RAIN GARDEN MUST BE 10' FROM FOUNDATIONS AND 5' FROM PROPERTY LINES UNLESS APPROVED BY BUILDING OFFICIAL.
4. **OVERFLOW:**
   -INLET ELEVATION MUST ALLOW FOR 2" OF FREEBOARD, MINIMUM. PROTECT FROM DEBRIS AND SEDIMENT WITH STRAINER OR GRATE.
   -IDENTIFY EMERGENCY OVERFLOW ROUTE ON THE STORMWATER MANAGEMENT PLAN.
5. **PIPING:**
   -PERFORATED UNDERDRAIN PIPING: SHALL BE ABS SCH. 40, DUCTILE IRON, OR PVC SCH.40. MINIMUM DIAMETER IS 6". PIPING MUST HAVE 1% GRADE AND FOLLOW THE UNIFORM PLUMBING CODE. PVC NOT ALLOWED ABOVE GROUND.
   -OVERFLOW PIPING: SHALL BE ABS SCH. 40, DUCTILE IRON, OR PVC SCH. 40 AND SHALL NOT BE PERFORATED. MINIMUM DIAMETER IS 6". PIPING MUST HAVE 1% GRADE AND FOLLOW THE UNIFORM PLUMBING CODE. PVC NOT ALLOWED ABOVE GROUND.
6. **DRAIN ROCK:**
   -SIZE: 1 1/2" to 3/4"-0 WASHED
   -DEPTH: 18" MINIMUM
7. **SEPARATION** BETWEEN DRAIN ROCK AND GROWING MEDIUM: SHALL BE A 3" LAYER OF 3/4" - 1/4" OPEN GRADED AGGREGATE OR FILTER FABRIC WITH 3" OF ADDITIONAL DRAIN ROCK MAY BE UTILIZED IN LIEU OF OPEN GRATED AGGREGATE IF APPROVED BY CITY ENGINEER.
8. **GROWING MEDIUM:**
   -DEPTH: 18" MINIMUM
   -SEE APPENDIX A FOR SPECIFICATION OR USE SAND/LOAM/COMPOST 3-WAY MIX.
   -FACILITY SURFACE AREA MAY BE REDUCED BY 20% WHEN GROWING MEDIA DEPTH IS INCREASED TO 30" OR MORE.
9. **VEGETATION:** FOLLOW LANDSCAPE PLANS OR REFER TO PLANTING REQUIREMENTS IN APPENDIX A.
10. **WATERPROOF LINER (IF REQUIRED):** SHALL BE 30 MIL PVC OR EQUIVALENT.
11. **INSTALL RIVER ROCK** OR SPLASH PAD TO TRANSITION FROM INLETS TO GROWING MEDIUM. SIZE OF ROCK SHALL BE 1" - 3".
12. **SEASONAL HIGH GROUNDWATER SEPARATION:**
    -SEPARATION DISTANCE AS REQUIRED BY CITY.

Rain Garden - Filtration
Figure C-4



GENERAL NOTES:

1. **PROVIDE PROTECTION** FROM ALL VEHICLE TRAFFIC, EQUIPMENT STAGING, AND FOOT TRAFFIC IN PROPOSED INFILTRATION AREAS PRIOR TO, DURING AND AFTER CONSTRUCTION. UNLESS REQUIRED BY SITE CONDITIONS, UNLINED SWALES ARE PREFERRED TO ALLOW MAXIMUM INFILTRATION.
2. **DIMENSIONS:**
   -DEPTH OF SWALE (FROM TOP OF GROWING MEDIUM TO OVERFLOW ELEVATION): 12"
   -LONGITUDINAL SLOPE OF SWALE: 6.0% OR LESS
   -FLAT BOTTOM WIDTH: 2' MINIMUM
   -SIDE SLOPES OF SWALE: 3:1 MAXIMUM
   -FACILITY AREA SHALL BE MEASURED AT THE DEEPEST SECTION (DRAIN ROCK) OF FACILITY
3. **SETBACKS:**
   -FILTRATION SWALES MUST BE 10' FROM FOUNDATIONS AND 5' FROM PROPERTY LINES UNLESS APPROVED BY BUILDING OFFICIAL.
4. **OVERFLOW:**
   -INLET ELEVATION MUST ALLOW FOR 2" OF FREEBOARD, MINIMUM. PROTECT FROM DEBRIS AND SEDIMENT WITH STRAINER OR GRATE.
   -IDENTIFY EMERGENCY OVERFLOW ROUTE ON THE STORMWATER MANAGEMENT PLAN.
5. **PIPING:**
   -PERFORATED UNDERDRAIN PIPING: SHALL BE ABS SCH. 40, DUCTILE IRON, OR PVC SCH.40. MINIMUM DIAMETER IS 6". PIPING MUST HAVE 1% GRADE AND FOLLOW THE UNIFORM PLUMBING CODE. PVC NOT ALLOWED ABOVE GROUND.
   -OVERFLOW PIPING: SHALL BE ABS SCH. 40, DUCTILE IRON, OR PVC SCH. 40 AND SHALL NOT BE PERFORATED. MINIMUM DIAMETER IS 6". PIPING MUST HAVE 1% GRADE AND FOLLOW THE UNIFORM PLUMBING CODE. PVC NOT ALLOWED ABOVE GROUND.
6. **DRAIN ROCK:**
   -SIZE: 1 1/2" - 3/4" WASHED
   -DEPTH: 12"
7. **SEPARATION** BETWEEN DRAIN ROCK AND GROWING MEDIUM: SHALL BE A 3" LAYER OF 3/4" - 1/4" OPEN GRADED AGGREGATE.
8. **GROWING MEDIUM:**
   -18" MINIMUM
   -SEE APPENDIX A FOR SPECIFICATION OR USE SAND/LOAM/COMPOST 3-WAY MIX.
   -FACILITY SURFACE AREA MAY BE REDUCED BY 20% WHEN GROWING MEDIA DEPTH IS INCREASED TO 30" OR MORE.
9. **VEGETATION:** FOLLOW LANDSCAPE PLANS OR REFER TO PLANTING REQUIREMENTS IN APPENDIX A.
10. **WATERPROOF LINER (IF REQUIRED):** SHALL BE 30 MIL PVC OR EQUIVALENT.
11. **INSTALL RIVER ROCK** OR SPLASH PAD TO TRANSITION FROM INLETS TO GROWING MEDIUM. SIZE OF ROCK SHALL BE 1" TO 3".
12. **SEASONAL HIGH GROUNDWATER SEPARATION:**
    -SEPARATION DISTANCE AS REQUIRED BY CITY.
13. **CHECK DAMS:** SHALL BE PLACED ACCORDING TO FACILITY DESIGN.

Vegetated Swale - Filtration
Figure C-7

OREGON CITY
STORMWATER AND GRADING DESIGN STANDARDS

Oregon City Mixed Use

UG Detention Basin D: Volume Storage - WES BMP Tool Data

Prepared by Harper Houf Peterson Righellis Inc.

Job No. LRS-20

March 2021

Stage-Storage-Discharge Table (derived from Hydraflow)

Depth (ft)	Volume (cf)	Delta Vol (cf)	Delta Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.0	0	0.00	0	0
0.40	907.0	907.000	0.40	2268	0.008
0.80	2478.0	1571.000	0.40	3928	0.011
1.20	4391.0	1913.000	0.40	4783	0.014
1.60	6497.0	2106.000	0.40	5265	0.016
2.00	8698.0	2201.000	0.40	5503	0.018
2.40	10899.0	2201.000	0.40	5503	0.020
2.80	13005.0	2106.000	0.40	5265	0.021
3.20	14907.0	1902.000	0.40	4755	0.023
3.60	16489.0	1582.000	0.40	3955	0.024
4.00	17393.0	904.000	0.40	2260	0.551

Stage-Storage-Discharge Table (input to WES BMP Tool)

Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.00	0
0.40	2267.50	0.008
0.80	3927.50	0.011
1.20	4782.50	0.014
1.60	5265.00	0.016
2.00	5502.50	0.018
2.40	5502.50	0.02
2.80	5265.00	0.021
3.60	3955.00	0.024
4.00	2260.00	0.551

WES BMP Sizing Software Version 1.6.0.2, May 2018

WES BMP Sizing Report

Project Information

Project Name	Oregon City Mixed-Use
Project Type	Commercial
Location	
Stormwater Management Area	9259
Project Applicant	Summit Development Group
Jurisdiction	OutofDistrict

Drainage Management Area

Name	Area (sq-ft)	Pre-Project Cover	Post-Project Cover	DMA Soil Type	BMP
D -Impervious	80,810	Forested	ConventionalConcrete	D	UG Det D
D - Pervious	11,386	Forested	LandscapeDsoil	D	UG Det D

LID Facility Sizing Details

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?
UG Det D	FCWQT	Lined	4.00	9,259.0	0	37,036.0	20,369.8	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.

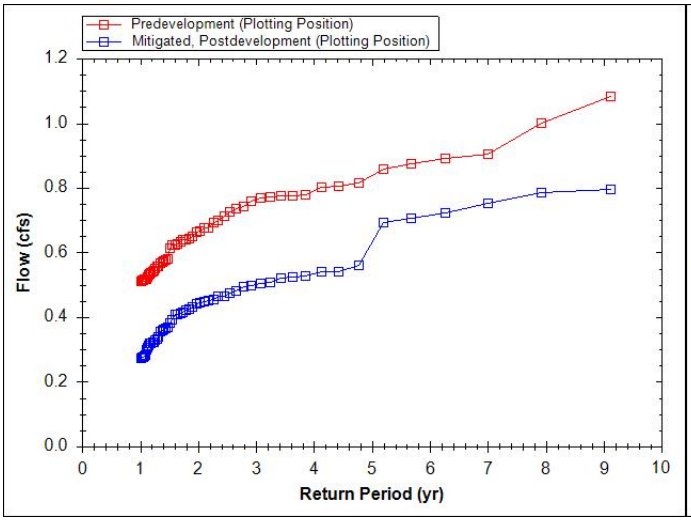
Custom Pond Geometry Configuration

Pond ID: UG Det D
Design: FlowControlAndTreatment

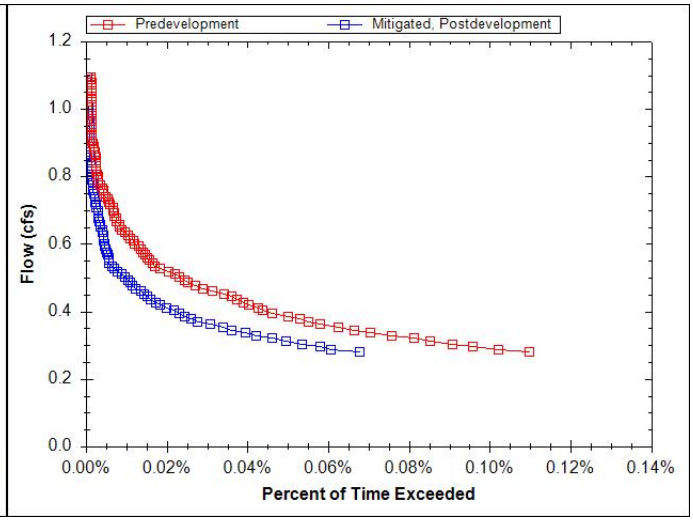
Shape Curve

Depth (ft)	Area (sq ft)	Discharge (cfs)
.0	.0	.0
.4	2,267.5	.0
.8	3,927.5	.0
1.2	4,782.5	.0
1.6	5,265.0	.0
2.0	5,502.5	.0
2.4	5,502.5	.0
2.8	5,265.0	.0
3.6	3,955.0	.0
4.0	2,260.0	.6

Flow Frequency Chart



Flow Duration Chart



User Inputs

Project Name:	
State:	
City:	
Engineer::	N/A
Measurement Type:	Imperial
Product:	HDPE N-12
Nominal diameter:	48
Required volume:	17370 cubic ft.
Available length:	170 ft.
Available width:	100 ft.
Pipe fill above:	6 in.
Pipe bedding below:	6 in.

Results

Installed Storage Volume:	17393.43 cubic ft.
System length:	154.84 ft.
System width:	59.80 ft.
Number Of Rows:	9
Approx. Bed Size Required:	9259.15 square ft.

System Components

Amount of fill required:	1230.49 cubic yards
Volume of excavation (Bottom of system to top of system):	1874.69 cubic yards

Oregon City Mixed Use

UG Detention Basin E: Volume Storage - WES BMP Tool Data

Prepared by Harper Houf Peterson Righellis Inc.

Job No. LRS-20

March 2021

Stage-Storage-Discharge Table (derived from Hydraflow)

Depth (ft)	Volume (cf)	Delta Vol (cf)	Delta Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.0	0	0.00	0	0
0.40	1883.0	1883.000	0.40	4708	0.008
0.80	5143.0	3260.000	0.40	8150	0.011
1.20	9112.0	3969.000	0.40	9923	0.014
1.60	13486.0	4374.000	0.40	10935	0.016
2.00	18053.0	4567.000	0.40	11418	0.018
2.40	22621.0	4568.000	0.40	11420	0.020
2.80	26992.0	4371.000	0.40	10928	0.021
3.20	30960.0	3968.000	0.40	9920	0.023
3.60	34222.0	3262.000	0.40	8155	0.024
4.00	36098.0	1876.000	0.40	4690	0.991

Stage-Storage-Discharge Table (input to WES BMP Tool)

Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.00	0
0.40	4707.50	0.008
0.80	8150.00	0.011
1.20	9922.50	0.014
1.60	10935.00	0.016
2.00	11417.50	0.018
2.40	11420.00	0.02
2.80	10927.50	0.021
3.60	8155.00	0.024
4.00	4690.00	0.991

WES BMP Sizing Software Version 1.6.0.2, May 2018

WES BMP Sizing Report

Project Information

Project Name	Oregon City Mixed-Use
Project Type	Commercial
Location	
Stormwater Management Area	19135
Project Applicant	Summit Development Group
Jurisdiction	OutofDistrict

Drainage Management Area

Name	Area (sq-ft)	Pre-Project Cover	Post-Project Cover	DMA Soil Type	BMP
E -Impervious	169,257	Forested	ConventionalConcrete	D	UG Det E
E - Pervious	6,536	Forested	LandscapeDsoil	D	UG Det E

LID Facility Sizing Details

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?
UG Det E	FCWQT	Lined	4.00	19,135.0	0	76,540.0	42,097.0	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.

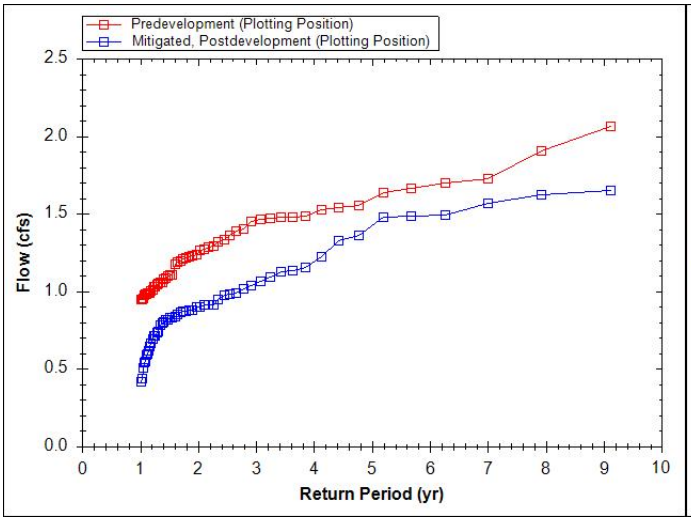
Custom Pond Geometry Configuration

Pond ID: UG Det E
Design: FlowControlAndTreatment

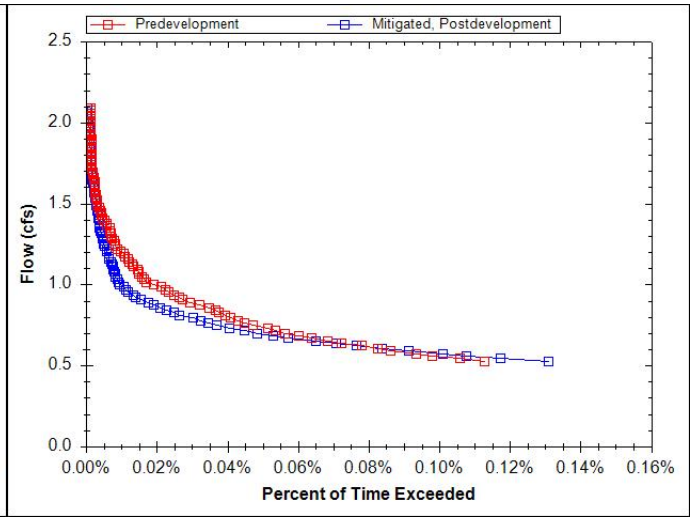
Shape Curve

Depth (ft)	Area (sq ft)	Discharge (cfs)
.0	.0	.0
.4	4,707.5	.0
.8	8,150.0	.0
1.2	9,922.5	.0
1.6	10,935.0	.0
2.0	11,417.5	.0
2.4	11,420.0	.0
2.8	10,927.5	.0
3.6	8,155.0	.0
4.0	4,690.0	1.0

Flow Frequency Chart



Flow Duration Chart



User Inputs

Project Name:	
State:	
City:	
Engineer::	N/A
Measurement Type:	Imperial
Product:	HDPE N-12
Nominal diameter:	48
Required volume:	36098 cubic ft.
Available length:	220 ft.
Available width:	100 ft.
Pipe fill above:	6 in.
Pipe bedding below:	6 in.

Results

Installed Storage Volume:	36098.77 cubic ft.
System length:	206.86 ft.
System width:	92.50 ft.
Number Of Rows:	14
Approx. Bed Size Required:	19134.87 square ft.

System Components

Amount of fill required:	2537.23 cubic yards
Volume of excavation (Bottom of system to top of system):	3874.22 cubic yards

Oregon City Mixed Use

UG Detention Basin F: Volume Storage - WES BMP Tool Data

Prepared by Harper Houf Peterson Righellis Inc.

Job No. LRS-20

March 2021

Stage-Storage-Discharge Table (derived from Hydraflow)

Depth (ft)	Volume (cf)	Delta Vol (cf)	Delta Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.0	0	0.00	0	0
0.40	154.0	154.000	0.40	385	0.022
0.80	421.0	267.000	0.40	668	0.032
1.20	746.0	325.000	0.40	813	0.040
1.60	1104.0	358.000	0.40	895	0.046
2.00	1478.0	374.000	0.40	935	0.052
2.40	1852.0	374.000	0.40	935	0.057
2.80	2210.0	358.000	0.40	895	0.062
3.20	2534.0	324.000	0.40	810	0.066
3.60	2801.0	267.000	0.40	668	0.070
4.00	2955.0	154.000	0.40	385	1.558

Stage-Storage-Discharge Table (input to WES BMP Tool)

Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.00	0
0.40	385.00	0.022
0.80	667.50	0.032
1.20	812.50	0.04
1.60	895.00	0.046
2.00	935.00	0.052
2.40	935.00	0.057
2.80	895.00	0.062
3.60	667.50	0.07
4.00	385.00	1.558

WES BMP Sizing Software Version 1.6.0.2, May 2018

WES BMP Sizing Report

Project Information

Project Name	Oregon City Mixed-Use
Project Type	Commercial
Location	
Stormwater Management Area	1636
Project Applicant	Summit Development Group
Jurisdiction	OutofDistrict

Drainage Management Area

Name	Area (sq-ft)	Pre-Project Cover	Post-Project Cover	DMA Soil Type	BMP
F -Impervious	30,914	Forested	ConventionalConcrete	D	UG Det F
F - Pervious	4,959	Forested	LandscapeDsoil	D	UG Det F

LID Facility Sizing Details

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?
UG Det F	FCWQT	Lined	4.00	1,636.0	0	6,544.0	3,599.2	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.

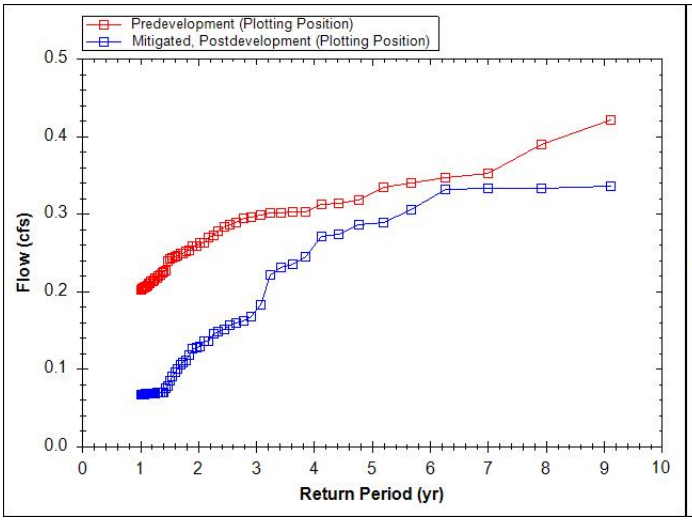
Custom Pond Geometry Configuration

Pond ID: UG Det F
Design: FlowControlAndTreatment

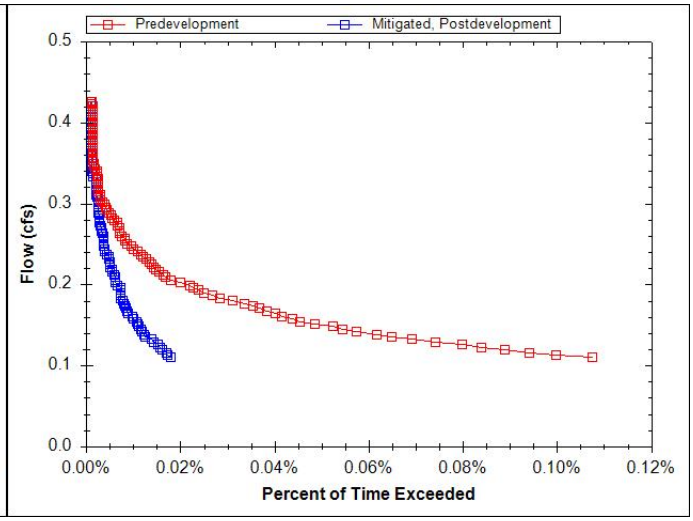
Shape Curve

Depth (ft)	Area (sq ft)	Discharge (cfs)
.0	.0	.0
.4	385.0	.0
.8	667.5	.0
1.2	812.5	.0
1.6	895.0	.0
2.0	935.0	.1
2.4	935.0	.1
2.8	895.0	.1
3.6	667.5	.1
4.0	385.0	1.6

Flow Frequency Chart



Flow Duration Chart



User Inputs

Project Name:	
State:	
City:	
Engineer::	N/A
Measurement Type:	Imperial
Product:	HDPE N-12
Nominal diameter:	48
Required volume:	2955 cubic ft.
Available length:	80 ft.
Available width:	27 ft.
Pipe fill above:	6 in.
Pipe bedding below:	6 in.

Results

Installed Storage Volume:	2955.93 cubic ft.
System length:	79.60 ft.
System width:	20.55 ft.
Number Of Rows:	3
Approx. Bed Size Required:	1635.70 square ft.

System Components

Amount of fill required:	221.70 cubic yards
Volume of excavation (Bottom of system to top of system):	331.18 cubic yards

Oregon City Mixed Use

UG Detention Basin G: Volume Storage - WES BMP Tool Data

Prepared by Harper Houf Peterson Righellis Inc.

Job No. LRS-20

March 2021

Stage-Storage-Discharge Table (derived from Hydraflow)

Depth (ft)	Volume (cf)	Delta Vol (cf)	Delta Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.0	0	0.00	0	0
0.40	2967.0	2967.000	0.40	7418	0.010
0.80	8104.0	5137.000	0.40	12843	0.015
1.20	14360.0	6256.000	0.40	15640	0.018
1.60	21251.0	6891.000	0.40	17228	0.021
2.00	28450.0	7199.000	0.40	17998	0.023
2.40	35648.0	7198.000	0.40	17995	0.026
2.80	42537.0	6889.000	0.40	17223	0.028
3.20	48790.0	6253.000	0.40	15633	0.030
3.60	53930.0	5140.000	0.40	12850	0.032
4.00	56886.0	2956.000	0.40	7390	1.520

Stage-Storage-Discharge Table (input to WES BMP Tool)

Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.00	0
0.40	7417.50	0.01
0.80	12842.50	0.015
1.20	15640.00	0.018
1.60	17227.50	0.021
2.00	17997.50	0.023
2.40	17995.00	0.026
2.80	17222.50	0.028
3.60	12850.00	0.032
4.00	7390.00	1.52

WES BMP Sizing Software Version 1.6.0.2, May 2018

WES BMP Sizing Report

Project Information

Project Name	Oregon City Mixed-Use
Project Type	Commercial
Location	
Stormwater Management Area	7390
Project Applicant	Summit Development Group
Jurisdiction	OutofDistrict

Drainage Management Area

Name	Area (sq-ft)	Pre-Project Cover	Post-Project Cover	DMA Soil Type	BMP
G -Impervious	256,058	Forested	ConventionalConcrete	D	UG Det G
G - Pervious	29,846	Forested	LandscapeDsoil	D	UG Det G

LID Facility Sizing Details

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?
UG Det G	FCWQT	Lined	4.00	7,390.0	0	29,560.0	16,258.0	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.

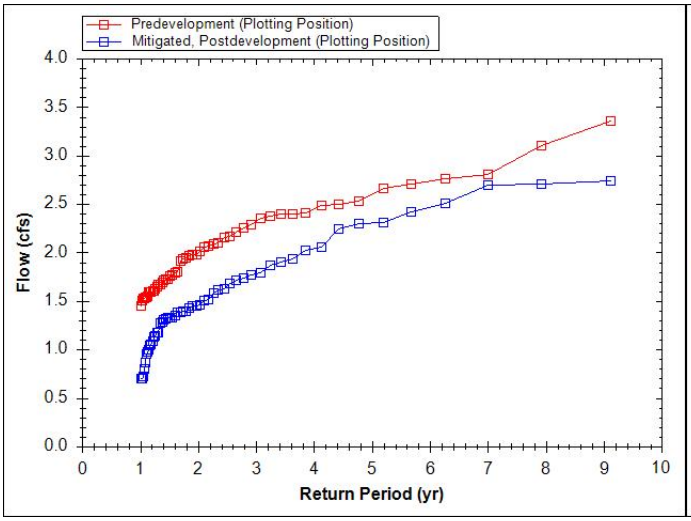
Custom Pond Geometry Configuration

Pond ID: UG Det G
Design: FlowControlAndTreatment

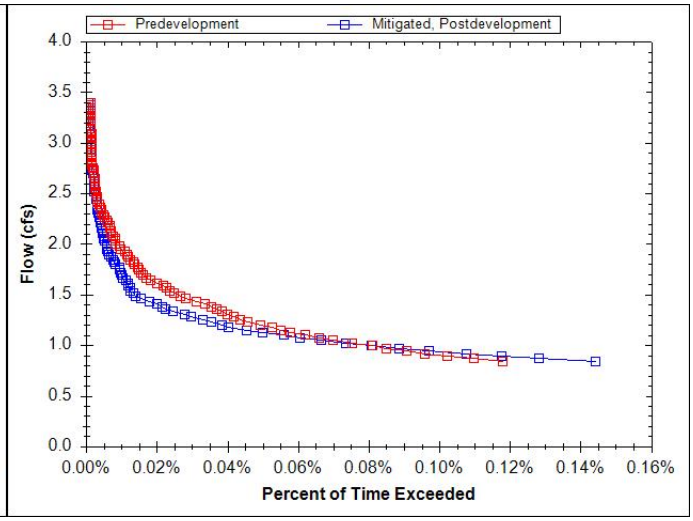
Shape Curve

Depth (ft)	Area (sq ft)	Discharge (cfs)
.0	.0	.0
.4	7,417.5	.0
.8	12,842.5	.0
1.2	15,640.0	.0
1.6	17,227.5	.0
2.0	17,997.5	.0
2.4	17,995.0	.0
2.8	17,222.5	.0
3.6	12,850.0	.0
4.0	7,390.0	1.5

Flow Frequency Chart



Flow Duration Chart



User Inputs

Project Name:	
State:	
City:	
Engineer::	N/A
Measurement Type:	Imperial
Product:	HDPE N-12
Nominal diameter:	48
Required volume:	56886 cubic ft.
Available length:	320 ft.
Available width:	100 ft.
Pipe fill above:	6 in.
Pipe bedding below:	6 in.

Results

Installed Storage Volume:	56926.07 cubic ft.
System length:	305.27 ft.
System width:	99.04 ft.
Number Of Rows:	15
Approx. Bed Size Required:	30235.57 square ft.

System Components

Amount of fill required:	4013.40 cubic yards
Volume of excavation (Bottom of system to top of system):	6121.77 cubic yards

Oregon City Mixed Use

UG Detention Basin H: Volume Storage - WES BMP Tool Data

Prepared by Harper Houf Peterson Righellis Inc.

Job No. LRS-20

March 2021

Stage-Storage-Discharge Table (derived from Hydraflow)

Depth (ft)	Volume (cf)	Delta Vol (cf)	Delta Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.0	0	0.00	0	0
0.40	878.0	878.000	0.40	2195	0.033
0.80	2398.0	1520.000	0.40	3800	0.049
1.20	4249.0	1851.000	0.40	4628	0.062
1.60	6288.0	2039.000	0.40	5098	0.072
2.00	8418.0	2130.000	0.40	5325	0.081
2.40	10548.0	2130.000	0.40	5325	0.089
2.80	12586.0	2038.000	0.40	5095	0.096
3.20	14436.0	1850.000	0.40	4625	0.103
3.60	15957.0	1521.000	0.40	3803	0.110
4.00	16832.0	875.000	0.40	2188	1.077

Stage-Storage-Discharge Table (input to WES BMP Tool)

Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.00	0
0.40	2195.00	0.033
0.80	3800.00	0.049
1.20	4627.50	0.062
1.60	5097.50	0.072
2.00	5325.00	0.081
2.40	5325.00	0.089
2.80	5095.00	0.096
3.60	3802.50	0.11
4.00	2187.50	1.077

WES BMP Sizing Software Version 1.6.0.2, May 2018

WES BMP Sizing Report

Project Information

Project Name	Oregon City Mixed-Use
Project Type	Commercial
Location	
Stormwater Management Area	2188
Project Applicant	Summit Development Group
Jurisdiction	OutofDistrict

Drainage Management Area

Name	Area (sq-ft)	Pre-Project Cover	Post-Project Cover	DMA Soil Type	BMP
H -Impervious	99,178	Forested	ConventionalConcrete	D	UG Det G
H - Pervious	13,840	Forested	LandscapeDsoil	D	UG Det G

LID Facility Sizing Details

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?
UG Det G	FCWQT	Lined	4.00	2,188.0	0	8,752.0	4,813.6	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.

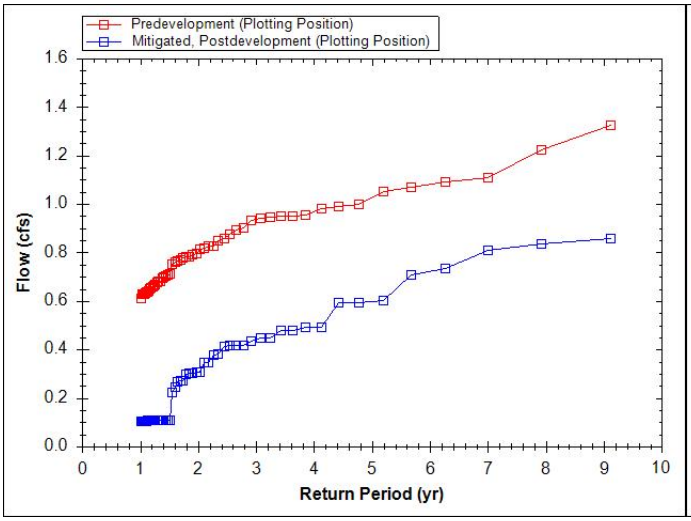
Custom Pond Geometry Configuration

Pond ID: UG Det G
Design: FlowControlAndTreatment

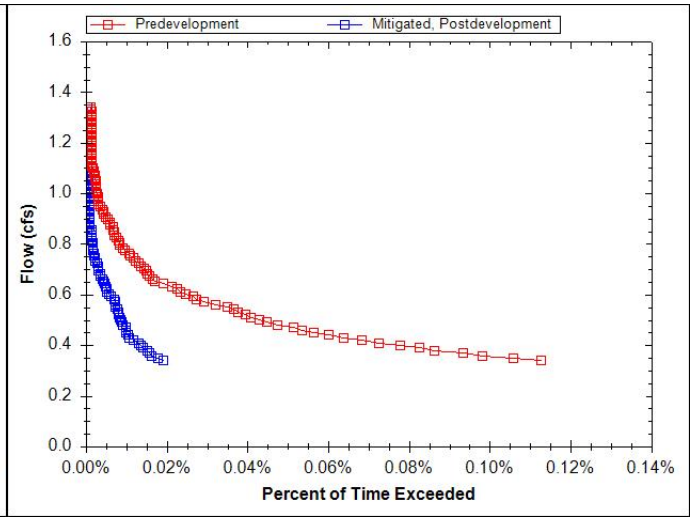
Shape Curve

Depth (ft)	Area (sq ft)	Discharge (cfs)
.0	.0	.0
.4	2,195.0	.0
.8	3,800.0	.0
1.2	4,627.5	.1
1.6	5,097.5	.1
2.0	5,325.0	.1
2.4	5,325.0	.1
2.8	5,095.0	.1
3.6	3,802.5	.1
4.0	2,187.5	1.1

Flow Frequency Chart



Flow Duration Chart



User Inputs

Project Name:	
State:	
City:	
Engineer::	N/A
Measurement Type:	Imperial
Product:	HDPE N-12
Nominal diameter:	48
Required volume:	16842 cubic ft.
Available length:	169 ft.
Available width:	59 ft.
Pipe fill above:	6 in.
Pipe bedding below:	6 in.

Results

Installed Storage Volume:	16831.70 cubic ft.
System length:	168.80 ft.
System width:	53.26 ft.
Number Of Rows:	8
Approx. Bed Size Required:	8989.43 square ft.

System Components

Amount of fill required:	1196.69 cubic yards
Volume of excavation (Bottom of system to top of system):	1820.08 cubic yards

Oregon City Mixed Use

UG Detention Basin I: Volume Storage - WES BMP Tool Data

Prepared by Harper Houf Peterson Righellis Inc.

Job No. LRS-20

March 2021

Stage-Storage-Discharge Table (derived from Hydraflow)

Depth (ft)	Volume (cf)	Delta Vol (cf)	Delta Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.0	0	0.00	0	0
0.40	727.0	727.000	0.40	1818	0.018
0.80	1985.0	1258.000	0.40	3145	0.027
1.20	3517.0	1532.000	0.40	3830	0.034
1.60	5204.0	1687.000	0.40	4218	0.040
2.00	6967.0	1763.000	0.40	4408	0.045
2.40	8730.0	1763.000	0.40	4408	0.049
2.80	10417.0	1687.000	0.40	4218	0.053
3.20	11948.0	1531.000	0.40	3828	0.057
3.60	13207.0	1259.000	0.40	3148	0.061
4.00	13931.0	724.000	0.40	1810	0.588

Stage-Storage-Discharge Table (input to WES BMP Tool)

Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.00	0
0.40	1817.50	0.018
0.80	3145.00	0.027
1.20	3830.00	0.034
1.60	4217.50	0.04
2.00	4407.50	0.045
2.40	4407.50	0.049
2.80	4217.50	0.053
3.60	3147.50	0.061
4.00	1810.00	0.588

WES BMP Sizing Software Version 1.6.0.2, May 2018

WES BMP Sizing Report

Project Information

Project Name	Oregon City Mixed-Use
Project Type	Commercial
Location	
Stormwater Management Area	2413
Project Applicant	Summit Development Group
Jurisdiction	OutofDistrict

Drainage Management Area

Name	Area (sq-ft)	Pre-Project Cover	Post-Project Cover	DMA Soil Type	BMP
I - Impervious	80,020	Forested	ConventionalConcrete	D	UG Det I
I - Pervious	2,675	Forested	LandscapeDsoil	D	UG Det I

LID Facility Sizing Details

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?
UG Det I	FCWQT	Lined	3.00	2,413.0	0	7,239.0	2,895.6	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.

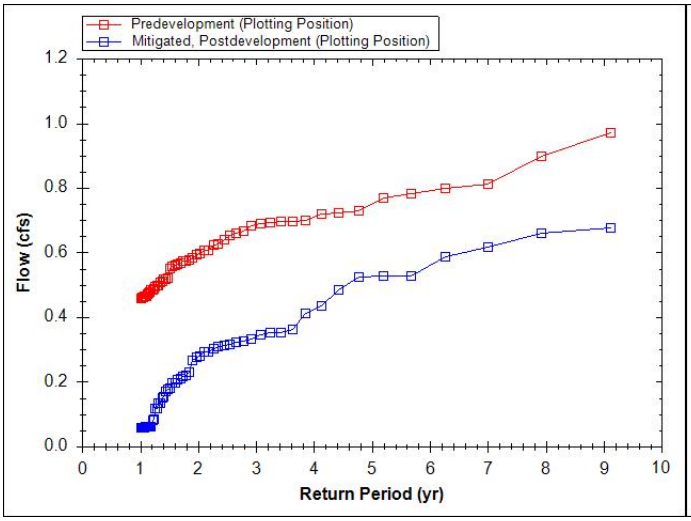
Custom Pond Geometry Configuration

Pond ID: UG Det I
Design: FlowControlAndTreatment

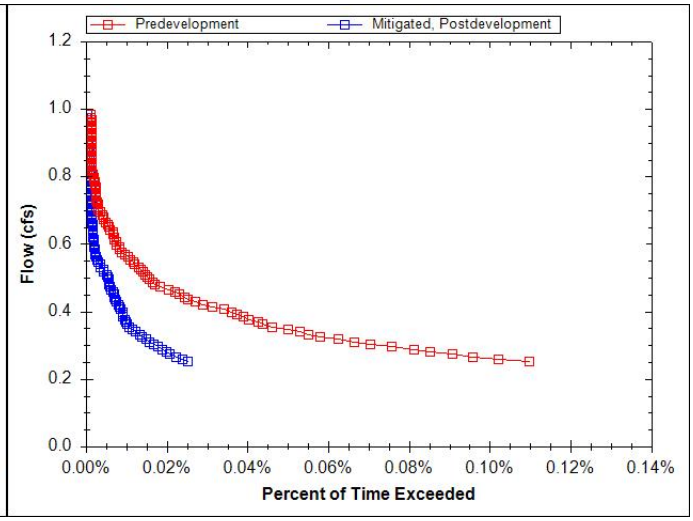
Shape Curve

Depth (ft)	Area (sq ft)	Discharge (cfs)
.0	.0	.0
.3	2,423.3	.0
.6	4,193.3	.0
.9	5,106.7	.0
1.2	5,623.3	.0
1.5	5,876.7	.0
1.8	5,876.7	.0
2.1	5,623.3	.1
2.7	4,196.7	.1
3.0	2,413.3	.6

Flow Frequency Chart



Flow Duration Chart



User Inputs

Project Name:	
State:	
City:	
Engineer::	Sheila Sayer
Measurement Type:	Imperial
Product:	HDPE N-12
Nominal diameter:	36
Required volume:	13899 cubic ft.
Available length:	195 ft.
Available width:	65 ft.
Pipe fill above:	6 in.
Pipe bedding below:	6 in.

Results

Installed Storage Volume:	13931.18 cubic ft.
System length:	178.19 ft.
System width:	58.95 ft.
Number Of Rows:	11
Approx. Bed Size Required:	10503.46 square ft.

System Components

Amount of fill required:	1224.88 cubic yards
Volume of excavation (Bottom of system to top of system):	1740.85 cubic yards

Oregon City Mixed Use

UG Detention Basin K: Volume Storage - WES BMP Tool Data

Prepared by Harper Houf Peterson Righellis Inc.

Job No. LRS-20

March 2021

Stage-Storage-Discharge Table (derived from Hydraflow)

Depth (ft)	Volume (cf)	Delta Vol (cf)	Delta Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.0	0	0.00	0	0
0.40	326.0	326.000	0.40	815	0.010
0.80	890.0	564.000	0.40	1410	0.015
1.20	1577.0	687.000	0.40	1718	0.018
1.60	2334.0	757.000	0.40	1893	0.021
2.00	3124.0	790.000	0.40	1975	0.023
2.40	3915.0	791.000	0.40	1978	0.026
2.80	4671.0	756.000	0.40	1890	0.028
3.20	5358.0	687.000	0.40	1718	0.030
3.60	5922.0	564.000	0.40	1410	0.032
4.00	6247.0	325.000	0.40	813	0.999

Stage-Storage-Discharge Table (input to WES BMP Tool)

Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.00	0
0.40	815.00	0.01
0.80	1410.00	0.015
1.20	1717.50	0.018
1.60	1892.50	0.021
2.00	1975.00	0.023
2.40	1977.50	0.026
2.80	1890.00	0.028
3.60	1410.00	0.032
4.00	812.50	0.999

WES BMP Sizing Software Version 1.6.0.2, May 2018

WES BMP Sizing Report

Project Information

Project Name	Oregon City Mixed-Use
Project Type	Commercial
Location	
Stormwater Management Area	813
Project Applicant	Summit Development Group
Jurisdiction	OutofDistrict

Drainage Management Area

Name	Area (sq-ft)	Pre-Project Cover	Post-Project Cover	DMA Soil Type	BMP
K - Impervious	33,728	Forested	ConventionalConcrete	D	UG Det K
K - Pervious	8,631	Forested	LandscapeDsoil	D	UG Det K

LID Facility Sizing Details

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?
UG Det K	FCWQT	Lined	4.00	813.0	0	3,252.0	1,788.6	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.

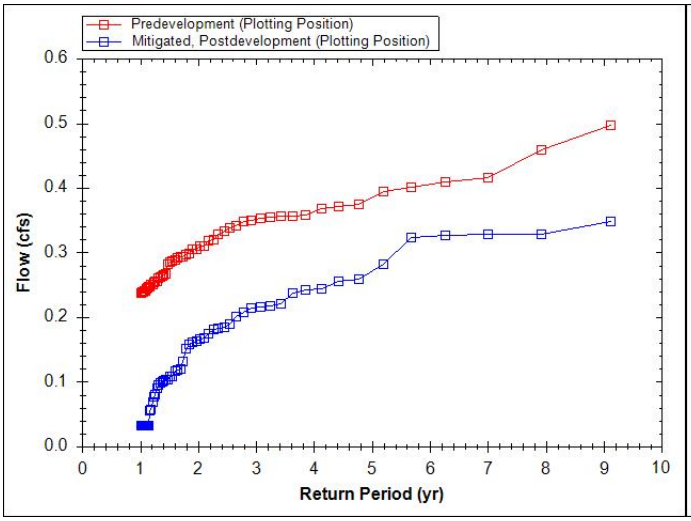
Custom Pond Geometry Configuration

Pond ID: UG Det K
Design: FlowControlAndTreatment

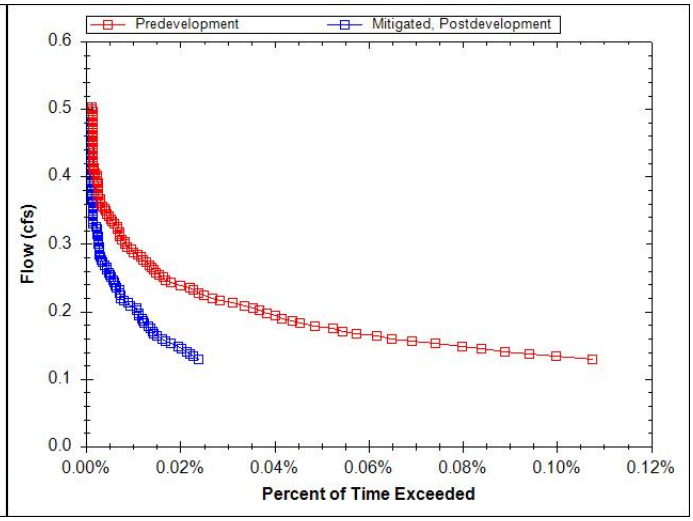
Shape Curve

Depth (ft)	Area (sq ft)	Discharge (cfs)
.0	.0	.0
.4	815.0	.0
.8	1,410.0	.0
1.2	1,717.5	.0
1.6	1,892.5	.0
2.0	1,975.0	.0
2.4	1,977.5	.0
2.8	1,890.0	.0
3.6	1,410.0	.0
4.0	812.5	1.0

Flow Frequency Chart



Flow Duration Chart



Oregon City Mixed Use

UG Detention Basin J: Volume Storage - WES BMP Tool Data

Prepared by Harper Houf Peterson Righellis Inc.

Job No. LRS-20

March 2021

Stage-Storage-Discharge Table (derived from Hydraflow)

Depth (ft)	Volume (cf)	Delta Vol (cf)	Delta Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.0	0	0.00	0	0
0.40	1650.0	1650.000	0.40	4125	0.157
0.80	4506.0	2856.000	0.40	7140	0.253
1.20	7984.0	3478.000	0.40	8695	0.326
1.60	11815.0	3831.000	0.40	9578	0.387
2.00	15917.0	4102.000	0.40	10255	0.440
2.40	19819.0	3902.000	0.40	9755	0.488
2.80	23649.0	3830.000	0.40	9575	0.532
3.20	27125.0	3476.000	0.40	8690	0.572
3.60	29983.0	2858.000	0.40	7145	1.136
4.00	31627.0	1644.000	0.40	4110	6.532

Stage-Storage-Discharge Table (input to WES BMP Tool)

Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.00	0
0.40	4125.00	0.157
0.80	7140.00	0.253
1.20	8695.00	0.326
1.60	9577.50	0.387
2.00	10255.00	0.44
2.40	9755.00	0.488
2.80	9575.00	0.532
3.60	7145.00	1.136
4.00	4110.00	6.532

WES BMP Sizing Software Version 1.6.0.2, May 2018

WES BMP Sizing Report

Project Information

Project Name	Oregon City Mixed-Use
Project Type	Commercial
Location	
Stormwater Management Area	4110
Project Applicant	Summit Development Group
Jurisdiction	OutofDistrict

Drainage Management Area

Name	Area (sq-ft)	Pre-Project Cover	Post-Project Cover	DMA Soil Type	BMP
J - Impervious	300,842	Forested	ConventionalConcrete	D	UG Det J
J - Pervious	9,780	Forested	LandscapeDsoil	D	UG Det J

LID Facility Sizing Details

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?
UG Det J	FCWQT	Lined	4.00	4,111.0	0	16,444.0	9,044.2	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.

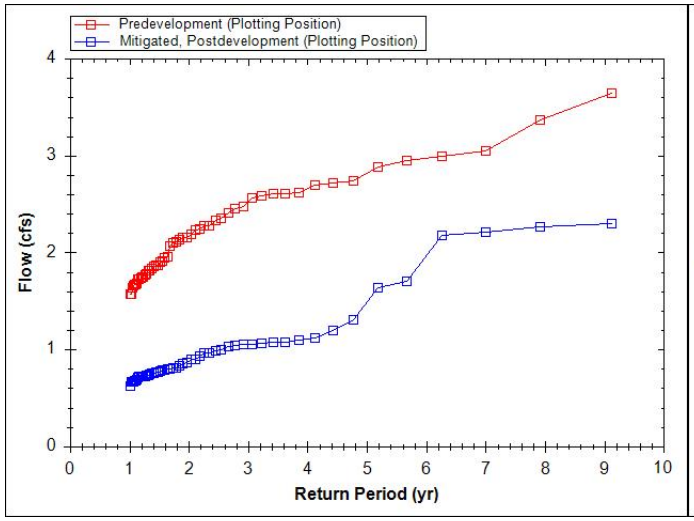
Custom Pond Geometry Configuration

Pond ID: UG Det J
Design: FlowControlAndTreatment

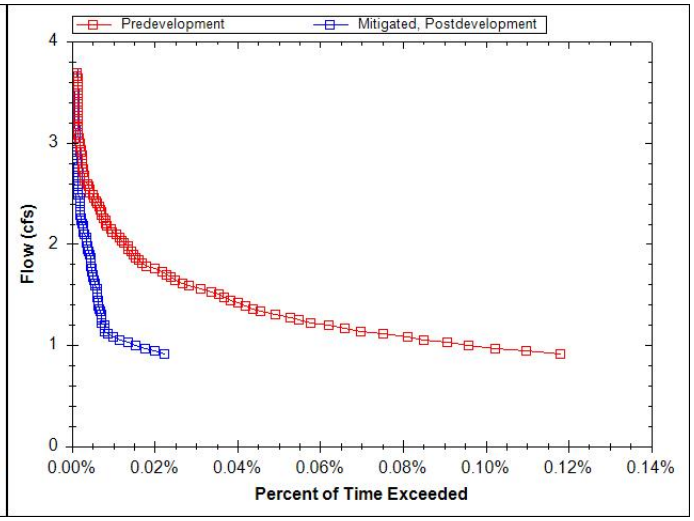
Shape Curve

Depth (ft)	Area (sq ft)	Discharge (cfs)
.0	.0	.0
.4	4,125.0	.2
.8	7,140.0	.3
1.2	8,695.0	.3
1.6	9,577.5	.4
2.0	10,255.0	.4
2.4	9,755.0	.5
2.8	9,575.0	.5
3.6	7,145.0	1.1
4.0	4,110.0	6.5

Flow Frequency Chart



Flow Duration Chart



User Inputs

Project Name:	
State:	
City:	
Engineer::	N/A
Measurement Type:	Imperial
Product:	HDPE N-12
Nominal diameter:	48
Required volume:	31623 cubic ft.
Available length:	175 ft.
Available width:	100 ft.
Pipe fill above:	6 in.
Pipe bedding below:	6 in.

Results

Installed Storage Volume:	31628.08 cubic ft.
System length:	168.80 ft.
System width:	99.04 ft.
Number Of Rows:	15
Approx. Bed Size Required:	16718.51 square ft.

System Components

Amount of fill required:	2213.57 cubic yards
Volume of excavation (Bottom of system to top of system):	3384.98 cubic yards

Oregon City Mixed Use

UG Detention Basin L: Volume Storage - WES BMP Tool Data

Prepared by Harper Houf Peterson Righellis Inc.

Job No. LRS-20

March 2021

Stage-Storage-Discharge Table (derived from Hydraflow)

Depth (ft)	Volume (cf)	Delta Vol (cf)	Delta Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.0	0	0.00	0	0
0.40	582.0	582.000	0.40	1455	0.025
0.80	1591.0	1009.000	0.40	2523	0.037
1.20	2819.0	1228.000	0.40	3070	0.047
1.60	4172.0	1353.000	0.40	3383	0.054
2.00	5585.0	1413.000	0.40	3533	0.061
2.40	6998.0	1413.000	0.40	3533	0.067
2.80	8350.0	1352.000	0.40	3380	0.073
3.20	9578.0	1228.000	0.40	3070	0.078
3.60	10587.0	1009.000	0.40	2523	0.083
4.00	11167.0	580.000	0.40	1450	1.576

Stage-Storage-Discharge Table (input to WES BMP Tool)

Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.00	0
0.40	1455.00	0.025
0.80	2522.50	0.037
1.20	3070.00	0.047
1.60	3382.50	0.054
2.00	3532.50	0.061
2.40	3532.50	0.067
2.80	3380.00	0.073
3.60	2522.50	0.083
4.00	1450.00	1.576

WES BMP Sizing Software Version 1.6.0.2, May 2018

WES BMP Sizing Report

Project Information

Project Name	Oregon City Mixed-Use
Project Type	Commercial
Location	
Stormwater Management Area	1450
Project Applicant	Summit Development Group
Jurisdiction	OutofDistrict

Drainage Management Area

Name	Area (sq-ft)	Pre-Project Cover	Post-Project Cover	DMA Soil Type	BMP
L - Impervious	69,608	Forested	ConventionalConcrete	D	UG Det L
L - Pervious	5,086	Forested	LandscapeDsoil	D	UG Det L

LID Facility Sizing Details

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?
UG Det L	FCWQT	Lined	4.00	1,450.0	0	5,800.0	3,190.0	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.

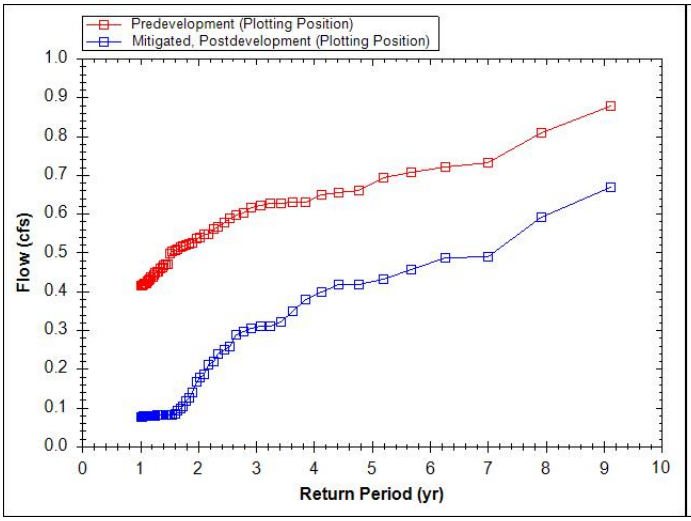
Custom Pond Geometry Configuration

Pond ID: UG Det L
Design: FlowControlAndTreatment

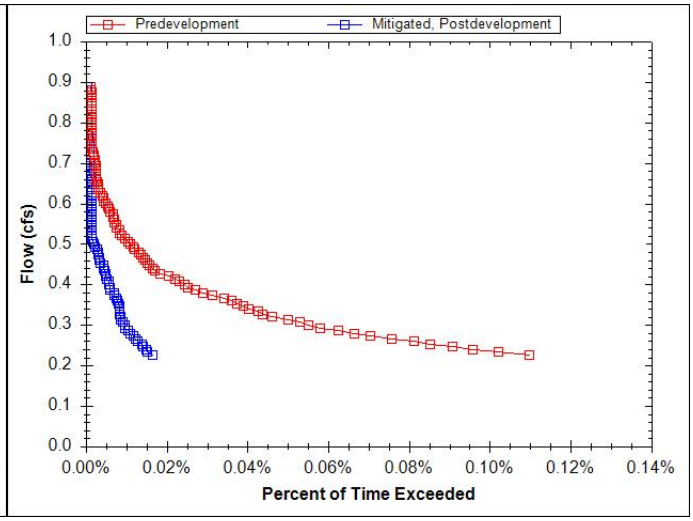
Shape Curve

Depth (ft)	Area (sq ft)	Discharge (cfs)
.0	.0	.0
.4	1,455.0	.0
.8	2,522.5	.0
1.2	3,070.0	.0
1.6	3,382.5	.1
2.0	3,532.5	.1
2.4	3,532.5	.1
2.8	3,380.0	.1
3.6	2,522.5	.1
4.0	1,450.0	1.6

Flow Frequency Chart



Flow Duration Chart



User Inputs

Project Name:	
State:	
City:	
Engineer::	Sheila Sayer
Measurement Type:	Imperial
Product:	HDPE N-12
Nominal diameter:	48
Required volume:	11167 cubic ft.
Available length:	180 ft.
Available width:	40 ft.
Pipe fill above:	6 in.
Pipe bedding below:	6 in.

Results

Installed Storage Volume:	11167.70 cubic ft.
System length:	179.76 ft.
System width:	33.63 ft.
Number Of Rows:	5
Approx. Bed Size Required:	6045.63 square ft.

System Components

Amount of fill required:	810.44 cubic yards
Volume of excavation (Bottom of system to top of system):	1224.05 cubic yards

Oregon City Mixed Use

UG Detention Basin M: Volume Storage - WES BMP Tool Data

Prepared by Harper Houf Peterson Righellis Inc.

Job No. LRS-20

March 2021

Stage-Storage-Discharge Table (derived from Hydraflow)

Depth (ft)	Volume (cf)	Delta Vol (cf)	Delta Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.0	0	0.00	0	0
0.40	576.0	576.000	0.40	1440	0.025
0.80	1572.0	996.000	0.40	2490	0.037
1.20	2786.0	1214.000	0.40	3035	0.047
1.60	4122.0	1336.000	0.40	3340	0.054
2.00	5519.0	1397.000	0.40	3493	0.061
2.40	6915.0	1396.000	0.40	3490	0.067
2.80	8252.0	1337.000	0.40	3343	0.073
3.20	9465.0	1213.000	0.40	3033	0.078
3.60	10462.0	997.000	0.40	2493	0.083
4.00	11035.0	573.000	0.40	1433	1.054

Stage-Storage-Discharge Table (input to WES BMP Tool)

Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.00	0
0.40	1440.00	0.025
0.80	2490.00	0.037
1.20	3035.00	0.047
1.60	3340.00	0.054
2.00	3492.50	0.061
2.40	3490.00	0.067
2.80	3342.50	0.073
3.60	2492.50	0.083
4.00	1432.50	1.054

WES BMP Sizing Software Version 1.6.0.2, May 2018

WES BMP Sizing Report

Project Information

Project Name	Oregon City Mixed-Use
Project Type	Commercial
Location	
Stormwater Management Area	1433
Project Applicant	Summit Development Group
Jurisdiction	OutofDistrict

Drainage Management Area

Name	Area (sq-ft)	Pre-Project Cover	Post-Project Cover	DMA Soil Type	BMP
M - Impervious	72,865	Forested	ConventionalConcrete	D	UG Det M
M - Pervious	5,597	Forested	LandscapeDsoil	D	UG Det M

LID Facility Sizing Details

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?
UG Det M	FCWQT	Lined	4.00	1,433.0	0	5,732.0	3,152.6	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.

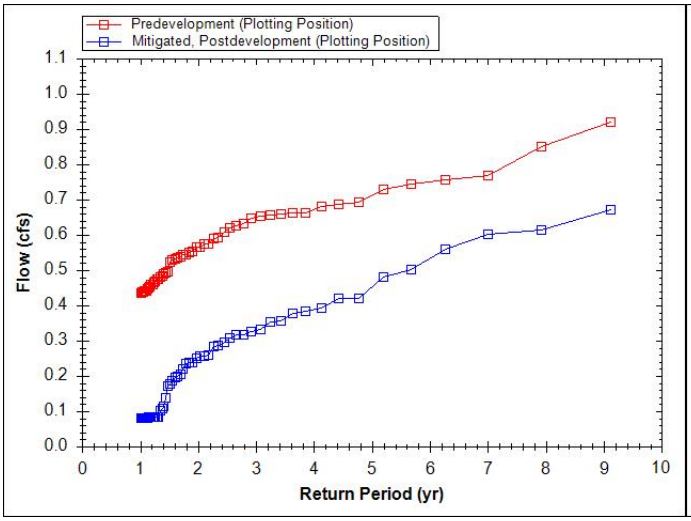
Custom Pond Geometry Configuration

Pond ID: UG Det M
Design: FlowControlAndTreatment

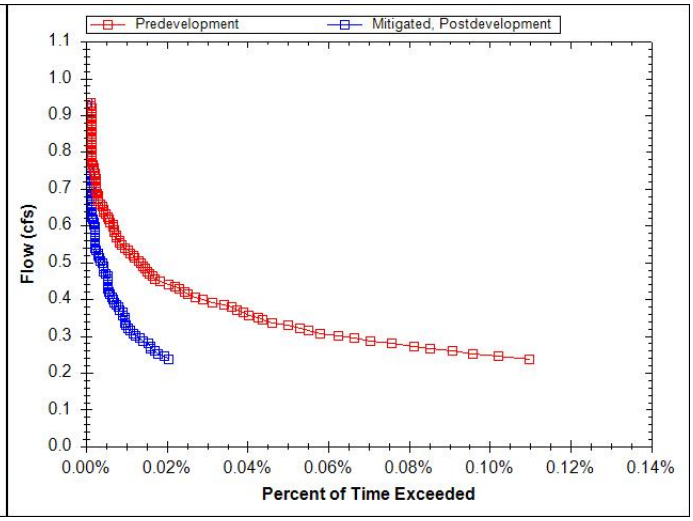
Shape Curve

Depth (ft)	Area (sq ft)	Discharge (cfs)
.0	.0	.0
.4	1,440.0	.0
.8	2,490.0	.0
1.2	3,035.0	.0
1.6	3,340.0	.1
2.0	3,492.5	.1
2.4	3,490.0	.1
2.8	3,342.5	.1
3.6	2,492.5	.1
4.0	1,432.5	1.1

Flow Frequency Chart



Flow Duration Chart



User Inputs

Project Name:	
State:	
City:	
Engineer::	Sheila Sayer
Measurement Type:	Imperial
Product:	HDPE N-12
Nominal diameter:	48
Required volume:	11010 cubic ft.
Available length:	180 ft.
Available width:	34 ft.
Pipe fill above:	6 in.
Pipe bedding below:	6 in.

Results

Installed Storage Volume:	11032.98 cubic ft.
System length:	177.58 ft.
System width:	33.63 ft.
Number Of Rows:	5
Approx. Bed Size Required:	5972.30 square ft.

System Components

Amount of fill required:	800.58 cubic yards
Volume of excavation (Bottom of system to top of system):	1209.21 cubic yards

Oregon City Mixed Use

UG Detention Basin N: Volume Storage - WES BMP Tool Data

Prepared by Harper Houf Peterson Righellis Inc.

Job No. LRS-20

March 2021

Stage-Storage-Discharge Table (derived from Hydraflow)

Depth (ft)	Volume (cf)	Delta Vol (cf)	Delta Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.0	0	0.00	0	0
0.50	470.0	470.000	0.50	940	0.025
1.00	1287.0	817.000	0.50	1634	0.036
1.50	2280.0	993.000	0.50	1986	0.045
2.00	3375.0	1095.000	0.50	2190	0.052
2.50	4518.0	1143.000	0.50	2286	0.058
3.00	5661.0	1143.000	0.50	2286	0.064
3.50	6755.0	1094.000	0.50	2188	0.069
4.00	7748.0	993.000	0.50	1986	0.074
4.50	8564.0	816.000	0.50	1632	0.079
5.00	9034.0	470.000	0.50	940	1.573

Stage-Storage-Discharge Table (input to WES BMP Tool)

Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.00	0
0.50	940.00	0.025
1.00	1634.00	0.036
1.50	1986.00	0.045
2.00	2190.00	0.052
2.50	2286.00	0.058
3.00	2286.00	0.064
3.50	2188.00	0.069
4.50	1632.00	0.079
5.00	940.00	1.573

WES BMP Sizing Software Version 1.6.0.2, May 2018

WES BMP Sizing Report

Project Information

Project Name	Oregon City Mixed-Use
Project Type	Commercial
Location	
Stormwater Management Area	940
Project Applicant	Summit Development Group
Jurisdiction	OutofDistrict

Drainage Management Area

Name	Area (sq-ft)	Pre-Project Cover	Post-Project Cover	DMA Soil Type	BMP
N - Impervious	60,569	Forested	ConventionalConcrete	D	UG Det N
N - Pervious	5,005	Forested	LandscapeDsoil	D	UG Det N

LID Facility Sizing Details

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?
UG Det N	FCWQT	Lined	5.00	940.0	0	4,700.0	3,008.0	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.

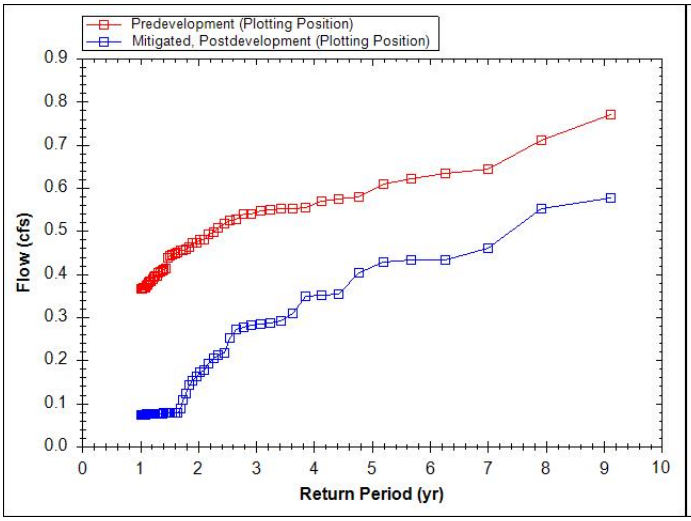
Custom Pond Geometry Configuration

Pond ID: UG Det N
Design: FlowControlAndTreatment

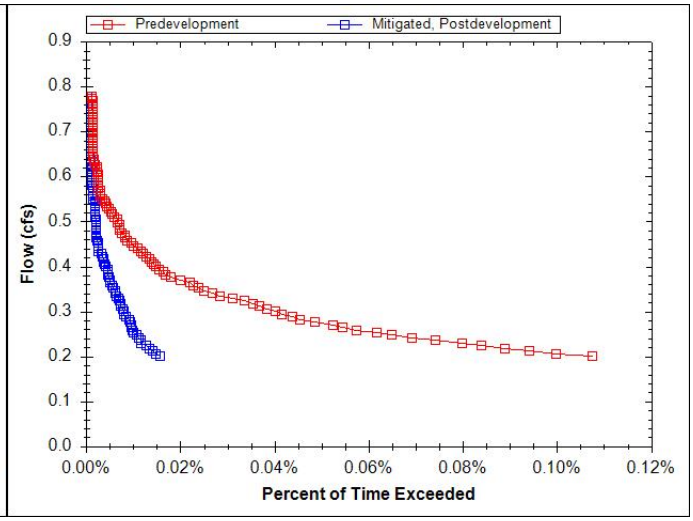
Shape Curve

Depth (ft)	Area (sq ft)	Discharge (cfs)
.0	.0	.0
.5	940.0	.0
1.0	1,634.0	.0
1.5	1,986.0	.0
2.0	2,190.0	.1
2.5	2,286.0	.1
3.0	2,286.0	.1
3.5	2,188.0	.1
4.5	1,632.0	.1
5.0	940.0	1.6

Flow Frequency Chart



Flow Duration Chart



User Inputs

Project Name:	
State:	
City:	
Engineer::	Sheila Sayer
Measurement Type:	Imperial
Product:	HDPE N-12
Nominal diameter:	60
Required volume:	9034 cubic ft.
Available length:	130 ft.
Available width:	34 ft.
Pipe fill above:	6 in.
Pipe bedding below:	6 in.

Results

Installed Storage Volume:	9038.07 cubic ft.
System length:	116.89 ft.
System width:	31.03 ft.
Number Of Rows:	4
Approx. Bed Size Required:	3627.39 square ft.

System Components

Amount of fill required:	541.42 cubic yards
Volume of excavation (Bottom of system to top of system):	876.17 cubic yards

Oregon City Mixed Use

UG Detention Basin O: Volume Storage - WES BMP Tool Data

Prepared by Harper Houf Peterson Righellis Inc.

Job No. LRS-20

March 2021

Stage-Storage-Discharge Table (derived from Hydraflow)

Depth (ft)	Volume (cf)	Delta Vol (cf)	Delta Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.0	0	0.00	0	0
0.50	1909.0	1909.000	0.50	3818	0.190
1.00	5226.0	3317.000	0.50	6634	0.297
1.50	9259.0	4033.000	0.50	8066	0.378
2.00	13702.0	4443.000	0.50	8886	0.445
2.50	18344.0	4642.000	0.50	9284	0.504
3.00	22985.0	4641.000	0.50	9282	0.556
3.50	27427.0	4442.000	0.50	8884	0.605
4.00	31459.0	4032.000	0.50	8064	0.650
4.50	34773.0	3314.000	0.50	6628	0.825
5.00	36679.0	1906.000	0.50	3812	7.339

Stage-Storage-Discharge Table (input to WES BMP Tool)

Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.00	0
0.50	3818.00	0.19
1.00	6634.00	0.297
1.50	8066.00	0.378
2.00	8886.00	0.445
2.50	9284.00	0.504
3.00	9282.00	0.556
3.50	8884.00	0.605
4.50	6628.00	0.825
5.00	3812.00	7.339

WES BMP Sizing Software Version 1.6.0.2, May 2018

WES BMP Sizing Report

Project Information

Project Name	Oregon City Mixed-Use
Project Type	Commercial
Location	
Stormwater Management Area	3812
Project Applicant	Summit Development Group
Jurisdiction	OutofDistrict

Drainage Management Area

Name	Area (sq-ft)	Pre-Project Cover	Post-Project Cover	DMA Soil Type	BMP
O - Impervious	343,196	Forested	ConventionalConcrete	D	UG Det O
O - Pervious	18,648	Forested	LandscapeDsoil	D	UG Det O

LID Facility Sizing Details

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?
UG Det O	FCWQT	Lined	5.00	3,812.0	0	19,060.0	12,198.4	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.

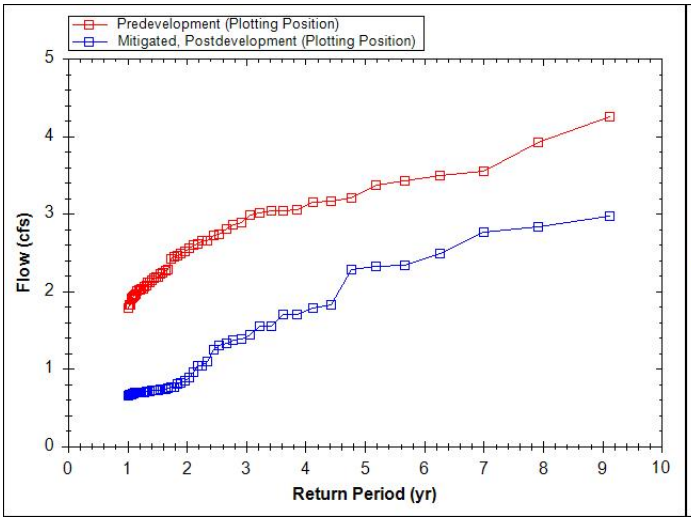
Custom Pond Geometry Configuration

Pond ID: UG Det O
Design: FlowControlAndTreatment

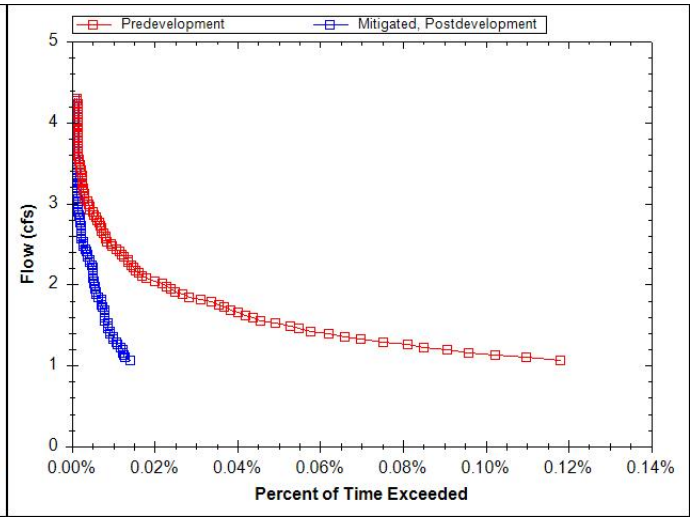
Shape Curve

Depth (ft)	Area (sq ft)	Discharge (cfs)
.0	.0	.0
.5	3,818.0	.2
1.0	6,634.0	.3
1.5	8,066.0	.4
2.0	8,886.0	.4
2.5	9,284.0	.5
3.0	9,282.0	.6
3.5	8,884.0	.6
4.5	6,628.0	.8
5.0	3,812.0	7.3

Flow Frequency Chart



Flow Duration Chart



User Inputs

Project Name:	
State:	
City:	
Engineer::	Sheila Sayer
Measurement Type:	Imperial
Product:	HDPE N-12
Nominal diameter:	60
Required volume:	36679 cubic ft.
Available length:	170 ft.
Available width:	115 ft.
Pipe fill above:	6 in.
Pipe bedding below:	6 in.

Results

Installed Storage Volume:	36679.31 cubic ft.
System length:	156.74 ft.
System width:	91.06 ft.
Number Of Rows:	12
Approx. Bed Size Required:	14272.52 square ft.

System Components

Amount of fill required:	2088.92 cubic yards
Volume of excavation (Bottom of system to top of system):	3447.41 cubic yards

Oregon City Mixed Use

UG Detention Basin P: Volume Storage - WES BMP Tool Data

Prepared by Harper Houf Peterson Righellis Inc.

Job No. LRS-20

March 2021

Stage-Storage-Discharge Table (derived from Hydraflow)

Depth (ft)	Volume (cf)	Delta Vol (cf)	Delta Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.0	0	0.00	0	0
0.50	1412.0	1412.000	0.50	2824	0.038
1.00	3865.0	2453.000	0.50	4906	0.059
1.50	6848.0	2983.000	0.50	5966	0.069
2.00	10134.0	3286.000	0.50	6572	0.081
2.50	13567.0	3433.000	0.50	6866	0.091
3.00	17000.0	3433.000	0.50	6866	0.100
3.50	20285.0	3285.000	0.50	6570	0.108
4.00	23267.0	2982.000	0.50	5964	0.116
4.50	25718.0	2451.000	0.50	4902	0.123
5.00	27128.0	1410.000	0.50	2820	1.619

Stage-Storage-Discharge Table (input to WES BMP Tool)

Depth (ft)	Surface Area for Tool (sf)	Flow (cfs)
0.00	0.00	0
0.50	2824.00	0.038
1.00	4906.00	0.059
1.50	5966.00	0.069
2.00	6572.00	0.081
2.50	6866.00	0.091
3.00	6866.00	0.100
3.50	6570.00	0.108
4.50	4902.00	0.123
5.00	2820.00	1.619

WES BMP Sizing Software Version 1.6.0.2, May 2018

WES BMP Sizing Report

Project Information

Project Name	Oregon City Mixed-Use
Project Type	Commercial
Location	
Stormwater Management Area	2820
Project Applicant	Summit Development Group
Jurisdiction	OutofDistrict

Drainage Management Area

Name	Area (sq-ft)	Pre-Project Cover	Post-Project Cover	DMA Soil Type	BMP
P - Impervious	155,167	Forested	ConventionalConcrete	D	UG Det P
P - Pervious	7,780	Forested	LandscapeDsoil	D	UG Det P

LID Facility Sizing Details

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?
UG Det P	FCWQT	Lined	5.00	2,820.0	0	14,100.0	9,024.0	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.

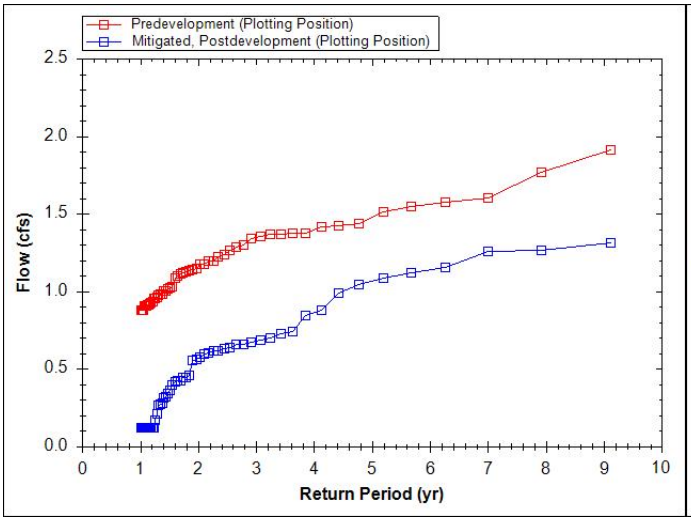
Custom Pond Geometry Configuration

Pond ID: UG Det P
Design: FlowControlAndTreatment

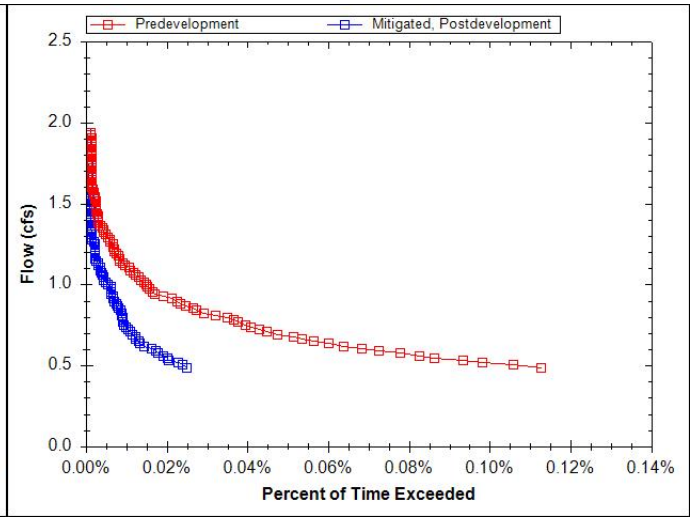
Shape Curve

Depth (ft)	Area (sq ft)	Discharge (cfs)
.0	.0	.0
.5	2,824.0	.0
1.0	4,906.0	.1
1.5	5,966.0	.1
2.0	6,572.0	.1
2.5	6,866.0	.1
3.0	6,866.0	.1
3.5	6,570.0	.1
4.5	4,902.0	.1
5.0	2,820.0	1.6

Flow Frequency Chart



Flow Duration Chart



User Inputs

Project Name:	
State:	
City:	
Engineer::	Sheila Sayer
Measurement Type:	Imperial
Product:	HDPE N-12
Nominal diameter:	60
Required volume:	27114 cubic ft.
Available length:	180 ft.
Available width:	80 ft.
Pipe fill above:	6 in.
Pipe bedding below:	6 in.

Results

Installed Storage Volume:	27127.41 cubic ft.
System length:	174.41 ft.
System width:	61.05 ft.
Number Of Rows:	8
Approx. Bed Size Required:	10647.03 square ft.

System Components

Amount of fill required:	1566.98 cubic yards
Volume of excavation (Bottom of system to top of system):	2571.70 cubic yards

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SBUH Runoff	------	0.261	0.830	0.326	-------	1.048	1.326	-------	-------	Aa
2	SBUH Runoff	------	0.001	0.048	0.003	-------	0.084	0.136	-------	-------	Ab
3	Combine	1, 2	0.261	0.878	0.326	-------	1.132	1.462	-------	-------	A - Post-Developed
4	SBUH Runoff	------	0.622	1.974	0.775	-------	2.491	3.151	-------	-------	Ba
5	SBUH Runoff	------	0.003	0.111	0.005	-------	0.191	0.304	-------	-------	Bb
6	Combine	4, 5	0.622	2.078	0.775	-------	2.674	3.449	-------	-------	B - Post-Developed
7	SBUH Runoff	------	0.409	1.299	0.510	-------	1.638	2.073	-------	-------	Ca
8	SBUH Runoff	------	0.001	0.047	0.002	-------	0.080	0.128	-------	-------	Cb
9	Combine	7, 8	0.409	1.342	0.510	-------	1.715	2.198	-------	-------	C- Post-Developed
10	SBUH Runoff	------	0.389	1.234	0.484	-------	1.557	1.970	-------	-------	Da
11	SBUH Runoff	------	0.001	0.036	0.002	-------	0.061	0.098	-------	-------	Db
12	Combine	10, 11	0.389	1.267	0.484	-------	1.616	2.066	-------	-------	D - Post-Developed
13	SBUH Runoff	------	0.796	2.526	0.992	-------	3.187	4.032	-------	-------	Ea
14	SBUH Runoff	------	0.001	0.027	0.001	-------	0.046	0.074	-------	-------	Eb
15	Combine	13, 14	0.796	2.551	0.992	-------	3.231	4.104	-------	-------	E - Post-Developed
16	SBUH Runoff	------	0.145	0.461	0.181	-------	0.582	0.736	-------	-------	Fa
17	SBUH Runoff	------	0.001	0.020	0.001	-------	0.034	0.054	-------	-------	Fb
18	Combine	16, 17	0.145	0.479	0.181	-------	0.614	0.789	-------	-------	F - Post-Developed
19	SBUH Runoff	------	1.204	3.818	1.499	-------	4.817	6.095	-------	-------	Ga
20	SBUH Runoff	------	0.003	0.124	0.006	-------	0.212	0.339	-------	-------	Gb
21	Combine	19, 20	1.204	3.934	1.499	-------	5.021	6.427	-------	-------	G - Post-Developed
22	SBUH Runoff	------	0.467	1.481	0.581	-------	1.868	2.363	-------	-------	Ha
23	SBUH Runoff	------	0.001	0.057	0.003	-------	0.098	0.157	-------	-------	Hb
24	Combine	22, 23	0.467	1.534	0.581	-------	1.962	2.517	-------	-------	H - Post-Developed
25	SBUH Runoff	------	0.377	1.195	0.469	-------	1.507	1.907	-------	-------	Ia
26	SBUH Runoff	------	0.000	0.011	0.000	-------	0.018	0.029	-------	-------	Ib
27	Combine	25, 26	0.377	1.205	0.469	-------	1.525	1.936	-------	-------	I - Post-Developed
28	SBUH Runoff	------	0.158	0.500	0.196	-------	0.631	0.798	-------	-------	Ka
29	SBUH Runoff	------	0.001	0.036	0.002	-------	0.061	0.098	-------	-------	Kb
30	Combine	28, 29	0.158	0.534	0.196	-------	0.690	0.894	-------	-------	K - Post-Developed
31	SBUH Runoff	------	0.005	0.203	0.009	-------	0.347	0.555	-------	-------	W - Post-Developed
33	Reservoir	6	0.303	0.714	0.356	-------	0.766	0.902	-------	-------	Raingarden 1 - Basin B
34	Reservoir	12	0.014	0.025	0.015	-------	0.220	0.381	-------	-------	UG Det - Basin D

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
35	Reservoir	15	0.014	0.025	0.016	-------	0.422	0.685	-------	-------	UG Det - Basin E
36	Reservoir	18	0.034	0.070	0.039	-------	0.238	0.819	-------	-------	UG Det - Basin F
37	Reservoir	21	0.019	0.032	0.020	-------	0.658	1.068	-------	-------	UG Det - Basin G
38	Reservoir	24	0.055	0.109	0.062	-------	0.295	0.598	-------	-------	UG Det - Basin H
39	Reservoir	27	0.033	0.063	0.037	-------	0.222	0.437	-------	-------	UG Det - Basin I
40	Reservoir	30	0.016	0.032	0.018	-------	0.106	0.212	-------	-------	UG Det - Basin K

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SBUH Runoff	0.261	2	480	4,106	------	------	------	Aa
2	SBUH Runoff	0.001	2	1244	56	------	------	------	Ab
3	Combine	0.261	2	480	4,161	1, 2	------	------	A - Post-Developed
4	SBUH Runoff	0.622	2	474	8,728	------	------	------	Ba
5	SBUH Runoff	0.003	2	1236	108	------	------	------	Bb
6	Combine	0.622	2	474	8,835	4, 5	------	------	B - Post-Developed
7	SBUH Runoff	0.409	2	474	5,742	------	------	------	Ca
8	SBUH Runoff	0.001	2	1236	45	------	------	------	Cb
9	Combine	0.409	2	474	5,787	7, 8	------	------	C- Post-Developed
10	SBUH Runoff	0.389	2	474	5,455	------	------	------	Da
11	SBUH Runoff	0.001	2	1236	35	------	------	------	Db
12	Combine	0.389	2	474	5,490	10, 11	------	------	D - Post-Developed
13	SBUH Runoff	0.796	2	474	11,168	------	------	------	Ea
14	SBUH Runoff	0.001	2	1236	26	------	------	------	Eb
15	Combine	0.796	2	474	11,194	13, 14	------	------	E - Post-Developed
16	SBUH Runoff	0.145	2	474	2,038	------	------	------	Fa
17	SBUH Runoff	0.001	2	1236	19	------	------	------	Fb
18	Combine	0.145	2	474	2,057	16, 17	------	------	F - Post-Developed
19	SBUH Runoff	1.204	2	474	16,881	------	------	------	Ga
20	SBUH Runoff	0.003	2	1236	120	------	------	------	Gb
21	Combine	1.204	2	474	17,001	19, 20	------	------	G - Post-Developed
22	SBUH Runoff	0.467	2	474	6,546	------	------	------	Ha
23	SBUH Runoff	0.001	2	1236	56	------	------	------	Hb
24	Combine	0.467	2	474	6,601	22, 23	------	------	H - Post-Developed
25	SBUH Runoff	0.377	2	474	5,283	------	------	------	Ia
26	SBUH Runoff	0.000	2	1236	10	------	------	------	Ib
27	Combine	0.377	2	474	5,293	25, 26	------	------	I - Post-Developed
28	SBUH Runoff	0.158	2	474	2,211	------	------	------	Ka
29	SBUH Runoff	0.001	2	1236	35	------	------	------	Kb
30	Combine	0.158	2	474	2,245	28, 29	------	------	K - Post-Developed
31	SBUH Runoff	0.005	2	1236	196	------	------	------	W - Post-Developed
33	Reservoir	0.303	2	500	8,812	6	38.34	1,247	Raingarden 1 - Basin B
34	Reservoir	0.014	2	1446	3,884	12	56.05	4,673	UG Det - Basin D

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

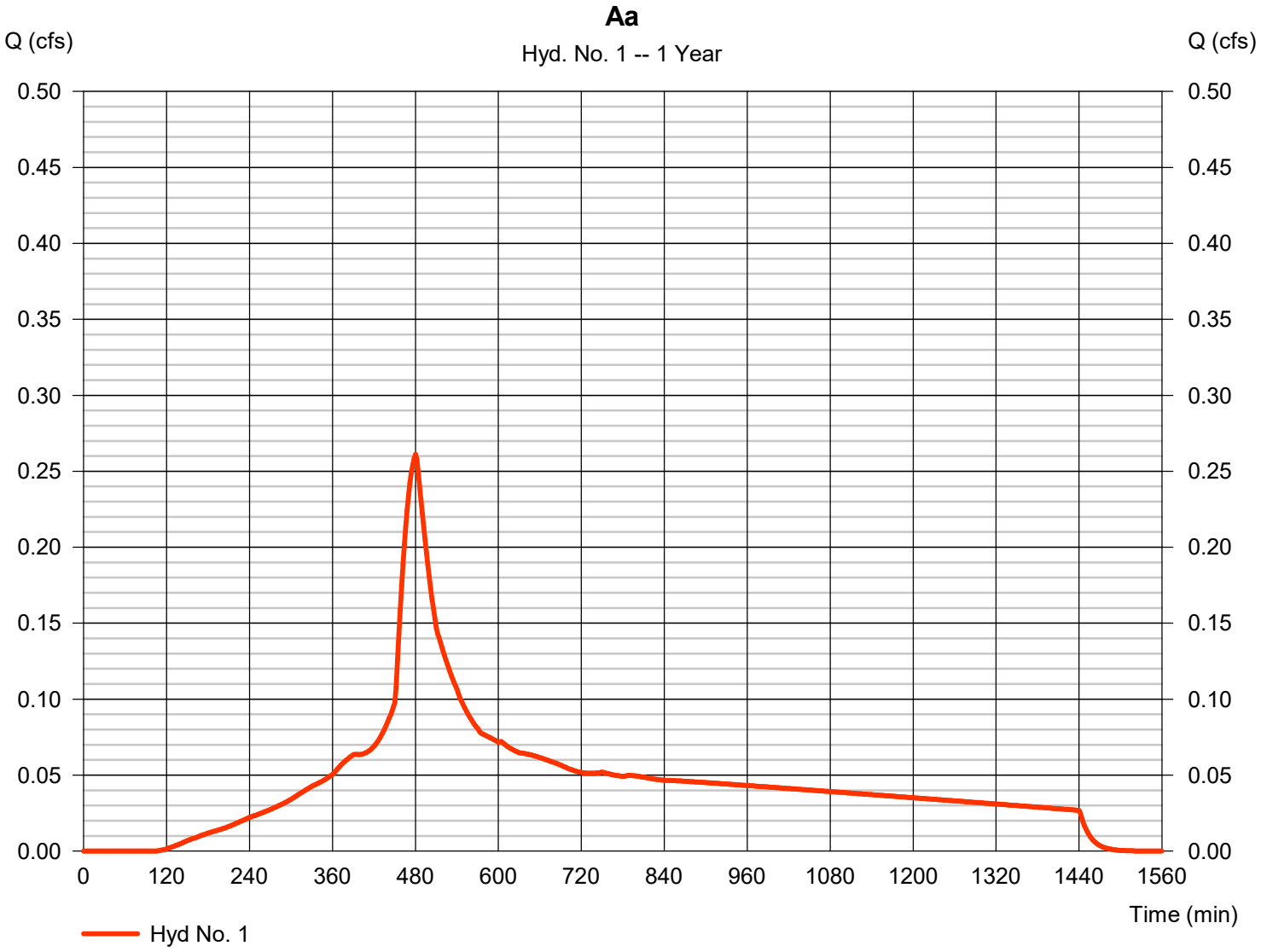
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
35	Reservoir	0.014	2	1450	4,302	15	101.31	10,362	UG Det - Basin E
36	Reservoir	0.034	2	608	2,050	18	100.90	504	UG Det - Basin F
37	Reservoir	0.019	2	1450	5,598	21	101.29	15,933	UG Det - Basin G
38	Reservoir	0.055	2	1230	6,562	24	100.99	3,258	UG Det - Basin H
39	Reservoir	0.033	2	1440	5,230	27	100.86	3,304	UG Det - Basin I
40	Reservoir	0.016	2	1374	2,224	30	101.01	1,246	UG Det - Basin K

Hydrograph Report

Hyd. No. 1

Aa

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.261 cfs
Storm frequency	= 1 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 4,106 cuft
Drainage area	= 1.430 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 14.60 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

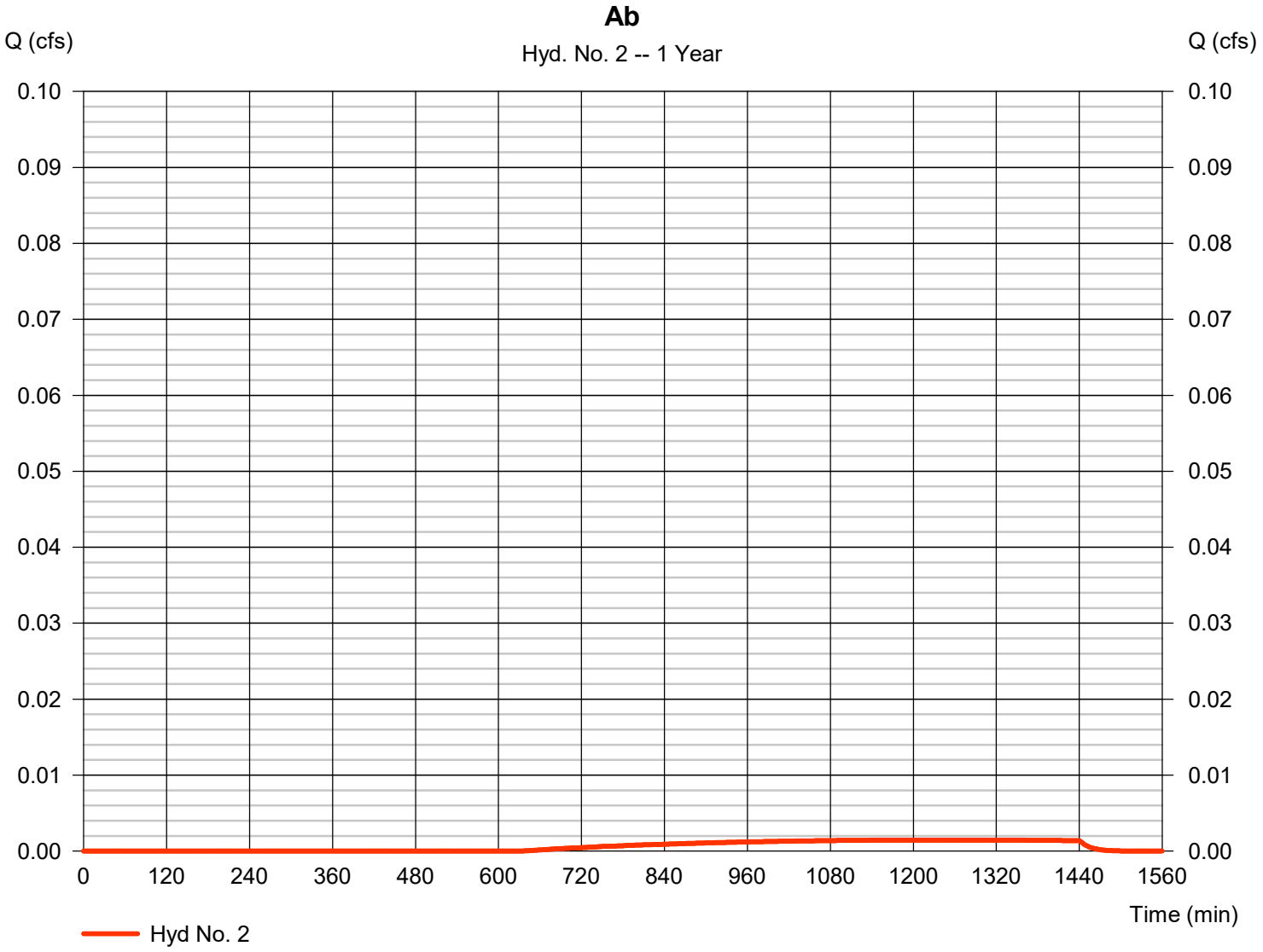


Hydrograph Report

Hyd. No. 2

Ab

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.001 cfs
Storm frequency	= 1 yrs	Time to peak	= 1244 min
Time interval	= 2 min	Hyd. volume	= 56 cuft
Drainage area	= 0.320 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 14.60 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

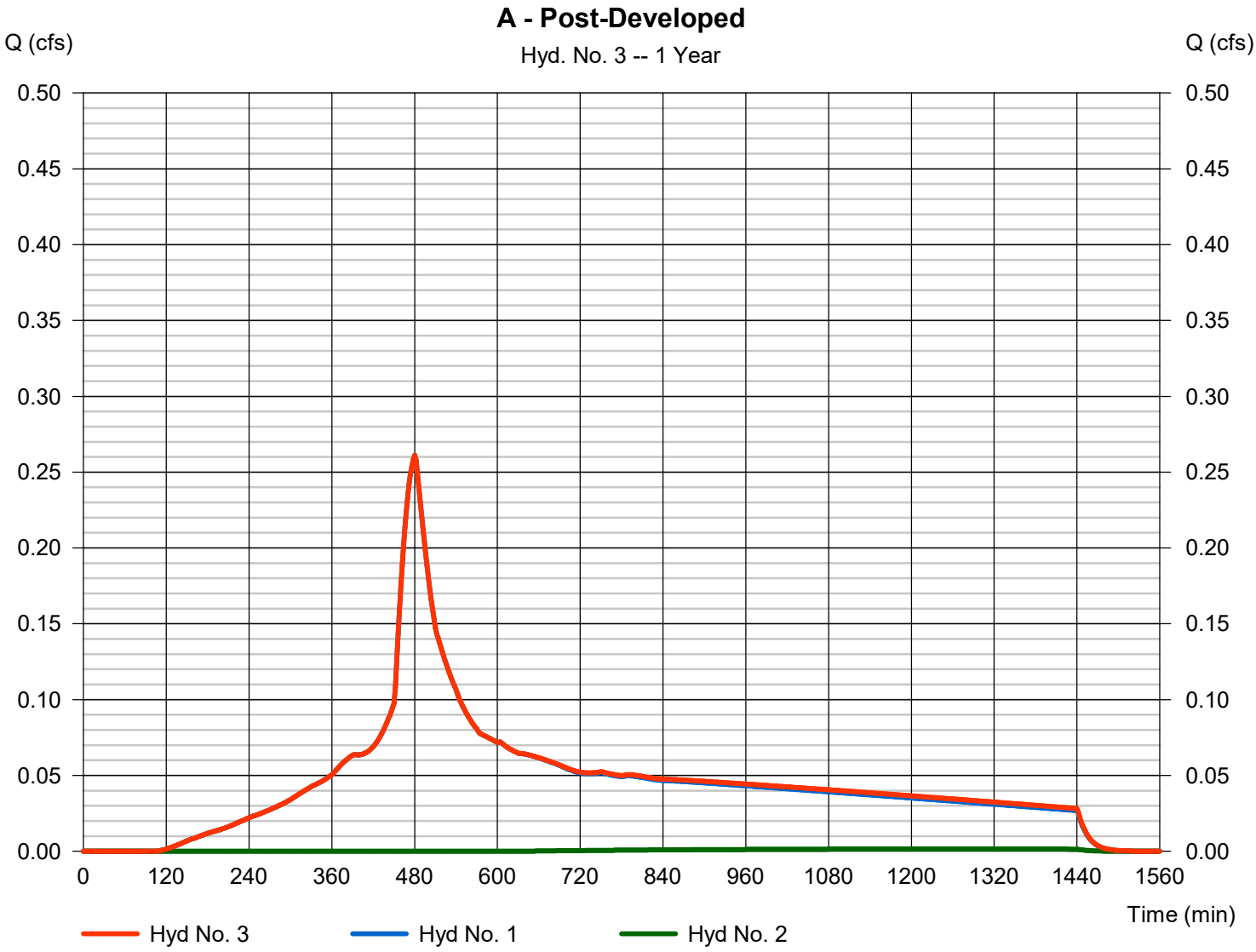


Hydrograph Report

Hyd. No. 3

A - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 0.261 cfs
Storm frequency	= 1 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 4,161 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 1.750 ac



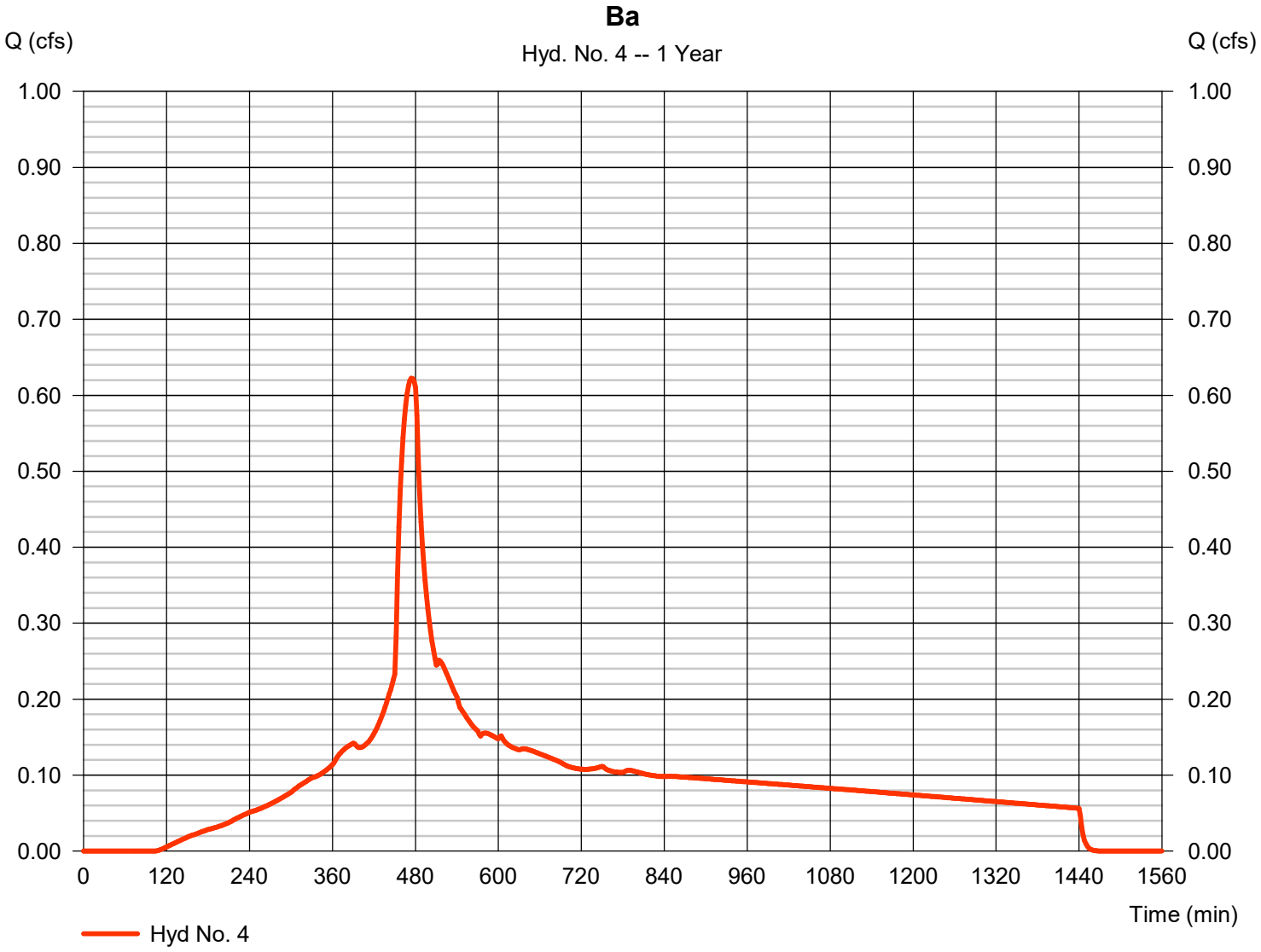
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Wednesday, 03 / 3 / 2021

Hyd. No. 4

Ba

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.622 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 8,728 cuft
Drainage area	= 3.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

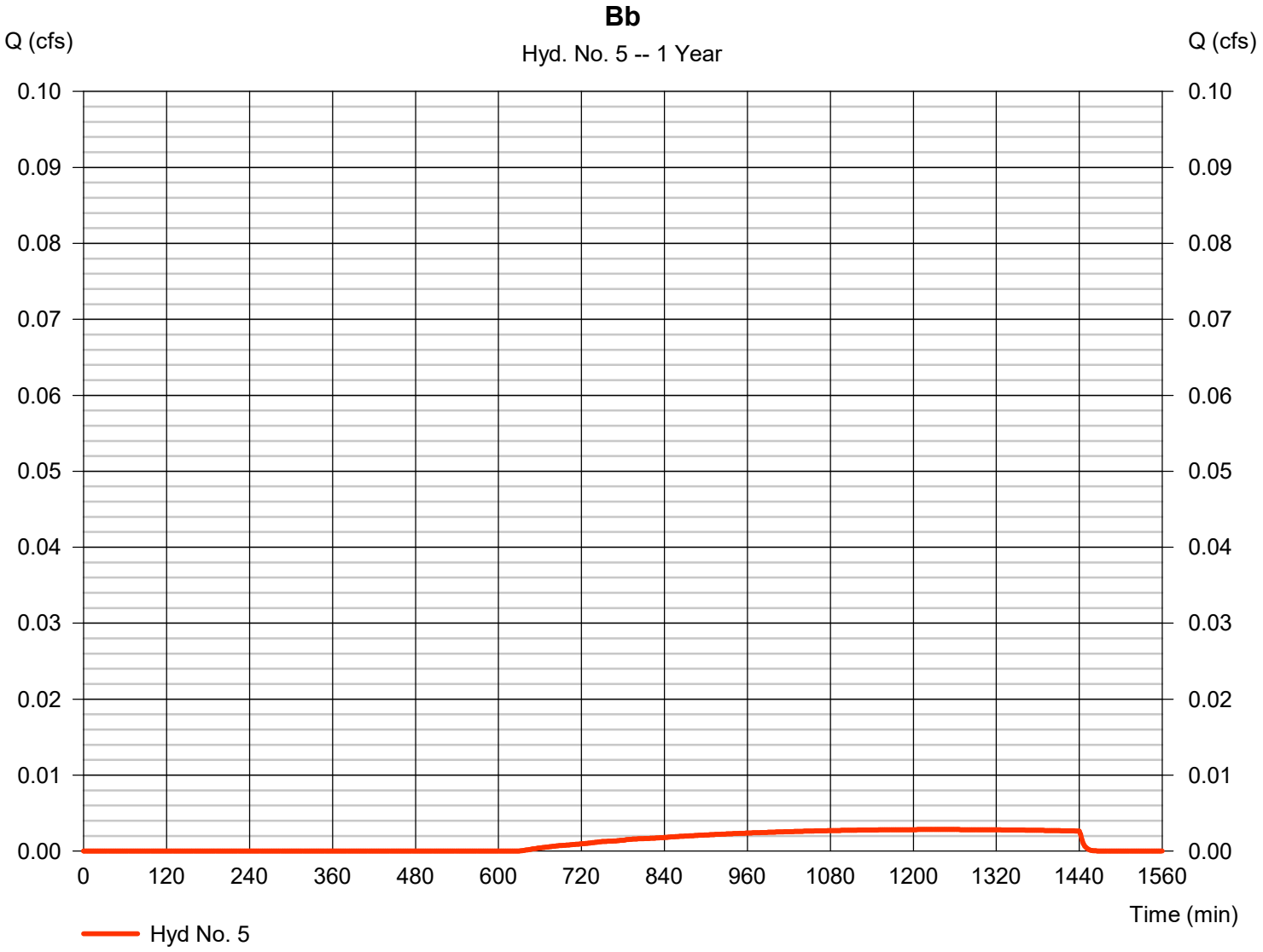


Hydrograph Report

Hyd. No. 5

Bb

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.003 cfs
Storm frequency	= 1 yrs	Time to peak	= 1236 min
Time interval	= 2 min	Hyd. volume	= 108 cuft
Drainage area	= 0.620 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

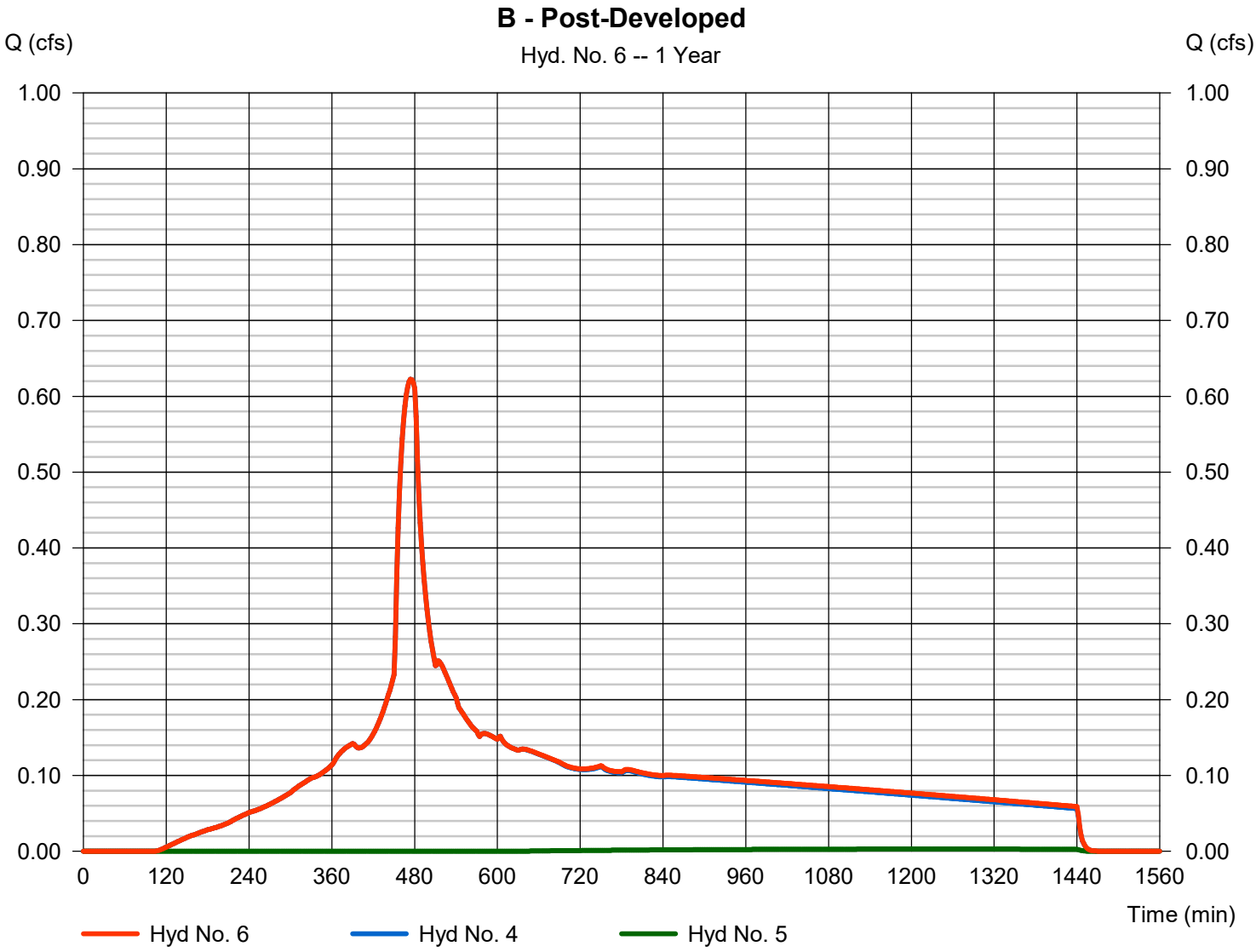


Hydrograph Report

Hyd. No. 6

B - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 0.622 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 8,835 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 3.660 ac

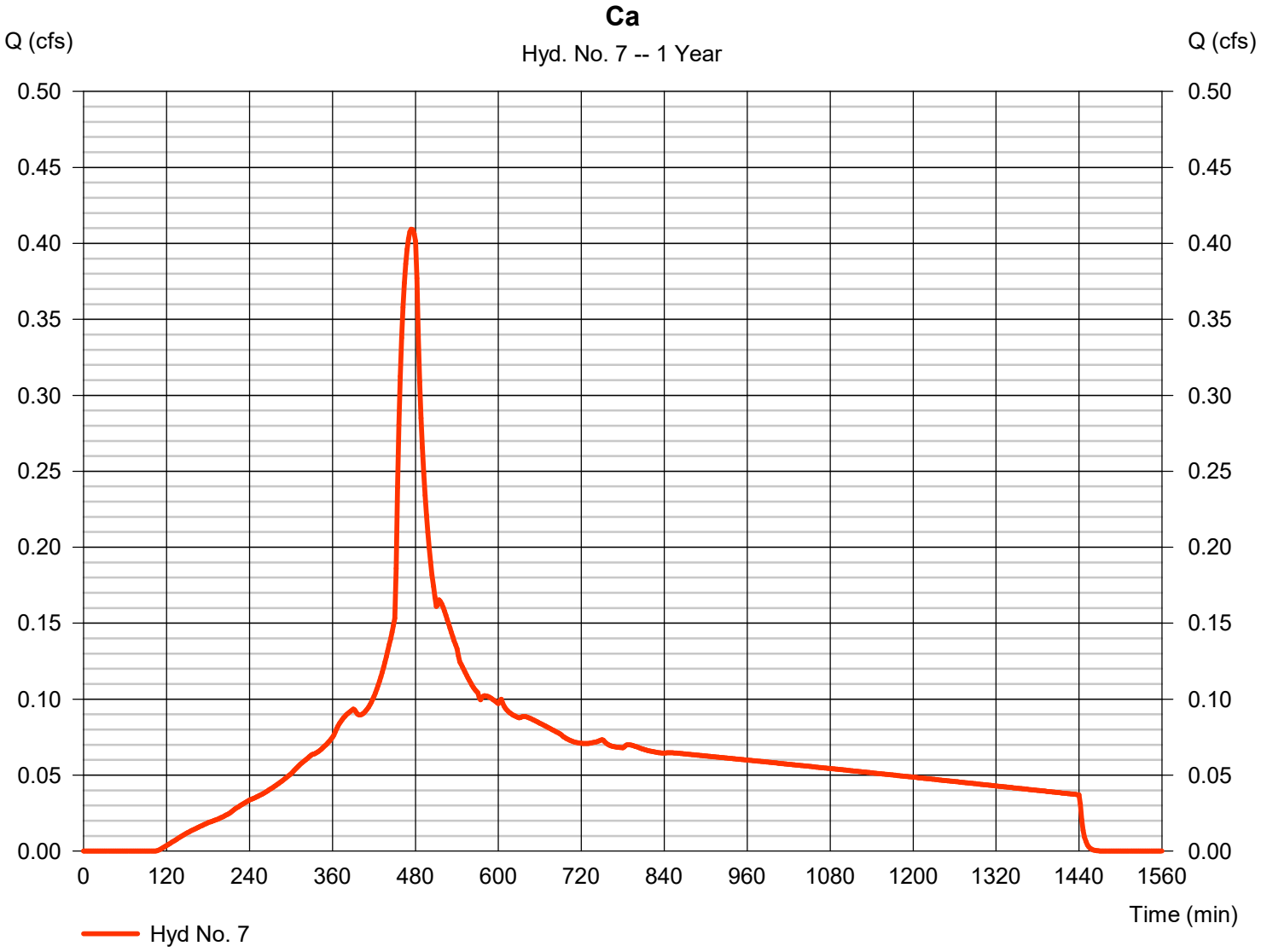


Hydrograph Report

Hyd. No. 7

Ca

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.409 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 5,742 cuft
Drainage area	= 2.000 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

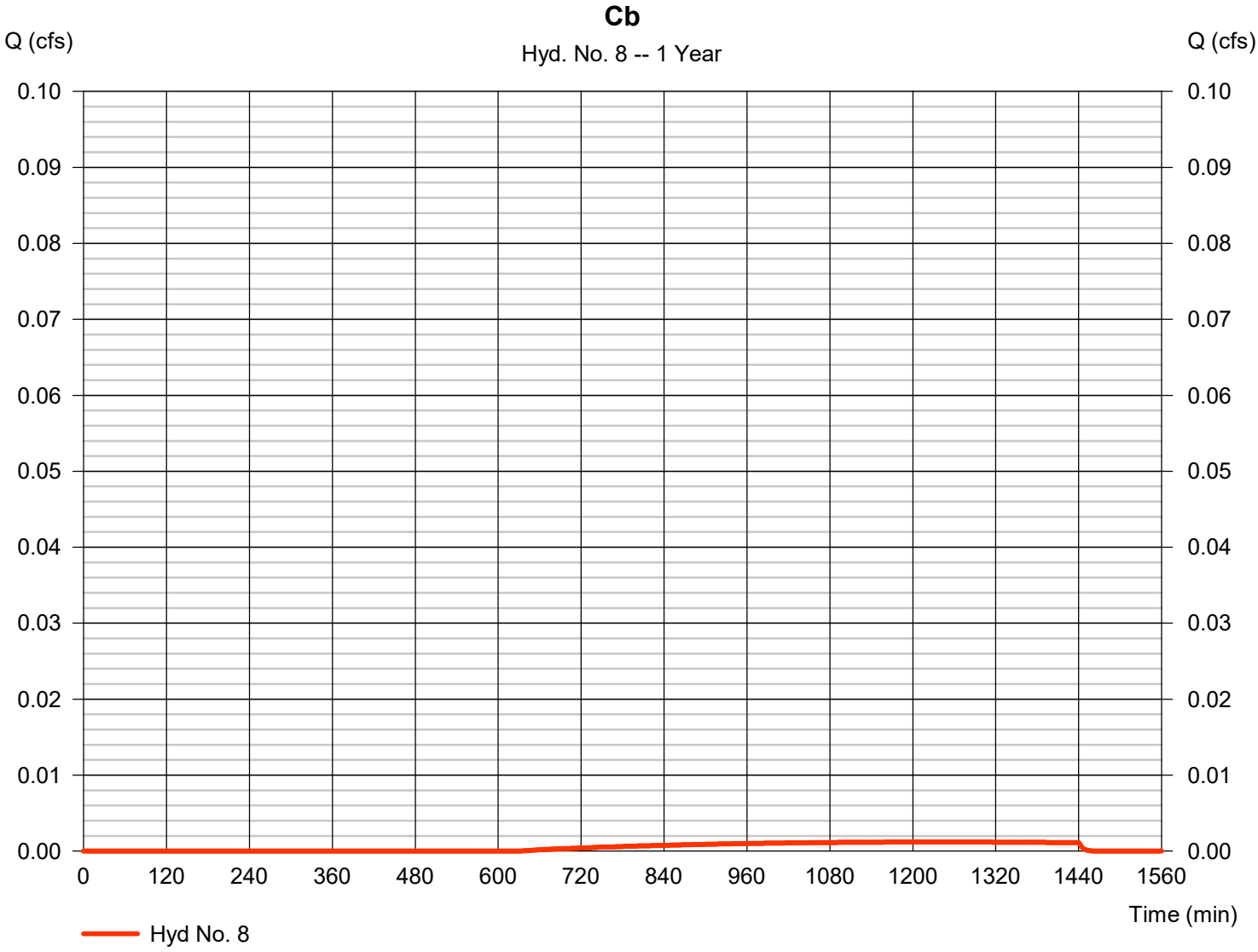


Hydrograph Report

Hyd. No. 8

Cb

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.001 cfs
Storm frequency	= 1 yrs	Time to peak	= 1236 min
Time interval	= 2 min	Hyd. volume	= 45 cuft
Drainage area	= 0.260 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

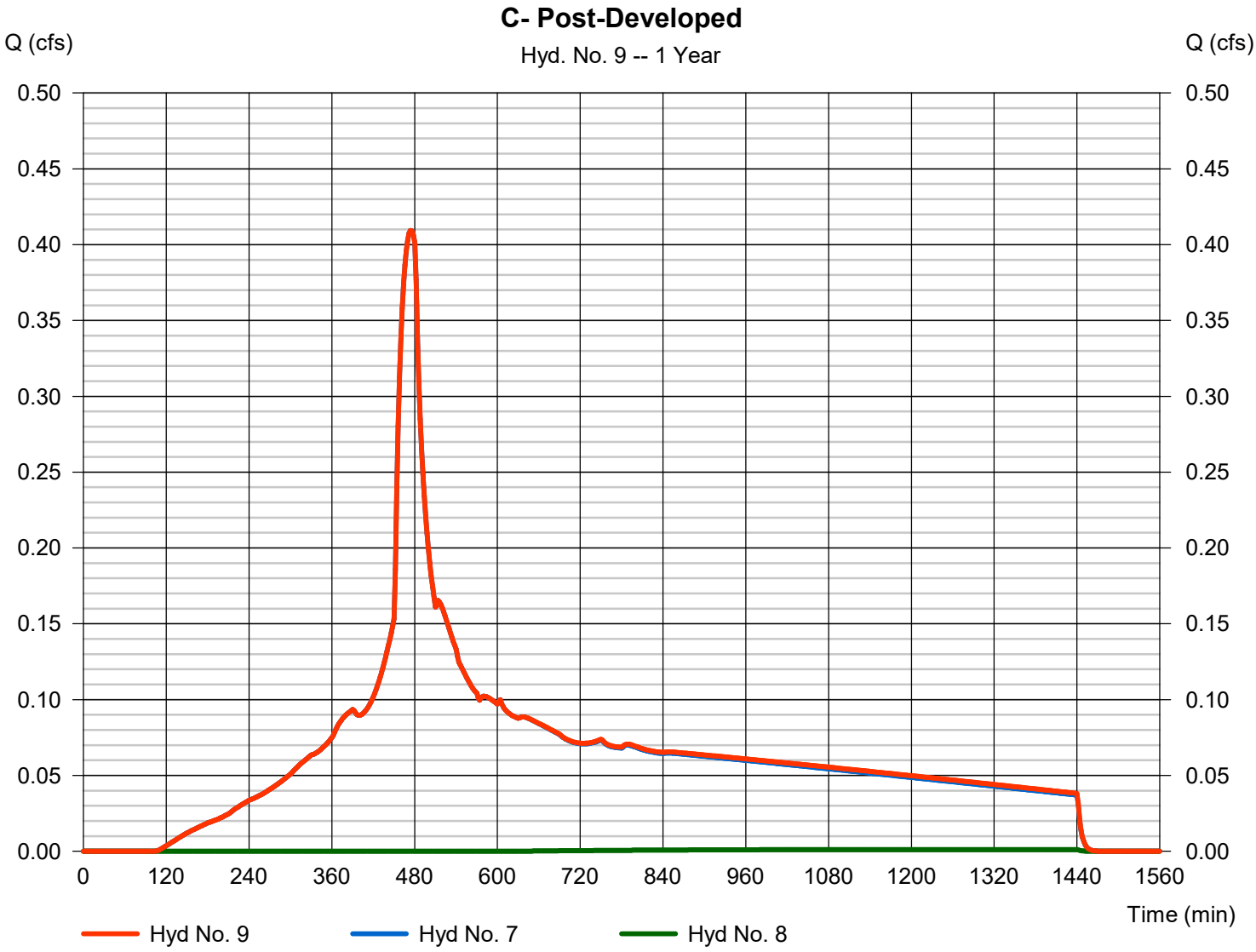


Hydrograph Report

Hyd. No. 9

C- Post-Developed

Hydrograph type	= Combine	Peak discharge	= 0.409 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 5,787 cuft
Inflow hyds.	= 7, 8	Contrib. drain. area	= 2.260 ac

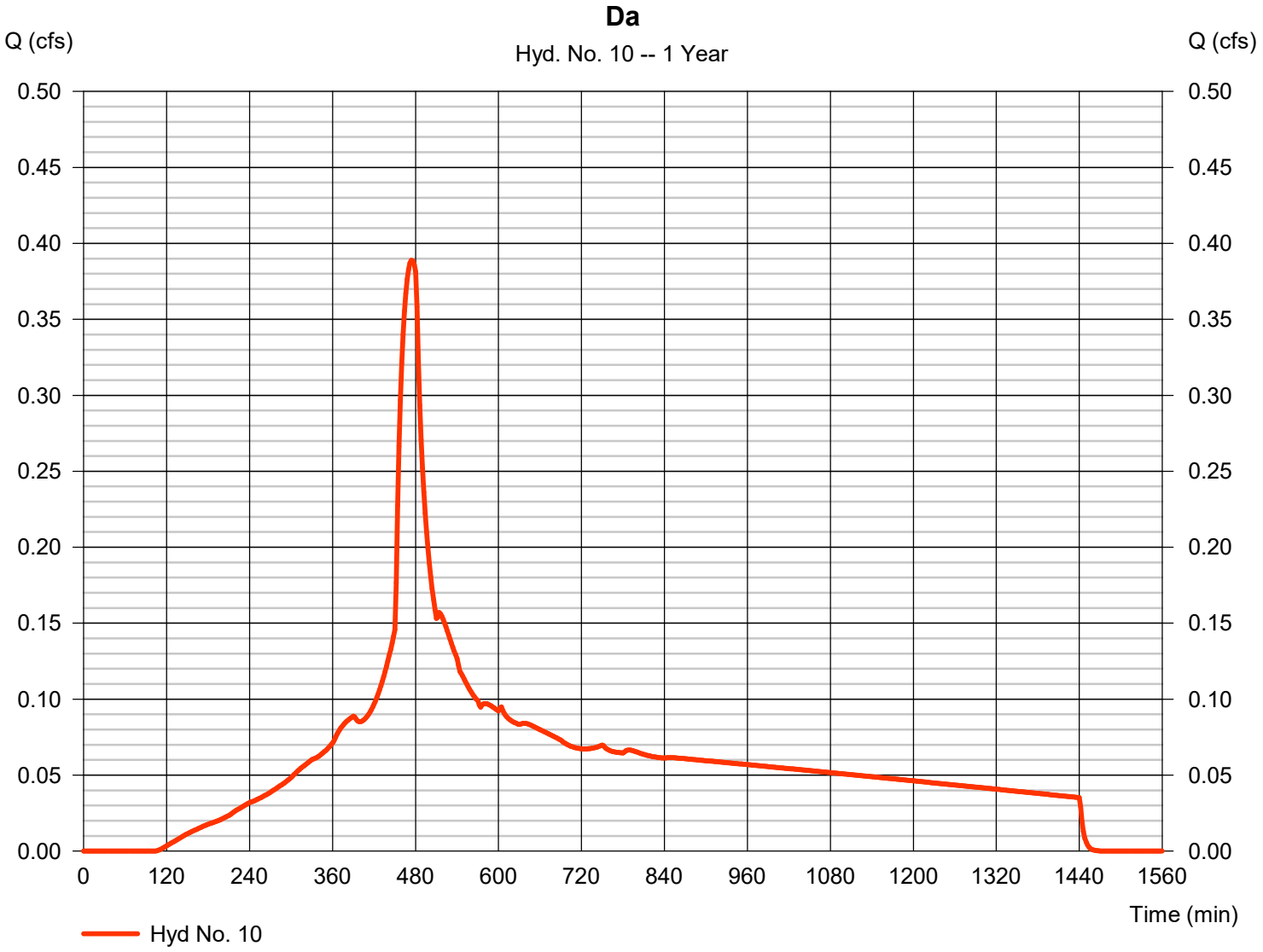


Hydrograph Report

Hyd. No. 10

Da

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.389 cfs
Storm frequency	=	1 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	5,455 cuft
Drainage area	=	1.900 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

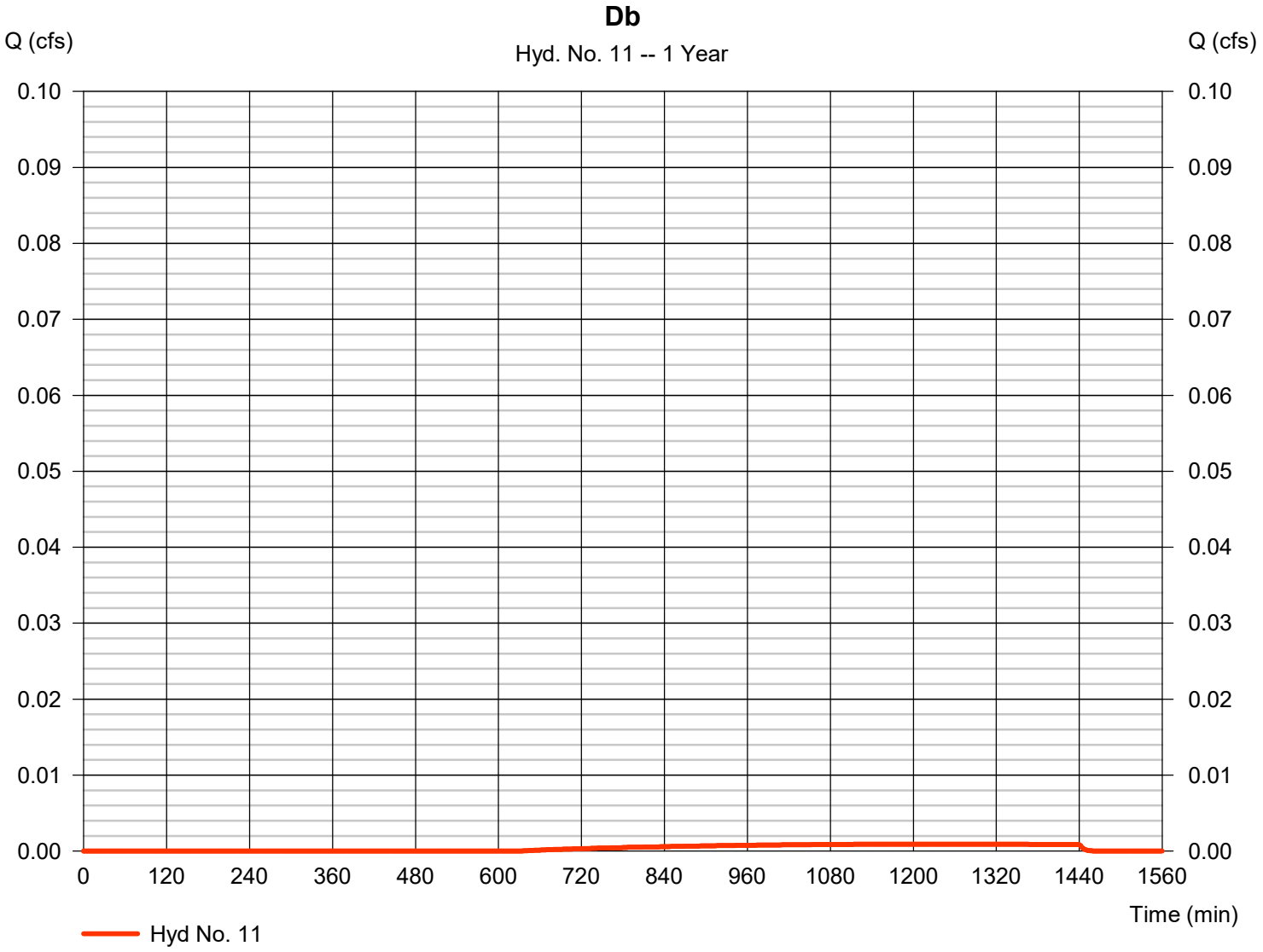


Hydrograph Report

Hyd. No. 11

Db

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.001 cfs
Storm frequency	= 1 yrs	Time to peak	= 1236 min
Time interval	= 2 min	Hyd. volume	= 35 cuft
Drainage area	= 0.200 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

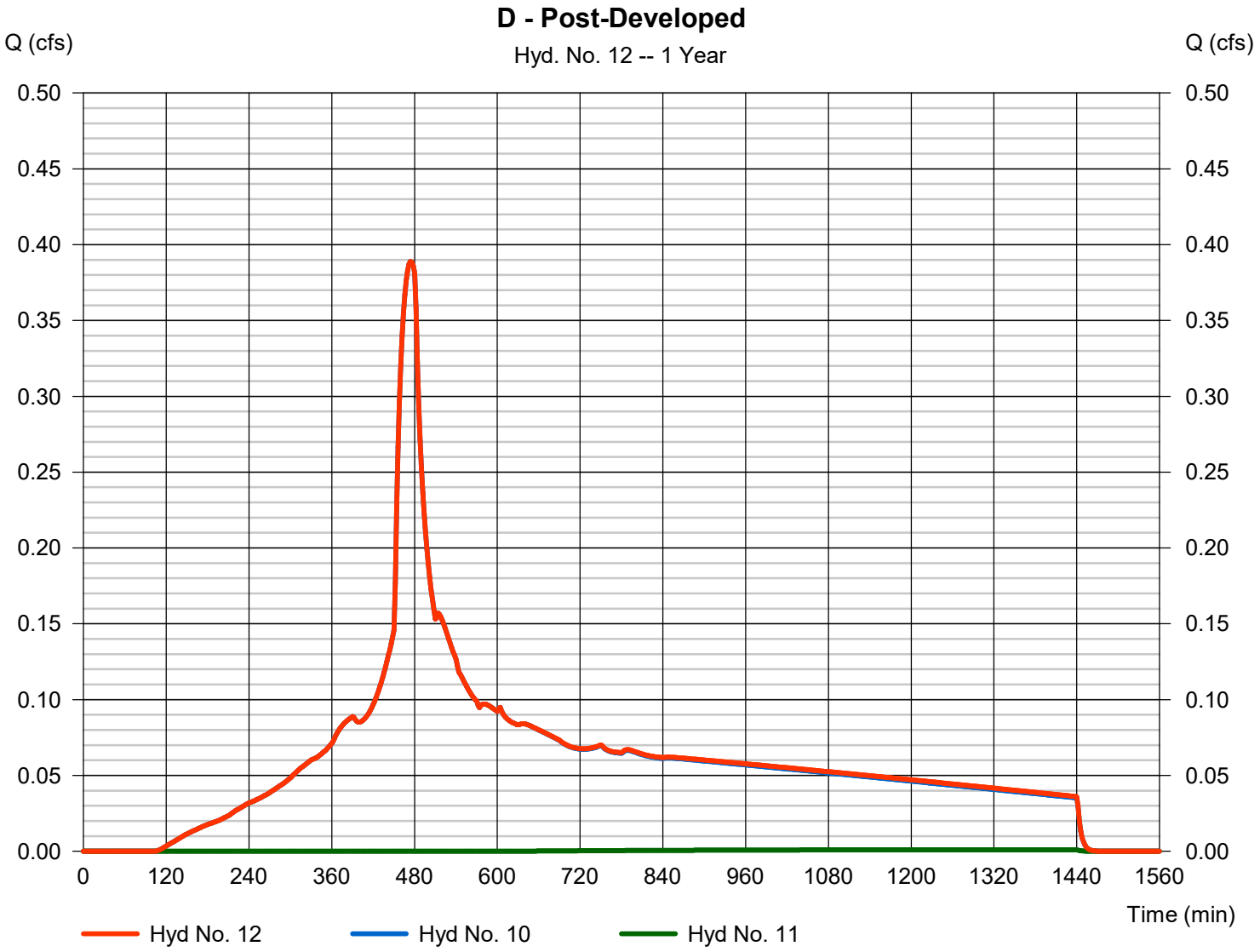


Hydrograph Report

Hyd. No. 12

D - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 0.389 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 5,490 cuft
Inflow hyds.	= 10, 11	Contrib. drain. area	= 2.100 ac

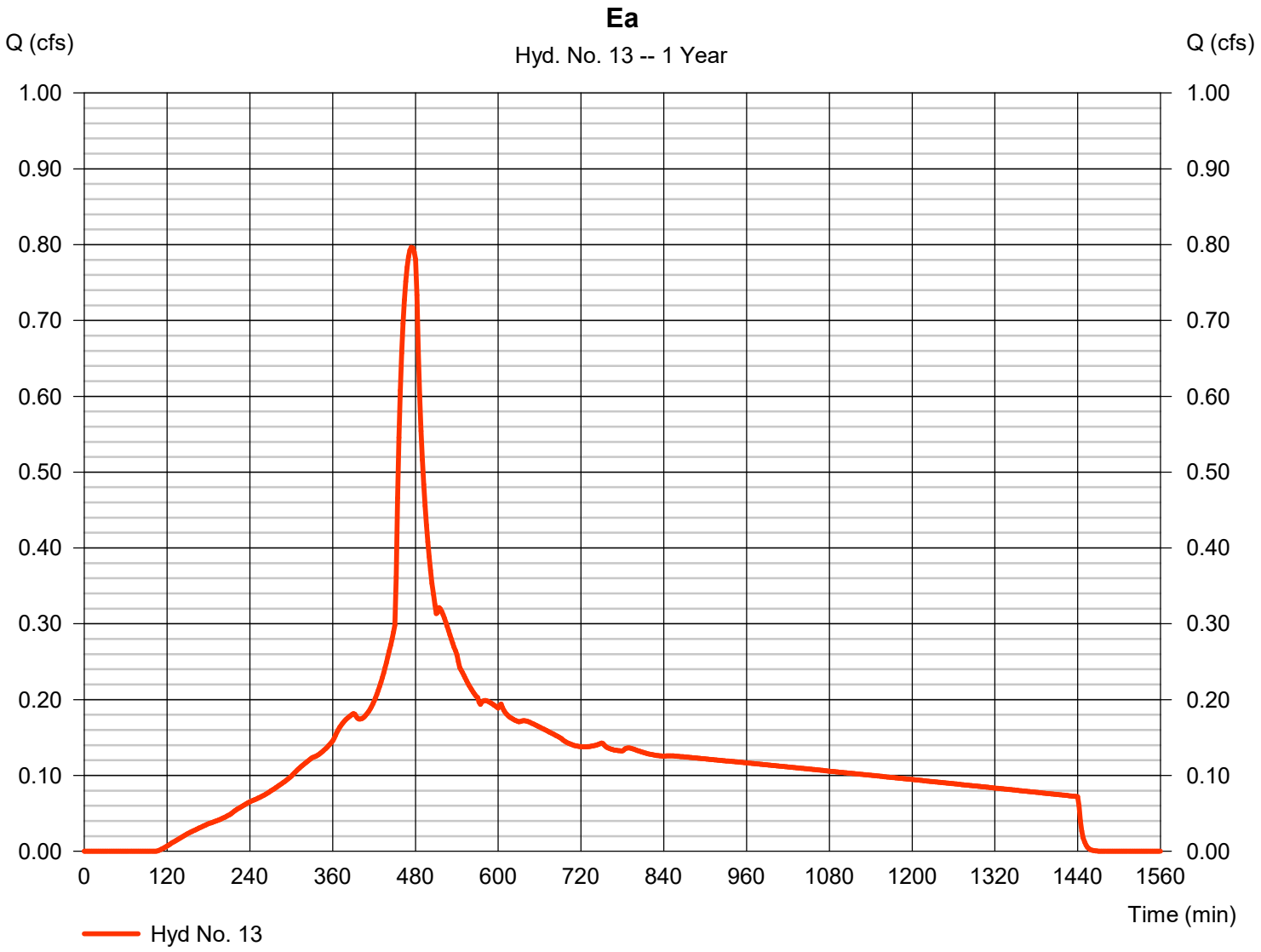


Hydrograph Report

Hyd. No. 13

Ea

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.796 cfs
Storm frequency	=	1 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	11,168 cuft
Drainage area	=	3.890 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

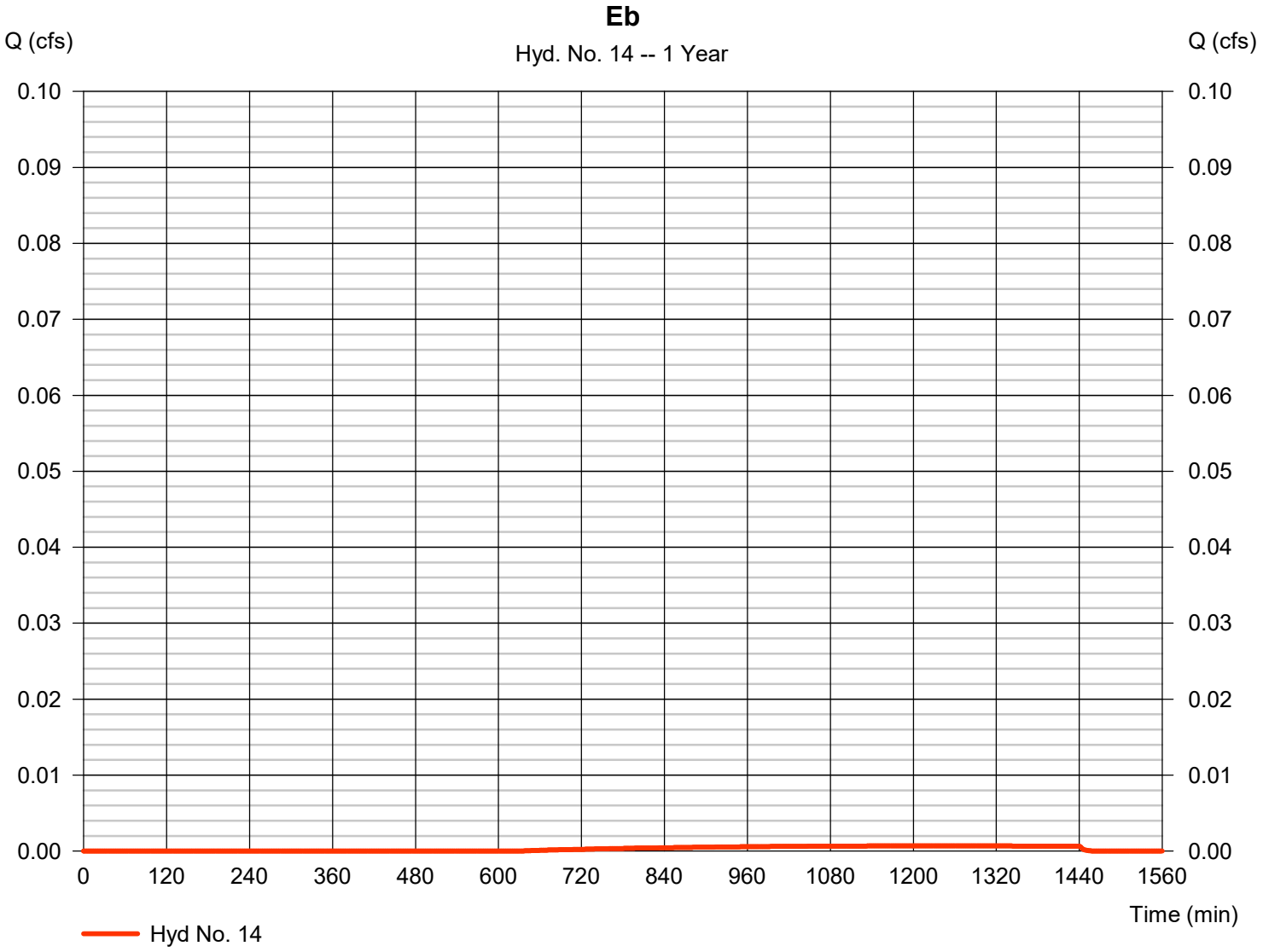


Hydrograph Report

Hyd. No. 14

Eb

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.001 cfs
Storm frequency	= 1 yrs	Time to peak	= 1236 min
Time interval	= 2 min	Hyd. volume	= 26 cuft
Drainage area	= 0.150 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

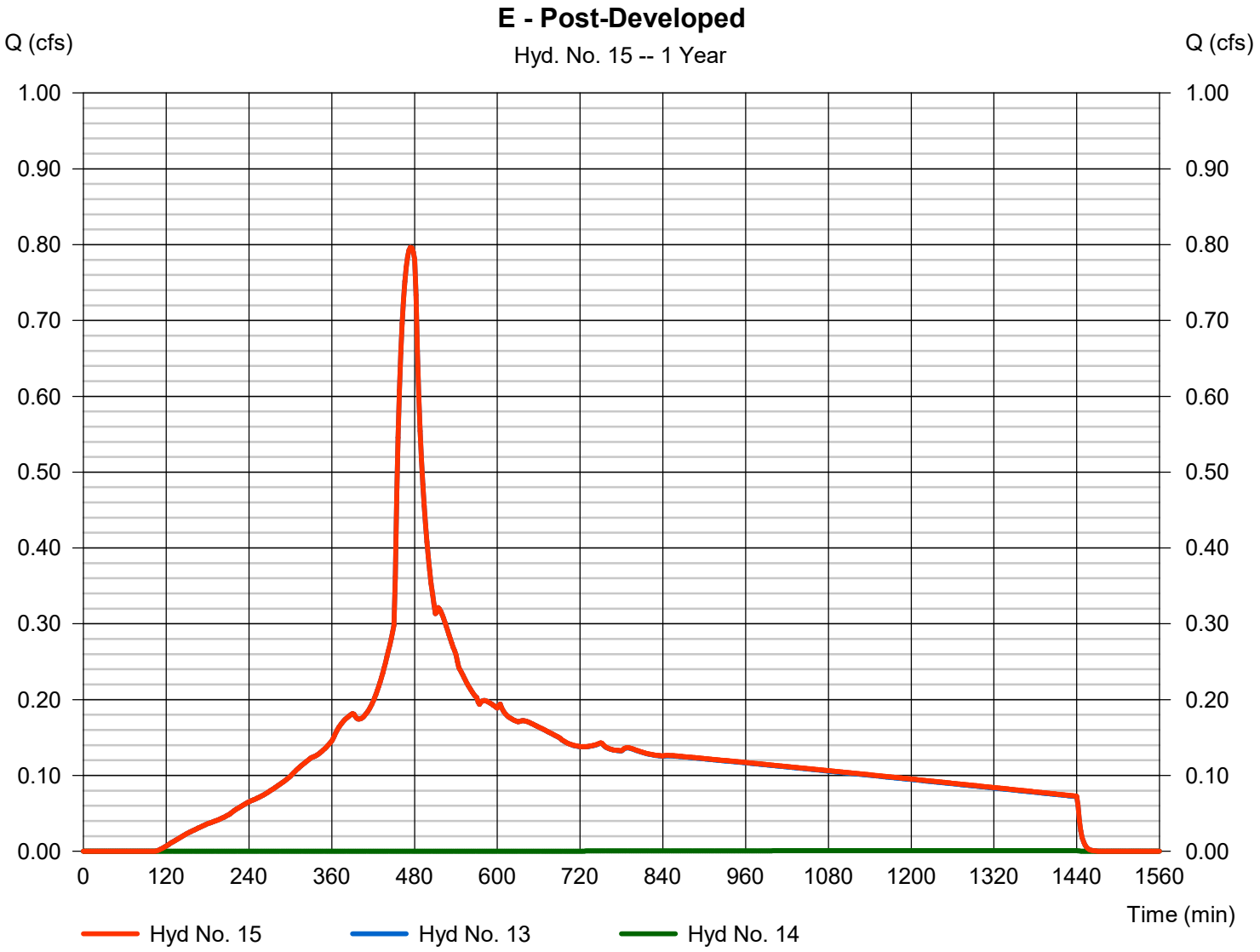


Hydrograph Report

Hyd. No. 15

E - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 0.796 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 11,194 cuft
Inflow hyds.	= 13, 14	Contrib. drain. area	= 4.040 ac

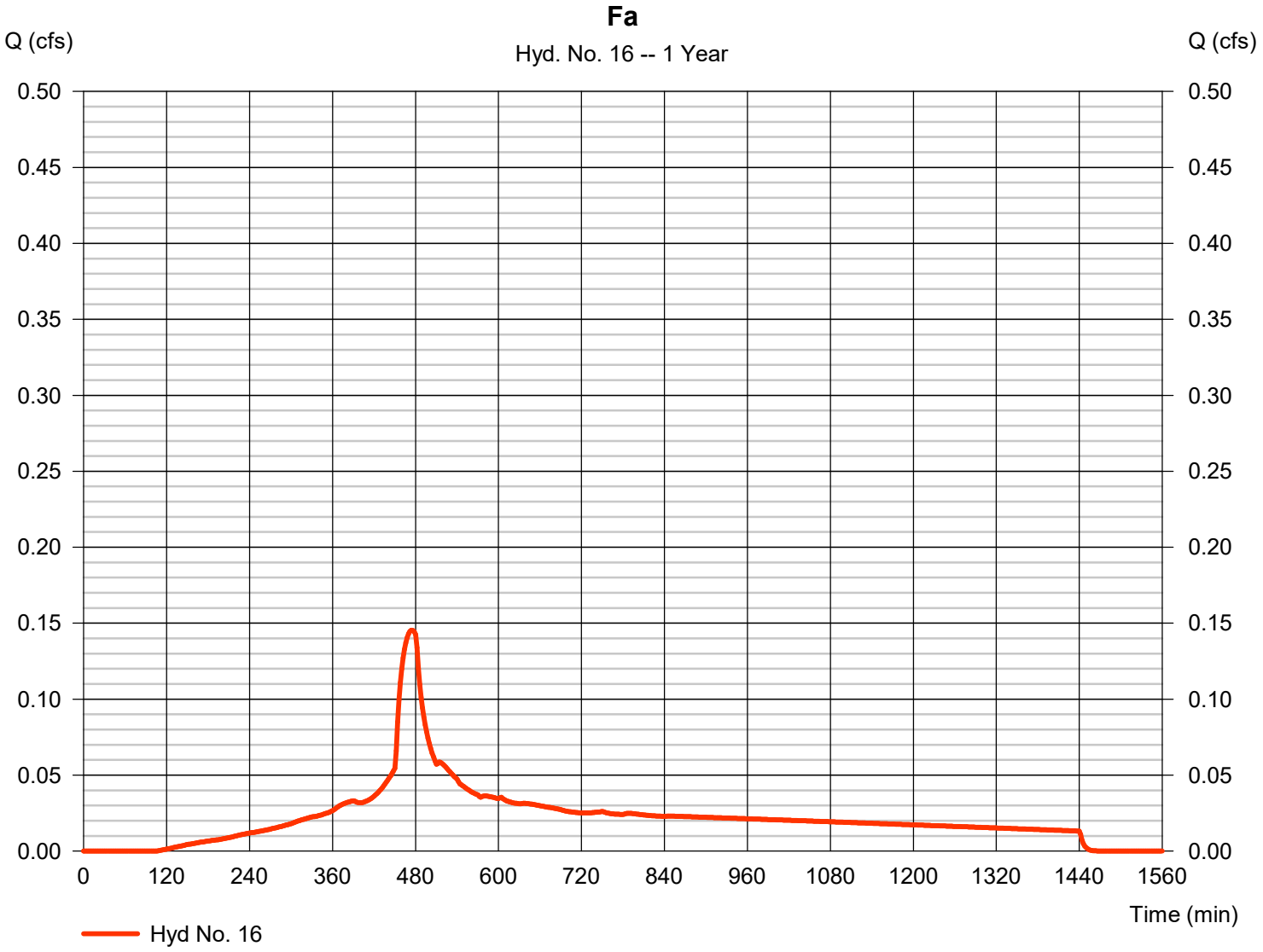


Hydrograph Report

Hyd. No. 16

Fa

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.145 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 2,038 cuft
Drainage area	= 0.710 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

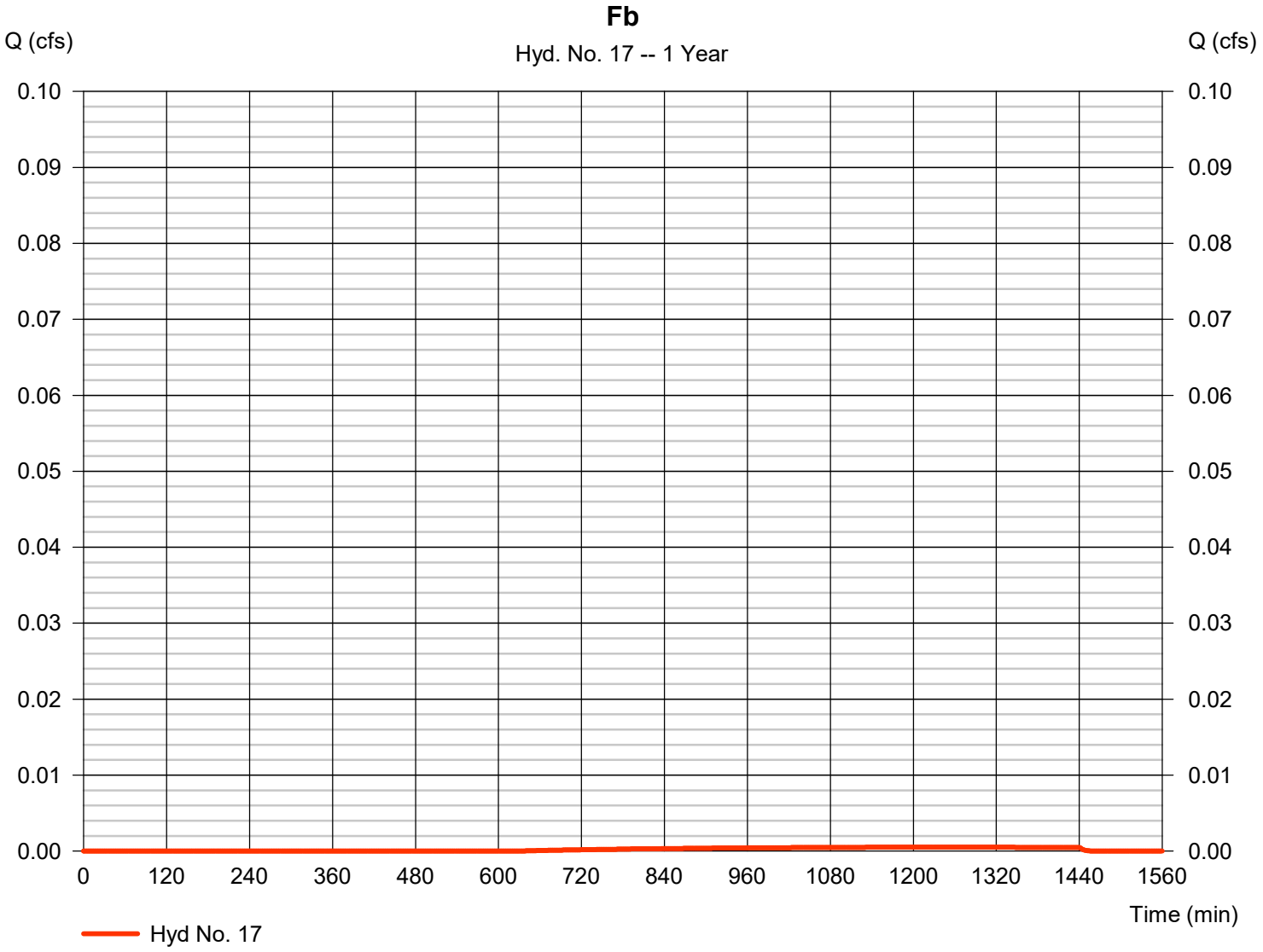


Hydrograph Report

Hyd. No. 17

Fb

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.001 cfs
Storm frequency	= 1 yrs	Time to peak	= 1236 min
Time interval	= 2 min	Hyd. volume	= 19 cuft
Drainage area	= 0.110 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

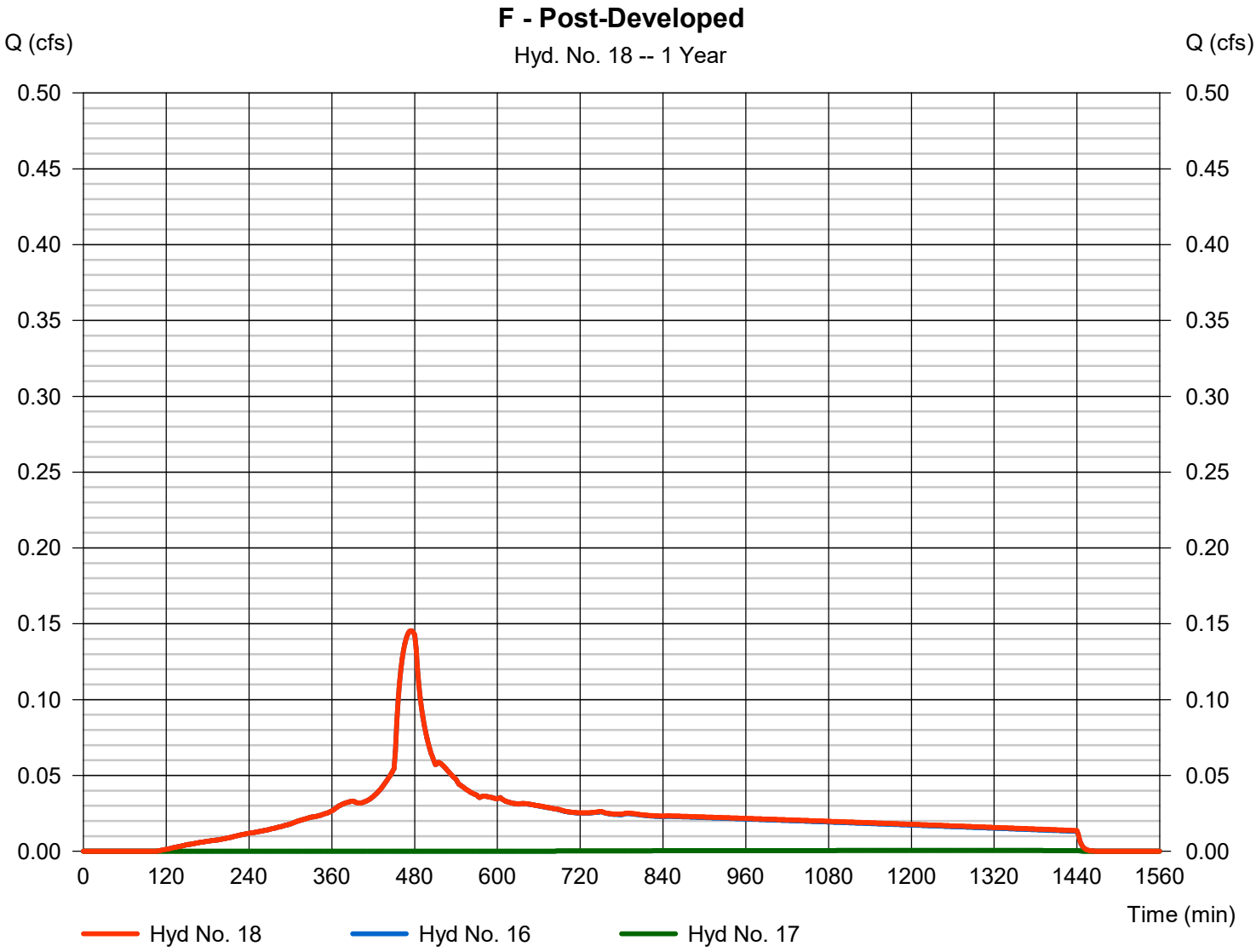


Hydrograph Report

Hyd. No. 18

F - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 0.145 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 2,057 cuft
Inflow hyds.	= 16, 17	Contrib. drain. area	= 0.820 ac

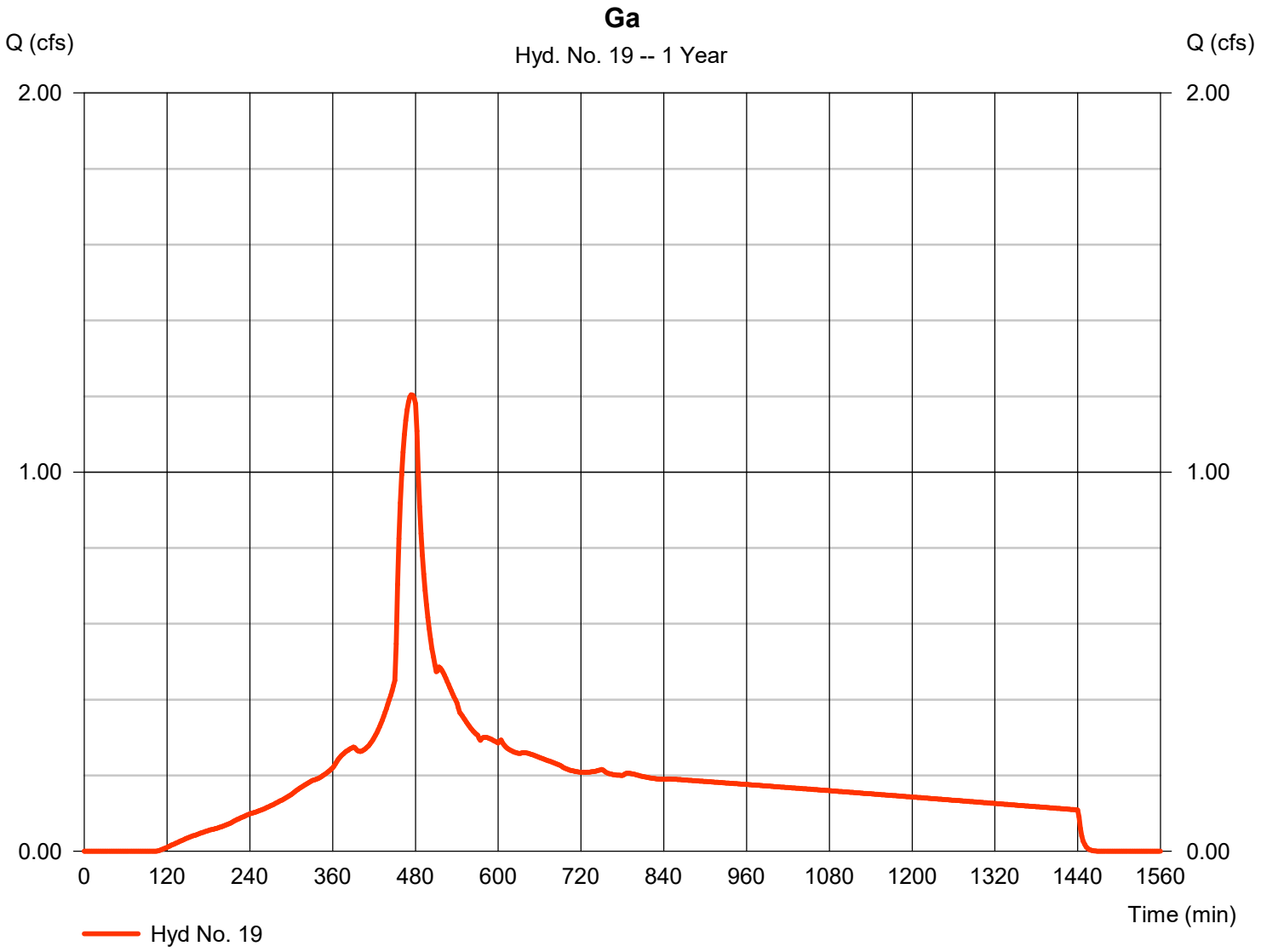


Hydrograph Report

Hyd. No. 19

Ga

Hydrograph type	=	SBUH Runoff	Peak discharge	=	1.204 cfs
Storm frequency	=	1 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	16,881 cuft
Drainage area	=	5.880 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

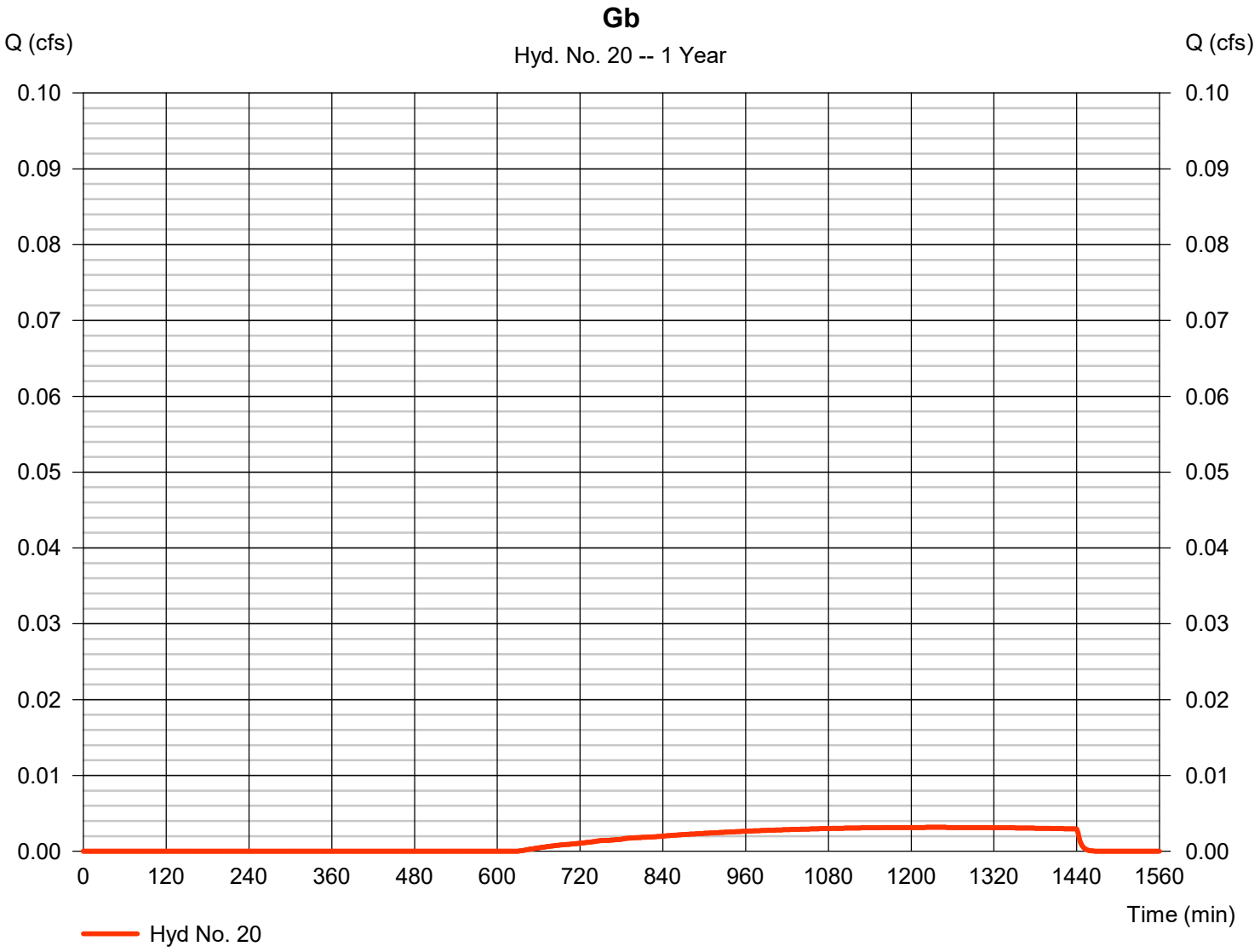


Hydrograph Report

Hyd. No. 20

Gb

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.003 cfs
Storm frequency	=	1 yrs	Time to peak	=	1236 min
Time interval	=	2 min	Hyd. volume	=	120 cuft
Drainage area	=	0.690 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

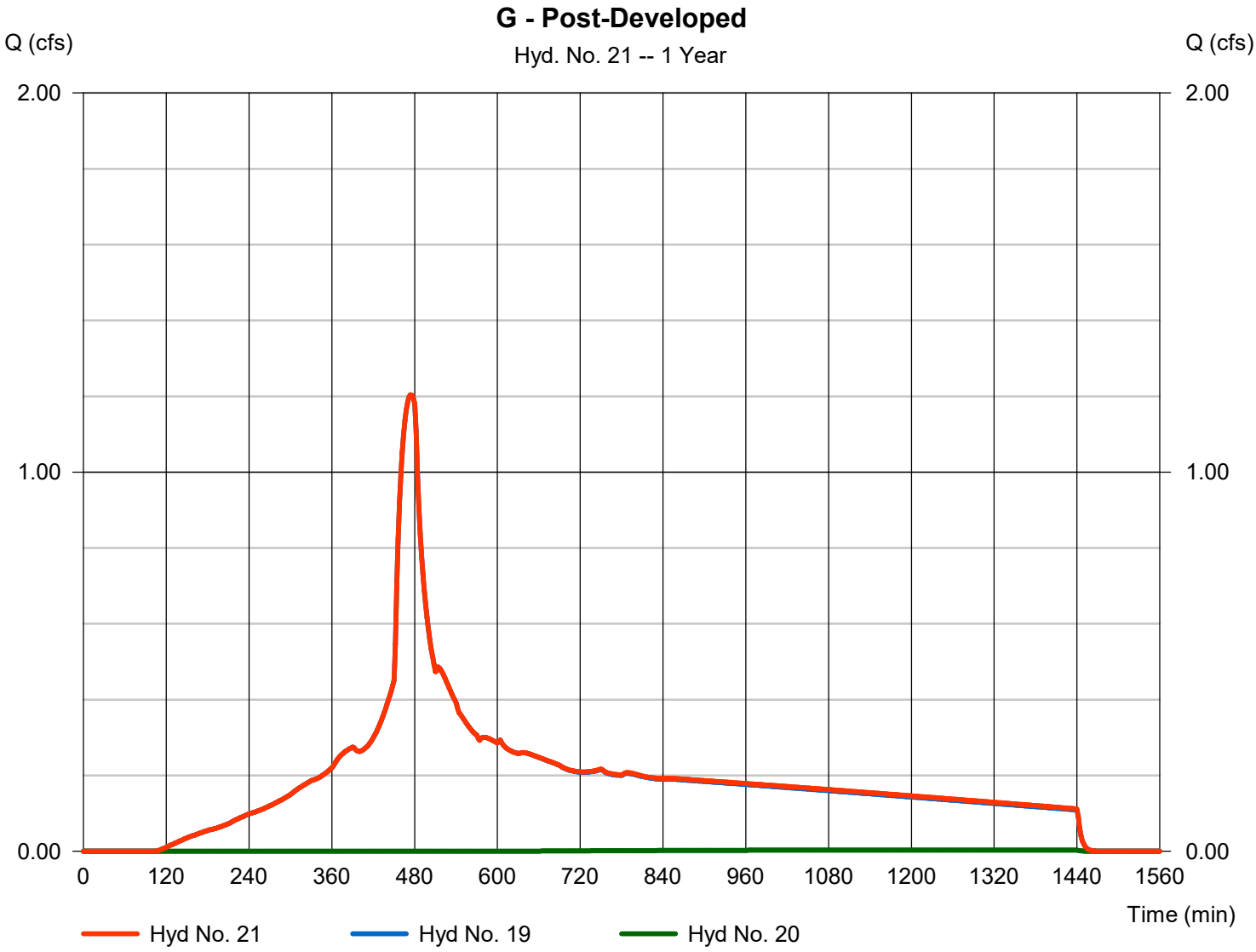


Hydrograph Report

Hyd. No. 21

G - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 1.204 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 17,001 cuft
Inflow hyds.	= 19, 20	Contrib. drain. area	= 6.570 ac

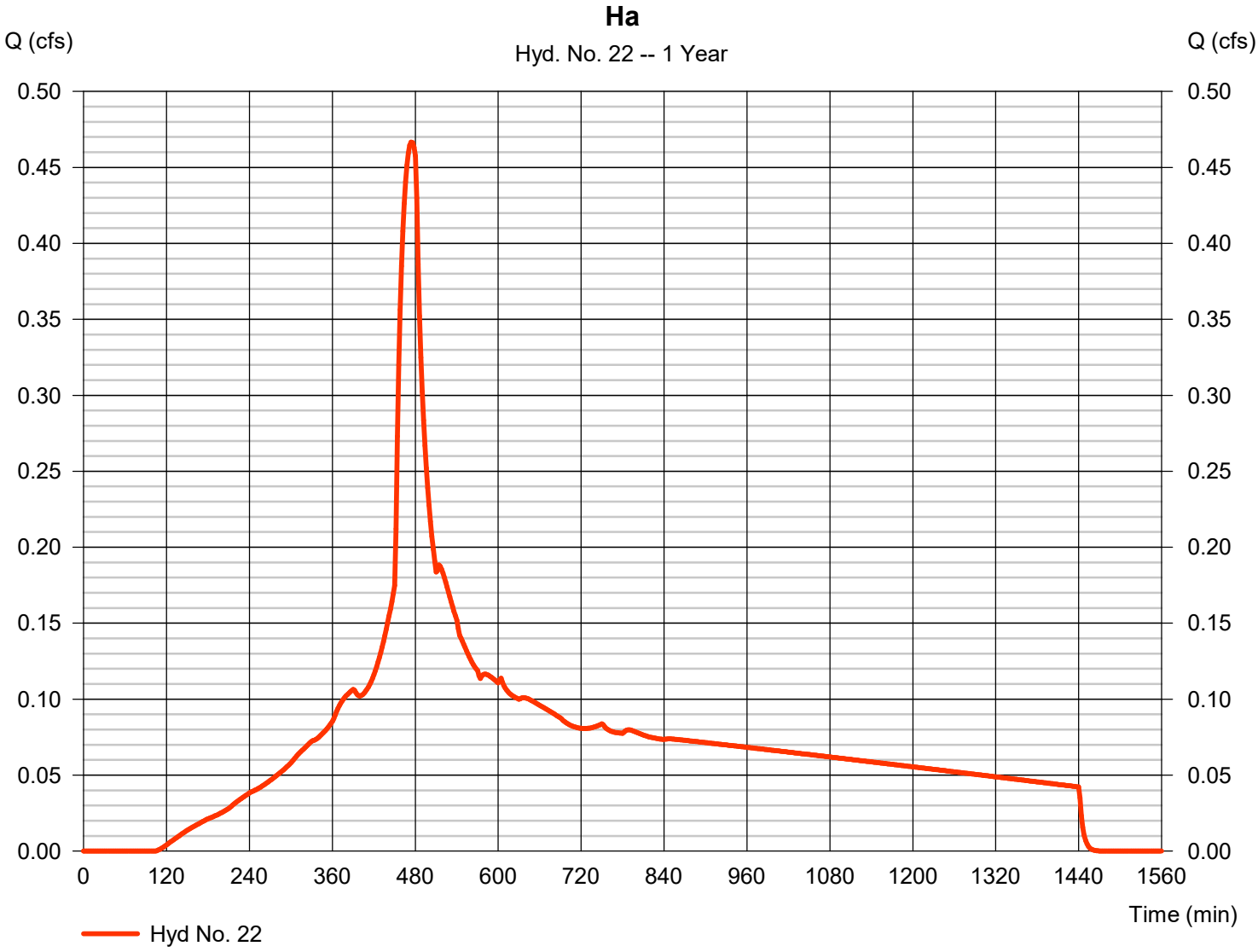


Hydrograph Report

Hyd. No. 22

Ha

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.467 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 6,546 cuft
Drainage area	= 2.280 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

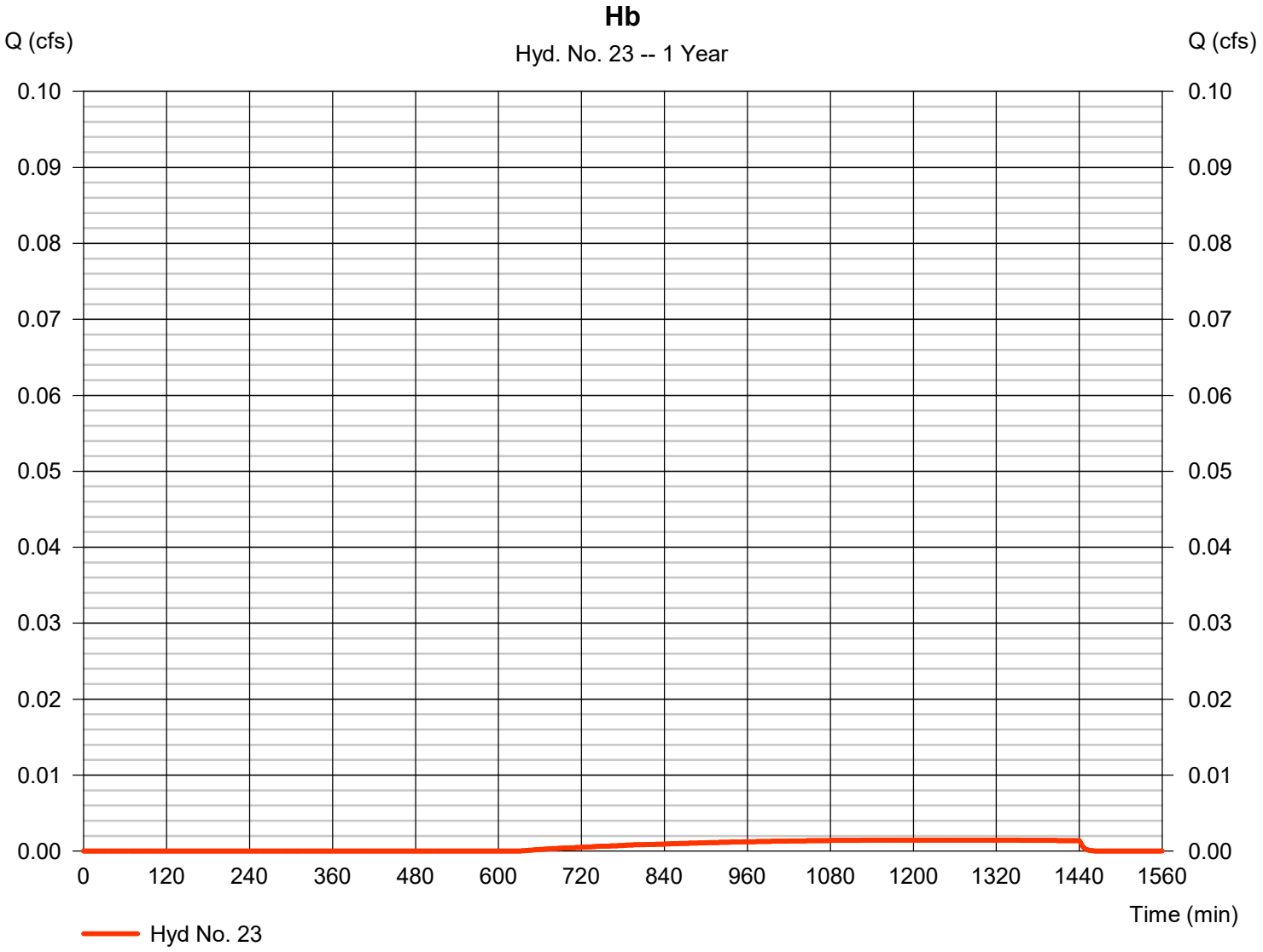


Hydrograph Report

Hyd. No. 23

Hb

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.001 cfs
Storm frequency	= 1 yrs	Time to peak	= 1236 min
Time interval	= 2 min	Hyd. volume	= 56 cuft
Drainage area	= 0.320 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

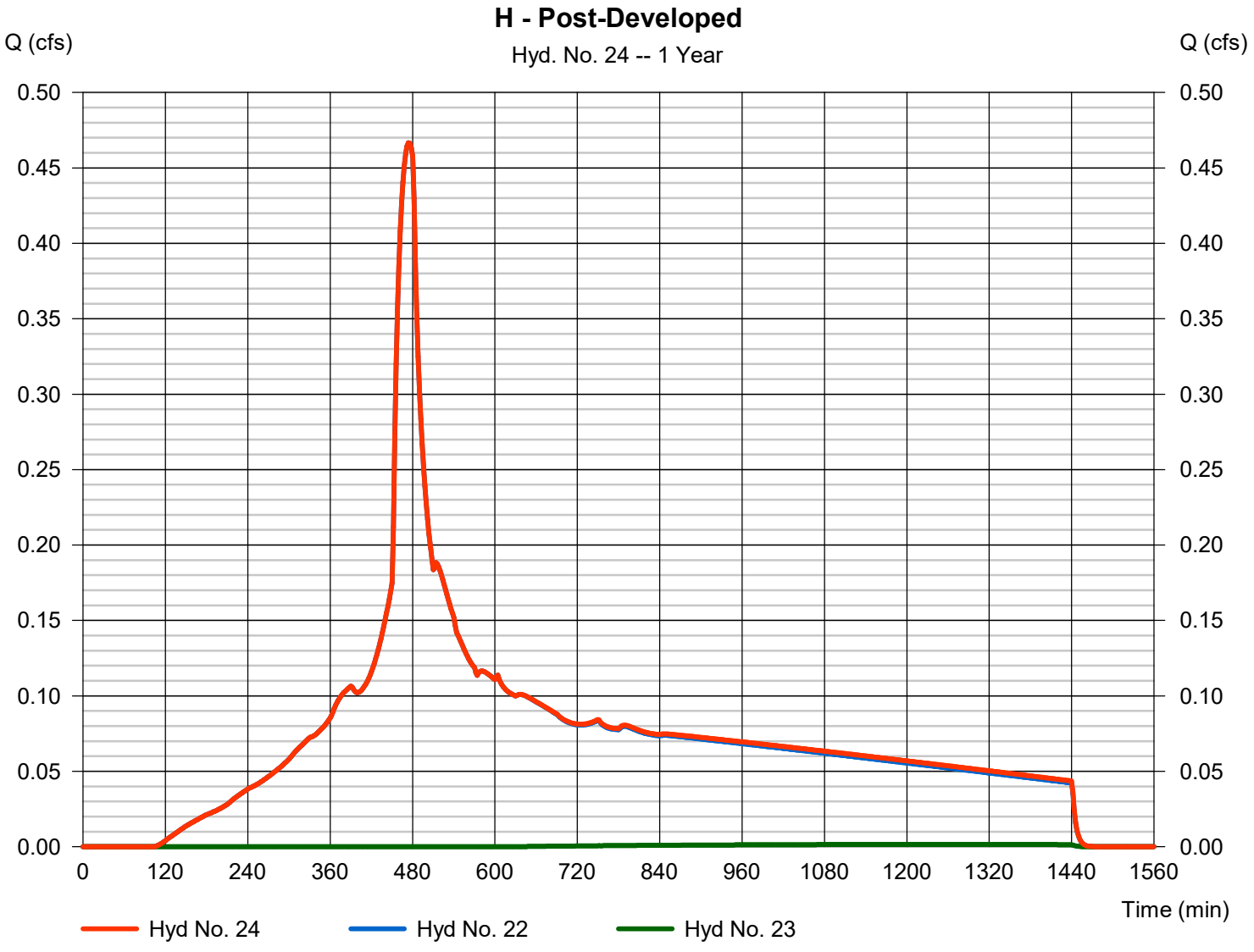


Hydrograph Report

Hyd. No. 24

H - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 0.467 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 6,601 cuft
Inflow hyds.	= 22, 23	Contrib. drain. area	= 2.600 ac

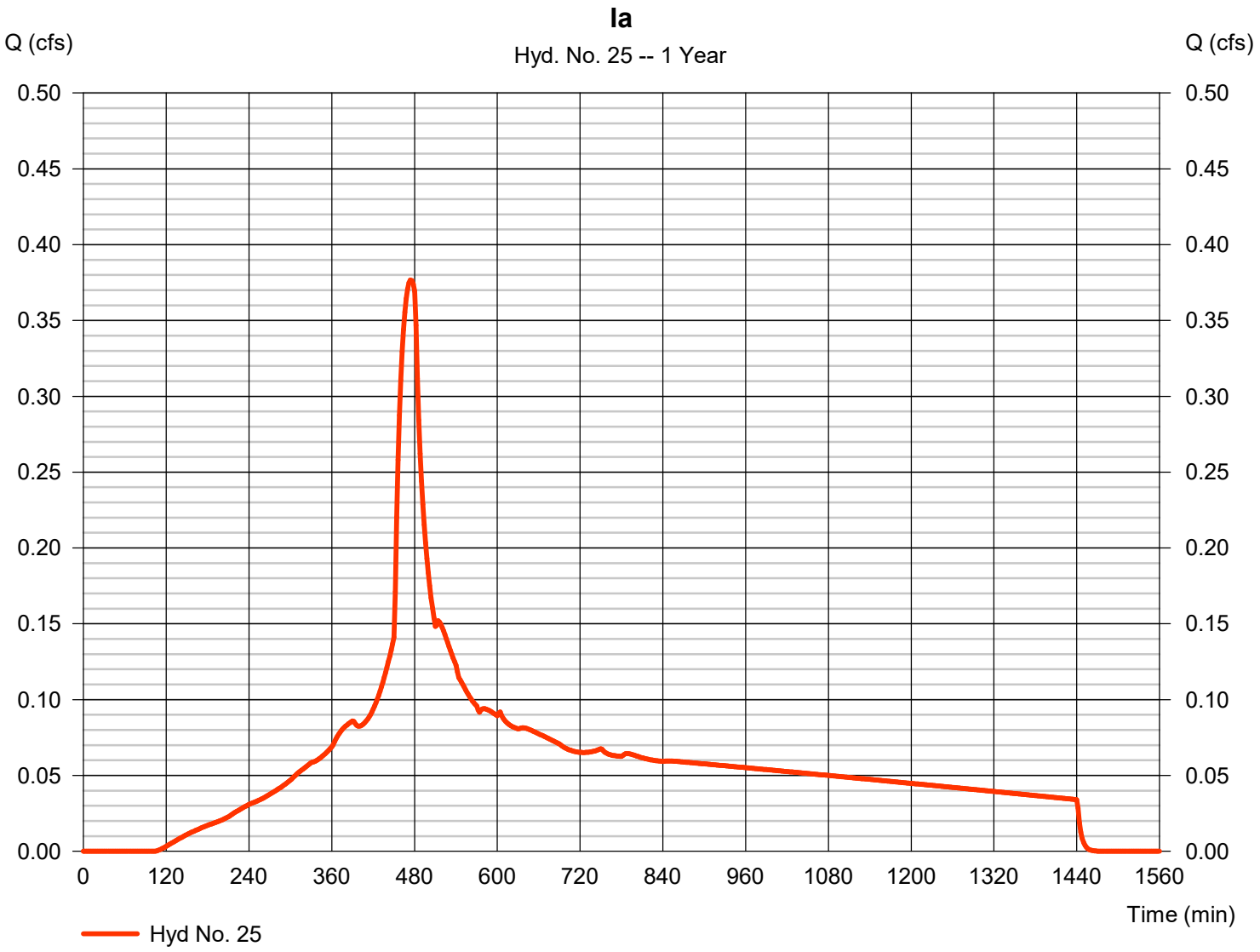


Hydrograph Report

Hyd. No. 25

Ia

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.377 cfs
Storm frequency	=	1 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	5,283 cuft
Drainage area	=	1.840 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

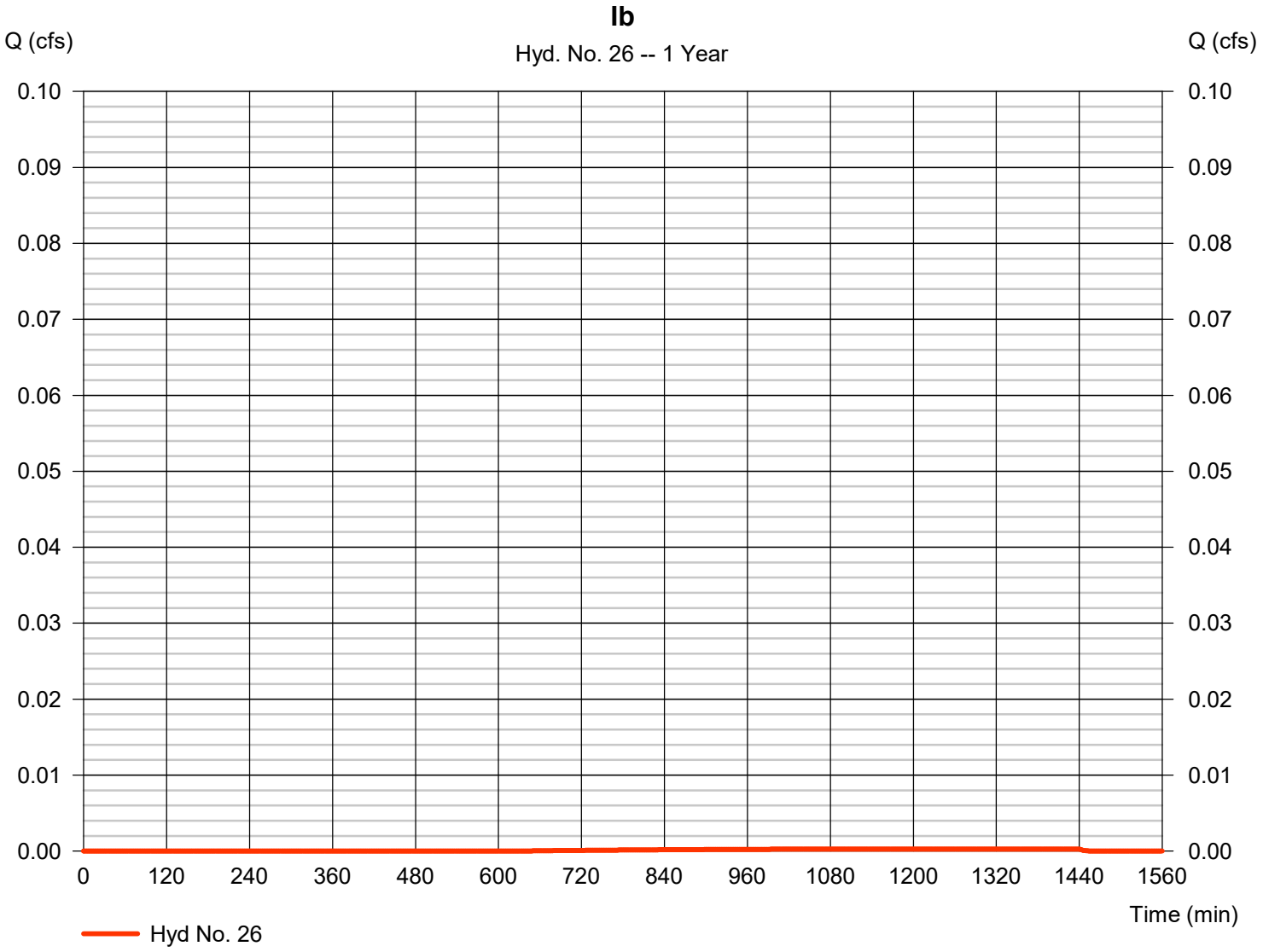


Hydrograph Report

Hyd. No. 26

Ib

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= 1236 min
Time interval	= 2 min	Hyd. volume	= 10 cuft
Drainage area	= 0.060 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

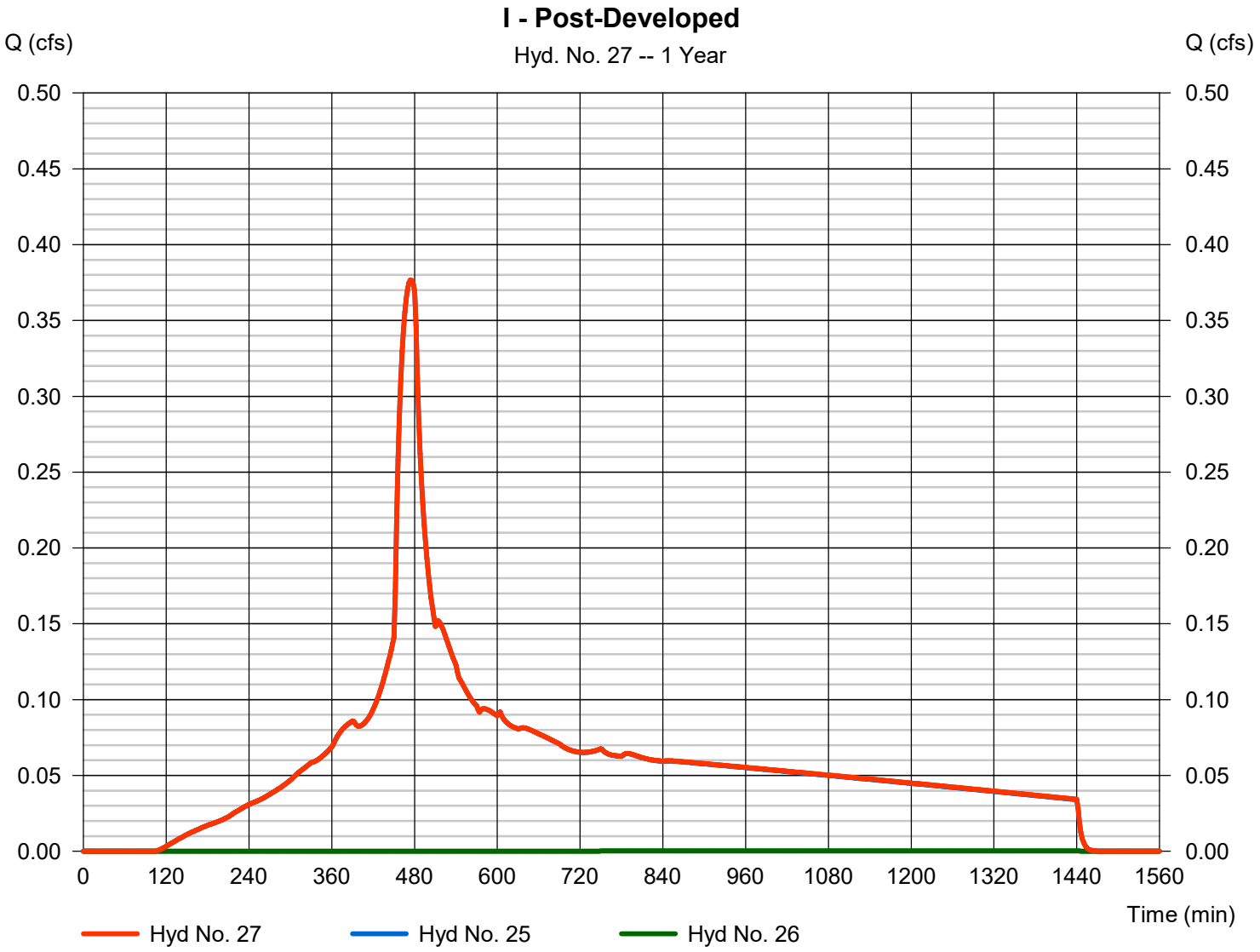


Hydrograph Report

Hyd. No. 27

I - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 0.377 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 5,293 cuft
Inflow hyds.	= 25, 26	Contrib. drain. area	= 1.900 ac

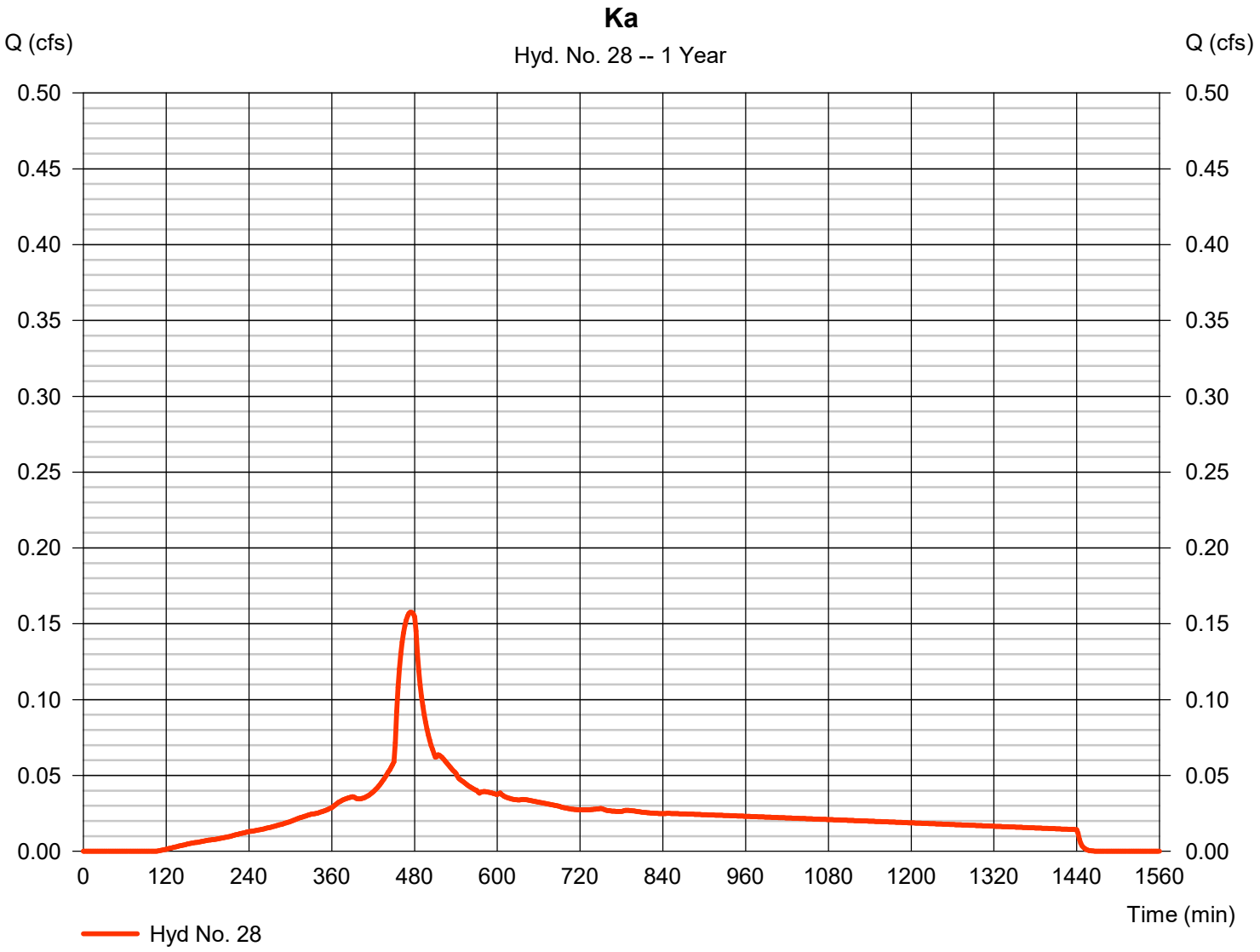


Hydrograph Report

Hyd. No. 28

Ka

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.158 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 2,211 cuft
Drainage area	= 0.770 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

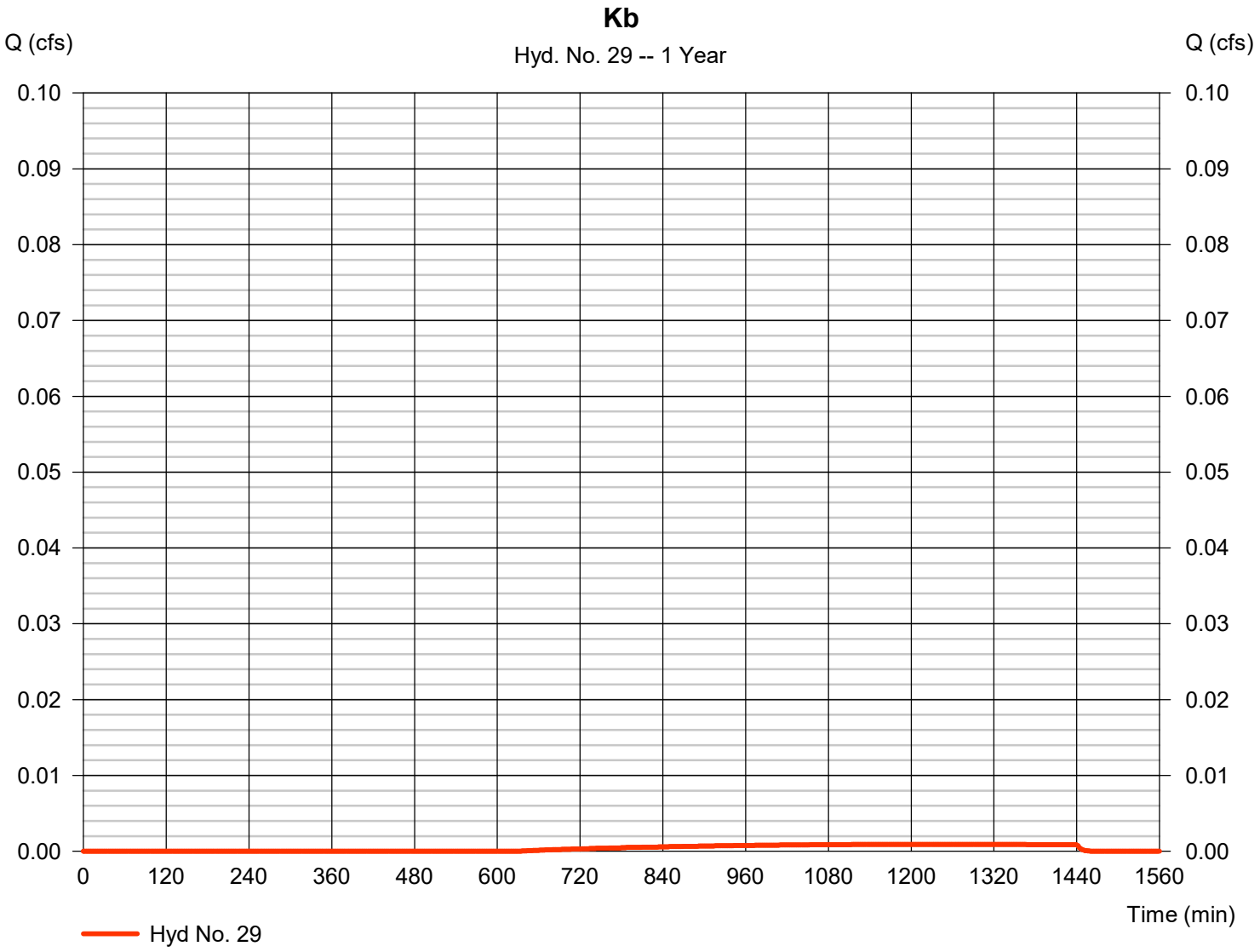


Hydrograph Report

Hyd. No. 29

Kb

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.001 cfs
Storm frequency	= 1 yrs	Time to peak	= 1236 min
Time interval	= 2 min	Hyd. volume	= 35 cuft
Drainage area	= 0.200 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

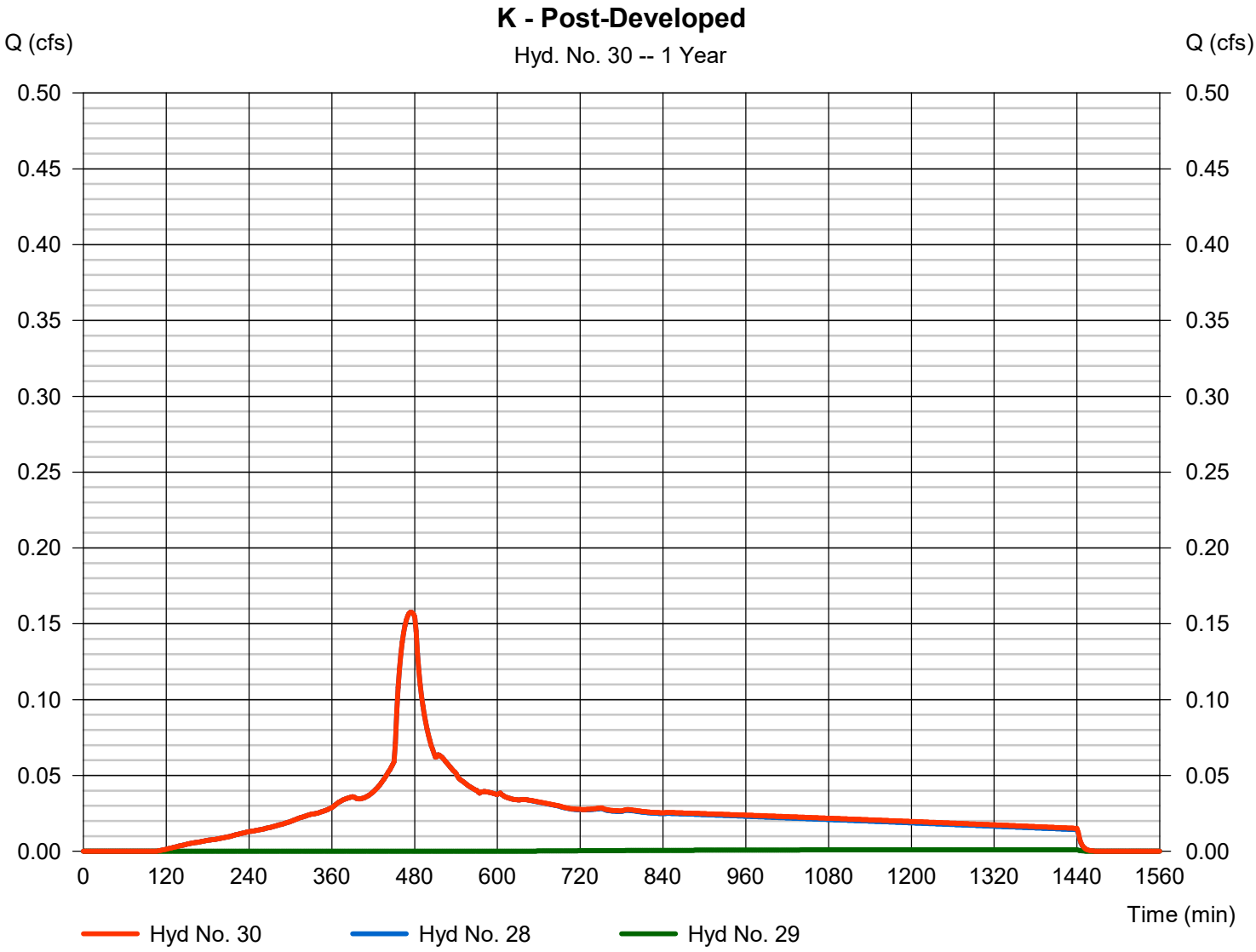


Hydrograph Report

Hyd. No. 30

K - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 0.158 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 2,245 cuft
Inflow hyds.	= 28, 29	Contrib. drain. area	= 0.970 ac

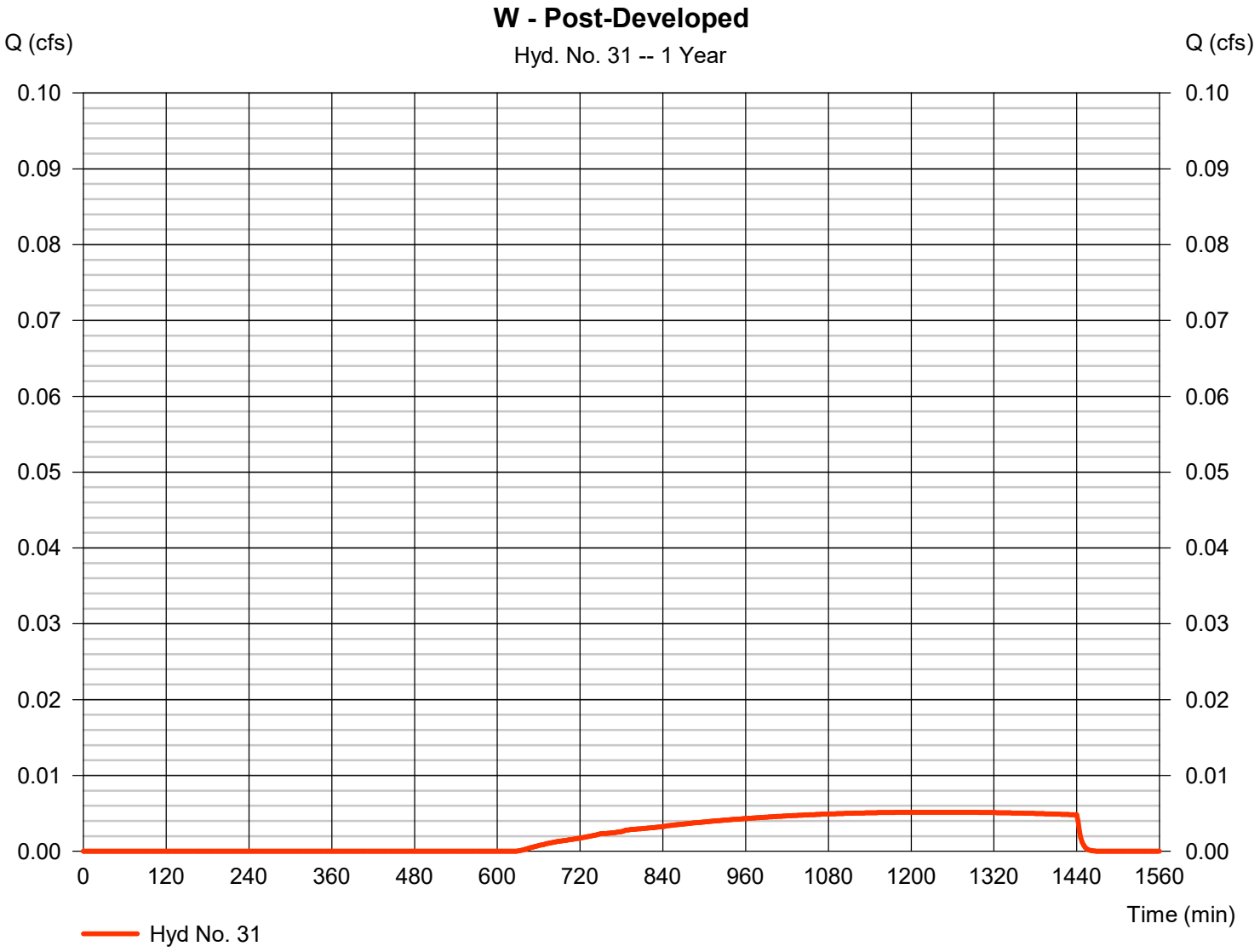


Hydrograph Report

Hyd. No. 31

W - Post-Developed

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.005 cfs
Storm frequency	=	1 yrs	Time to peak	=	1236 min
Time interval	=	2 min	Hyd. volume	=	196 cuft
Drainage area	=	1.130 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a



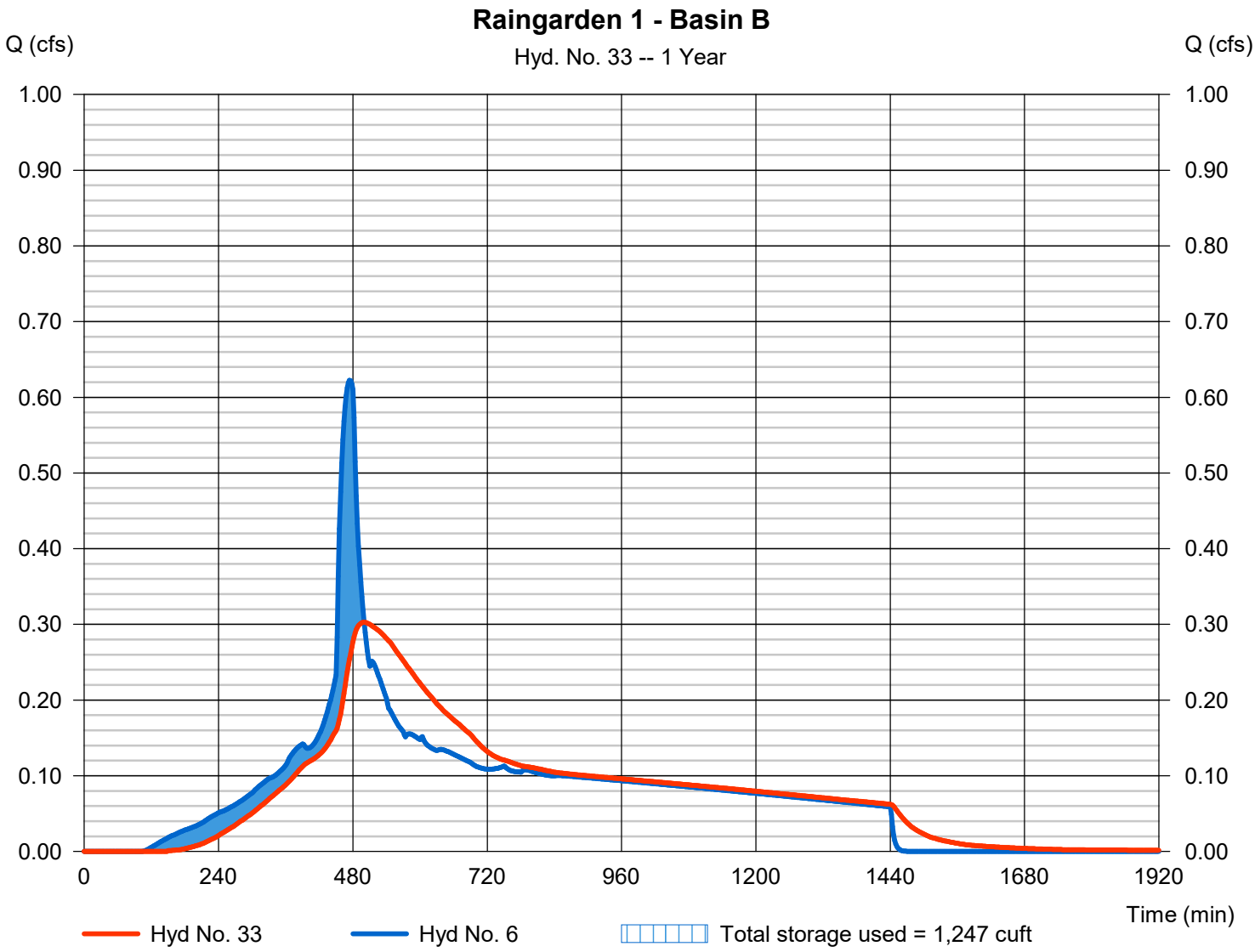
Hydrograph Report

Hyd. No. 33

Raingarden 1 - Basin B

Hydrograph type	=	Reservoir	Peak discharge	=	0.303 cfs
Storm frequency	=	1 yrs	Time to peak	=	500 min
Time interval	=	2 min	Hyd. volume	=	8,812 cuft
Inflow hyd. No.	=	6 - B - Post-Developed	Max. Elevation	=	38.34 ft
Reservoir name	=	Raingarden B	Max. Storage	=	1,247 cuft

Storage Indication method used.



Pond Report

Pond No. 10 - Raingarden B

Pond Data

Contours -User-defined contour areas. Conic method used for volumes. Bottom elevation = 37.55 ft, Depth = 3.24 ft, Void = 21.50%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	37.55	7,370	0	0
0.32	37.87	7,370	513	513
0.65	38.20	7,370	513	1,027
0.97	38.52	7,370	513	1,540
1.30	38.85	7,370	513	2,053
1.62	39.17	7,370	513	2,567
1.94	39.49	7,370	513	3,080
2.27	39.82	7,370	513	3,594
2.59	40.14	7,370	513	4,107
2.92	40.47	7,370	513	4,620
3.24	40.79	7,370	513	5,134
3.25	40.80	4,780	60	5,194
3.55	41.10	5,559	1,549	6,743
3.85	41.40	6,346	1,784	8,527
4.15	41.70	7,138	2,021	10,549
4.25	41.80	7,370	725	11,274
4.58	42.13	8,248	2,575	13,849

Assume 21.5% void space in soil & rock section of raingarden:

18" Growing Media ~ 5% Void
3" Rock Storage ~ 10% Void
18" Rock Storage ~ 40% Void

[(1.5' * 0.05) + (1.5' * 0.40)+(0.25 * 0.10]/ 3.25' *100 = 21.5% Voids

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	4.00	Inactive	0.00
Span (in)	= 12.00	4.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 37.55	37.55	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 2.33	Inactive	0.00	0.00
Crest El. (ft)	= 41.80	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	37.55	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
0.32	513	37.87	0.16 ic	0.15 ic	---	---	0.00	---	---	---	---	---	0.154
0.65	1,027	38.20	0.26 ic	0.26 ic	---	---	0.00	---	---	---	---	---	0.265
0.97	1,540	38.52	0.35 ic	0.35 ic	---	---	0.00	---	---	---	---	---	0.348
1.30	2,053	38.85	0.42 ic	0.42 ic	---	---	0.00	---	---	---	---	---	0.416
1.62	2,567	39.17	0.48 ic	0.48 ic	---	---	0.00	---	---	---	---	---	0.476
1.94	3,080	39.49	0.54 ic	0.53 ic	---	---	0.00	---	---	---	---	---	0.529
2.27	3,594	39.82	0.58 ic	0.58 ic	---	---	0.00	---	---	---	---	---	0.578
2.59	4,107	40.14	0.62 ic	0.62 ic	---	---	0.00	---	---	---	---	---	0.623
2.92	4,620	40.47	0.67 ic	0.67 ic	---	---	0.00	---	---	---	---	---	0.666
3.24	5,134	40.79	0.71 ic	0.71 ic	---	---	0.00	---	---	---	---	---	0.705
3.25	5,194	40.80	0.71 ic	0.71 ic	---	---	0.00	---	---	---	---	---	0.707
3.55	6,743	41.10	0.74 ic	0.74 ic	---	---	0.00	---	---	---	---	---	0.741
3.85	8,527	41.40	0.79 ic	0.78 ic	---	---	0.00	---	---	---	---	---	0.775
4.15	10,549	41.70	0.81 ic	0.81 ic	---	---	0.00	---	---	---	---	---	0.808
4.25	11,274	41.80	0.84 ic	0.82 ic	---	---	0.00	---	---	---	---	---	0.818
4.58	13,849	42.13	2.02 ic	0.82 ic	---	---	1.05 ic	---	---	---	---	---	1.866

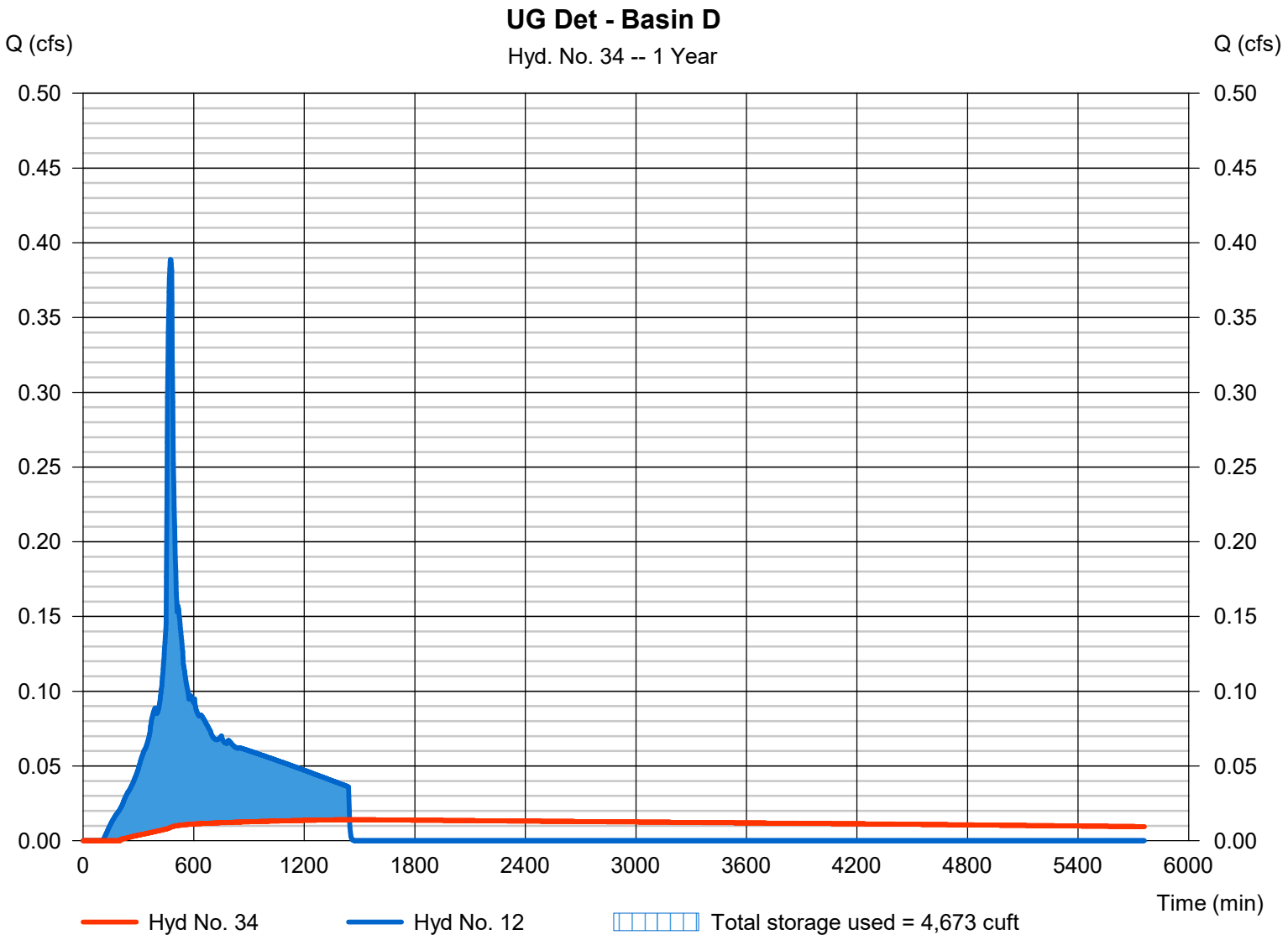
Hydrograph Report

Hyd. No. 34

UG Det - Basin D

Hydrograph type	= Reservoir	Peak discharge	= 0.014 cfs
Storm frequency	= 1 yrs	Time to peak	= 1446 min
Time interval	= 2 min	Hyd. volume	= 3,884 cuft
Inflow hyd. No.	= 12 - D - Post-Developed	Max. Elevation	= 56.05 ft
Reservoir name	= Basin D Detention	Max. Storage	= 4,673 cuft

Storage Indication method used.



Pond Report

Pond No. 1 - Basin D Detention

Pond Data

UG Chambers -Invert elev. = 54.80 ft, Rise x Span = 4.00 x 4.00 ft, Barrel Len = 142.20 ft, No. Barrels = 9, Slope = 0.00%, Headers = Yes

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	54.80	n/a	0	0
0.40	55.20	n/a	907	907
0.80	55.60	n/a	1,571	2,478
1.20	56.00	n/a	1,913	4,391
1.60	56.40	n/a	2,107	6,497
2.00	56.80	n/a	2,201	8,698
2.40	57.20	n/a	2,201	10,899
2.80	57.60	n/a	2,106	13,005
3.20	58.00	n/a	1,912	14,917
3.60	58.40	n/a	1,571	16,489
4.00	58.80	n/a	904	17,393

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	0.70	0.00	0.00
Span (in)	= 12.00	0.70	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 54.80	54.80	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 5.00	0.00	0.00	0.00
Crest El. (ft)	= 58.70	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	54.80	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
0.40	907	55.20	0.01 ic	0.01 ic	---	---	0.00	---	---	---	---	---	0.008
0.80	2,478	55.60	0.01 ic	0.01 ic	---	---	0.00	---	---	---	---	---	0.011
1.20	4,391	56.00	0.01 ic	0.01 ic	---	---	0.00	---	---	---	---	---	0.014
1.60	6,497	56.40	0.02 ic	0.02 ic	---	---	0.00	---	---	---	---	---	0.016
2.00	8,698	56.80	0.02 ic	0.02 ic	---	---	0.00	---	---	---	---	---	0.018
2.40	10,899	57.20	0.02 ic	0.02 ic	---	---	0.00	---	---	---	---	---	0.020
2.80	13,005	57.60	0.02 ic	0.02 ic	---	---	0.00	---	---	---	---	---	0.021
3.20	14,917	58.00	0.02 ic	0.02 ic	---	---	0.00	---	---	---	---	---	0.023
3.60	16,489	58.40	0.03 ic	0.02 ic	---	---	0.00	---	---	---	---	---	0.024
4.00	17,393	58.80	0.56 ic	0.02 ic	---	---	0.53	---	---	---	---	---	0.551

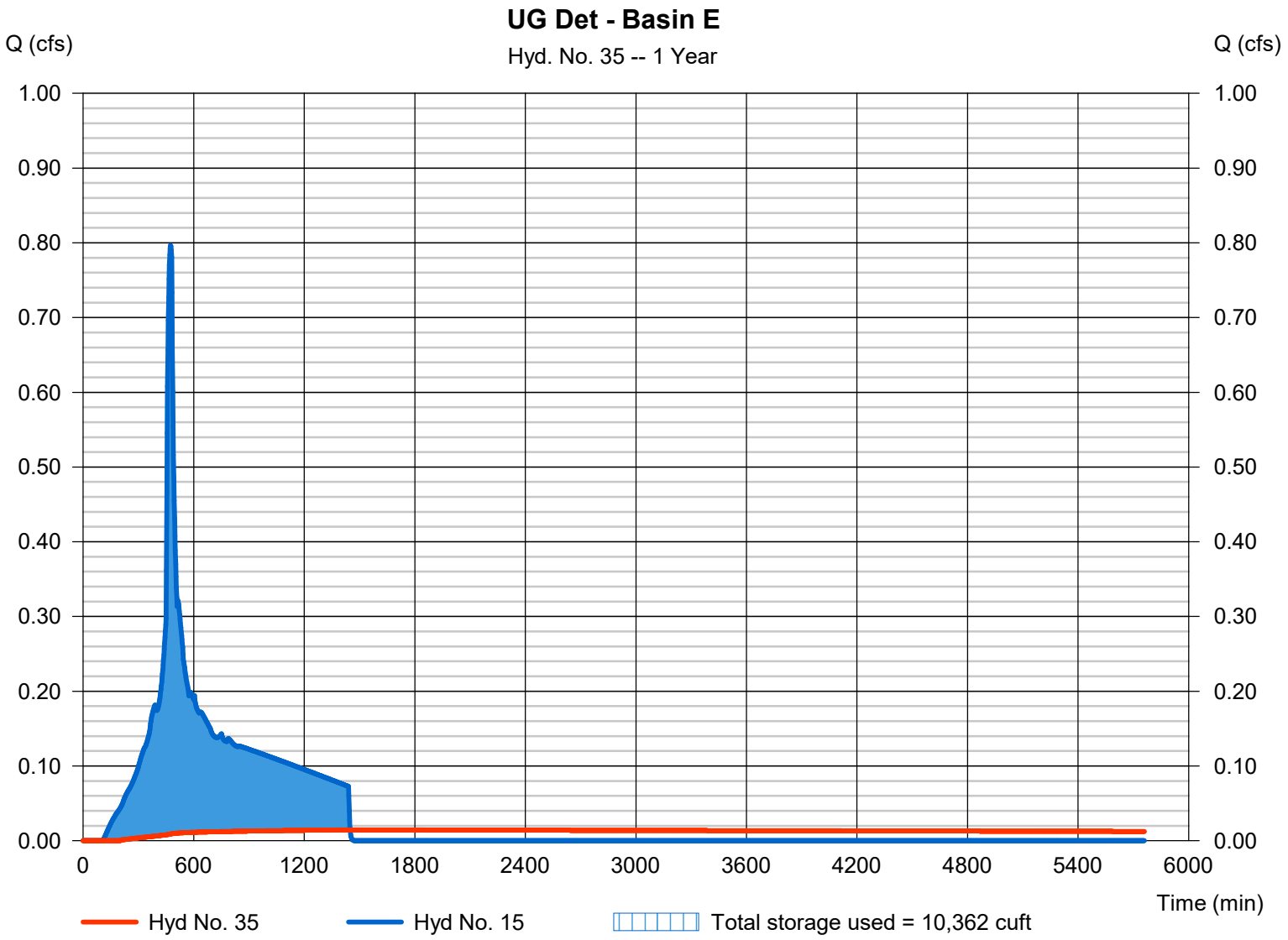
Hydrograph Report

Hyd. No. 35

UG Det - Basin E

Hydrograph type	= Reservoir	Peak discharge	= 0.014 cfs
Storm frequency	= 1 yrs	Time to peak	= 1450 min
Time interval	= 2 min	Hyd. volume	= 4,302 cuft
Inflow hyd. No.	= 15 - E - Post-Developed	Max. Elevation	= 101.31 ft
Reservoir name	= Basin E Detention	Max. Storage	= 10,362 cuft

Storage Indication method used.



Pond Report

Pond No. 2 - Basin E Detention

Pond Data

UG Chambers -Invert elev. = 100.00 ft, Rise x Span = 4.00 x 4.00 ft, Barrel Len = 193.43 ft, No. Barrels = 14, Slope = 0.00%, Headers = Yes

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	100.00	n/a	0	0
0.40	100.40	n/a	1,883	1,883
0.80	100.80	n/a	3,260	5,143
1.20	101.20	n/a	3,970	9,112
1.60	101.60	n/a	4,372	13,485
2.00	102.00	n/a	4,568	18,053
2.40	102.40	n/a	4,568	22,621
2.80	102.80	n/a	4,371	26,992
3.20	103.20	n/a	3,968	30,960
3.60	103.60	n/a	3,262	34,222
4.00	104.00	n/a	1,876	36,098

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	0.70	0.00	0.00
Span (in)	= 12.00	0.70	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 100.00	100.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 5.00	0.00	0.00	0.00
Crest El. (ft)	= 103.85	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	100.00	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
0.40	1,883	100.40	0.01 ic	0.01 ic	---	---	0.00	---	---	---	---	---	0.008
0.80	5,143	100.80	0.01 ic	0.01 ic	---	---	0.00	---	---	---	---	---	0.011
1.20	9,112	101.20	0.01 ic	0.01 ic	---	---	0.00	---	---	---	---	---	0.014
1.60	13,485	101.60	0.02 ic	0.02 ic	---	---	0.00	---	---	---	---	---	0.016
2.00	18,053	102.00	0.02 ic	0.02 ic	---	---	0.00	---	---	---	---	---	0.018
2.40	22,621	102.40	0.02 ic	0.02 ic	---	---	0.00	---	---	---	---	---	0.020
2.80	26,992	102.80	0.02 ic	0.02 ic	---	---	0.00	---	---	---	---	---	0.021
3.20	30,960	103.20	0.02 ic	0.02 ic	---	---	0.00	---	---	---	---	---	0.023
3.60	34,222	103.60	0.03 ic	0.02 ic	---	---	0.00	---	---	---	---	---	0.024
4.00	36,098	104.00	0.99 ic	0.02 ic	---	---	0.97	---	---	---	---	---	0.991

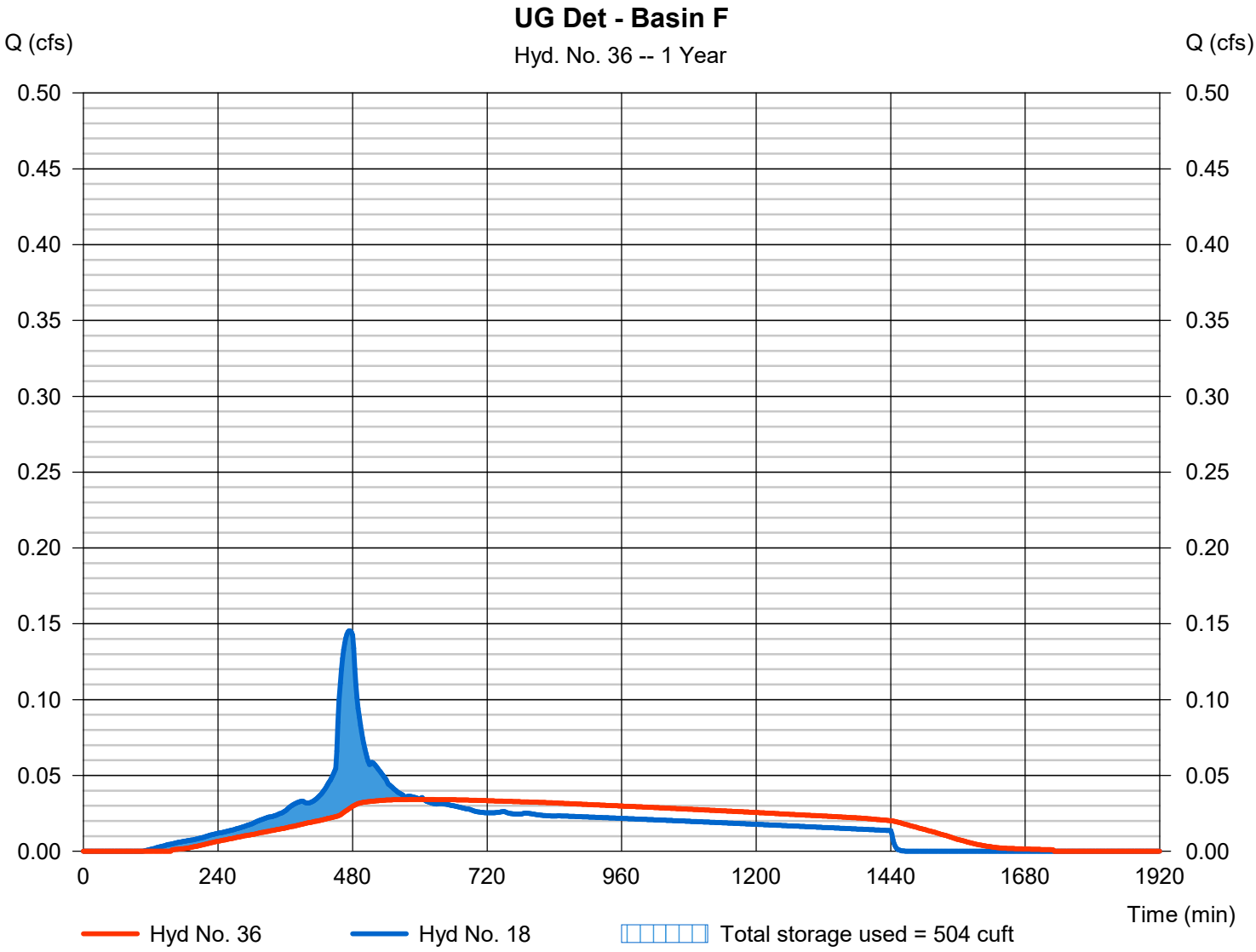
Hydrograph Report

Hyd. No. 36

UG Det - Basin F

Hydrograph type	=	Reservoir	Peak discharge	=	0.034 cfs
Storm frequency	=	1 yrs	Time to peak	=	608 min
Time interval	=	2 min	Hyd. volume	=	2,050 cuft
Inflow hyd. No.	=	18 - F - Post-Developed	Max. Elevation	=	100.90 ft
Reservoir name	=	Basin F Detention	Max. Storage	=	504 cuft

Storage Indication method used.



Pond Report

Pond No. 3 - Basin F Detention

Pond Data

UG Chambers -Invert elev. = 100.00 ft, Rise x Span = 4.00 x 4.00 ft, Barrel Len = 67.70 ft, No. Barrels = 3, Slope = 0.00%, Headers = Yes

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	100.00	n/a	0	0
0.40	100.40	n/a	154	154
0.80	100.80	n/a	267	421
1.20	101.20	n/a	325	746
1.60	101.60	n/a	358	1,104
2.00	102.00	n/a	374	1,478
2.40	102.40	n/a	374	1,852
2.80	102.80	n/a	358	2,210
3.20	103.20	n/a	325	2,534
3.60	103.60	n/a	267	2,801
4.00	104.00	n/a	154	2,955

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	1.20	0.00	0.00
Span (in)	= 12.00	1.20	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 100.00	100.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 5.00	0.00	0.00	0.00
Crest El. (ft)	= 103.80	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	100.00	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
0.40	154	100.40	0.02 ic	0.02 ic	---	---	0.00	---	---	---	---	---	0.022
0.80	421	100.80	0.03 ic	0.03 ic	---	---	0.00	---	---	---	---	---	0.032
1.20	746	101.20	0.04 ic	0.04 ic	---	---	0.00	---	---	---	---	---	0.040
1.60	1,104	101.60	0.05 ic	0.05 ic	---	---	0.00	---	---	---	---	---	0.046
2.00	1,478	102.00	0.05 ic	0.05 ic	---	---	0.00	---	---	---	---	---	0.052
2.40	1,852	102.40	0.06 ic	0.06 ic	---	---	0.00	---	---	---	---	---	0.057
2.80	2,210	102.80	0.06 ic	0.06 ic	---	---	0.00	---	---	---	---	---	0.062
3.20	2,534	103.20	0.07 ic	0.07 ic	---	---	0.00	---	---	---	---	---	0.066
3.60	2,801	103.60	0.07 ic	0.07 ic	---	---	0.00	---	---	---	---	---	0.070
4.00	2,955	104.00	1.58 ic	0.07 ic	---	---	1.49	---	---	---	---	---	1.558

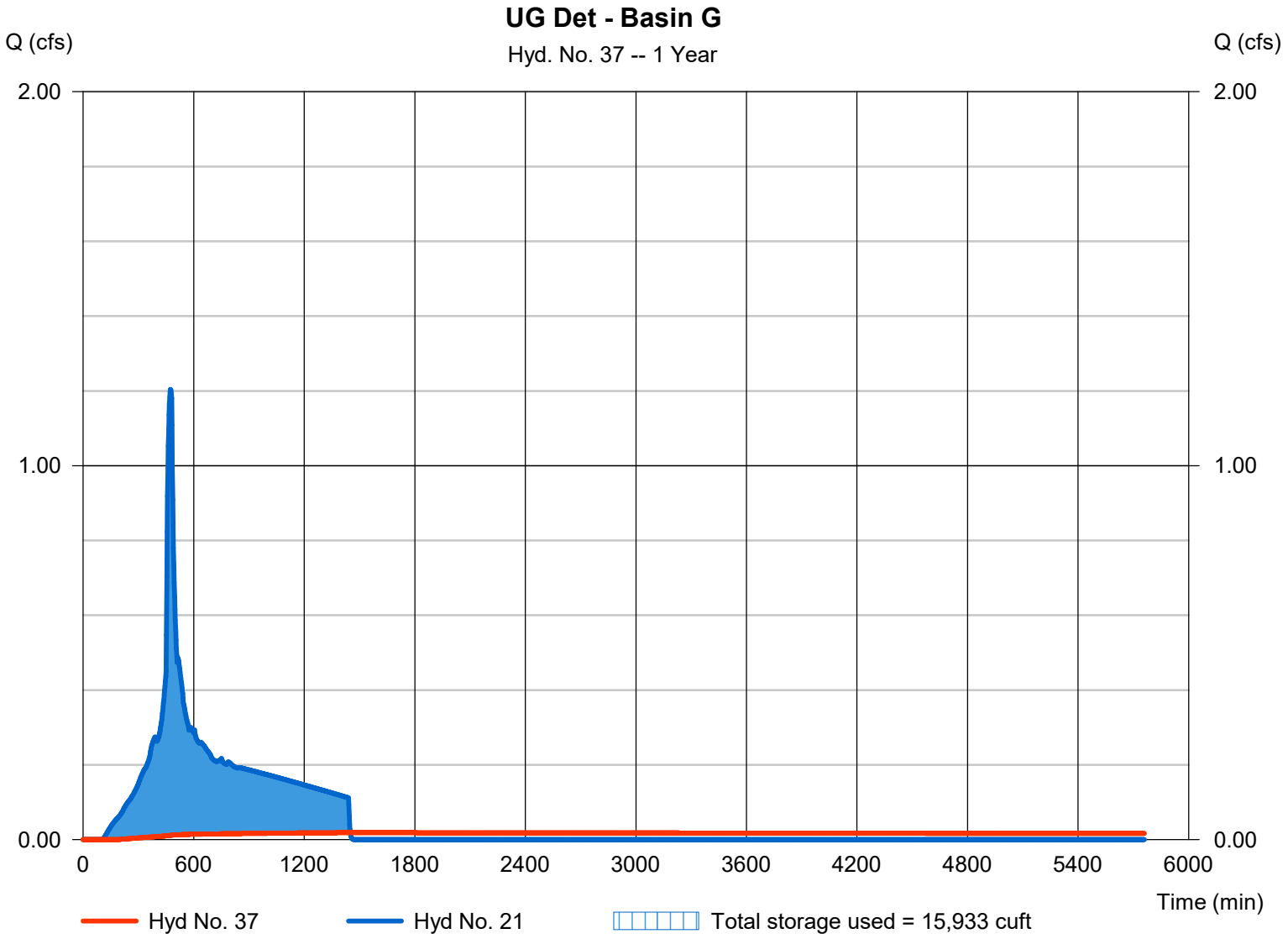
Hydrograph Report

Hyd. No. 37

UG Det - Basin G

Hydrograph type	=	Reservoir	Peak discharge	=	0.019 cfs
Storm frequency	=	1 yrs	Time to peak	=	1450 min
Time interval	=	2 min	Hyd. volume	=	5,598 cuft
Inflow hyd. No.	=	21 - G - Post-Developed	Max. Elevation	=	101.29 ft
Reservoir name	=	Basin G Detention	Max. Storage	=	15,933 cuft

Storage Indication method used.



Pond Report

Pond No. 4 - Basin G Detention

Pond Data

UG Chambers -Invert elev. = 100.00 ft, Rise x Span = 4.00 x 4.00 ft, Barrel Len = 290.00 ft, No. Barrels = 15, Slope = 0.00%, Headers = Yes

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	100.00	n/a	0	0
0.40	100.40	n/a	2,967	2,967
0.80	100.80	n/a	5,137	8,104
1.20	101.20	n/a	6,256	14,360
1.60	101.60	n/a	6,890	21,251
2.00	102.00	n/a	7,199	28,450
2.40	102.40	n/a	7,199	35,648
2.80	102.80	n/a	6,889	42,537
3.20	103.20	n/a	6,253	48,790
3.60	103.60	n/a	5,140	53,930
4.00	104.00	n/a	2,956	56,886

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	0.80	0.00	0.00
Span (in)	= 12.00	0.80	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 100.00	100.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 5.00	0.00	0.00	0.00
Crest El. (ft)	= 103.80	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	100.00	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
0.40	2,967	100.40	0.01 ic	0.01 ic	---	---	0.00	---	---	---	---	---	0.010
0.80	8,104	100.80	0.01 ic	0.01 ic	---	---	0.00	---	---	---	---	---	0.015
1.20	14,360	101.20	0.02 ic	0.02 ic	---	---	0.00	---	---	---	---	---	0.018
1.60	21,251	101.60	0.02 ic	0.02 ic	---	---	0.00	---	---	---	---	---	0.021
2.00	28,450	102.00	0.02 ic	0.02 ic	---	---	0.00	---	---	---	---	---	0.023
2.40	35,648	102.40	0.03 ic	0.03 ic	---	---	0.00	---	---	---	---	---	0.026
2.80	42,537	102.80	0.03 ic	0.03 ic	---	---	0.00	---	---	---	---	---	0.028
3.20	48,790	103.20	0.03 ic	0.03 ic	---	---	0.00	---	---	---	---	---	0.030
3.60	53,930	103.60	0.03 ic	0.03 ic	---	---	0.00	---	---	---	---	---	0.032
4.00	56,886	104.00	1.52 ic	0.03 ic	---	---	1.49	---	---	---	---	---	1.520

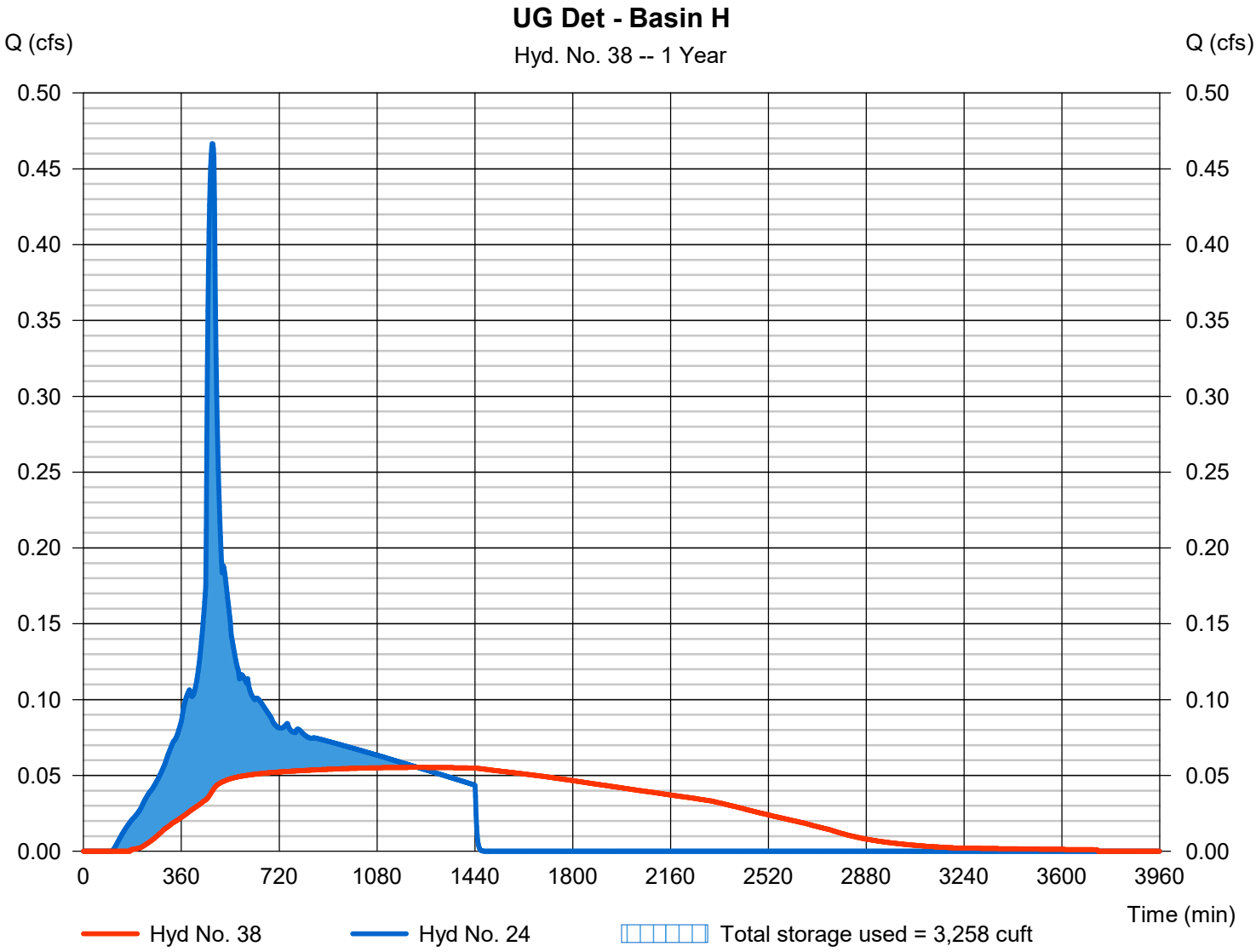
Hydrograph Report

Hyd. No. 38

UG Det - Basin H

Hydrograph type	=	Reservoir	Peak discharge	=	0.055 cfs
Storm frequency	=	1 yrs	Time to peak	=	1230 min
Time interval	=	2 min	Hyd. volume	=	6,562 cuft
Inflow hyd. No.	=	24 - H - Post-Developed	Max. Elevation	=	100.99 ft
Reservoir name	=	Basin H Detention	Max. Storage	=	3,258 cuft

Storage Indication method used.



Pond Report

Pond No. 6 - Basin H Detention

Pond Data

UG Chambers -Invert elev. = 100.00 ft, Rise x Span = 4.00 x 4.00 ft, Barrel Len = 155.90 ft, No. Barrels = 8, Slope = 0.00%, Headers = Yes

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	100.00	n/a	0	0
0.40	100.40	n/a	878	878
0.80	100.80	n/a	1,520	2,398
1.20	101.20	n/a	1,851	4,249
1.60	101.60	n/a	2,039	6,288
2.00	102.00	n/a	2,130	8,418
2.40	102.40	n/a	2,130	10,548
2.80	102.80	n/a	2,038	12,586
3.20	103.20	n/a	1,850	14,436
3.60	103.60	n/a	1,521	15,957
4.00	104.00	n/a	875	16,832

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	1.50	0.00	0.00
Span (in)	= 12.00	1.50	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 100.00	100.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 5.00	0.00	0.00	0.00
Crest El. (ft)	= 103.85	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	100.00	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
0.40	878	100.40	0.04 ic	0.03 ic	---	---	0.00	---	---	---	---	---	0.033
0.80	2,398	100.80	0.05 ic	0.05 ic	---	---	0.00	---	---	---	---	---	0.049
1.20	4,249	101.20	0.06 ic	0.06 ic	---	---	0.00	---	---	---	---	---	0.062
1.60	6,288	101.60	0.07 ic	0.07 ic	---	---	0.00	---	---	---	---	---	0.072
2.00	8,418	102.00	0.08 ic	0.08 ic	---	---	0.00	---	---	---	---	---	0.081
2.40	10,548	102.40	0.09 ic	0.09 ic	---	---	0.00	---	---	---	---	---	0.089
2.80	12,586	102.80	0.10 ic	0.10 ic	---	---	0.00	---	---	---	---	---	0.096
3.20	14,436	103.20	0.11 ic	0.10 ic	---	---	0.00	---	---	---	---	---	0.103
3.60	15,957	103.60	0.11 ic	0.11 ic	---	---	0.00	---	---	---	---	---	0.110
4.00	16,832	104.00	1.08 ic	0.11 ic	---	---	0.97	---	---	---	---	---	1.077

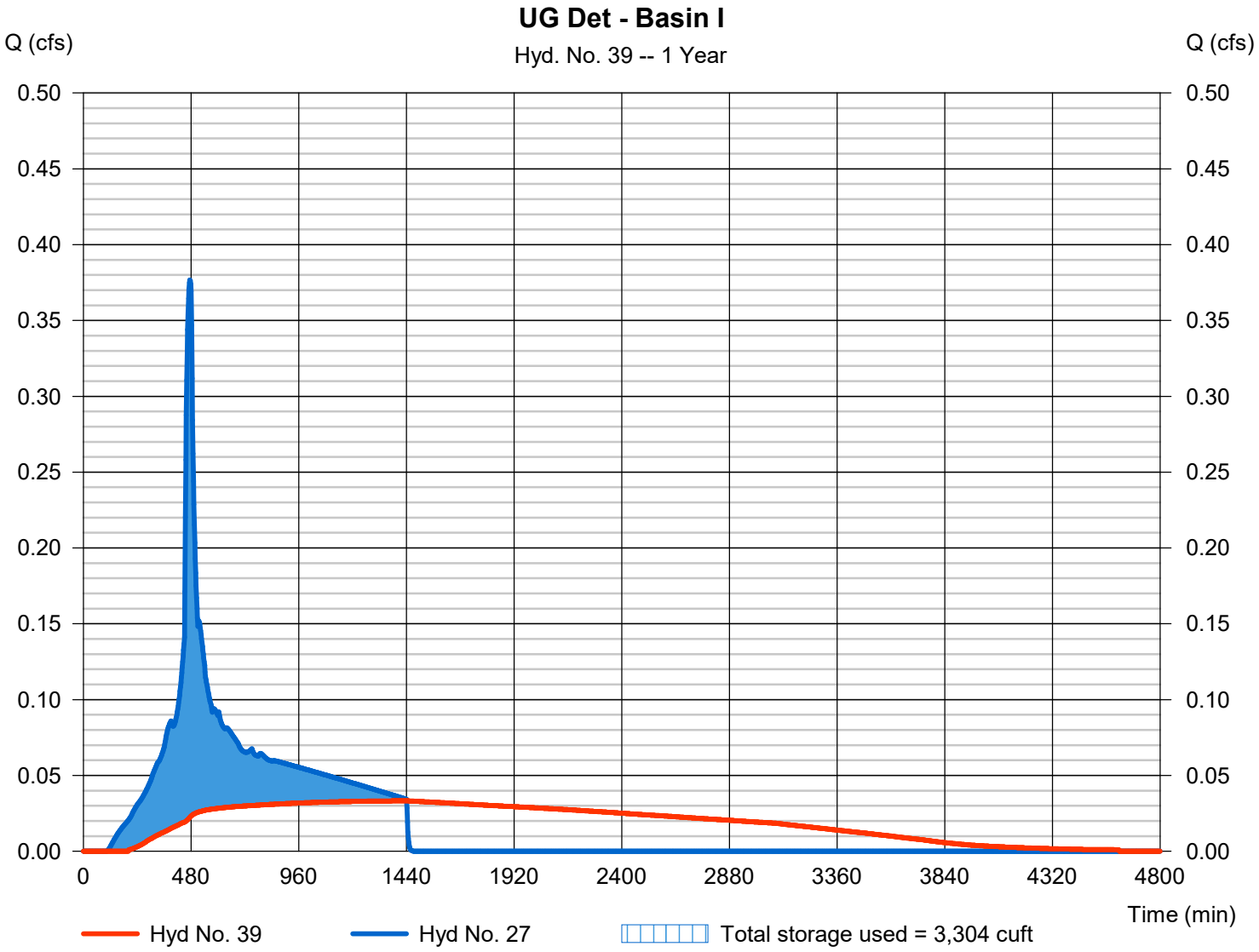
Hydrograph Report

Hyd. No. 39

UG Det - Basin I

Hydrograph type	=	Reservoir	Peak discharge	=	0.033 cfs
Storm frequency	=	1 yrs	Time to peak	=	1440 min
Time interval	=	2 min	Hyd. volume	=	5,230 cuft
Inflow hyd. No.	=	27 - I - Post-Developed	Max. Elevation	=	100.86 ft
Reservoir name	=	Basin I Detention	Max. Storage	=	3,304 cuft

Storage Indication method used.



Pond Report

Pond No. 7 - Basin I Detention

Pond Data

UG Chambers -Invert elev. = 100.00 ft, Rise x Span = 3.00 x 3.00 ft, Barrel Len = 170.40 ft, No. Barrels = 11, Slope = 0.00%, Headers = Yes

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	100.00	n/a	0	0
0.30	100.30	n/a	727	727
0.60	100.60	n/a	1,258	1,985
0.90	100.90	n/a	1,532	3,517
1.20	101.20	n/a	1,687	5,204
1.50	101.50	n/a	1,763	6,967
1.80	101.80	n/a	1,763	8,730
2.10	102.10	n/a	1,687	10,417
2.40	102.40	n/a	1,531	11,948
2.70	102.70	n/a	1,259	13,207
3.00	103.00	n/a	724	13,931

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	1.20	0.00	0.00
Span (in)	= 12.00	1.20	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 100.00	100.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 5.00	0.00	0.00	0.00
Crest El. (ft)	= 102.90	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	100.00	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
0.30	727	100.30	0.02 ic	0.02 ic	---	---	0.00	---	---	---	---	---	0.018
0.60	1,985	100.60	0.03 ic	0.03 ic	---	---	0.00	---	---	---	---	---	0.027
0.90	3,517	100.90	0.04 ic	0.03 ic	---	---	0.00	---	---	---	---	---	0.034
1.20	5,204	101.20	0.04 ic	0.04 ic	---	---	0.00	---	---	---	---	---	0.040
1.50	6,967	101.50	0.05 ic	0.04 ic	---	---	0.00	---	---	---	---	---	0.045
1.80	8,730	101.80	0.05 ic	0.05 ic	---	---	0.00	---	---	---	---	---	0.049
2.10	10,417	102.10	0.06 ic	0.05 ic	---	---	0.00	---	---	---	---	---	0.053
2.40	11,948	102.40	0.06 ic	0.06 ic	---	---	0.00	---	---	---	---	---	0.057
2.70	13,207	102.70	0.06 ic	0.06 ic	---	---	0.00	---	---	---	---	---	0.061
3.00	13,931	103.00	0.60 ic	0.06 ic	---	---	0.53	---	---	---	---	---	0.588

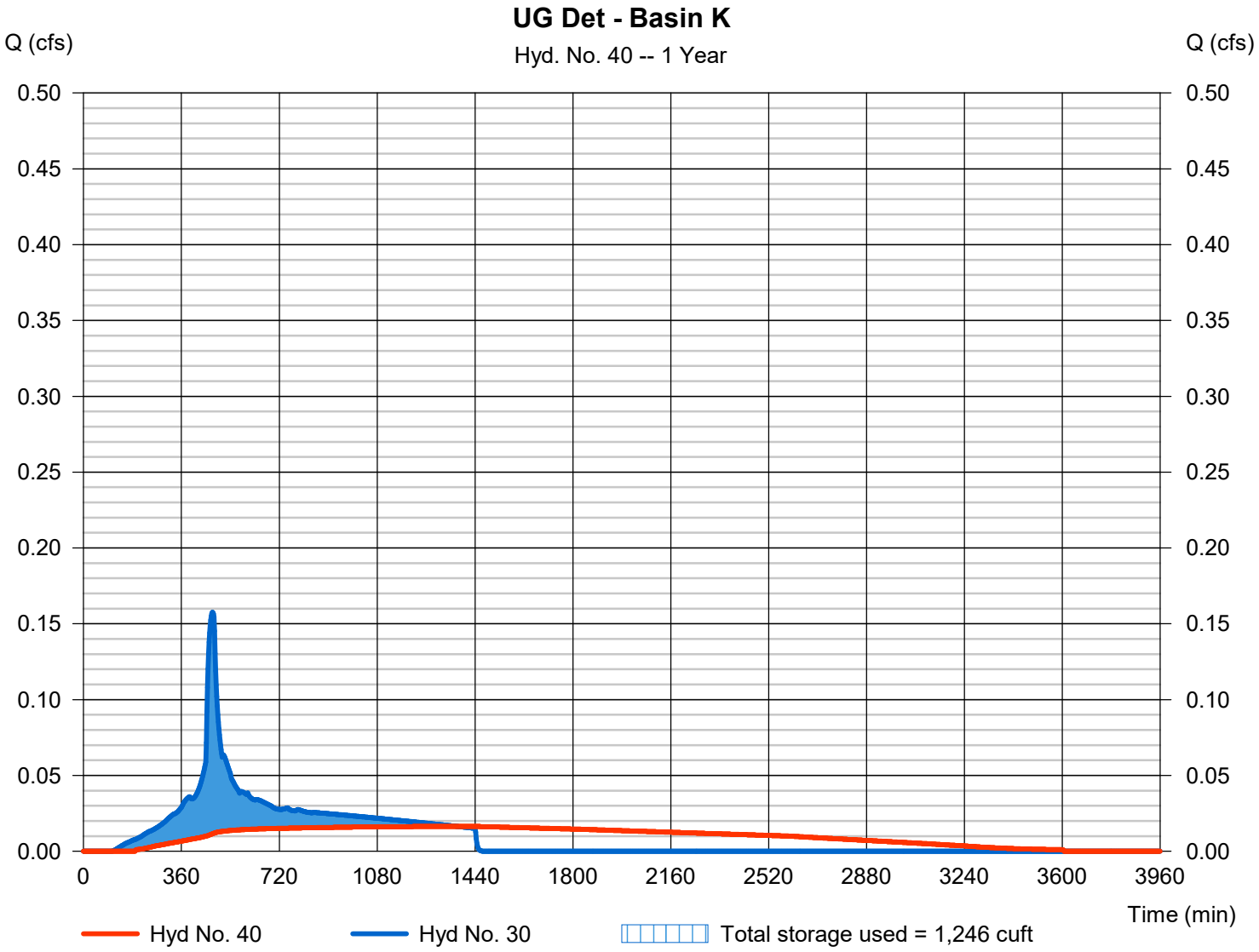
Hydrograph Report

Hyd. No. 40

UG Det - Basin K

Hydrograph type	=	Reservoir	Peak discharge	=	0.016 cfs
Storm frequency	=	1 yrs	Time to peak	=	1374 min
Time interval	=	2 min	Hyd. volume	=	2,224 cuft
Inflow hyd. No.	=	30 - K - Post-Developed	Max. Elevation	=	101.01 ft
Reservoir name	=	Basin K Detention	Max. Storage	=	1,246 cuft

Storage Indication method used.



Pond Report

Pond No. 5 - Basin K Detention

Pond Data

UG Chambers -Invert elev. = 100.00 ft, Rise x Span = 4.00 x 4.00 ft, Barrel Len = 155.00 ft, No. Barrels = 3, Slope = 0.00%, Headers = Yes

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	100.00	n/a	0	0
0.40	100.40	n/a	326	326
0.80	100.80	n/a	564	890
1.20	101.20	n/a	687	1,577
1.60	101.60	n/a	757	2,334
2.00	102.00	n/a	791	3,124
2.40	102.40	n/a	790	3,915
2.80	102.80	n/a	756	4,671
3.20	103.20	n/a	687	5,358
3.60	103.60	n/a	564	5,922
4.00	104.00	n/a	325	6,247

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	0.80	0.00	0.00
Span (in)	= 12.00	0.80	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 100.00	100.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 5.00	0.00	0.00	0.00
Crest El. (ft)	= 103.85	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	100.00	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
0.40	326	100.40	0.01 ic	0.01 ic	---	---	0.00	---	---	---	---	---	0.010
0.80	890	100.80	0.01 ic	0.01 ic	---	---	0.00	---	---	---	---	---	0.015
1.20	1,577	101.20	0.02 ic	0.02 ic	---	---	0.00	---	---	---	---	---	0.018
1.60	2,334	101.60	0.02 ic	0.02 ic	---	---	0.00	---	---	---	---	---	0.021
2.00	3,124	102.00	0.02 ic	0.02 ic	---	---	0.00	---	---	---	---	---	0.023
2.40	3,915	102.40	0.03 ic	0.03 ic	---	---	0.00	---	---	---	---	---	0.026
2.80	4,671	102.80	0.03 ic	0.03 ic	---	---	0.00	---	---	---	---	---	0.028
3.20	5,358	103.20	0.03 ic	0.03 ic	---	---	0.00	---	---	---	---	---	0.030
3.60	5,922	103.60	0.03 ic	0.03 ic	---	---	0.00	---	---	---	---	---	0.032
4.00	6,247	104.00	1.02 ic	0.03 ic	---	---	0.97	---	---	---	---	---	0.999

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SBUH Runoff	0.830	2	480	13,336	------	------	------	Aa
2	SBUH Runoff	0.048	2	482	1,086	------	------	------	Ab
3	Combine	0.878	2	480	14,422	1, 2	------	------	A - Post-Developed
4	SBUH Runoff	1.974	2	474	28,351	------	------	------	Ba
5	SBUH Runoff	0.111	2	480	2,104	------	------	------	Bb
6	Combine	2.078	2	474	30,455	4, 5	------	------	B - Post-Developed
7	SBUH Runoff	1.299	2	474	18,652	------	------	------	Ca
8	SBUH Runoff	0.047	2	480	882	------	------	------	Cb
9	Combine	1.342	2	474	19,534	7, 8	------	------	C- Post-Developed
10	SBUH Runoff	1.234	2	474	17,719	------	------	------	Da
11	SBUH Runoff	0.036	2	480	679	------	------	------	Db
12	Combine	1.267	2	474	18,398	10, 11	------	------	D - Post-Developed
13	SBUH Runoff	2.526	2	474	36,278	------	------	------	Ea
14	SBUH Runoff	0.027	2	480	509	------	------	------	Eb
15	Combine	2.551	2	474	36,787	13, 14	------	------	E - Post-Developed
16	SBUH Runoff	0.461	2	474	6,621	------	------	------	Fa
17	SBUH Runoff	0.020	2	480	373	------	------	------	Fb
18	Combine	0.479	2	474	6,995	16, 17	------	------	F - Post-Developed
19	SBUH Runoff	3.818	2	474	54,837	------	------	------	Ga
20	SBUH Runoff	0.124	2	480	2,341	------	------	------	Gb
21	Combine	3.934	2	474	57,179	19, 20	------	------	G - Post-Developed
22	SBUH Runoff	1.481	2	474	21,263	------	------	------	Ha
23	SBUH Runoff	0.057	2	480	1,086	------	------	------	Hb
24	Combine	1.534	2	474	22,349	22, 23	------	------	H - Post-Developed
25	SBUH Runoff	1.195	2	474	17,160	------	------	------	Ia
26	SBUH Runoff	0.011	2	480	204	------	------	------	Ib
27	Combine	1.205	2	474	17,364	25, 26	------	------	I - Post-Developed
28	SBUH Runoff	0.500	2	474	7,181	------	------	------	Ka
29	SBUH Runoff	0.036	2	480	679	------	------	------	Kb
30	Combine	0.534	2	474	7,860	28, 29	------	------	K - Post-Developed
31	SBUH Runoff	0.203	2	480	3,835	------	------	------	W - Post-Developed
33	Reservoir	0.714	2	532	30,432	6	40.86	5,520	Raingarden 1 - Basin B
34	Reservoir	0.025	2	1448	7,168	12	58.60	16,941	UG Det - Basin D

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

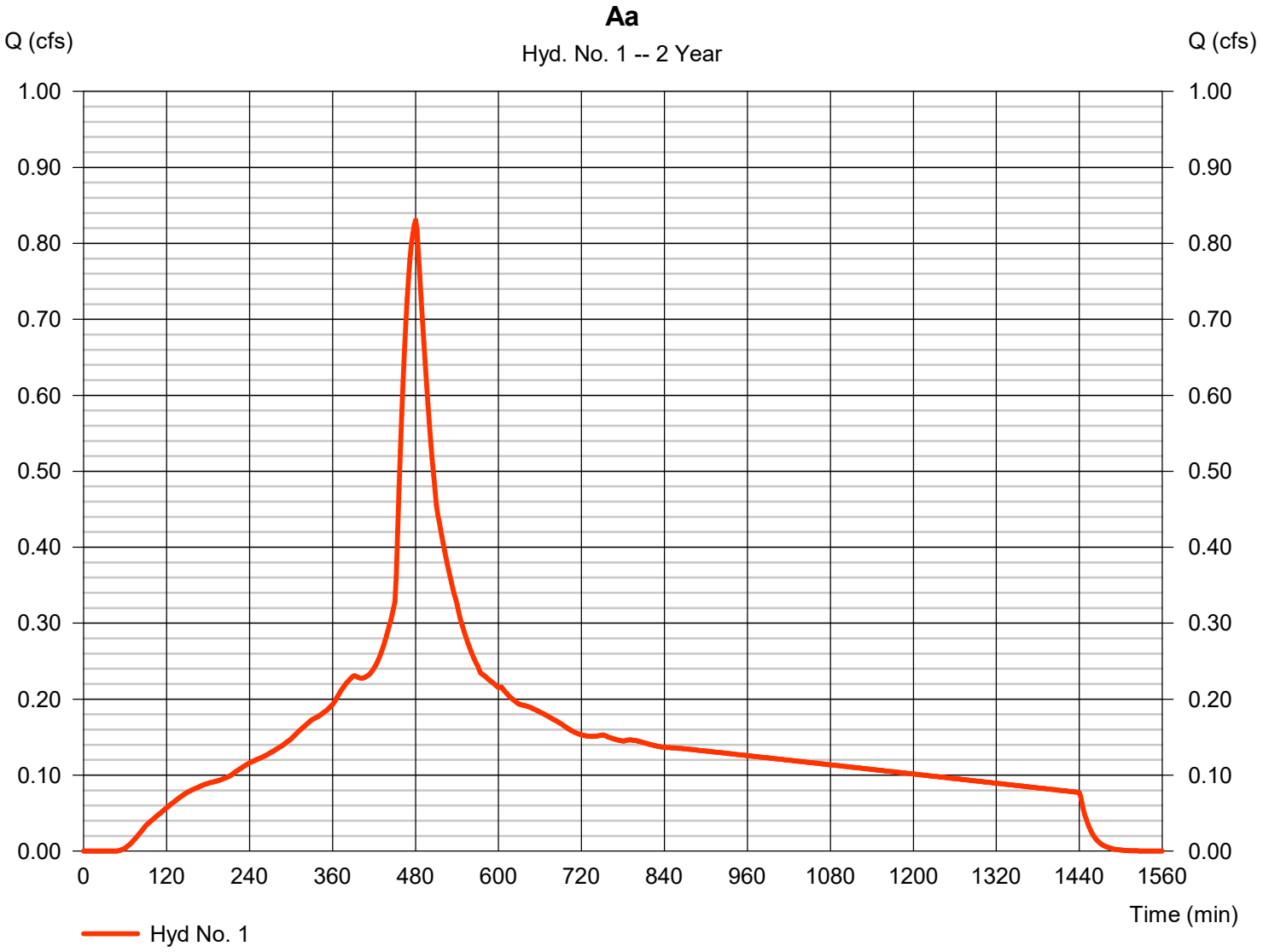
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
35	Reservoir	0.025	2	1452	7,495	15	103.84	35,326	UG Det - Basin E
36	Reservoir	0.070	2	912	6,987	18	103.56	2,773	UG Det - Basin F
37	Reservoir	0.032	2	1452	9,792	21	103.78	55,289	UG Det - Basin G
38	Reservoir	0.109	2	1442	22,258	24	103.53	15,695	UG Det - Basin H
39	Reservoir	0.063	2	1444	15,249	27	102.87	13,623	UG Det - Basin I
40	Reservoir	0.032	2	1444	7,446	30	103.63	5,949	UG Det - Basin K

Hydrograph Report

Hyd. No. 1

Aa

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.830 cfs
Storm frequency	=	2 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	13,336 cuft
Drainage area	=	1.430 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	14.60 min
Total precip.	=	2.80 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

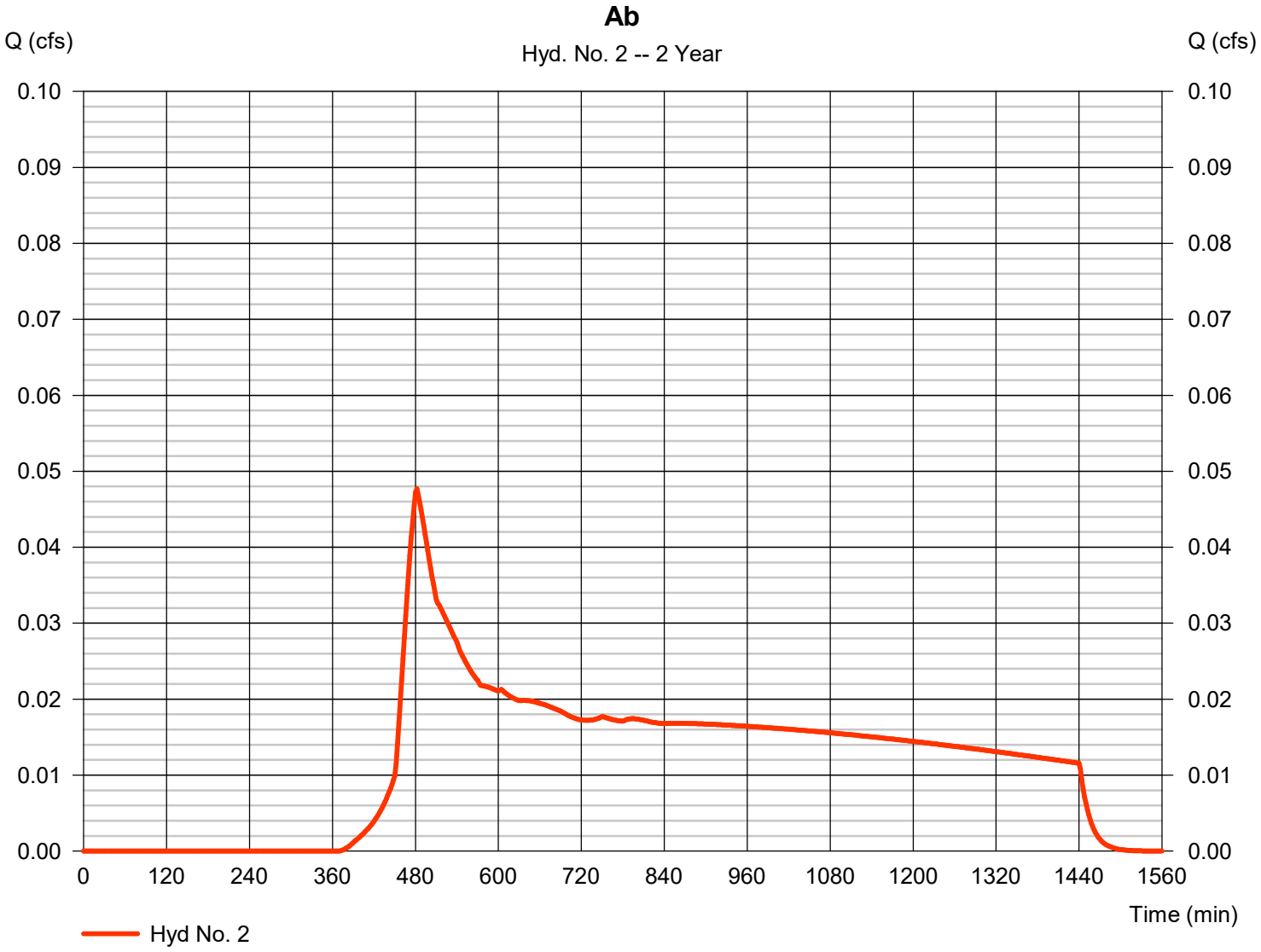


Hydrograph Report

Hyd. No. 2

Ab

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.048 cfs
Storm frequency	=	2 yrs	Time to peak	=	482 min
Time interval	=	2 min	Hyd. volume	=	1,086 cuft
Drainage area	=	0.320 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	14.60 min
Total precip.	=	2.80 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

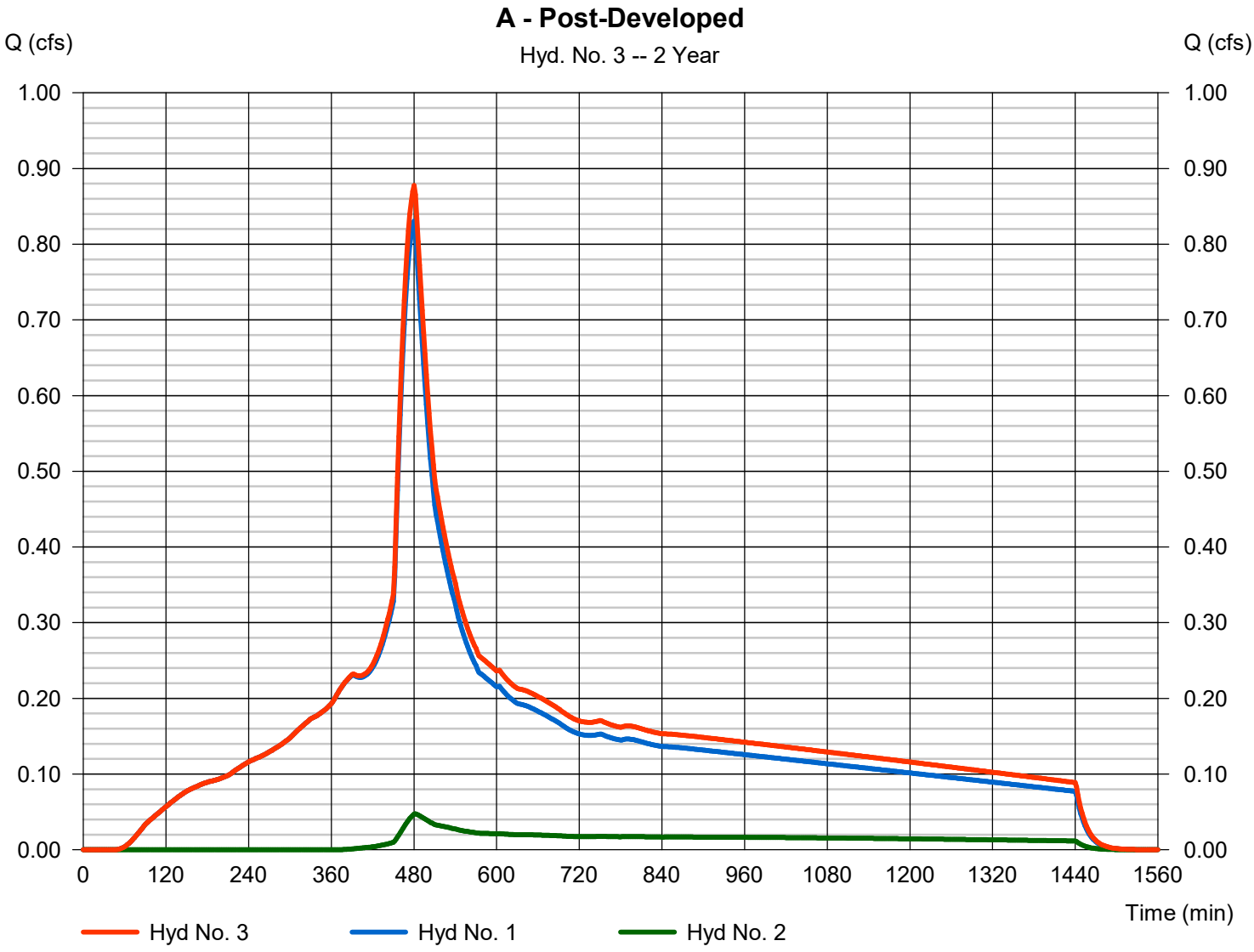


Hydrograph Report

Hyd. No. 3

A - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 0.878 cfs
Storm frequency	= 2 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 14,422 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 1.750 ac

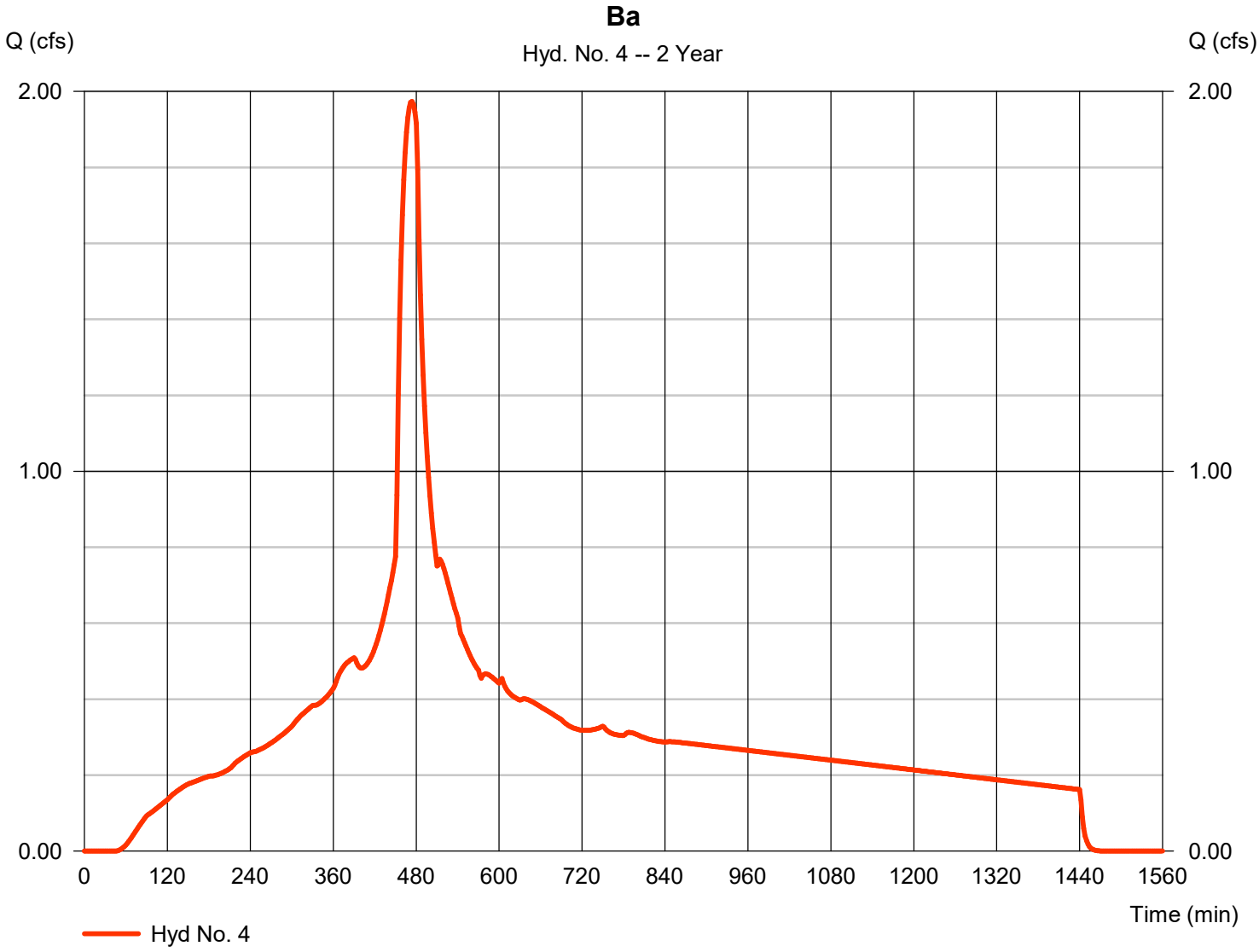


Hydrograph Report

Hyd. No. 4

Ba

Hydrograph type	= SBUH Runoff	Peak discharge	= 1.974 cfs
Storm frequency	= 2 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 28,351 cuft
Drainage area	= 3.040 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.80 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

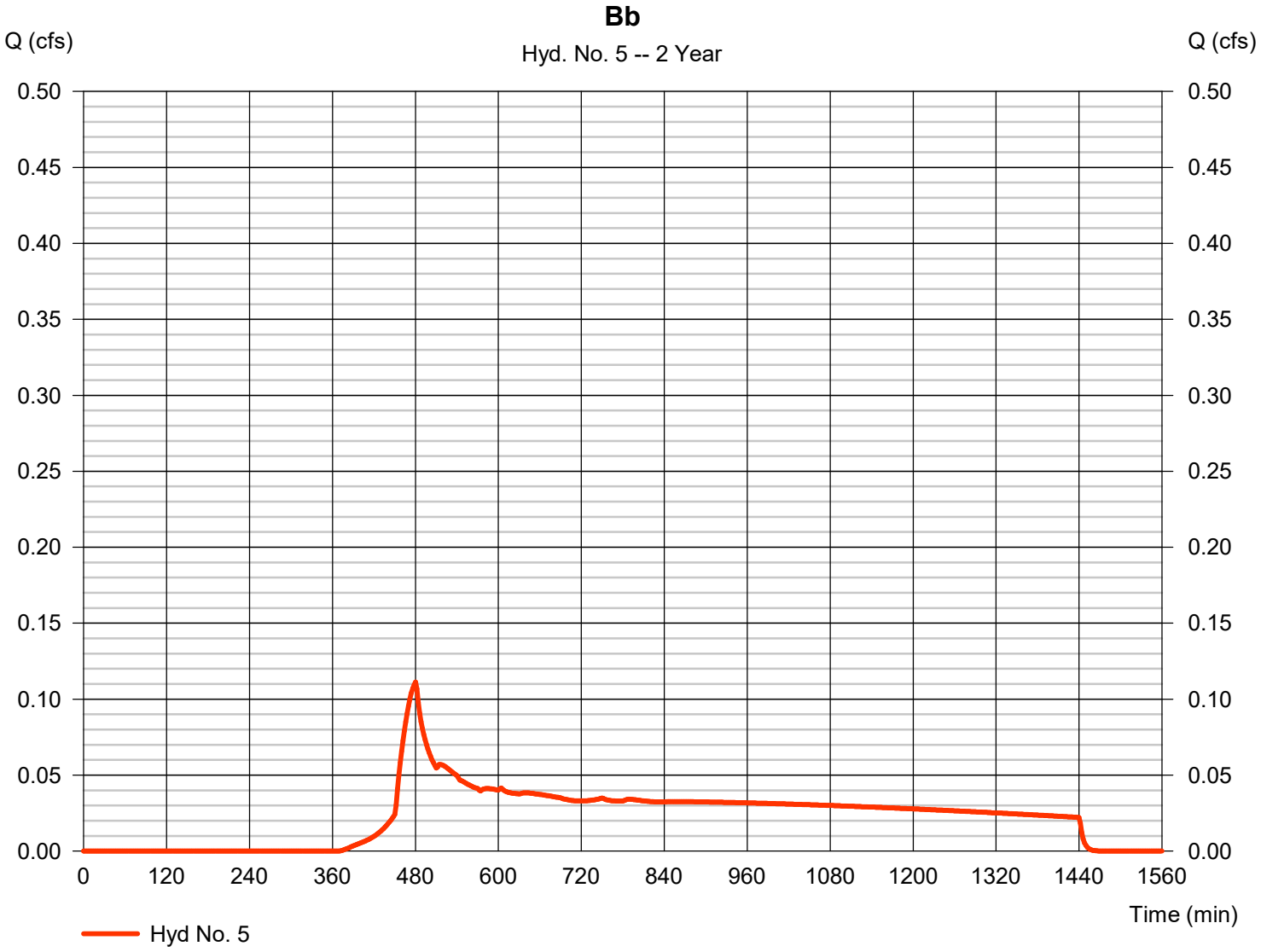


Hydrograph Report

Hyd. No. 5

Bb

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.111 cfs
Storm frequency	= 2 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 2,104 cuft
Drainage area	= 0.620 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.80 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

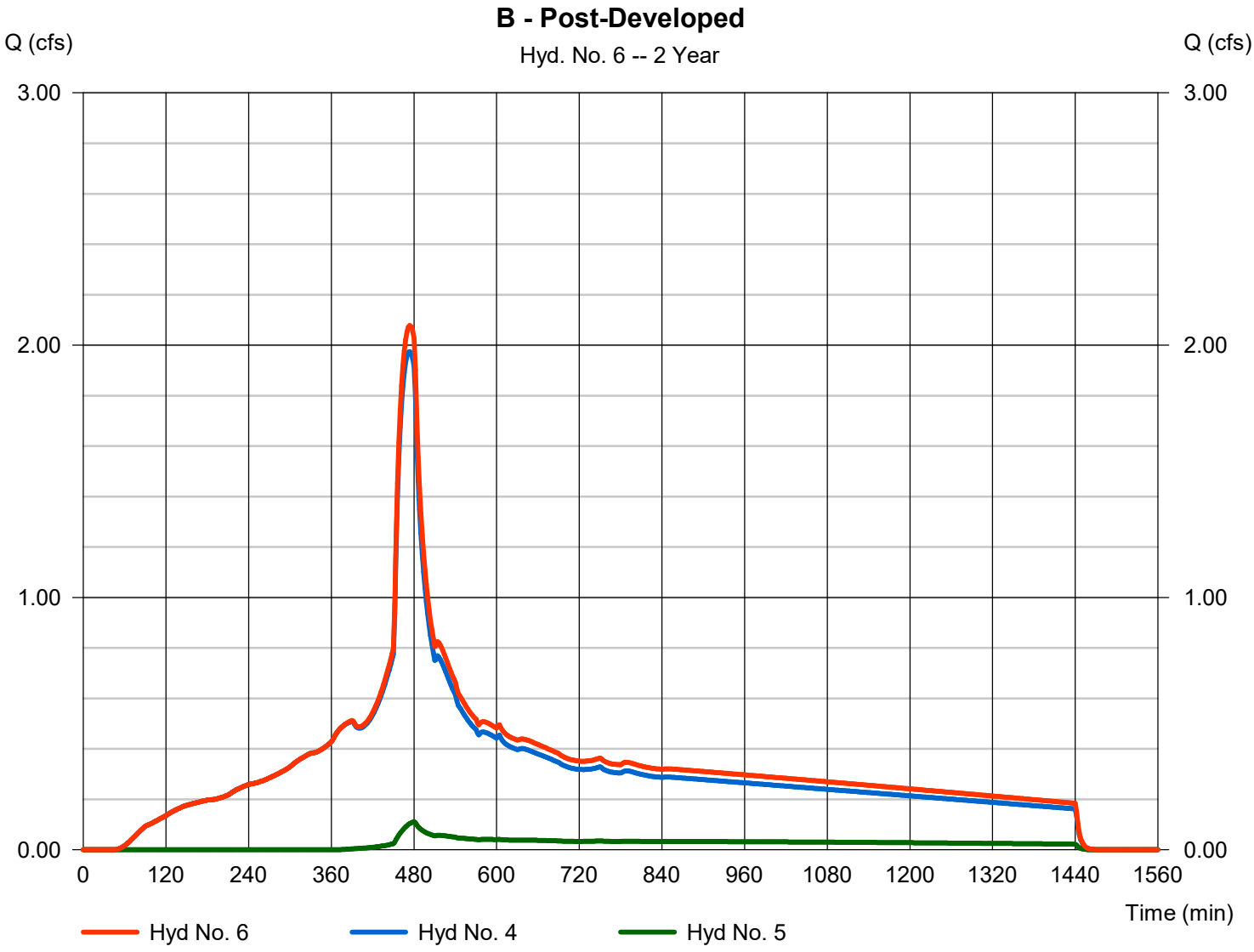


Hydrograph Report

Hyd. No. 6

B - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 2.078 cfs
Storm frequency	= 2 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 30,455 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 3.660 ac

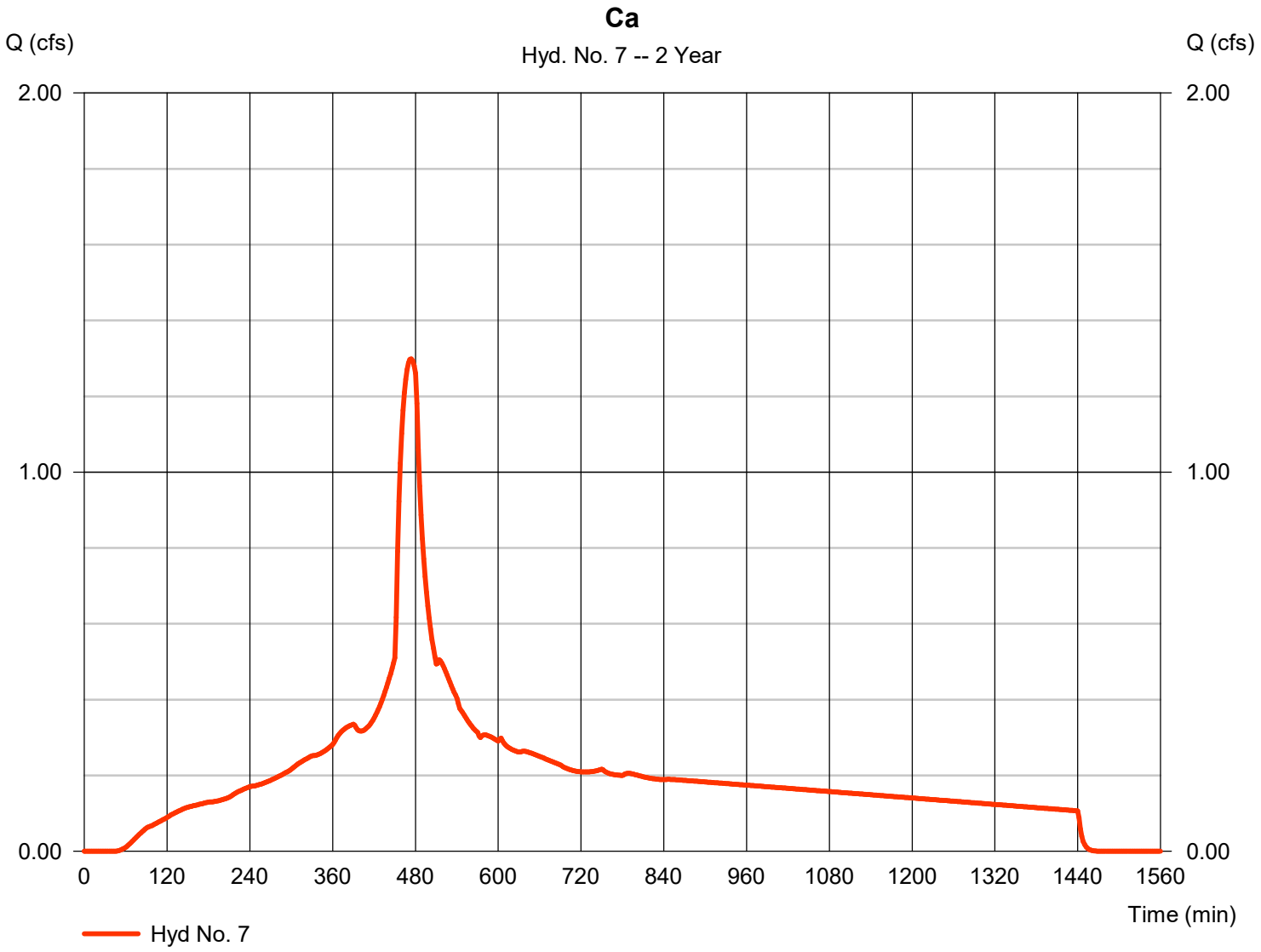


Hydrograph Report

Hyd. No. 7

Ca

Hydrograph type	=	SBUH Runoff	Peak discharge	=	1.299 cfs
Storm frequency	=	2 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	18,652 cuft
Drainage area	=	2.000 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.80 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

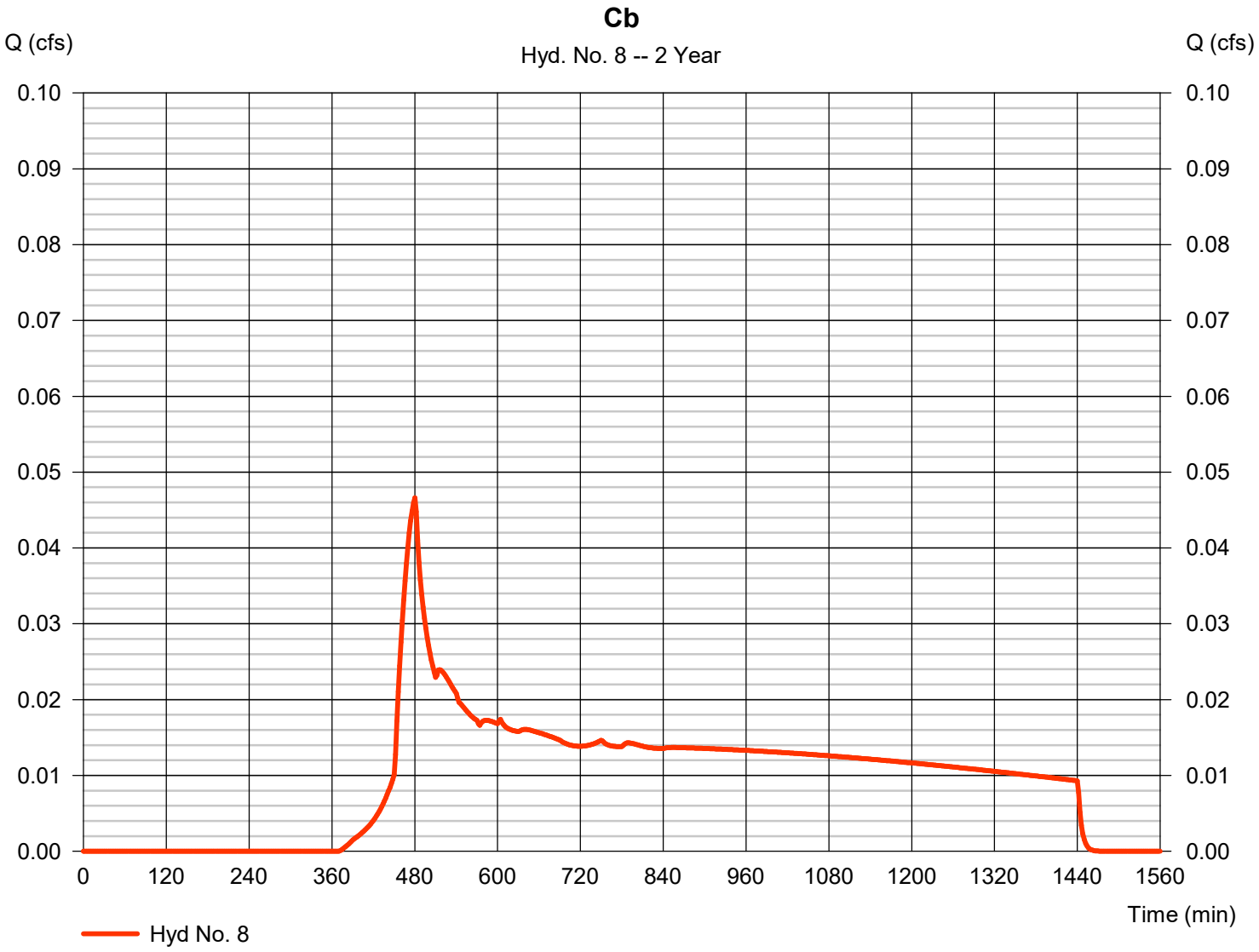


Hydrograph Report

Hyd. No. 8

Cb

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.047 cfs
Storm frequency	=	2 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	882 cuft
Drainage area	=	0.260 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.80 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

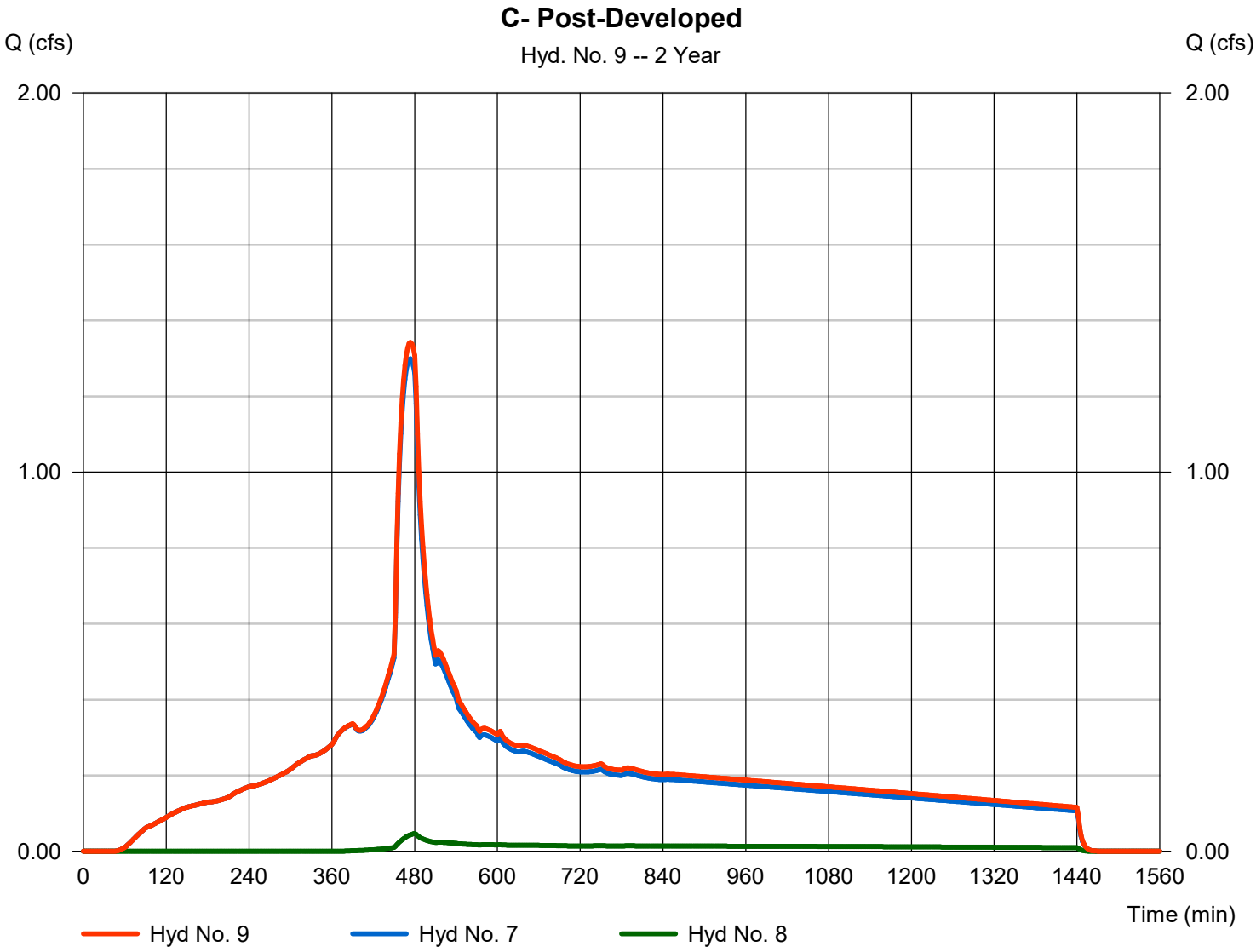


Hydrograph Report

Hyd. No. 9

C- Post-Developed

Hydrograph type	= Combine	Peak discharge	= 1.342 cfs
Storm frequency	= 2 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 19,534 cuft
Inflow hyds.	= 7, 8	Contrib. drain. area	= 2.260 ac

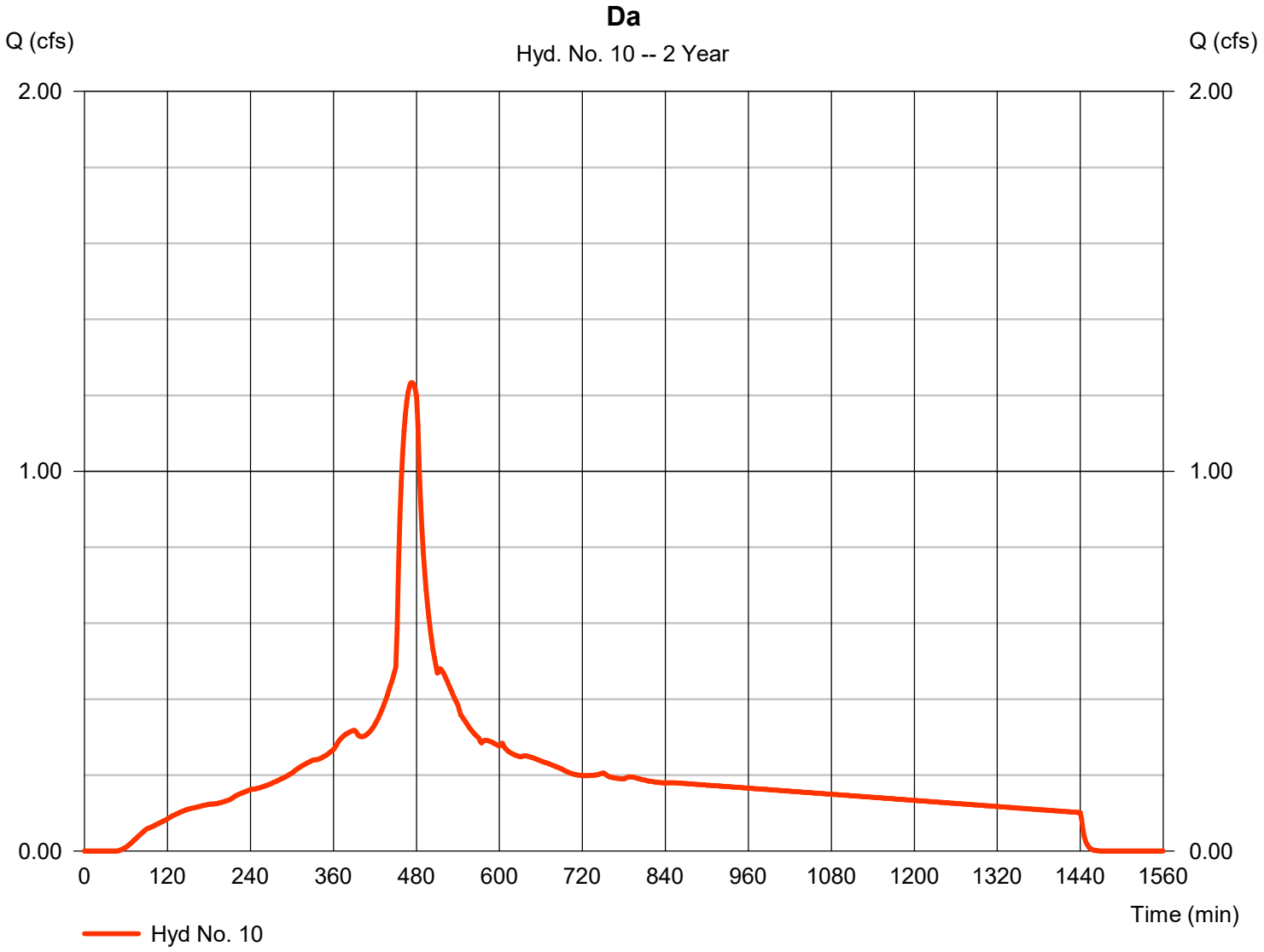


Hydrograph Report

Hyd. No. 10

Da

Hydrograph type	=	SBUH Runoff	Peak discharge	=	1.234 cfs
Storm frequency	=	2 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	17,719 cuft
Drainage area	=	1.900 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.80 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

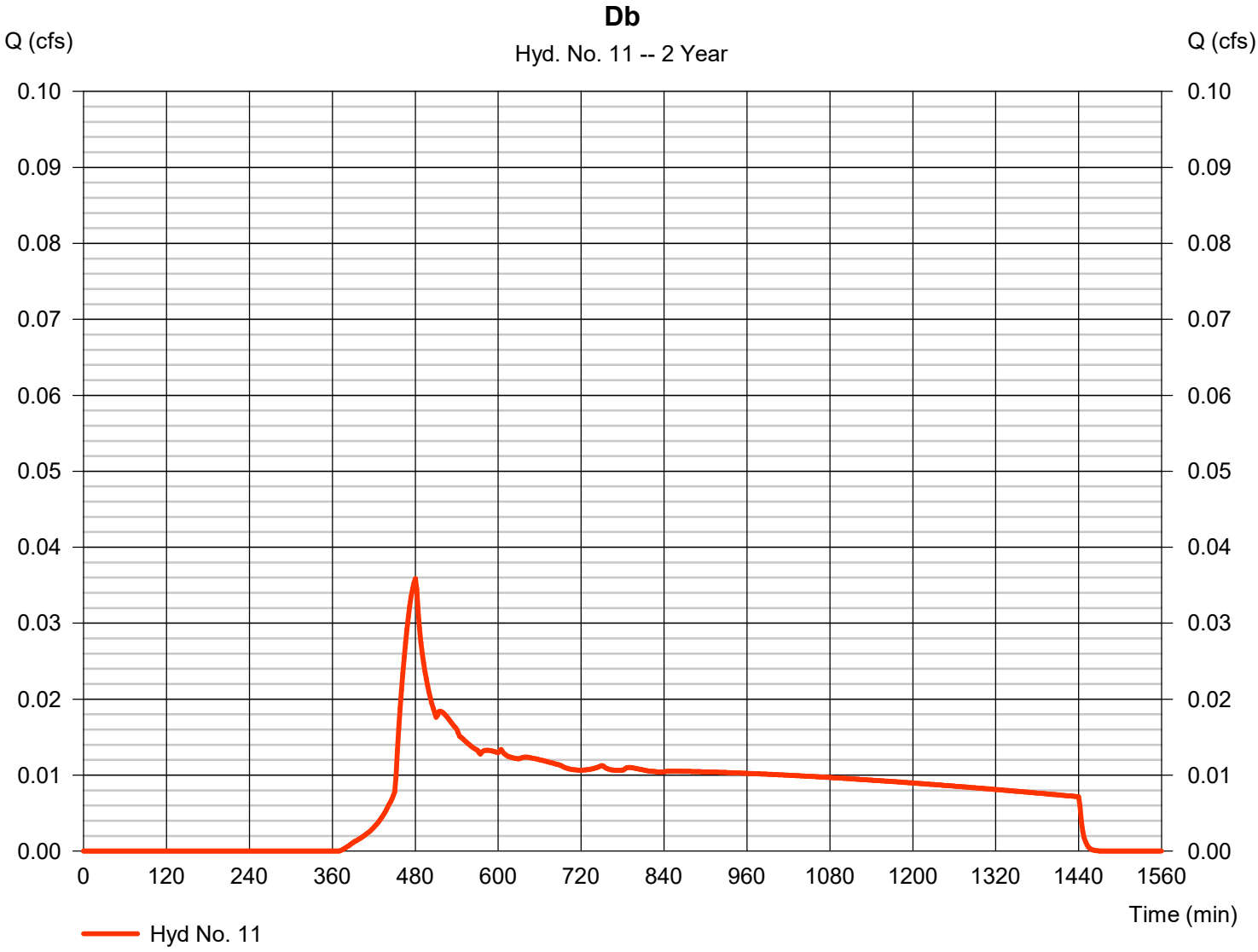


Hydrograph Report

Hyd. No. 11

Db

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.036 cfs
Storm frequency	= 2 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 679 cuft
Drainage area	= 0.200 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.80 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

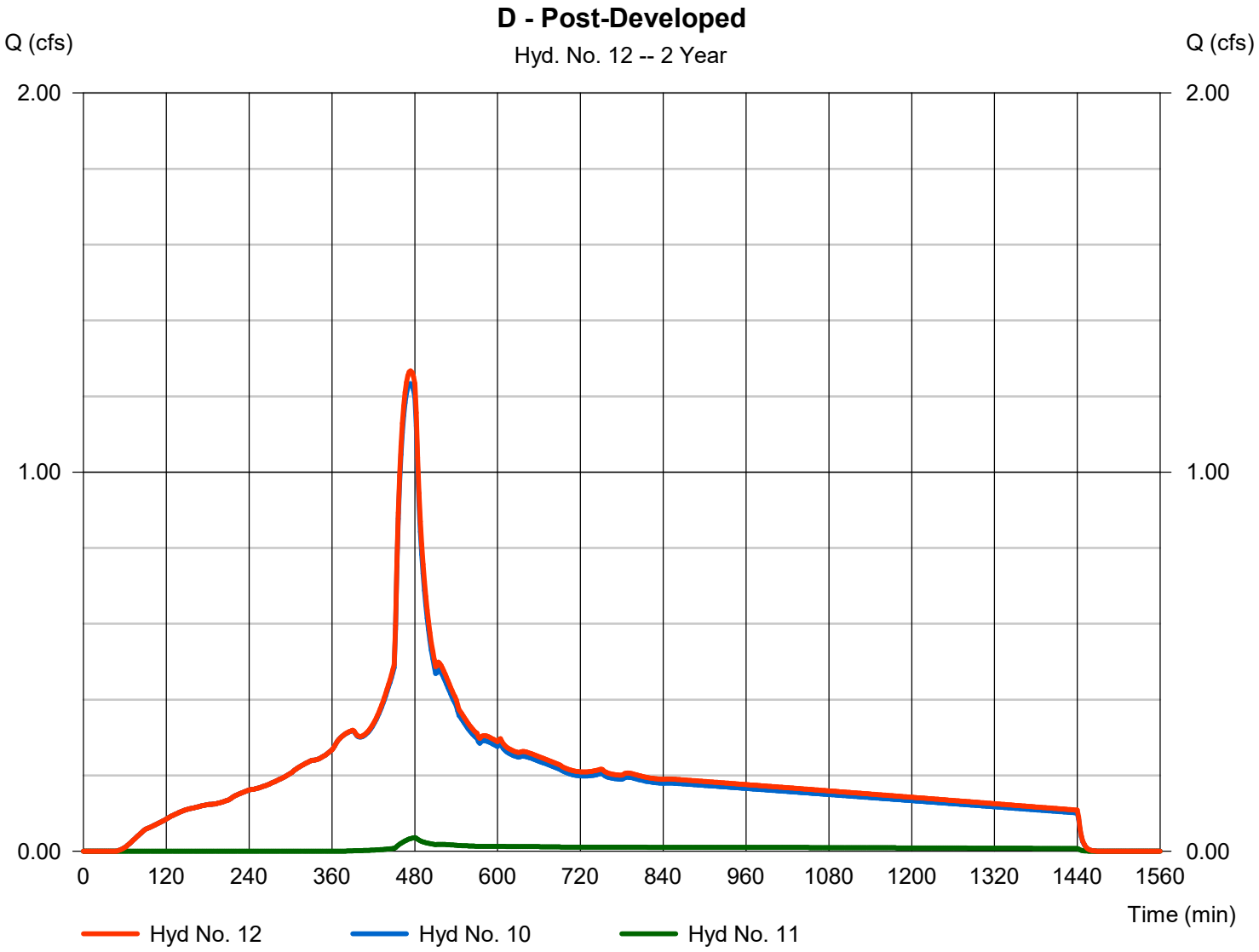


Hydrograph Report

Hyd. No. 12

D - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 1.267 cfs
Storm frequency	= 2 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 18,398 cuft
Inflow hyds.	= 10, 11	Contrib. drain. area	= 2.100 ac

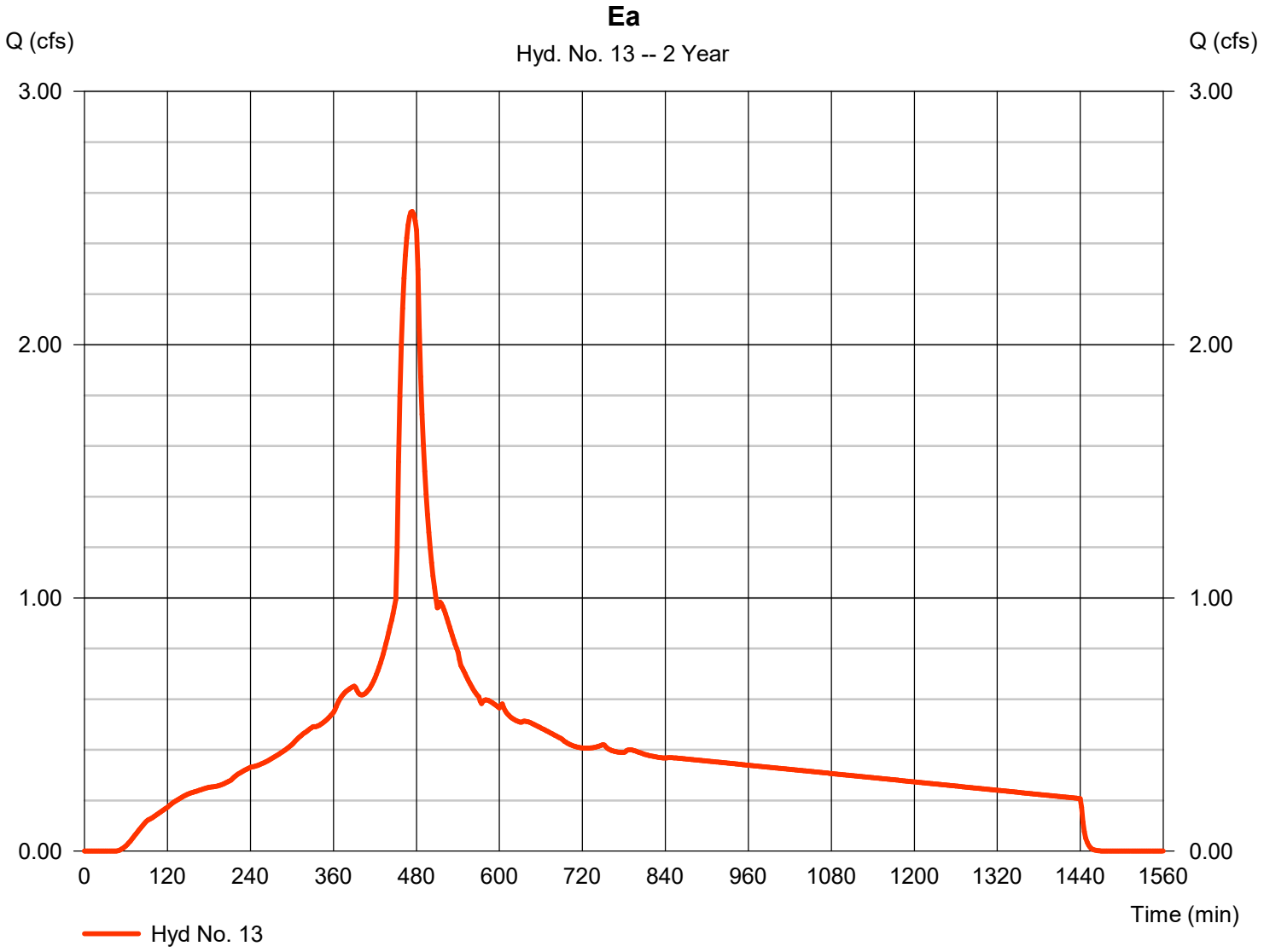


Hydrograph Report

Hyd. No. 13

Ea

Hydrograph type	= SBUH Runoff	Peak discharge	= 2.526 cfs
Storm frequency	= 2 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 36,278 cuft
Drainage area	= 3.890 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.80 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

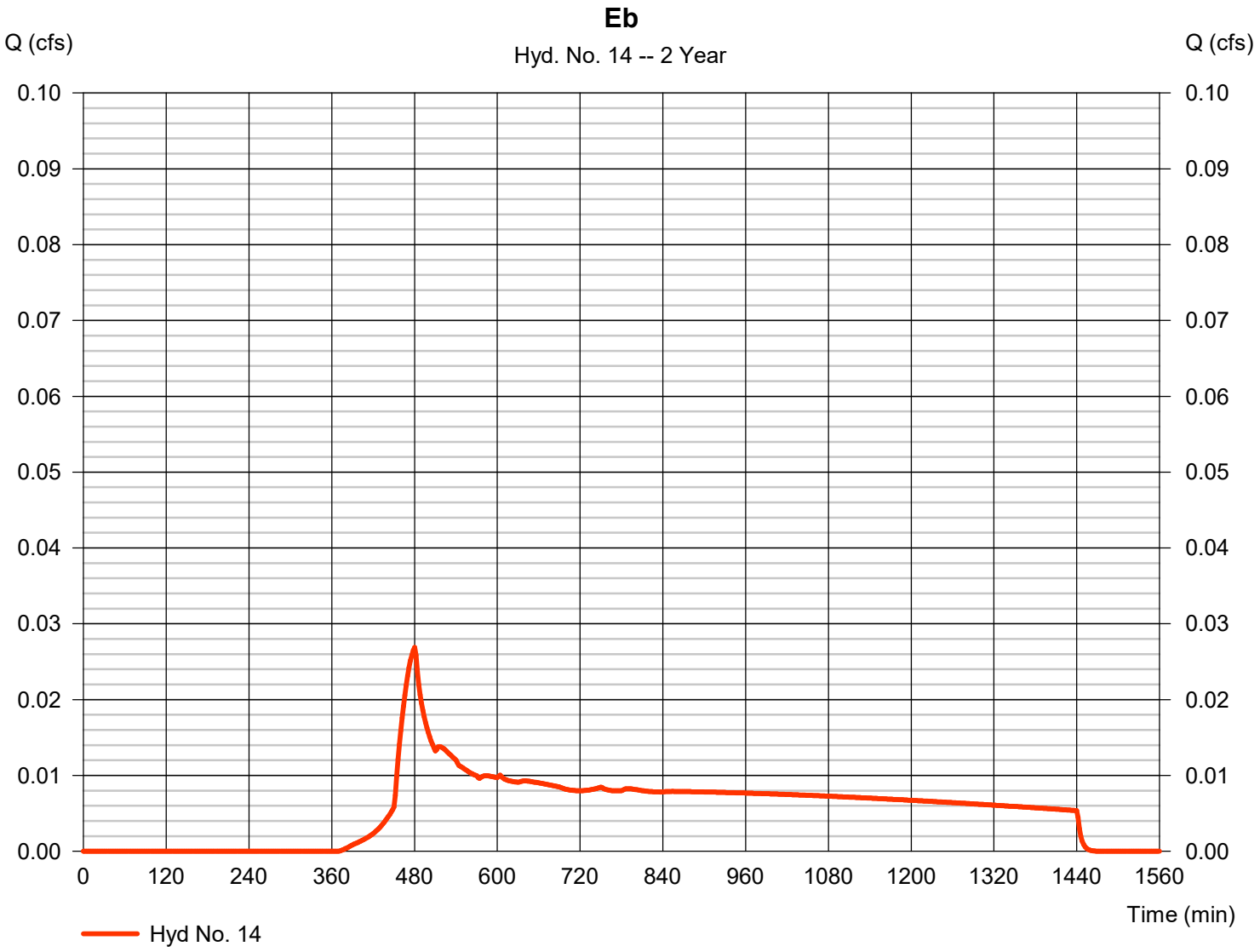


Hydrograph Report

Hyd. No. 14

Eb

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.027 cfs
Storm frequency	=	2 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	509 cuft
Drainage area	=	0.150 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.80 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

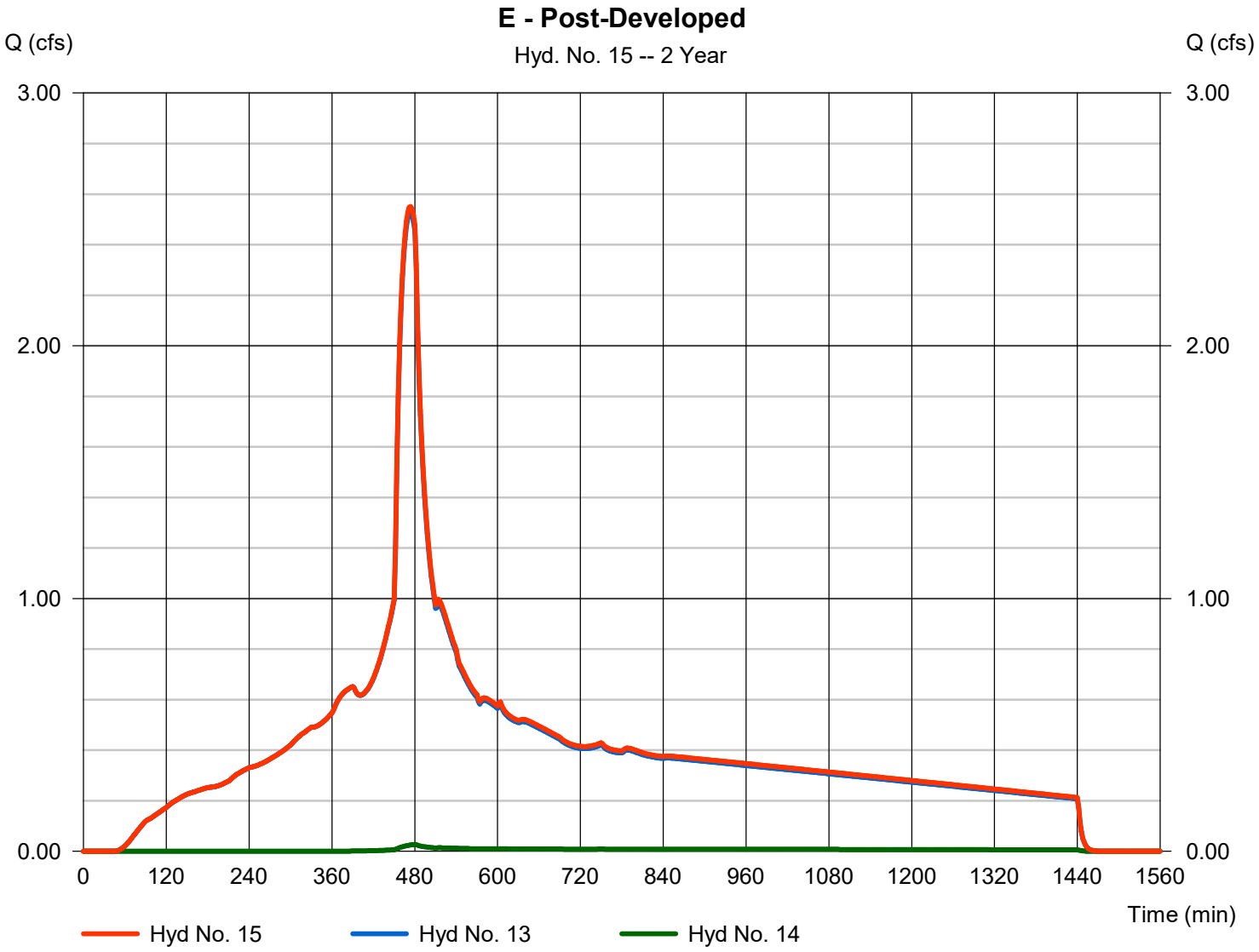


Hydrograph Report

Hyd. No. 15

E - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 2.551 cfs
Storm frequency	= 2 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 36,787 cuft
Inflow hyds.	= 13, 14	Contrib. drain. area	= 4.040 ac

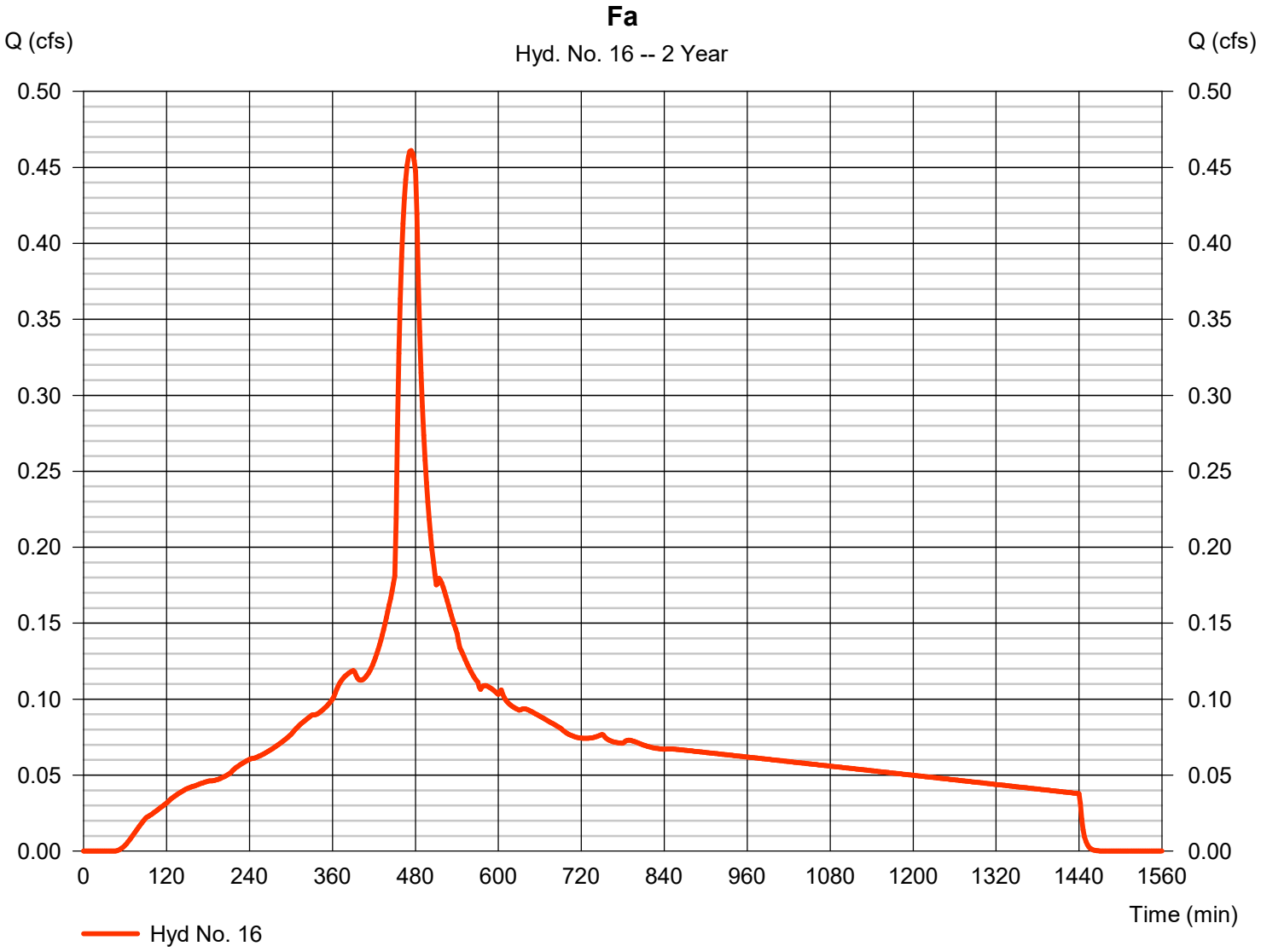


Hydrograph Report

Hyd. No. 16

Fa

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.461 cfs
Storm frequency	= 2 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 6,621 cuft
Drainage area	= 0.710 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.80 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

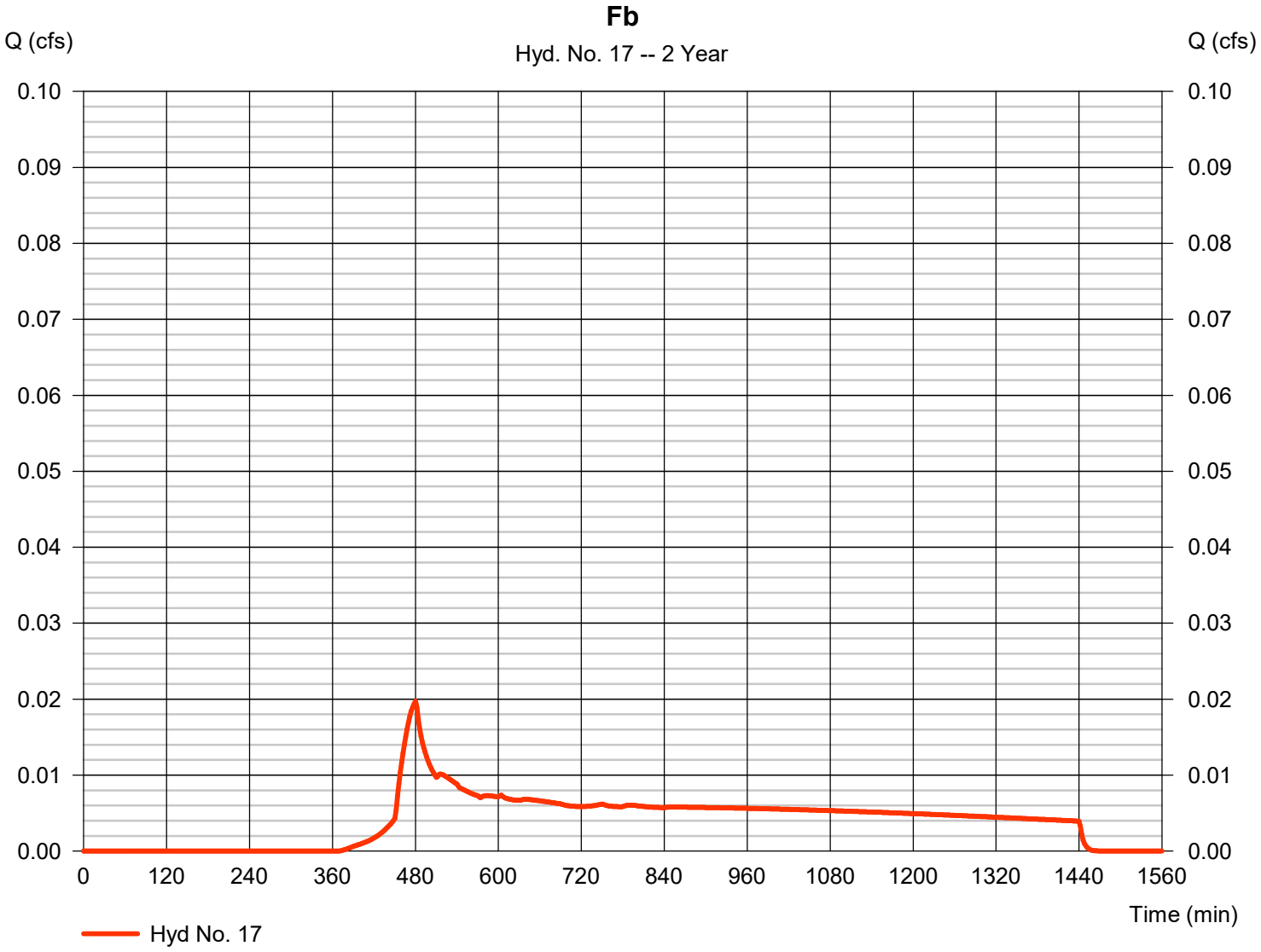


Hydrograph Report

Hyd. No. 17

Fb

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.020 cfs
Storm frequency	=	2 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	373 cuft
Drainage area	=	0.110 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.80 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

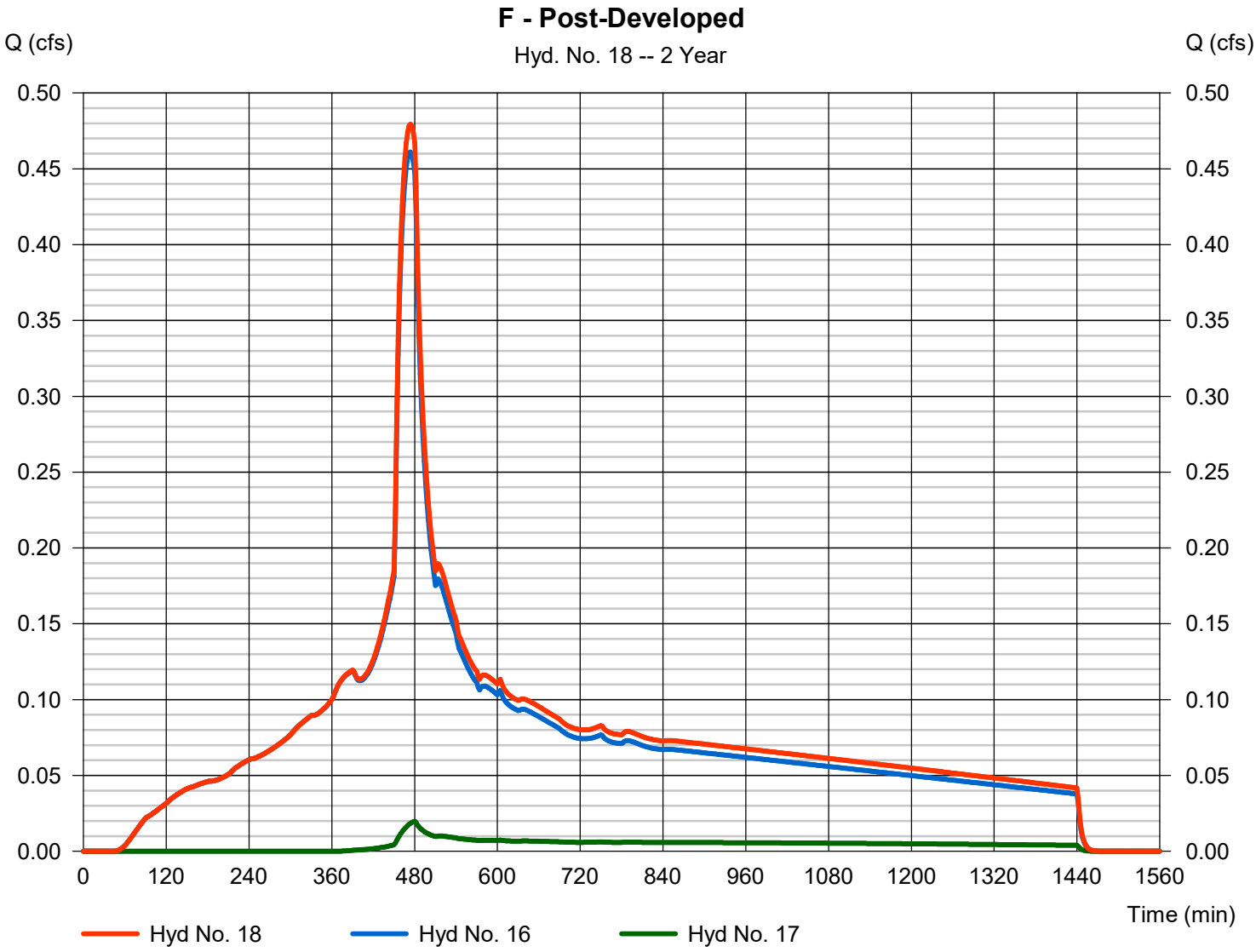


Hydrograph Report

Hyd. No. 18

F - Post-Developed

Hydrograph type	=	Combine	Peak discharge	=	0.479 cfs
Storm frequency	=	2 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	6,995 cuft
Inflow hyds.	=	16, 17	Contrib. drain. area	=	0.820 ac

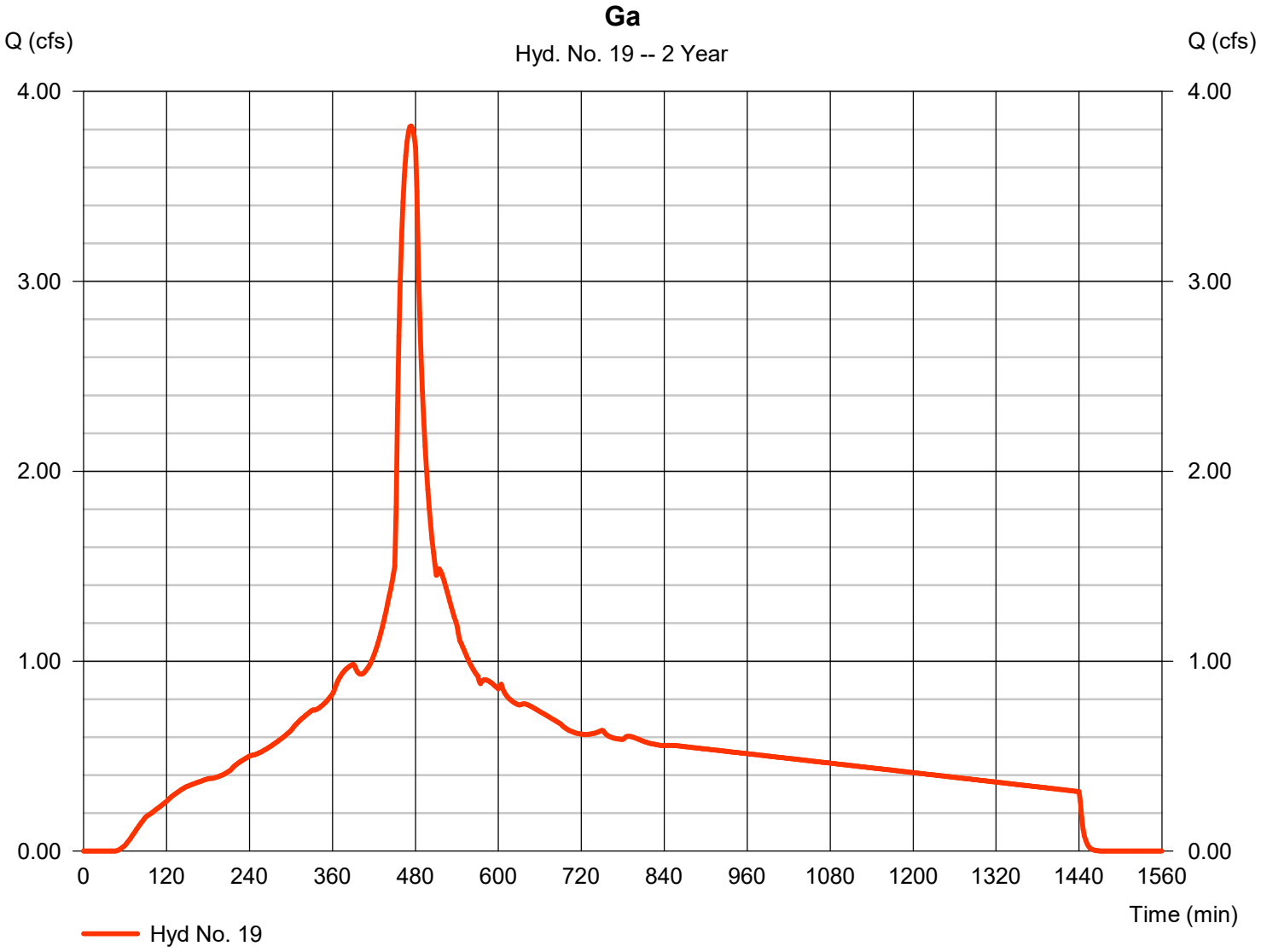


Hydrograph Report

Hyd. No. 19

Ga

Hydrograph type	=	SBUH Runoff	Peak discharge	=	3.818 cfs
Storm frequency	=	2 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	54,837 cuft
Drainage area	=	5.880 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.80 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

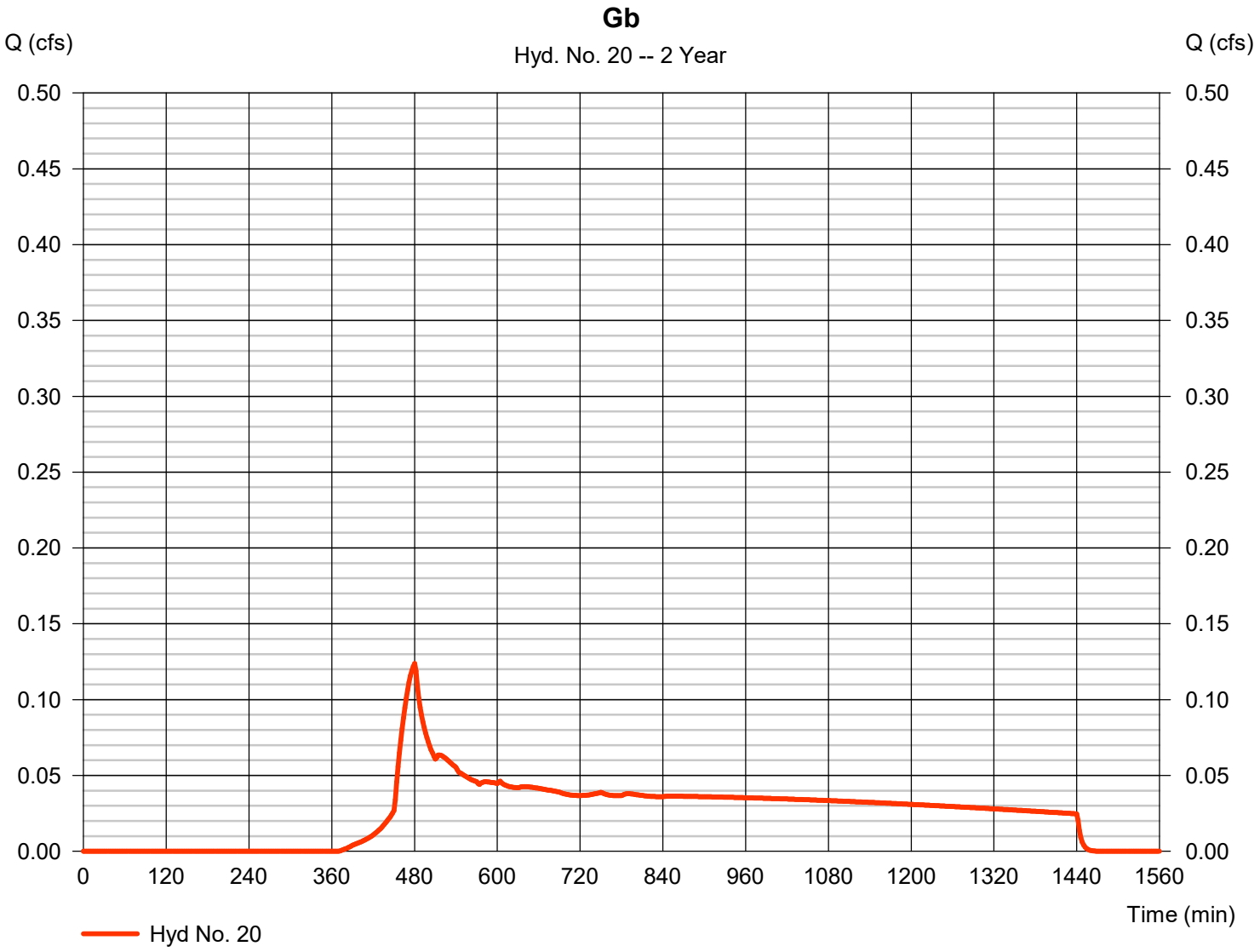


Hydrograph Report

Hyd. No. 20

Gb

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.124 cfs
Storm frequency	=	2 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	2,341 cuft
Drainage area	=	0.690 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.80 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

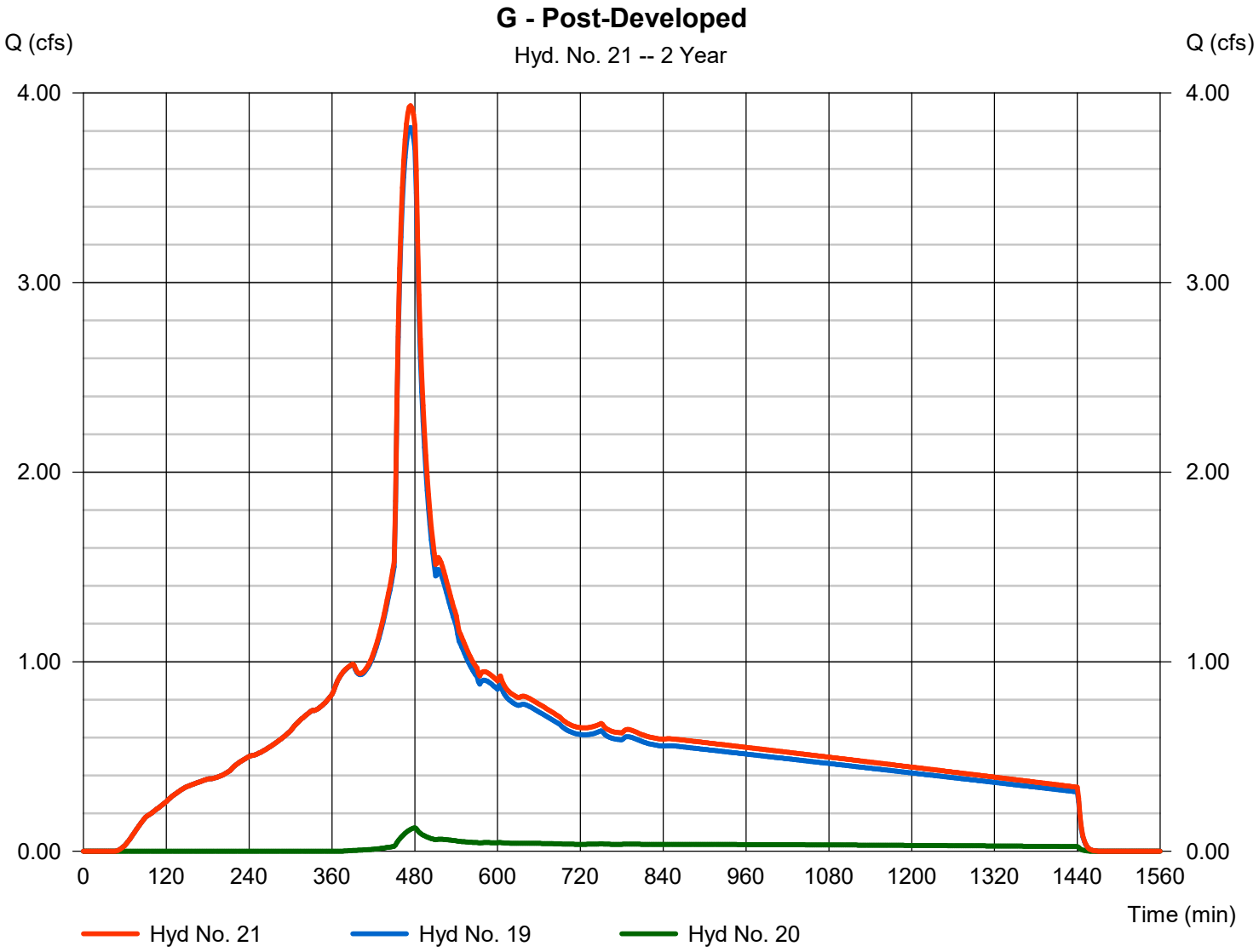


Hydrograph Report

Hyd. No. 21

G - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 3.934 cfs
Storm frequency	= 2 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 57,179 cuft
Inflow hyds.	= 19, 20	Contrib. drain. area	= 6.570 ac

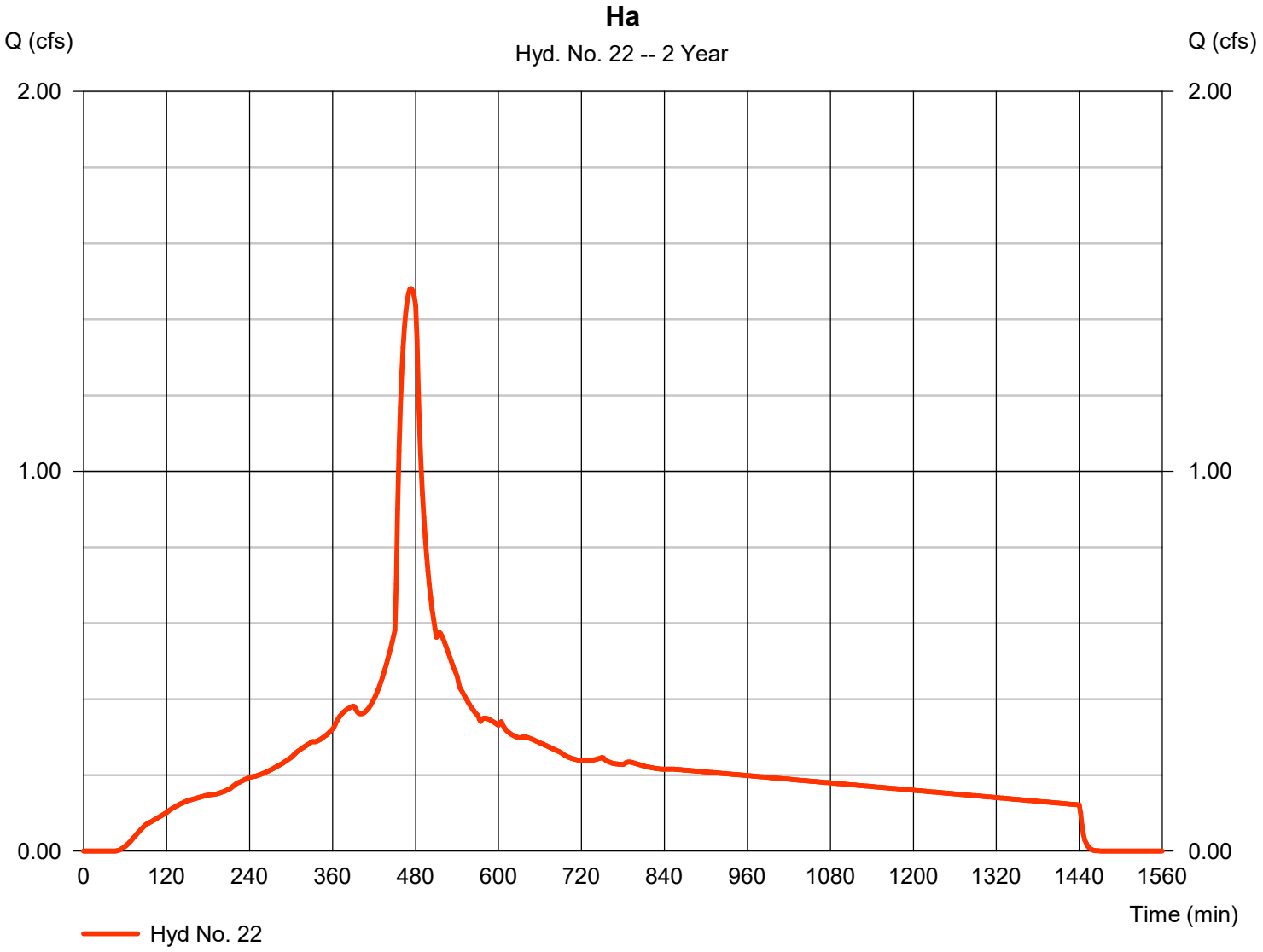


Hydrograph Report

Hyd. No. 22

Ha

Hydrograph type	=	SBUH Runoff	Peak discharge	=	1.481 cfs
Storm frequency	=	2 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	21,263 cuft
Drainage area	=	2.280 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.80 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

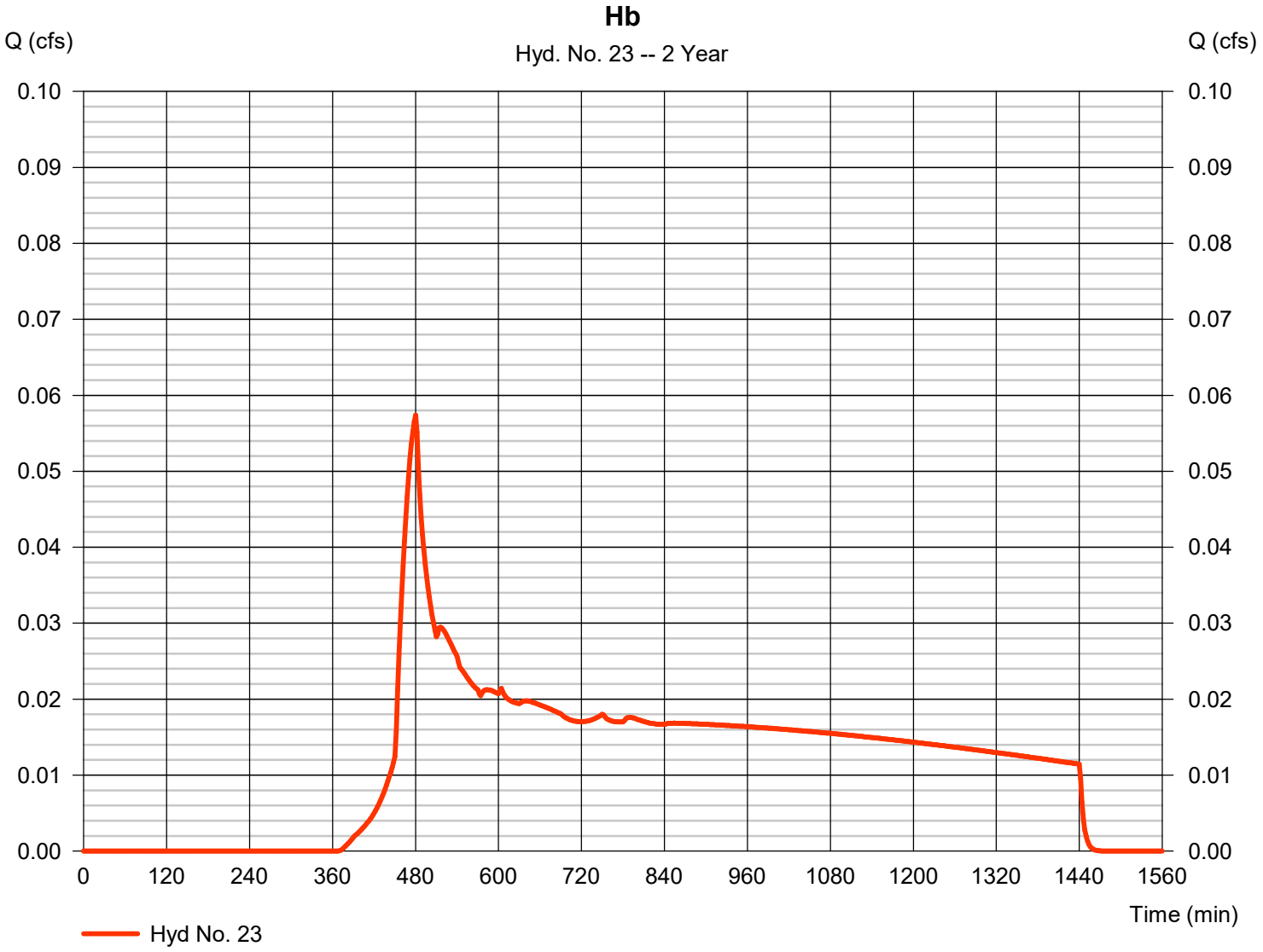


Hydrograph Report

Hyd. No. 23

Hb

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.057 cfs
Storm frequency	=	2 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	1,086 cuft
Drainage area	=	0.320 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.80 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

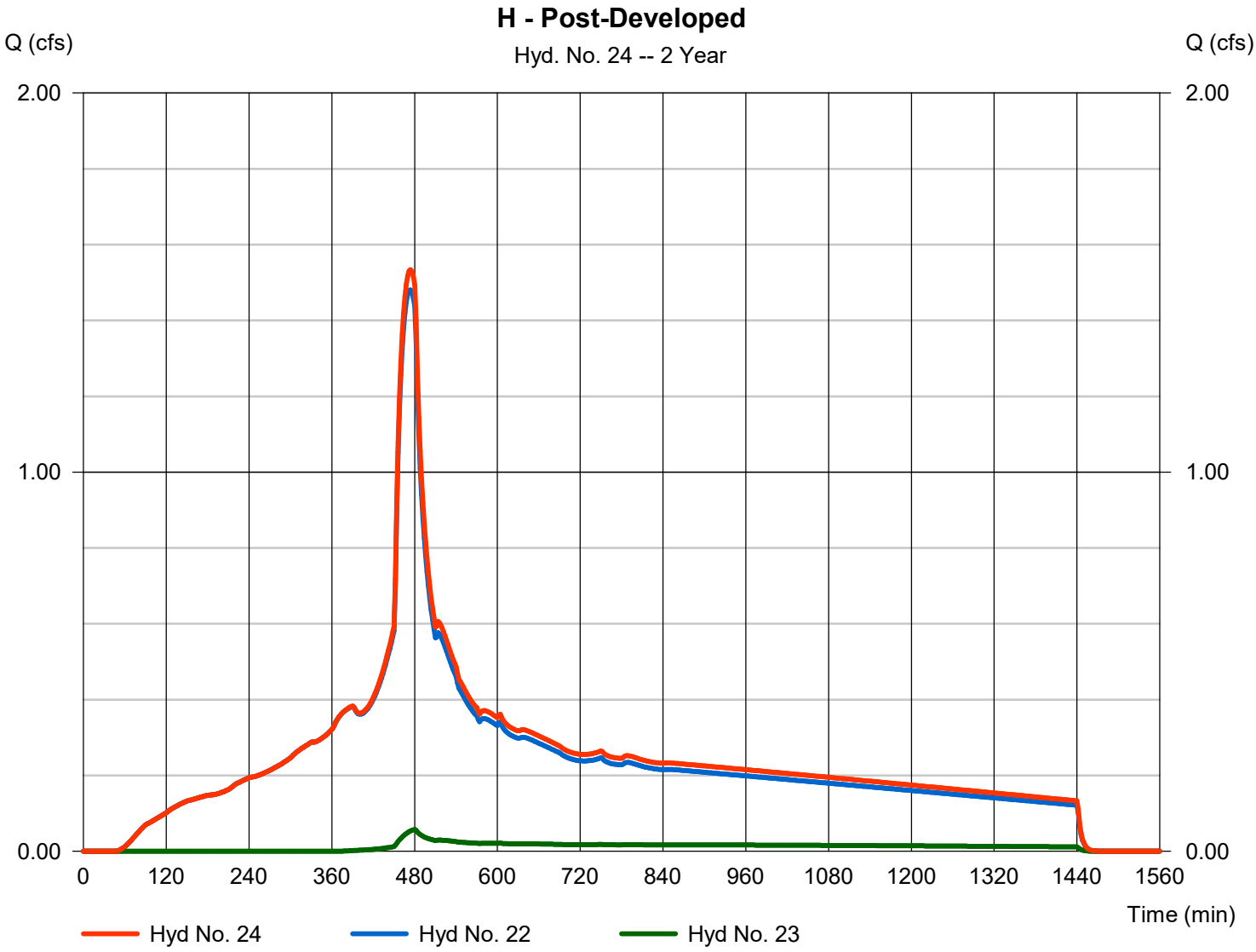


Hydrograph Report

Hyd. No. 24

H - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 1.534 cfs
Storm frequency	= 2 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 22,349 cuft
Inflow hyds.	= 22, 23	Contrib. drain. area	= 2.600 ac

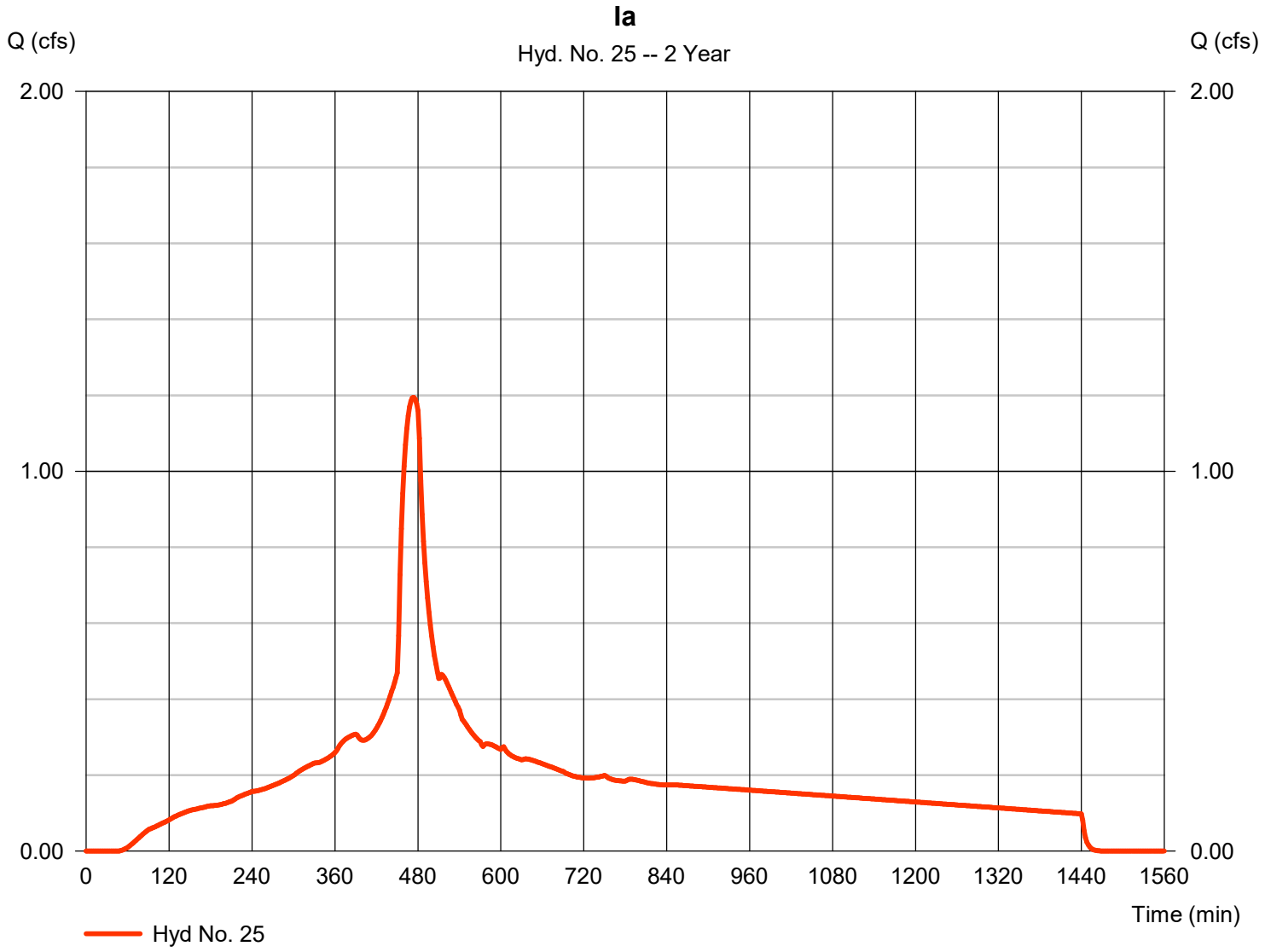


Hydrograph Report

Hyd. No. 25

Ia

Hydrograph type	=	SBUH Runoff	Peak discharge	=	1.195 cfs
Storm frequency	=	2 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	17,160 cuft
Drainage area	=	1.840 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.80 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

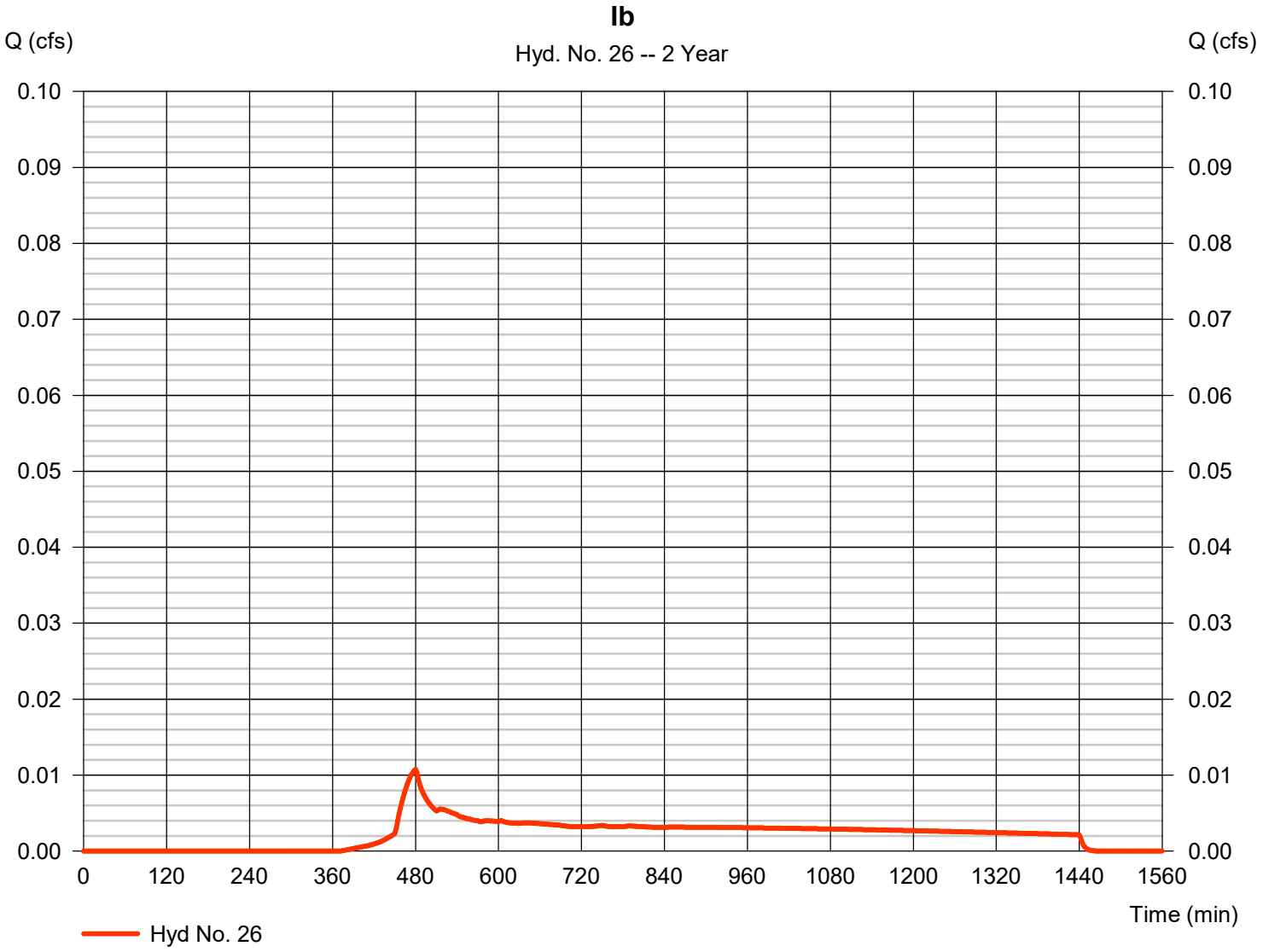


Hydrograph Report

Hyd. No. 26

Ib

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.011 cfs
Storm frequency	=	2 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	204 cuft
Drainage area	=	0.060 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.80 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

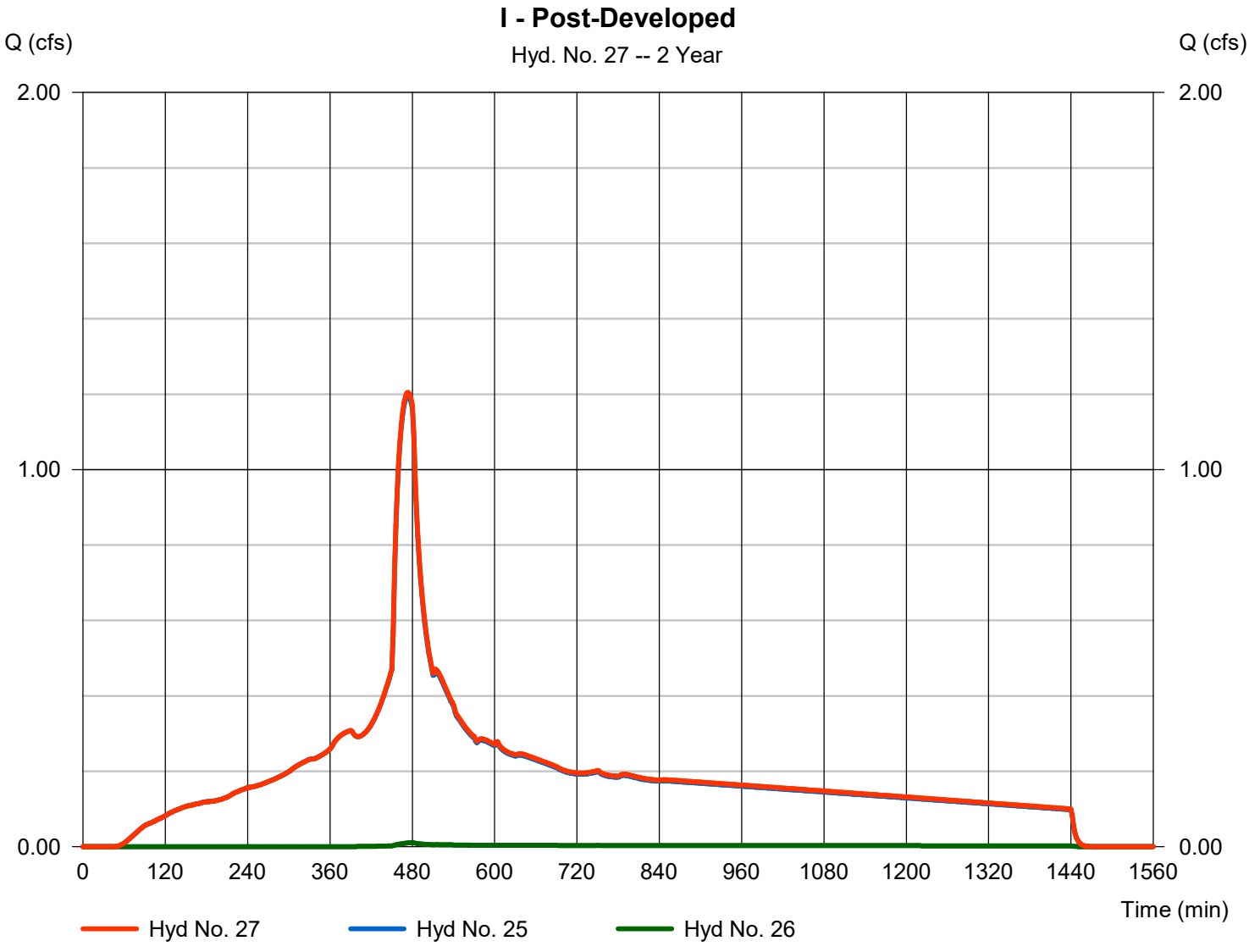


Hydrograph Report

Hyd. No. 27

I - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 1.205 cfs
Storm frequency	= 2 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 17,364 cuft
Inflow hyds.	= 25, 26	Contrib. drain. area	= 1.900 ac

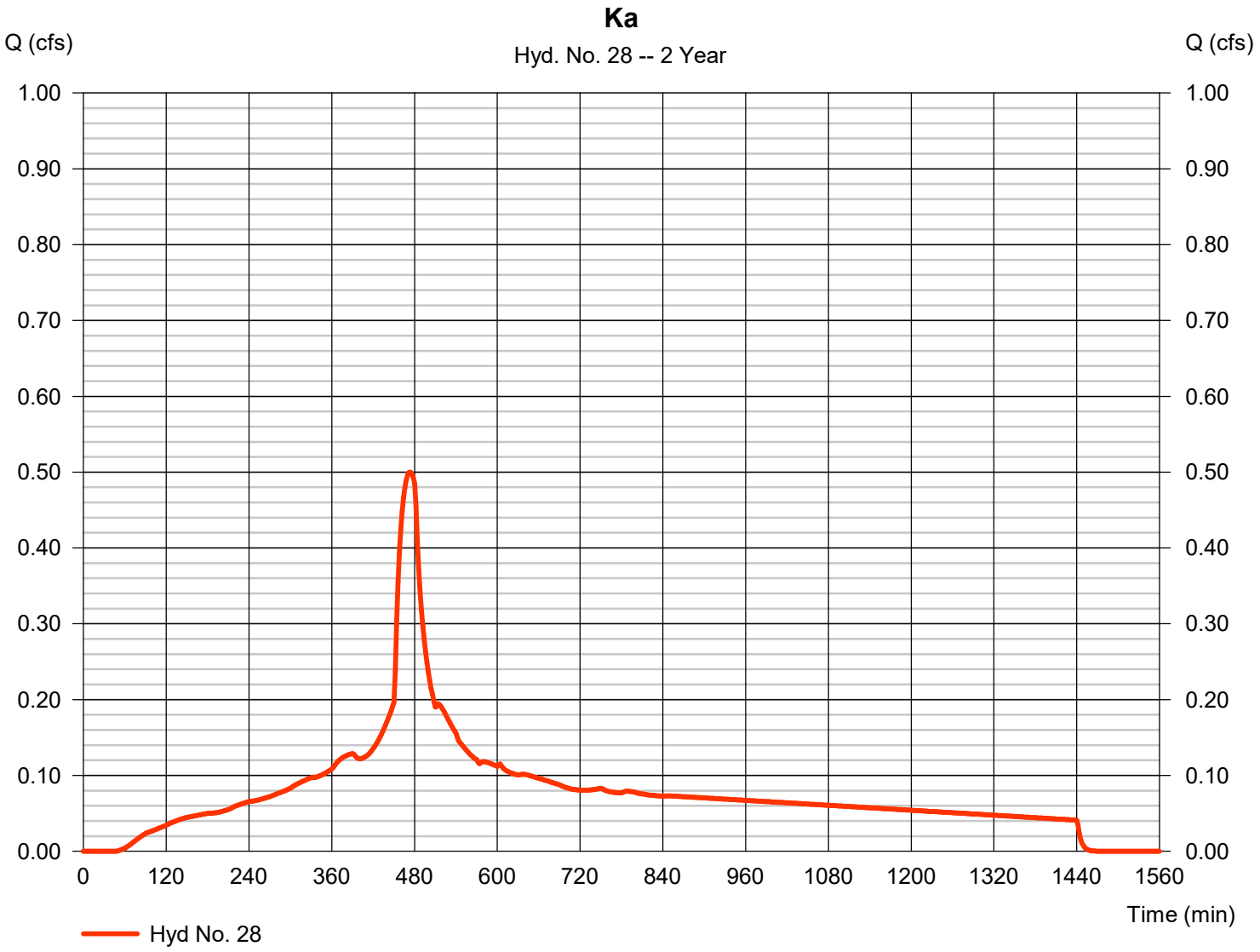


Hydrograph Report

Hyd. No. 28

Ka

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.500 cfs
Storm frequency	=	2 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	7,181 cuft
Drainage area	=	0.770 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.80 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

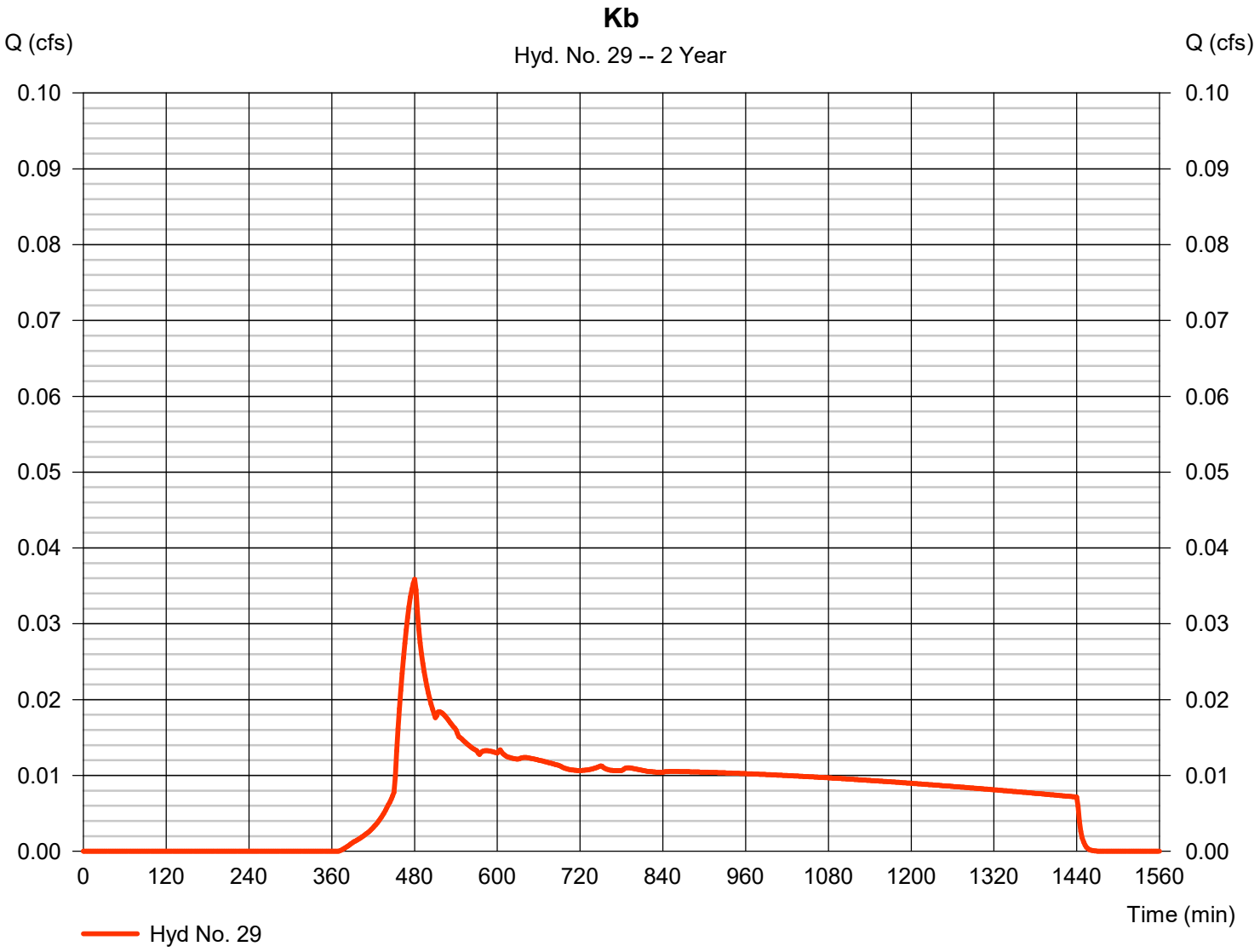


Hydrograph Report

Hyd. No. 29

Kb

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.036 cfs
Storm frequency	=	2 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	679 cuft
Drainage area	=	0.200 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.80 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

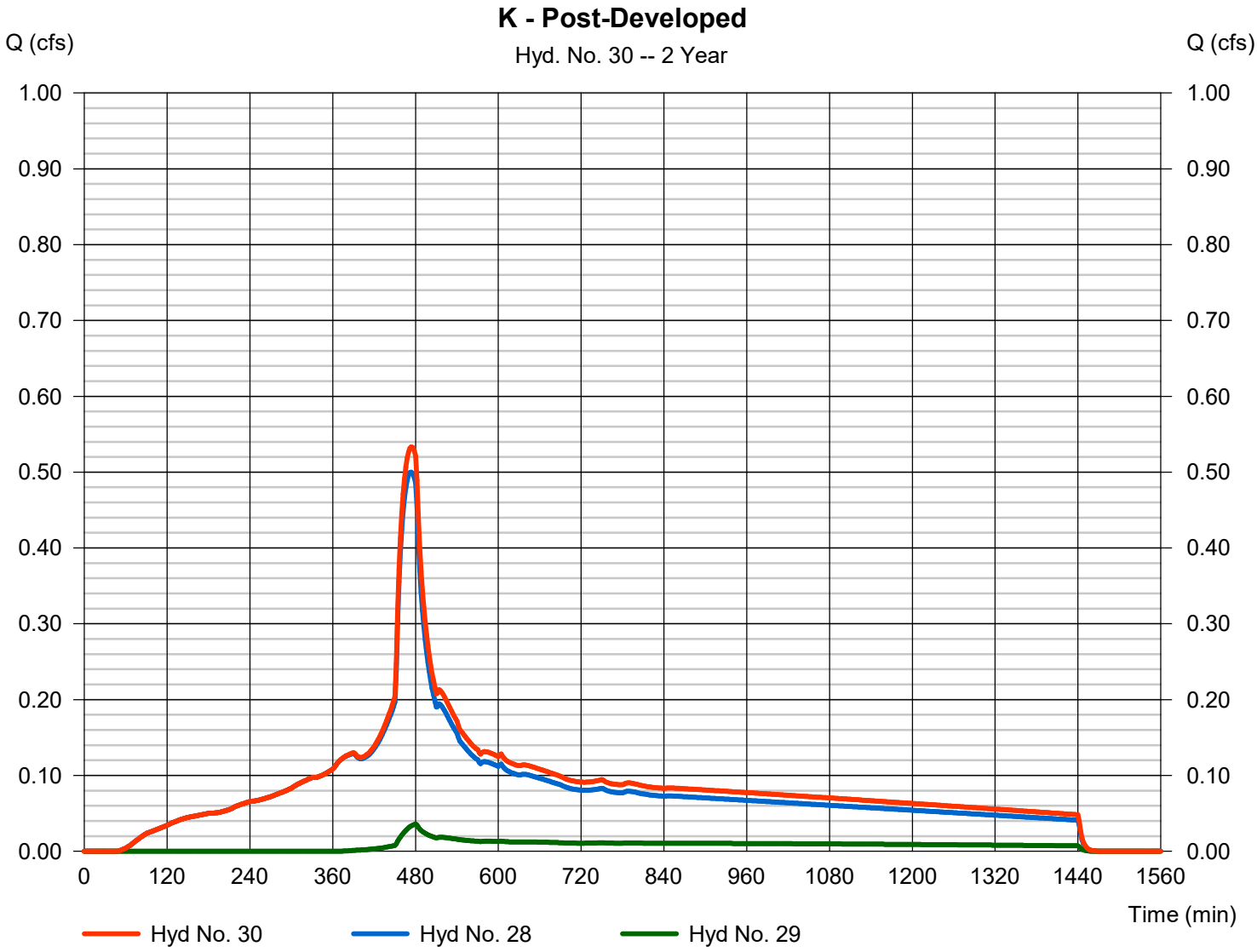


Hydrograph Report

Hyd. No. 30

K - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 0.534 cfs
Storm frequency	= 2 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 7,860 cuft
Inflow hyds.	= 28, 29	Contrib. drain. area	= 0.970 ac

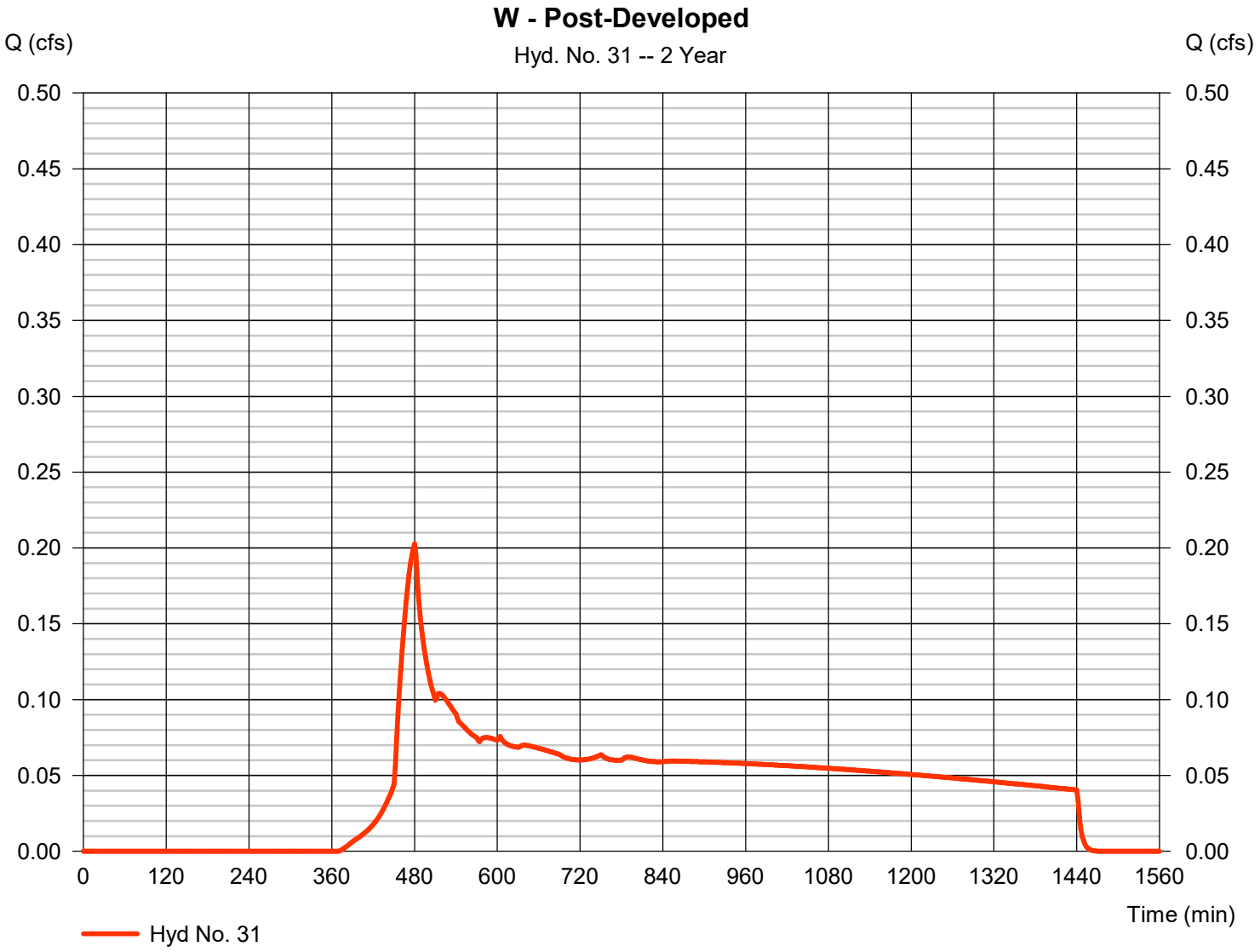


Hydrograph Report

Hyd. No. 31

W - Post-Developed

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.203 cfs
Storm frequency	= 2 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 3,835 cuft
Drainage area	= 1.130 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.80 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



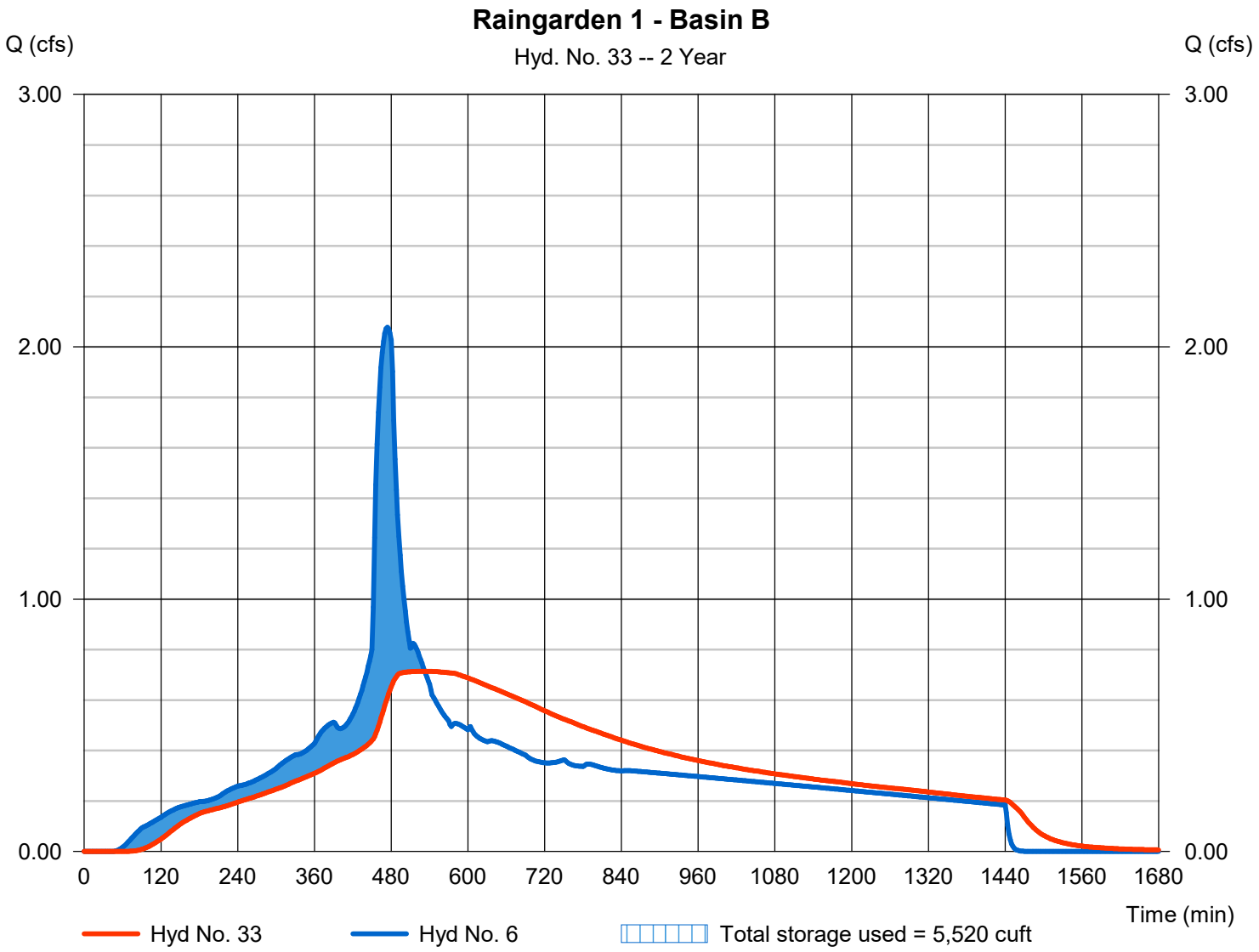
Hydrograph Report

Hyd. No. 33

Raingarden 1 - Basin B

Hydrograph type	=	Reservoir	Peak discharge	=	0.714 cfs
Storm frequency	=	2 yrs	Time to peak	=	532 min
Time interval	=	2 min	Hyd. volume	=	30,432 cuft
Inflow hyd. No.	=	6 - B - Post-Developed	Max. Elevation	=	40.86 ft
Reservoir name	=	Raingarden B	Max. Storage	=	5,520 cuft

Storage Indication method used.



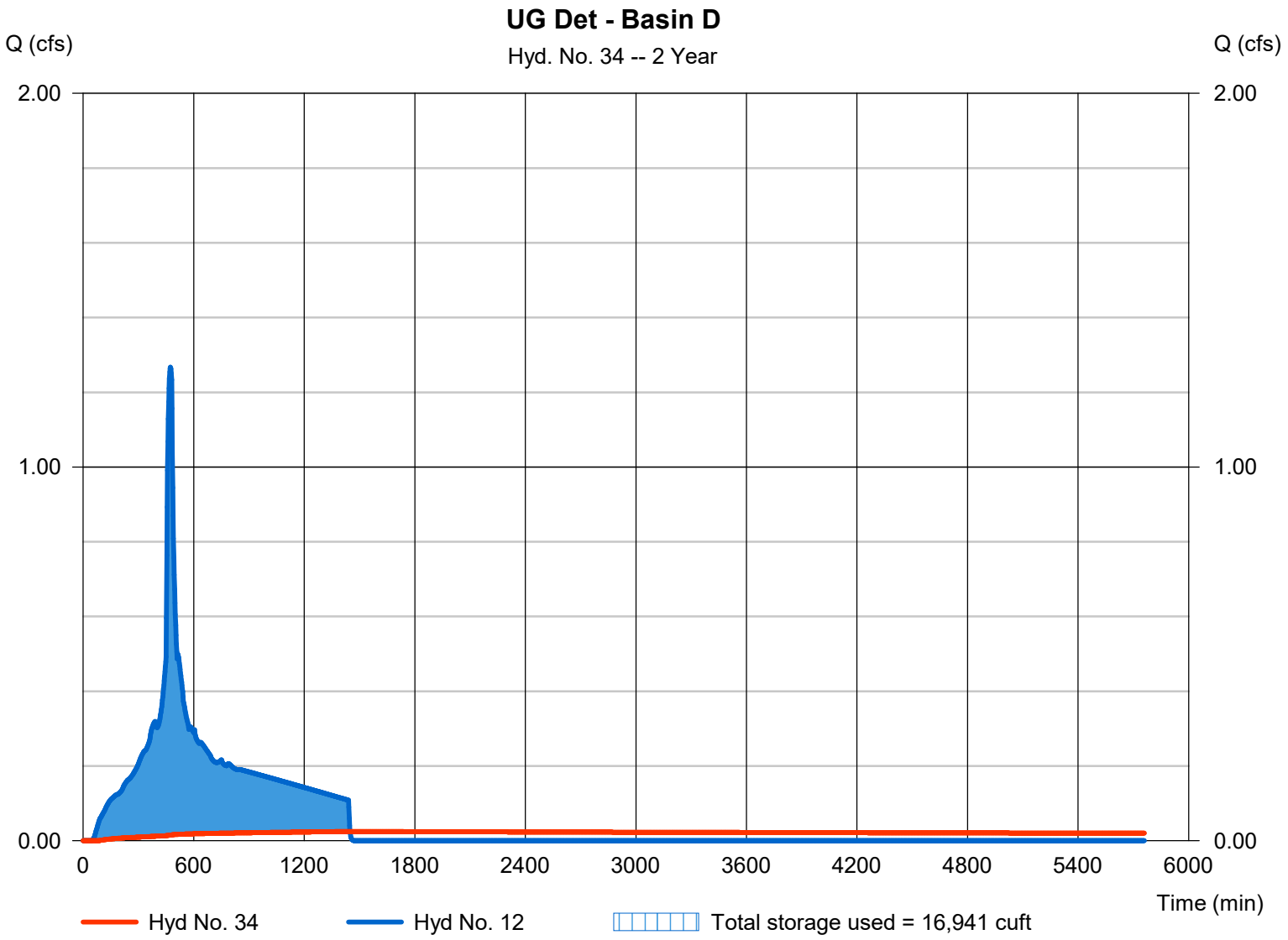
Hydrograph Report

Hyd. No. 34

UG Det - Basin D

Hydrograph type	=	Reservoir	Peak discharge	=	0.025 cfs
Storm frequency	=	2 yrs	Time to peak	=	1448 min
Time interval	=	2 min	Hyd. volume	=	7,168 cuft
Inflow hyd. No.	=	12 - D - Post-Developed	Max. Elevation	=	58.60 ft
Reservoir name	=	Basin D Detention	Max. Storage	=	16,941 cuft

Storage Indication method used.



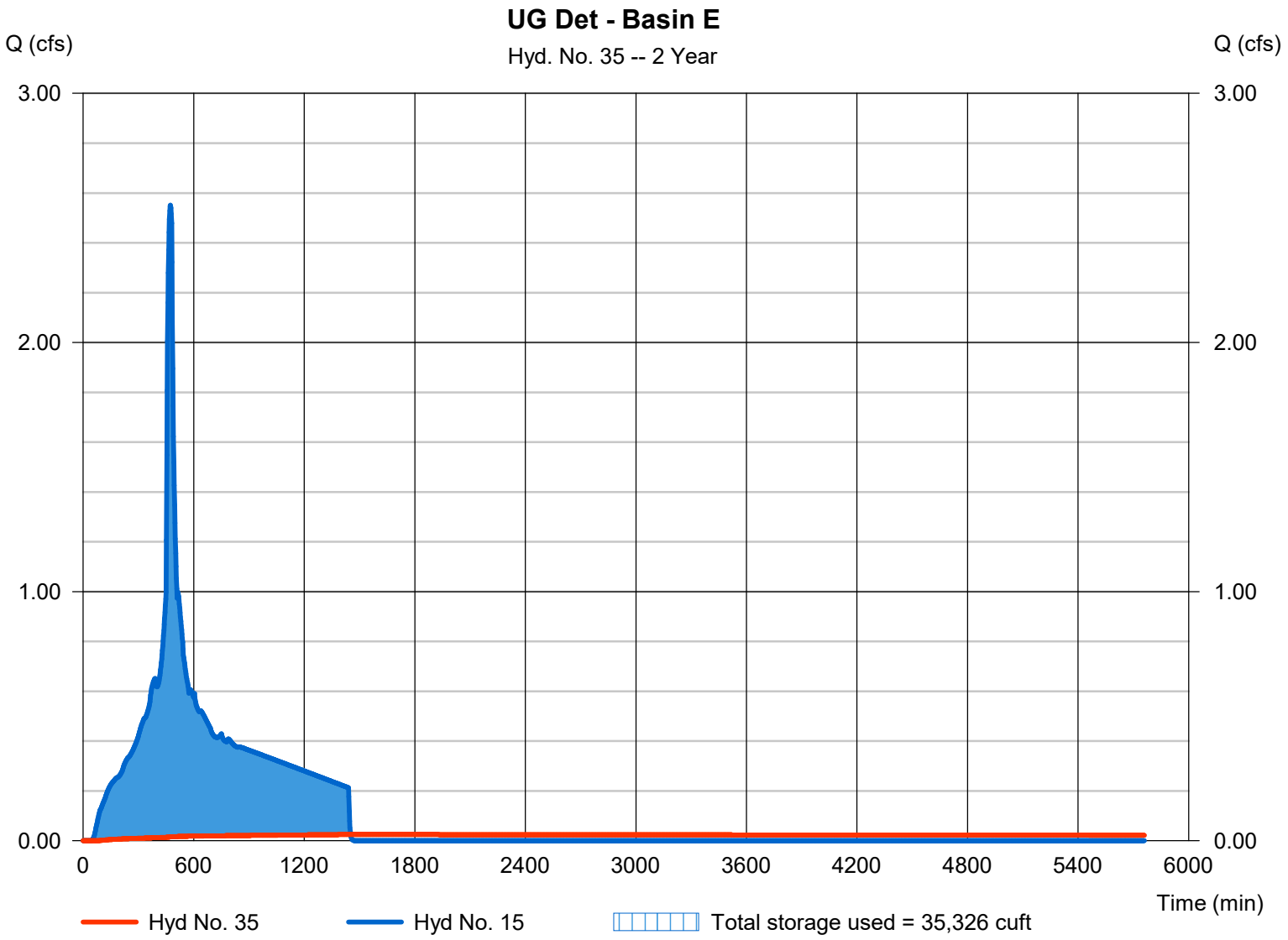
Hydrograph Report

Hyd. No. 35

UG Det - Basin E

Hydrograph type	= Reservoir	Peak discharge	= 0.025 cfs
Storm frequency	= 2 yrs	Time to peak	= 1452 min
Time interval	= 2 min	Hyd. volume	= 7,495 cuft
Inflow hyd. No.	= 15 - E - Post-Developed	Max. Elevation	= 103.84 ft
Reservoir name	= Basin E Detention	Max. Storage	= 35,326 cuft

Storage Indication method used.



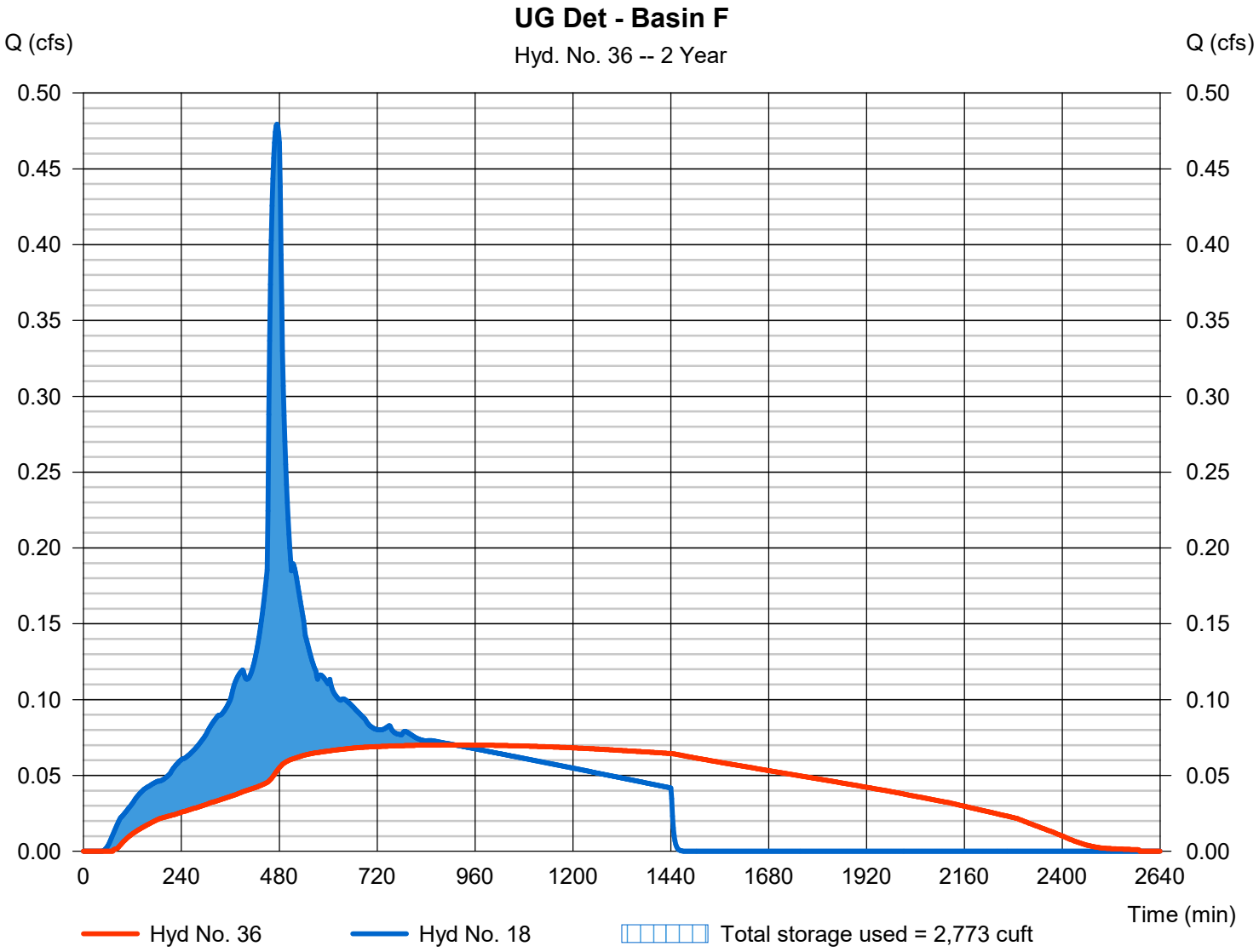
Hydrograph Report

Hyd. No. 36

UG Det - Basin F

Hydrograph type	=	Reservoir	Peak discharge	=	0.070 cfs
Storm frequency	=	2 yrs	Time to peak	=	912 min
Time interval	=	2 min	Hyd. volume	=	6,987 cuft
Inflow hyd. No.	=	18 - F - Post-Developed	Max. Elevation	=	103.56 ft
Reservoir name	=	Basin F Detention	Max. Storage	=	2,773 cuft

Storage Indication method used.



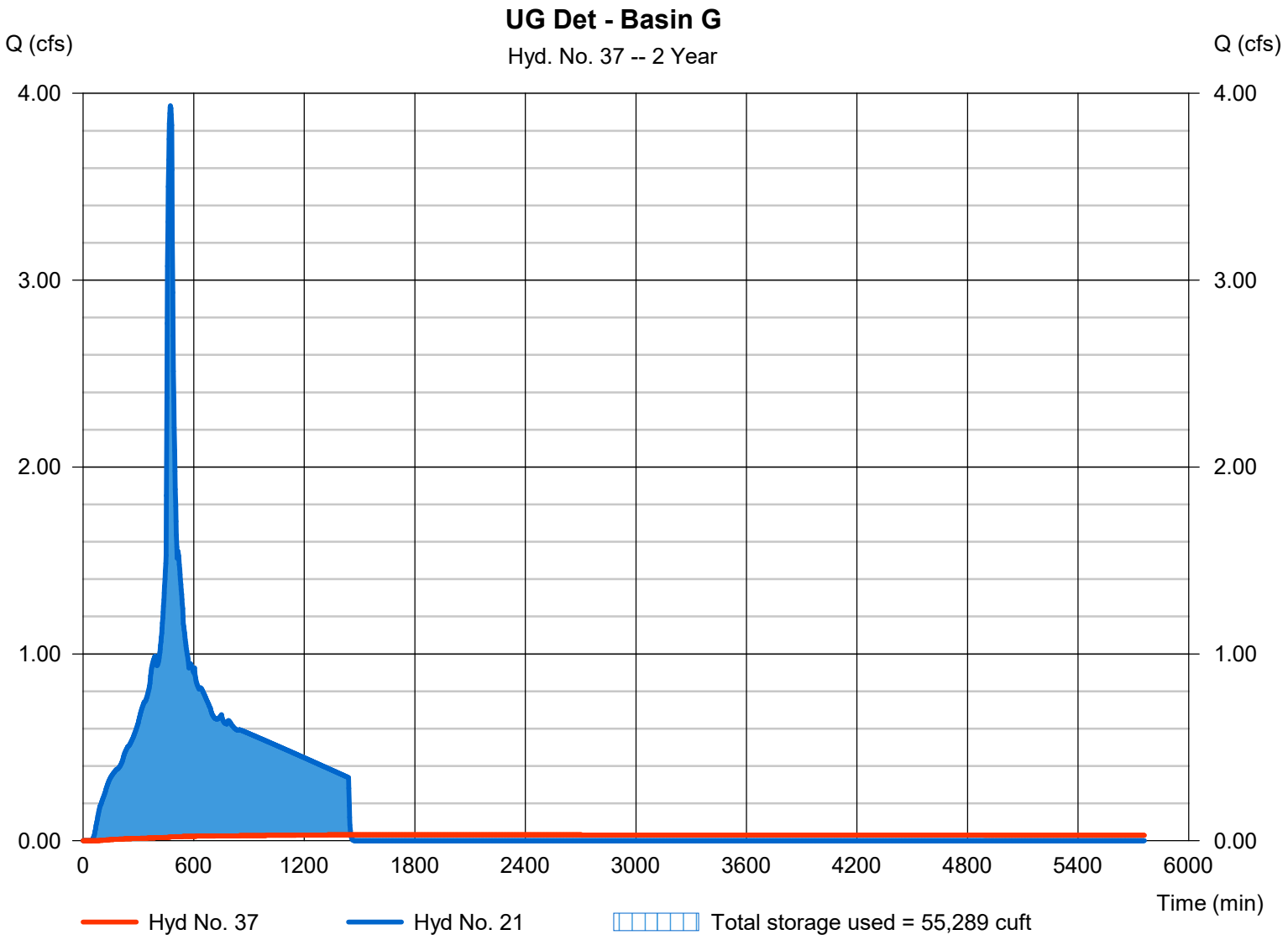
Hydrograph Report

Hyd. No. 37

UG Det - Basin G

Hydrograph type	=	Reservoir	Peak discharge	=	0.032 cfs
Storm frequency	=	2 yrs	Time to peak	=	1452 min
Time interval	=	2 min	Hyd. volume	=	9,792 cuft
Inflow hyd. No.	=	21 - G - Post-Developed	Max. Elevation	=	103.78 ft
Reservoir name	=	Basin G Detention	Max. Storage	=	55,289 cuft

Storage Indication method used.



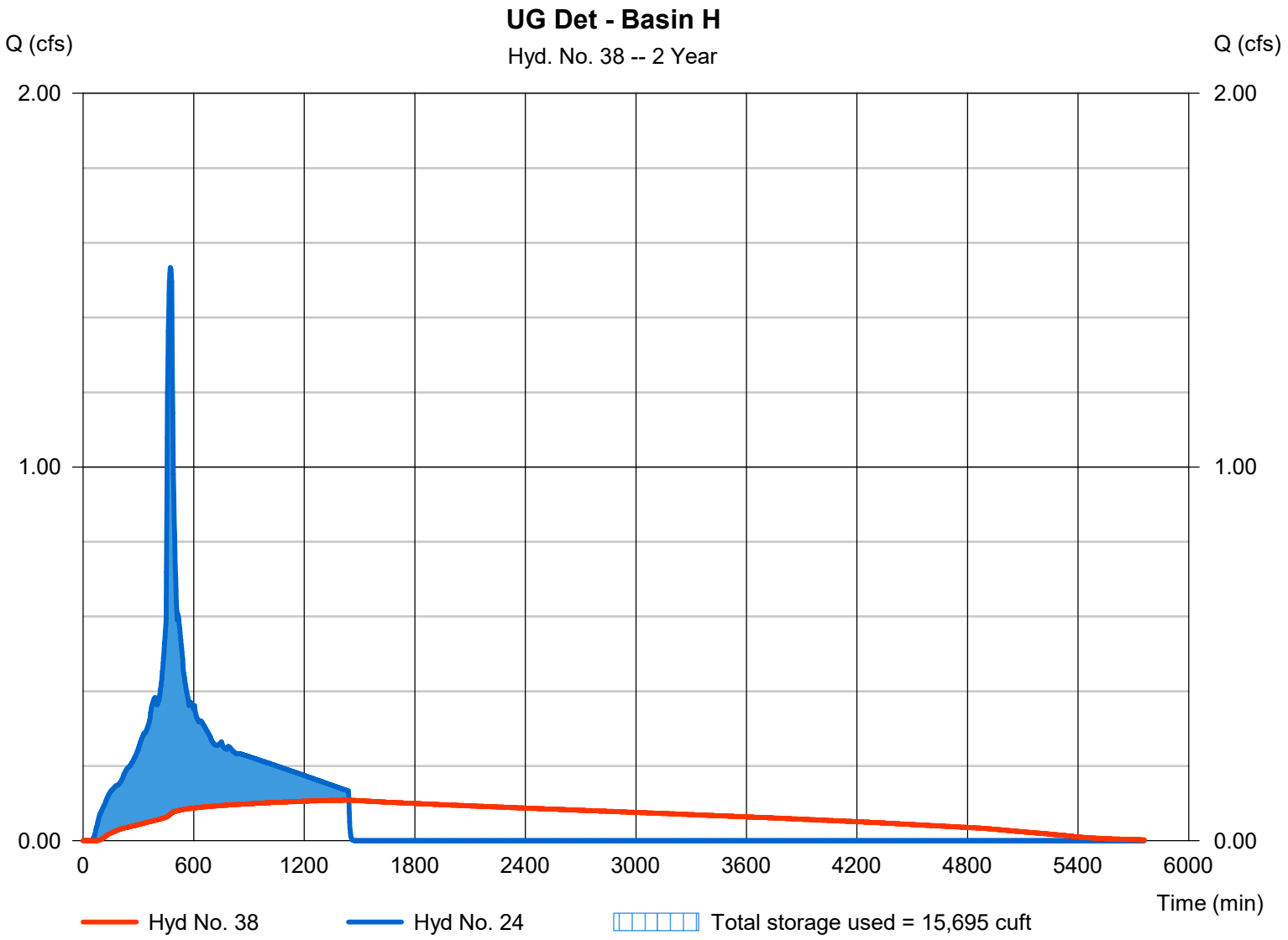
Hydrograph Report

Hyd. No. 38

UG Det - Basin H

Hydrograph type	=	Reservoir	Peak discharge	=	0.109 cfs
Storm frequency	=	2 yrs	Time to peak	=	1442 min
Time interval	=	2 min	Hyd. volume	=	22,258 cuft
Inflow hyd. No.	=	24 - H - Post-Developed	Max. Elevation	=	103.53 ft
Reservoir name	=	Basin H Detention	Max. Storage	=	15,695 cuft

Storage Indication method used.



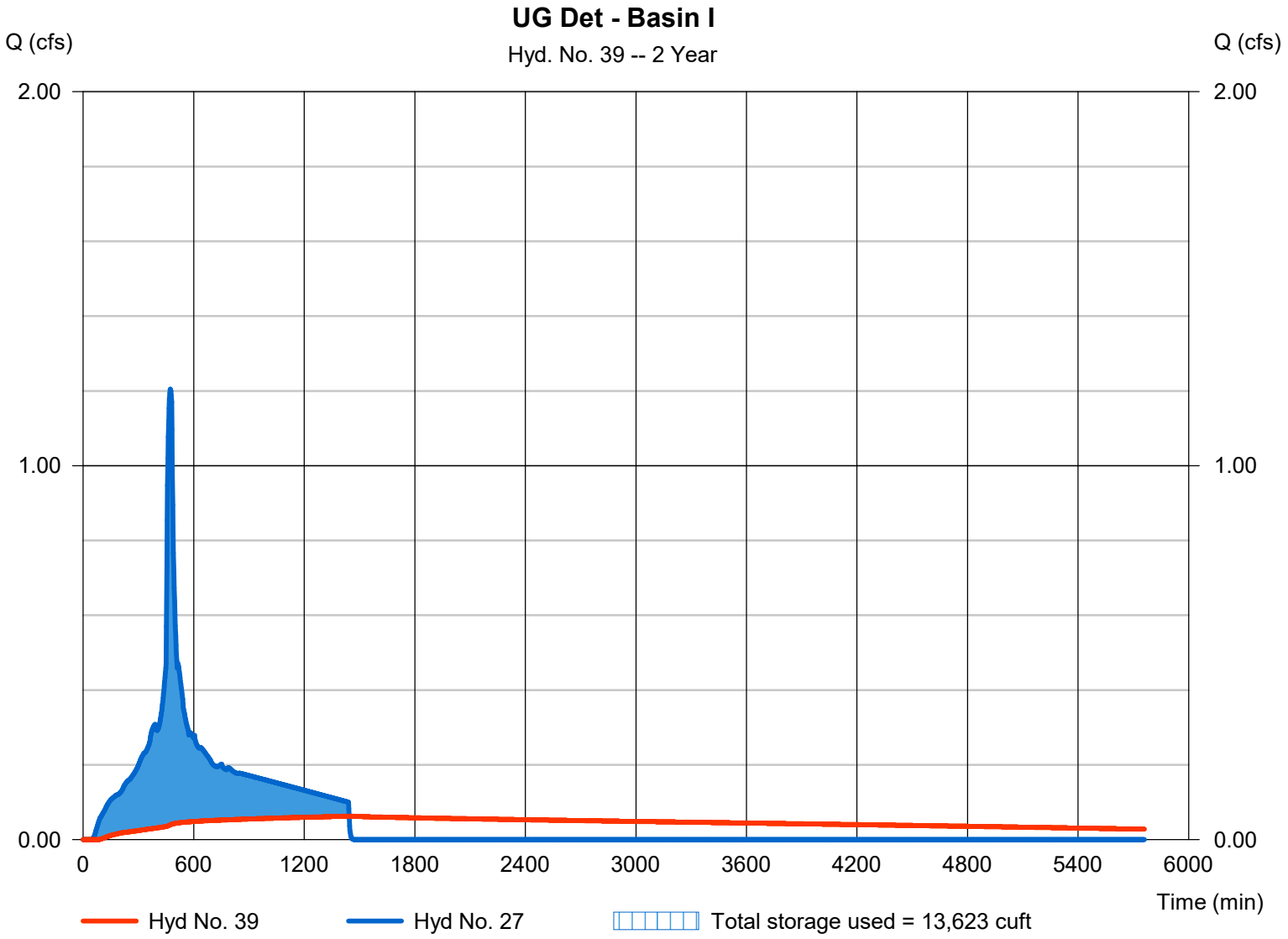
Hydrograph Report

Hyd. No. 39

UG Det - Basin I

Hydrograph type	=	Reservoir	Peak discharge	=	0.063 cfs
Storm frequency	=	2 yrs	Time to peak	=	1444 min
Time interval	=	2 min	Hyd. volume	=	15,249 cuft
Inflow hyd. No.	=	27 - I - Post-Developed	Max. Elevation	=	102.87 ft
Reservoir name	=	Basin I Detention	Max. Storage	=	13,623 cuft

Storage Indication method used.



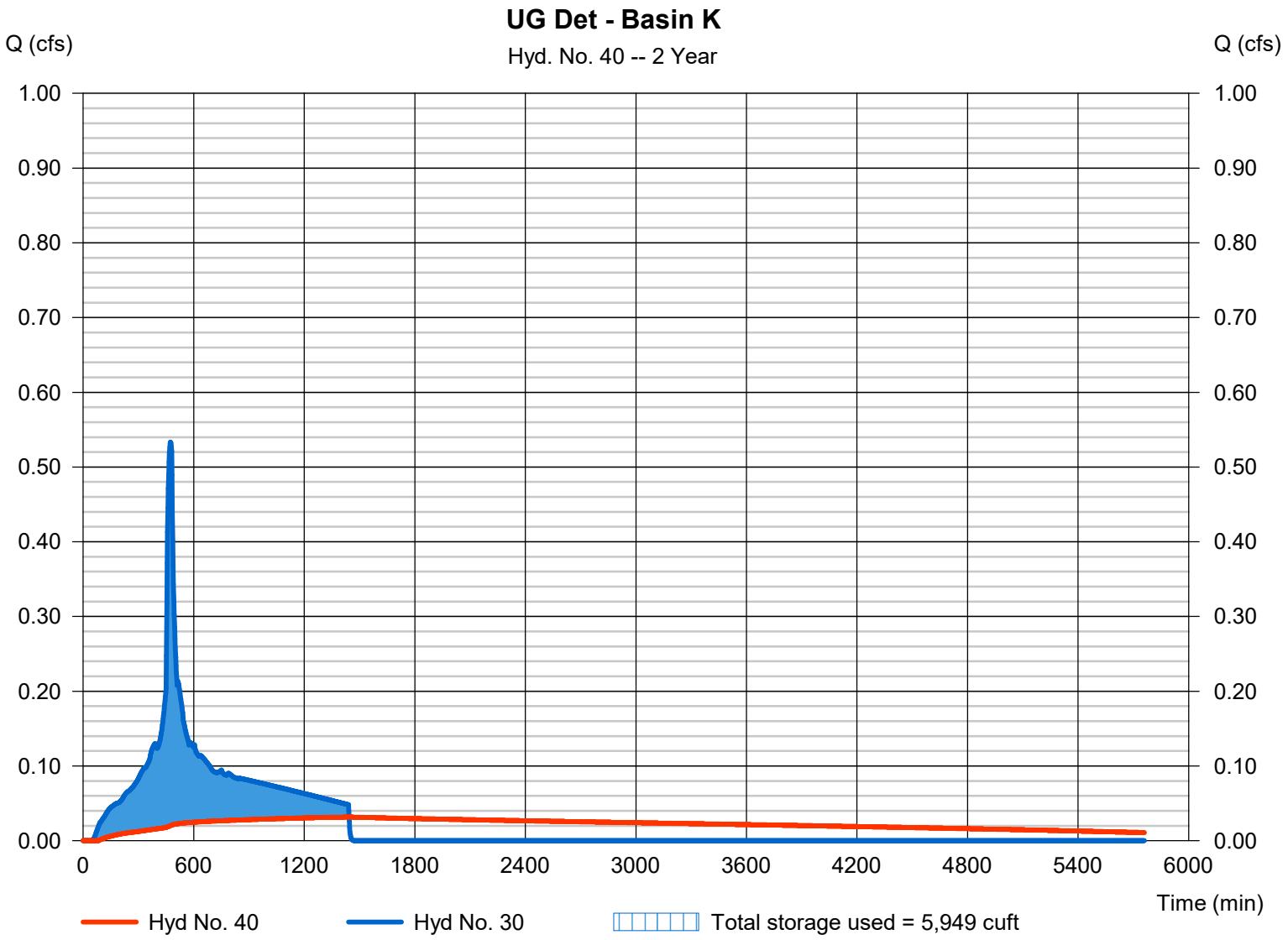
Hydrograph Report

Hyd. No. 40

UG Det - Basin K

Hydrograph type	=	Reservoir	Peak discharge	=	0.032 cfs
Storm frequency	=	2 yrs	Time to peak	=	1444 min
Time interval	=	2 min	Hyd. volume	=	7,446 cuft
Inflow hyd. No.	=	30 - K - Post-Developed	Max. Elevation	=	103.63 ft
Reservoir name	=	Basin K Detention	Max. Storage	=	5,949 cuft

Storage Indication method used.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SBUH Runoff	1.048	2	480	16,956	------	------	------	Aa
2	SBUH Runoff	0.084	2	482	1,662	------	------	------	Ab
3	Combine	1.132	2	480	18,618	1, 2	------	------	A - Post-Developed
4	SBUH Runoff	2.491	2	474	36,046	------	------	------	Ba
5	SBUH Runoff	0.191	2	480	3,219	------	------	------	Bb
6	Combine	2.674	2	474	39,266	4, 5	------	------	B - Post-Developed
7	SBUH Runoff	1.638	2	474	23,715	------	------	------	Ca
8	SBUH Runoff	0.080	2	480	1,350	------	------	------	Cb
9	Combine	1.715	2	474	25,065	7, 8	------	------	C- Post-Developed
10	SBUH Runoff	1.557	2	474	22,529	------	------	------	Da
11	SBUH Runoff	0.061	2	480	1,039	------	------	------	Db
12	Combine	1.616	2	474	23,567	10, 11	------	------	D - Post-Developed
13	SBUH Runoff	3.187	2	474	46,125	------	------	------	Ea
14	SBUH Runoff	0.046	2	480	779	------	------	------	Eb
15	Combine	3.231	2	474	46,904	13, 14	------	------	E - Post-Developed
16	SBUH Runoff	0.582	2	474	8,419	------	------	------	Fa
17	SBUH Runoff	0.034	2	480	571	------	------	------	Fb
18	Combine	0.614	2	474	8,990	16, 17	------	------	F - Post-Developed
19	SBUH Runoff	4.817	2	474	69,721	------	------	------	Ga
20	SBUH Runoff	0.212	2	480	3,583	------	------	------	Gb
21	Combine	5.021	2	474	73,304	19, 20	------	------	G - Post-Developed
22	SBUH Runoff	1.868	2	474	27,035	------	------	------	Ha
23	SBUH Runoff	0.098	2	480	1,662	------	------	------	Hb
24	Combine	1.962	2	474	28,696	22, 23	------	------	H - Post-Developed
25	SBUH Runoff	1.507	2	474	21,817	------	------	------	Ia
26	SBUH Runoff	0.018	2	480	312	------	------	------	Ib
27	Combine	1.525	2	474	22,129	25, 26	------	------	I - Post-Developed
28	SBUH Runoff	0.631	2	474	9,130	------	------	------	Ka
29	SBUH Runoff	0.061	2	480	1,039	------	------	------	Kb
30	Combine	0.690	2	474	10,169	28, 29	------	------	K - Post-Developed
31	SBUH Runoff	0.347	2	480	5,868	------	------	------	W - Post-Developed
33	Reservoir	0.766	2	550	39,243	6	41.32	8,029	Raingarden 1 - Basin B
34	Reservoir	0.220	2	976	12,153	12	58.75	17,279	UG Det - Basin D

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
35	Reservoir	0.422	2	1000	17,517	15	103.93	35,778	UG Det - Basin E
36	Reservoir	0.238	2	518	8,982	18	103.85	2,896	UG Det - Basin F
37	Reservoir	0.658	2	1024	25,689	21	103.91	56,234	UG Det - Basin G
38	Reservoir	0.295	2	852	28,582	24	103.90	16,607	UG Det - Basin H
39	Reservoir	0.222	2	860	19,972	27	102.94	13,797	UG Det - Basin I
40	Reservoir	0.106	2	866	9,695	30	103.87	6,144	UG Det - Basin K

Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.2000	0.1000	0.0000	--------
2	71.8477	13.3000	0.8718	--------
3	0.0000	0.0000	0.0000	--------
5	75.7517	14.2000	0.8271	--------
10	86.7192	15.3000	0.8244	--------
25	103.3028	16.6000	0.8227	--------
50	116.5747	17.3000	0.8234	--------
100	124.5731	17.6000	0.8144	--------

File name: WQ Rational.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
2	5.70	4.62	3.90	3.38	2.99	2.69	2.45	2.24	2.08	1.93	1.81	1.70
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.58	5.43	4.65	4.08	3.64	3.30	3.02	2.79	2.59	2.42	2.28	2.15
10	7.25	6.05	5.21	4.59	4.12	3.74	3.43	3.17	2.95	2.77	2.60	2.46
25	8.25	6.95	6.03	5.34	4.81	4.38	4.03	3.73	3.48	3.26	3.08	2.91
50	9.05	7.66	6.67	5.92	5.34	4.87	4.48	4.16	3.88	3.64	3.43	3.25
100	9.83	8.35	7.30	6.49	5.87	5.36	4.94	4.59	4.29	4.03	3.80	3.60

Tc = time in minutes. Values may exceed 60.

ortland\LRS (LRS Architects)\LRS-20 (OC Entertainment)\LRS20-DOCS\Reports\Stormwater\CALCS\OC PRECIP.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	1.00	2.80	1.20	3.50	3.50	4.40	0.00	6.48
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SBUH Runoff	1.415	2	474	19,839	------	------	------	Ja
2	SBUH Runoff	0.001	2	1236	38	------	------	------	Jb
3	Combine	1.415	2	474	19,877	1, 2	------	------	J - Post-Developed
4	SBUH Runoff	0.328	2	474	4,594	------	------	------	La
5	SBUH Runoff	0.001	2	1236	21	------	------	------	Lb
6	Combine	0.328	2	474	4,614	4, 5	------	------	L - Post-Developed
7	SBUH Runoff	0.342	2	474	4,795	------	------	------	Ma
8	SBUH Runoff	0.001	2	1236	23	------	------	------	Mb
9	Combine	0.342	2	474	4,817	7, 8	------	------	M - Post-Developed
10	SBUH Runoff	0.285	2	474	3,991	------	------	------	Na
11	SBUH Runoff	0.001	2	1236	19	------	------	------	Nb
12	Combine	0.285	2	474	4,010	10, 11	------	------	N - Post-Developed
13	SBUH Runoff	1.613	2	474	22,623	------	------	------	Oa
14	SBUH Runoff	0.002	2	1236	75	------	------	------	Ob
15	Combine	1.613	2	474	22,698	13, 14	------	------	O - Post-Developed
16	SBUH Runoff	0.729	2	474	10,221	------	------	------	Pa
17	SBUH Runoff	0.001	2	1236	31	------	------	------	Pb
18	Combine	0.729	2	474	10,252	16, 17	------	------	P - Post-Developed
19	SBUH Runoff	0.025	2	474	345	------	------	------	Qa
20	SBUH Runoff	0.001	2	1236	33	------	------	------	Qb
21	Combine	0.025	2	474	377	19, 20	------	------	Q - Post-Developed
22	SBUH Runoff	0.162	2	474	2,268	------	------	------	Ra
23	SBUH Runoff	0.002	2	1236	80	------	------	------	Rb
24	Combine	0.162	2	474	2,348	22, 23	------	------	R - Post-Developed
25	SBUH Runoff	0.005	2	1236	200	------	------	------	S - Post-Developed
26	SBUH Runoff	0.002	2	1236	90	------	------	------	T - Post-Developed
27	SBUH Runoff	0.045	2	474	632	------	------	------	Ua
28	SBUH Runoff	0.001	2	1236	23	------	------	------	Ub
29	Combine	0.045	2	474	654	27, 28	------	------	U - Post-Developed
30	SBUH Runoff	0.049	2	474	689	------	------	------	Va
31	SBUH Runoff	0.001	2	1236	23	------	------	------	Vb
32	Combine	0.049	2	474	712	30, 31	------	------	V - Post-Developed
34	SBUH Runoff	0.042	2	1168	1,816	------	------	------	ex J

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

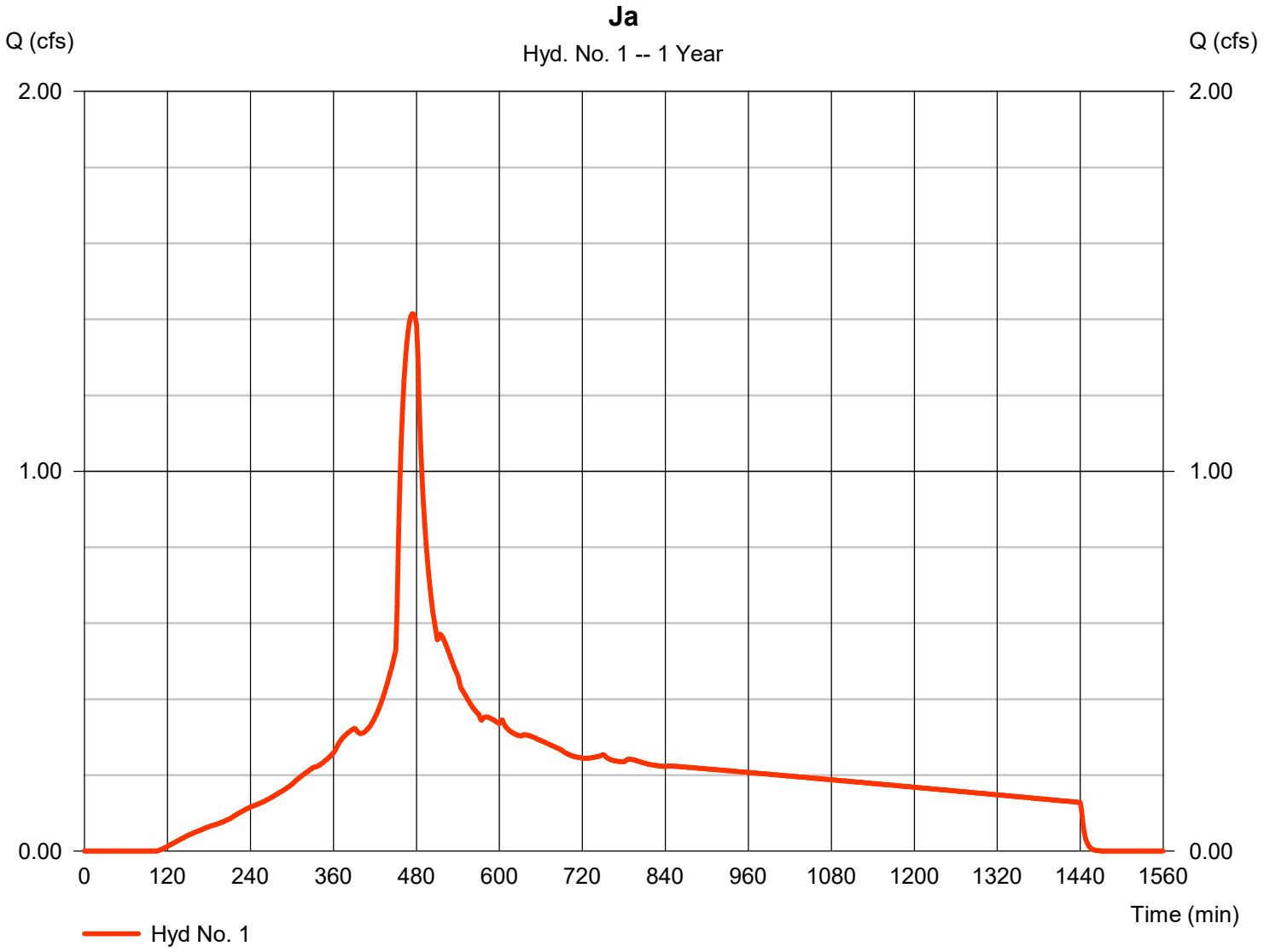
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
35	SBUH Runoff	0.010	2	1168	435	------	------	------	ex L
36	SBUH Runoff	0.011	2	1168	458	------	------	------	ex M
37	SBUH Runoff	0.009	2	1168	385	------	------	------	ex N
38	SBUH Runoff	0.049	2	1168	2,116	------	------	------	ex O
39	SBUH Runoff	0.022	2	1168	958	------	------	------	ex P
40	SBUH Runoff	0.002	2	1168	79	------	------	------	ex Q
41	SBUH Runoff	0.008	2	1168	331	------	------	------	ex R
42	SBUH Runoff	0.007	2	1168	293	------	------	------	ex S
43	SBUH Runoff	0.003	2	1168	132	------	------	------	ex T
44	SBUH Runoff	0.002	2	1168	92	------	------	------	ex U
45	SBUH Runoff	0.002	2	1168	99	------	------	------	ex V
47	Reservoir	0.287	2	664	19,825	3	100.97	5,995	UG Det - Basin J
48	Reservoir	0.042	2	1146	4,587	6	100.97	2,116	UG Det - Basin L
49	Reservoir	0.043	2	1164	4,790	9	101.02	2,242	UG Det - Basin M
50	Reservoir	0.040	2	1040	3,994	12	101.19	1,658	UG Det - Basin N
51	Reservoir	0.330	2	662	21,551	15	54.77	6,742	UG Det - Basin O
52	Reservoir	0.067	2	1440	10,211	18	101.40	6,226	UG Det - Basin P
53	Reservoir	0.093	2	494	2,340	24	29.81	237	Raingarden - Basin R
54	Reservoir	0.033	2	486	653	29	51.30	39.2	Planter - Basin U
55	Reservoir	0.037	2	486	710	32	51.26	41.1	Planter - Basin V

Hydrograph Report

Hyd. No. 1

Ja

Hydrograph type	= SBUH Runoff	Peak discharge	= 1.415 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 19,839 cuft
Drainage area	= 6.910 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

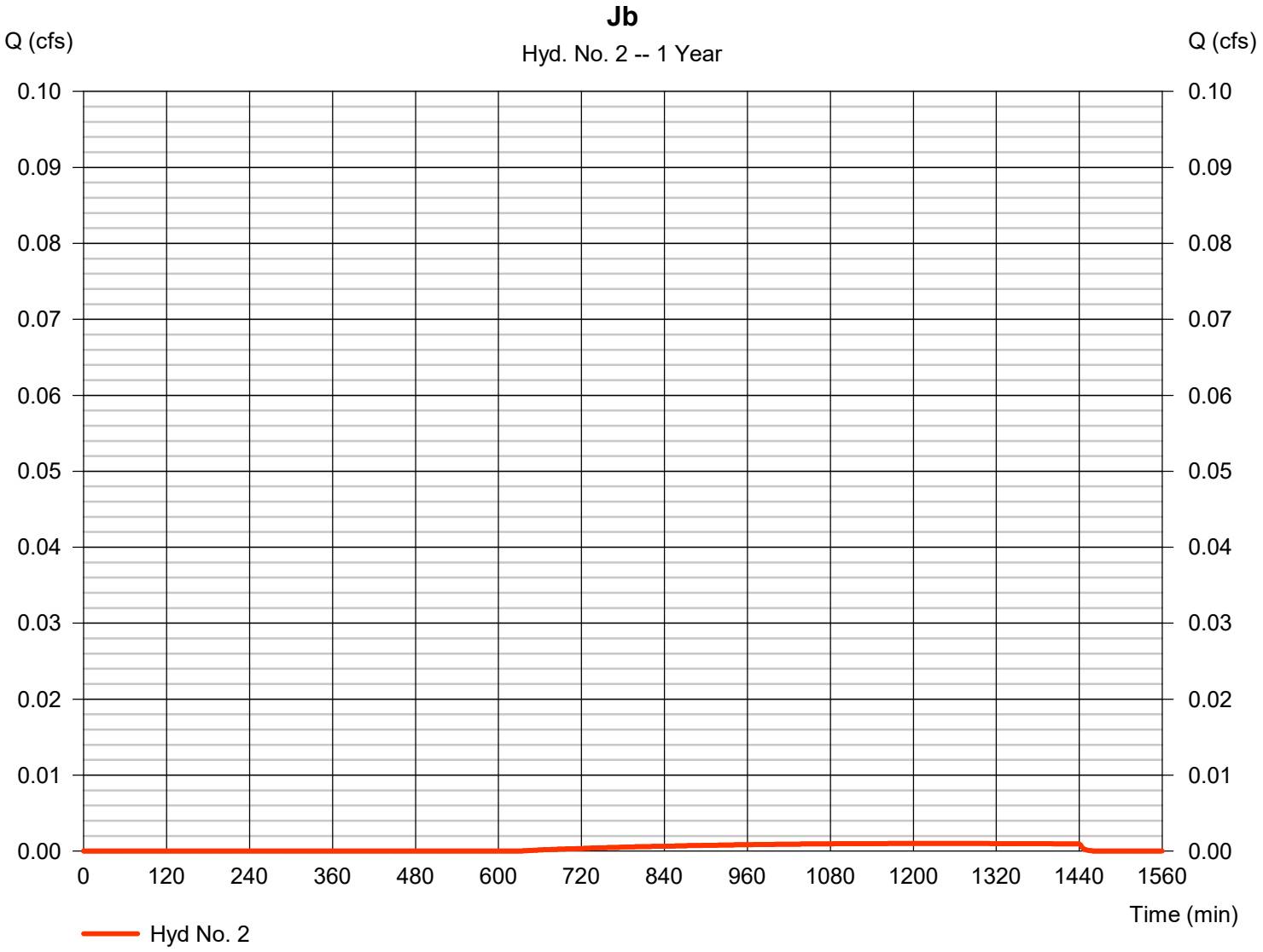


Hydrograph Report

Hyd. No. 2

Jb

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.001 cfs
Storm frequency	= 1 yrs	Time to peak	= 1236 min
Time interval	= 2 min	Hyd. volume	= 38 cuft
Drainage area	= 0.220 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

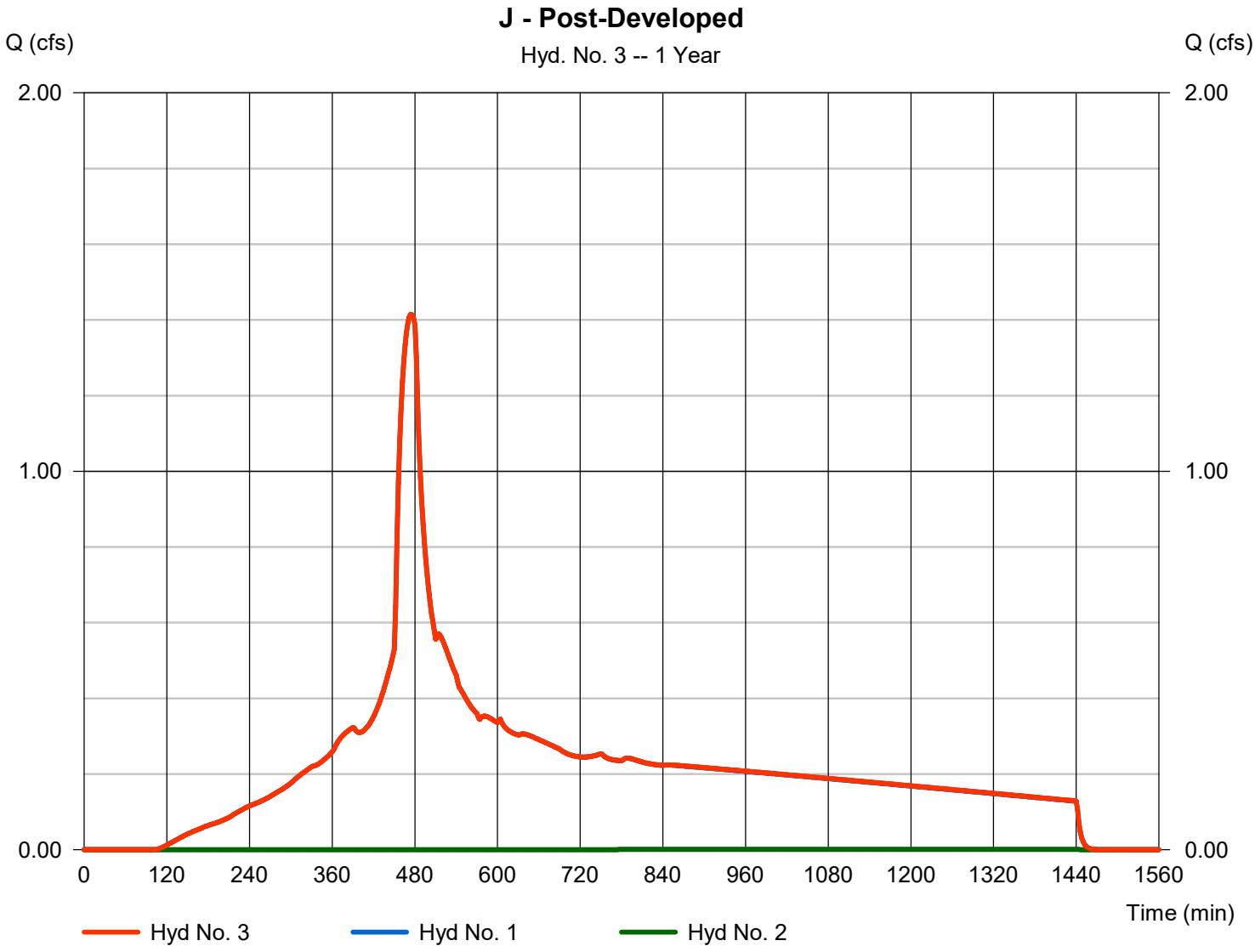


Hydrograph Report

Hyd. No. 3

J - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 1.415 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 19,877 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 7.130 ac

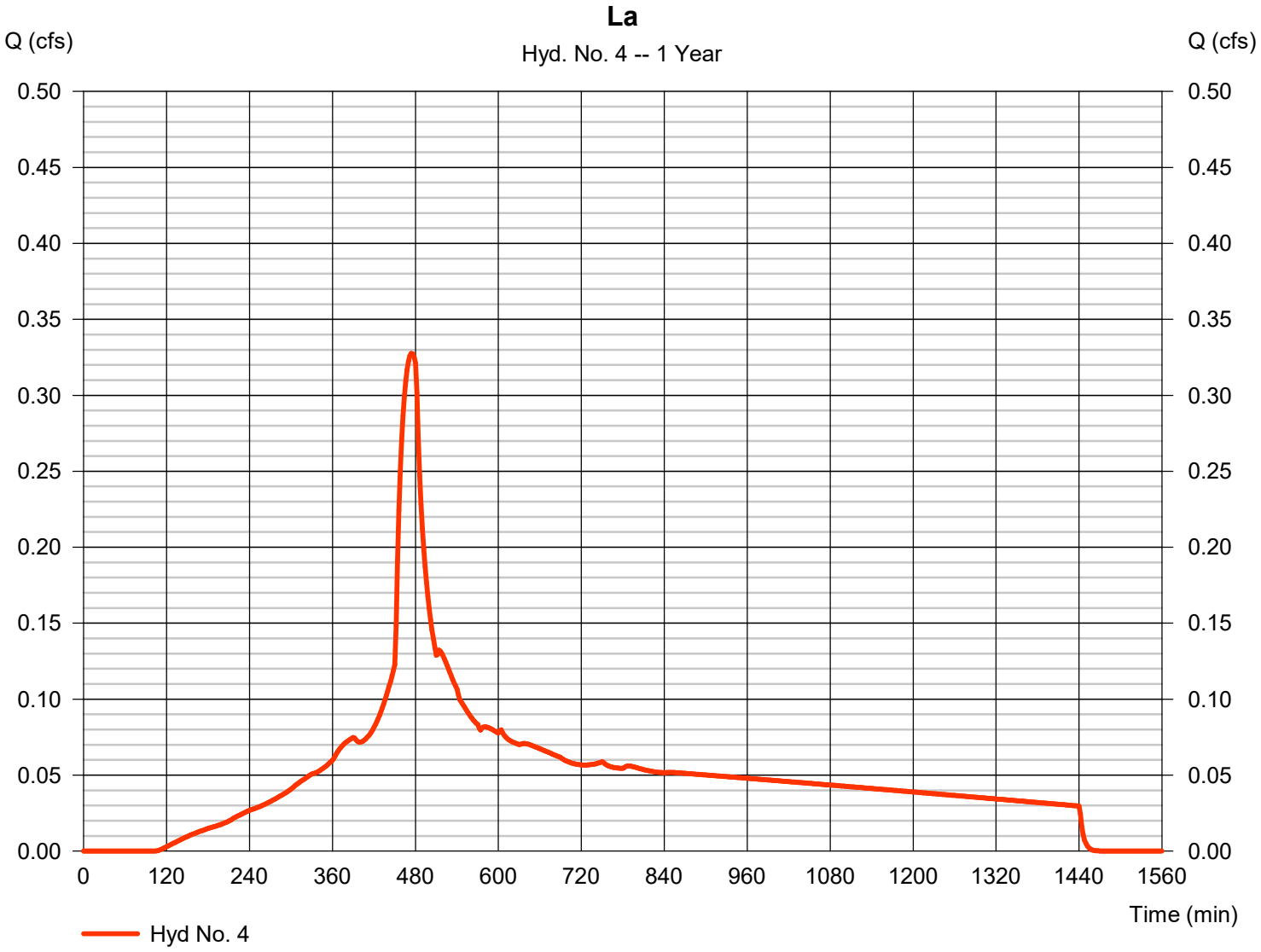


Hydrograph Report

Hyd. No. 4

La

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.328 cfs
Storm frequency	=	1 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	4,594 cuft
Drainage area	=	1.600 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

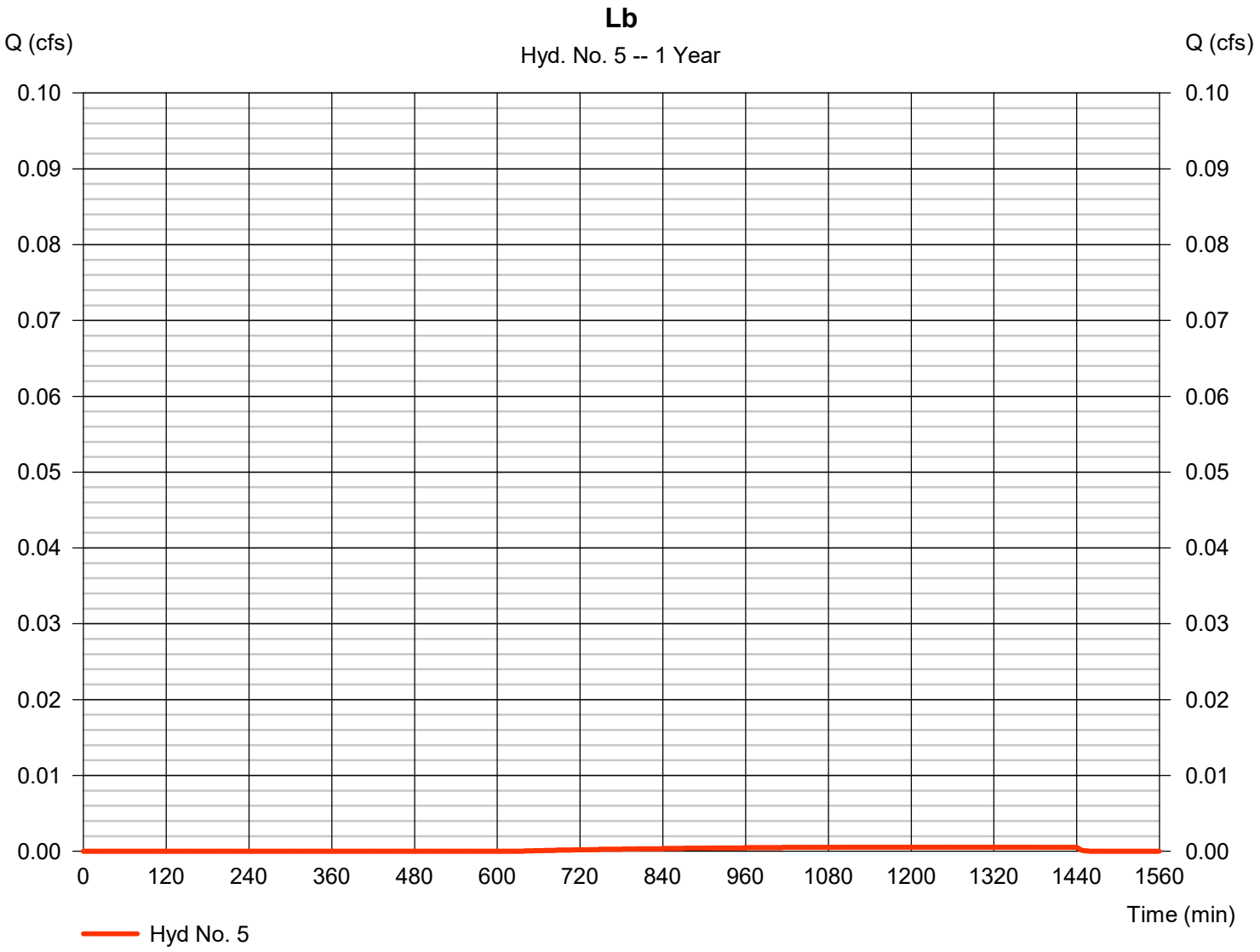


Hydrograph Report

Hyd. No. 5

Lb

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.001 cfs
Storm frequency	= 1 yrs	Time to peak	= 1236 min
Time interval	= 2 min	Hyd. volume	= 21 cuft
Drainage area	= 0.120 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

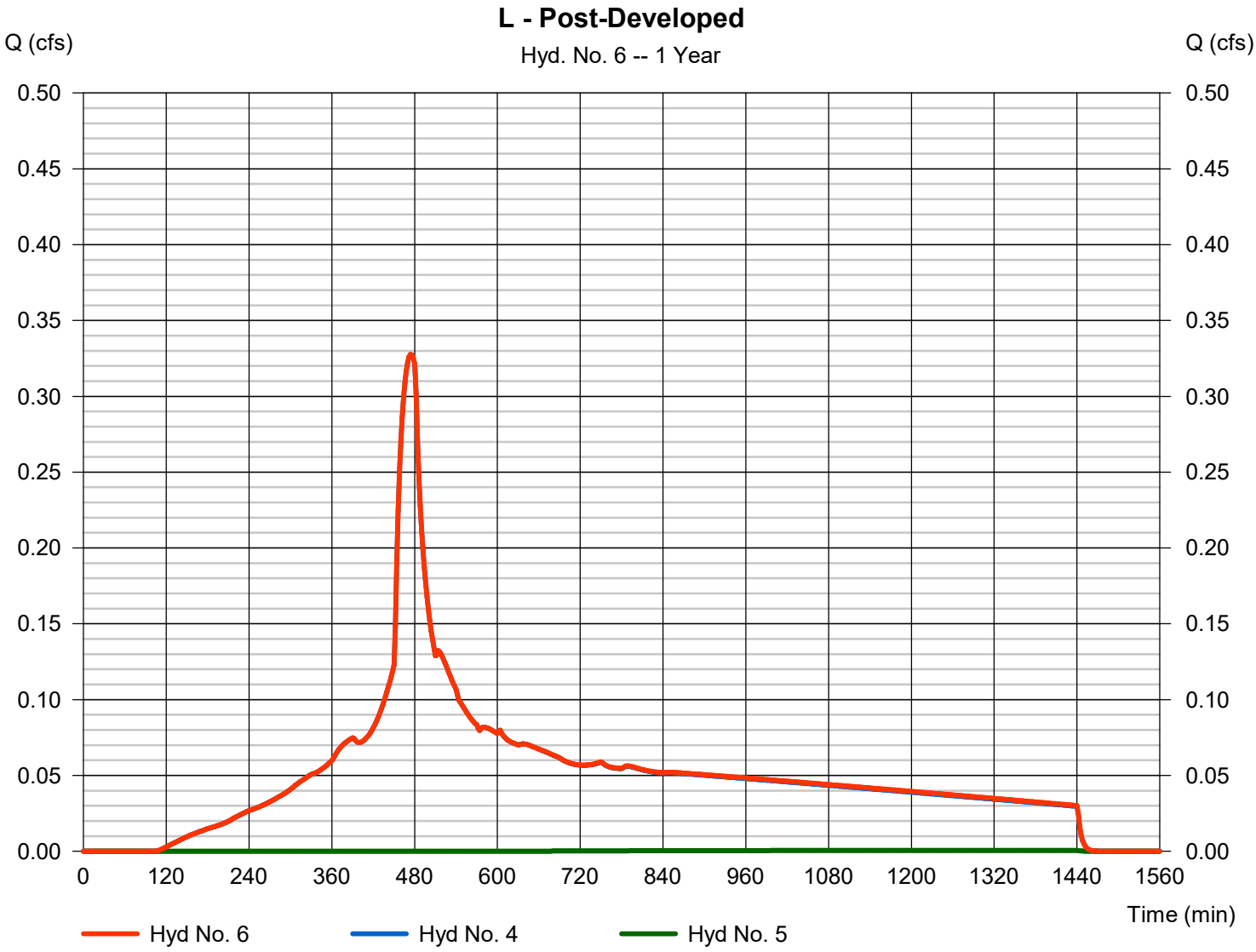


Hydrograph Report

Hyd. No. 6

L - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 0.328 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 4,614 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 1.720 ac

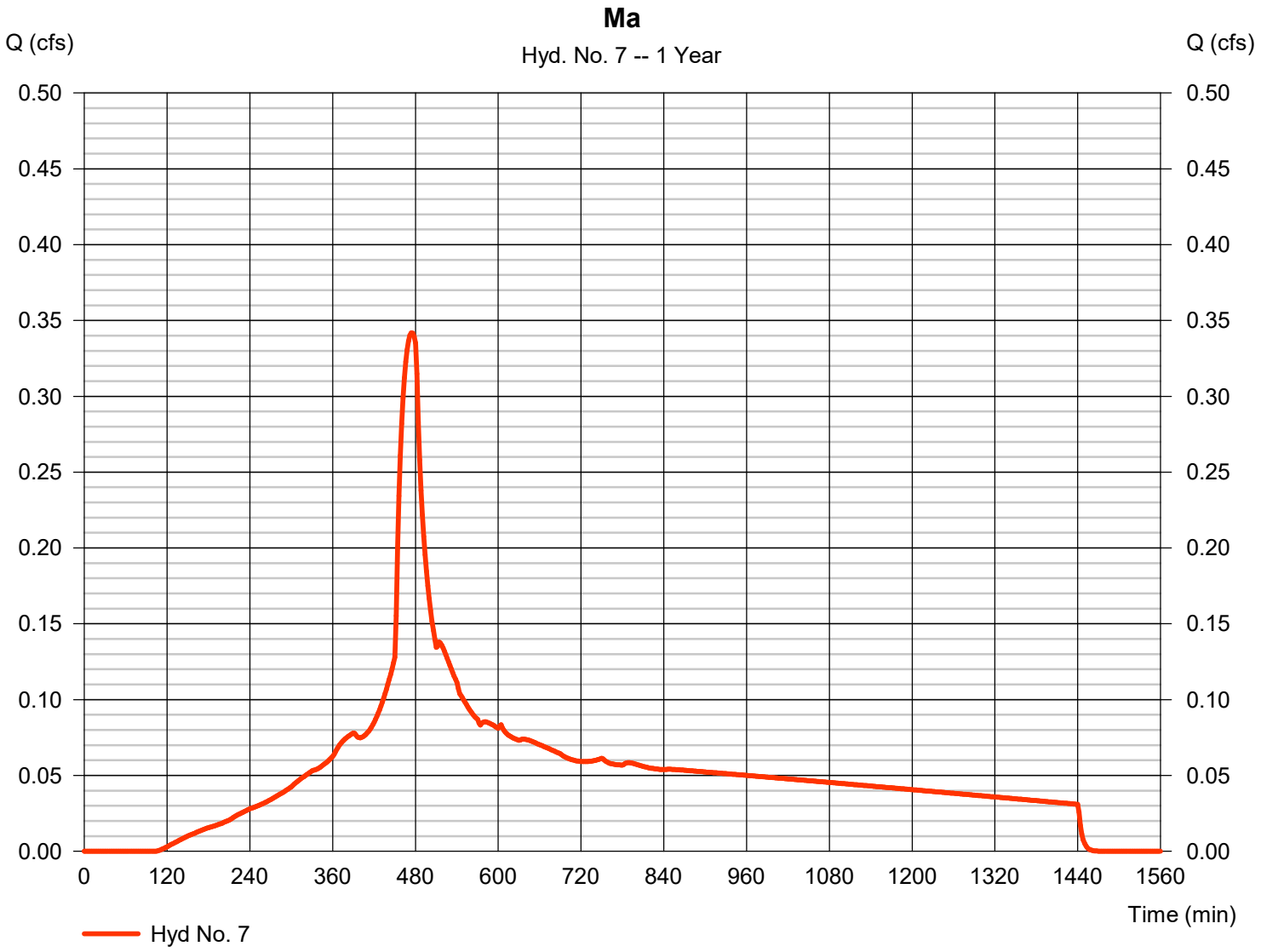


Hydrograph Report

Hyd. No. 7

Ma

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.342 cfs
Storm frequency	=	1 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	4,795 cuft
Drainage area	=	1.670 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

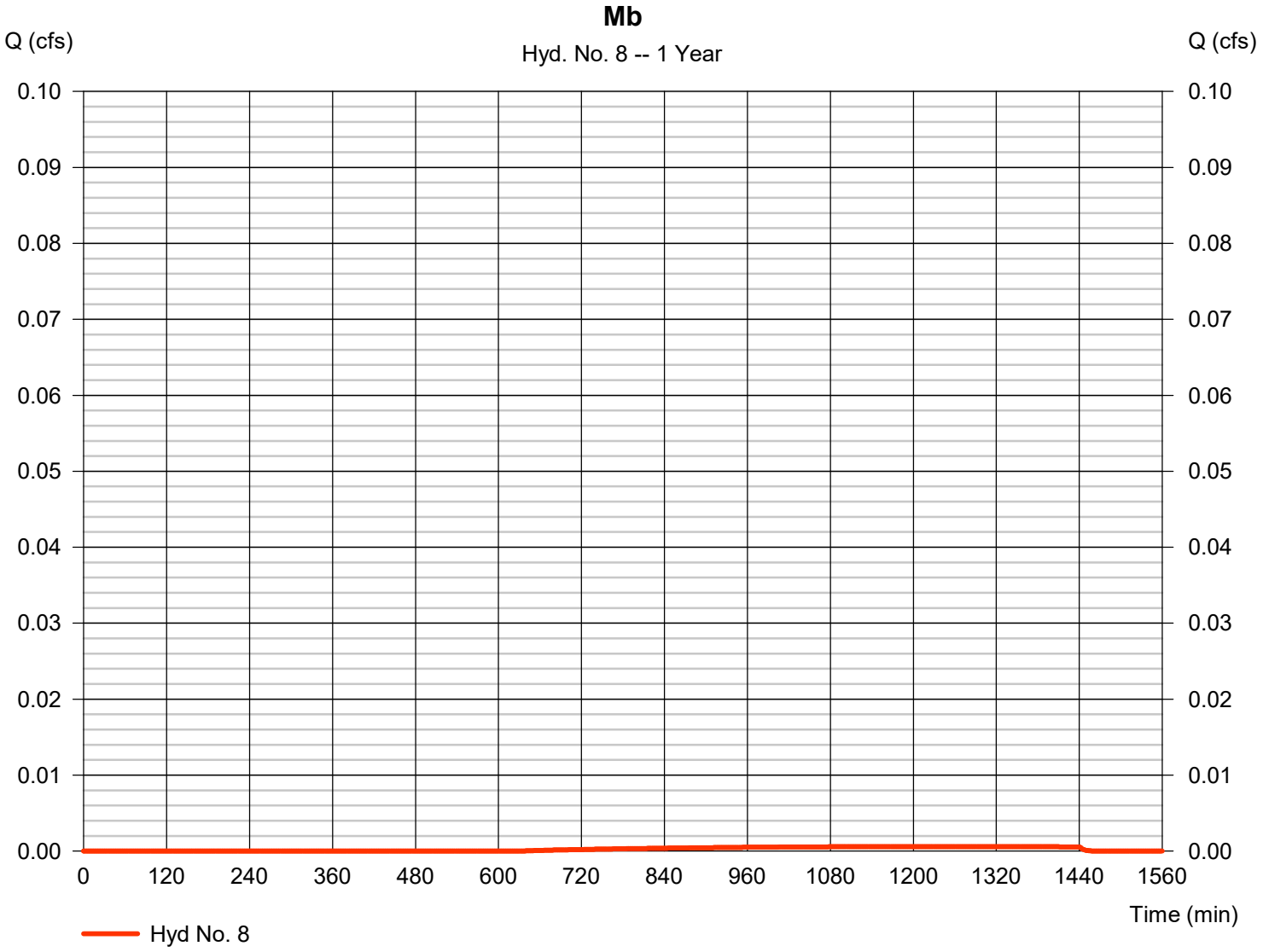


Hydrograph Report

Hyd. No. 8

Mb

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.001 cfs
Storm frequency	= 1 yrs	Time to peak	= 1236 min
Time interval	= 2 min	Hyd. volume	= 23 cuft
Drainage area	= 0.130 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

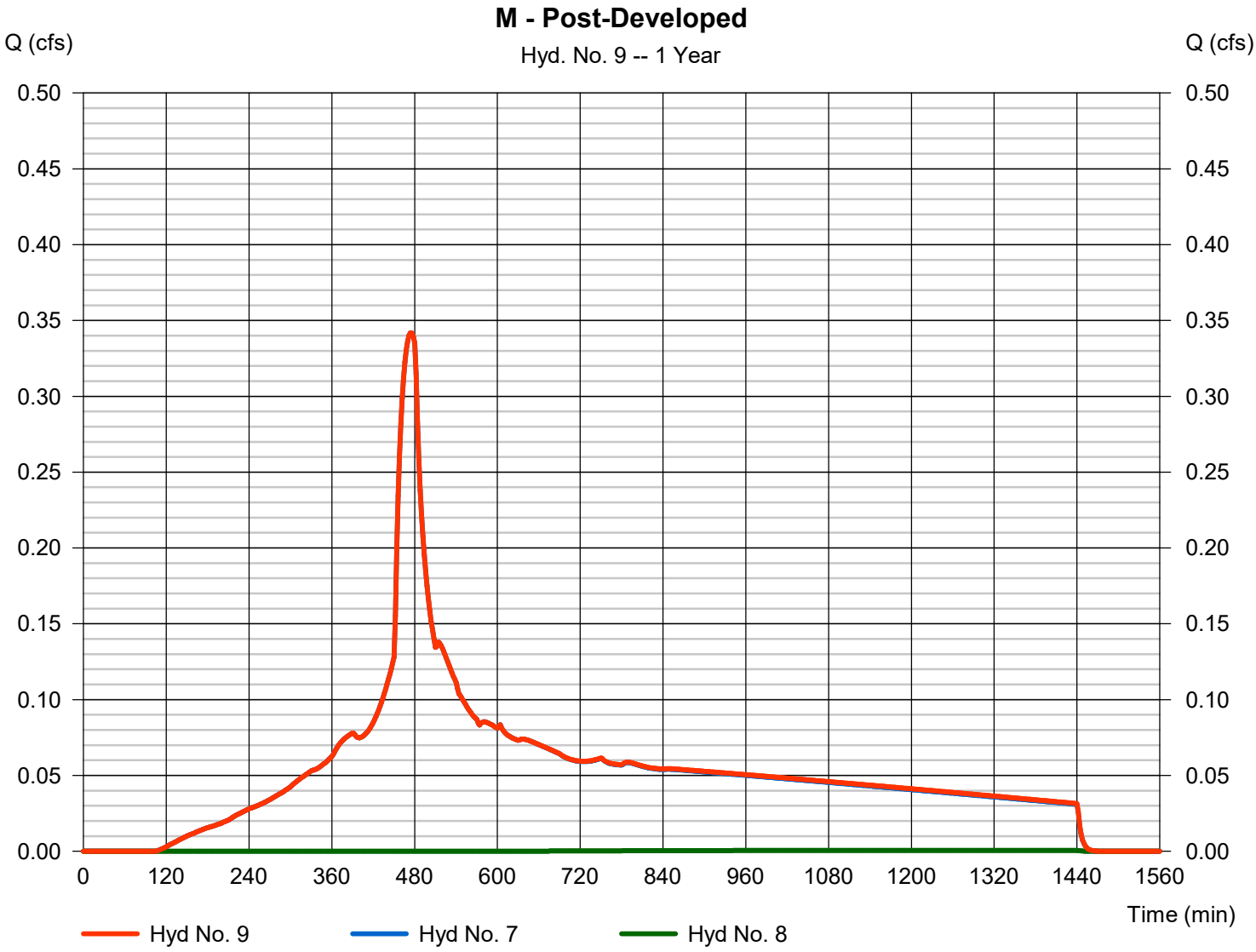


Hydrograph Report

Hyd. No. 9

M - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 0.342 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 4,817 cuft
Inflow hyds.	= 7, 8	Contrib. drain. area	= 1.800 ac

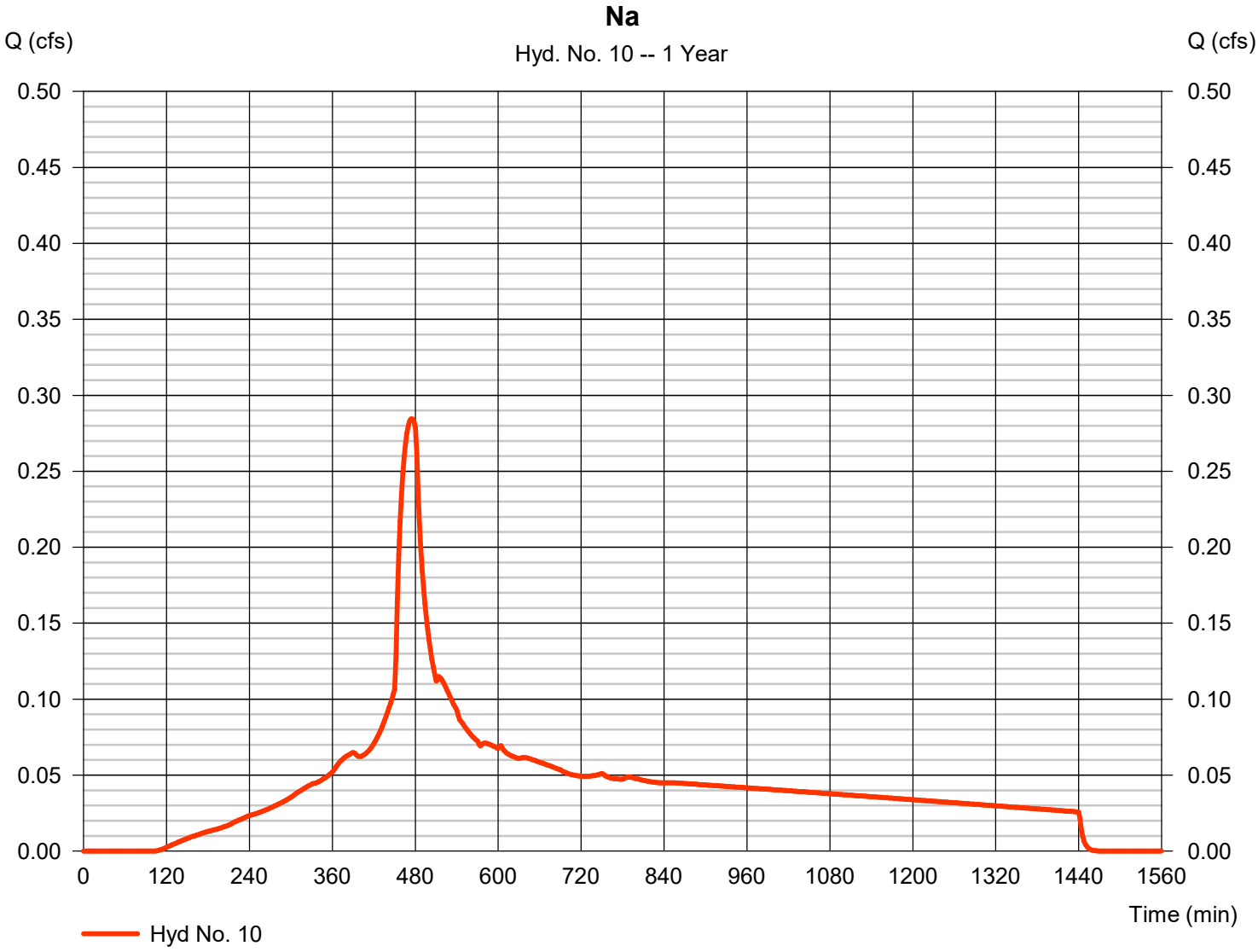


Hydrograph Report

Hyd. No. 10

Na

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.285 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 3,991 cuft
Drainage area	= 1.390 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

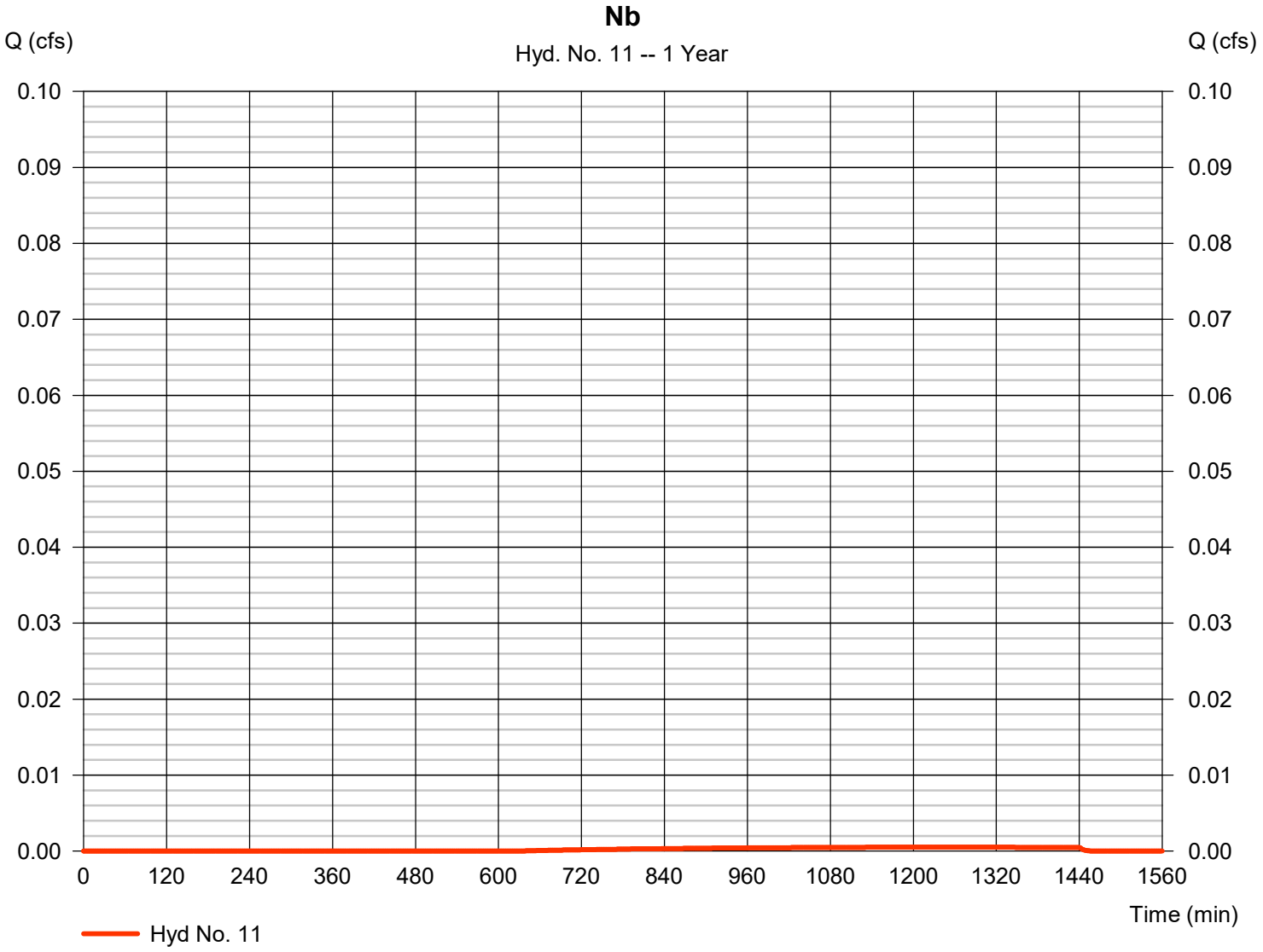


Hydrograph Report

Hyd. No. 11

Nb

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.001 cfs
Storm frequency	= 1 yrs	Time to peak	= 1236 min
Time interval	= 2 min	Hyd. volume	= 19 cuft
Drainage area	= 0.110 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

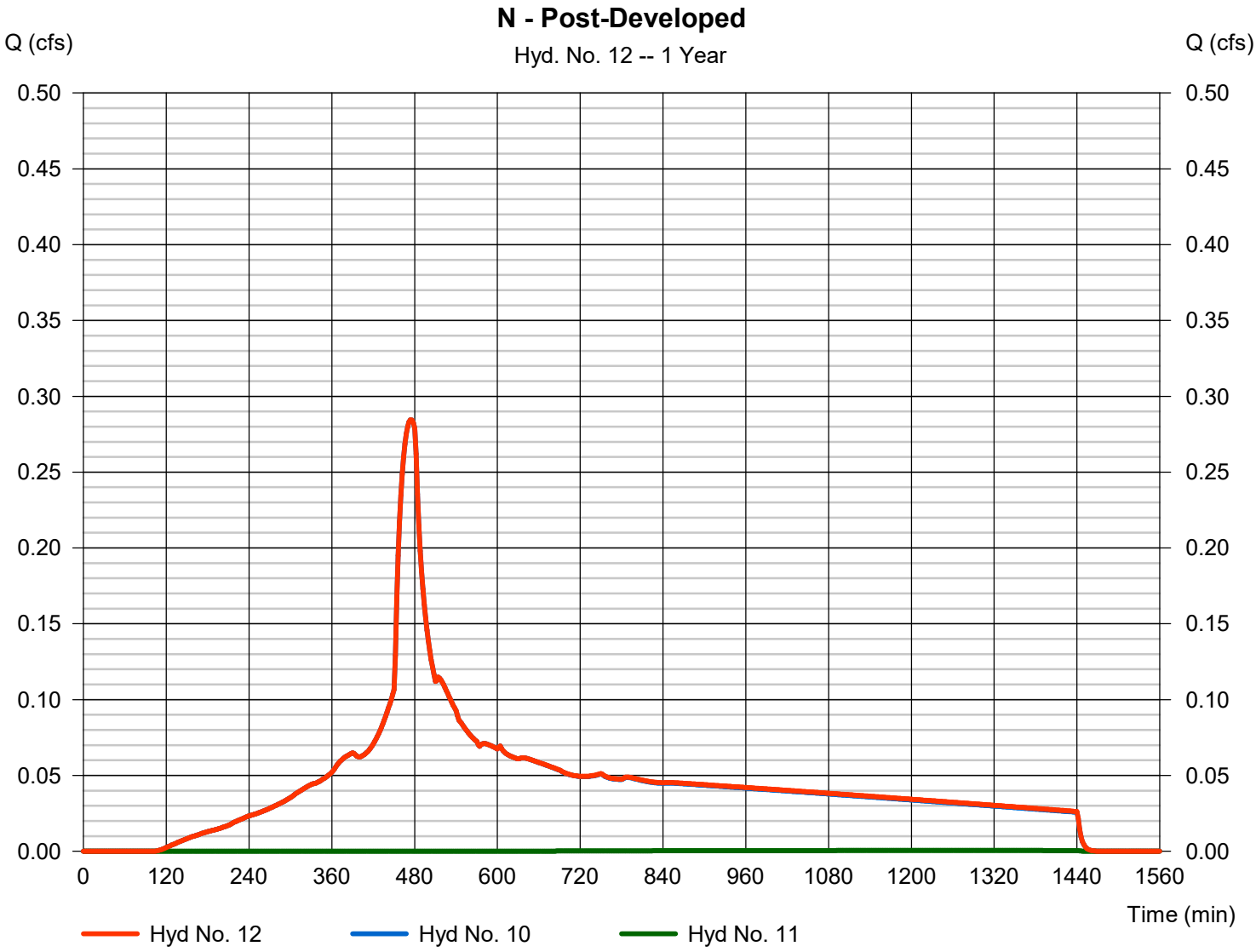


Hydrograph Report

Hyd. No. 12

N - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 0.285 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 4,010 cuft
Inflow hyds.	= 10, 11	Contrib. drain. area	= 1.500 ac

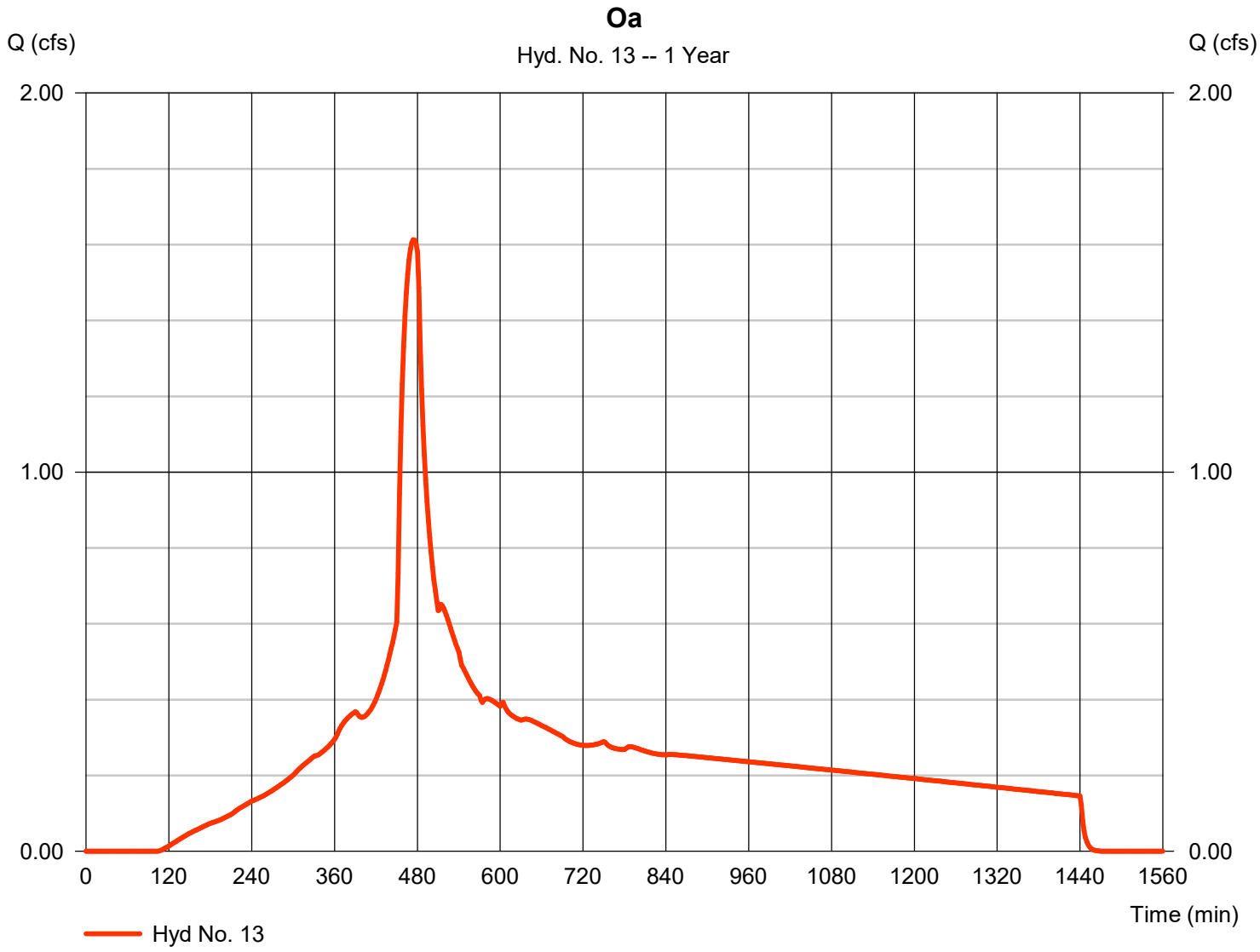


Hydrograph Report

Hyd. No. 13

Oa

Hydrograph type	=	SBUH Runoff	Peak discharge	=	1.613 cfs
Storm frequency	=	1 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	22,623 cuft
Drainage area	=	7.880 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

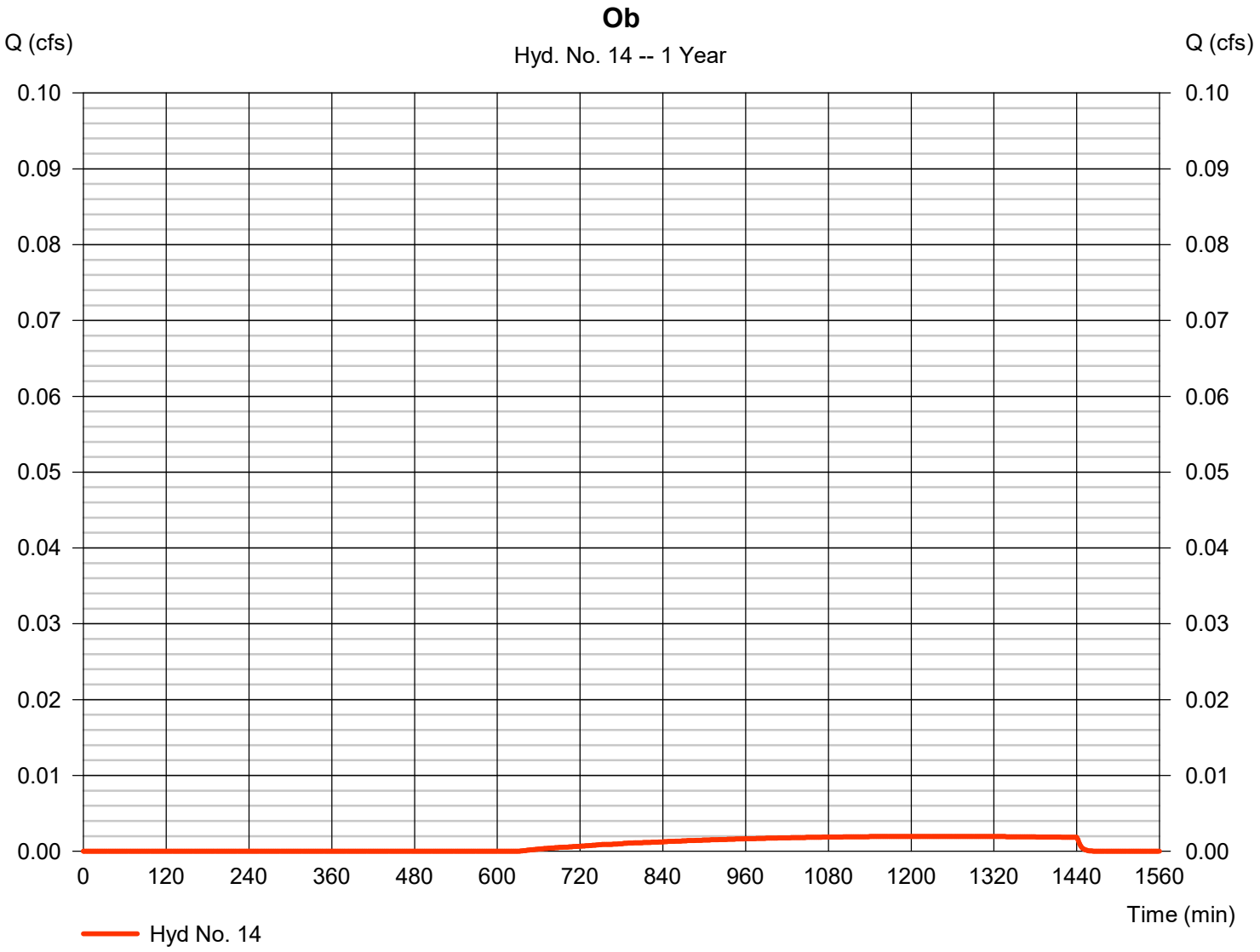


Hydrograph Report

Hyd. No. 14

Ob

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.002 cfs
Storm frequency	= 1 yrs	Time to peak	= 1236 min
Time interval	= 2 min	Hyd. volume	= 75 cuft
Drainage area	= 0.430 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

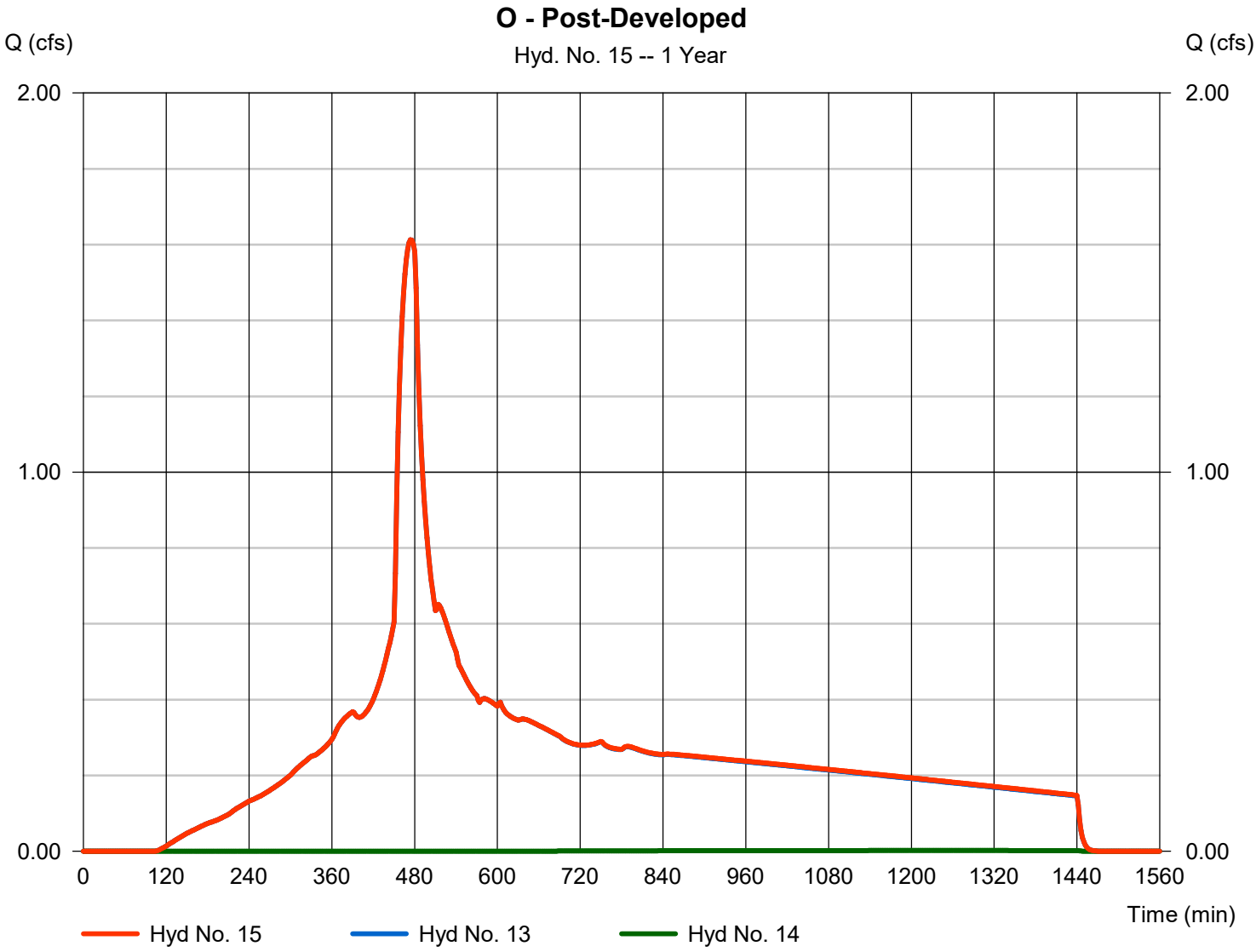


Hydrograph Report

Hyd. No. 15

O - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 1.613 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 22,698 cuft
Inflow hyds.	= 13, 14	Contrib. drain. area	= 8.310 ac

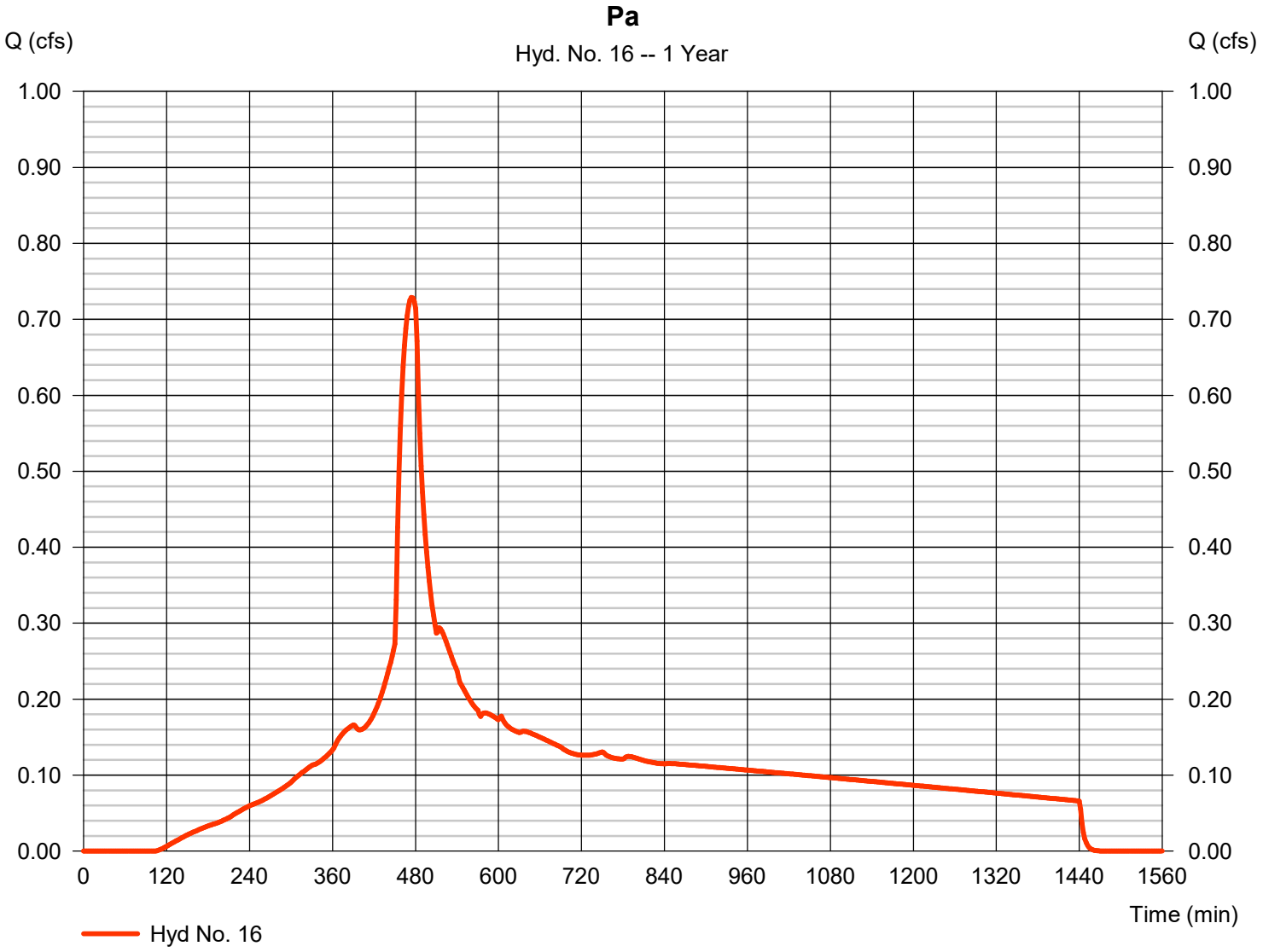


Hydrograph Report

Hyd. No. 16

Pa

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.729 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 10,221 cuft
Drainage area	= 3.560 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

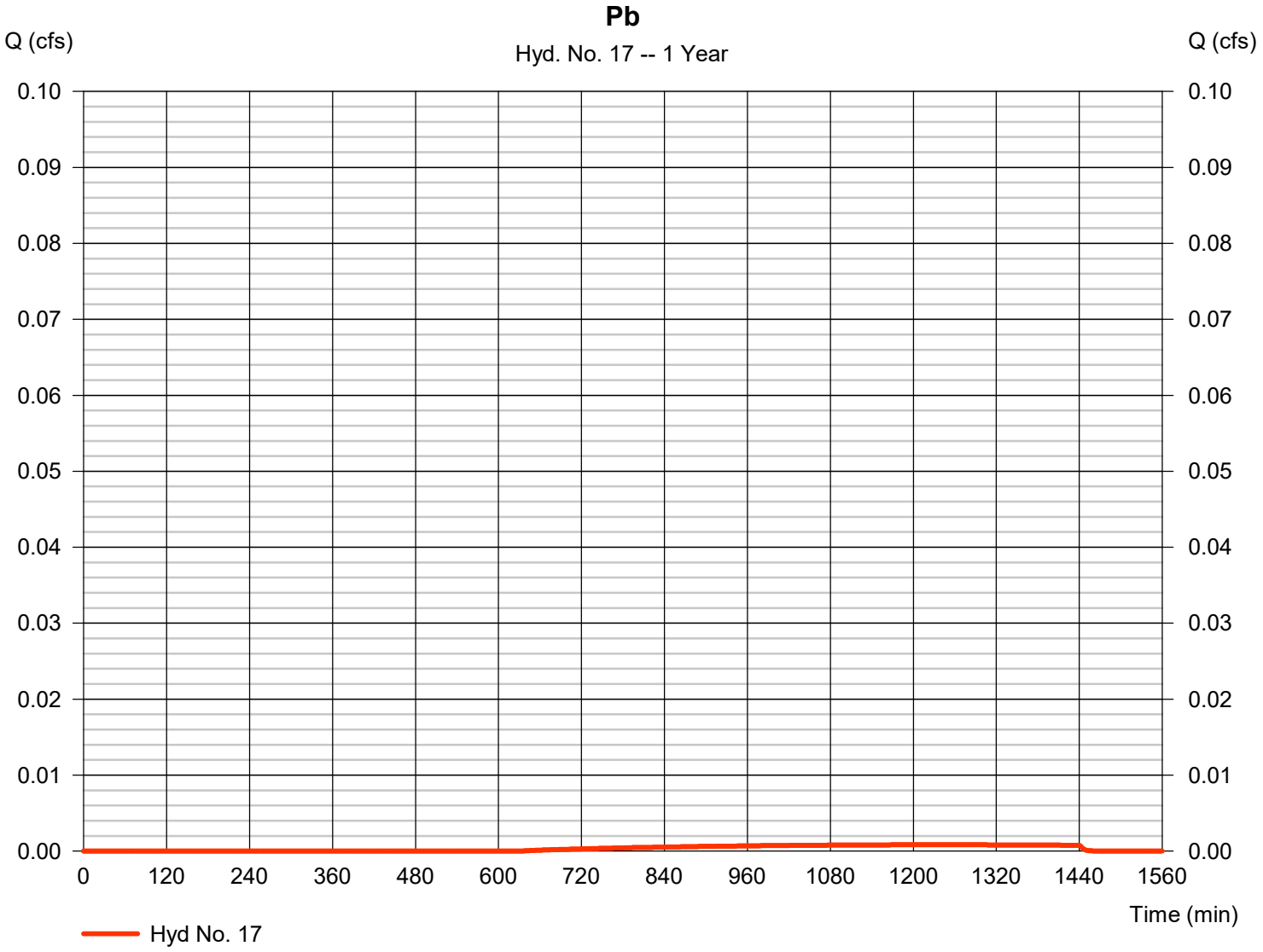


Hydrograph Report

Hyd. No. 17

Pb

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.001 cfs
Storm frequency	= 1 yrs	Time to peak	= 1236 min
Time interval	= 2 min	Hyd. volume	= 31 cuft
Drainage area	= 0.180 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

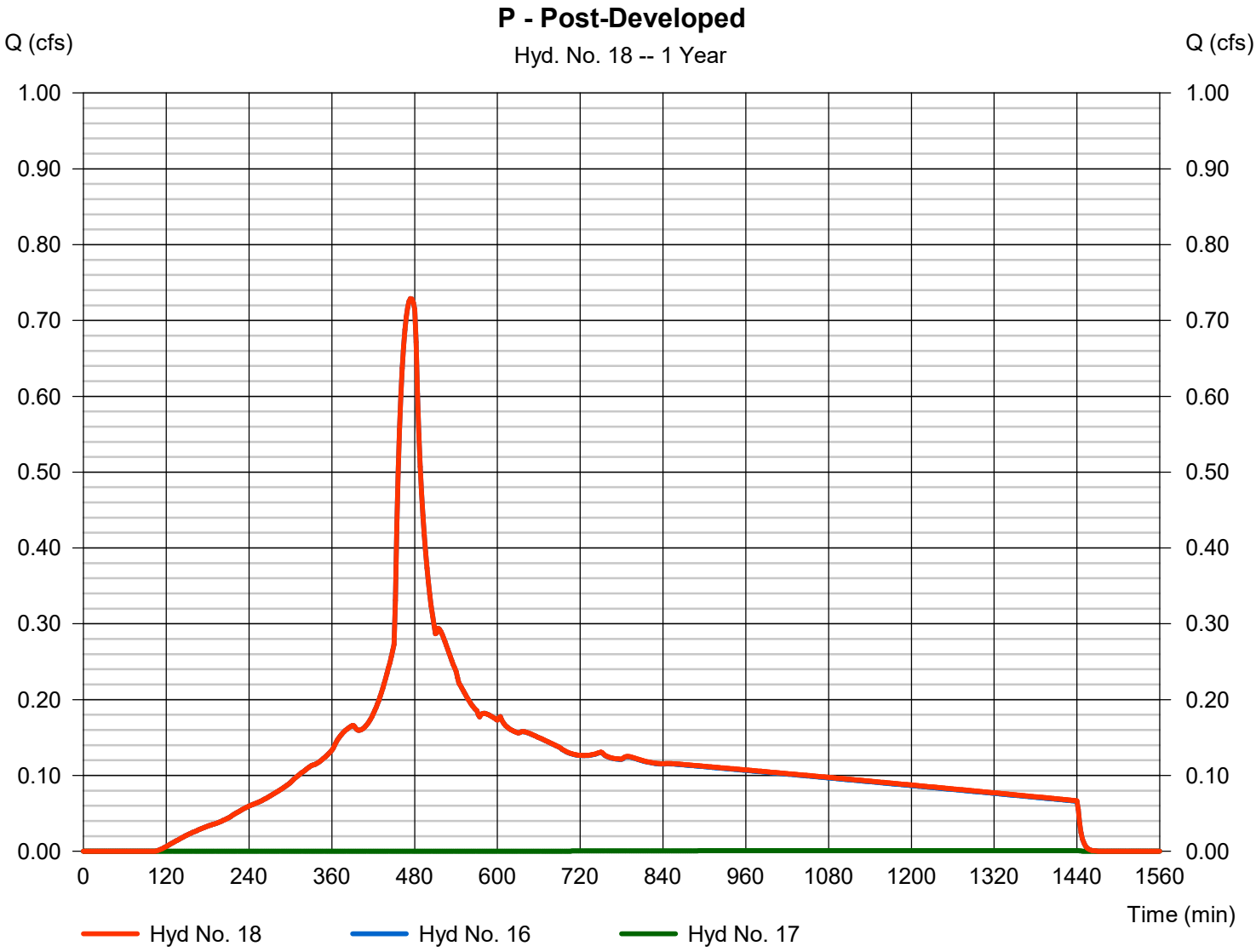


Hydrograph Report

Hyd. No. 18

P - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 0.729 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 10,252 cuft
Inflow hyds.	= 16, 17	Contrib. drain. area	= 3.740 ac

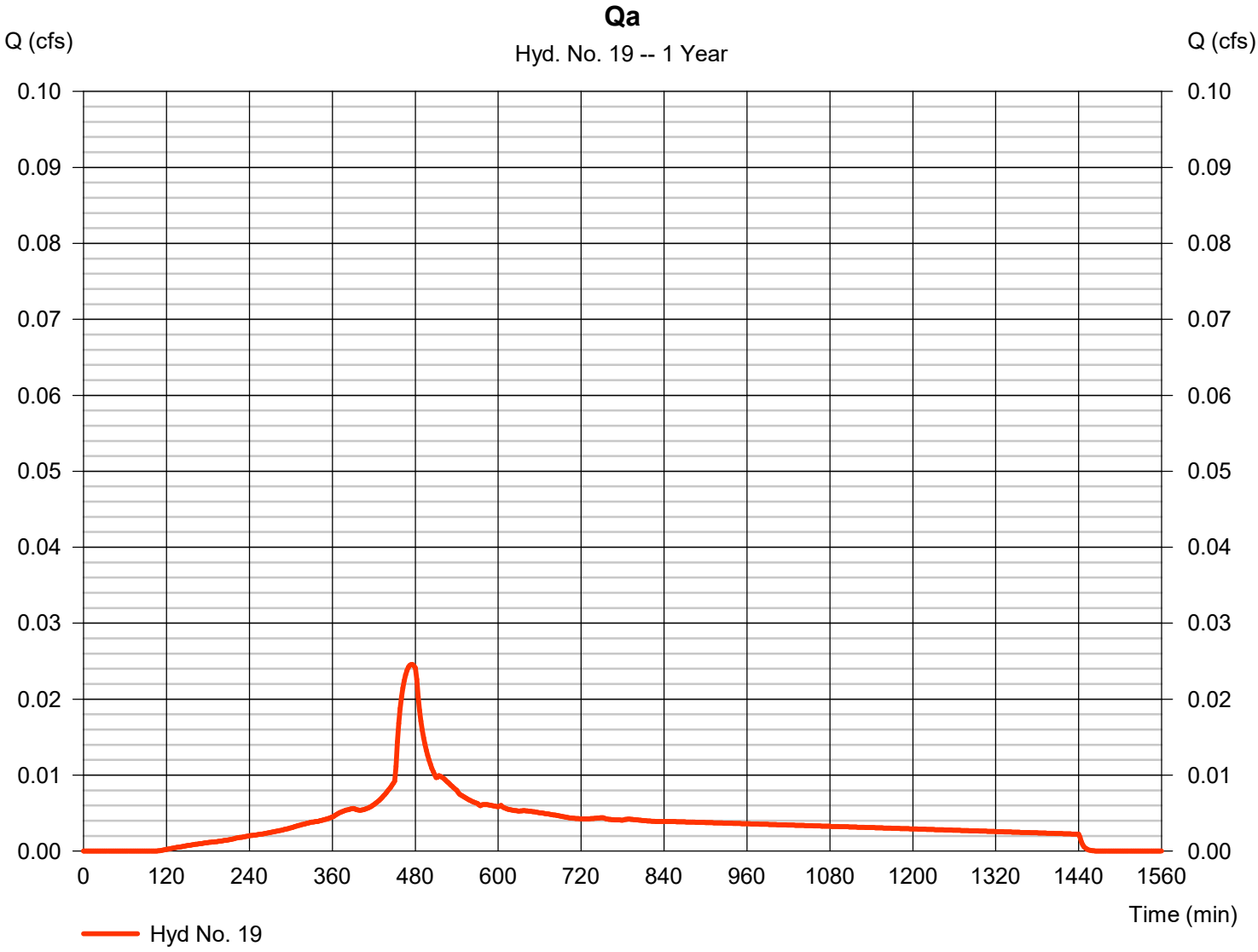


Hydrograph Report

Hyd. No. 19

Qa

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.025 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 345 cuft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

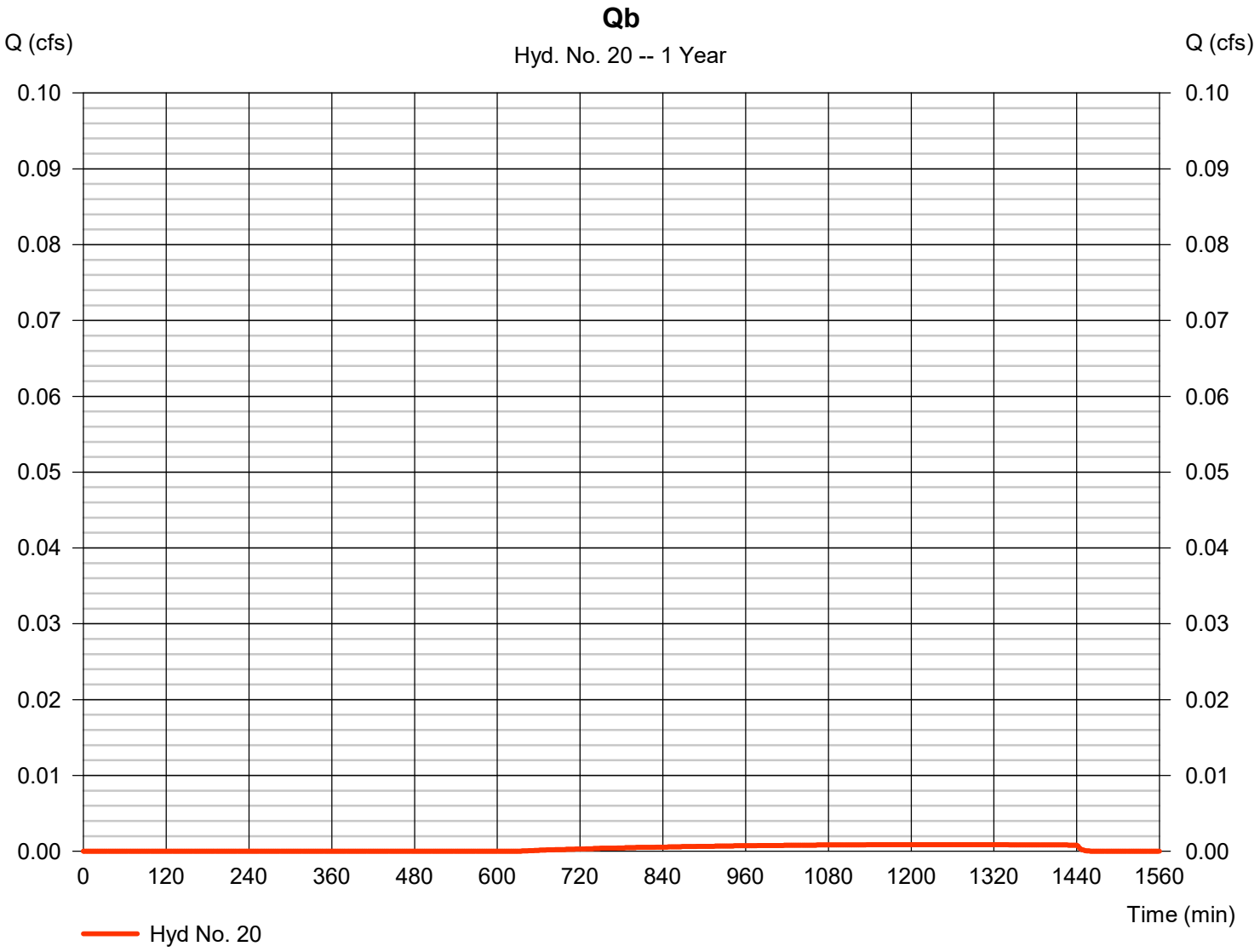


Hydrograph Report

Hyd. No. 20

Qb

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.001 cfs
Storm frequency	= 1 yrs	Time to peak	= 1236 min
Time interval	= 2 min	Hyd. volume	= 33 cuft
Drainage area	= 0.190 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

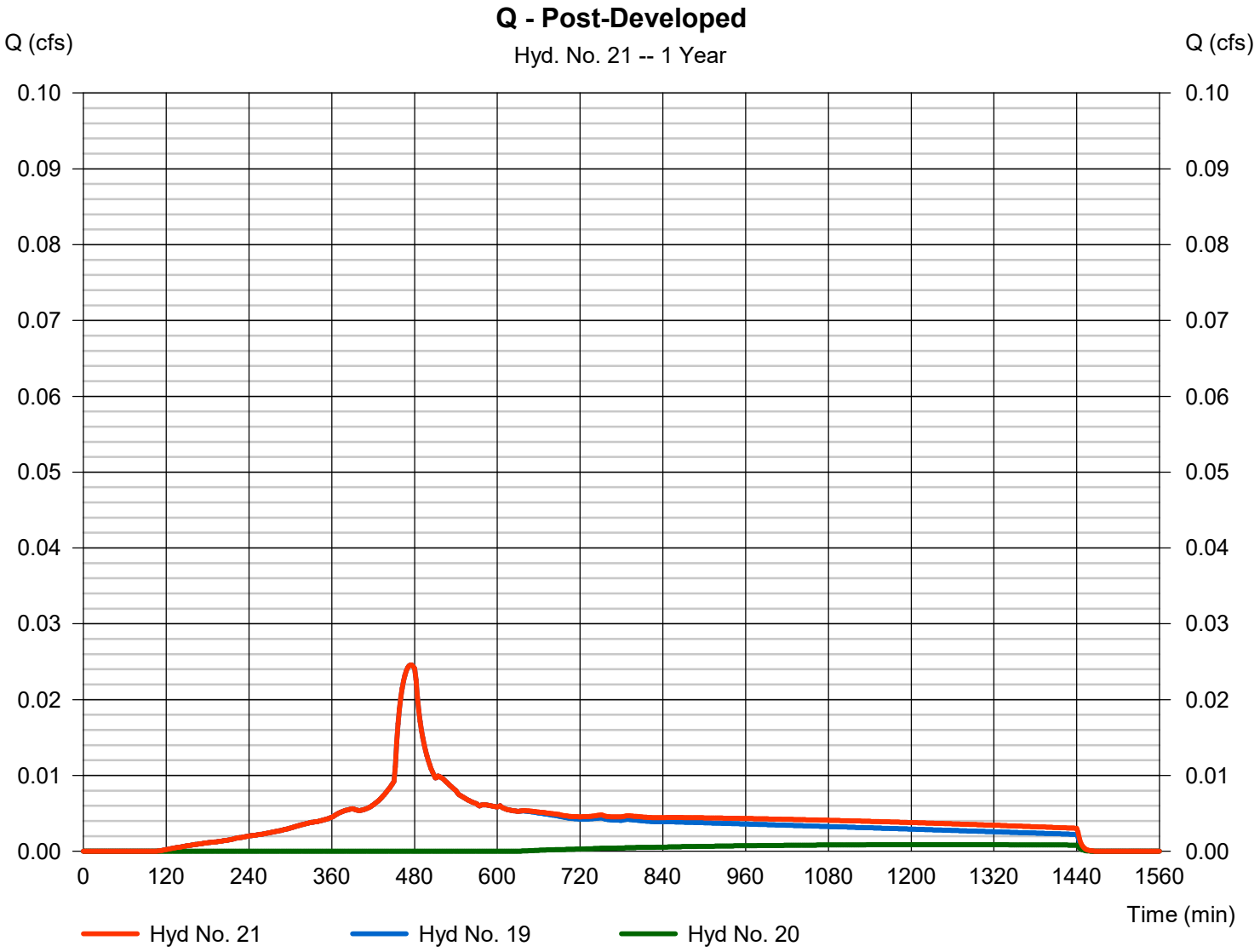


Hydrograph Report

Hyd. No. 21

Q - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 0.025 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 377 cuft
Inflow hyds.	= 19, 20	Contrib. drain. area	= 0.310 ac

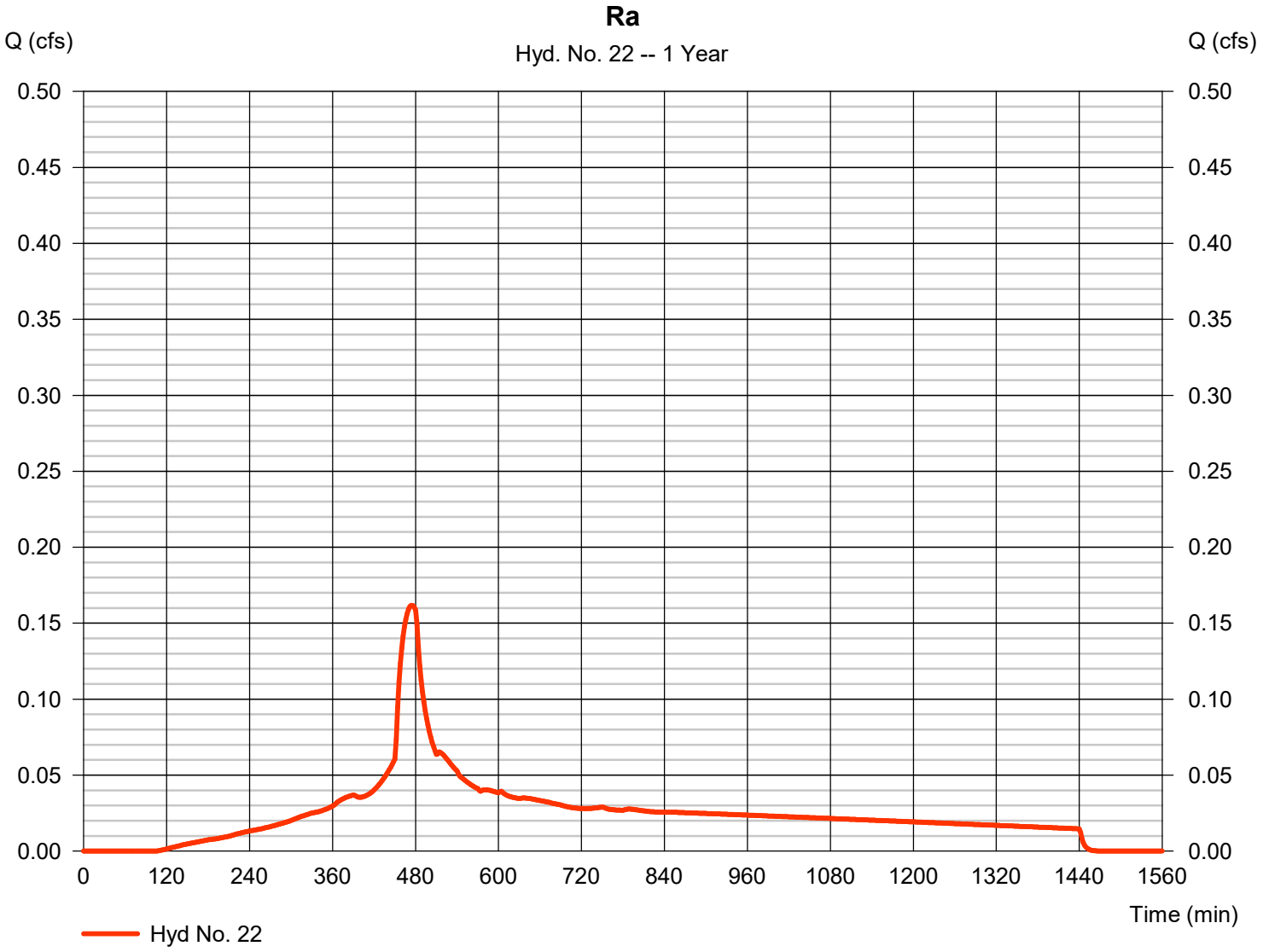


Hydrograph Report

Hyd. No. 22

Ra

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.162 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 2,268 cuft
Drainage area	= 0.790 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

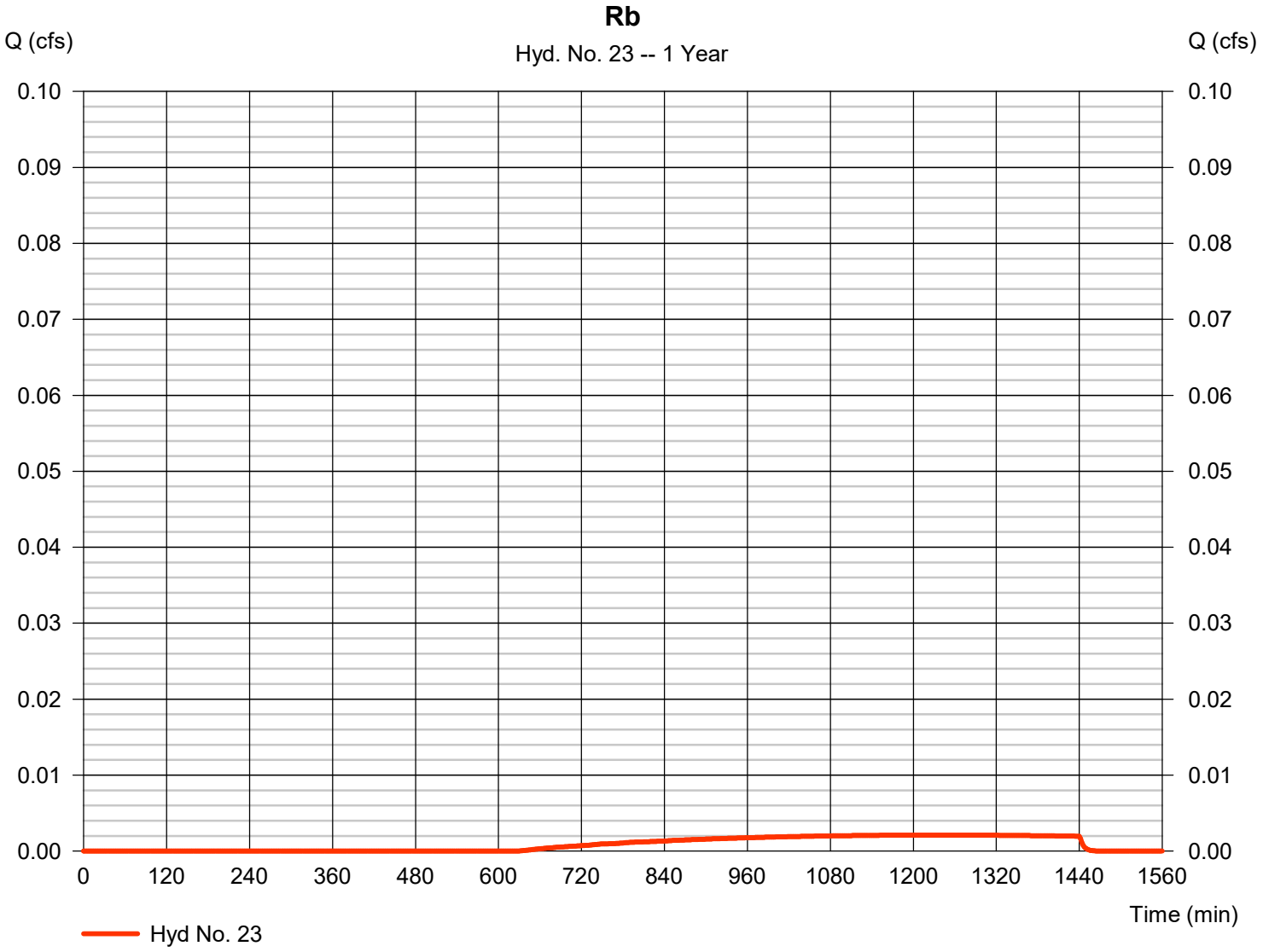


Hydrograph Report

Hyd. No. 23

Rb

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.002 cfs
Storm frequency	= 1 yrs	Time to peak	= 1236 min
Time interval	= 2 min	Hyd. volume	= 80 cuft
Drainage area	= 0.460 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

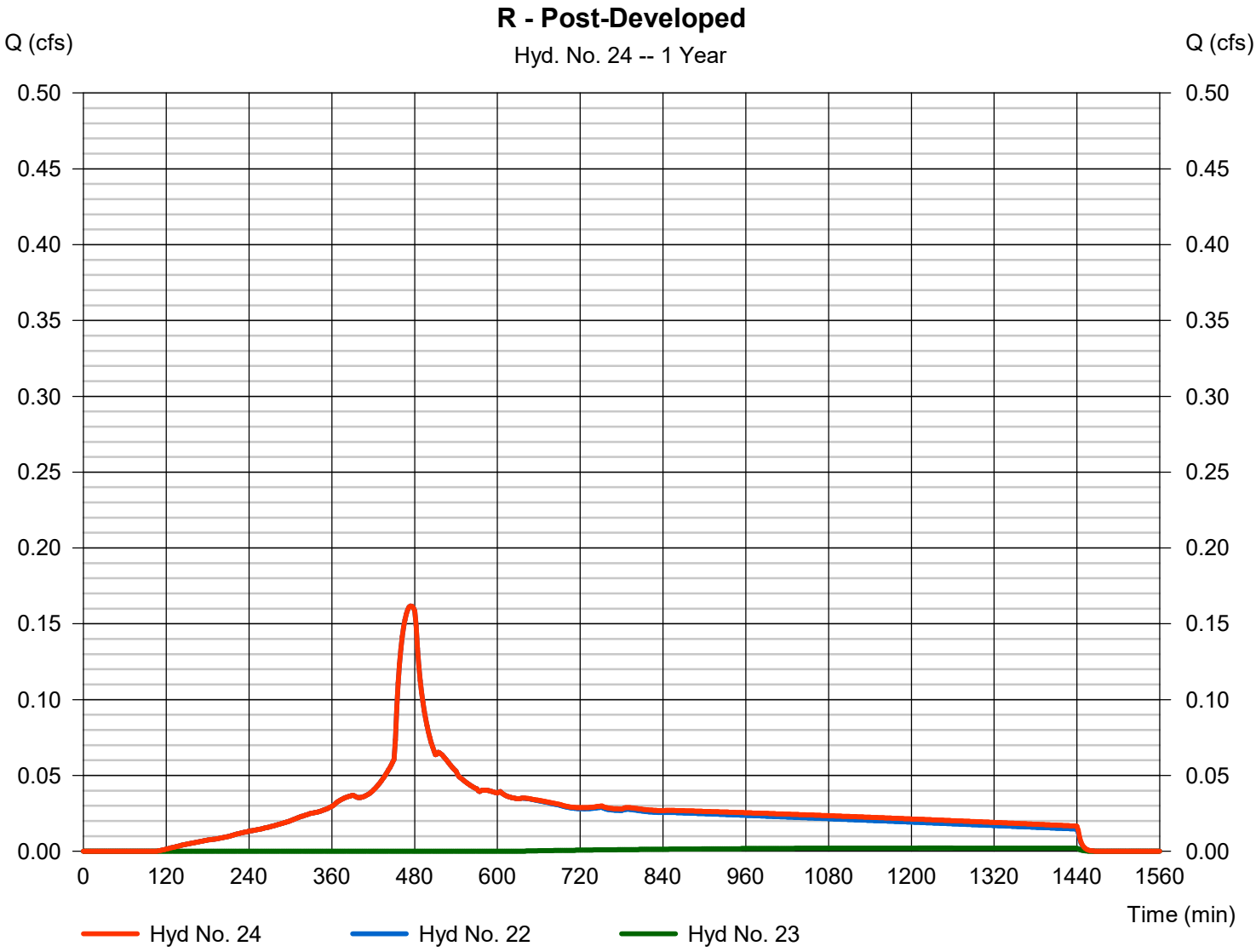


Hydrograph Report

Hyd. No. 24

R - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 0.162 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 2,348 cuft
Inflow hyds.	= 22, 23	Contrib. drain. area	= 1.250 ac

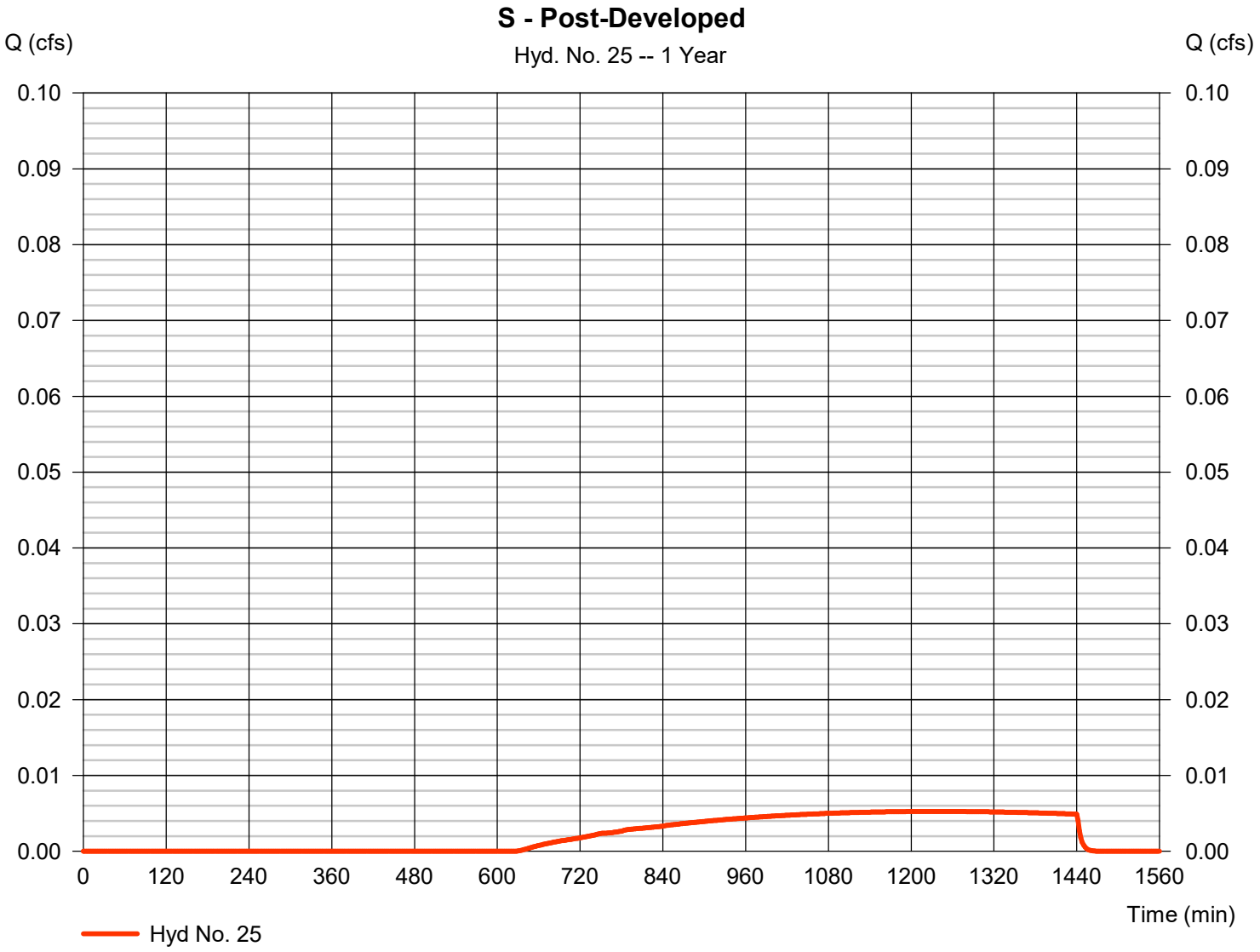


Hydrograph Report

Hyd. No. 25

S - Post-Developed

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.005 cfs
Storm frequency	= 1 yrs	Time to peak	= 1236 min
Time interval	= 2 min	Hyd. volume	= 200 cuft
Drainage area	= 1.150 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

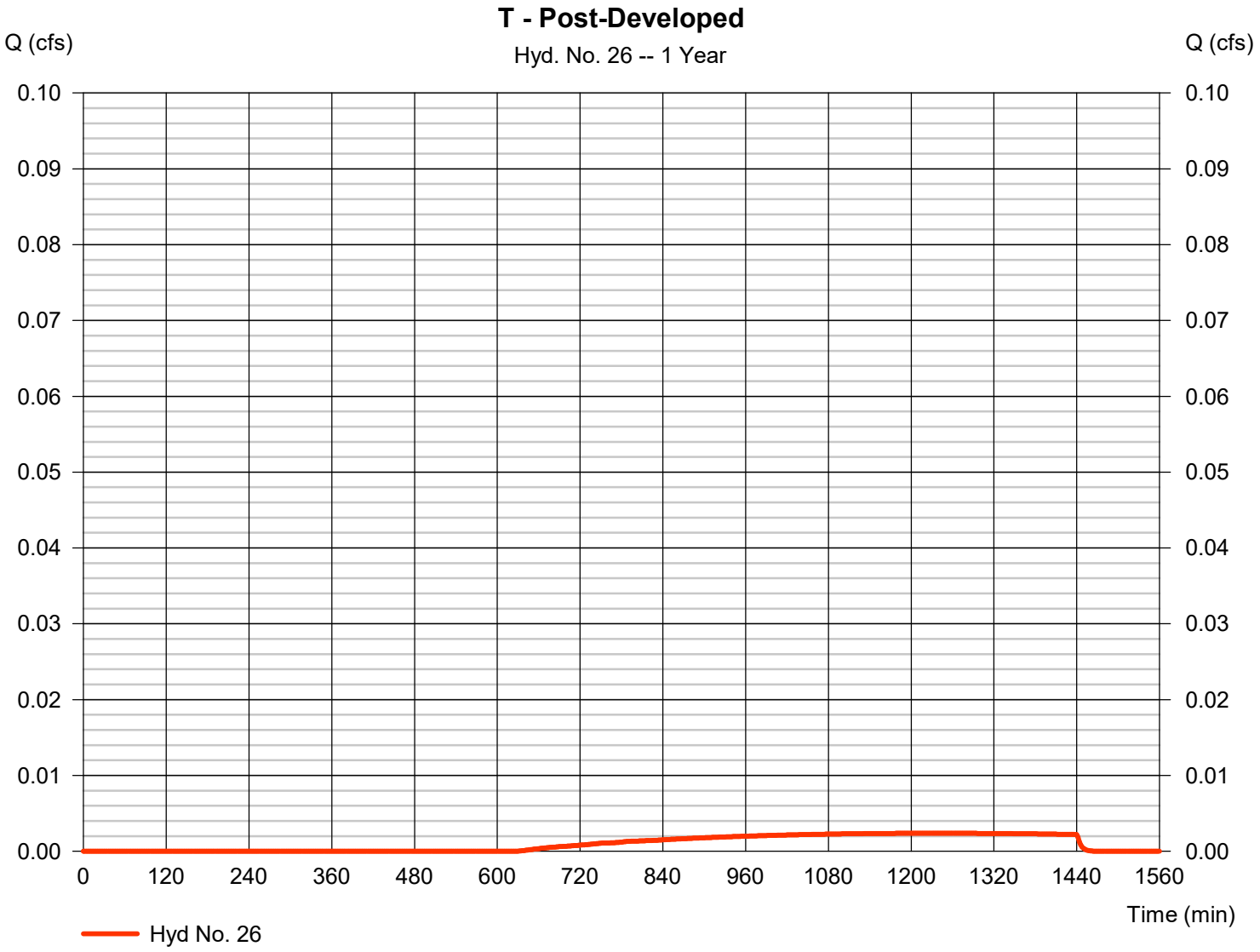


Hydrograph Report

Hyd. No. 26

T - Post-Developed

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.002 cfs
Storm frequency	= 1 yrs	Time to peak	= 1236 min
Time interval	= 2 min	Hyd. volume	= 90 cuft
Drainage area	= 0.520 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

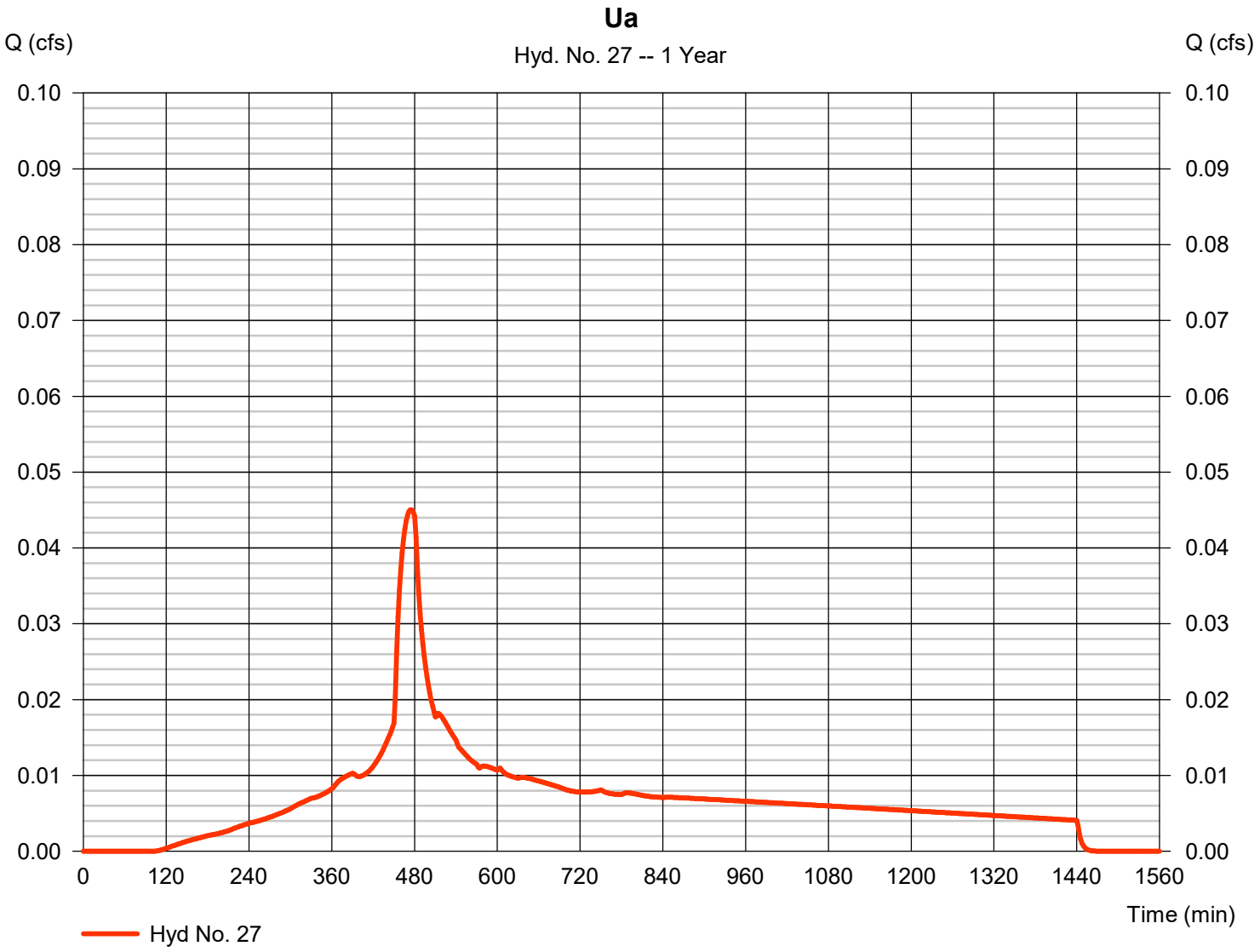


Hydrograph Report

Hyd. No. 27

Ua

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.045 cfs
Storm frequency	=	1 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	632 cuft
Drainage area	=	0.220 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

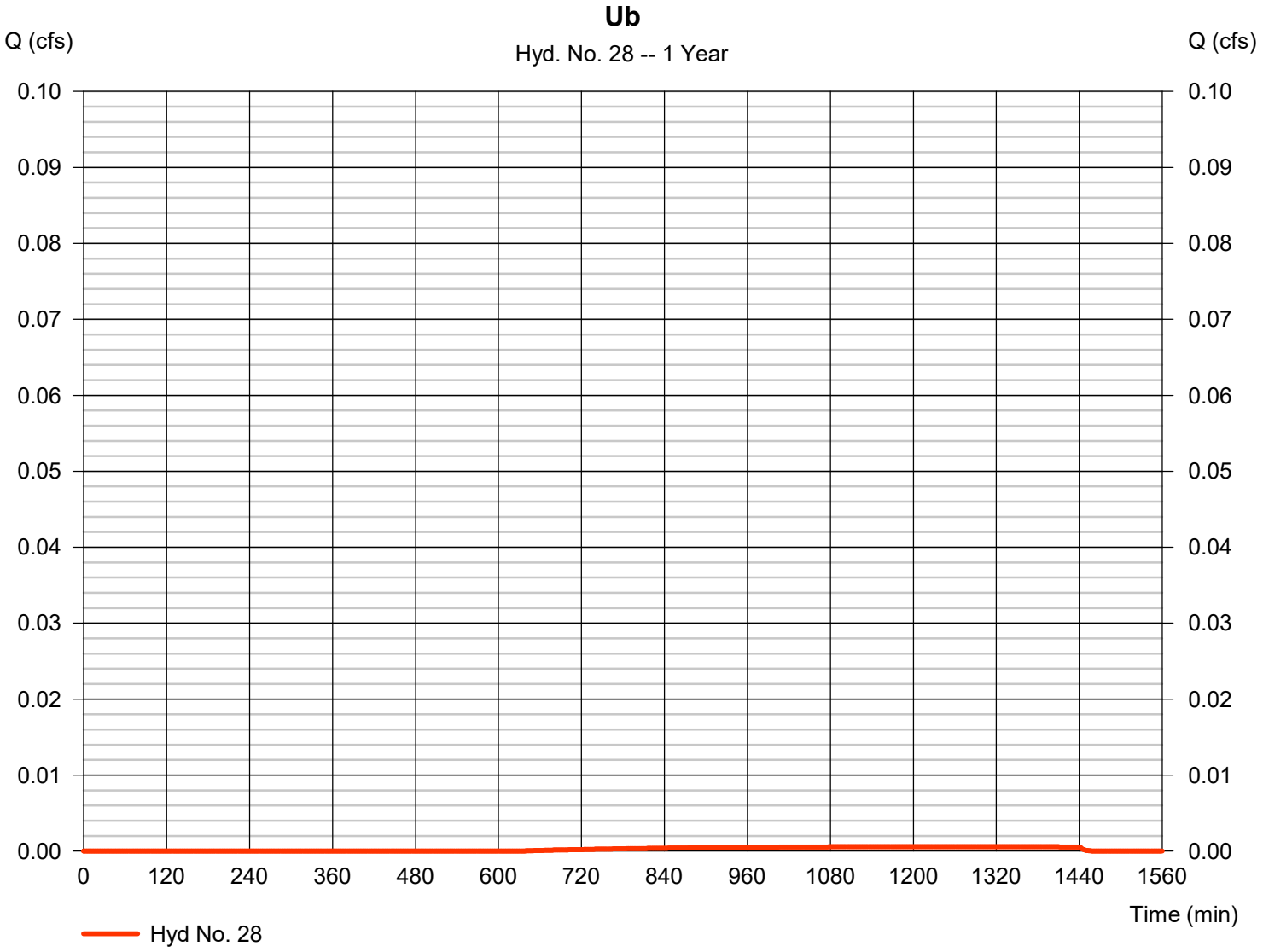


Hydrograph Report

Hyd. No. 28

Ub

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.001 cfs
Storm frequency	= 1 yrs	Time to peak	= 1236 min
Time interval	= 2 min	Hyd. volume	= 23 cuft
Drainage area	= 0.130 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

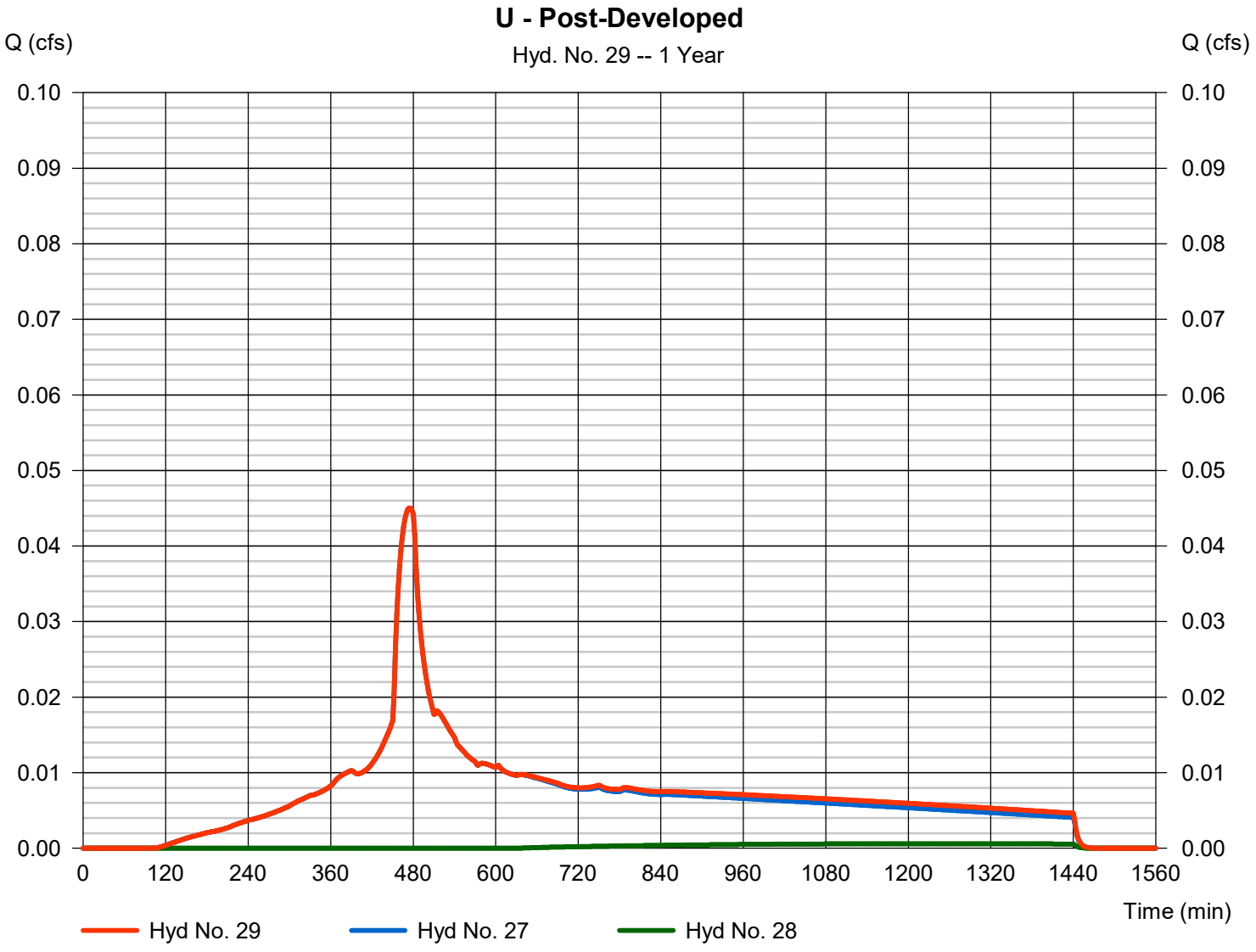


Hydrograph Report

Hyd. No. 29

U - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 0.045 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 654 cuft
Inflow hyds.	= 27, 28	Contrib. drain. area	= 0.350 ac

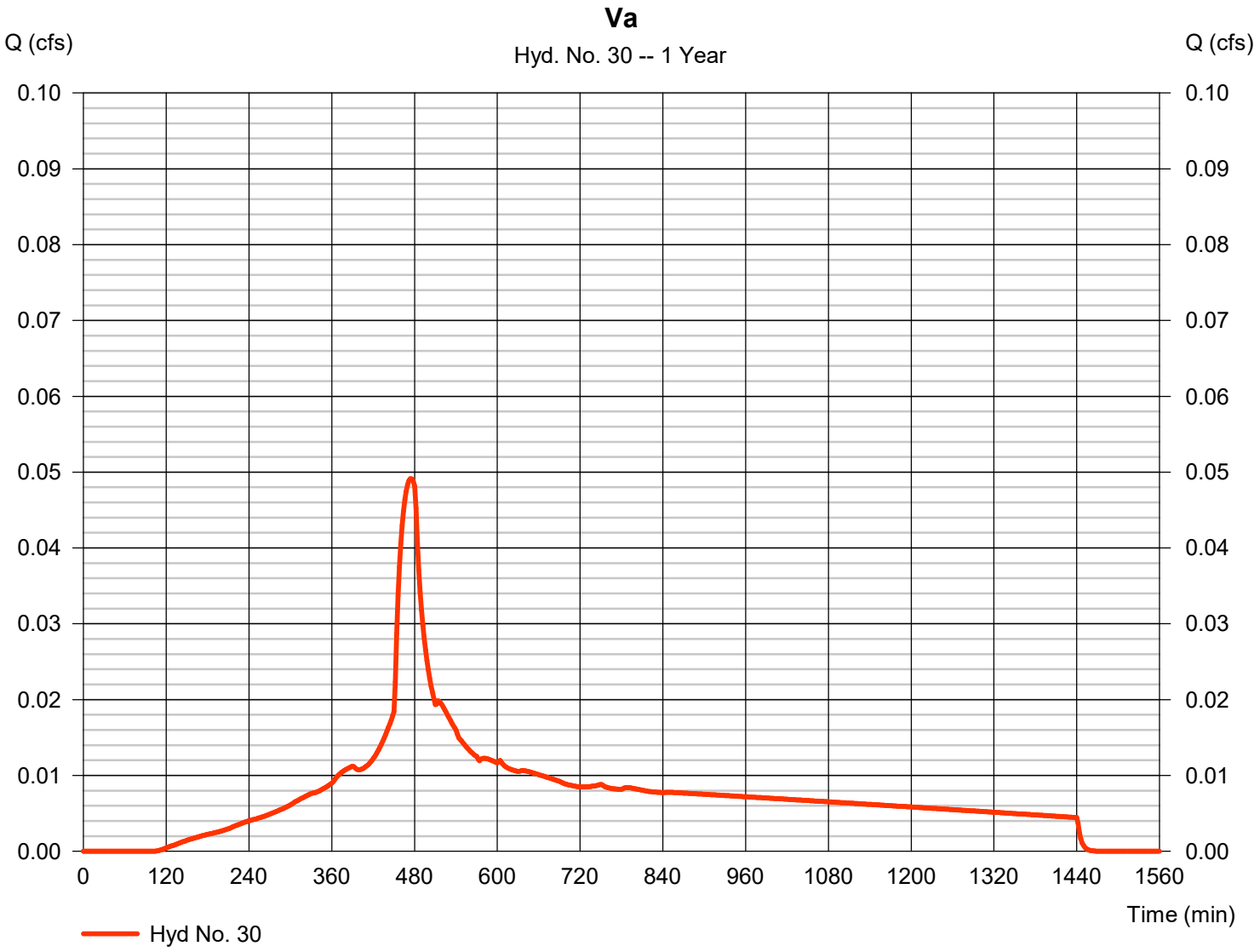


Hydrograph Report

Hyd. No. 30

Va

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.049 cfs
Storm frequency	=	1 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	689 cuft
Drainage area	=	0.240 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

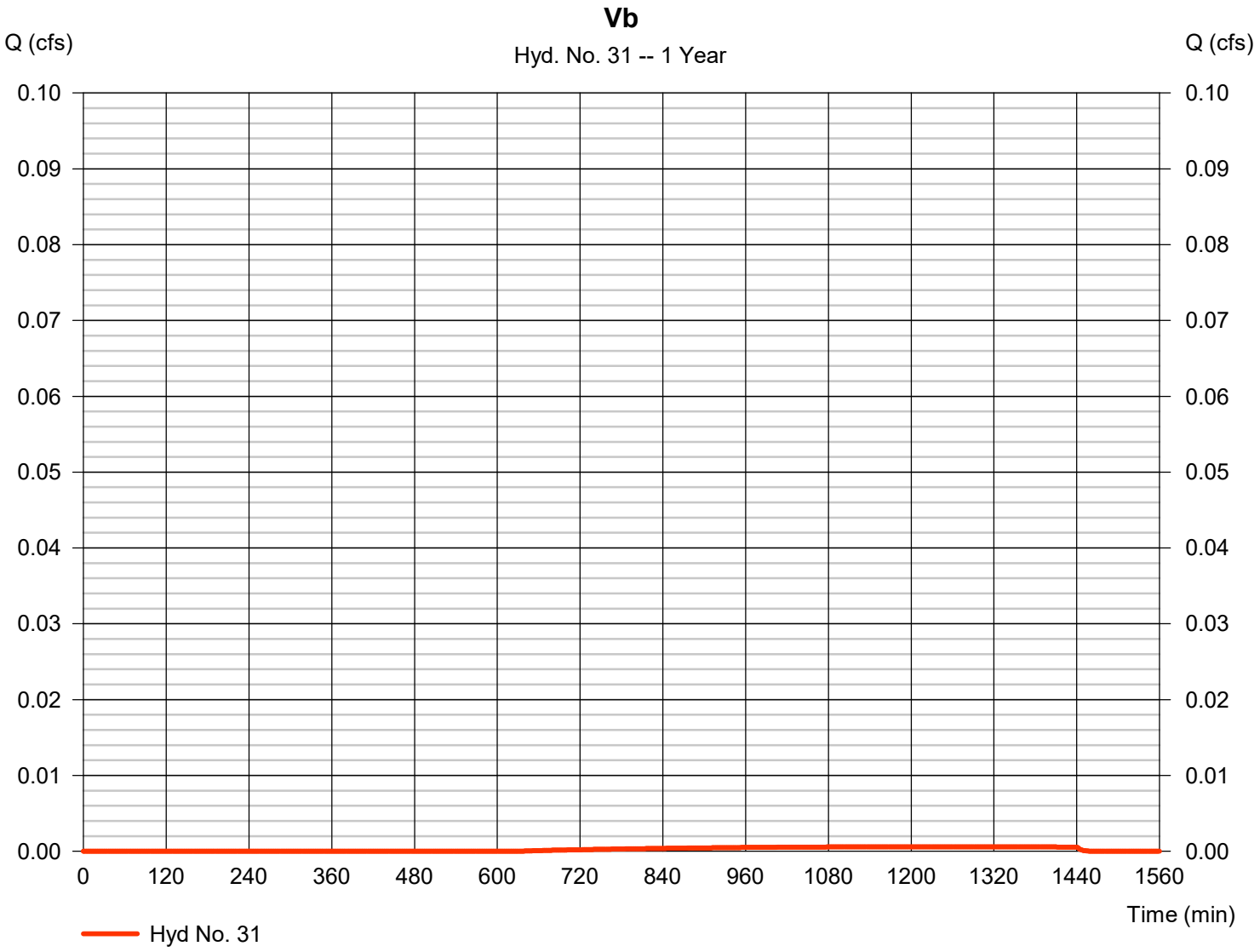


Hydrograph Report

Hyd. No. 31

Vb

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.001 cfs
Storm frequency	= 1 yrs	Time to peak	= 1236 min
Time interval	= 2 min	Hyd. volume	= 23 cuft
Drainage area	= 0.130 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

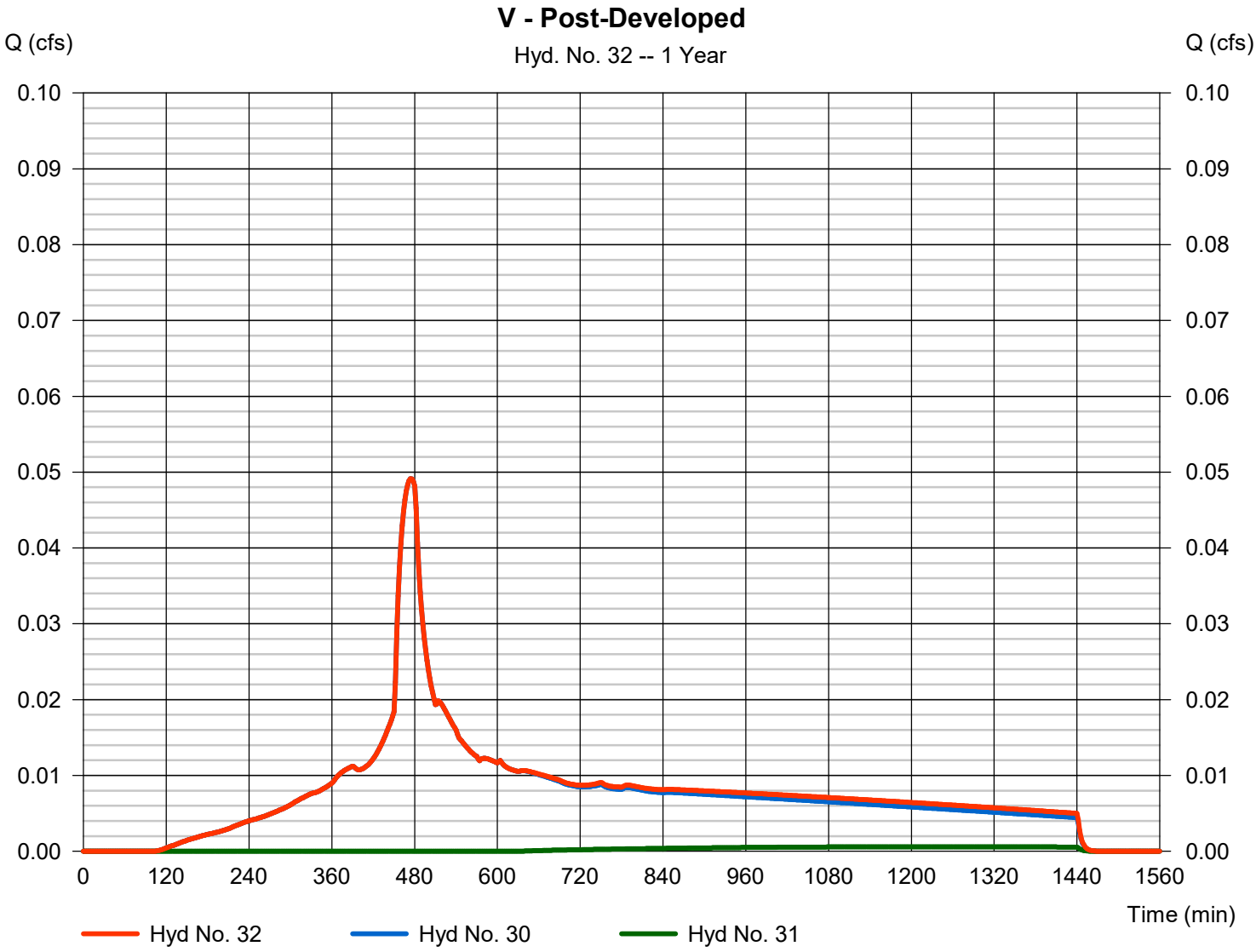


Hydrograph Report

Hyd. No. 32

V - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 0.049 cfs
Storm frequency	= 1 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 712 cuft
Inflow hyds.	= 30, 31	Contrib. drain. area	= 0.370 ac

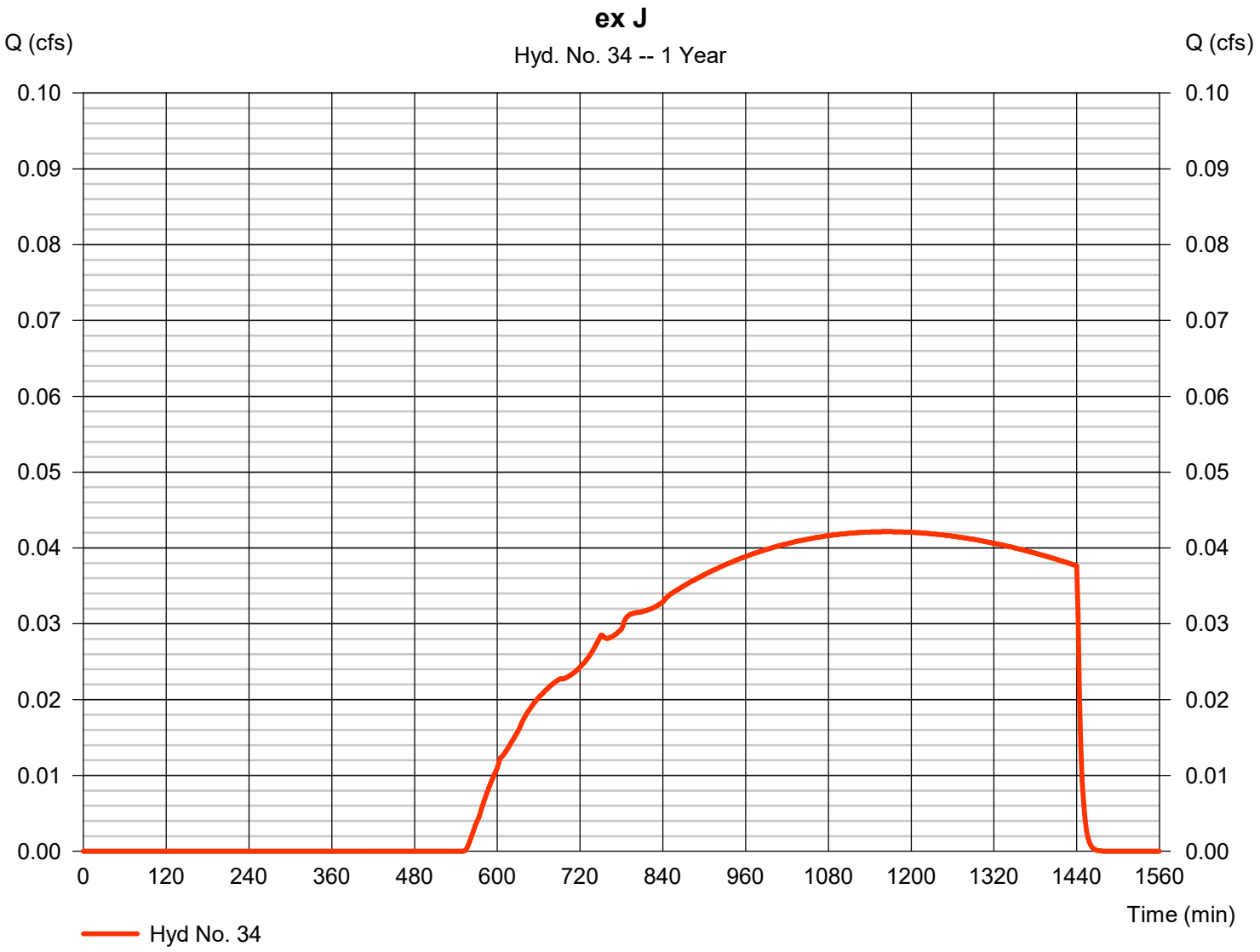


Hydrograph Report

Hyd. No. 34

ex J

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.042 cfs
Storm frequency	= 1 yrs	Time to peak	= 1168 min
Time interval	= 2 min	Hyd. volume	= 1,816 cuft
Drainage area	= 7.130 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

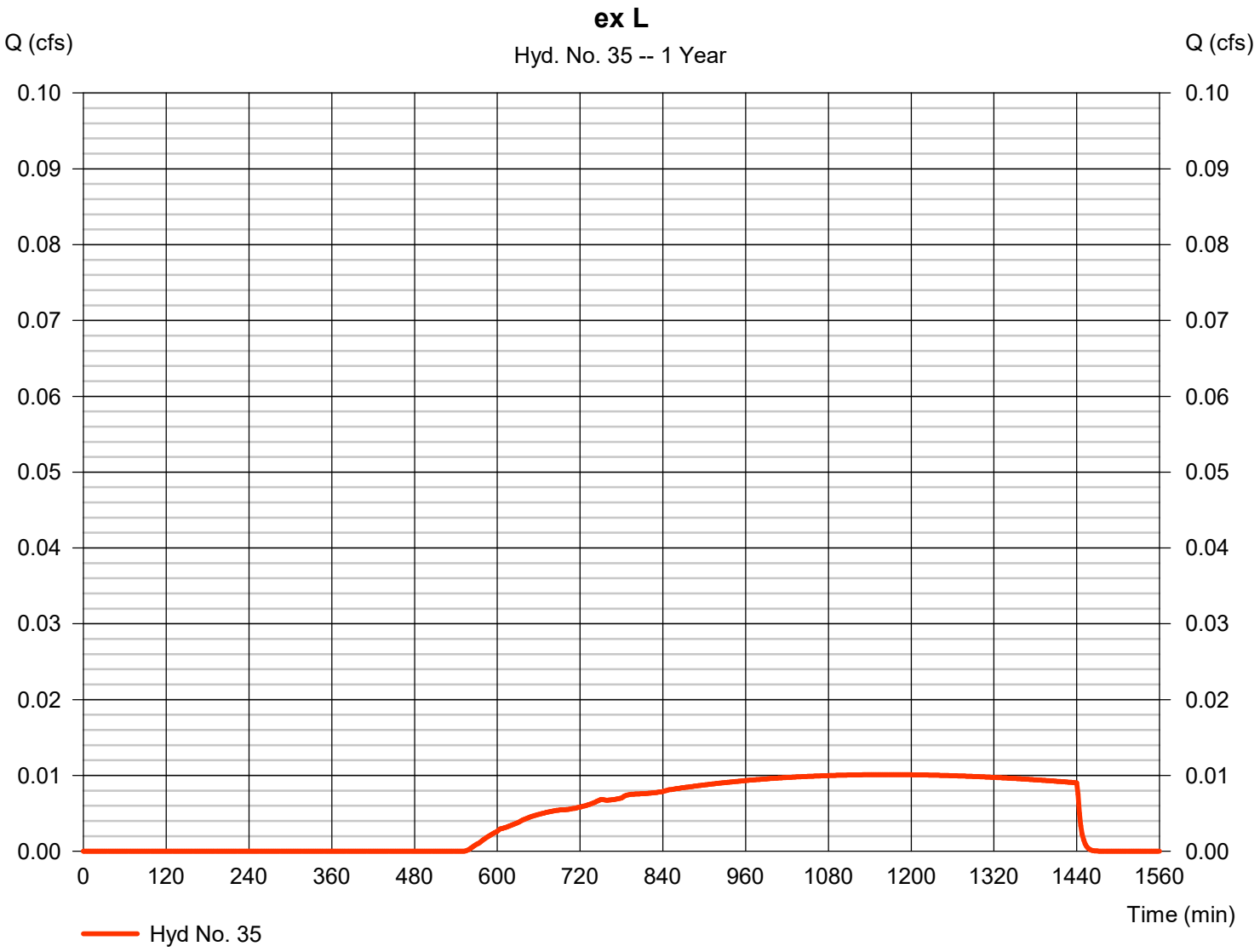


Hydrograph Report

Hyd. No. 35

ex L

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.010 cfs
Storm frequency	= 1 yrs	Time to peak	= 1168 min
Time interval	= 2 min	Hyd. volume	= 435 cuft
Drainage area	= 1.710 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

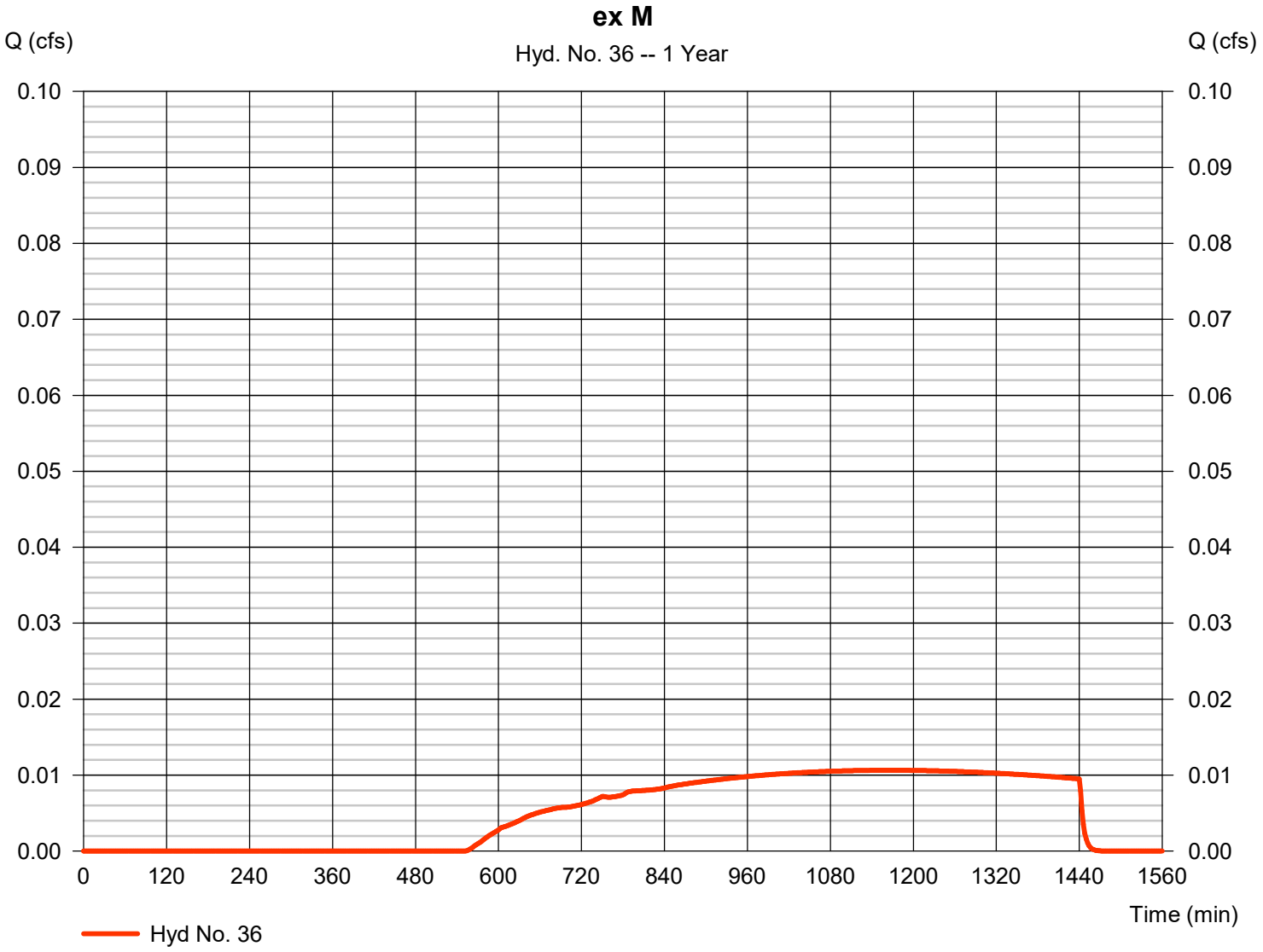


Hydrograph Report

Hyd. No. 36

ex M

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.011 cfs
Storm frequency	= 1 yrs	Time to peak	= 1168 min
Time interval	= 2 min	Hyd. volume	= 458 cuft
Drainage area	= 1.800 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

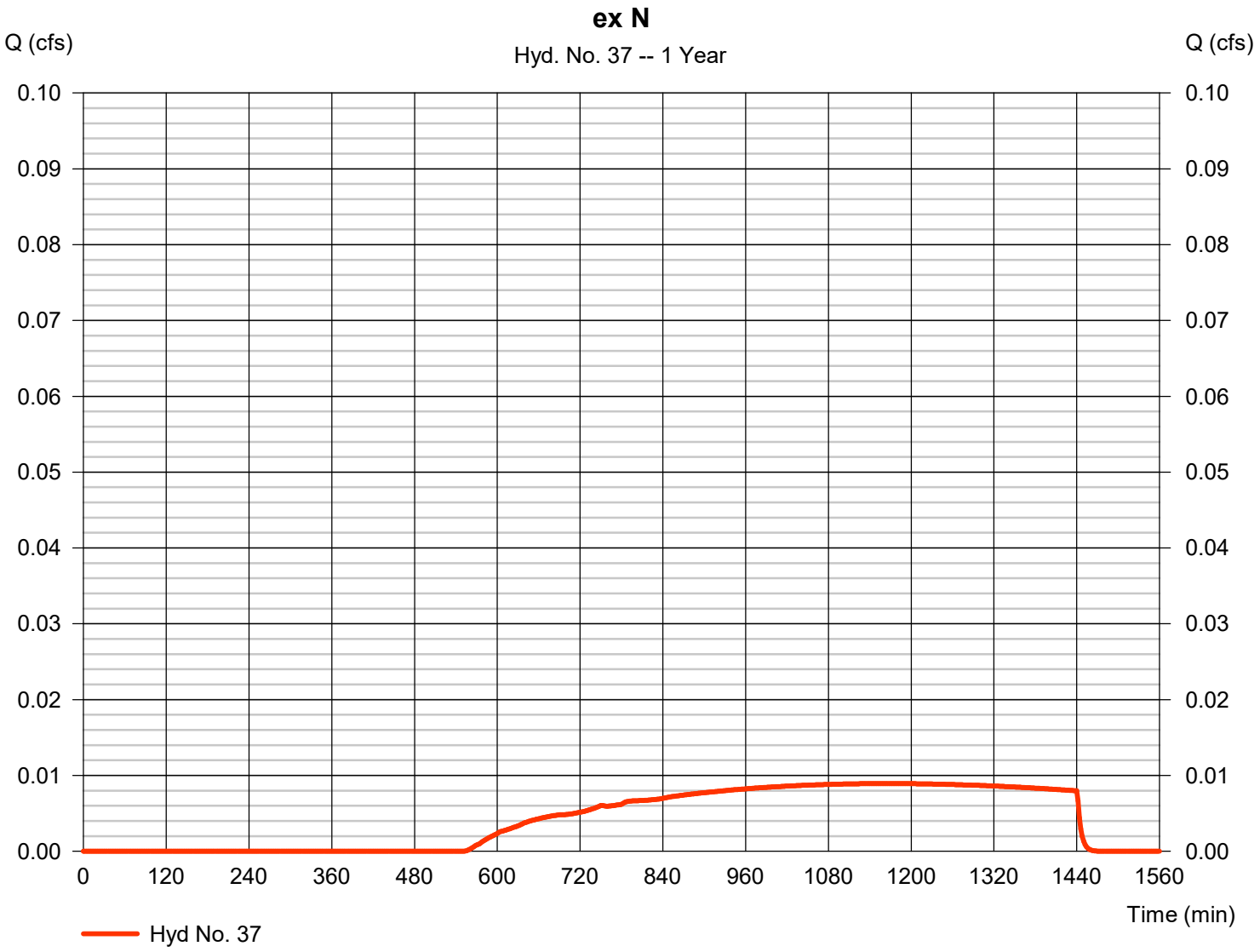


Hydrograph Report

Hyd. No. 37

ex N

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.009 cfs
Storm frequency	=	1 yrs	Time to peak	=	1168 min
Time interval	=	2 min	Hyd. volume	=	385 cuft
Drainage area	=	1.510 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

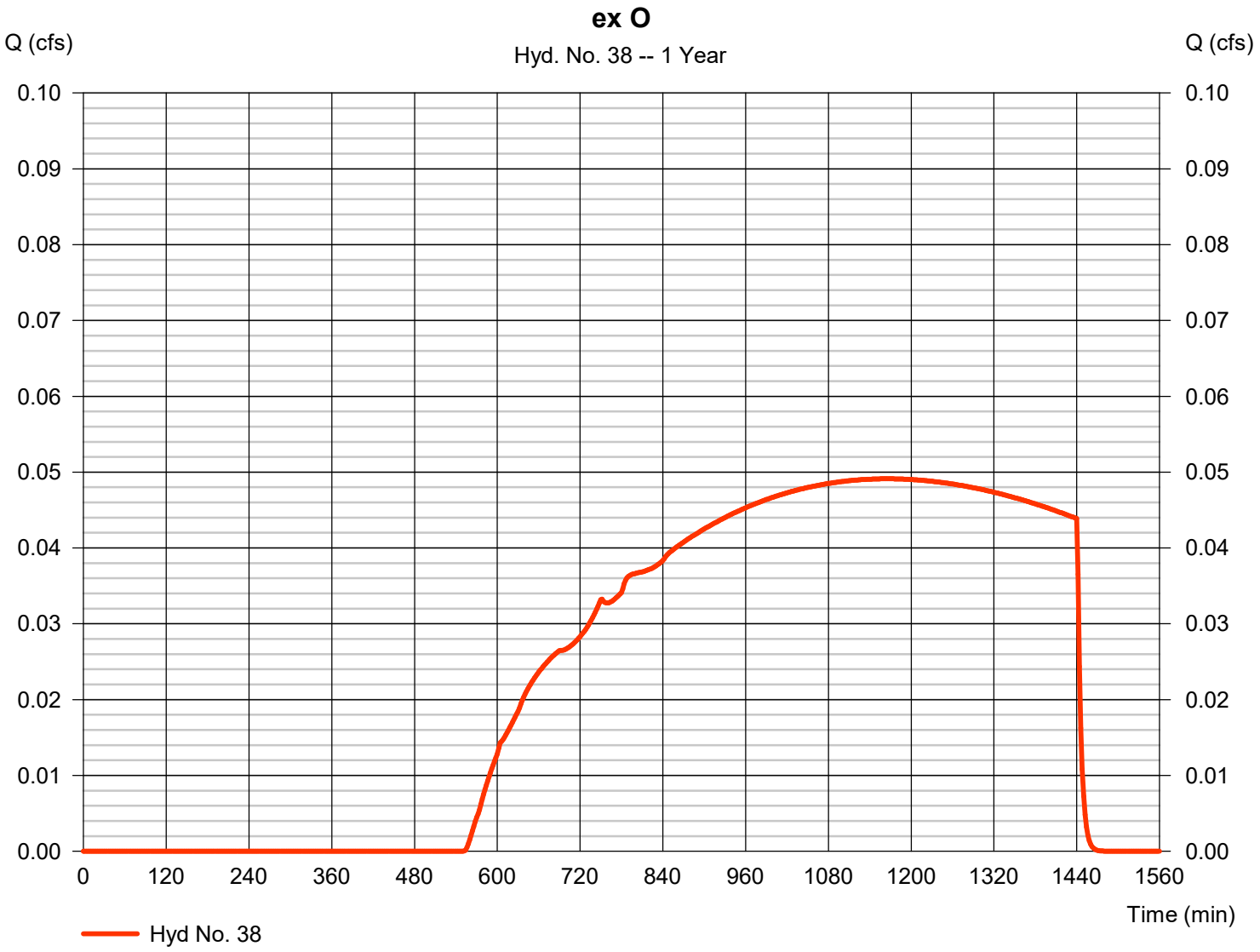


Hydrograph Report

Hyd. No. 38

ex O

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.049 cfs
Storm frequency	=	1 yrs	Time to peak	=	1168 min
Time interval	=	2 min	Hyd. volume	=	2,116 cuft
Drainage area	=	8.310 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

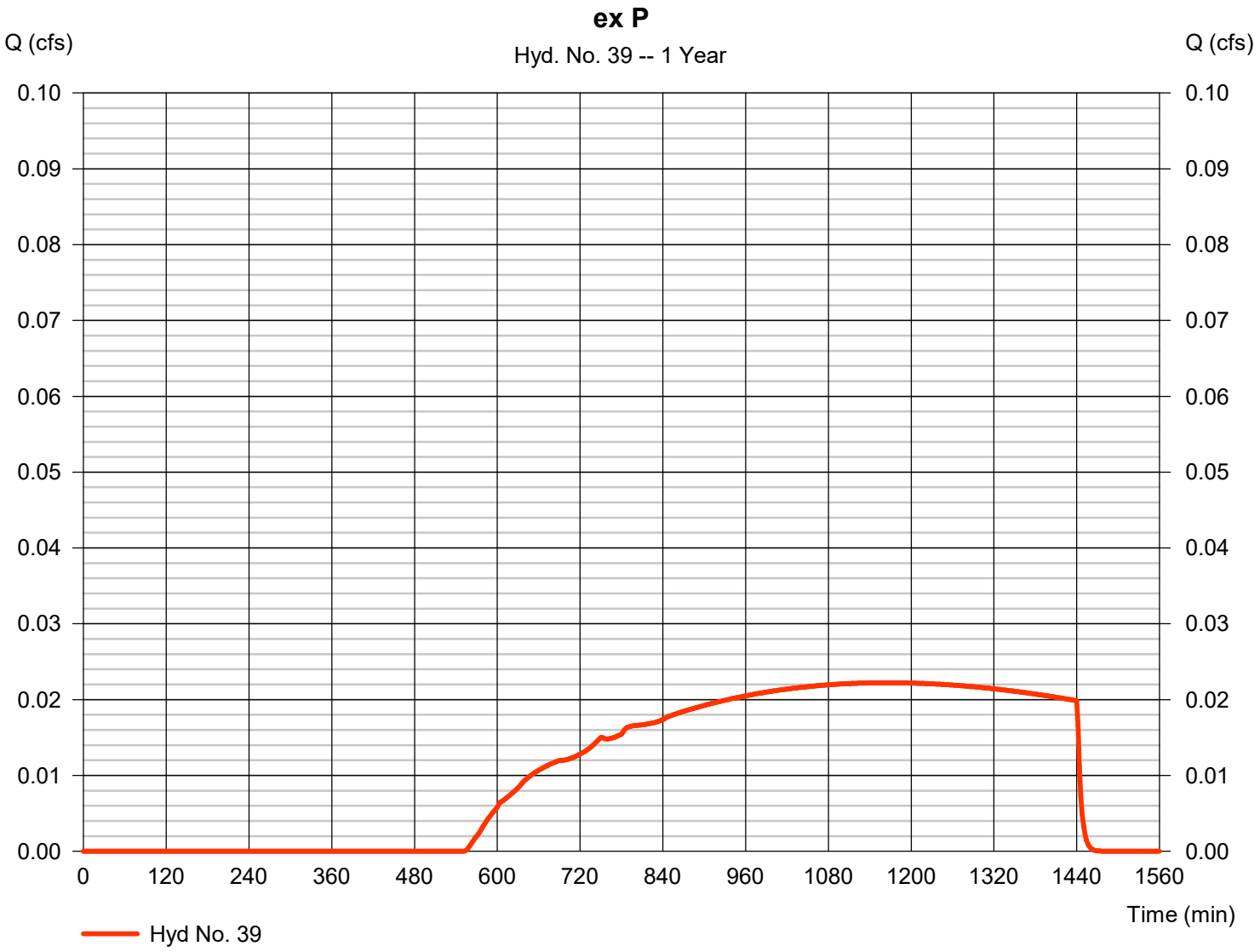


Hydrograph Report

Hyd. No. 39

ex P

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.022 cfs
Storm frequency	= 1 yrs	Time to peak	= 1168 min
Time interval	= 2 min	Hyd. volume	= 958 cuft
Drainage area	= 3.760 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

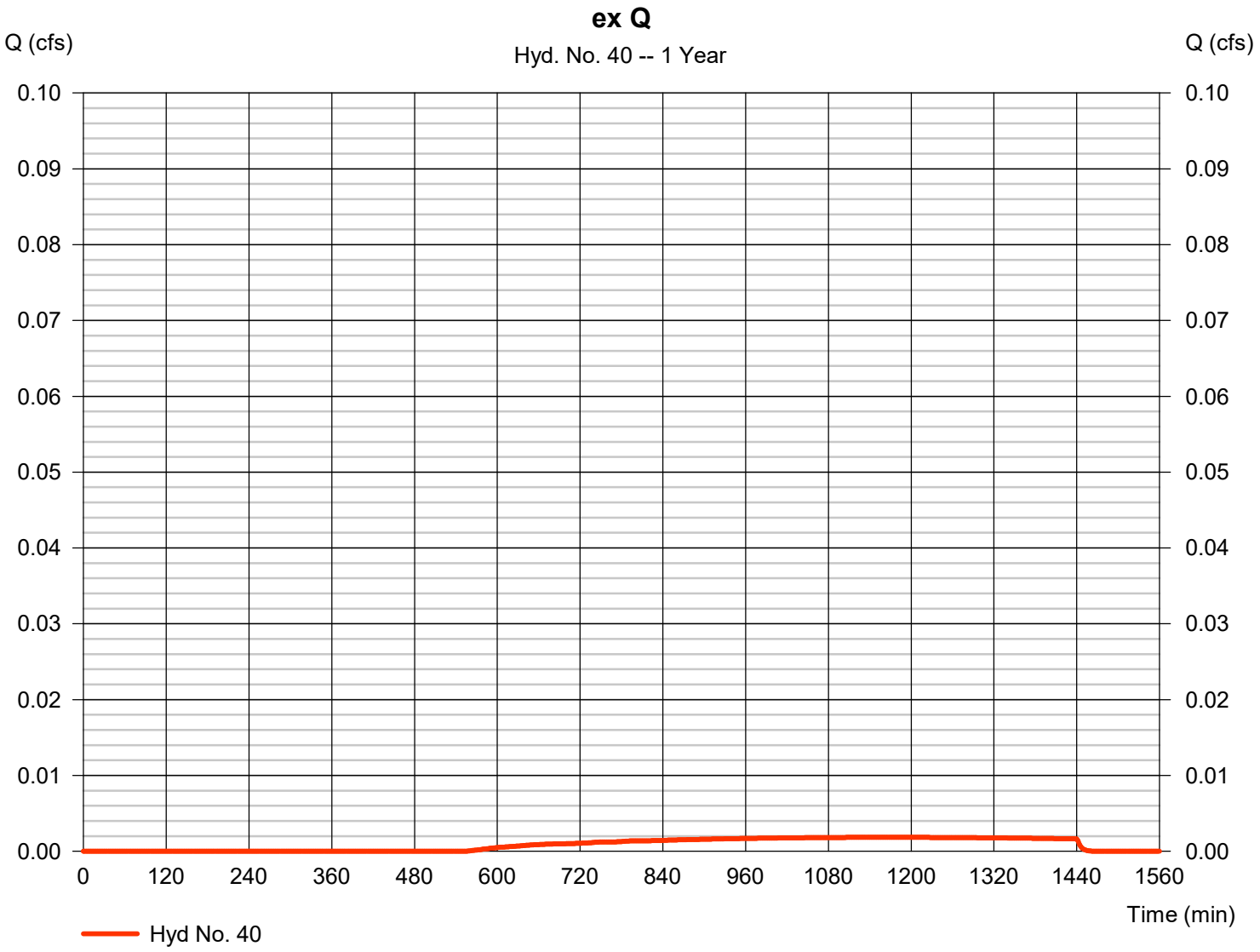


Hydrograph Report

Hyd. No. 40

ex Q

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.002 cfs
Storm frequency	= 1 yrs	Time to peak	= 1168 min
Time interval	= 2 min	Hyd. volume	= 79 cuft
Drainage area	= 0.310 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

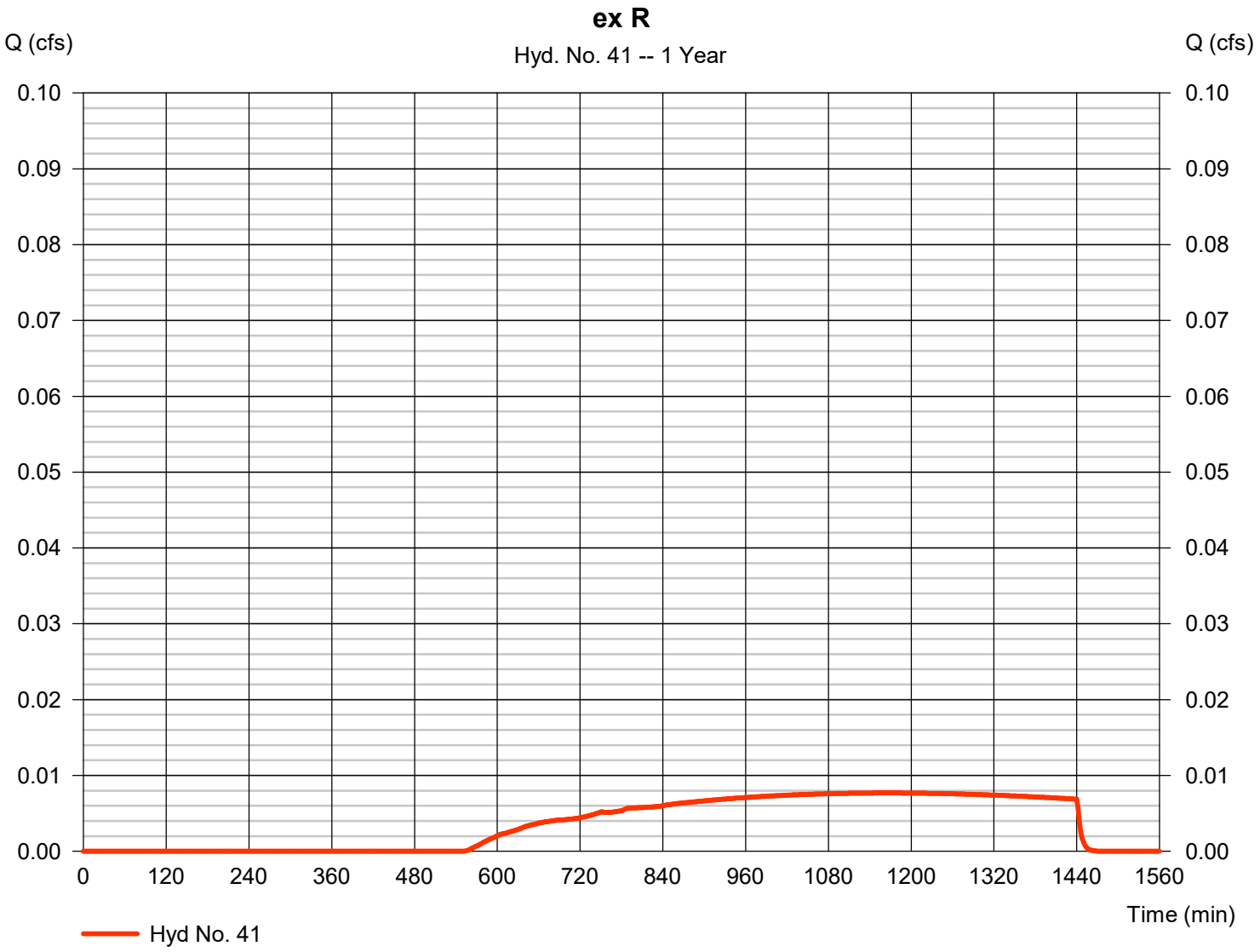


Hydrograph Report

Hyd. No. 41

ex R

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.008 cfs
Storm frequency	= 1 yrs	Time to peak	= 1168 min
Time interval	= 2 min	Hyd. volume	= 331 cuft
Drainage area	= 1.300 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

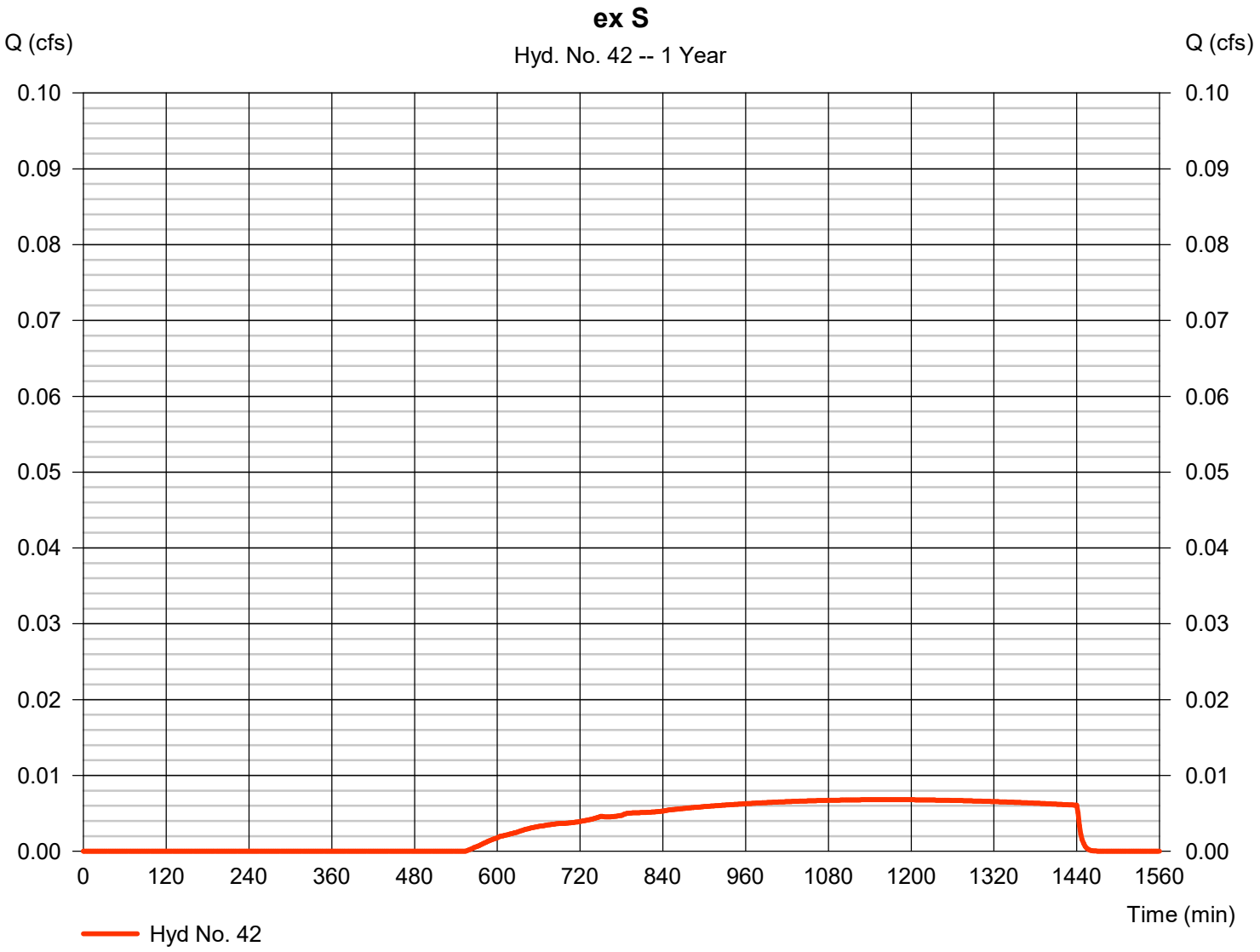


Hydrograph Report

Hyd. No. 42

ex S

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.007 cfs
Storm frequency	=	1 yrs	Time to peak	=	1168 min
Time interval	=	2 min	Hyd. volume	=	293 cuft
Drainage area	=	1.150 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

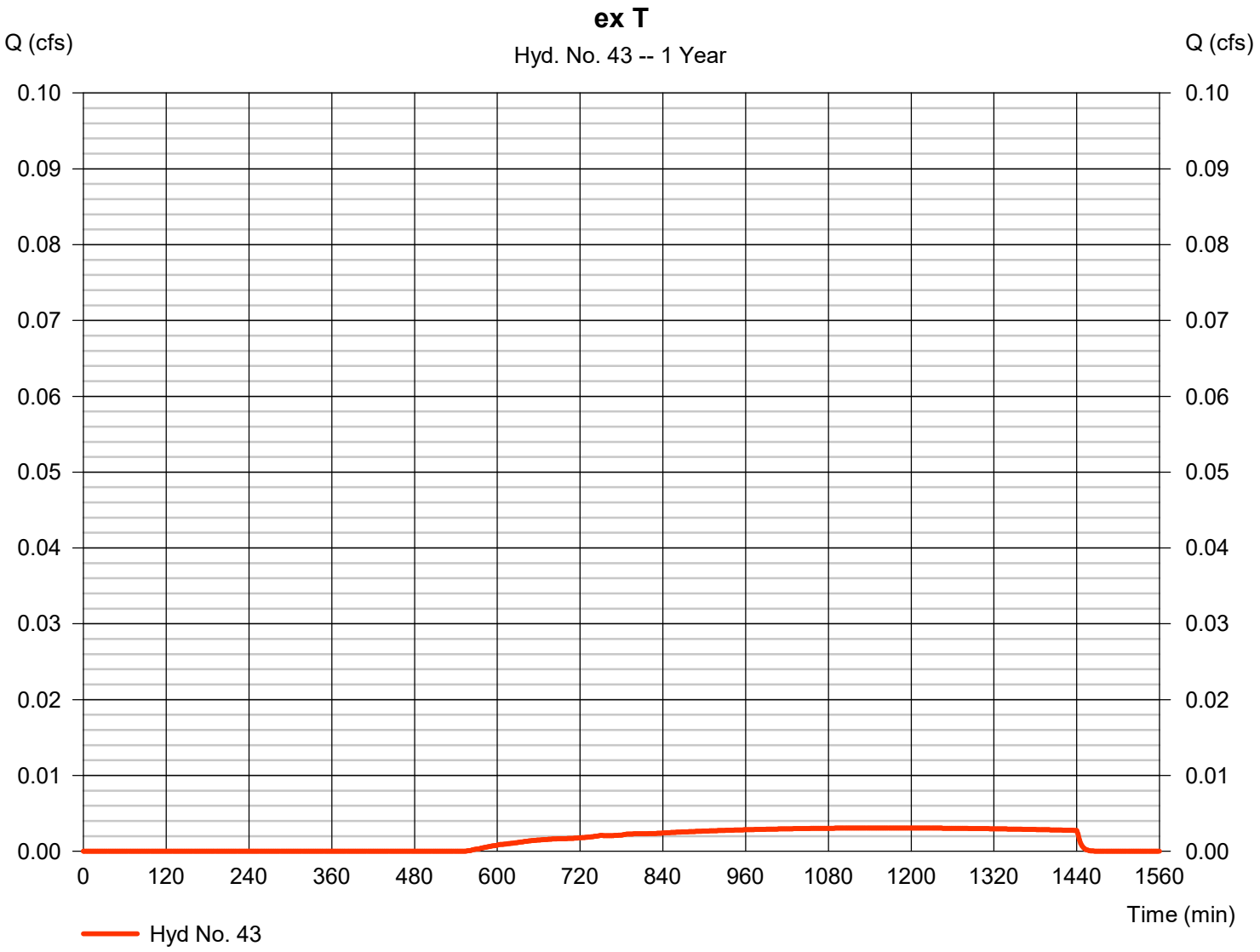


Hydrograph Report

Hyd. No. 43

ex T

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.003 cfs
Storm frequency	= 1 yrs	Time to peak	= 1168 min
Time interval	= 2 min	Hyd. volume	= 132 cuft
Drainage area	= 0.520 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

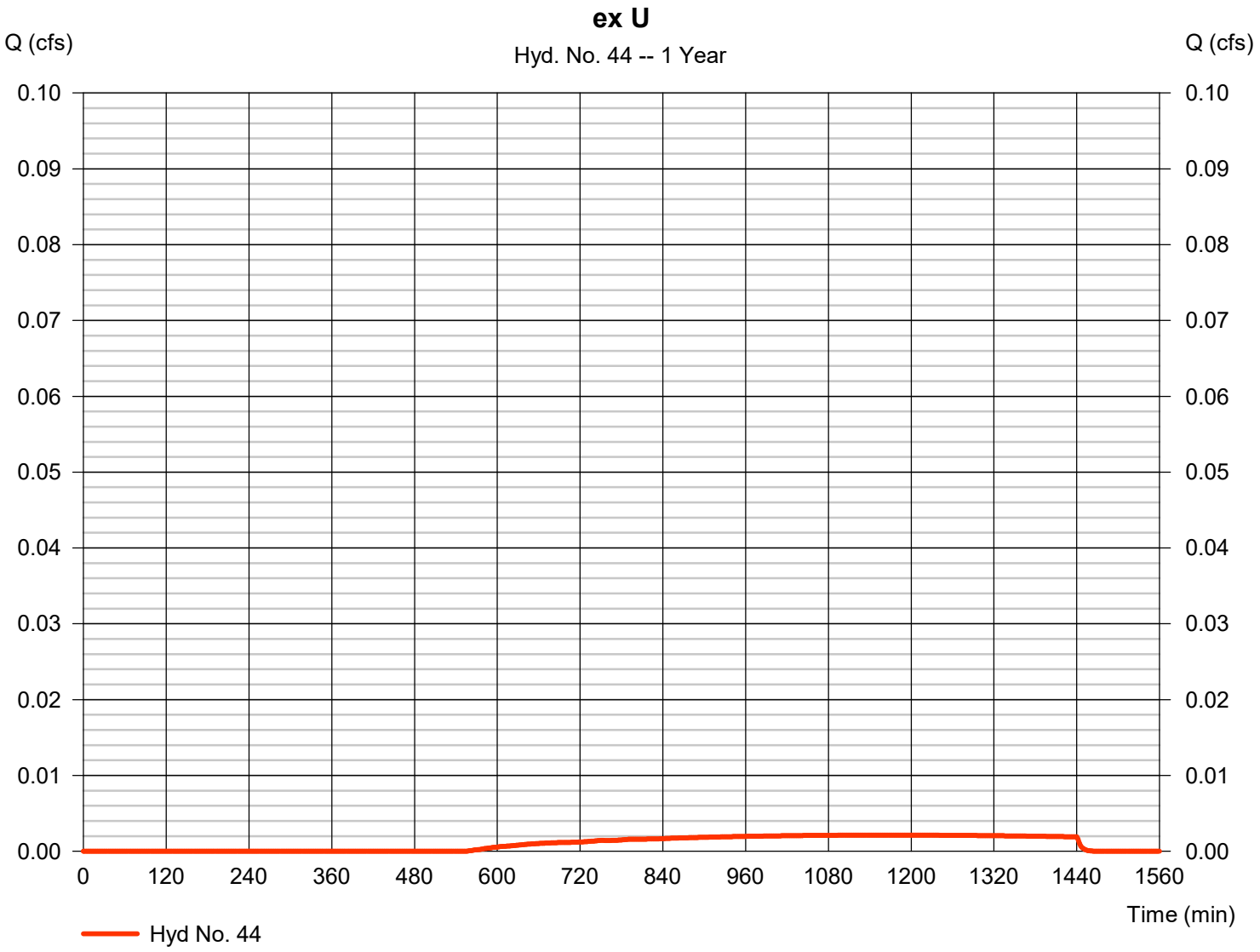


Hydrograph Report

Hyd. No. 44

ex U

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.002 cfs
Storm frequency	=	1 yrs	Time to peak	=	1168 min
Time interval	=	2 min	Hyd. volume	=	92 cuft
Drainage area	=	0.360 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	1.00 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

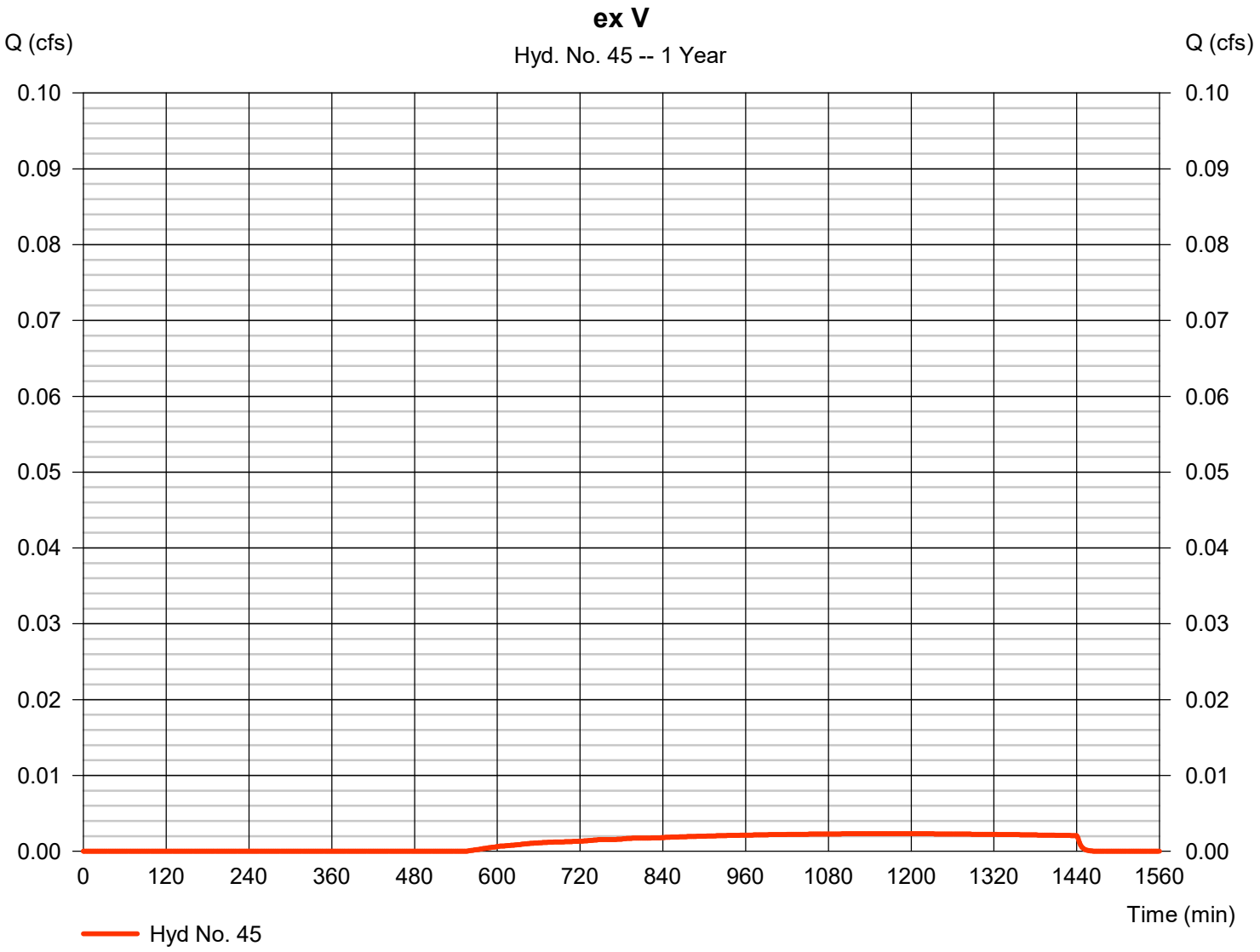


Hydrograph Report

Hyd. No. 45

ex V

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.002 cfs
Storm frequency	= 1 yrs	Time to peak	= 1168 min
Time interval	= 2 min	Hyd. volume	= 99 cuft
Drainage area	= 0.390 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



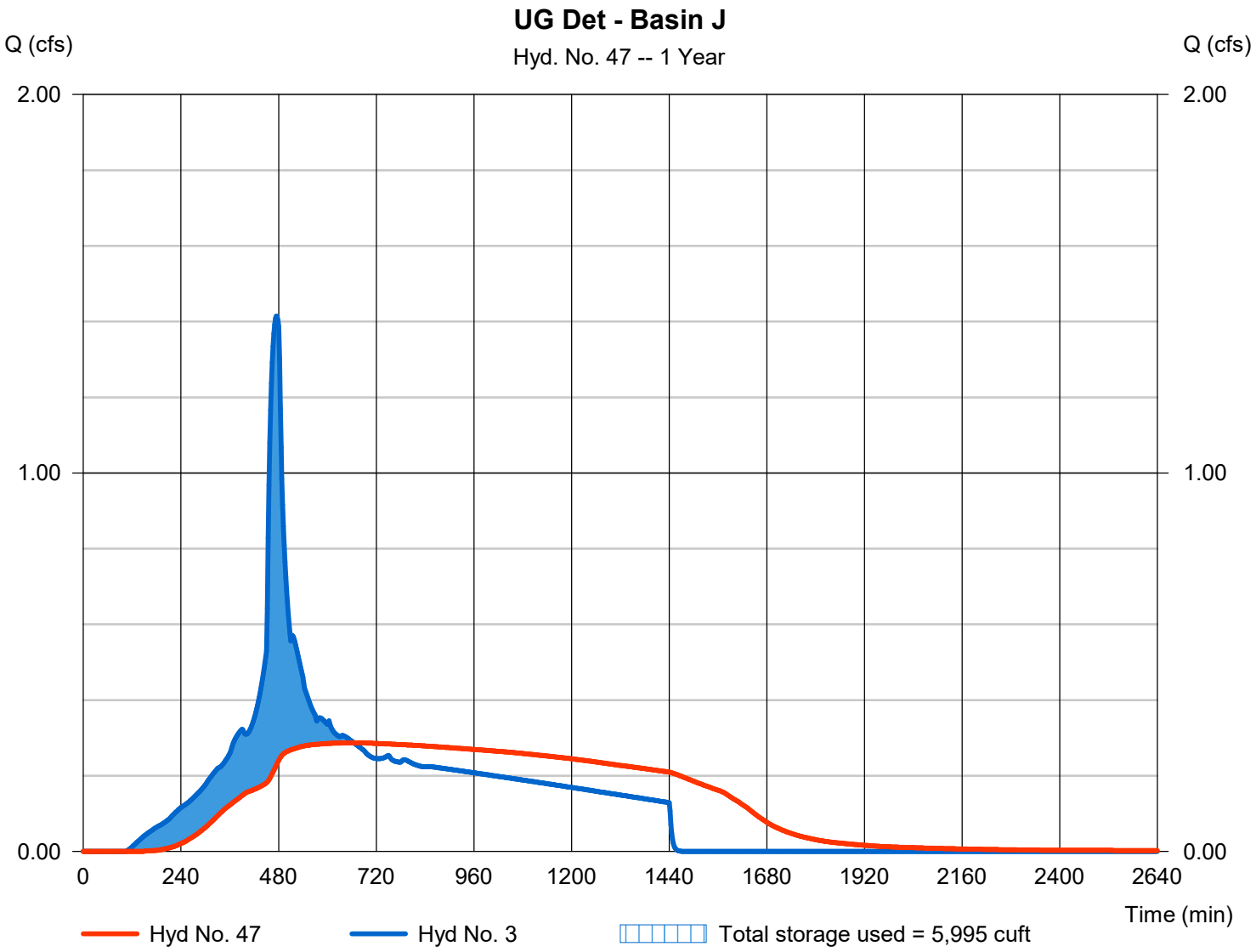
Hydrograph Report

Hyd. No. 47

UG Det - Basin J

Hydrograph type	=	Reservoir	Peak discharge	=	0.287 cfs
Storm frequency	=	1 yrs	Time to peak	=	664 min
Time interval	=	2 min	Hyd. volume	=	19,825 cuft
Inflow hyd. No.	=	3 - J - Post-Developed	Max. Elevation	=	100.97 ft
Reservoir name	=	Basin J Detention	Max. Storage	=	5,995 cuft

Storage Indication method used.



Pond Report

Pond No. 2 - Basin J Detention

Pond Data

UG Chambers -Invert elev. = 100.00 ft, Rise x Span = 4.00 x 4.00 ft, Barrel Len = 156.02 ft, No. Barrels = 15, Slope = 0.00%, Headers = Yes

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	100.00	n/a	0	0
0.40	100.40	n/a	1,650	1,650
0.80	100.80	n/a	2,856	4,506
1.20	101.20	n/a	3,478	7,984
1.60	101.60	n/a	3,831	11,815
2.00	102.00	n/a	4,002	15,817
2.40	102.40	n/a	4,002	19,819
2.80	102.80	n/a	3,830	23,649
3.20	103.20	n/a	3,476	27,125
3.60	103.60	n/a	2,858	29,983
4.00	104.00	n/a	1,644	31,627

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	3.60	0.00	0.00
Span (in)	= 12.00	3.60	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 100.00	100.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 5.00	0.00	0.00	0.00
Crest El. (ft)	= 103.50	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	100.00	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
0.40	1,650	100.40	0.16 ic	0.16 ic	---	---	0.00	---	---	---	---	---	0.157
0.80	4,506	100.80	0.26 ic	0.25 ic	---	---	0.00	---	---	---	---	---	0.253
1.20	7,984	101.20	0.34 ic	0.33 ic	---	---	0.00	---	---	---	---	---	0.326
1.60	11,815	101.60	0.39 ic	0.39 ic	---	---	0.00	---	---	---	---	---	0.387
2.00	15,817	102.00	0.44 ic	0.44 ic	---	---	0.00	---	---	---	---	---	0.440
2.40	19,819	102.40	0.50 ic	0.49 ic	---	---	0.00	---	---	---	---	---	0.488
2.80	23,649	102.80	0.54 ic	0.53 ic	---	---	0.00	---	---	---	---	---	0.532
3.20	27,125	103.20	0.58 ic	0.57 ic	---	---	0.00	---	---	---	---	---	0.572
3.60	29,983	103.60	0.62 ic	0.61 ic	---	---	0.53	---	---	---	---	---	1.136
4.00	31,627	104.00	0.65 ic	0.65 ic	---	---	5.89	---	---	---	---	---	6.532

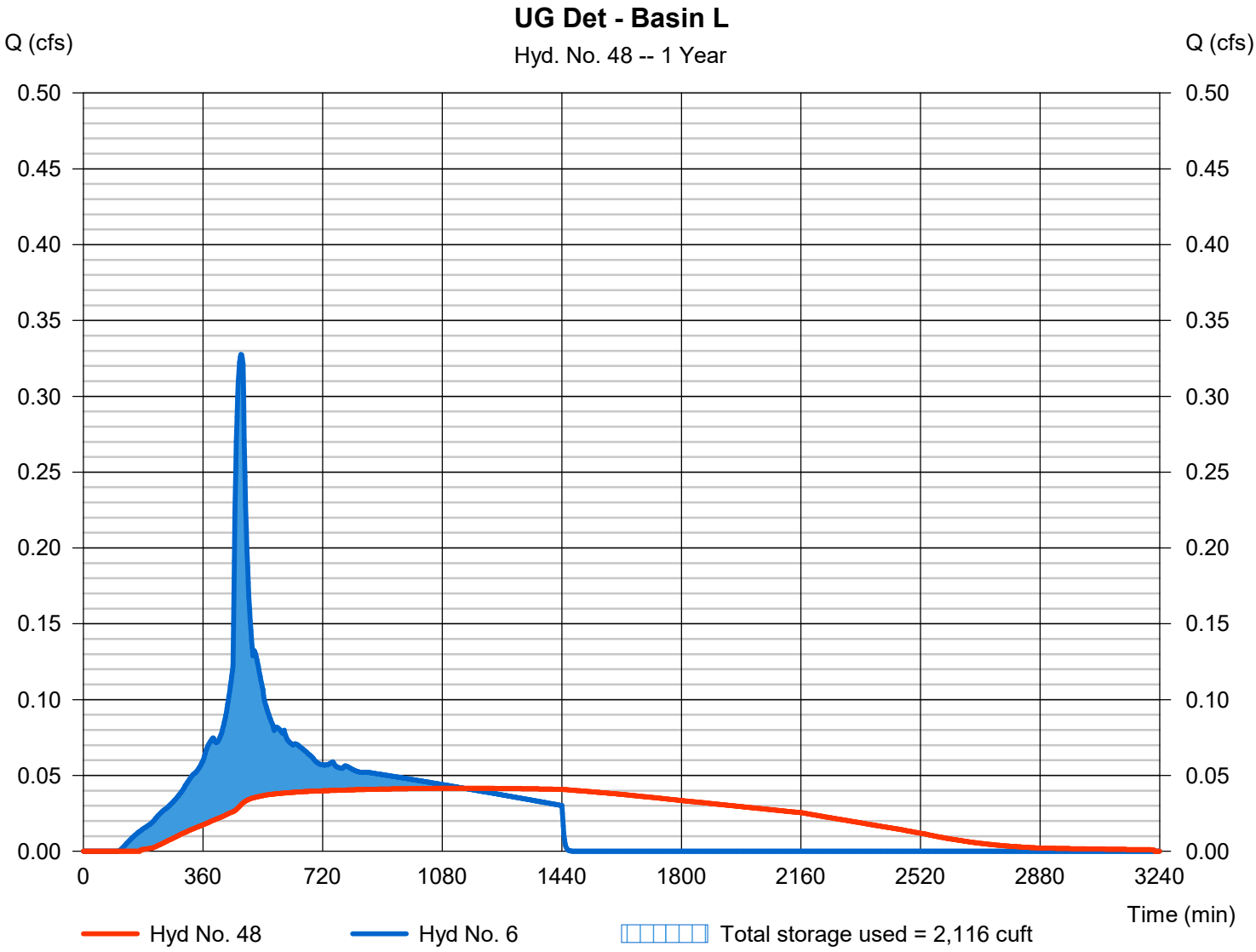
Hydrograph Report

Hyd. No. 48

UG Det - Basin L

Hydrograph type	= Reservoir	Peak discharge	= 0.042 cfs
Storm frequency	= 1 yrs	Time to peak	= 1146 min
Time interval	= 2 min	Hyd. volume	= 4,587 cuft
Inflow hyd. No.	= 6 - L - Post-Developed	Max. Elevation	= 100.97 ft
Reservoir name	= Basin L Detention	Max. Storage	= 2,116 cuft

Storage Indication method used.



Pond Report

Pond No. 3 - Basin L Detention

Pond Data

UG Chambers -Invert elev. = 100.00 ft, Rise x Span = 4.00 x 4.00 ft, Barrel Len = 166.50 ft, No. Barrels = 5, Slope = 0.00%, Headers = Yes

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	100.00	n/a	0	0
0.40	100.40	n/a	582	582
0.80	100.80	n/a	1,009	1,591
1.20	101.20	n/a	1,228	2,819
1.60	101.60	n/a	1,353	4,172
2.00	102.00	n/a	1,413	5,585
2.40	102.40	n/a	1,413	6,998
2.80	102.80	n/a	1,352	8,350
3.20	103.20	n/a	1,228	9,578
3.60	103.60	n/a	1,009	10,587
4.00	104.00	n/a	580	11,167

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	1.30	0.00	0.00
Span (in)	= 12.00	1.30	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 100.00	100.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 5.00	0.00	0.00	0.00
Crest El. (ft)	= 103.80	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	100.00	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
0.40	582	100.40	0.03 ic	0.03 ic	---	---	0.00	---	---	---	---	---	0.025
0.80	1,591	100.80	0.04 ic	0.04 ic	---	---	0.00	---	---	---	---	---	0.037
1.20	2,819	101.20	0.05 ic	0.05 ic	---	---	0.00	---	---	---	---	---	0.047
1.60	4,172	101.60	0.06 ic	0.05 ic	---	---	0.00	---	---	---	---	---	0.054
2.00	5,585	102.00	0.06 ic	0.06 ic	---	---	0.00	---	---	---	---	---	0.061
2.40	6,998	102.40	0.07 ic	0.07 ic	---	---	0.00	---	---	---	---	---	0.067
2.80	8,350	102.80	0.07 ic	0.07 ic	---	---	0.00	---	---	---	---	---	0.073
3.20	9,578	103.20	0.08 ic	0.08 ic	---	---	0.00	---	---	---	---	---	0.078
3.60	10,587	103.60	0.08 ic	0.08 ic	---	---	0.00	---	---	---	---	---	0.083
4.00	11,167	104.00	0.09 ic	0.09 ic	---	---	1.49	---	---	---	---	---	1.576

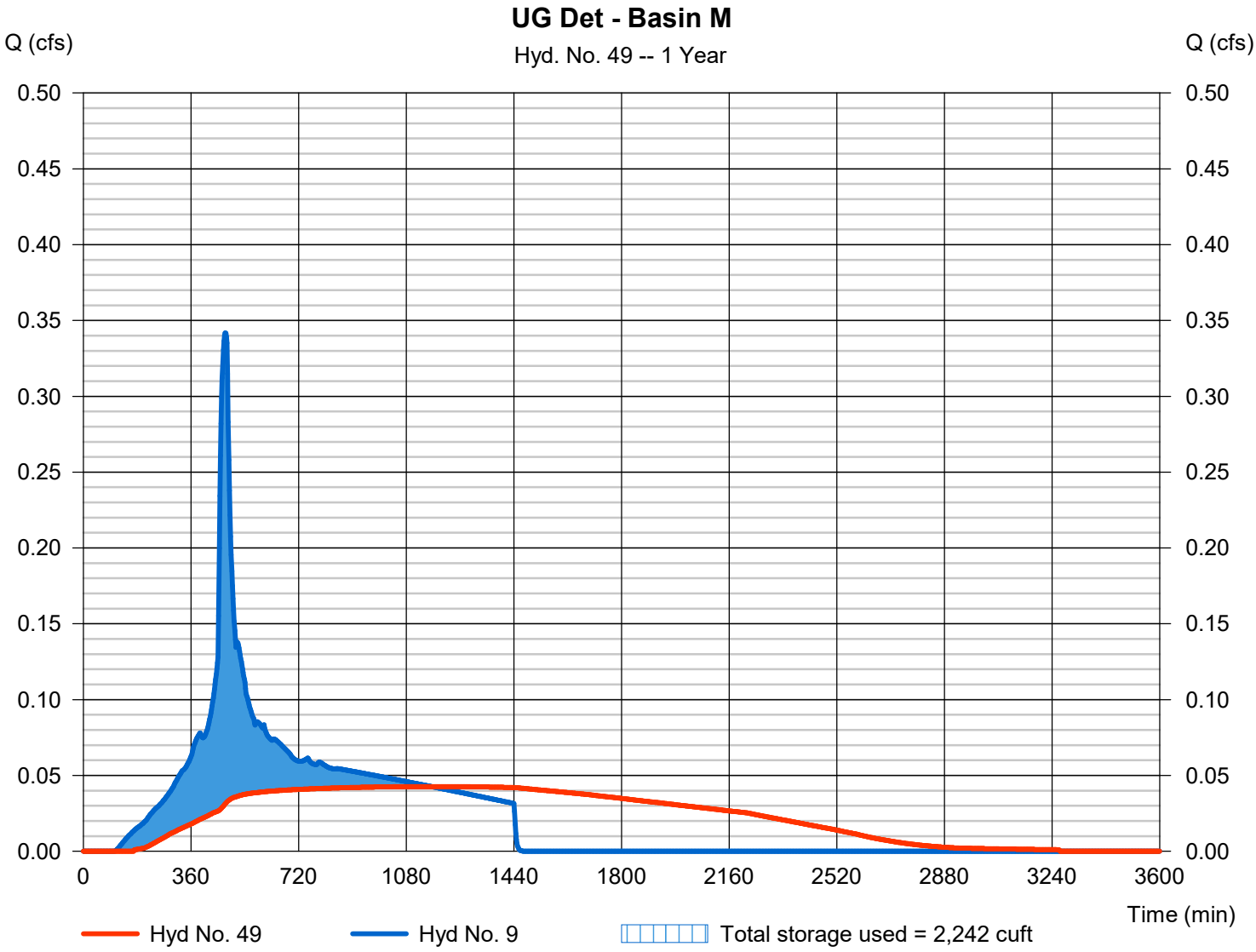
Hydrograph Report

Hyd. No. 49

UG Det - Basin M

Hydrograph type	= Reservoir	Peak discharge	= 0.043 cfs
Storm frequency	= 1 yrs	Time to peak	= 1164 min
Time interval	= 2 min	Hyd. volume	= 4,790 cuft
Inflow hyd. No.	= 9 - M - Post-Developed	Max. Elevation	= 101.02 ft
Reservoir name	= Basin M Detention	Max. Storage	= 2,242 cuft

Storage Indication method used.



Pond Report

Pond No. 4 - Basin M Detention

Pond Data

UG Chambers -Invert elev. = 100.00 ft, Rise x Span = 4.00 x 4.00 ft, Barrel Len = 164.40 ft, No. Barrels = 5, Slope = 0.00%, Headers = Yes

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	100.00	n/a	0	0
0.40	100.40	n/a	576	576
0.80	100.80	n/a	997	1,572
1.20	101.20	n/a	1,214	2,786
1.60	101.60	n/a	1,337	4,122
2.00	102.00	n/a	1,397	5,519
2.40	102.40	n/a	1,396	6,915
2.80	102.80	n/a	1,336	8,252
3.20	103.20	n/a	1,213	9,465
3.60	103.60	n/a	997	10,462
4.00	104.00	n/a	574	11,035

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	1.30	0.00	0.00
Span (in)	= 12.00	1.30	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 100.00	100.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 5.00	0.00	0.00	0.00
Crest El. (ft)	= 103.85	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	100.00	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
0.40	576	100.40	0.03 ic	0.03 ic	---	---	0.00	---	---	---	---	---	0.025
0.80	1,572	100.80	0.04 ic	0.04 ic	---	---	0.00	---	---	---	---	---	0.037
1.20	2,786	101.20	0.05 ic	0.05 ic	---	---	0.00	---	---	---	---	---	0.047
1.60	4,122	101.60	0.06 ic	0.05 ic	---	---	0.00	---	---	---	---	---	0.054
2.00	5,519	102.00	0.06 ic	0.06 ic	---	---	0.00	---	---	---	---	---	0.061
2.40	6,915	102.40	0.07 ic	0.07 ic	---	---	0.00	---	---	---	---	---	0.067
2.80	8,252	102.80	0.07 ic	0.07 ic	---	---	0.00	---	---	---	---	---	0.073
3.20	9,465	103.20	0.08 ic	0.08 ic	---	---	0.00	---	---	---	---	---	0.078
3.60	10,462	103.60	0.08 ic	0.08 ic	---	---	0.00	---	---	---	---	---	0.083
4.00	11,035	104.00	0.09 ic	0.09 ic	---	---	0.97	---	---	---	---	---	1.054

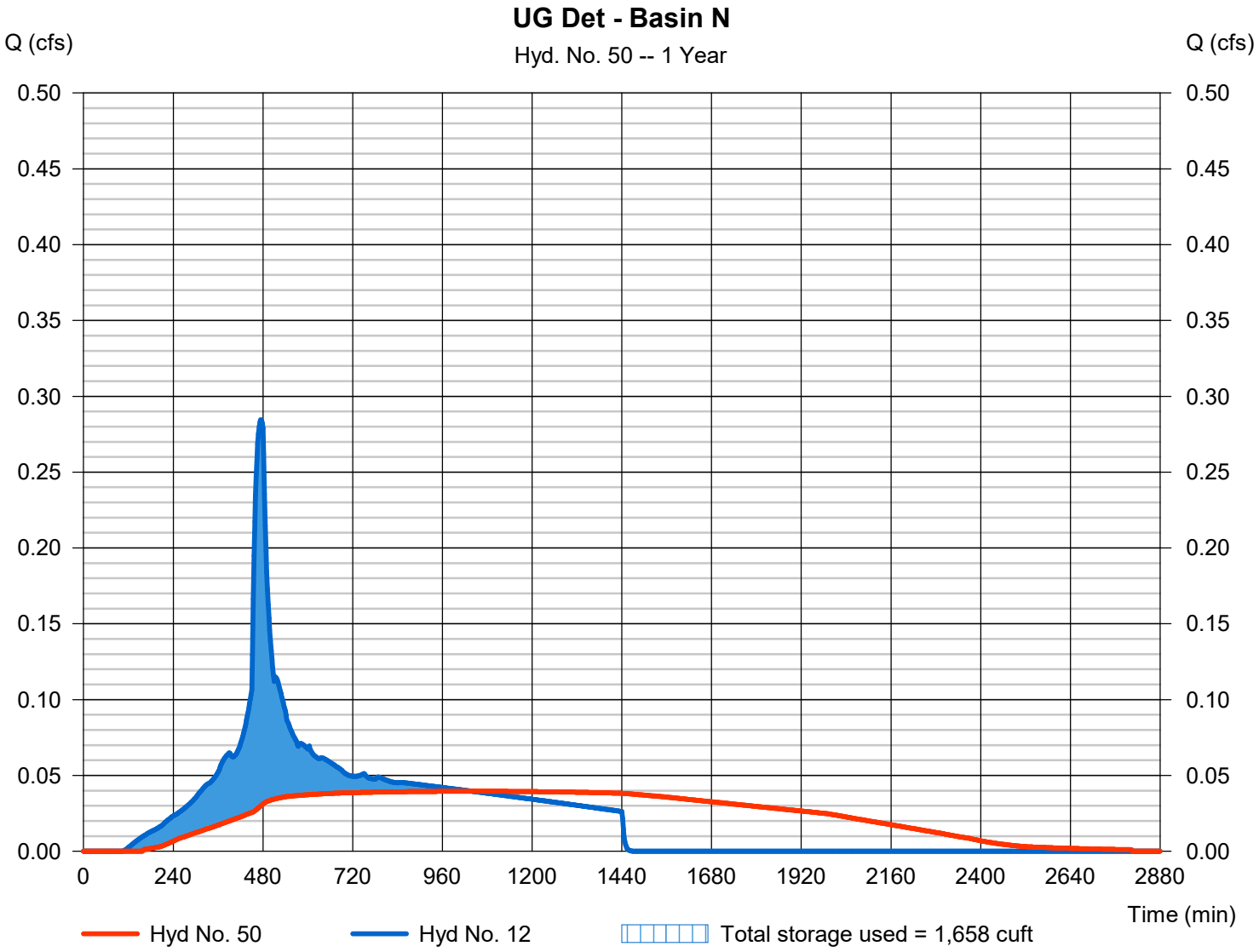
Hydrograph Report

Hyd. No. 50

UG Det - Basin N

Hydrograph type	=	Reservoir	Peak discharge	=	0.040 cfs
Storm frequency	=	1 yrs	Time to peak	=	1040 min
Time interval	=	2 min	Hyd. volume	=	3,994 cuft
Inflow hyd. No.	=	12 - N - Post-Developed	Max. Elevation	=	101.19 ft
Reservoir name	=	Basin N Detention	Max. Storage	=	1,658 cuft

Storage Indication method used.



Pond Report

Pond No. 5 - Basin N Detention

Pond Data

UG Chambers -Invert elev. = 100.00 ft, Rise x Span = 5.00 x 5.00 ft, Barrel Len = 115.00 ft, No. Barrels = 4, Slope = 0.00%, Headers = No

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	100.00	n/a	0	0
0.50	100.50	n/a	470	470
1.00	101.00	n/a	817	1,287
1.50	101.50	n/a	993	2,280
2.00	102.00	n/a	1,094	3,375
2.50	102.50	n/a	1,143	4,518
3.00	103.00	n/a	1,143	5,661
3.50	103.50	n/a	1,094	6,755
4.00	104.00	n/a	993	7,748
4.50	104.50	n/a	816	8,564
5.00	105.00	n/a	470	9,034

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	1.20	0.00	0.00
Span (in)	= 12.00	1.20	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 100.00	100.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 5.00	0.00	0.00	0.00
Crest El. (ft)	= 104.80	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	100.00	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
0.50	470	100.50	0.03 ic	0.02 ic	---	---	0.00	---	---	---	---	---	0.025
1.00	1,287	101.00	0.04 ic	0.04 ic	---	---	0.00	---	---	---	---	---	0.036
1.50	2,280	101.50	0.05 ic	0.04 ic	---	---	0.00	---	---	---	---	---	0.045
2.00	3,375	102.00	0.05 ic	0.05 ic	---	---	0.00	---	---	---	---	---	0.052
2.50	4,518	102.50	0.06 ic	0.06 ic	---	---	0.00	---	---	---	---	---	0.058
3.00	5,661	103.00	0.07 ic	0.06 ic	---	---	0.00	---	---	---	---	---	0.064
3.50	6,755	103.50	0.07 ic	0.07 ic	---	---	0.00	---	---	---	---	---	0.069
4.00	7,748	104.00	0.08 ic	0.07 ic	---	---	0.00	---	---	---	---	---	0.074
4.50	8,564	104.50	0.08 ic	0.08 ic	---	---	0.00	---	---	---	---	---	0.079
5.00	9,034	105.00	0.08 ic	0.08 ic	---	---	1.49	---	---	---	---	---	1.573

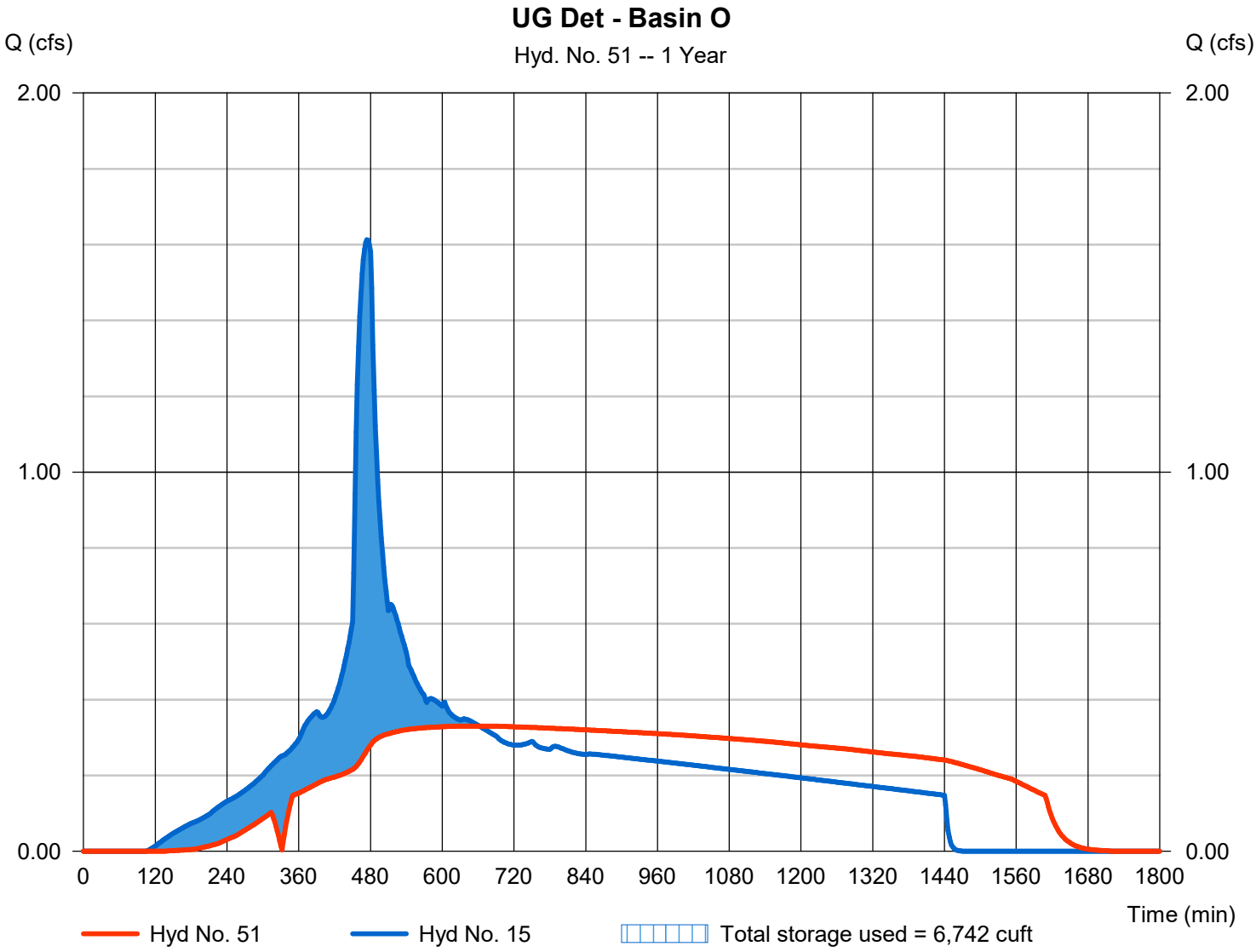
Hydrograph Report

Hyd. No. 51

UG Det - Basin O

Hydrograph type	=	Reservoir	Peak discharge	=	0.330 cfs
Storm frequency	=	1 yrs	Time to peak	=	662 min
Time interval	=	2 min	Hyd. volume	=	21,551 cuft
Inflow hyd. No.	=	15 - O - Post-Developed	Max. Elevation	=	54.77 ft
Reservoir name	=	Basin O Detention	Max. Storage	=	6,742 cuft

Storage Indication method used.



Pond Report

Pond No. 6 - Basin O Detention

Pond Data

UG Chambers -Invert elev. = 53.58 ft, Rise x Span = 5.00 x 5.00 ft, Barrel Len = 141.06 ft, No. Barrels = 12, Slope = 0.00%, Headers = Yes

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	53.58	n/a	0	0
0.50	54.08	n/a	1,909	1,909
1.00	54.58	n/a	3,317	5,226
1.50	55.08	n/a	4,034	9,259
2.00	55.58	n/a	4,443	13,702
2.50	56.08	n/a	4,642	18,344
3.00	56.58	n/a	4,642	22,985
3.50	57.08	n/a	4,442	27,427
4.00	57.58	n/a	4,032	31,459
4.50	58.08	n/a	3,314	34,773
5.00	58.58	n/a	1,906	36,679

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	3.60	0.00	0.00
Span (in)	= 18.00	3.60	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 53.58	53.58	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 5.00	0.00	0.00	0.00
Crest El. (ft)	= 58.04	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	53.58	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
0.50	1,909	54.08	0.20 ic	0.19 ic	---	---	0.00	---	---	---	---	---	0.190
1.00	5,226	54.58	0.31 ic	0.30 ic	---	---	0.00	---	---	---	---	---	0.297
1.50	9,259	55.08	0.38 ic	0.38 ic	---	---	0.00	---	---	---	---	---	0.378
2.00	13,702	55.58	0.46 ic	0.44 ic	---	---	0.00	---	---	---	---	---	0.445
2.50	18,344	56.08	0.52 ic	0.50 ic	---	---	0.00	---	---	---	---	---	0.504
3.00	22,985	56.58	0.56 ic	0.56 ic	---	---	0.00	---	---	---	---	---	0.556
3.50	27,427	57.08	0.62 ic	0.61 ic	---	---	0.00	---	---	---	---	---	0.605
4.00	31,459	57.58	0.65 ic	0.65 ic	---	---	0.00	---	---	---	---	---	0.650
4.50	34,773	58.08	0.69 ic	0.69 ic	---	---	0.13	---	---	---	---	---	0.825
5.00	36,679	58.58	0.73 ic	0.73 ic	---	---	6.61	---	---	---	---	---	7.339

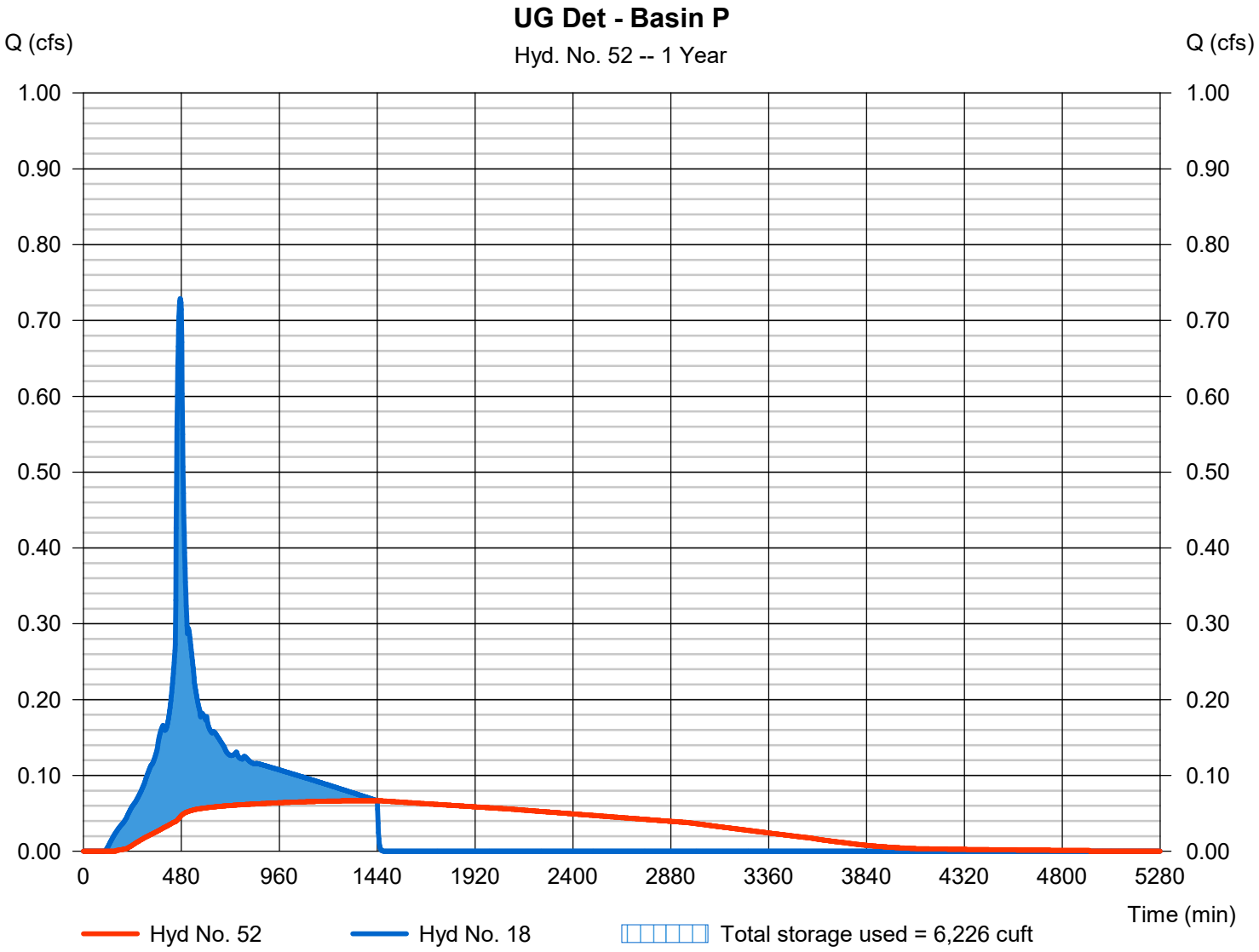
Hydrograph Report

Hyd. No. 52

UG Det - Basin P

Hydrograph type	=	Reservoir	Peak discharge	=	0.067 cfs
Storm frequency	=	1 yrs	Time to peak	=	1440 min
Time interval	=	2 min	Hyd. volume	=	10,211 cuft
Inflow hyd. No.	=	18 - P - Post-Developed	Max. Elevation	=	101.40 ft
Reservoir name	=	Basin P Detention	Max. Storage	=	6,226 cuft

Storage Indication method used.



Pond Report

Pond No. 7 - Basin P Detention

Pond Data

UG Chambers -Invert elev. = 100.00 ft, Rise x Span = 5.00 x 5.00 ft, Barrel Len = 183.05 ft, No. Barrels = 7, Slope = 0.00%, Headers = Yes

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	100.00	n/a	0	0
0.50	100.50	n/a	1,412	1,412
1.00	101.00	n/a	2,453	3,865
1.50	101.50	n/a	2,983	6,848
2.00	102.00	n/a	3,286	10,134
2.50	102.50	n/a	3,433	13,567
3.00	103.00	n/a	3,433	17,000
3.50	103.50	n/a	3,285	20,285
4.00	104.00	n/a	2,982	23,267
4.50	104.50	n/a	2,451	25,718
5.00	105.00	n/a	1,410	27,128

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	1.50	0.00	0.00
Span (in)	= 12.00	1.50	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 100.00	100.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 5.00	0.00	0.00	0.00
Crest El. (ft)	= 104.80	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	100.00	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
0.50	1,412	100.50	0.04 ic	0.04 ic	---	---	0.00	---	---	---	---	---	0.038
1.00	3,865	101.00	0.06 ic	0.06 ic	---	---	0.00	---	---	---	---	---	0.056
1.50	6,848	101.50	0.07 ic	0.07 ic	---	---	0.00	---	---	---	---	---	0.069
2.00	10,134	102.00	0.08 ic	0.08 ic	---	---	0.00	---	---	---	---	---	0.081
2.50	13,567	102.50	0.09 ic	0.09 ic	---	---	0.00	---	---	---	---	---	0.091
3.00	17,000	103.00	0.10 ic	0.10 ic	---	---	0.00	---	---	---	---	---	0.100
3.50	20,285	103.50	0.11 ic	0.11 ic	---	---	0.00	---	---	---	---	---	0.108
4.00	23,267	104.00	0.12 ic	0.12 ic	---	---	0.00	---	---	---	---	---	0.116
4.50	25,718	104.50	0.12 ic	0.12 ic	---	---	0.00	---	---	---	---	---	0.123
5.00	27,128	105.00	0.13 ic	0.13 ic	---	---	1.49	---	---	---	---	---	1.619

Pond Report

Pond No. 12 - Raingarden - Basin R

Pond Data

Contours -User-defined contour areas. Conic method used for volumes. Bottom elevation=29.25 ft, Depth=3.24 ft, Void = 21.50%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	29.25	1,966	0	0
0.32	29.57	1,966	137	137
0.65	29.90	1,966	137	274
0.97	30.22	1,966	137	411
1.30	30.55	1,966	137	548
1.62	30.87	1,966	137	685
1.94	31.19	1,966	137	822
2.27	31.52	1,966	137	958
2.59	31.84	1,966	137	1,095
2.92	32.17	1,966	137	1,232
3.24	32.49	1,966	137	1,369
3.25	32.50	1,188	16	1,385
3.75	33.00	1,570	687	2,072
4.25	33.50	1,966	882	2,954
4.58	33.83	2,238	693	3,647

Assume 21.5% void space in soil & rock section of raingarden:

18" Growing Media ~ 5% Void
3" Rock Storage ~ 10% Void
18" Rock Storage ~ 40% Void

[(1.5' * 0.05) + (1.5' * 0.40)+(0.25 * 0.10]/ 3.25' *100 = 21.5% Voids

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	2.35	0.00	0.00
Span (in)	= 12.00	2.35	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 29.25	29.25	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 2.33	0.00	0.00	0.00
Crest El. (ft)	= 33.50	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.000 (by Contour)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	29.25	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
0.32	137	29.57	0.07 ic	0.07 ic	---	---	0.00	---	---	---	---	---	0.066
0.65	274	29.90	0.11 ic	0.10 ic	---	---	0.00	---	---	---	---	---	0.102
0.97	411	30.22	0.13 ic	0.13 ic	---	---	0.00	---	---	---	---	---	0.130
1.30	548	30.55	0.16 ic	0.15 ic	---	---	0.00	---	---	---	---	---	0.153
1.62	685	30.87	0.18 ic	0.17 ic	---	---	0.00	---	---	---	---	---	0.173
1.94	822	31.19	0.19 ic	0.19 ic	---	---	0.00	---	---	---	---	---	0.191
2.27	958	31.52	0.21 ic	0.21 ic	---	---	0.00	---	---	---	---	---	0.208
2.59	1,095	31.84	0.22 ic	0.22 ic	---	---	0.00	---	---	---	---	---	0.223
2.92	1,232	32.17	0.24 ic	0.24 ic	---	---	0.00	---	---	---	---	---	0.237
3.24	1,369	32.49	0.25 ic	0.25 ic	---	---	0.00	---	---	---	---	---	0.251
3.25	1,385	32.50	0.25 ic	0.25 ic	---	---	0.00	---	---	---	---	---	0.251
3.75	2,072	33.00	0.28 ic	0.27 ic	---	---	0.00	---	---	---	---	---	0.271
4.25	2,954	33.50	0.29 ic	0.29 ic	---	---	0.00	---	---	---	---	---	0.290
4.58	3,647	33.83	1.50 ic	0.29 ic	---	---	1.05 ic	---	---	---	---	---	1.335

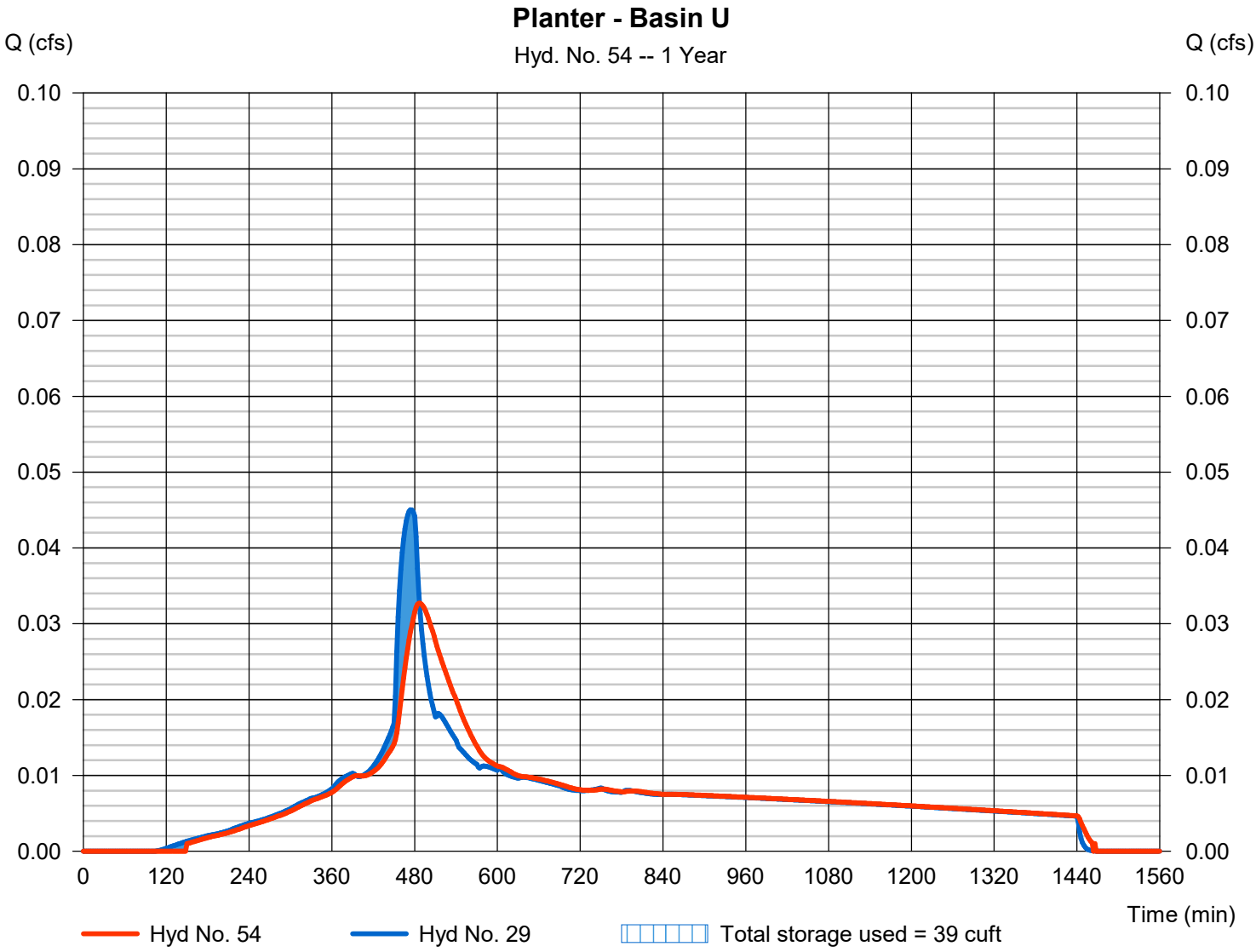
Hydrograph Report

Hyd. No. 54

Planter - Basin U

Hydrograph type	= Reservoir	Peak discharge	= 0.033 cfs
Storm frequency	= 1 yrs	Time to peak	= 486 min
Time interval	= 2 min	Hyd. volume	= 653 cuft
Inflow hyd. No.	= 29 - U - Post-Developed	Max. Elevation	= 51.30 ft
Reservoir name	= Planter - Basin U	Max. Storage	= 39 cuft

Storage Indication method used.



Pond Report

Pond No. 9 - Planter - Basin U

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begin at elevation = 50.67 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	50.67	405	0	0
0.27	50.94	405	17	17
0.55	51.22	405	17	34
0.82	51.49	405	17	51
1.10	51.77	405	17	68
1.37	52.04	405	17	85
1.64	52.31	405	17	103
1.92	52.59	405	17	120
2.19	52.86	405	17	137
2.47	53.14	405	17	154
2.74	53.41	405	17	171
2.75	53.42	405	4	175
3.25	53.92	405	202	377
3.75	54.42	405	202	580
4.08	54.75	405	134	714

Assume 21.5% void space in soil & rock section of raingarden:

18" Growing Media ~ 5% Void
3" Rock Storage ~ 10% Void
12" Rock Storage ~ 40% Void

[(1.5' * 0.05) + (1.0' * 0.40)+(0.25 * 0.10]/2.75' *100 = 15.4% Voids

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	1.30	Inactive	0.00
Span (in)	= 12.00	1.30	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 50.67	50.67	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 2.33	Inactive	0.00	0.00
Crest El. (ft)	= 54.42	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	50.67	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
0.27	17	50.94	0.02 ic	0.02 ic	---	---	0.00	---	---	---	---	---	0.020
0.55	34	51.22	0.03 ic	0.03 ic	---	---	0.00	---	---	---	---	---	0.030
0.82	51	51.49	0.04 ic	0.04 ic	---	---	0.00	---	---	---	---	---	0.038
1.10	68	51.77	0.05 ic	0.04 ic	---	---	0.00	---	---	---	---	---	0.044
1.37	85	52.04	0.05 ic	0.05 ic	---	---	0.00	---	---	---	---	---	0.050
1.64	103	52.31	0.06 ic	0.05 ic	---	---	0.00	---	---	---	---	---	0.055
1.92	120	52.59	0.06 ic	0.06 ic	---	---	0.00	---	---	---	---	---	0.060
2.19	137	52.86	0.07 ic	0.06 ic	---	---	0.00	---	---	---	---	---	0.064
2.47	154	53.14	0.07 ic	0.07 ic	---	---	0.00	---	---	---	---	---	0.068
2.74	171	53.41	0.07 ic	0.07 ic	---	---	0.00	---	---	---	---	---	0.072
2.75	175	53.42	0.07 ic	0.07 ic	---	---	0.00	---	---	---	---	---	0.072
3.25	377	53.92	0.08 ic	0.08 ic	---	---	0.00	---	---	---	---	---	0.078
3.75	580	54.42	0.08 ic	0.08 ic	---	---	0.00	---	---	---	---	---	0.084
4.08	714	54.75	1.30 ic	0.08 ic	---	---	1.05 ic	---	---	---	---	---	1.131

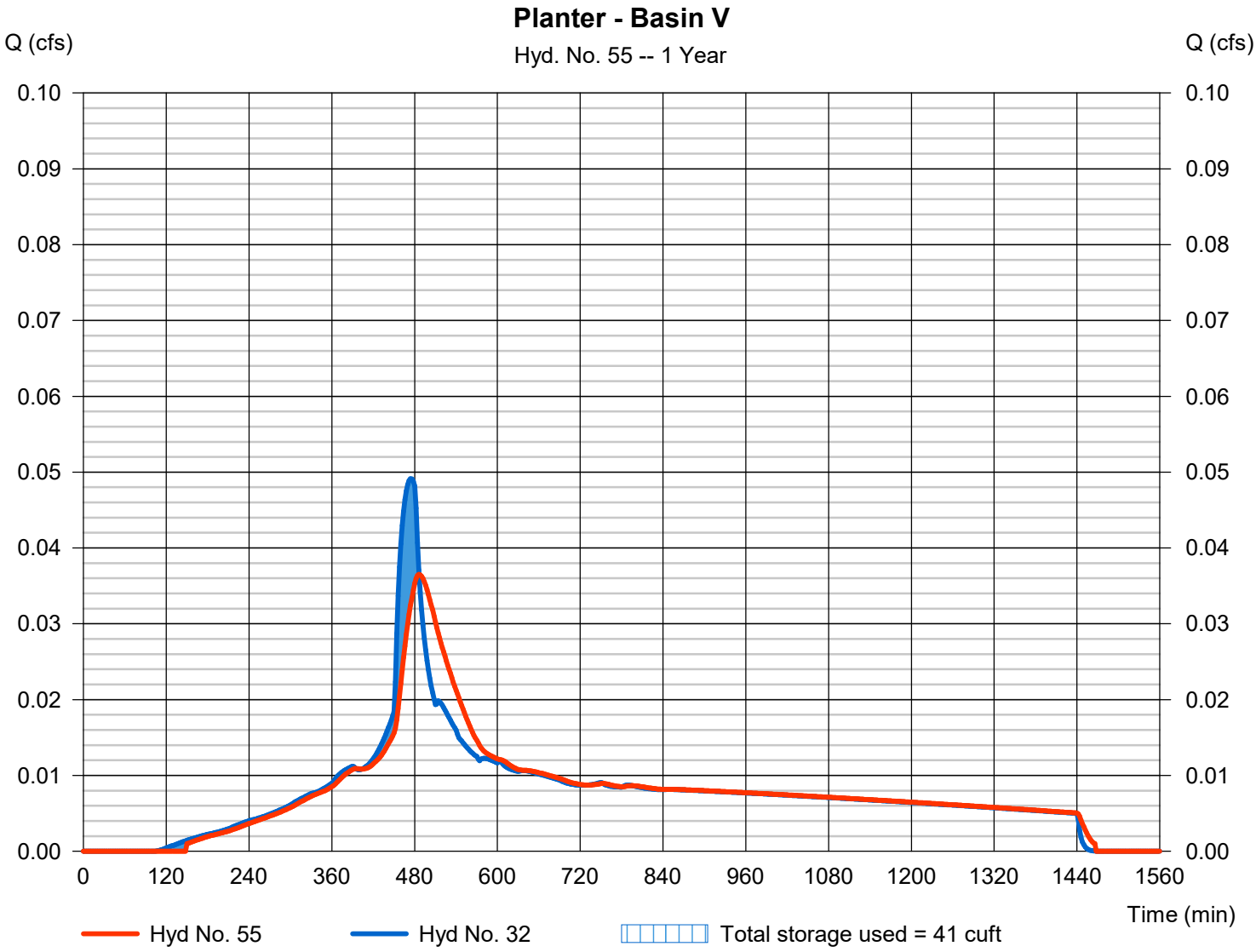
Hydrograph Report

Hyd. No. 55

Planter - Basin V

Hydrograph type	= Reservoir	Peak discharge	= 0.037 cfs
Storm frequency	= 1 yrs	Time to peak	= 486 min
Time interval	= 2 min	Hyd. volume	= 710 cuft
Inflow hyd. No.	= 32 - V - Post-Developed	Max. Elevation	= 51.26 ft
Reservoir name	= Planter - Basin V	Max. Storage	= 41 cuft

Storage Indication method used.



Pond Report

Pond No. 11 - Planter - Basin V

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begin at elevation = 50.67 ft

Custom -Stage-area data. Conic method used for volume calculation. Begin at elevation = 50.67 ft, Voids = 15.40%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	50.67	450	0	0
0.27	50.94	450	19	19
0.55	51.22	450	19	38
0.82	51.49	450	19	57
1.10	51.77	450	19	76
1.37	52.04	450	19	95
1.64	52.31	450	19	114
1.92	52.59	450	19	133
2.19	52.86	450	19	152
2.47	53.14	450	19	171
2.74	53.41	450	19	190
2.75	53.42	450	5	194
3.25	53.92	450	225	419
3.75	54.42	450	225	644
4.08	54.75	450	148	793

Assume 21.5% void space in soil & rock section of raingarden:

18" Growing Media ~ 5% Void
3" Rock Storage ~ 10% Void
12" Rock Storage ~ 40% Void

[(1.5' * 0.05) + (1.0' * 0.40)+(0.25 * 0.10]/2.75' *100 = 15.4% Voids

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	1.40	Inactive	0.00
Span (in)	= 12.00	1.40	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 50.67	50.67	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 2.33	Inactive	0.00	0.00
Crest El. (ft)	= 54.42	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	50.67	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
0.27	19	50.94	0.02 ic	0.02 ic	---	---	0.00	---	---	---	---	---	0.023
0.55	38	51.22	0.04 ic	0.03 ic	---	---	0.00	---	---	---	---	---	0.035
0.82	57	51.49	0.04 ic	0.04 ic	---	---	0.00	---	---	---	---	---	0.044
1.10	76	51.77	0.05 ic	0.05 ic	---	---	0.00	---	---	---	---	---	0.051
1.37	95	52.04	0.06 ic	0.06 ic	---	---	0.00	---	---	---	---	---	0.058
1.64	114	52.31	0.07 ic	0.06 ic	---	---	0.00	---	---	---	---	---	0.064
1.92	133	52.59	0.07 ic	0.07 ic	---	---	0.00	---	---	---	---	---	0.069
2.19	152	52.86	0.08 ic	0.07 ic	---	---	0.00	---	---	---	---	---	0.074
2.47	171	53.14	0.08 ic	0.08 ic	---	---	0.00	---	---	---	---	---	0.079
2.74	190	53.41	0.08 ic	0.08 ic	---	---	0.00	---	---	---	---	---	0.083
2.75	194	53.42	0.08 ic	0.08 ic	---	---	0.00	---	---	---	---	---	0.083
3.25	419	53.92	0.09 ic	0.09 ic	---	---	0.00	---	---	---	---	---	0.091
3.75	644	54.42	0.10 ic	0.10 ic	---	---	0.00	---	---	---	---	---	0.098
4.08	793	54.75	1.30 ic	0.10 ic	---	---	1.05 ic	---	---	---	---	---	1.144

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SBUH Runoff	5.661	2	474	81,934	------	------	------	Ja
2	SBUH Runoff	0.068	2	480	1,142	------	------	------	Jb
3	Combine	5.726	2	474	83,076	1, 2	------	------	J - Post-Developed
4	SBUH Runoff	1.311	2	474	18,972	------	------	------	La
5	SBUH Runoff	0.037	2	480	623	------	------	------	Lb
6	Combine	1.346	2	474	19,595	4, 5	------	------	L - Post-Developed
7	SBUH Runoff	1.368	2	474	19,802	------	------	------	Ma
8	SBUH Runoff	0.040	2	480	675	------	------	------	Mb
9	Combine	1.407	2	474	20,477	7, 8	------	------	M - Post-Developed
10	SBUH Runoff	1.139	2	474	16,482	------	------	------	Na
11	SBUH Runoff	0.034	2	480	571	------	------	------	Nb
12	Combine	1.171	2	474	17,053	10, 11	------	------	N - Post-Developed
13	SBUH Runoff	6.456	2	474	93,435	------	------	------	Oa
14	SBUH Runoff	0.132	2	480	2,233	------	------	------	Ob
15	Combine	6.583	2	474	95,668	13, 14	------	------	O - Post-Developed
16	SBUH Runoff	2.917	2	474	42,212	------	------	------	Pa
17	SBUH Runoff	0.055	2	480	935	------	------	------	Pb
18	Combine	2.970	2	474	43,147	16, 17	------	------	P - Post-Developed
19	SBUH Runoff	0.098	2	474	1,423	------	------	------	Qa
20	SBUH Runoff	0.058	2	480	987	------	------	------	Qb
21	Combine	0.155	2	476	2,409	19, 20	------	------	Q - Post-Developed
22	SBUH Runoff	0.647	2	474	9,367	------	------	------	Ra
23	SBUH Runoff	0.141	2	480	2,389	------	------	------	Rb
24	Combine	0.783	2	474	11,756	22, 23	------	------	R - Post-Developed
25	SBUH Runoff	0.354	2	480	5,972	------	------	------	S - Post-Developed
26	SBUH Runoff	0.160	2	480	2,700	------	------	------	T - Post-Developed
27	SBUH Runoff	0.180	2	474	2,609	------	------	------	Ua
28	SBUH Runoff	0.040	2	480	675	------	------	------	Ub
29	Combine	0.219	2	474	3,284	27, 28	------	------	U - Post-Developed
30	SBUH Runoff	0.197	2	474	2,846	------	------	------	Va
31	SBUH Runoff	0.040	2	480	675	------	------	------	Vb
32	Combine	0.235	2	474	3,521	30, 31	------	------	V - Post-Developed
34	SBUH Runoff	2.498	2	480	40,531	------	------	------	ex J

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

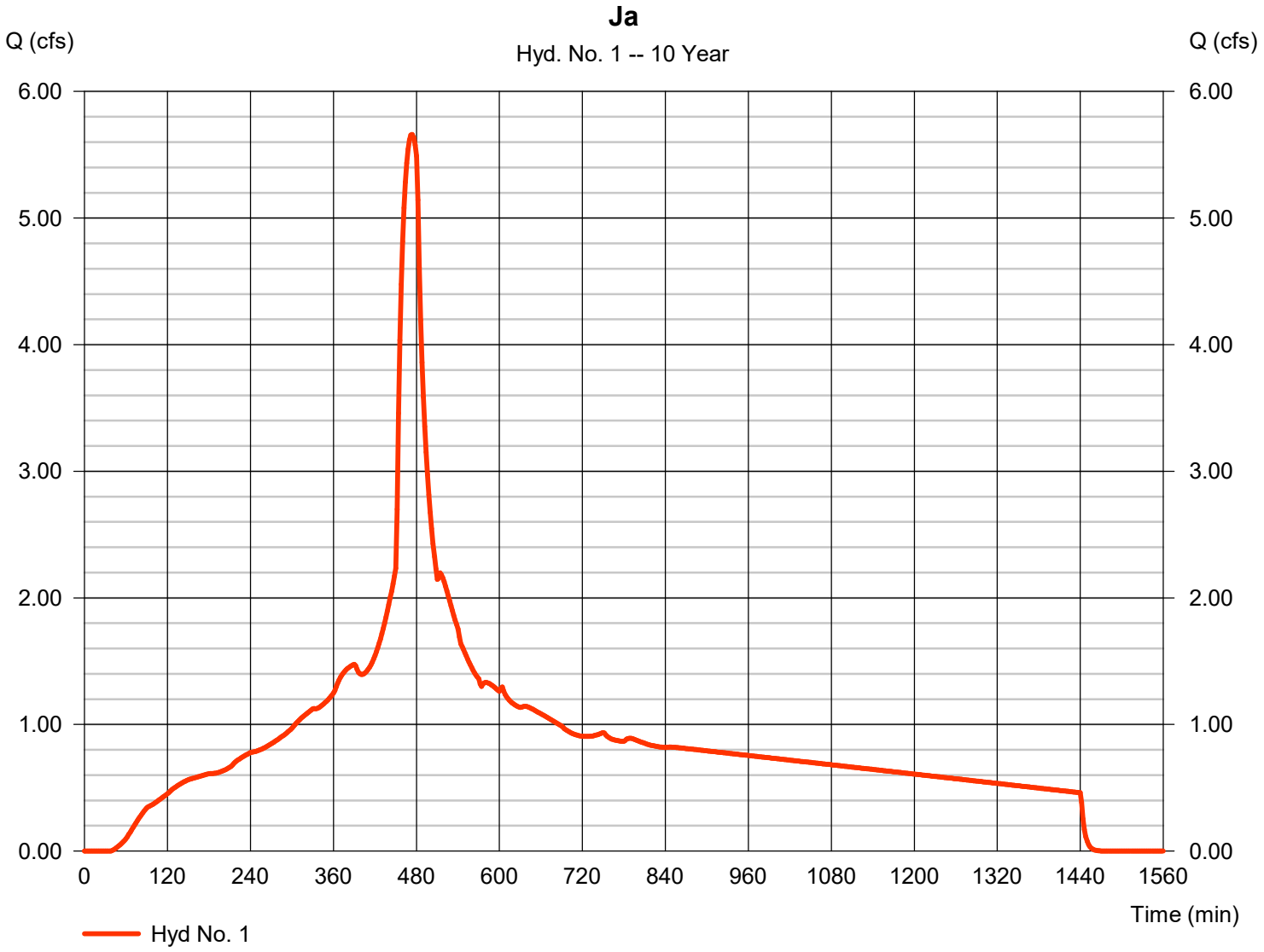
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
35	SBUH Runoff	0.599	2	480	9,721	------	------	------	ex L
36	SBUH Runoff	0.631	2	480	10,232	------	------	------	ex M
37	SBUH Runoff	0.529	2	480	8,584	------	------	------	ex N
38	SBUH Runoff	2.911	2	480	47,238	------	------	------	ex O
39	SBUH Runoff	1.317	2	480	21,374	------	------	------	ex P
40	SBUH Runoff	0.109	2	480	1,762	------	------	------	ex Q
41	SBUH Runoff	0.455	2	480	7,390	------	------	------	ex R
42	SBUH Runoff	0.403	2	480	6,537	------	------	------	ex S
43	SBUH Runoff	0.182	2	480	2,956	------	------	------	ex T
44	SBUH Runoff	0.126	2	480	2,046	------	------	------	ex U
45	SBUH Runoff	0.137	2	480	2,217	------	------	------	ex V
47	Reservoir	1.736	2	542	83,025	3	103.66	30,249	UG Det - Basin J
48	Reservoir	0.210	2	802	19,567	6	103.84	10,932	UG Det - Basin L
49	Reservoir	0.235	2	752	20,450	9	103.89	10,880	UG Det - Basin M
50	Reservoir	0.196	2	752	17,037	12	104.83	8,875	UG Det - Basin N
51	Reservoir	1.874	2	548	94,522	15	58.21	35,267	UG Det - Basin O
52	Reservoir	0.434	2	860	39,562	18	104.87	26,754	UG Det - Basin P
53	Reservoir	0.266	2	536	11,748	24	32.86	1,885	Raingarden - Basin R
54	Reservoir	0.079	2	530	3,282	29	54.01	414	Planter - Basin U
55	Reservoir	0.091	2	522	3,519	32	53.91	417	Planter - Basin V

Hydrograph Report

Hyd. No. 1

Ja

Hydrograph type	=	SBUH Runoff	Peak discharge	=	5.661 cfs
Storm frequency	=	10 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	81,934 cuft
Drainage area	=	6.910 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

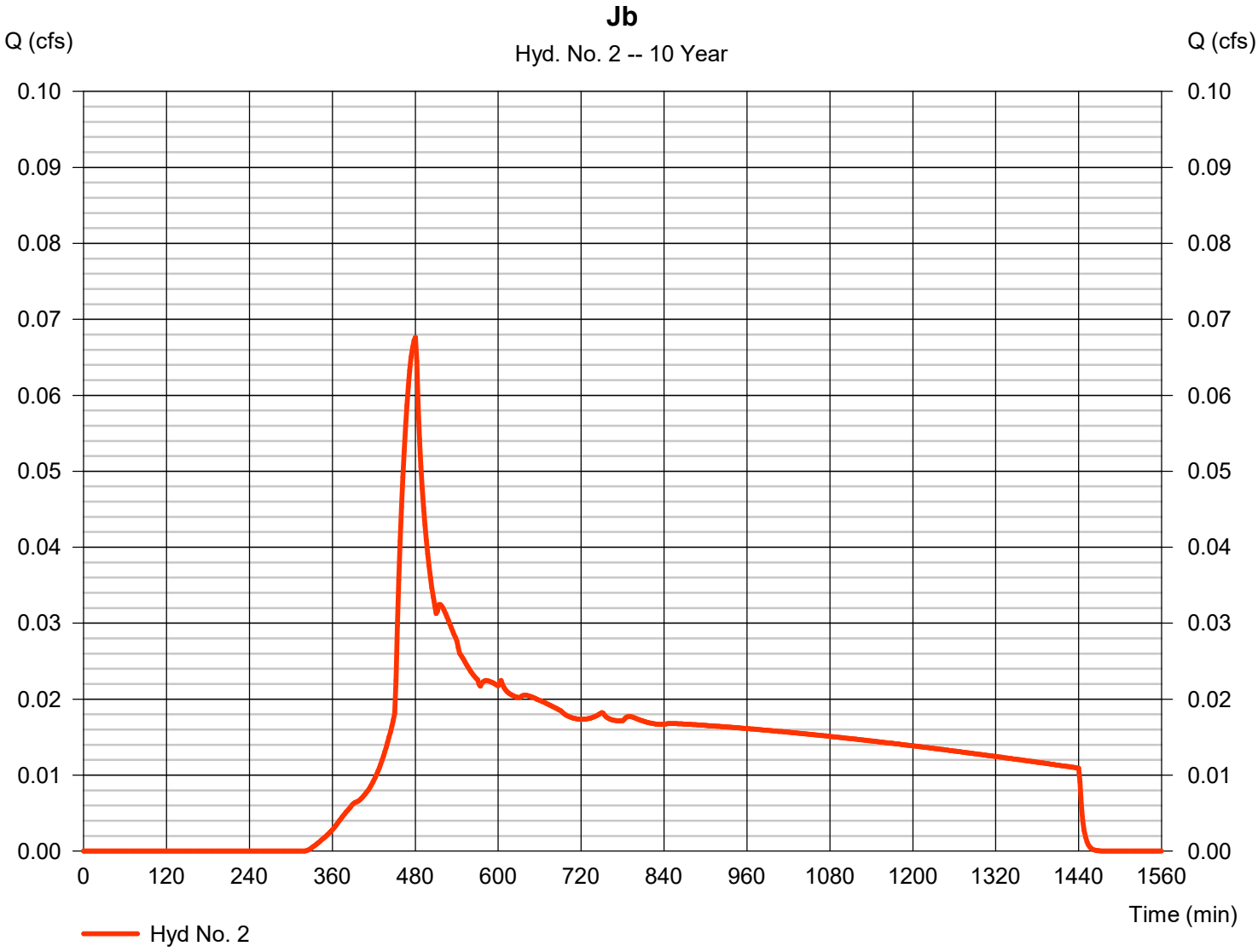


Hydrograph Report

Hyd. No. 2

Jb

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.068 cfs
Storm frequency	= 10 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 1,142 cuft
Drainage area	= 0.220 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

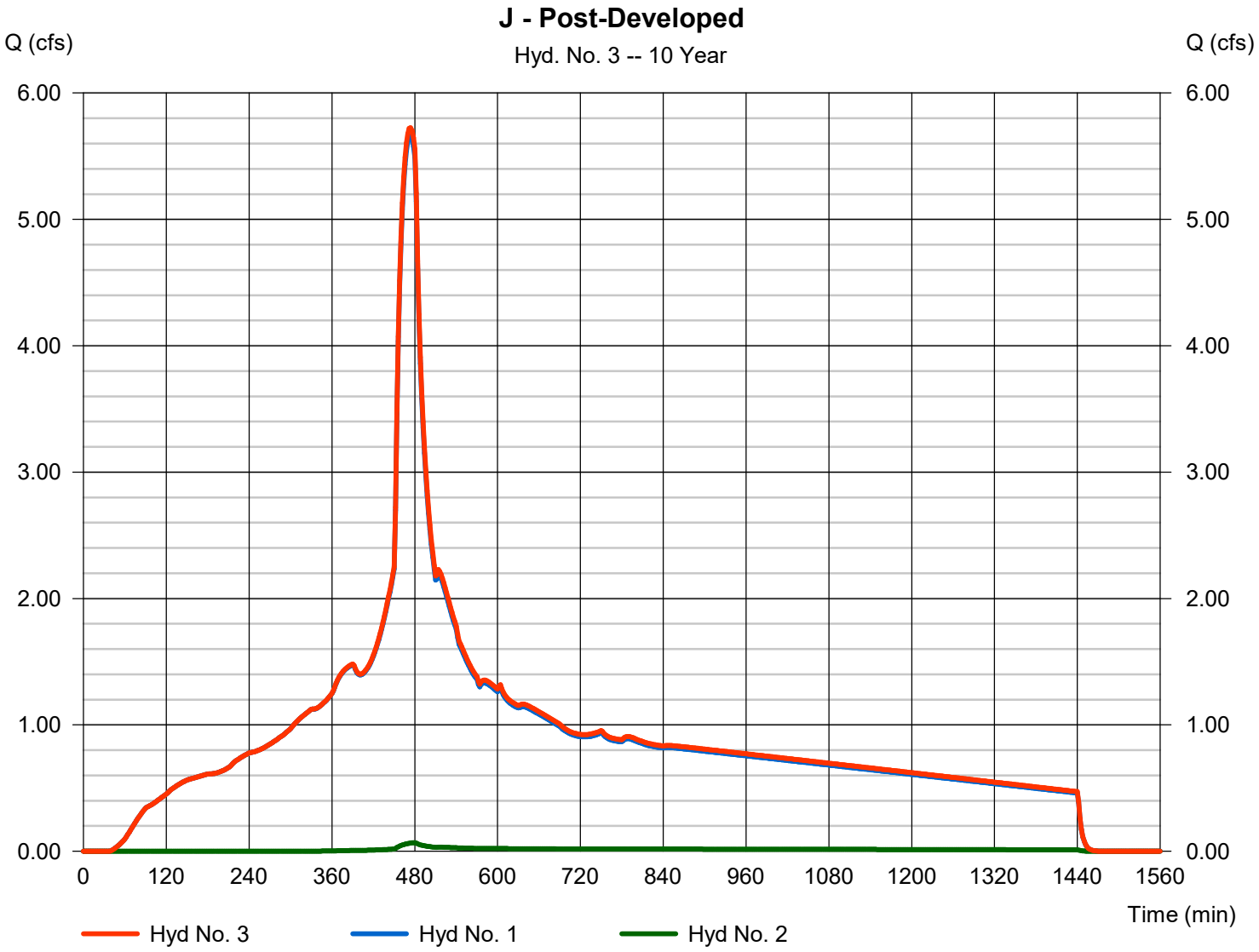


Hydrograph Report

Hyd. No. 3

J - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 5.726 cfs
Storm frequency	= 10 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 83,076 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 7.130 ac

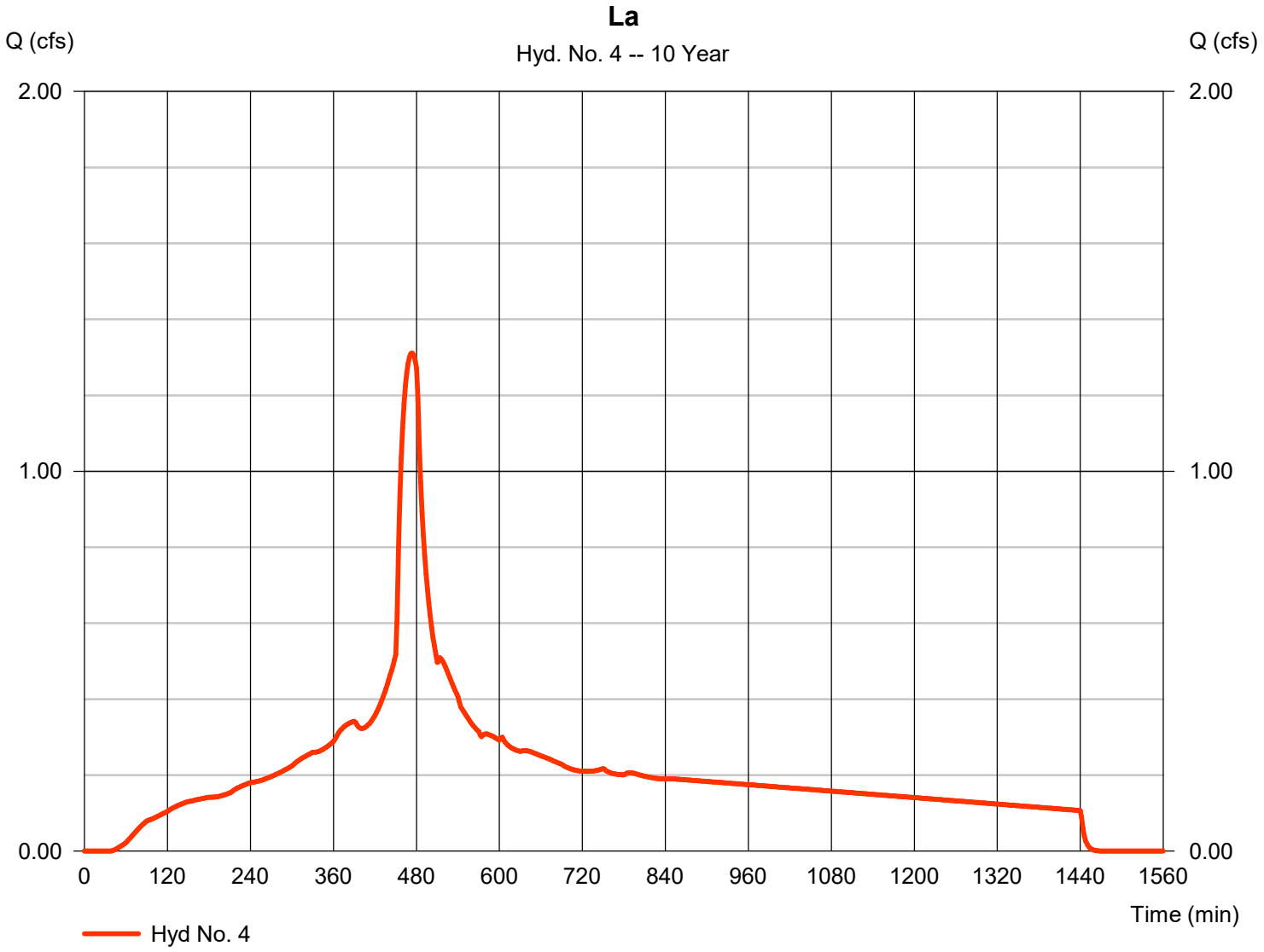


Hydrograph Report

Hyd. No. 4

La

Hydrograph type	=	SBUH Runoff	Peak discharge	=	1.311 cfs
Storm frequency	=	10 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	18,972 cuft
Drainage area	=	1.600 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

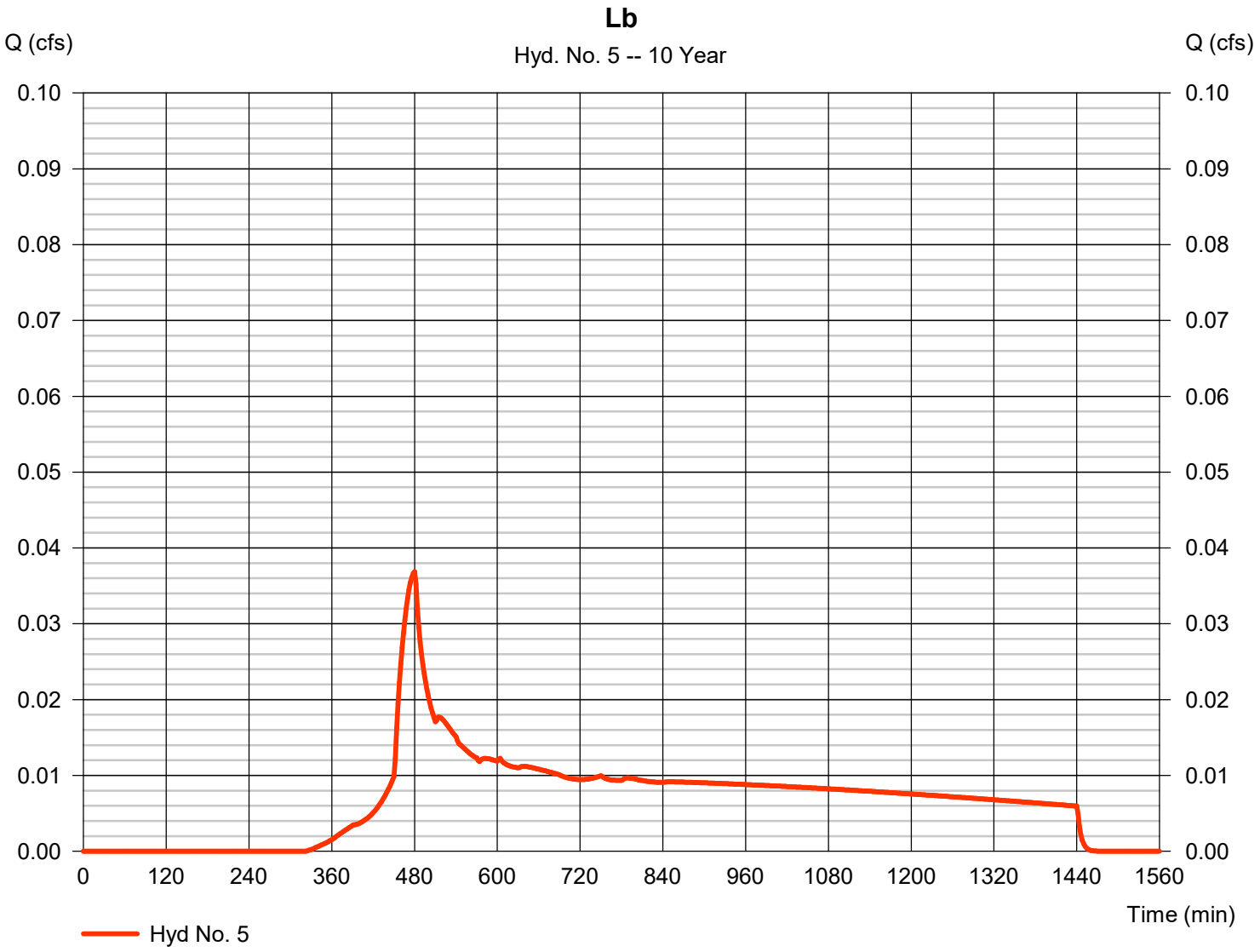


Hydrograph Report

Hyd. No. 5

Lb

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.037 cfs
Storm frequency	= 10 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 623 cuft
Drainage area	= 0.120 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

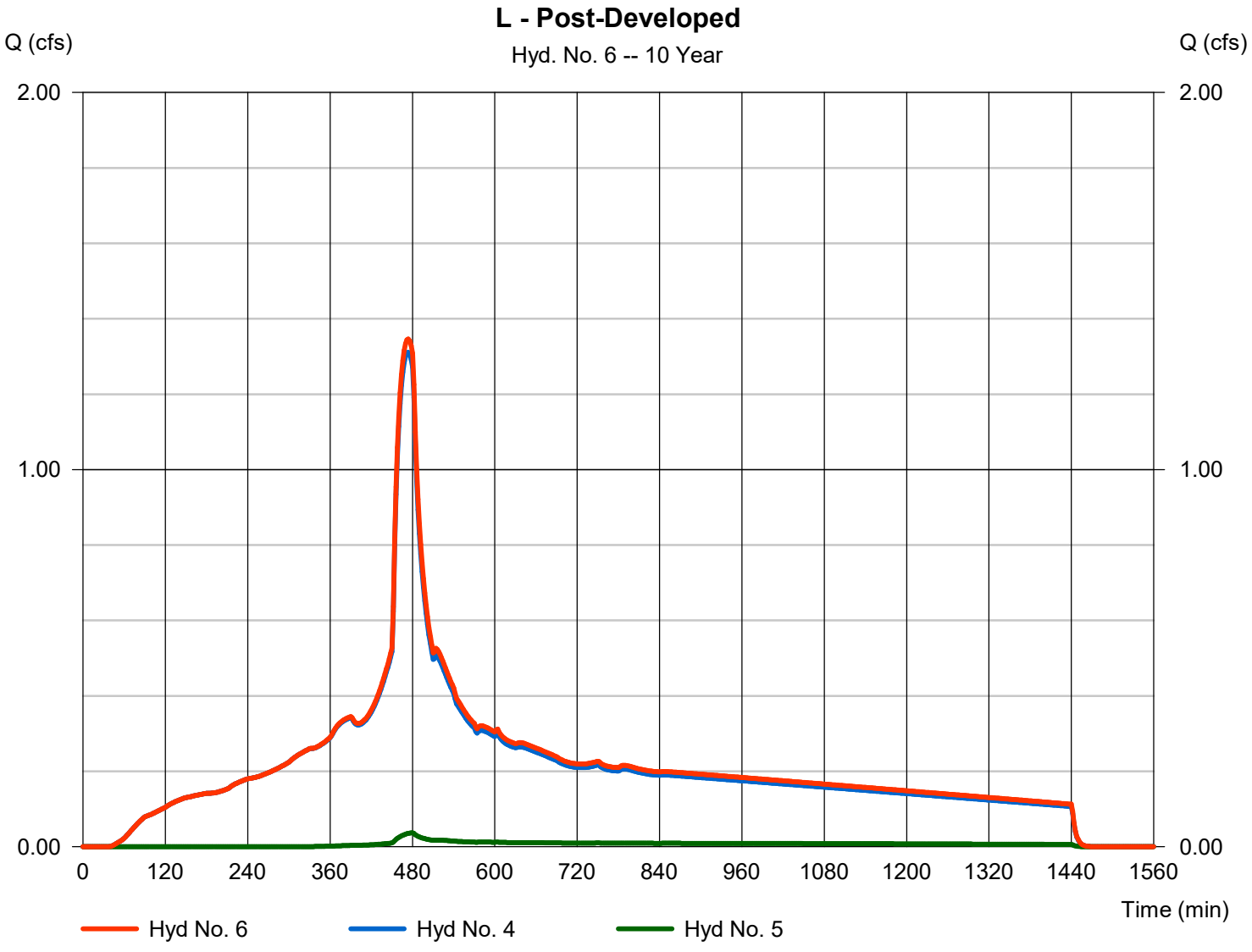


Hydrograph Report

Hyd. No. 6

L - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 1.346 cfs
Storm frequency	= 10 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 19,595 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 1.720 ac

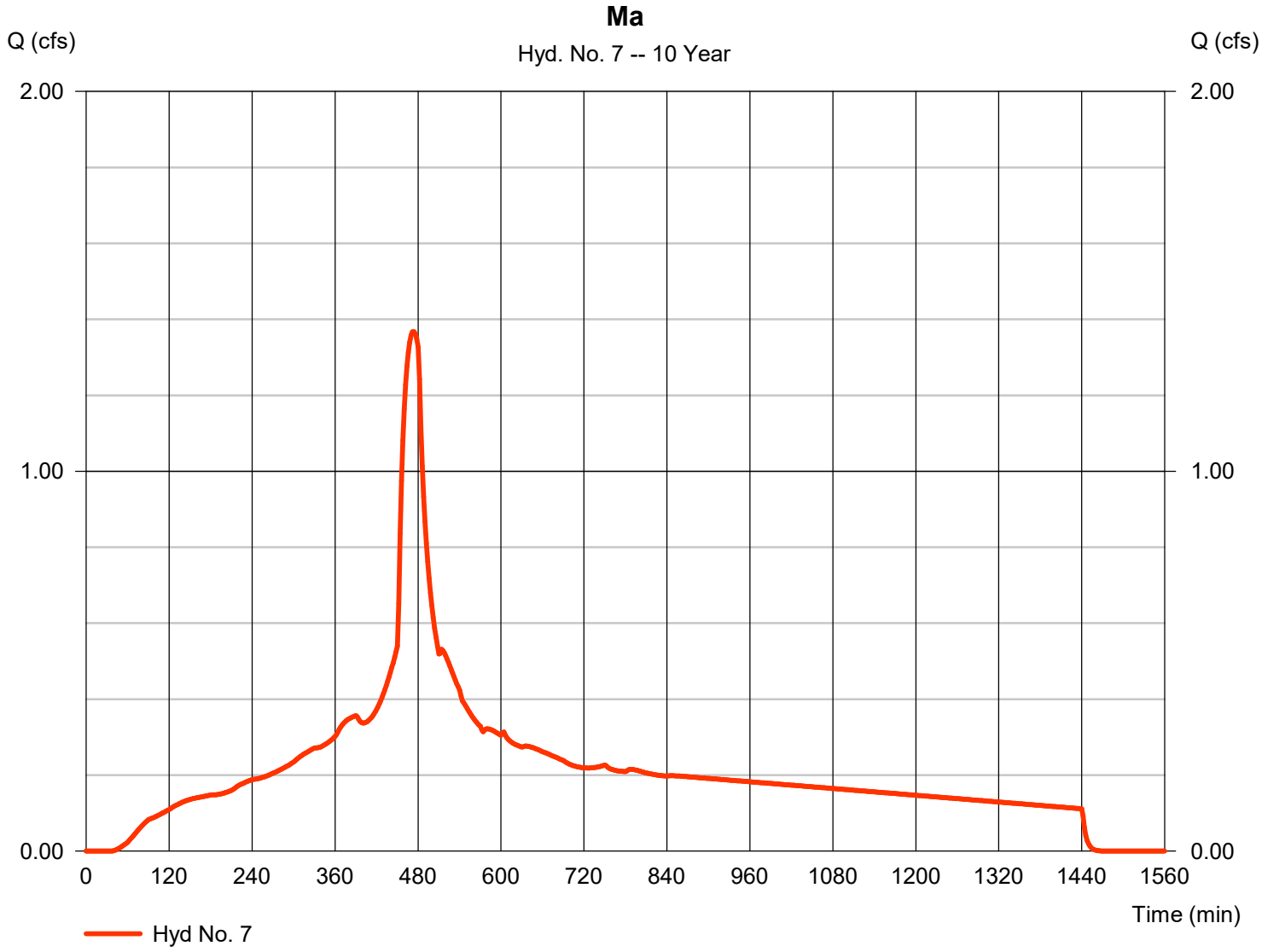


Hydrograph Report

Hyd. No. 7

Ma

Hydrograph type	=	SBUH Runoff	Peak discharge	=	1.368 cfs
Storm frequency	=	10 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	19,802 cuft
Drainage area	=	1.670 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

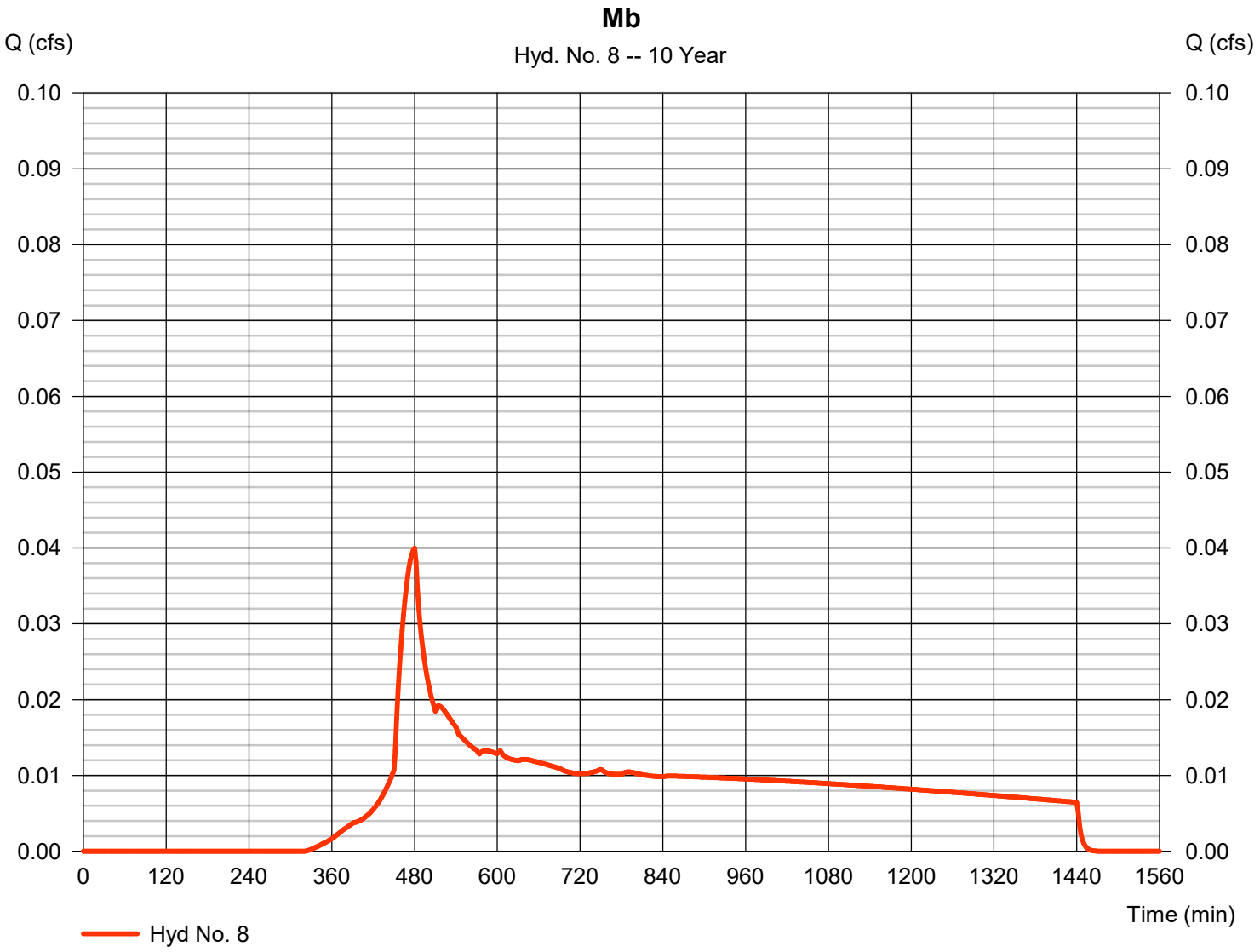


Hydrograph Report

Hyd. No. 8

Mb

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.040 cfs
Storm frequency	= 10 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 675 cuft
Drainage area	= 0.130 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

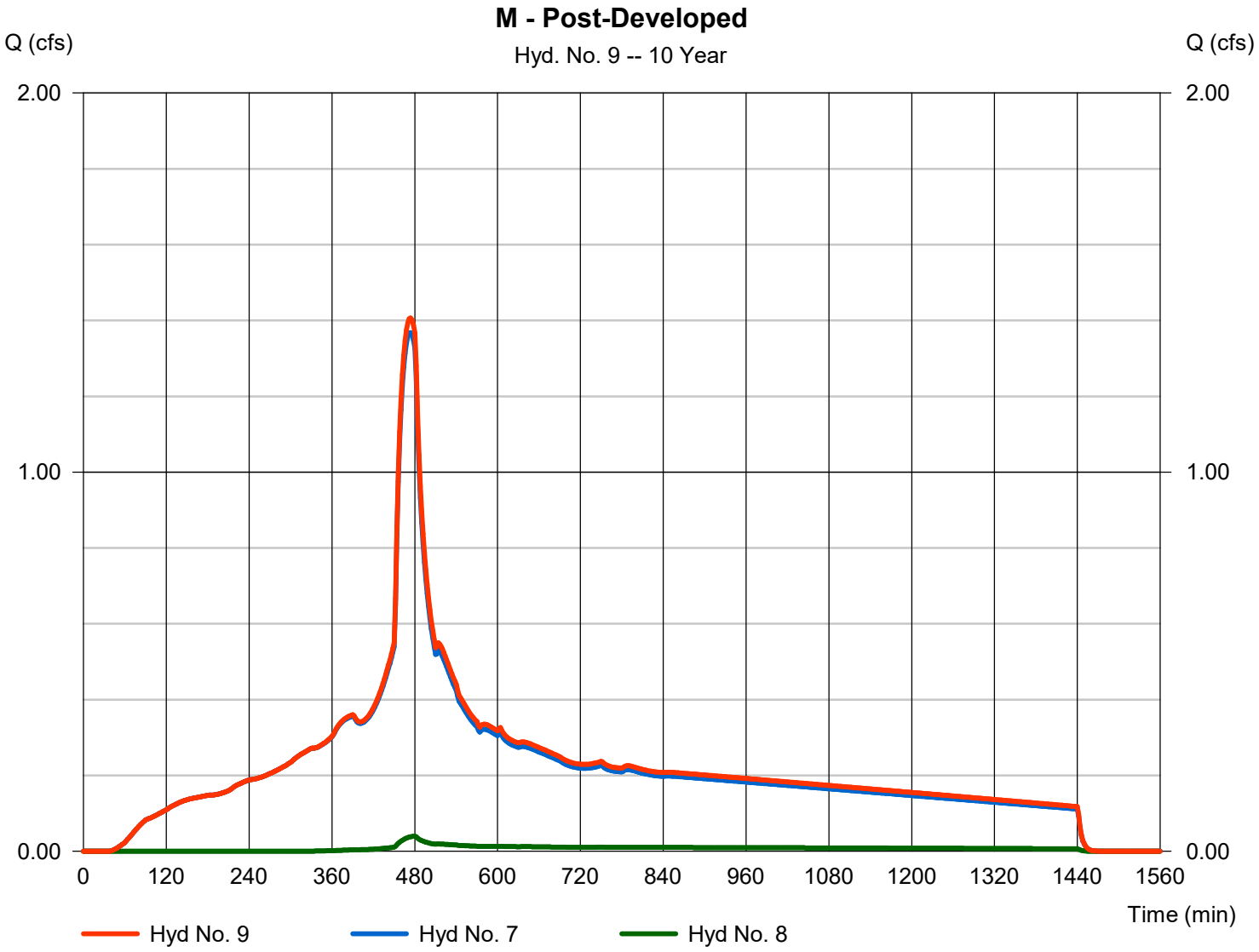


Hydrograph Report

Hyd. No. 9

M - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 1.407 cfs
Storm frequency	= 10 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 20,477 cuft
Inflow hyds.	= 7, 8	Contrib. drain. area	= 1.800 ac

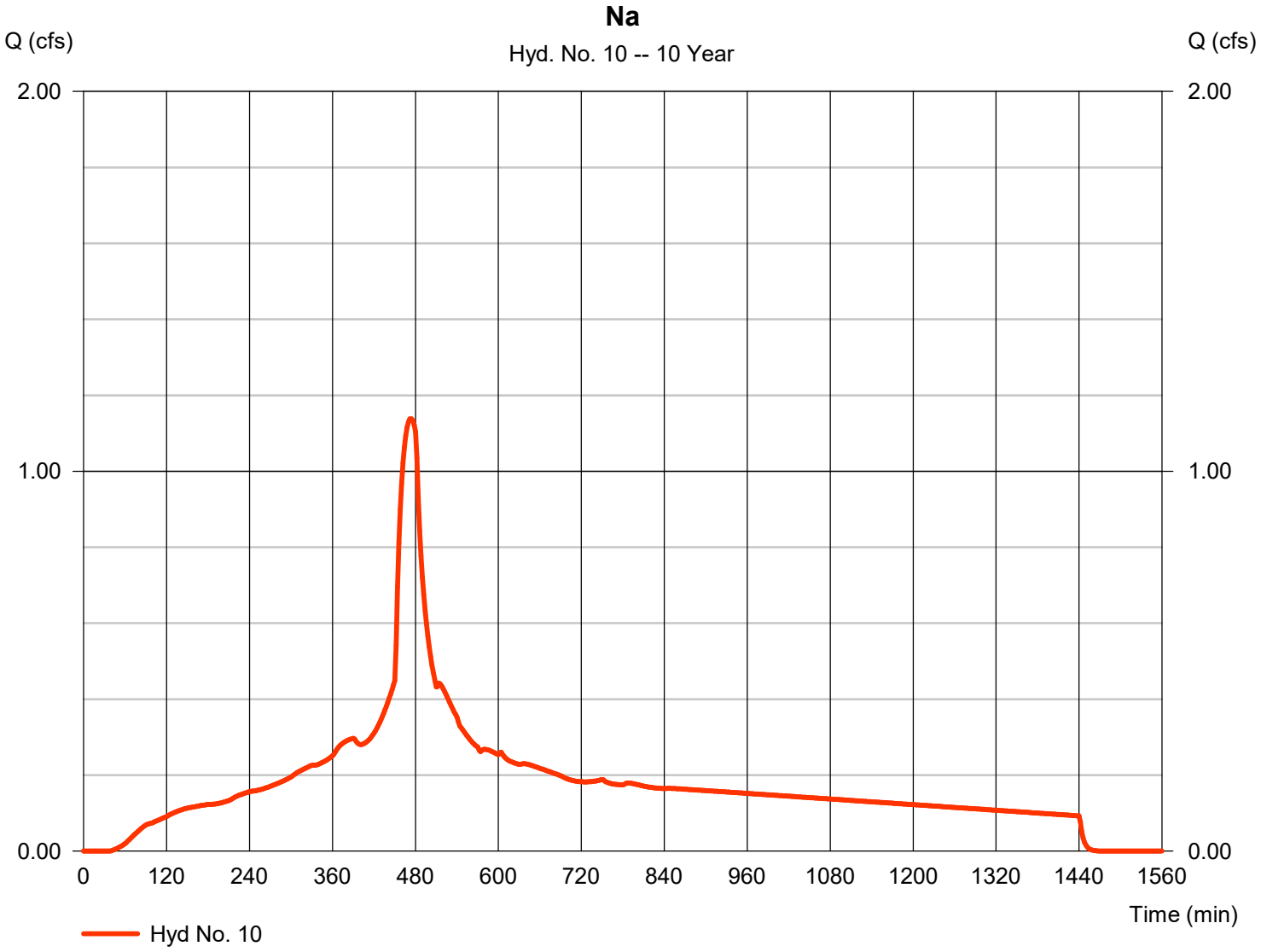


Hydrograph Report

Hyd. No. 10

Na

Hydrograph type	= SBUH Runoff	Peak discharge	= 1.139 cfs
Storm frequency	= 10 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 16,482 cuft
Drainage area	= 1.390 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

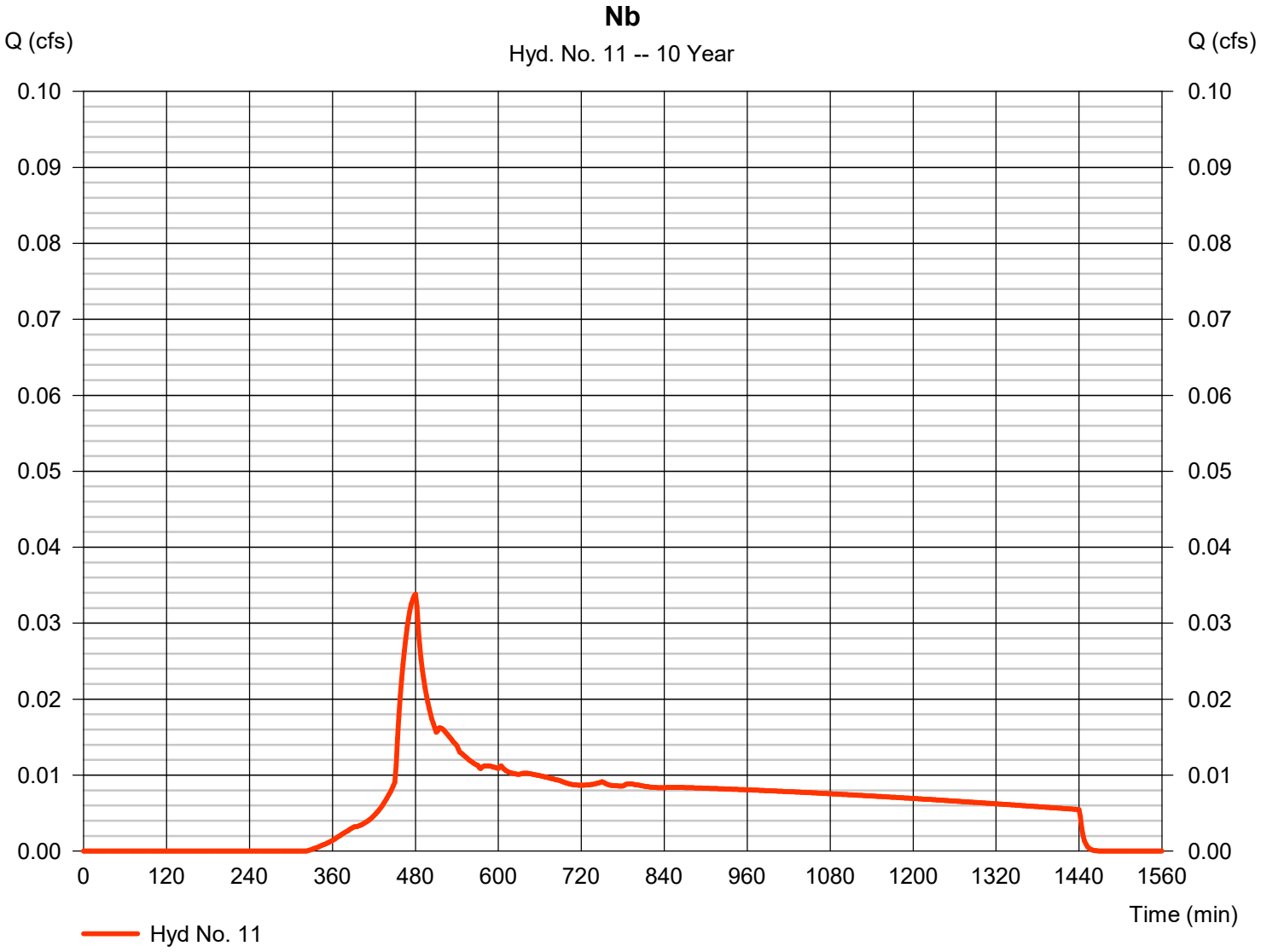


Hydrograph Report

Hyd. No. 11

Nb

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.034 cfs
Storm frequency	=	10 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	571 cuft
Drainage area	=	0.110 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

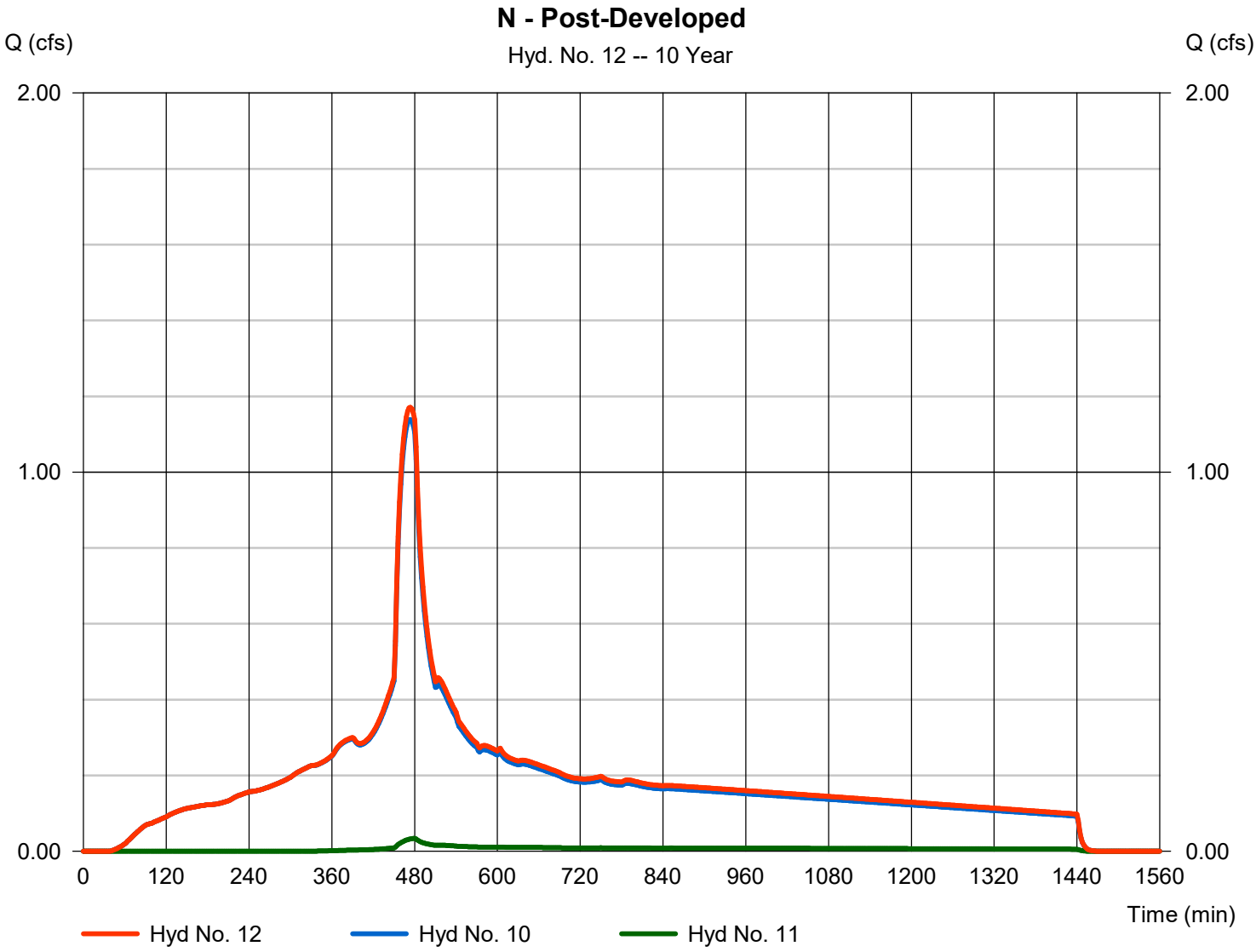


Hydrograph Report

Hyd. No. 12

N - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 1.171 cfs
Storm frequency	= 10 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 17,053 cuft
Inflow hyds.	= 10, 11	Contrib. drain. area	= 1.500 ac

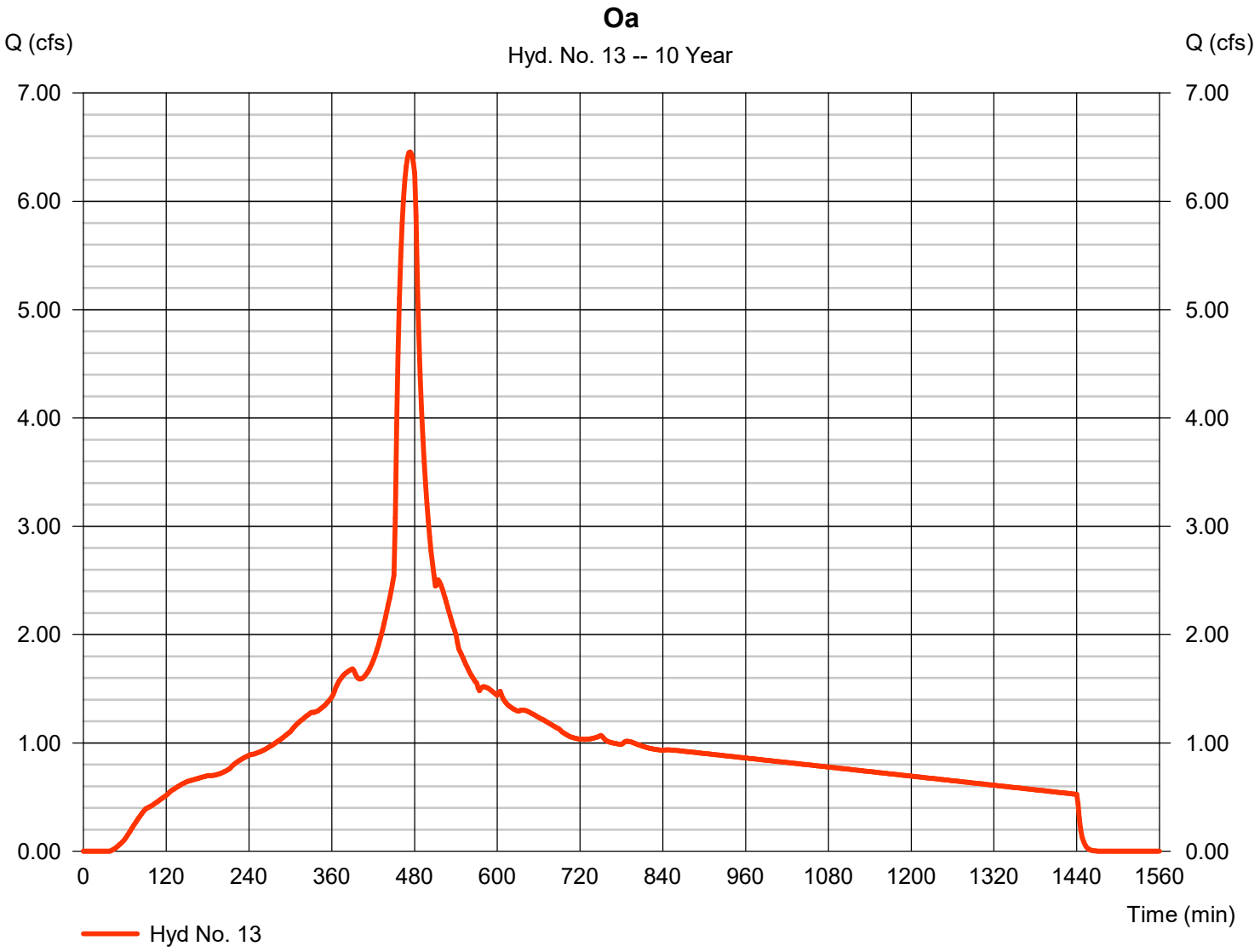


Hydrograph Report

Hyd. No. 13

Oa

Hydrograph type	=	SBUH Runoff	Peak discharge	=	6.456 cfs
Storm frequency	=	10 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	93,435 cuft
Drainage area	=	7.880 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

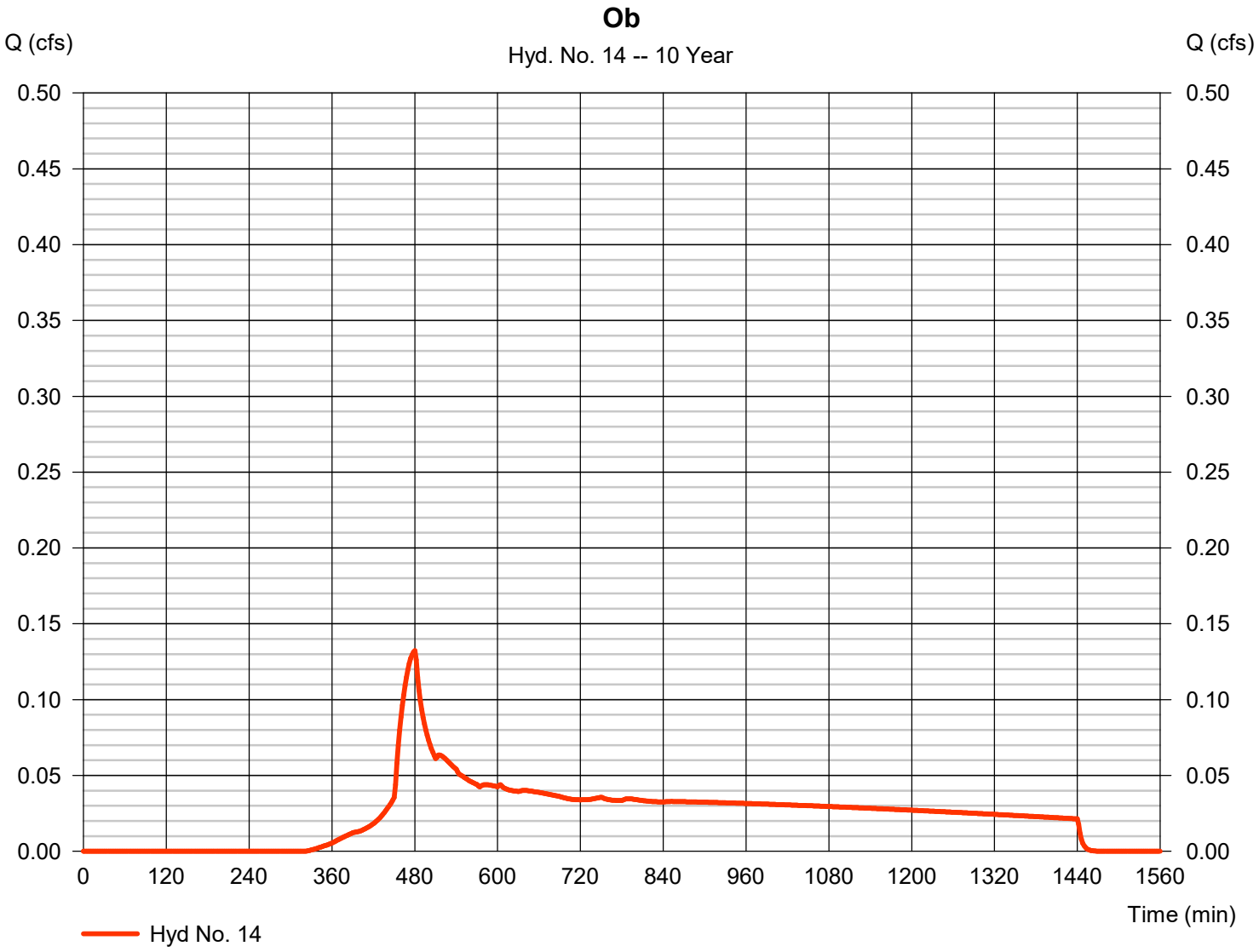


Hydrograph Report

Hyd. No. 14

Ob

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.132 cfs
Storm frequency	=	10 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	2,233 cuft
Drainage area	=	0.430 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

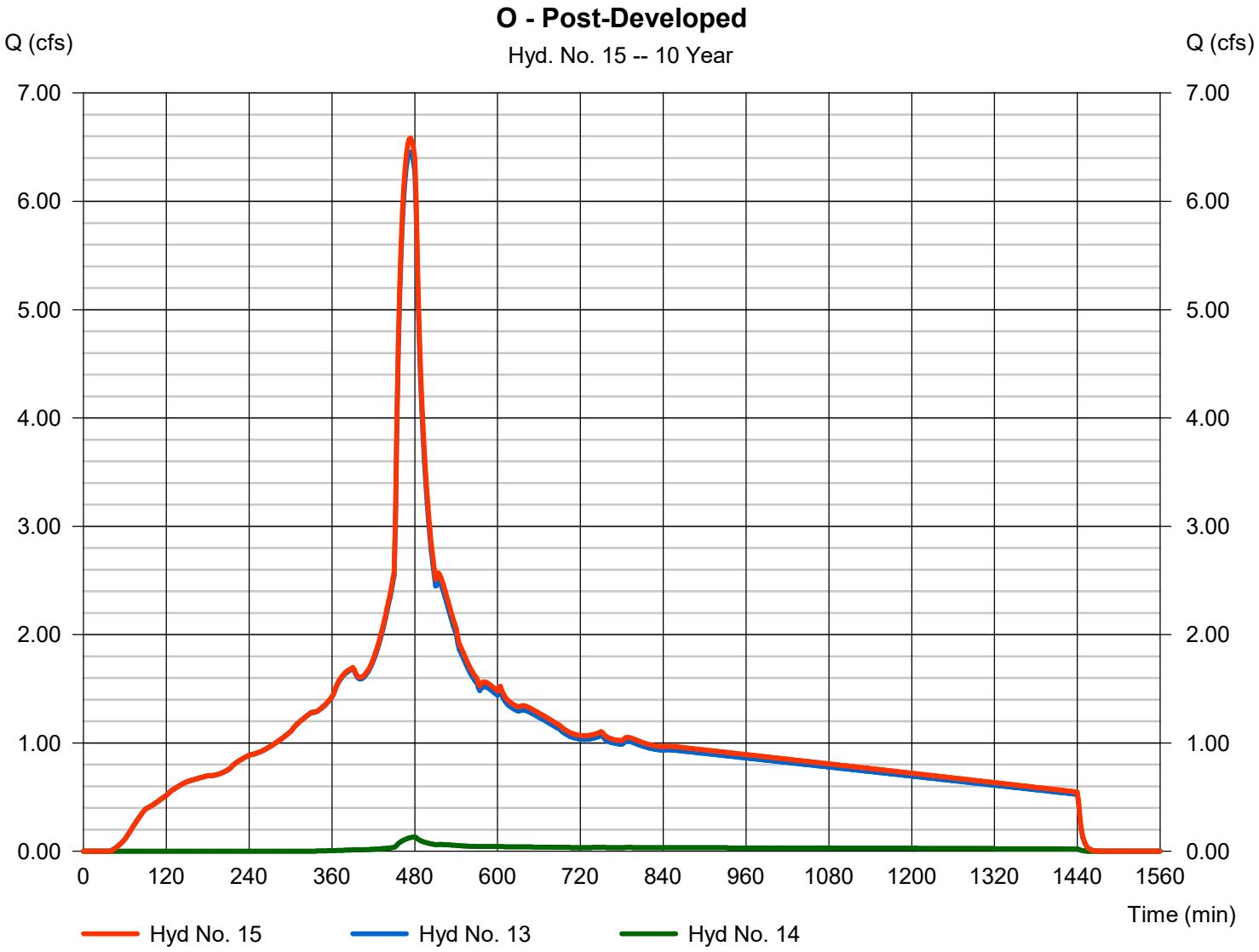


Hydrograph Report

Hyd. No. 15

O - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 6.583 cfs
Storm frequency	= 10 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 95,668 cuft
Inflow hyds.	= 13, 14	Contrib. drain. area	= 8.310 ac

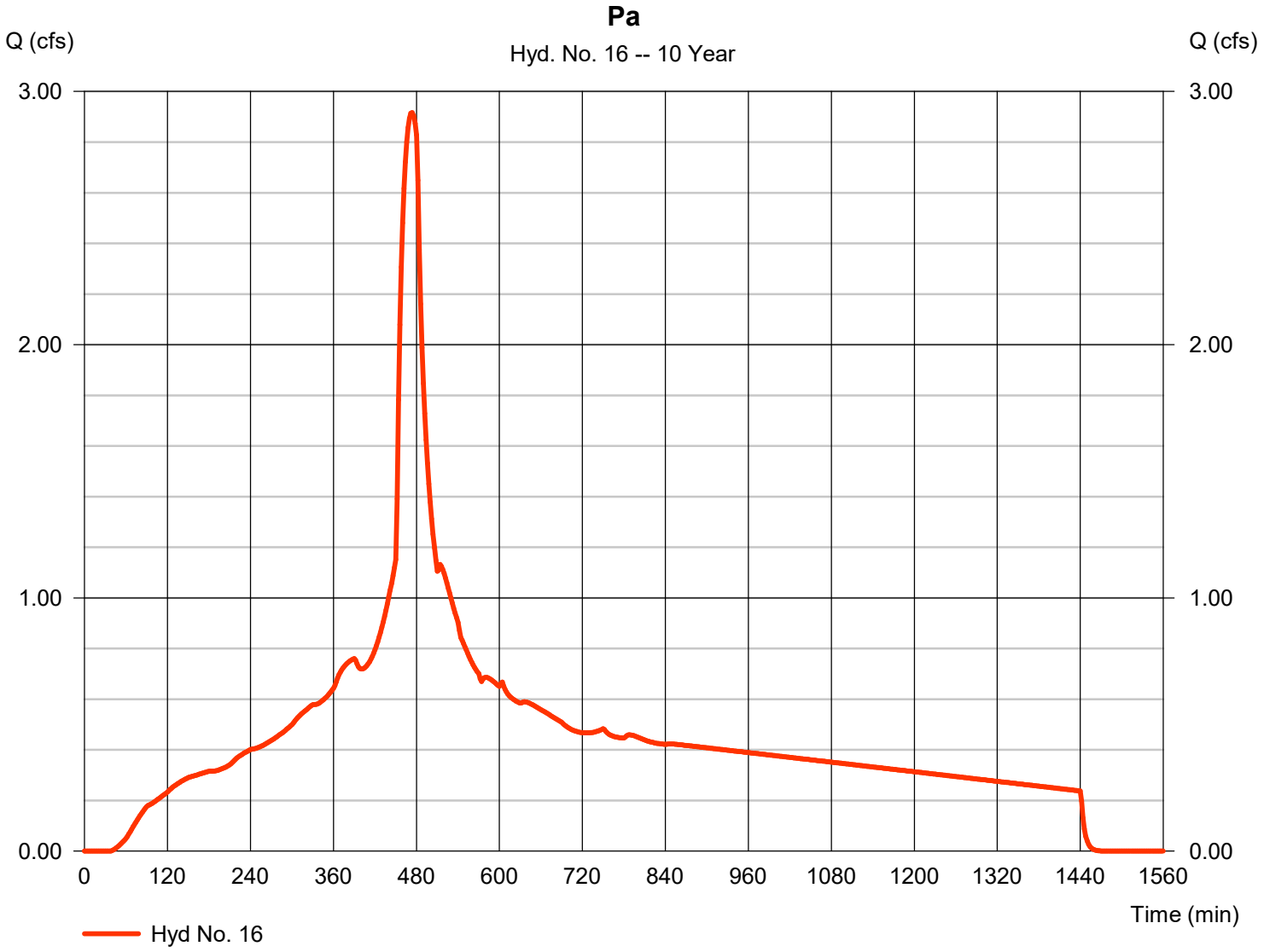


Hydrograph Report

Hyd. No. 16

Pa

Hydrograph type	= SBUH Runoff	Peak discharge	= 2.917 cfs
Storm frequency	= 10 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 42,212 cuft
Drainage area	= 3.560 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

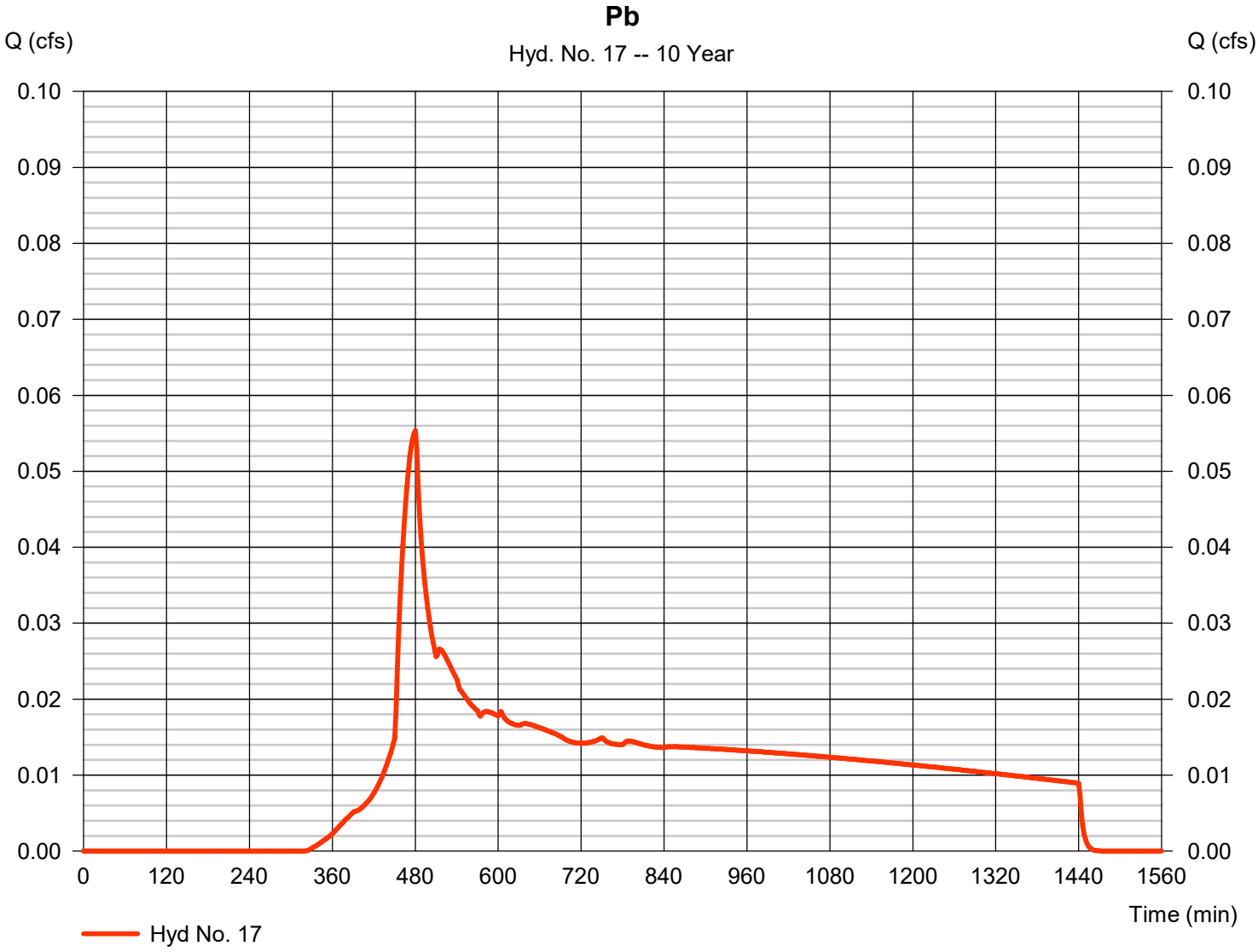


Hydrograph Report

Hyd. No. 17

Pb

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.055 cfs
Storm frequency	= 10 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 935 cuft
Drainage area	= 0.180 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

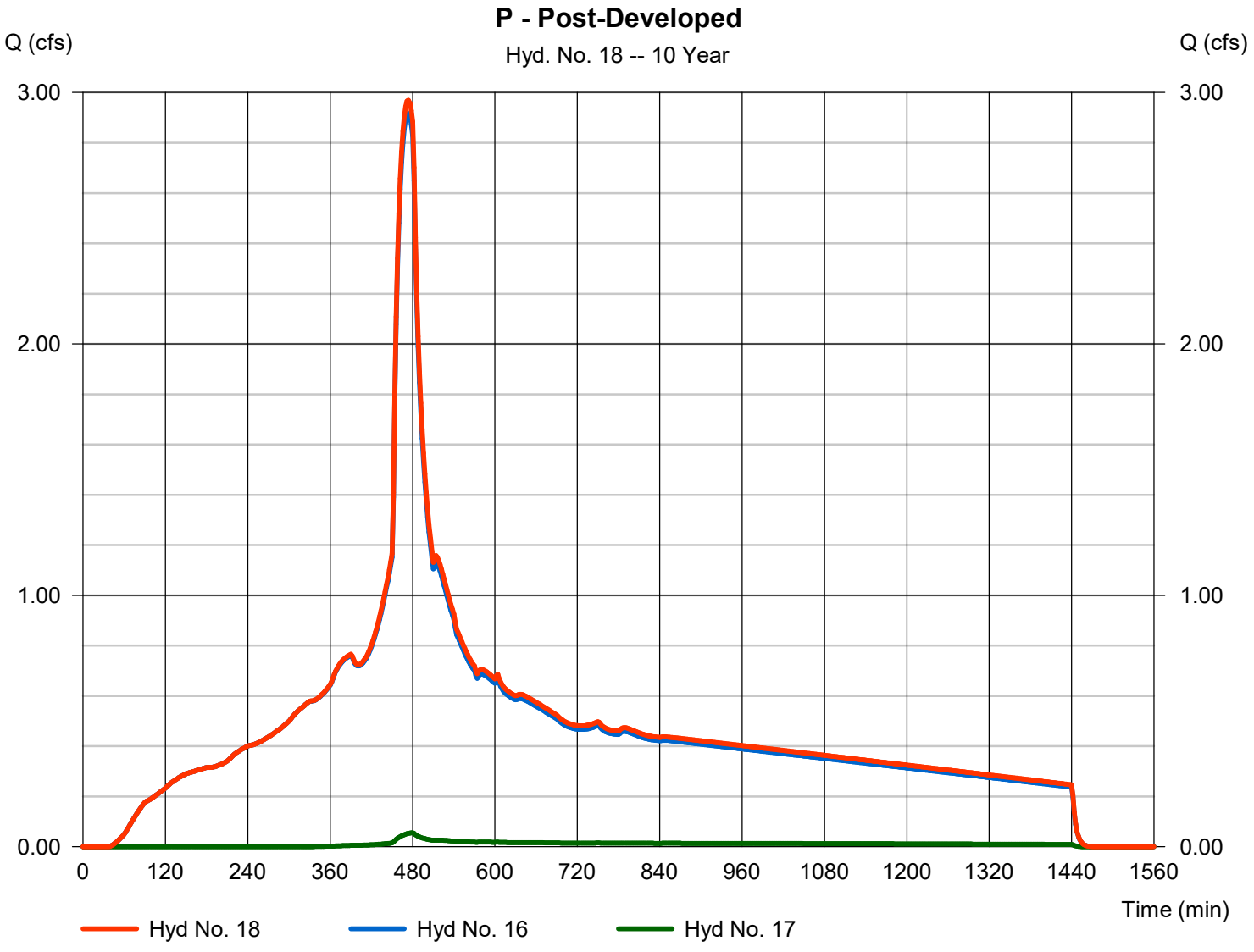


Hydrograph Report

Hyd. No. 18

P - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 2.970 cfs
Storm frequency	= 10 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 43,147 cuft
Inflow hyds.	= 16, 17	Contrib. drain. area	= 3.740 ac

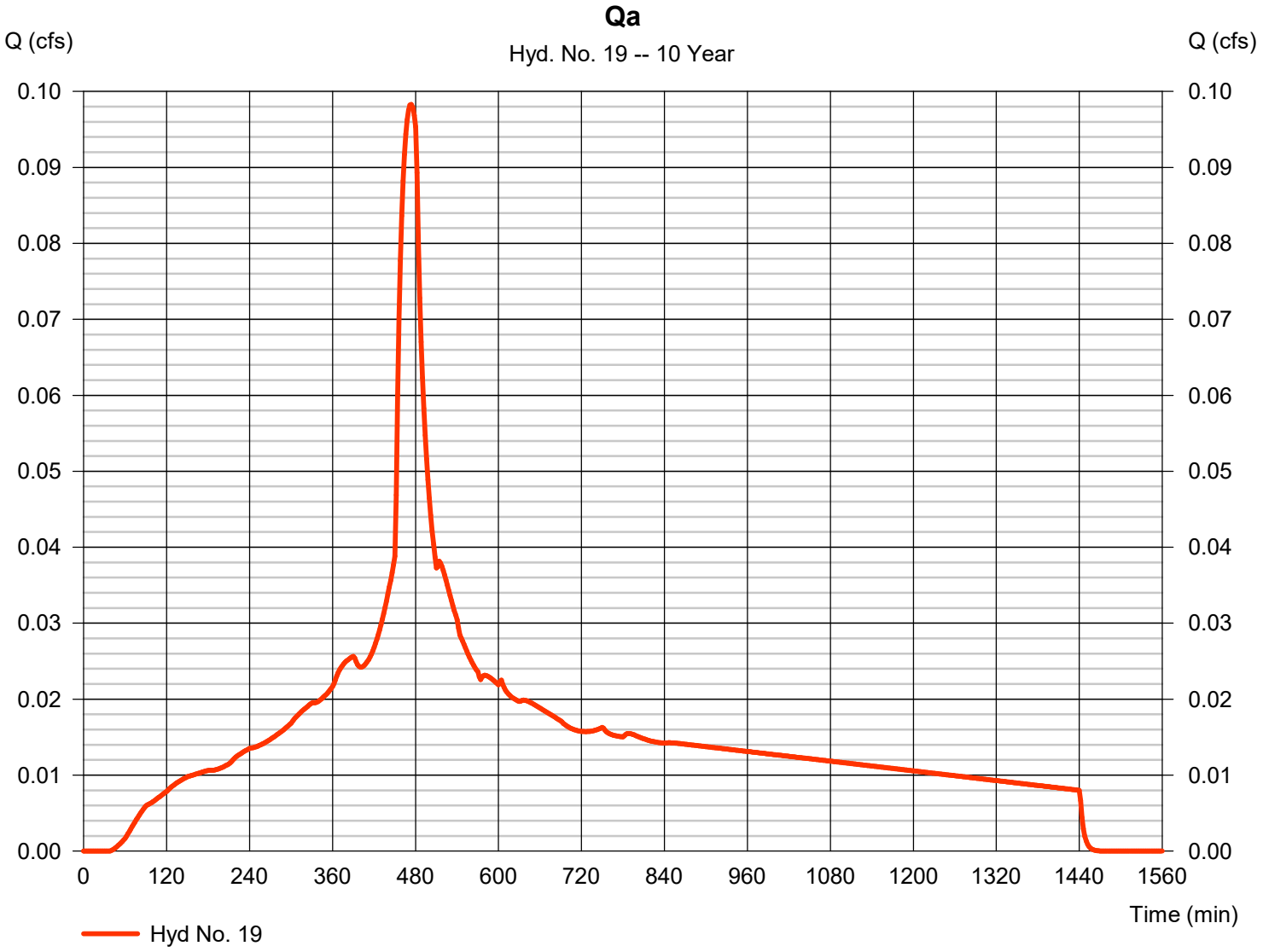


Hydrograph Report

Hyd. No. 19

Qa

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.098 cfs
Storm frequency	= 10 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 1,423 cuft
Drainage area	= 0.120 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

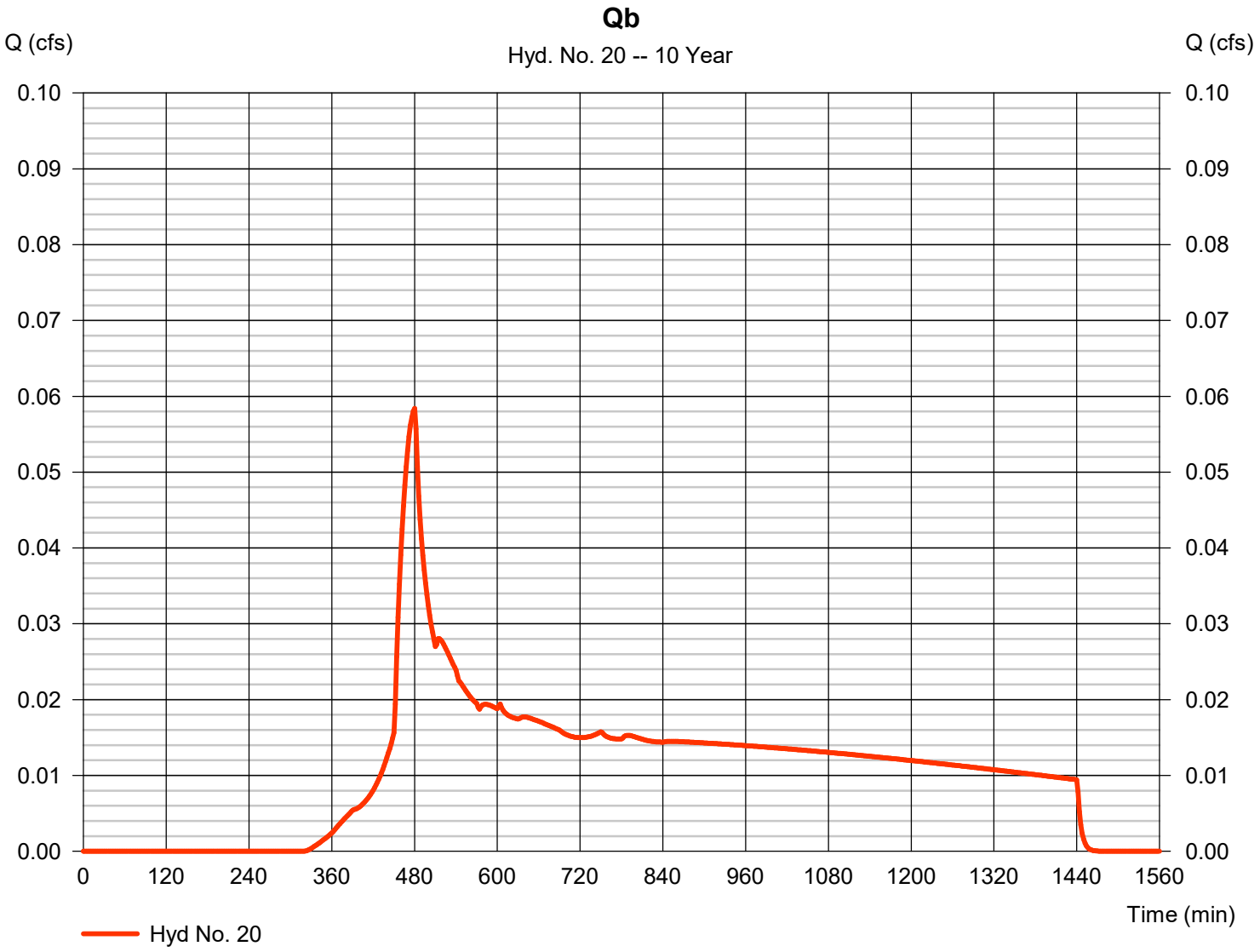


Hydrograph Report

Hyd. No. 20

Qb

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.058 cfs
Storm frequency	= 10 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 987 cuft
Drainage area	= 0.190 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

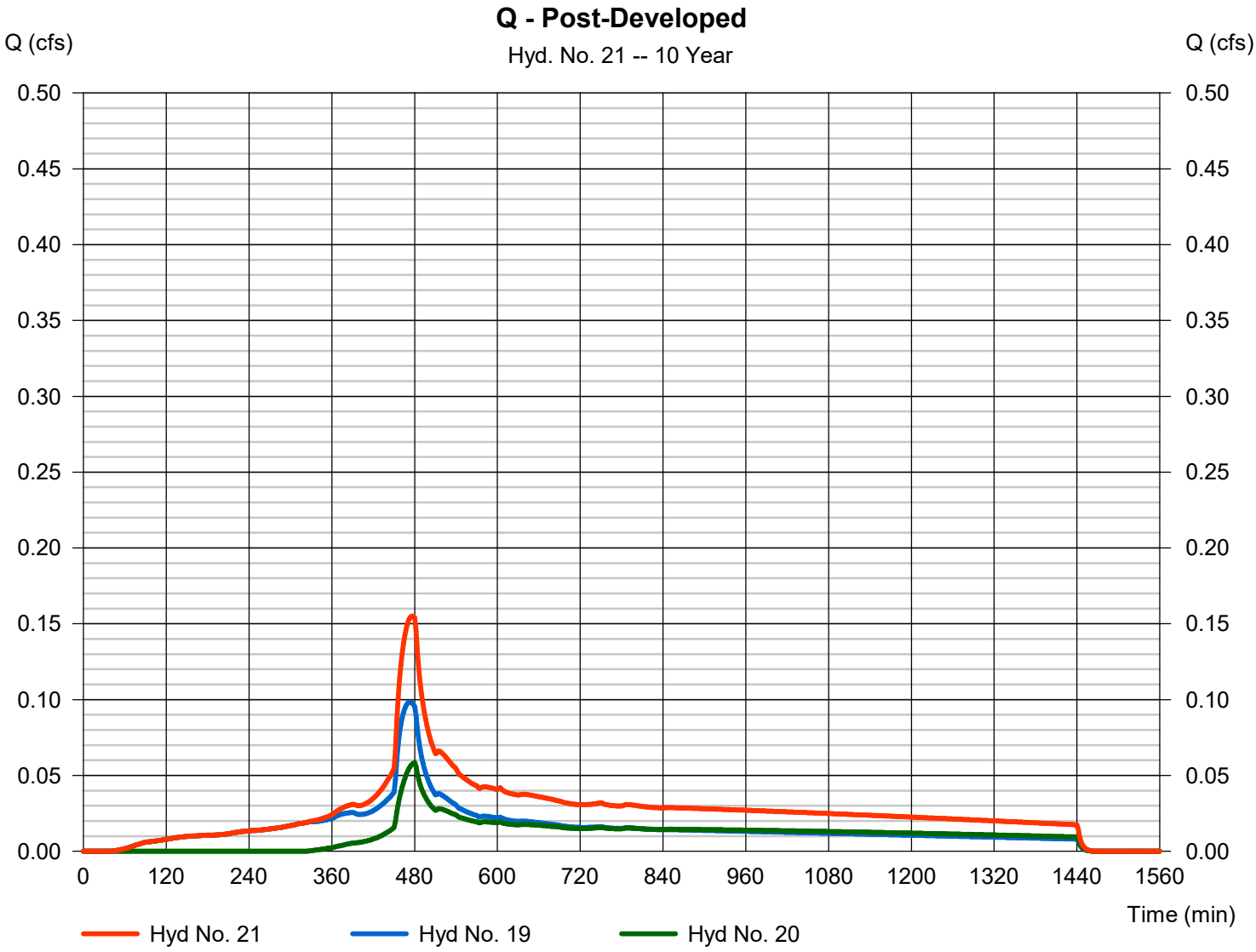


Hydrograph Report

Hyd. No. 21

Q - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 0.155 cfs
Storm frequency	= 10 yrs	Time to peak	= 476 min
Time interval	= 2 min	Hyd. volume	= 2,409 cuft
Inflow hyds.	= 19, 20	Contrib. drain. area	= 0.310 ac

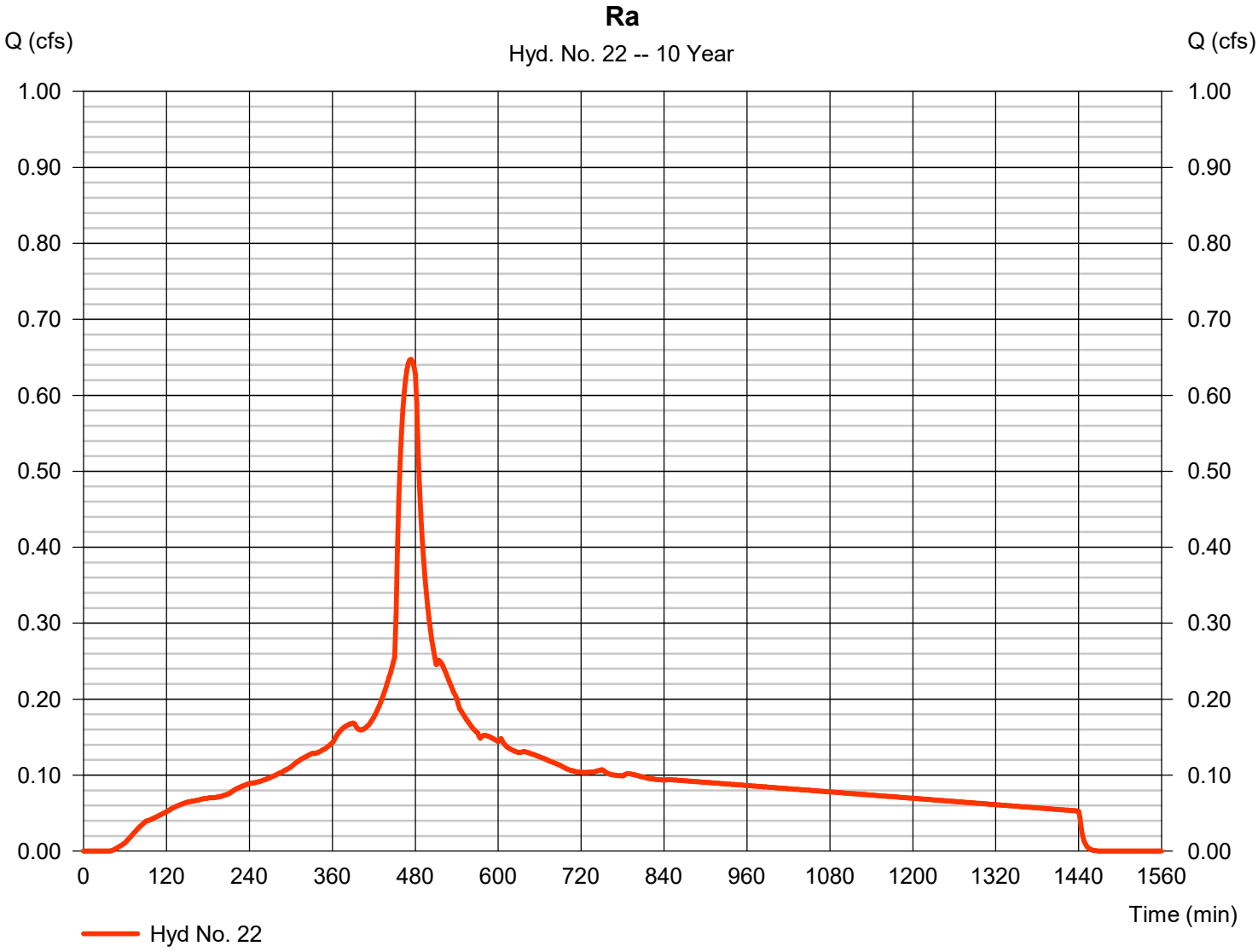


Hydrograph Report

Hyd. No. 22

Ra

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.647 cfs
Storm frequency	=	10 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	9,367 cuft
Drainage area	=	0.790 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

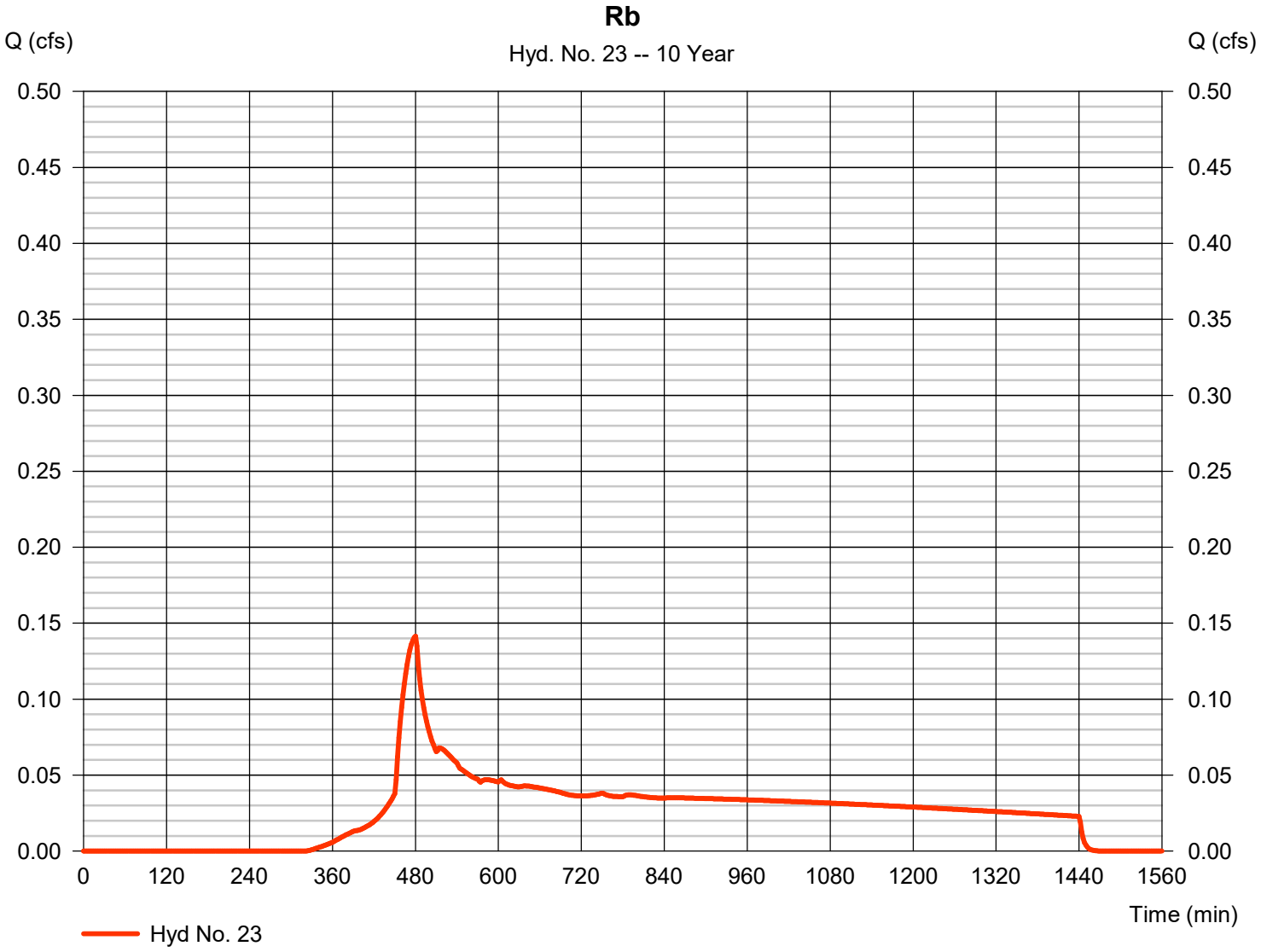


Hydrograph Report

Hyd. No. 23

Rb

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.141 cfs
Storm frequency	= 10 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 2,389 cuft
Drainage area	= 0.460 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

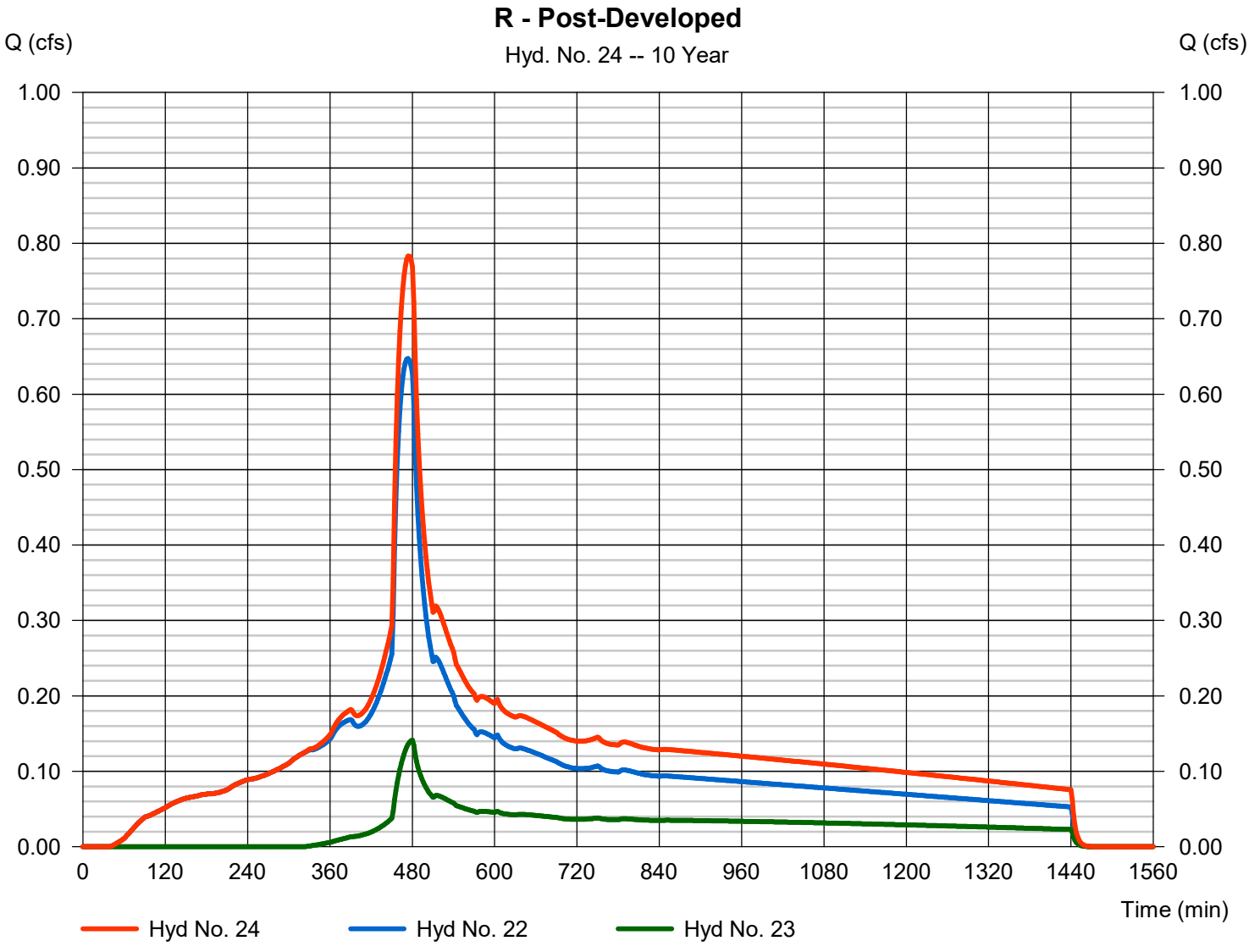


Hydrograph Report

Hyd. No. 24

R - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 0.783 cfs
Storm frequency	= 10 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 11,756 cuft
Inflow hyds.	= 22, 23	Contrib. drain. area	= 1.250 ac

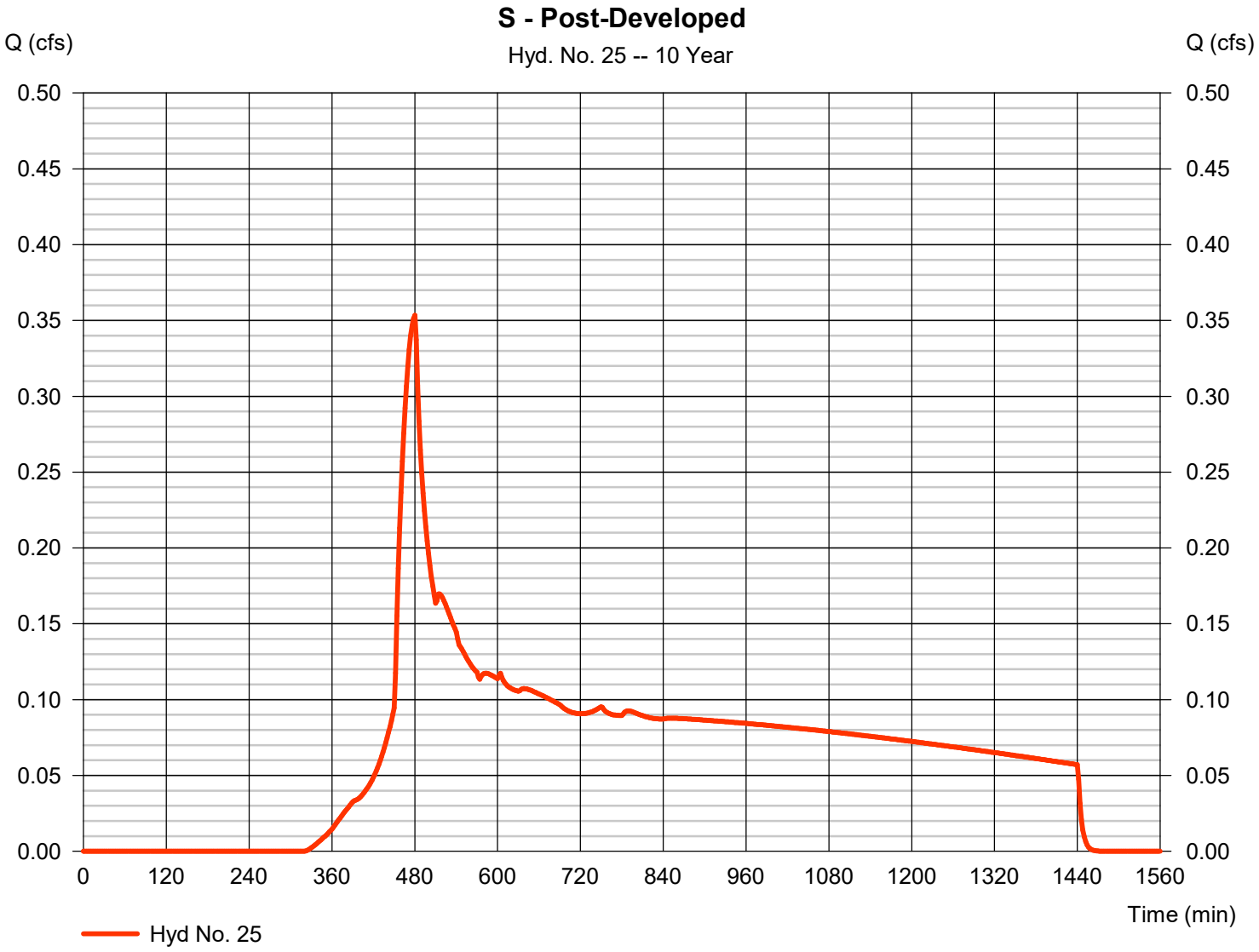


Hydrograph Report

Hyd. No. 25

S - Post-Developed

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.354 cfs
Storm frequency	= 10 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 5,972 cuft
Drainage area	= 1.150 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

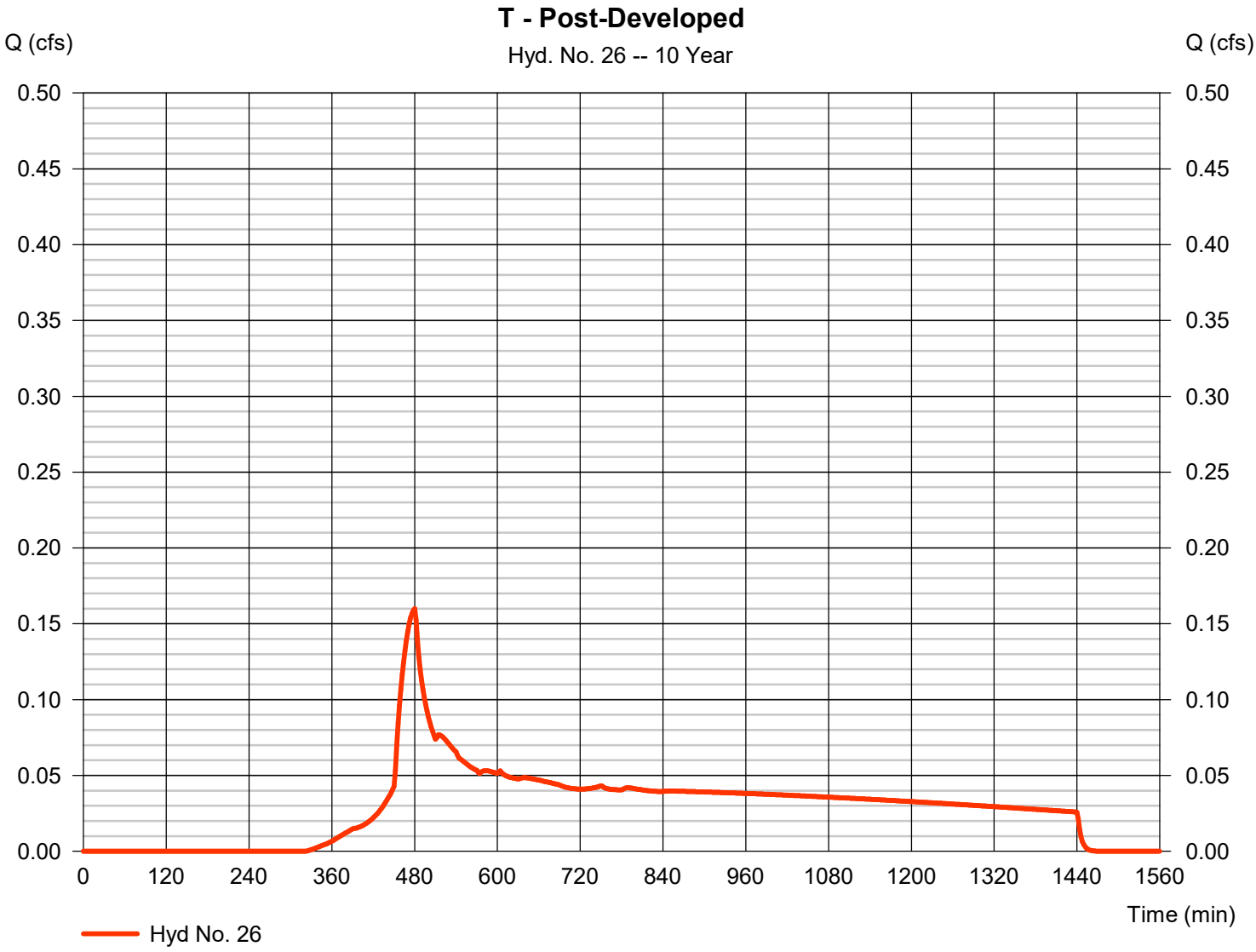


Hydrograph Report

Hyd. No. 26

T - Post-Developed

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.160 cfs
Storm frequency	= 10 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 2,700 cuft
Drainage area	= 0.520 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

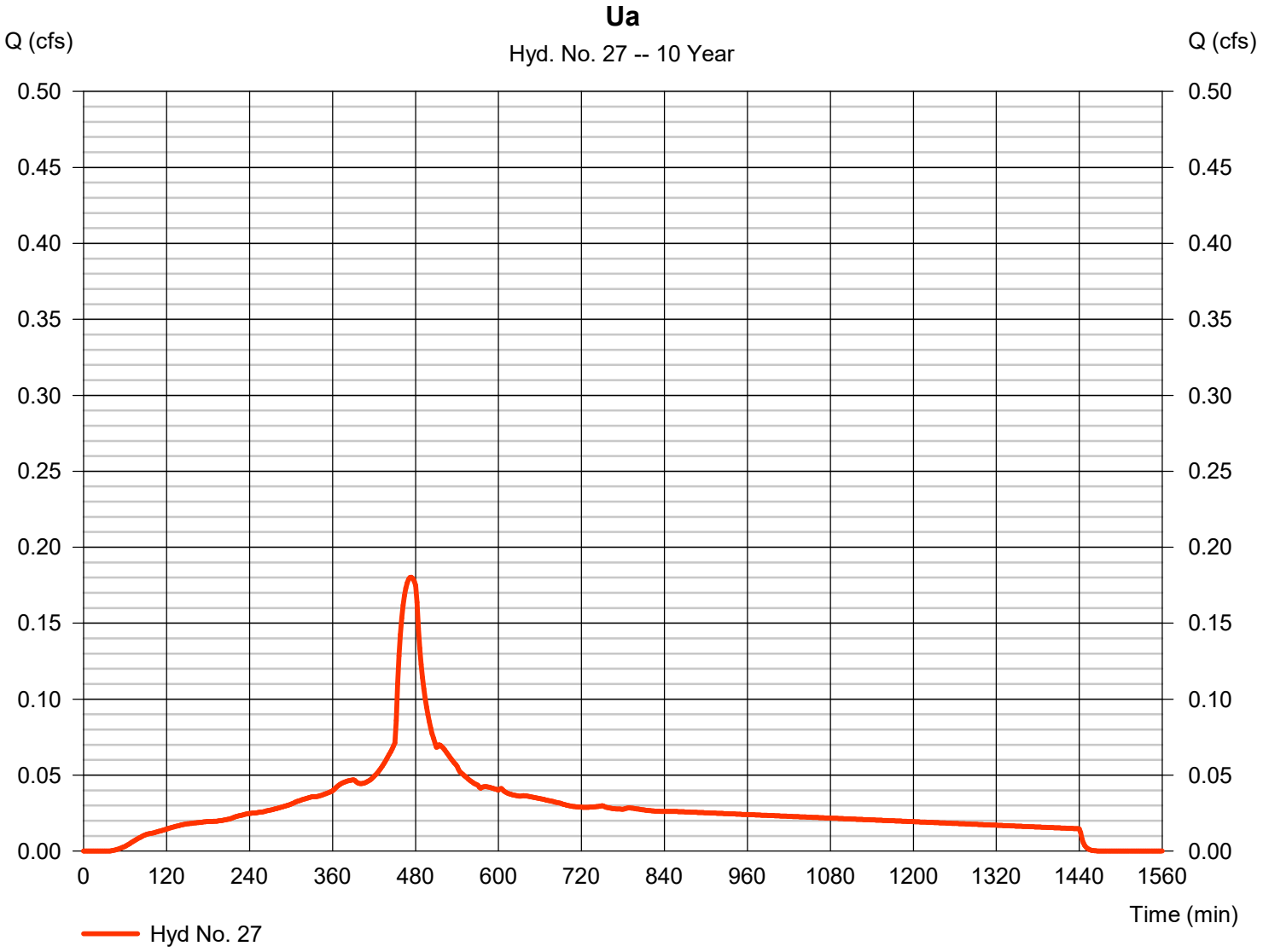


Hydrograph Report

Hyd. No. 27

Ua

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.180 cfs
Storm frequency	=	10 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	2,609 cuft
Drainage area	=	0.220 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

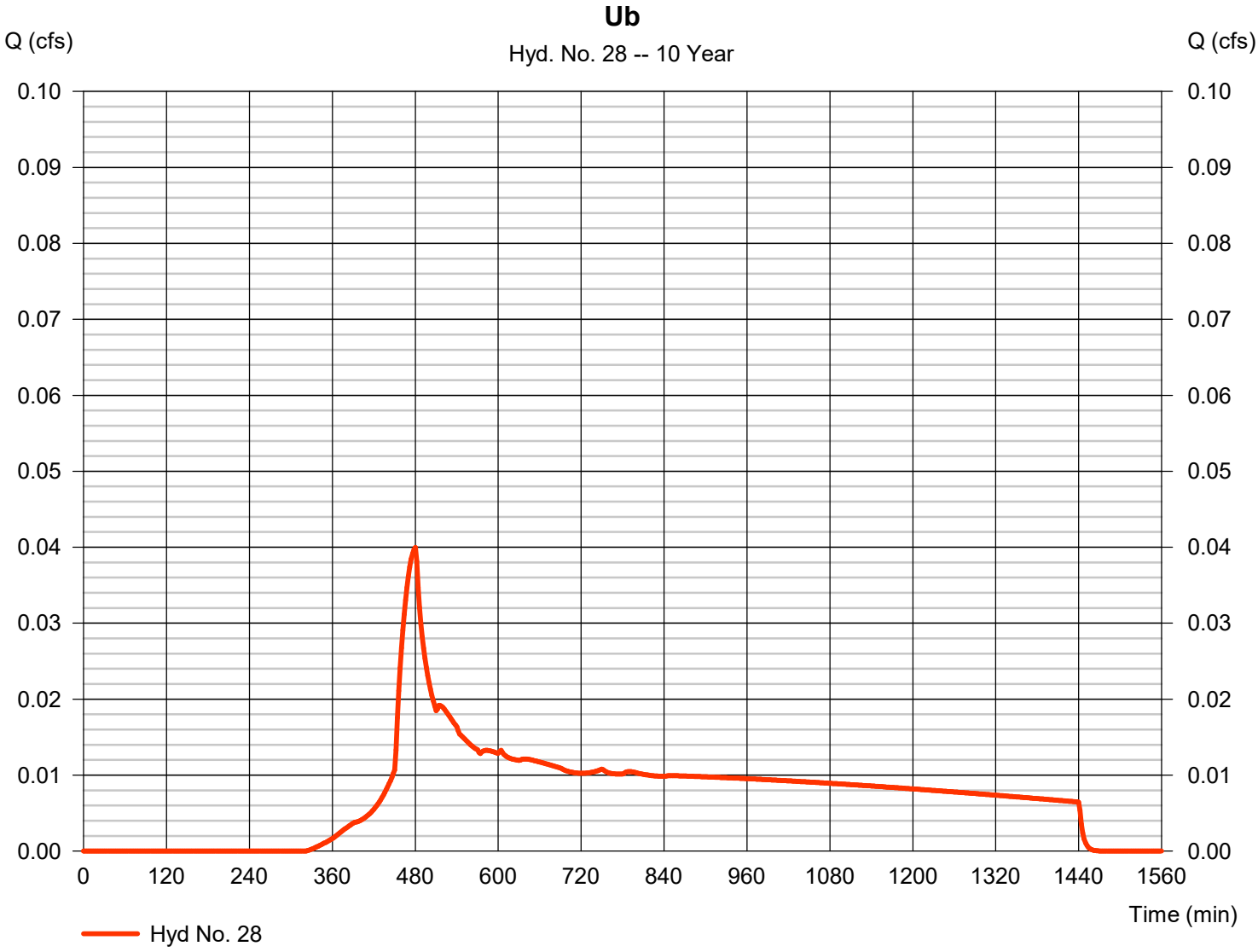


Hydrograph Report

Hyd. No. 28

Ub

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.040 cfs
Storm frequency	= 10 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 675 cuft
Drainage area	= 0.130 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

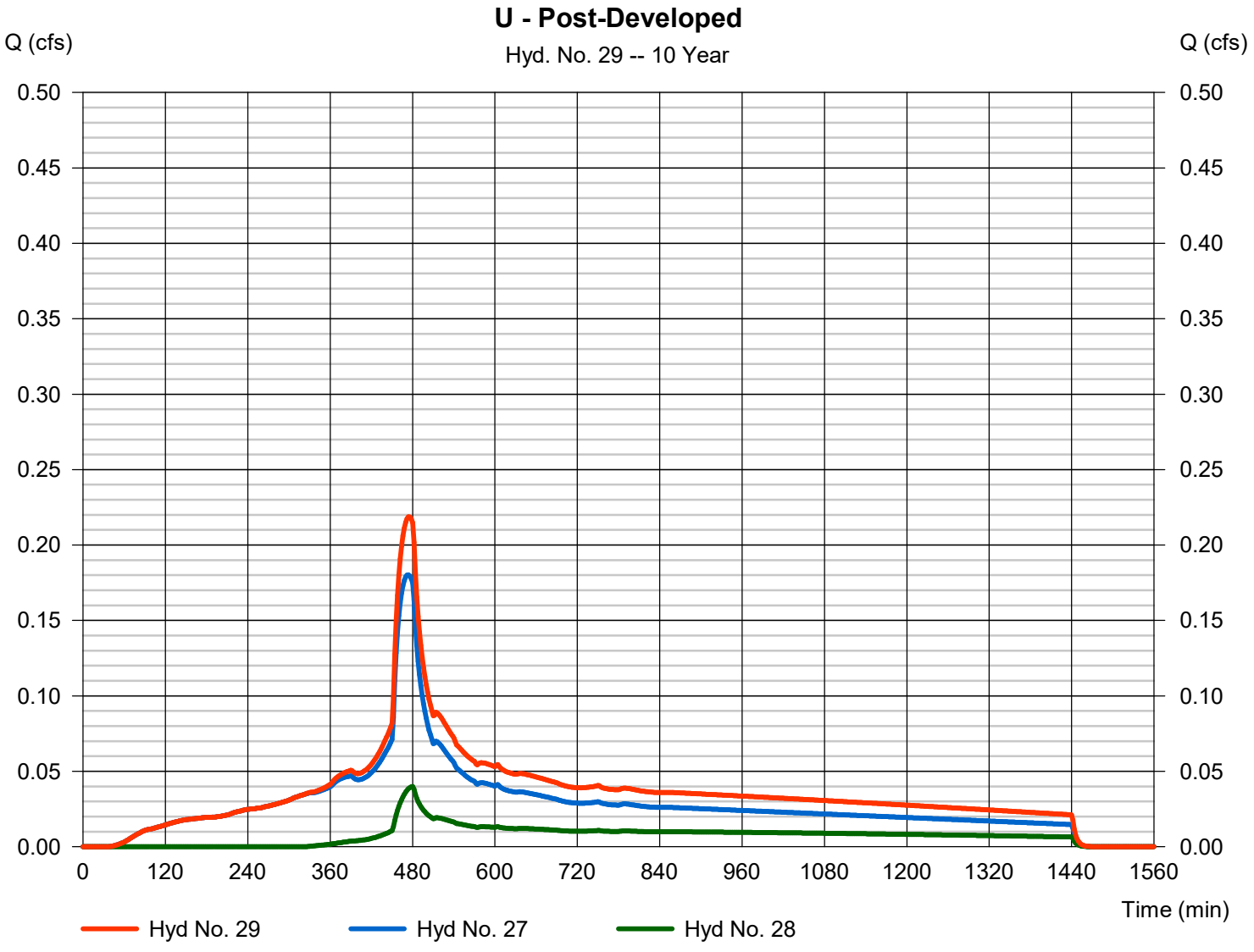


Hydrograph Report

Hyd. No. 29

U - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 0.219 cfs
Storm frequency	= 10 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 3,284 cuft
Inflow hyds.	= 27, 28	Contrib. drain. area	= 0.350 ac

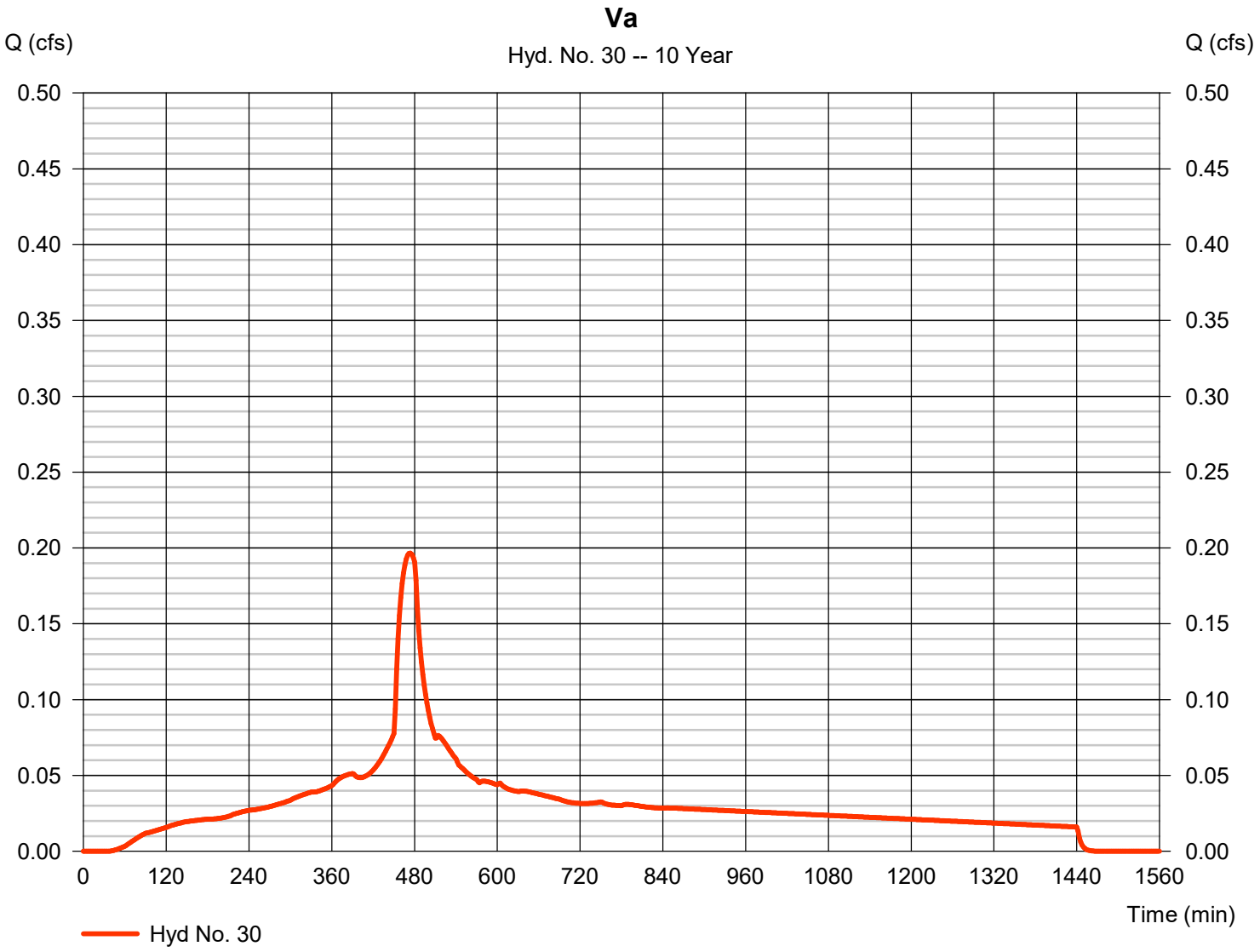


Hydrograph Report

Hyd. No. 30

Va

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.197 cfs
Storm frequency	=	10 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	2,846 cuft
Drainage area	=	0.240 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

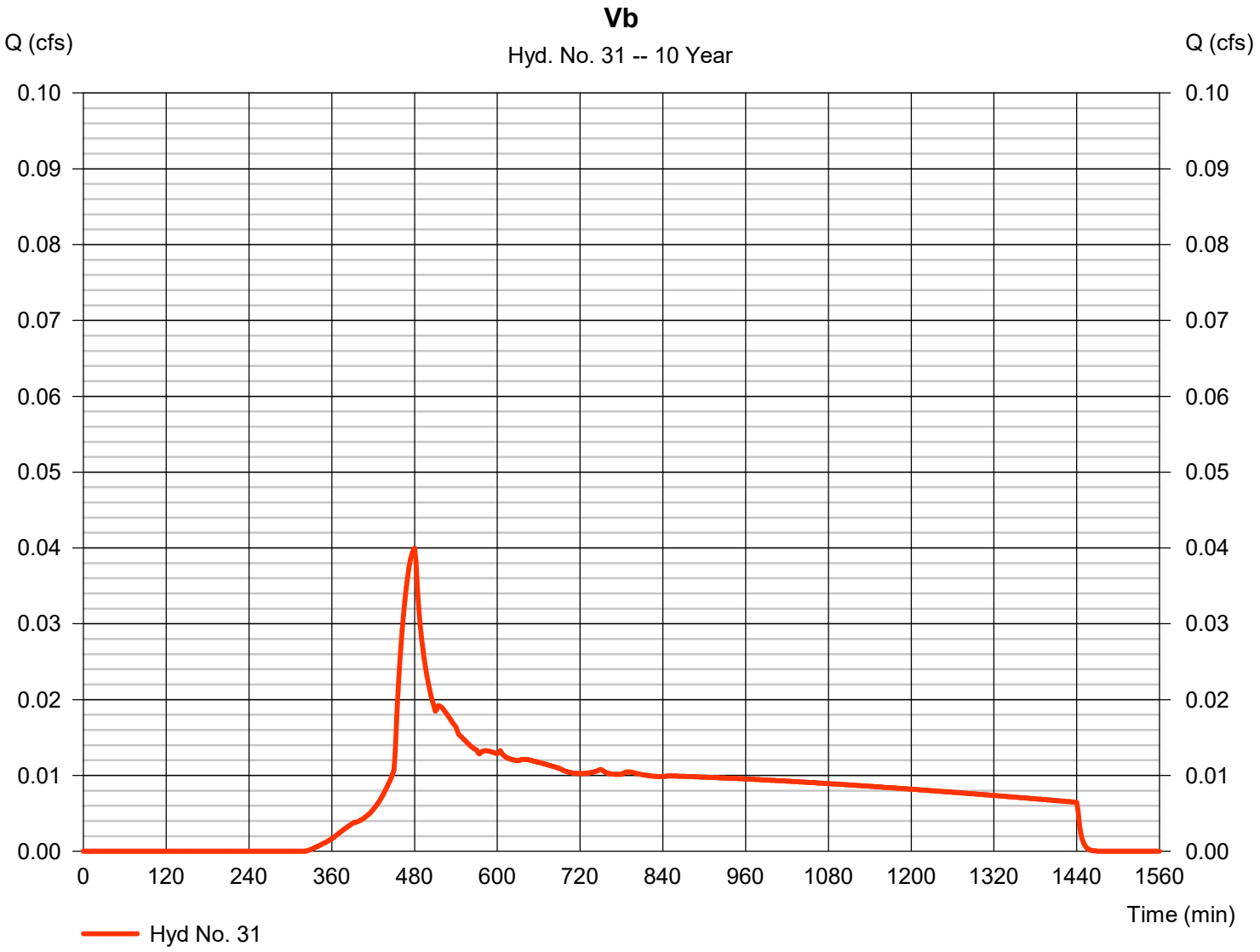


Hydrograph Report

Hyd. No. 31

Vb

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.040 cfs
Storm frequency	=	10 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	675 cuft
Drainage area	=	0.130 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

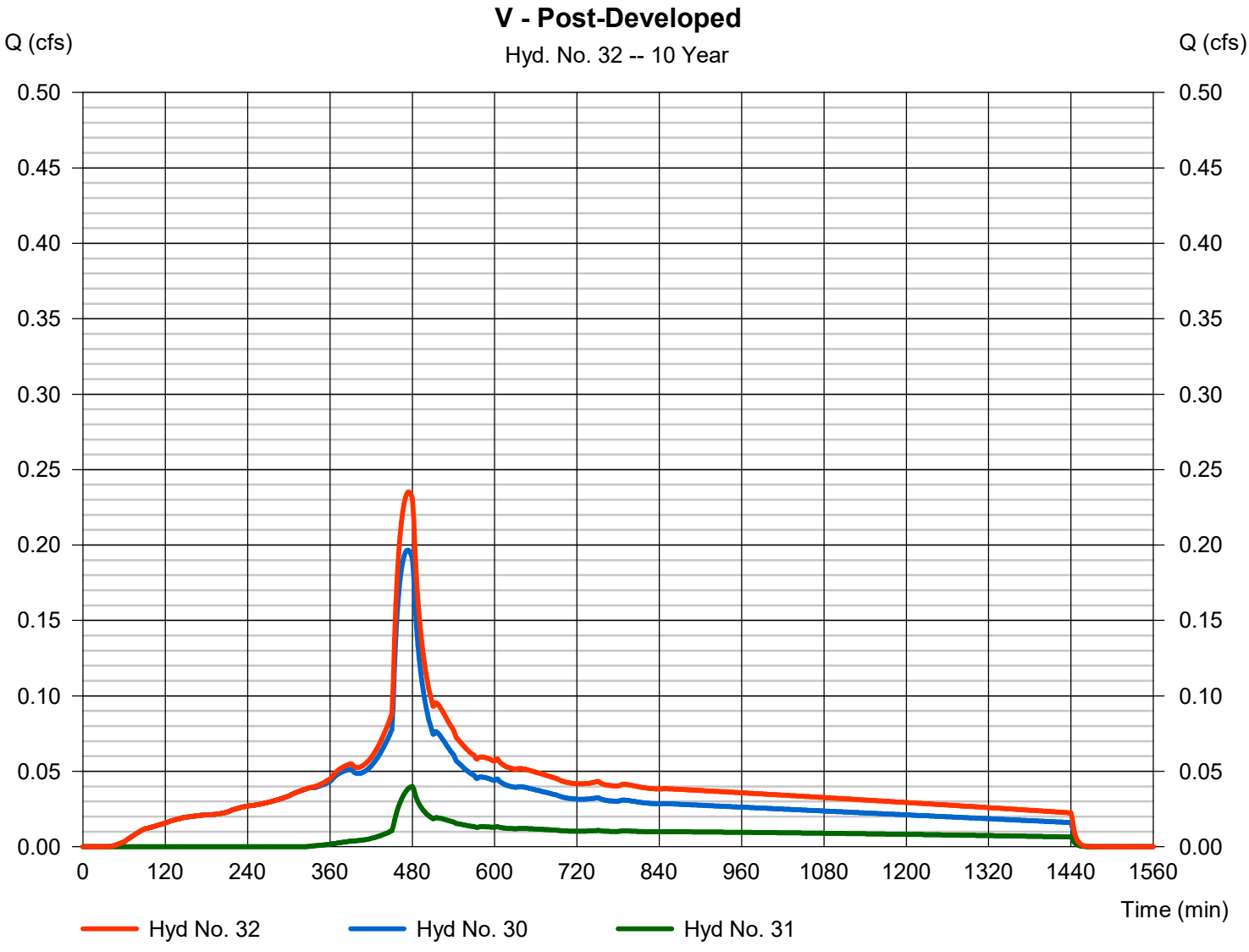


Hydrograph Report

Hyd. No. 32

V - Post-Developed

Hydrograph type	= Combine	Peak discharge	= 0.235 cfs
Storm frequency	= 10 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 3,521 cuft
Inflow hyds.	= 30, 31	Contrib. drain. area	= 0.370 ac

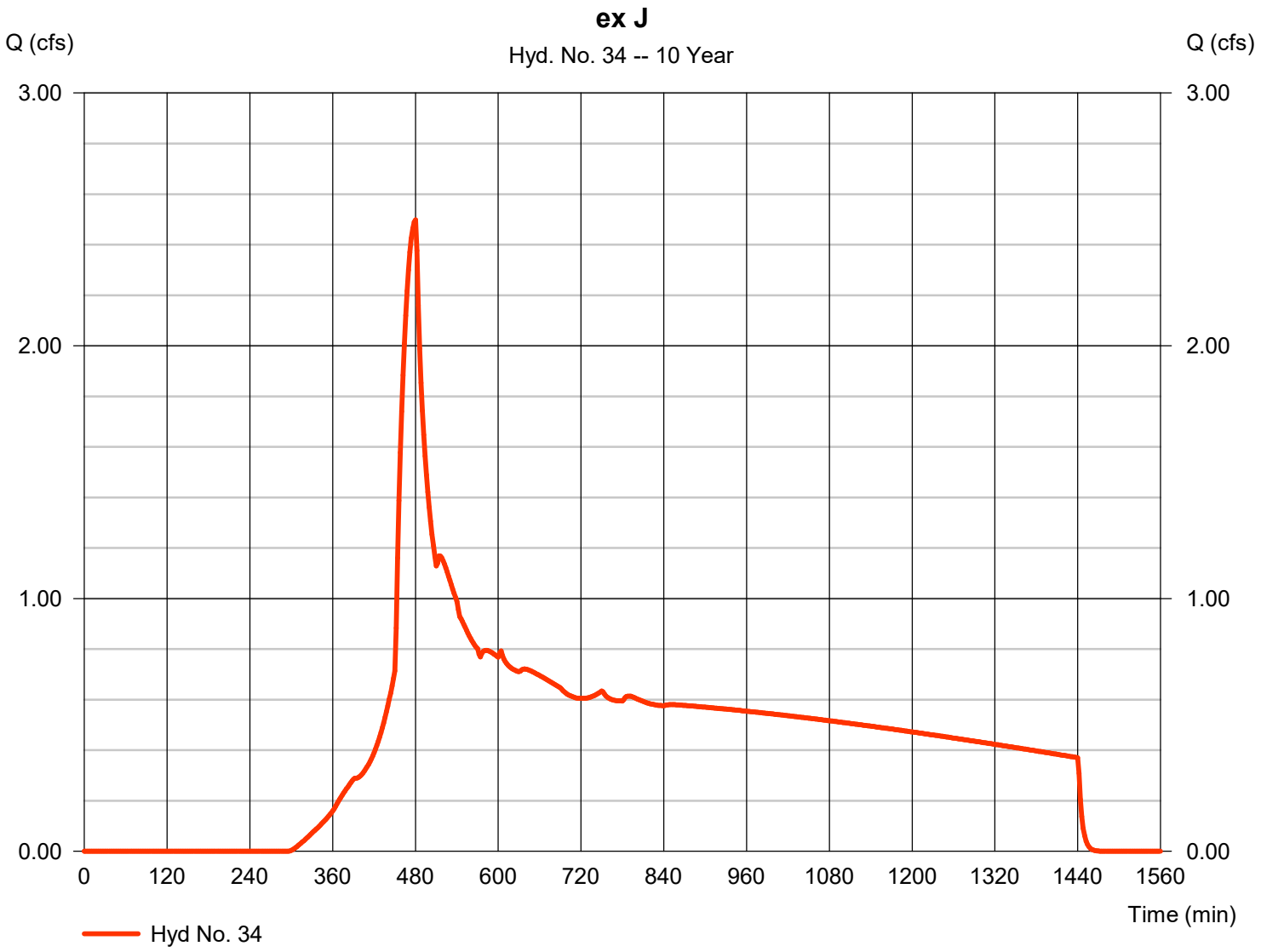


Hydrograph Report

Hyd. No. 34

ex J

Hydrograph type	=	SBUH Runoff	Peak discharge	=	2.498 cfs
Storm frequency	=	10 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	40,531 cuft
Drainage area	=	7.130 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

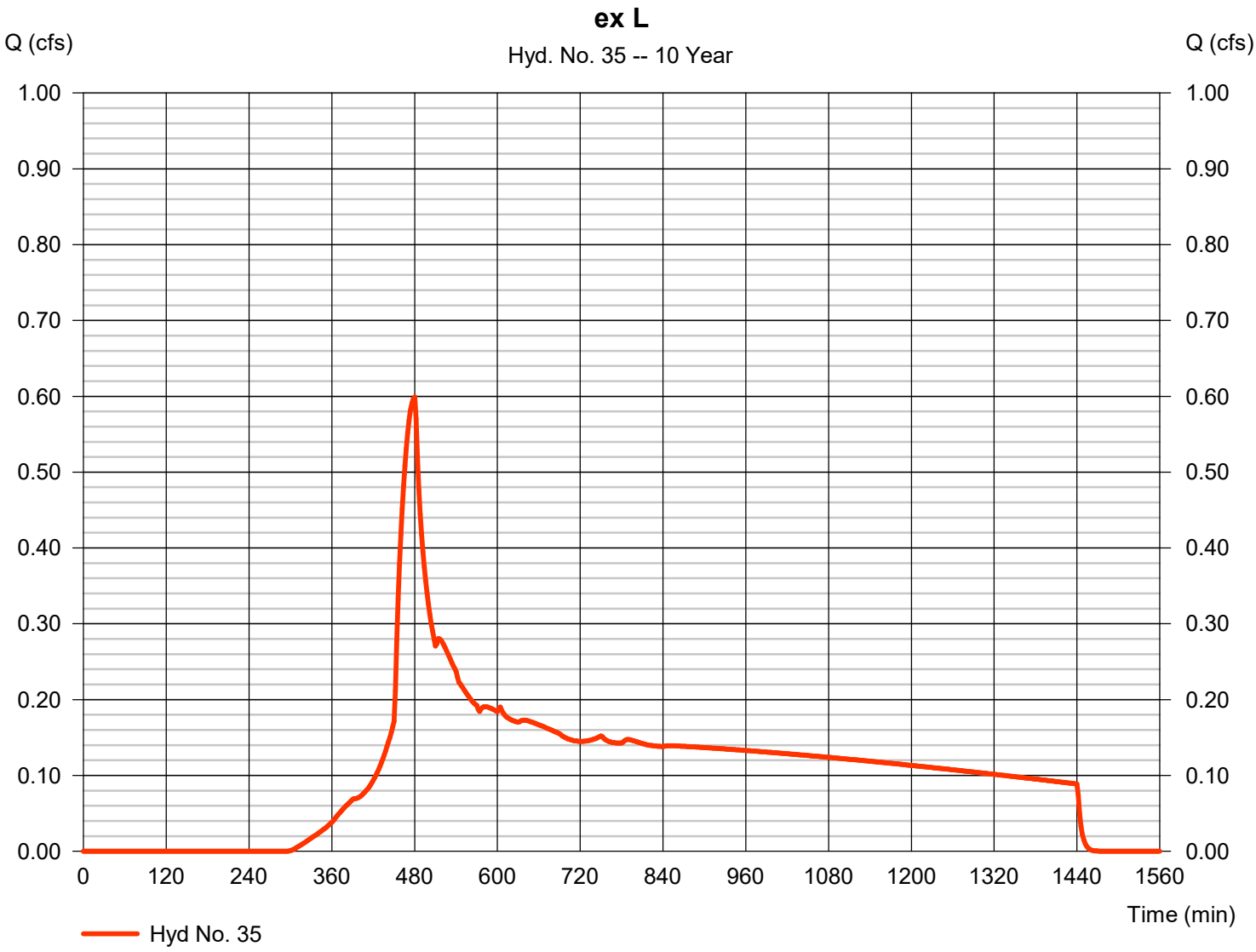


Hydrograph Report

Hyd. No. 35

ex L

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.599 cfs
Storm frequency	=	10 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	9,721 cuft
Drainage area	=	1.710 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

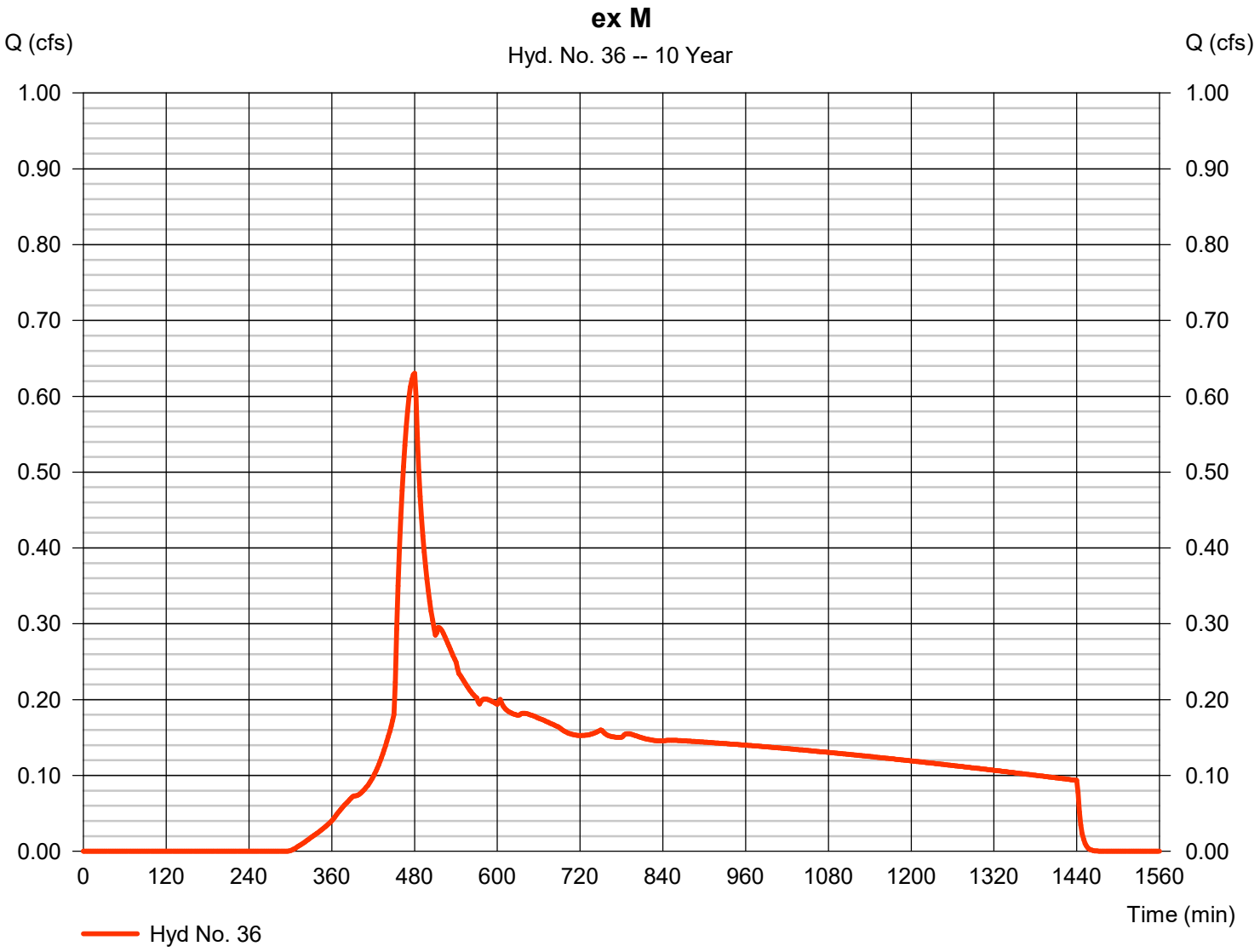


Hydrograph Report

Hyd. No. 36

ex M

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.631 cfs
Storm frequency	= 10 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 10,232 cuft
Drainage area	= 1.800 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

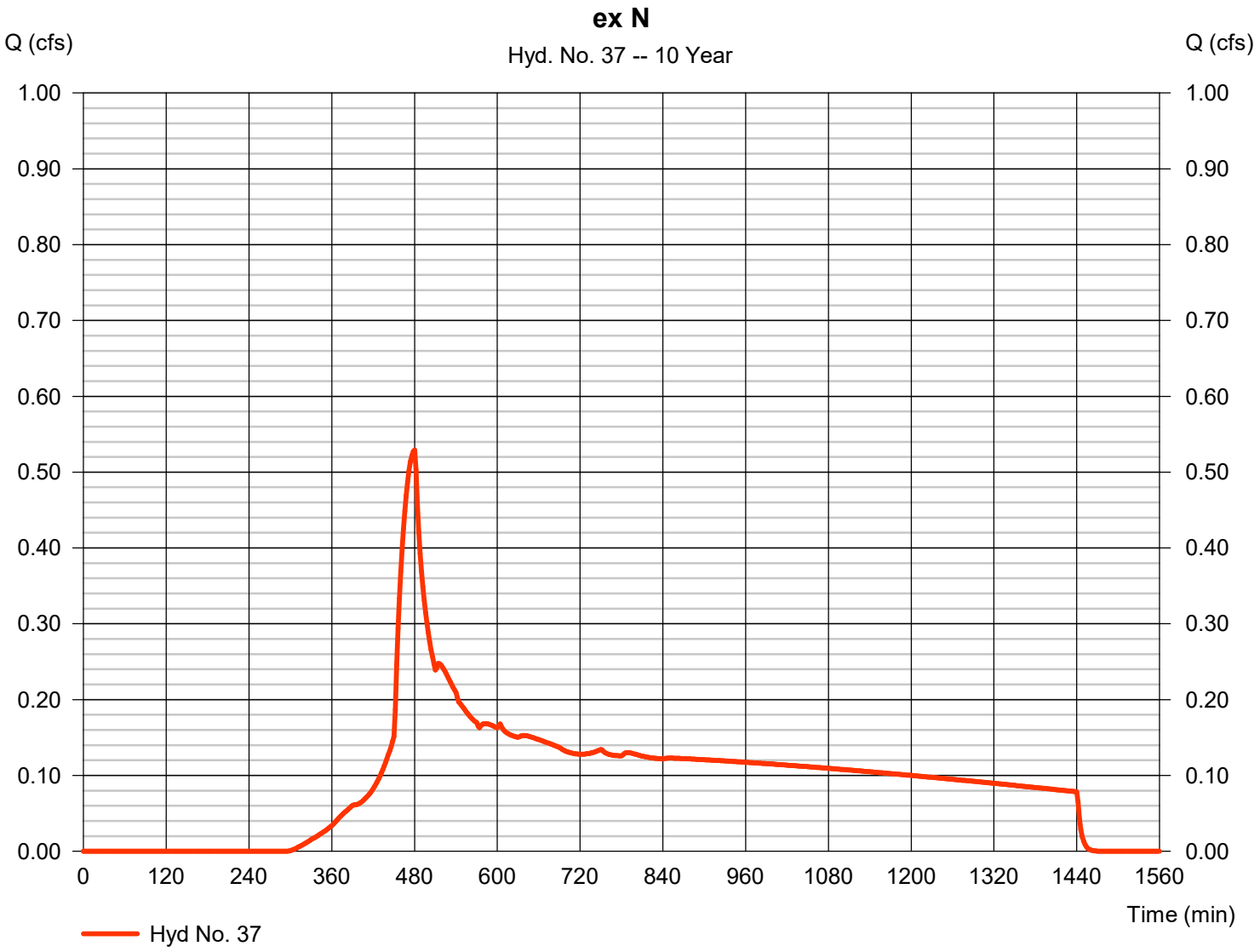


Hydrograph Report

Hyd. No. 37

ex N

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.529 cfs
Storm frequency	=	10 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	8,584 cuft
Drainage area	=	1.510 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

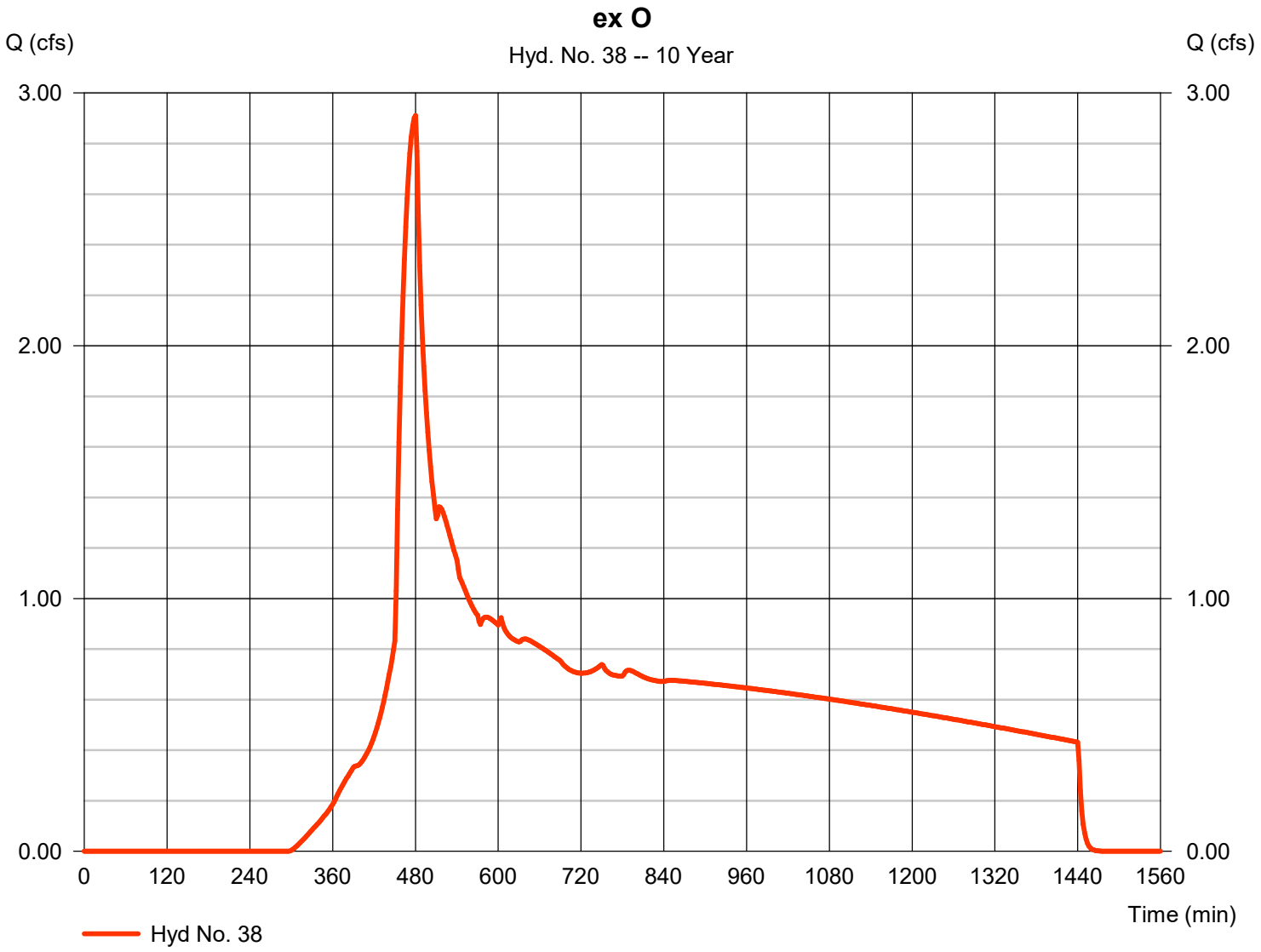


Hydrograph Report

Hyd. No. 38

ex O

Hydrograph type	=	SBUH Runoff	Peak discharge	=	2.911 cfs
Storm frequency	=	10 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	47,238 cuft
Drainage area	=	8.310 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

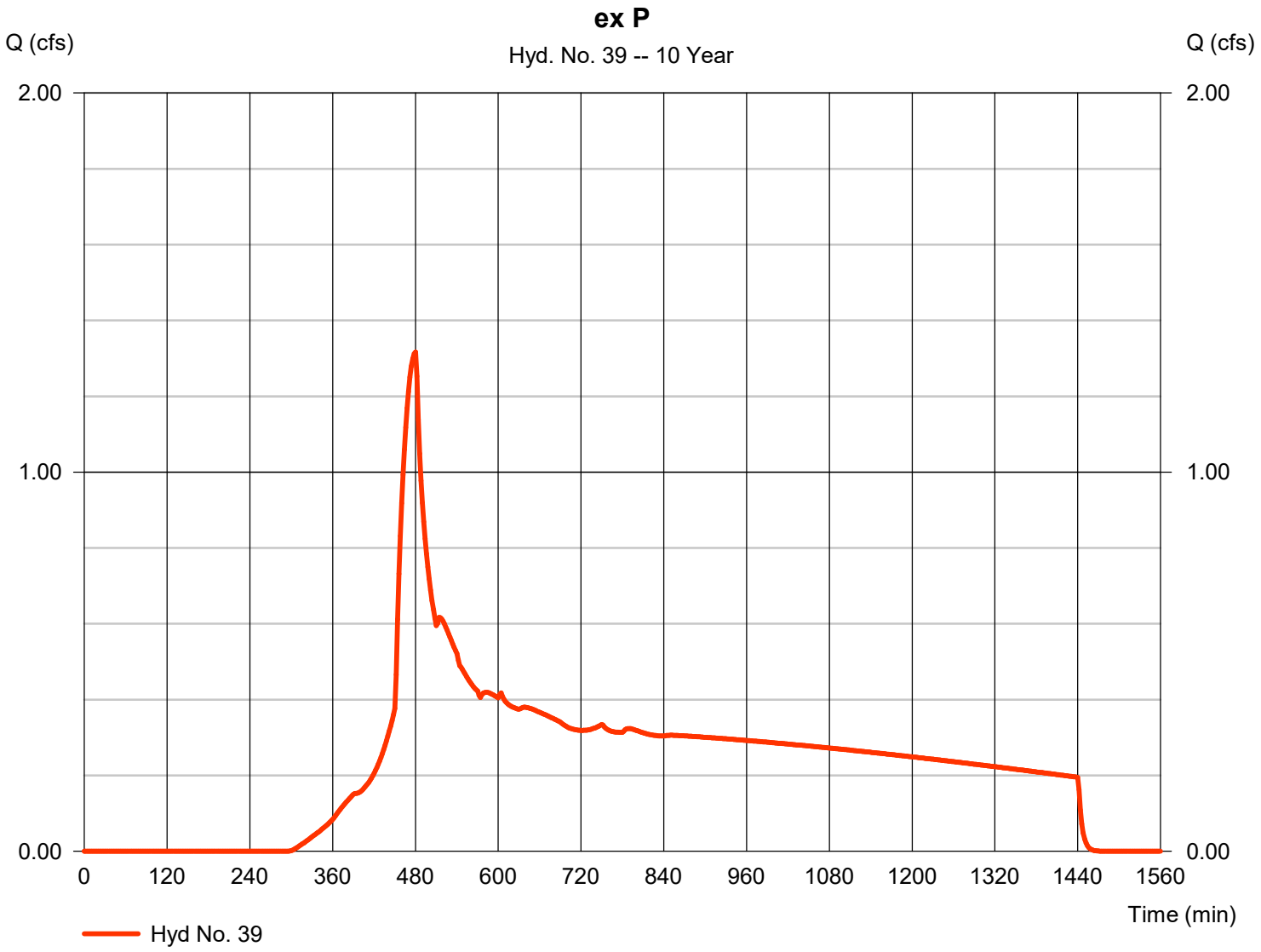


Hydrograph Report

Hyd. No. 39

ex P

Hydrograph type	=	SBUH Runoff	Peak discharge	=	1.317 cfs
Storm frequency	=	10 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	21,374 cuft
Drainage area	=	3.760 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

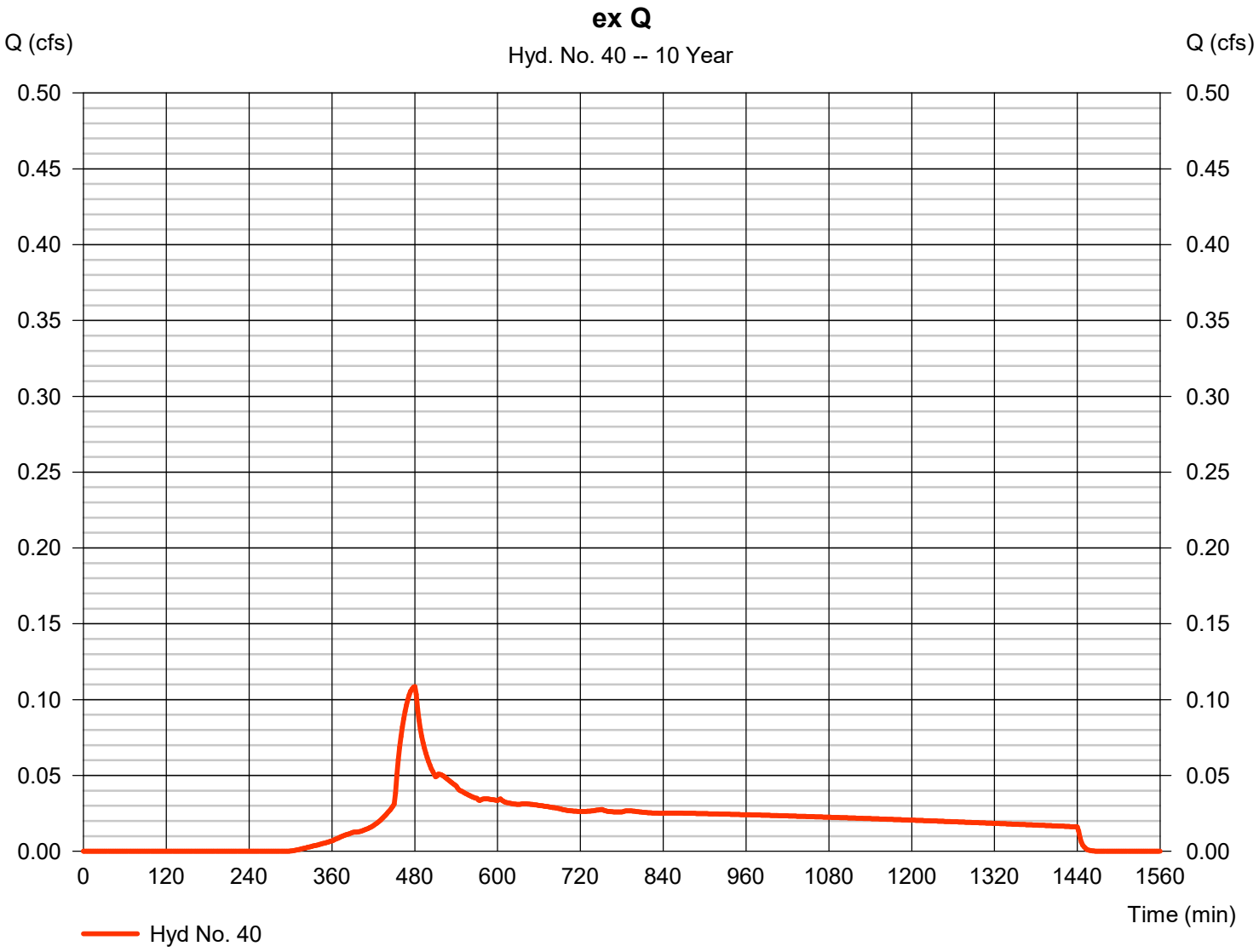


Hydrograph Report

Hyd. No. 40

ex Q

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.109 cfs
Storm frequency	=	10 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	1,762 cuft
Drainage area	=	0.310 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

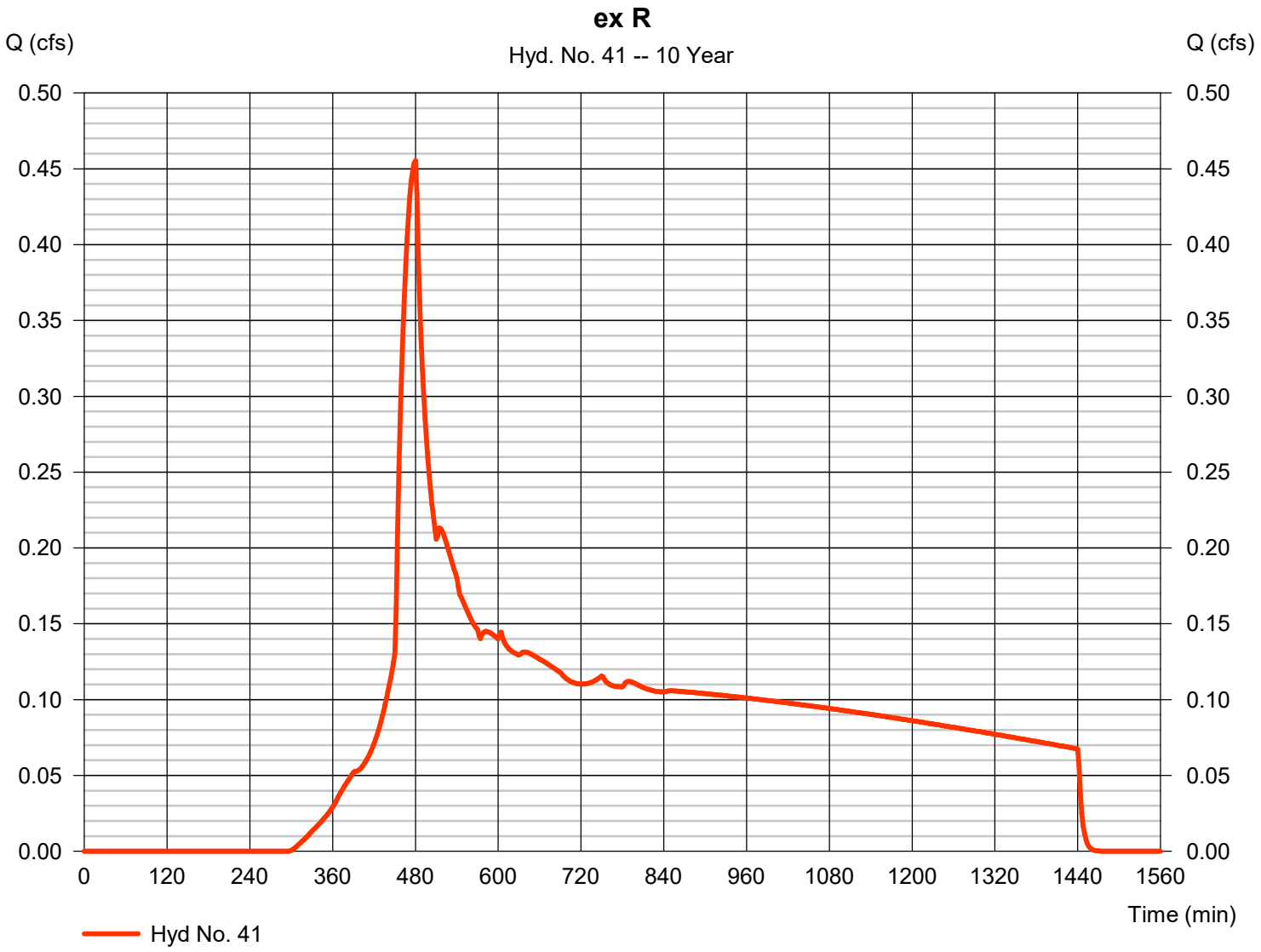


Hydrograph Report

Hyd. No. 41

ex R

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.455 cfs
Storm frequency	=	10 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	7,390 cuft
Drainage area	=	1.300 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

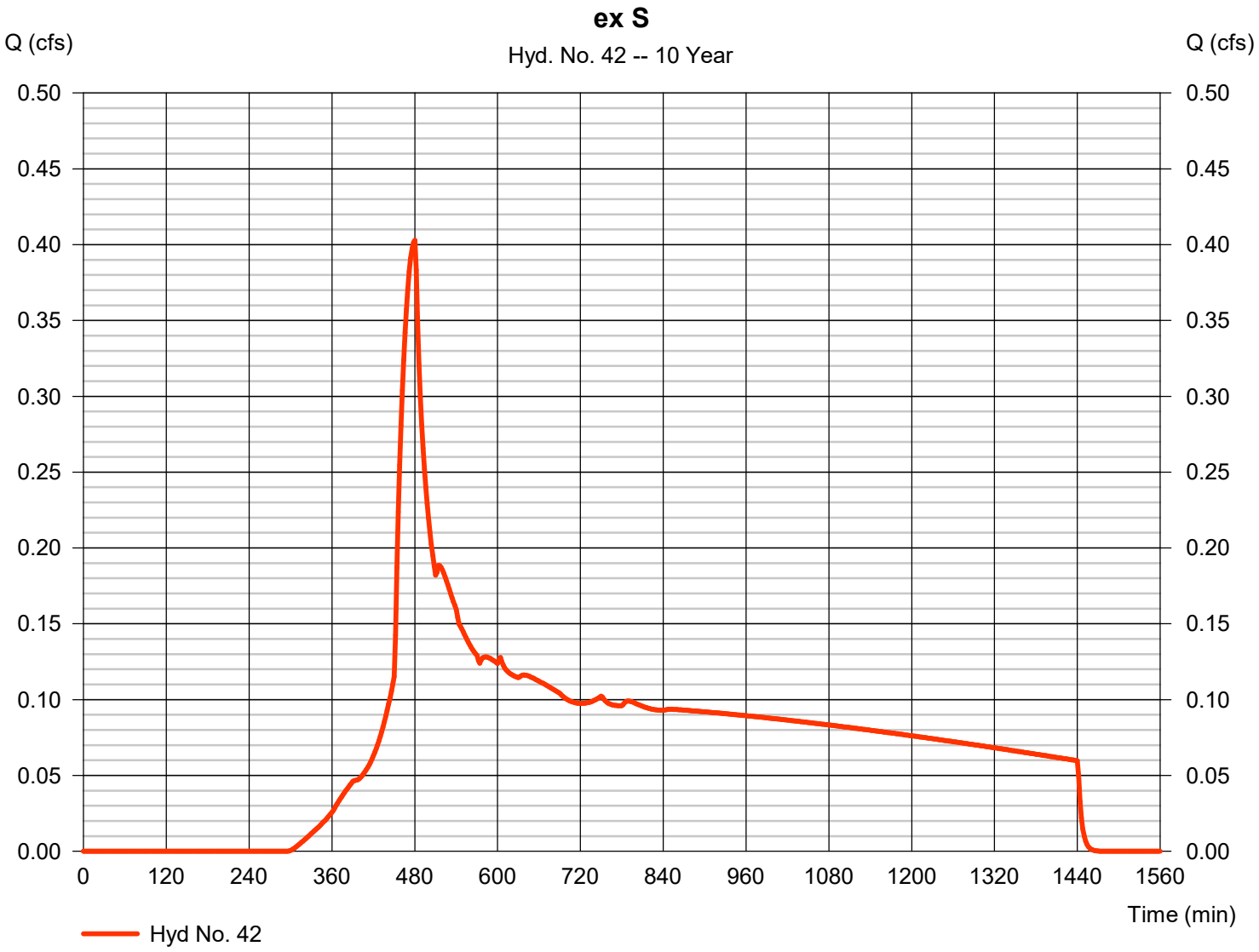


Hydrograph Report

Hyd. No. 42

ex S

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.403 cfs
Storm frequency	=	10 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	6,537 cuft
Drainage area	=	1.150 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

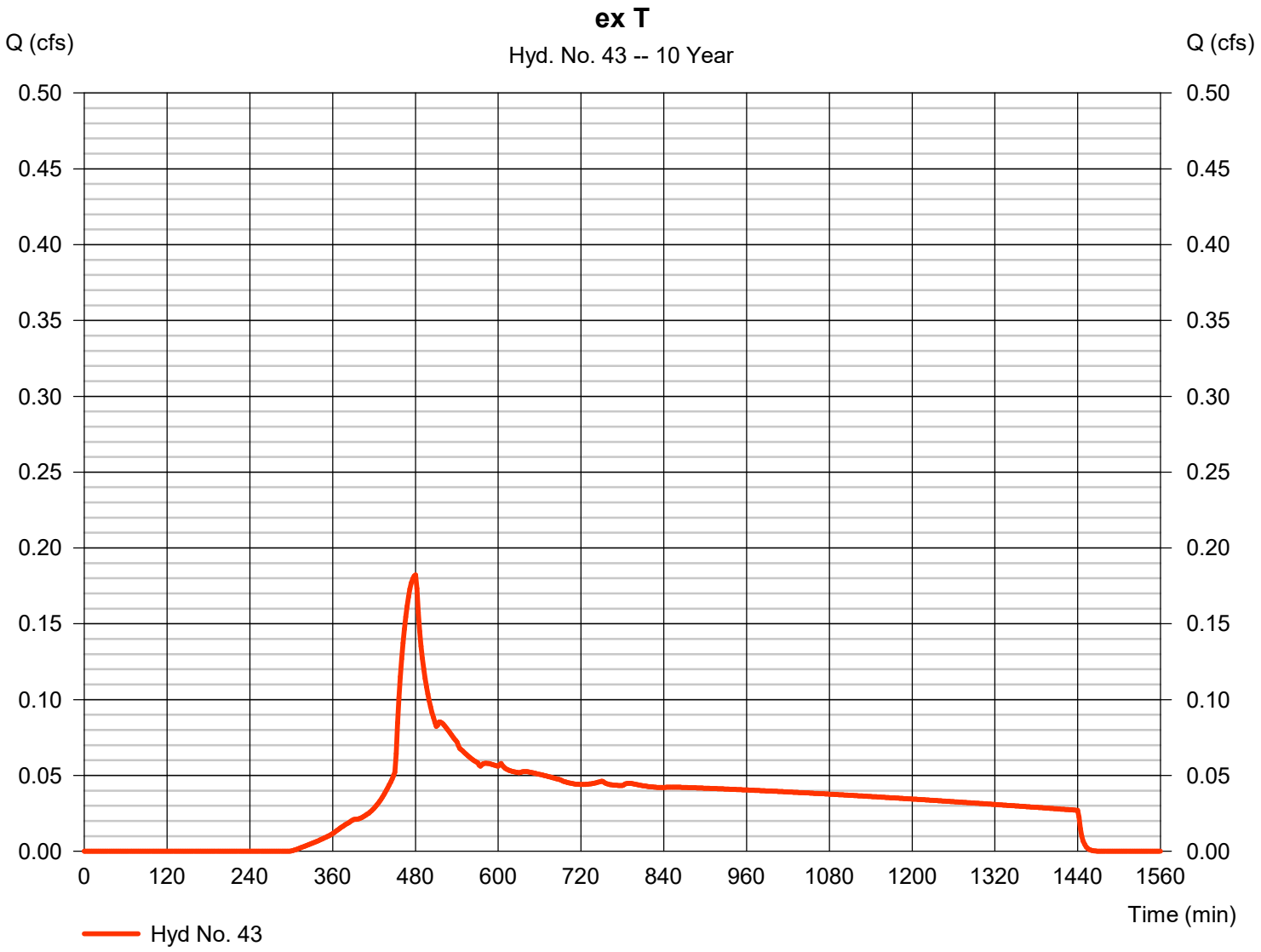


Hydrograph Report

Hyd. No. 43

ex T

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.182 cfs
Storm frequency	=	10 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	2,956 cuft
Drainage area	=	0.520 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

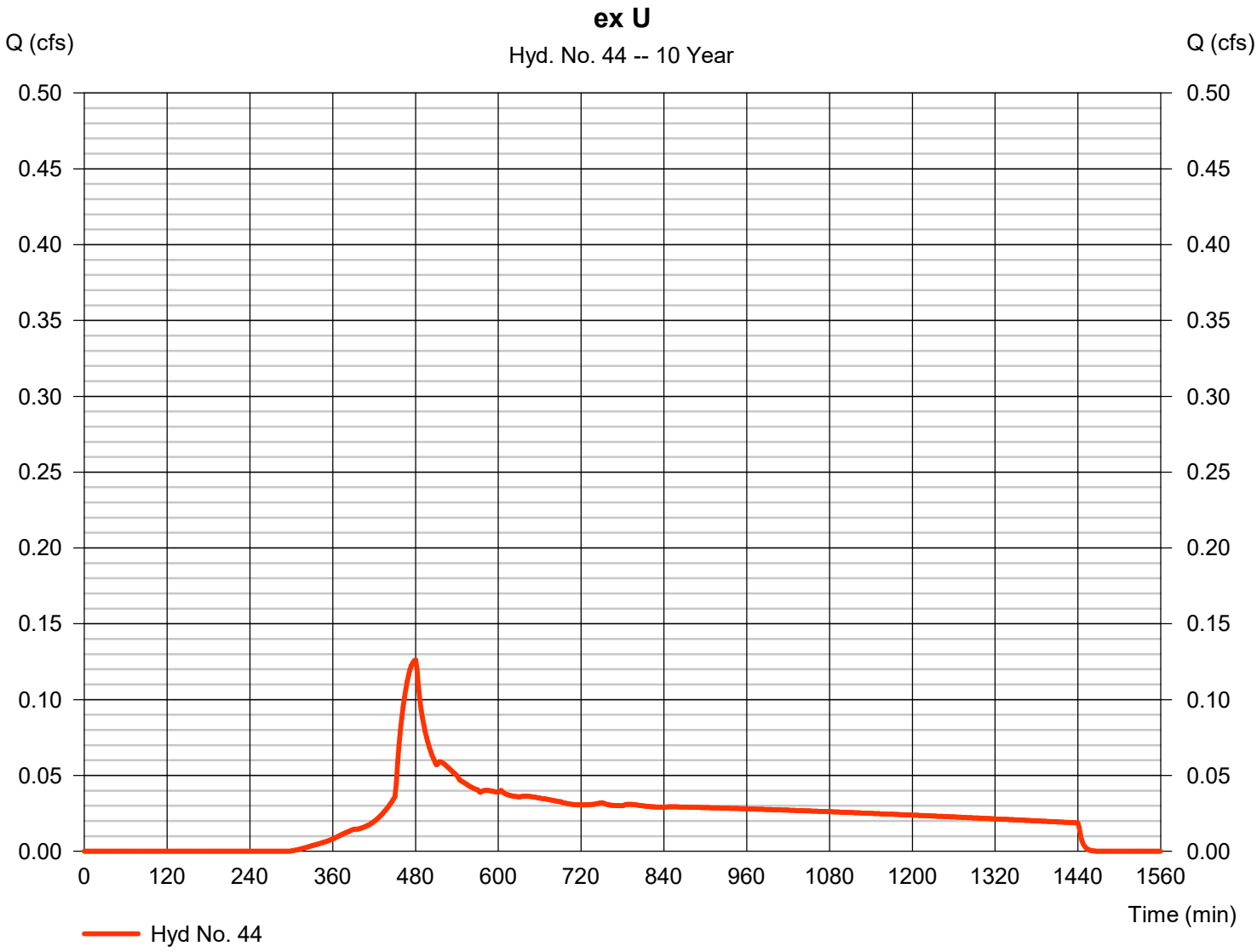


Hydrograph Report

Hyd. No. 44

ex U

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.126 cfs
Storm frequency	=	10 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	2,046 cuft
Drainage area	=	0.360 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

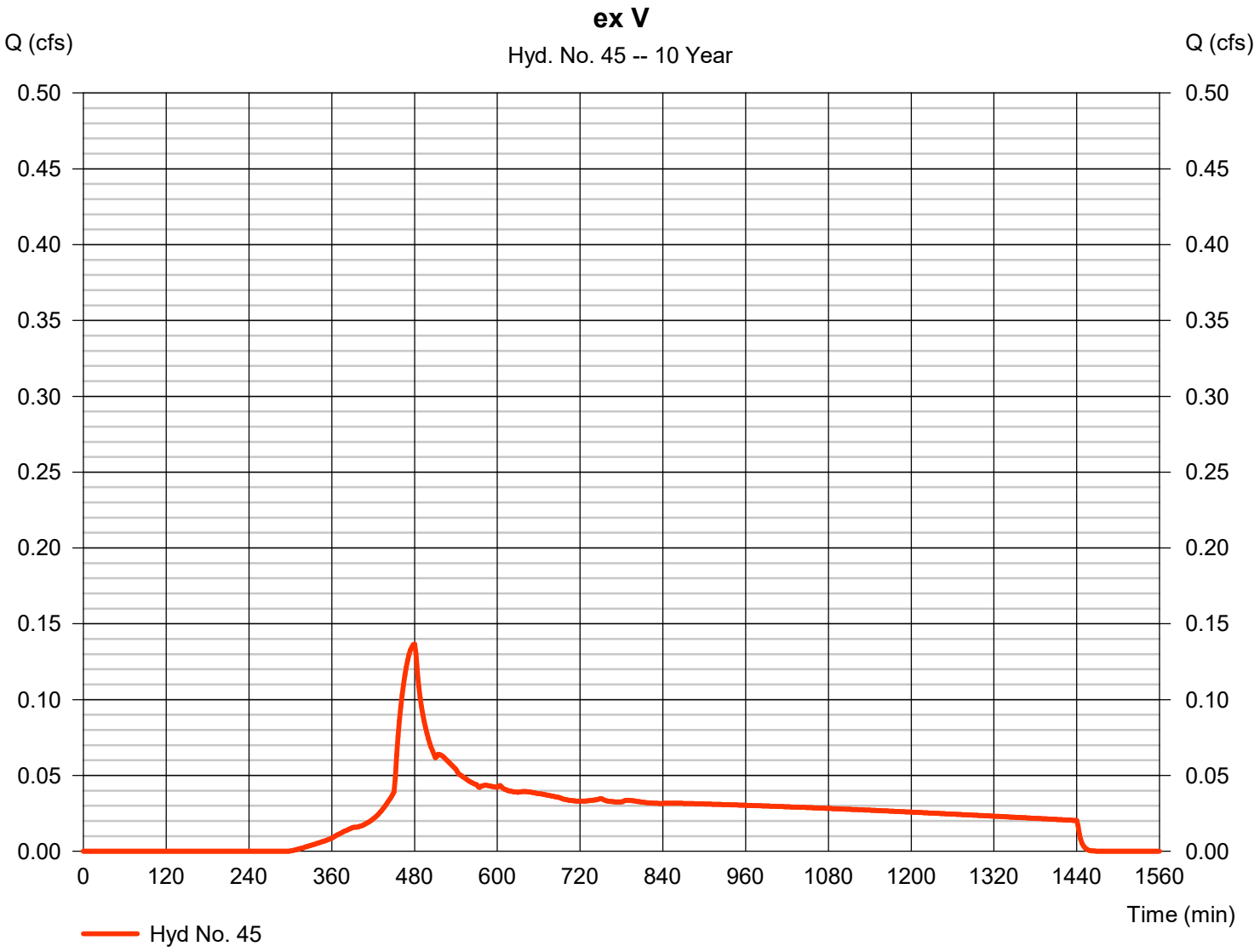


Hydrograph Report

Hyd. No. 45

ex V

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.137 cfs
Storm frequency	=	10 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	2,217 cuft
Drainage area	=	0.390 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a



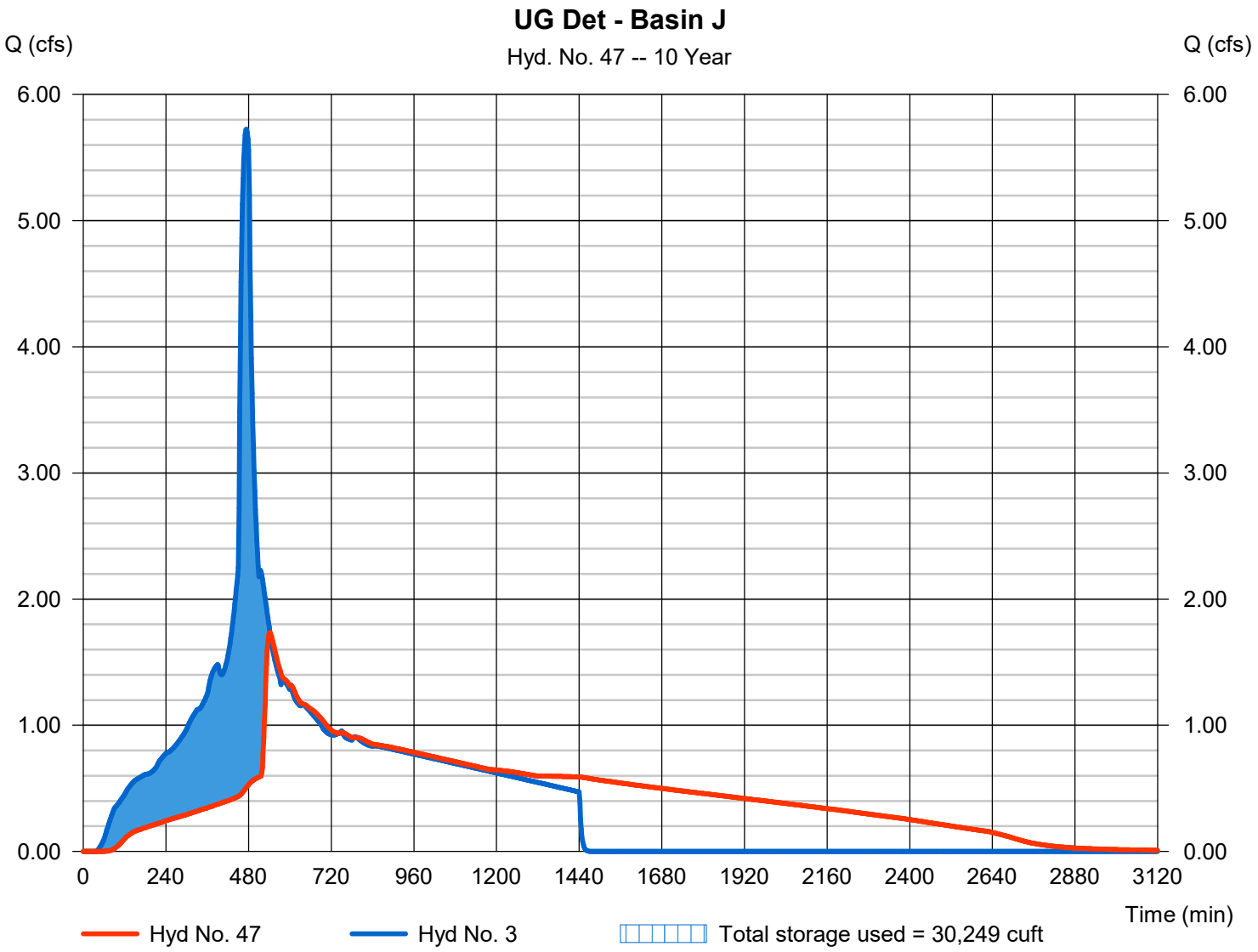
Hydrograph Report

Hyd. No. 47

UG Det - Basin J

Hydrograph type	=	Reservoir	Peak discharge	=	1.736 cfs
Storm frequency	=	10 yrs	Time to peak	=	542 min
Time interval	=	2 min	Hyd. volume	=	83,025 cuft
Inflow hyd. No.	=	3 - J - Post-Developed	Max. Elevation	=	103.66 ft
Reservoir name	=	Basin J Detention	Max. Storage	=	30,249 cuft

Storage Indication method used.



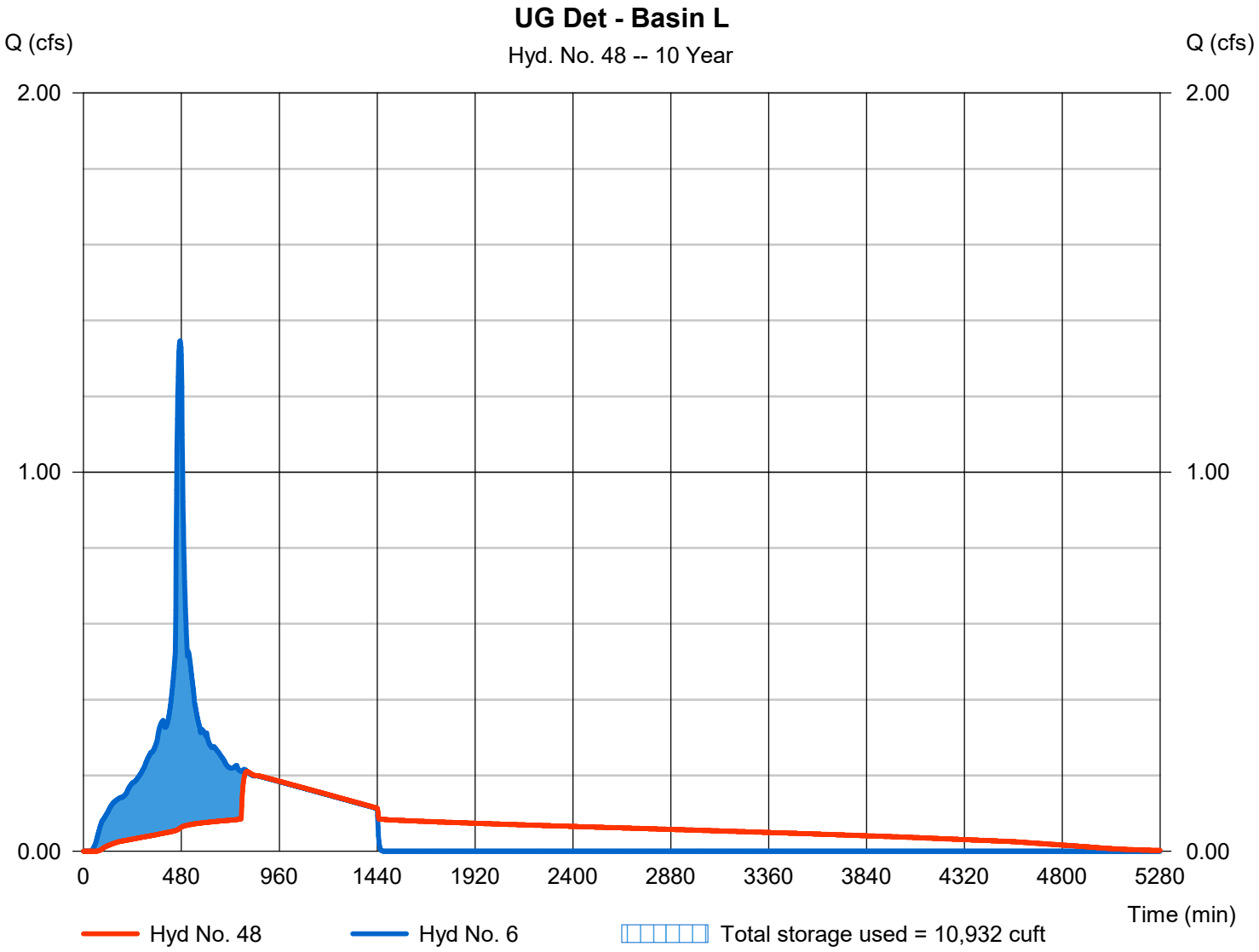
Hydrograph Report

Hyd. No. 48

UG Det - Basin L

Hydrograph type	=	Reservoir	Peak discharge	=	0.210 cfs
Storm frequency	=	10 yrs	Time to peak	=	802 min
Time interval	=	2 min	Hyd. volume	=	19,567 cuft
Inflow hyd. No.	=	6 - L - Post-Developed	Max. Elevation	=	103.84 ft
Reservoir name	=	Basin L Detention	Max. Storage	=	10,932 cuft

Storage Indication method used.



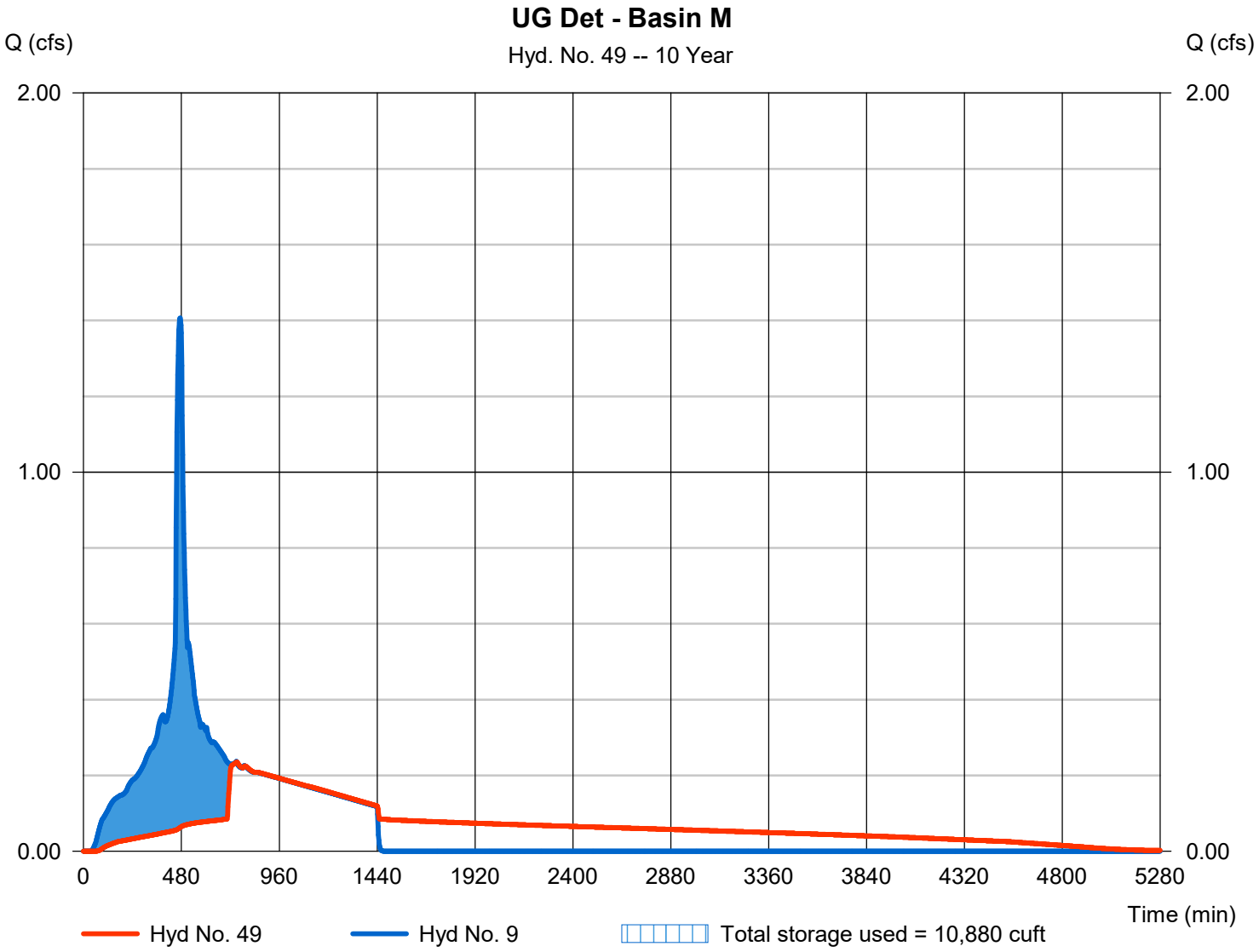
Hydrograph Report

Hyd. No. 49

UG Det - Basin M

Hydrograph type	=	Reservoir	Peak discharge	=	0.235 cfs
Storm frequency	=	10 yrs	Time to peak	=	752 min
Time interval	=	2 min	Hyd. volume	=	20,450 cuft
Inflow hyd. No.	=	9 - M - Post-Developed	Max. Elevation	=	103.89 ft
Reservoir name	=	Basin M Detention	Max. Storage	=	10,880 cuft

Storage Indication method used.



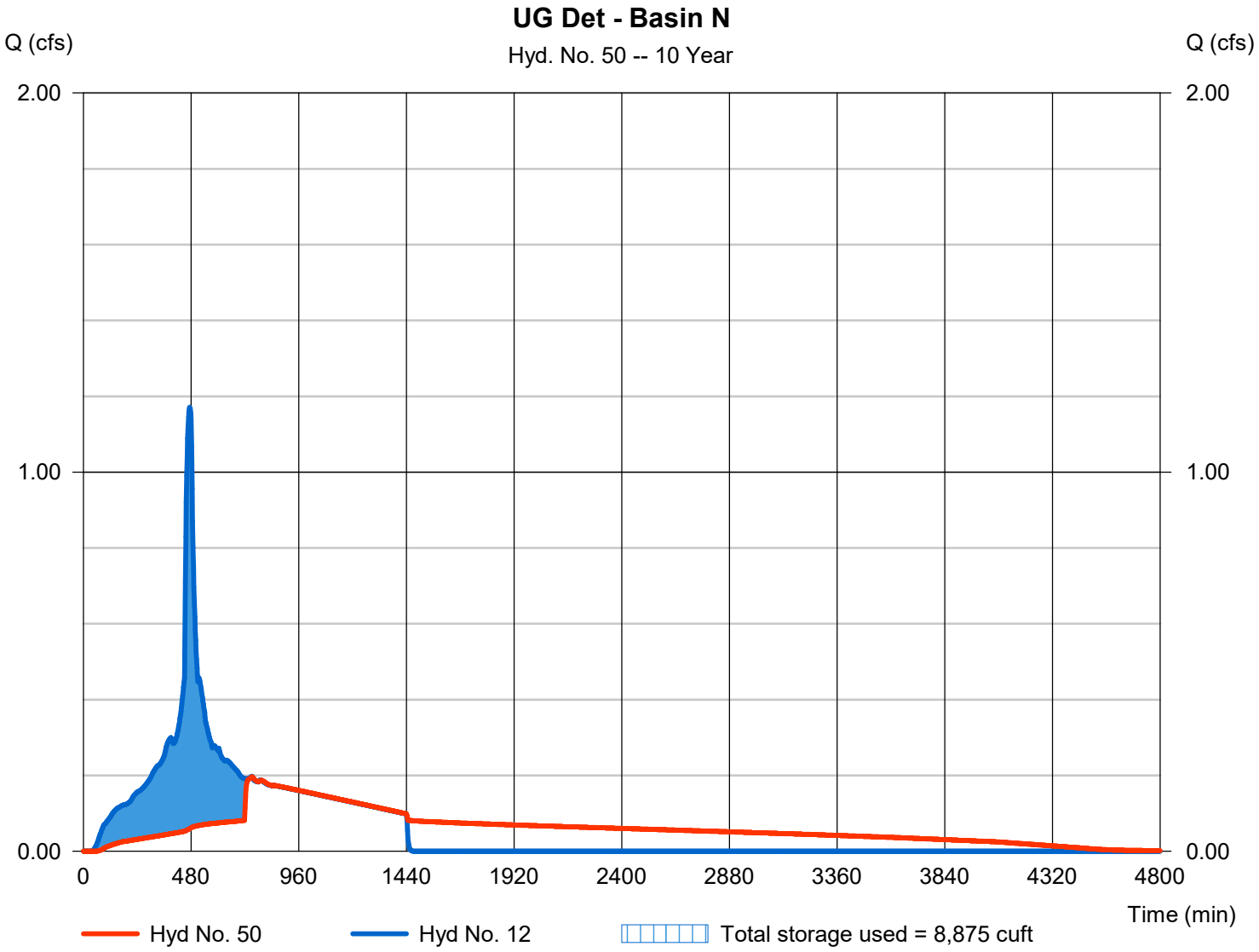
Hydrograph Report

Hyd. No. 50

UG Det - Basin N

Hydrograph type	=	Reservoir	Peak discharge	=	0.196 cfs
Storm frequency	=	10 yrs	Time to peak	=	752 min
Time interval	=	2 min	Hyd. volume	=	17,037 cuft
Inflow hyd. No.	=	12 - N - Post-Developed	Max. Elevation	=	104.83 ft
Reservoir name	=	Basin N Detention	Max. Storage	=	8,875 cuft

Storage Indication method used.



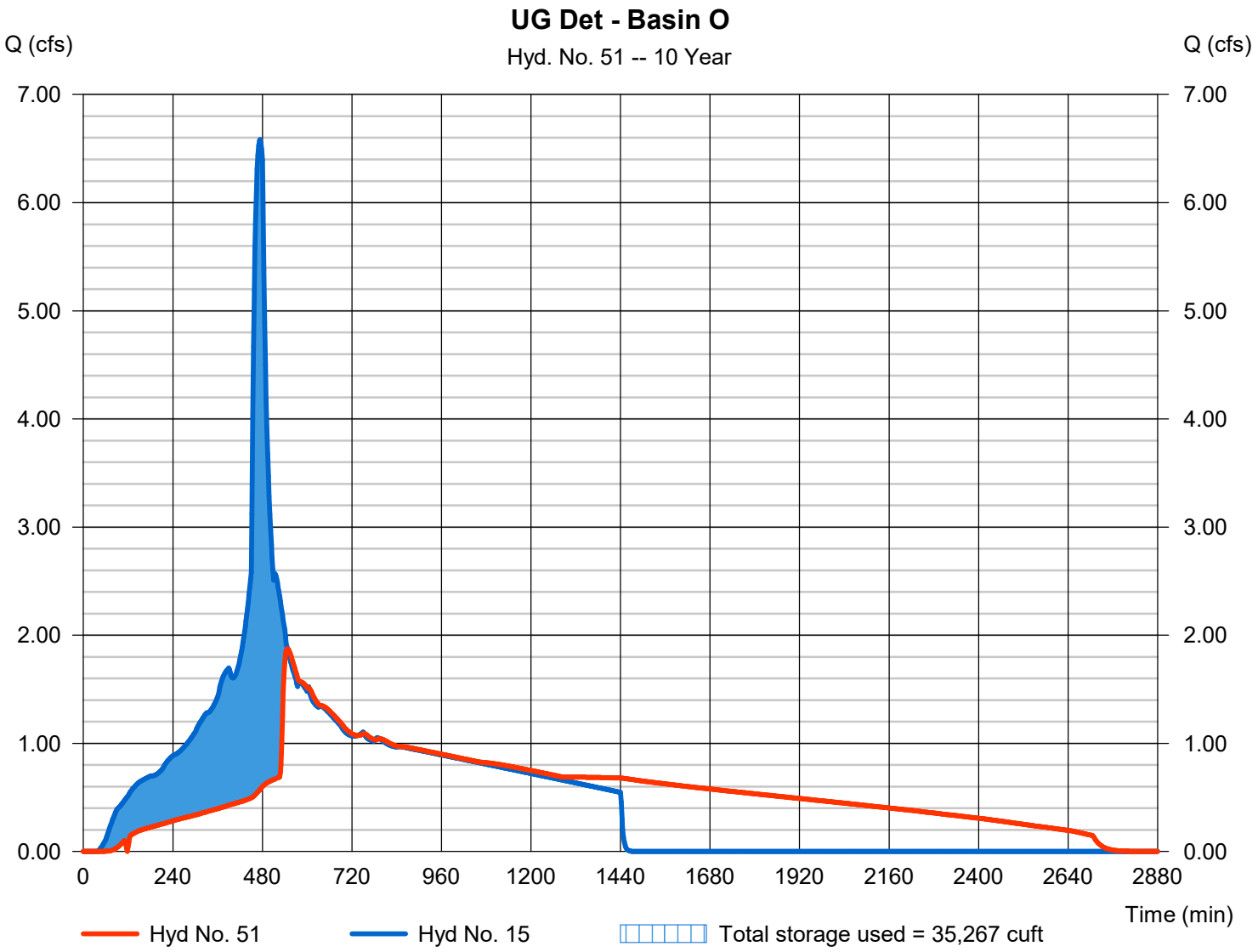
Hydrograph Report

Hyd. No. 51

UG Det - Basin O

Hydrograph type	=	Reservoir	Peak discharge	=	1.874 cfs
Storm frequency	=	10 yrs	Time to peak	=	548 min
Time interval	=	2 min	Hyd. volume	=	94,522 cuft
Inflow hyd. No.	=	15 - O - Post-Developed	Max. Elevation	=	58.21 ft
Reservoir name	=	Basin O Detention	Max. Storage	=	35,267 cuft

Storage Indication method used.



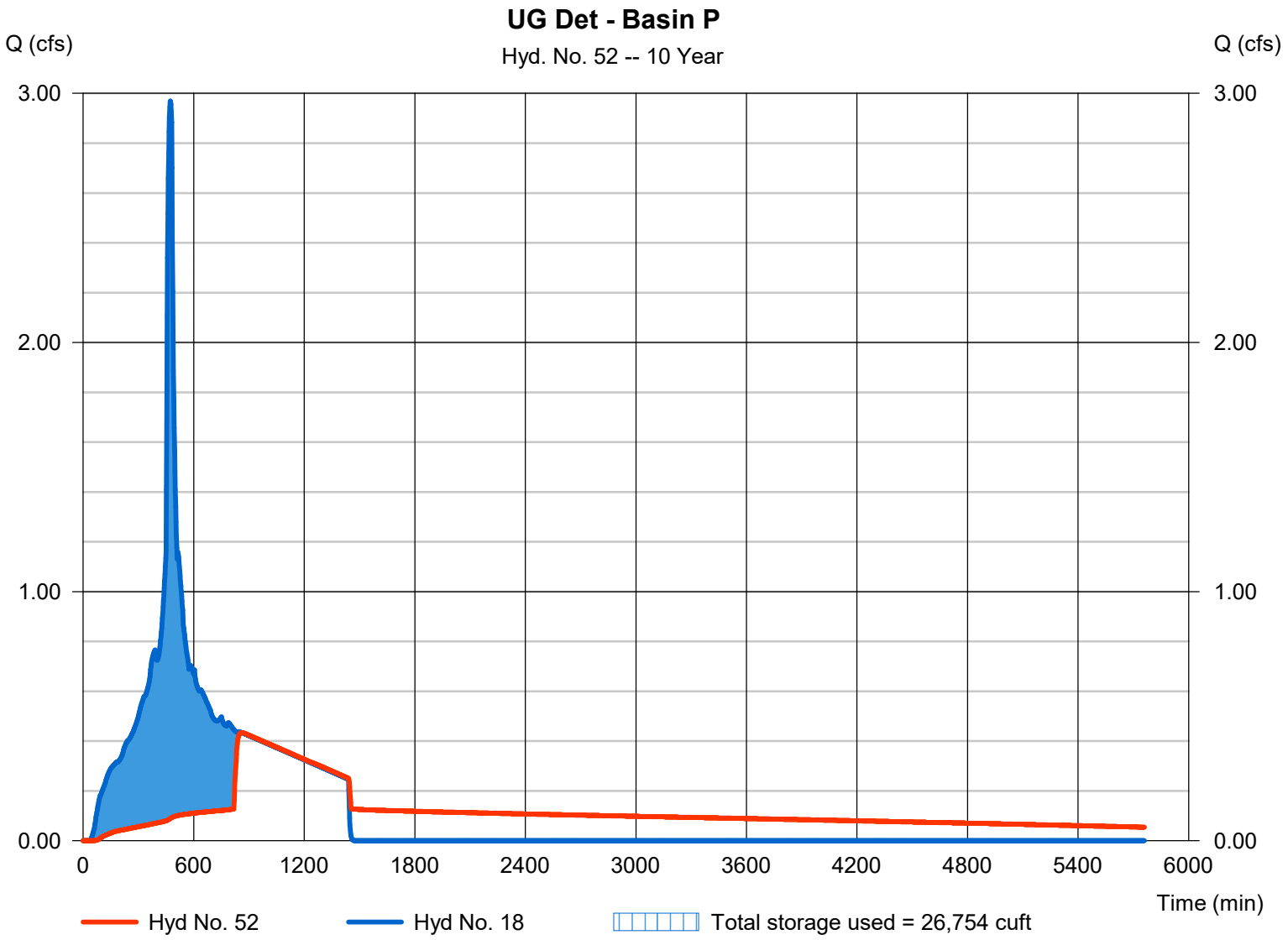
Hydrograph Report

Hyd. No. 52

UG Det - Basin P

Hydrograph type	=	Reservoir	Peak discharge	=	0.434 cfs
Storm frequency	=	10 yrs	Time to peak	=	860 min
Time interval	=	2 min	Hyd. volume	=	39,562 cuft
Inflow hyd. No.	=	18 - P - Post-Developed	Max. Elevation	=	104.87 ft
Reservoir name	=	Basin P Detention	Max. Storage	=	26,754 cuft

Storage Indication method used.



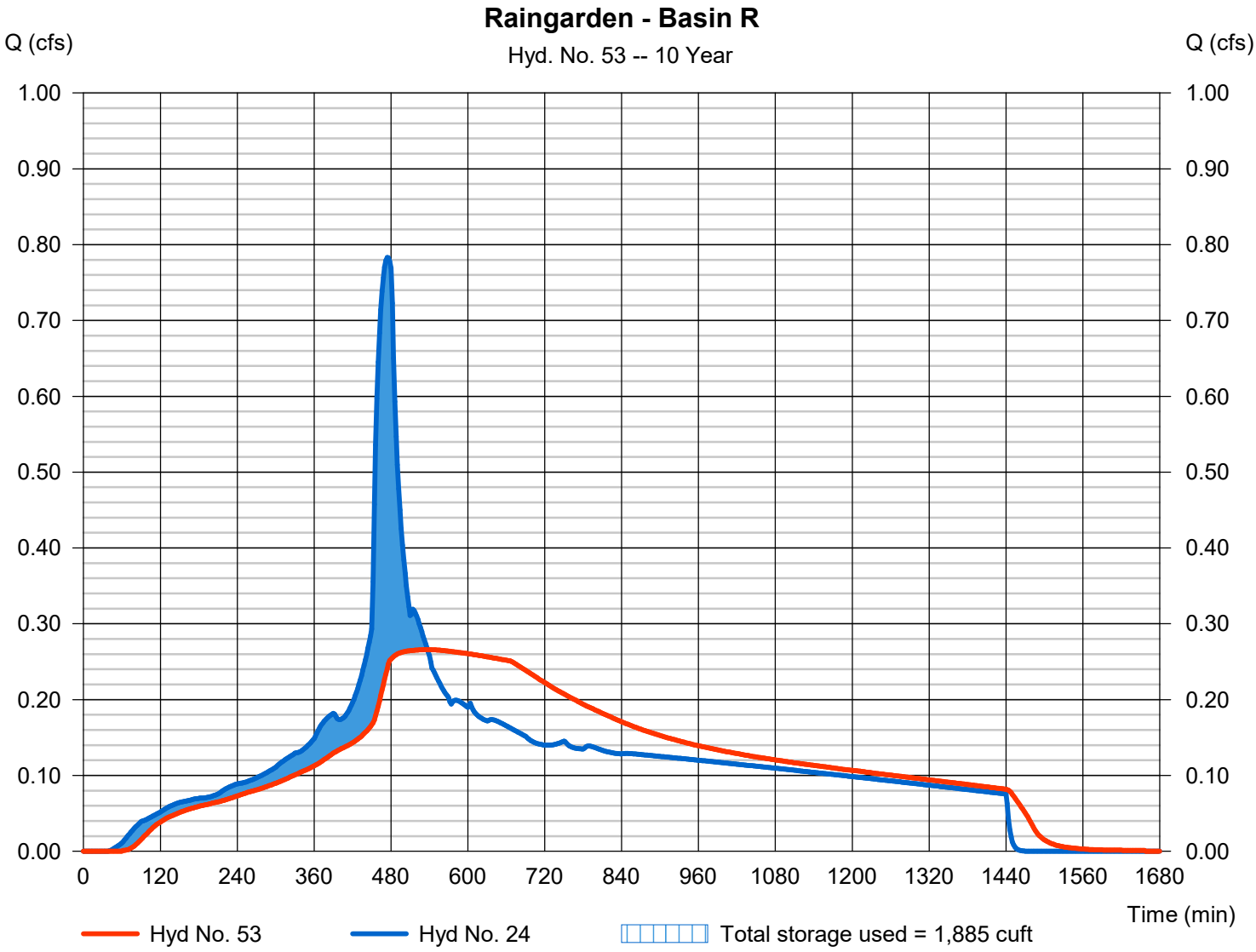
Hydrograph Report

Hyd. No. 53

Raingarden - Basin R

Hydrograph type	= Reservoir	Peak discharge	= 0.266 cfs
Storm frequency	= 10 yrs	Time to peak	= 536 min
Time interval	= 2 min	Hyd. volume	= 11,748 cuft
Inflow hyd. No.	= 24 - R - Post-Developed	Max. Elevation	= 32.86 ft
Reservoir name	= Raingarden - Basin R	Max. Storage	= 1,885 cuft

Storage Indication method used.



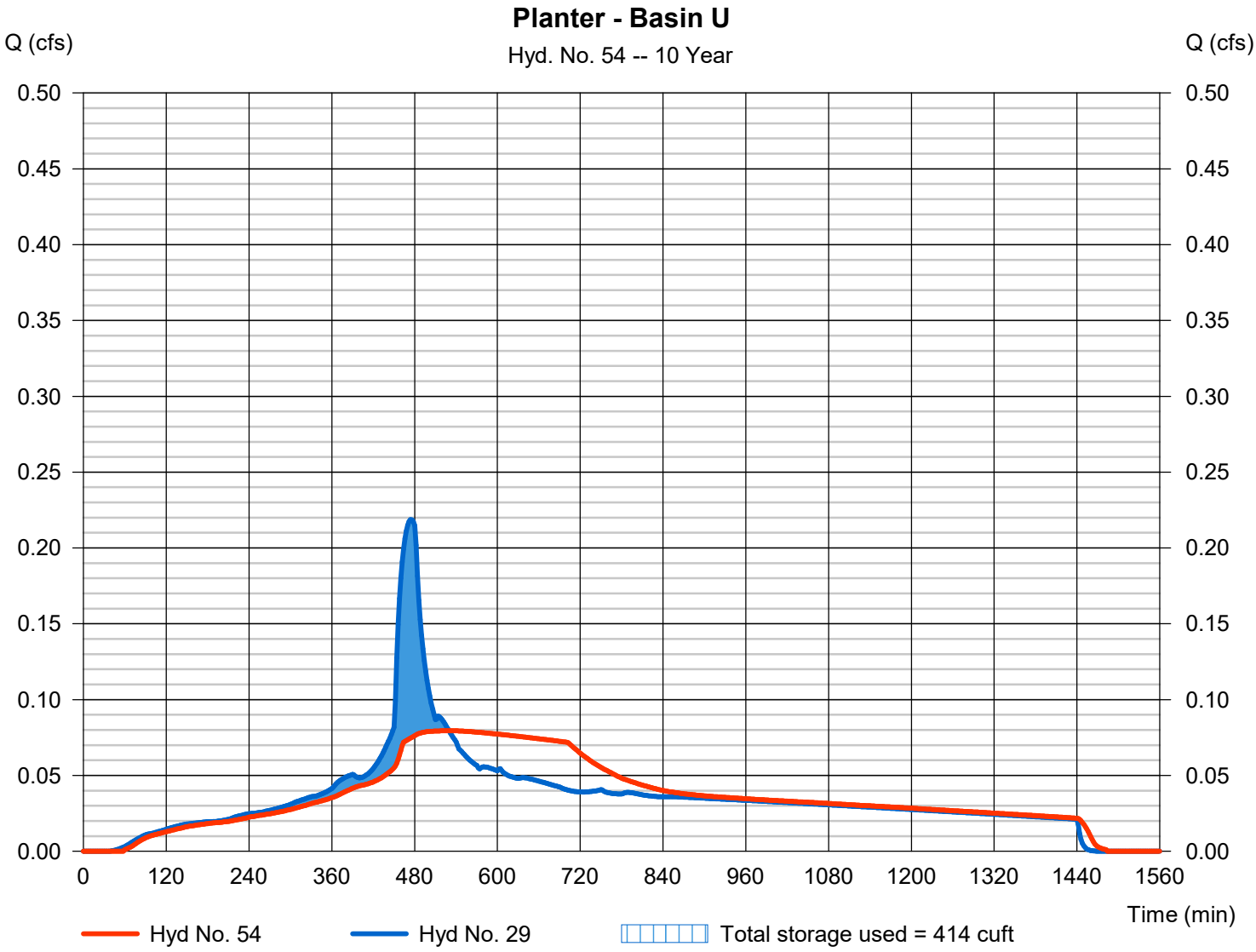
Hydrograph Report

Hyd. No. 54

Planter - Basin U

Hydrograph type	= Reservoir	Peak discharge	= 0.079 cfs
Storm frequency	= 10 yrs	Time to peak	= 530 min
Time interval	= 2 min	Hyd. volume	= 3,282 cuft
Inflow hyd. No.	= 29 - U - Post-Developed	Max. Elevation	= 54.01 ft
Reservoir name	= Planter - Basin U	Max. Storage	= 414 cuft

Storage Indication method used.



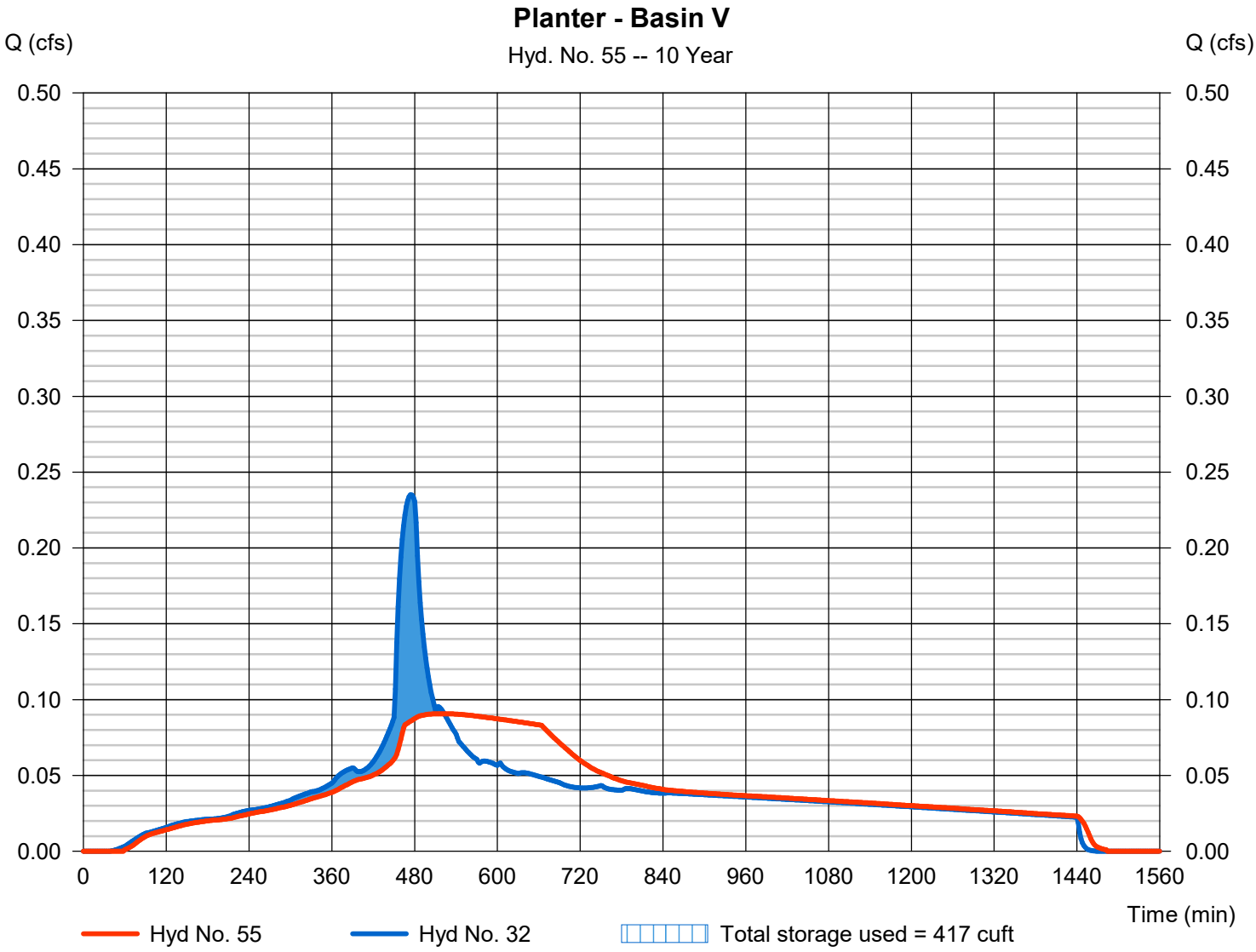
Hydrograph Report

Hyd. No. 55

Planter - Basin V

Hydrograph type	= Reservoir	Peak discharge	= 0.091 cfs
Storm frequency	= 10 yrs	Time to peak	= 522 min
Time interval	= 2 min	Hyd. volume	= 3,519 cuft
Inflow hyd. No.	= 32 - V - Post-Developed	Max. Elevation	= 53.91 ft
Reservoir name	= Planter - Basin V	Max. Storage	= 417 cuft

Storage Indication method used.



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.2000	0.1000	0.0000	--------
2	71.8477	13.3000	0.8718	--------
3	0.0000	0.0000	0.0000	--------
5	75.7517	14.2000	0.8271	--------
10	86.7192	15.3000	0.8244	--------
25	103.3028	16.6000	0.8227	--------
50	116.5747	17.3000	0.8234	--------
100	124.5731	17.6000	0.8144	--------

File name: WQ Rational.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
2	5.70	4.62	3.90	3.38	2.99	2.69	2.45	2.24	2.08	1.93	1.81	1.70
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.58	5.43	4.65	4.08	3.64	3.30	3.02	2.79	2.59	2.42	2.28	2.15
10	7.25	6.05	5.21	4.59	4.12	3.74	3.43	3.17	2.95	2.77	2.60	2.46
25	8.25	6.95	6.03	5.34	4.81	4.38	4.03	3.73	3.48	3.26	3.08	2.91
50	9.05	7.66	6.67	5.92	5.34	4.87	4.48	4.16	3.88	3.64	3.43	3.25
100	9.83	8.35	7.30	6.49	5.87	5.36	4.94	4.59	4.29	4.03	3.80	3.60

Tc = time in minutes. Values may exceed 60.

\CLA (Clackamas County)\CLA-93 (Linwood Ave)\CLA93-DOCS\REPORTS\STORM - (Storm Report)\Calcs\WES.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	1.00	2.80	1.20	3.10	3.50	4.00	4.20	4.50
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Subdivision

WQ Proprietary Systems

Prepared by Harper Houf Peterson Righellis Inc.
Job No. LRS-20
March 2021

Basin C Water Quality Flow by SBUH

Q
0.409

Bayfilter Cartridge
Water Quality Flow x (449 gpm/cfs) / (22.5 gpm/ Bayfilter 522 cartridge*)

0.41	cfs x 449/22.5=	**8.16**	cartridges

Use 9 bayfilter cartridges (BF-8-12-9)

* 22.5 GMP/Cartridge design flow for Bayfilter 522 Cartridge Approved by WES for Maintained Proprietary Systems

Basin D Water Quality Flow by SBUH

Q
0.389

Bayfilter Cartridge
Water Quality Flow x (449 gpm/cfs) / (22.5 gpm/ Bayfilter 522 cartridge*)

0.39	cfs x 449/22.5=	**7.76**	cartridges

Use 8 bayfilter cartridges (BF-8-12-8)

* 22.5 GMP/Cartridge design flow for Bayfilter 522 Cartridge Approved by WES for Maintained Proprietary Systems

Subdivision

WQ Proprietary Systems

Prepared by Harper Houf Peterson Righellis Inc.
Job No. LRS-20
March 2021

Basin E Water Quality Flow by SBUH

Q
0.796

Bayfilter Cartridge
Water Quality Flow x (449 gpm/cfs) / (22.5 gpm/ Bayfilter 522 cartridge*)

0.80	cfs x 449/22.5=	**15.88**	cartridges

Use 16 bayfilter cartridges (BF-8-20-16)

* 22.5 GMP/Cartridge design flow for Bayfilter 522 Cartridge Approved by WES for Maintained Proprietary Systems

Basin F Water Quality Flow by SBUH

Q
0.145

Bayfilter Cartridge
Water Quality Flow x (449 gpm/cfs) / (22.5 gpm/ Bayfilter 522 cartridge*)

0.15	cfs x 449/22.5=	**2.89**	cartridges

Use 3 bayfilter cartridges (BF-6-8-3)

* 22.5 GMP/Cartridge design flow for Bayfilter 522 Cartridge Approved by WES for Maintained Proprietary Systems

Basin G Water Quality Flow by SBUH

Q
1.204

Bayfilter Cartridge
Water Quality Flow x (449 gpm/cfs) / (45.0 gpm/ Bayfilter 545 cartridge*)

1.20	cfs x 449/45=	**12.01**	cartridges

Use 13 bayfilter cartridges (BF-8-18-13)

* 45.0 GMP/Cartridge design flow for Bayfilter 545 Cartridge Approved by WES for Maintained Proprietary Systems

Basin H Water Quality Flow by SBUH

Q
0.467

Bayfilter Cartridge
Water Quality Flow x (449 gpm/cfs) / (22.5 gpm/ Bayfilter 522 cartridge*)

0.47	cfs x 449/22.5=	**9.32**	cartridges

Use 10 bayfilter cartridges (BF-8-13-10)

* 22.5 GMP/Cartridge design flow for Bayfilter 522 Cartridge Approved by WES for Maintained Proprietary Systems

Subdivision

WQ Proprietary Systems

Prepared by Harper Houf Peterson Righellis Inc.
Job No. LRS-20
March 2021

Basin I Water Quality Flow by SBUH

Q
0.377

Bayfilter Cartridge
Water Quality Flow x (449 gpm/cfs) / (22.5 gpm/ Bayfilter 522 cartridge*)

0.38	cfs x 449/22.5=	**7.52**	cartridges

Use 8 bayfilter cartridges (BF-8-12-8)

* 22.5 GMP/Cartridge design flow for Bayfilter 522 Cartridge Approved by WES for Maintained Proprietary Systems

Basin J Water Quality Flow by SBUH

Q
1.415

Bayfilter Cartridge
Water Quality Flow x (449 gpm/cfs) / (45.0 gpm/ Bayfilter 545 cartridge*)

1.42	cfs x 449/45=	**14.12**	cartridges

Use 15 bayfilter cartridges (BF-8-20-15)

* 45.0 GMP/Cartridge design flow for Bayfilter 545 Cartridge Approved by WES for Maintained Proprietary Systems

Basin K Water Quality Flow by SBUH

Q
0.158

Bayfilter Cartridge
Water Quality Flow x (449 gpm/cfs) / (22.5 gpm/ Bayfilter 522 cartridge*)

0.16	cfs x 449/22.5=	**3.15**	cartridges

Use 4 bayfilter cartridges (BF-6-9-4)

* 22.5 GMP/Cartridge design flow for Bayfilter 522 Cartridge Approved by WES for Maintained Proprietary Systems

Basin L Water Quality Flow by SBUH

Q
0.328

Bayfilter Cartridge
Water Quality Flow x (449 gpm/cfs) / (22.5 gpm/ Bayfilter 522 cartridge*)

0.33	cfs x 449/22.5=	**6.55**	cartridges

Use 7 bayfilter cartridges (BF-8-12-7)

* 22.5 GMP/Cartridge design flow for Bayfilter 522 Cartridge Approved by WES for Maintained Proprietary Systems

Subdivision

WQ Proprietary Systems

Prepared by Harper Houf Peterson Righellis Inc.
Job No. LRS-20
March 2021

Basin M Water Quality Flow by SBUH

Q
0.342

Bayfilter Cartridge
Water Quality Flow x (449 gpm/cfs) / (22.5 gpm/ Bayfilter 522 cartridge*)

0.34	cfs x 449/22.5=	**6.82**	cartridges

Use 7 bayfilter cartridges (BF-8-12-7)

* 22.5 GMP/Cartridge design flow for Bayfilter 522 Cartridge Approved by WES for Maintained Proprietary Systems

Basin N Water Quality Flow by SBUH

Q
0.285

Bayfilter Cartridge
Water Quality Flow x (449 gpm/cfs) / (22.5 gpm/ Bayfilter 522 cartridge*)

0.29	cfs x 449/22.5=	**5.69**	cartridges

Use 3 bayfilter cartridges (BF-6-8-3)

* 22.5 GMP/Cartridge design flow for Bayfilter 522 Cartridge Approved by WES for Maintained Proprietary Systems

Basin O Water Quality Flow by SBUH

Q
1.613

Bayfilter Cartridge
Water Quality Flow x (449 gpm/cfs) / (45.0 gpm/ Bayfilter 545 cartridge*)

1.61	cfs x 449/45=	**16.09**	cartridges

Use 17 bayfilter cartridges (BF-8-20-17)

* 45.0 GMP/Cartridge design flow for Bayfilter 545 Cartridge Approved by WES for Maintained Proprietary Systems

Basin P Water Quality Flow by SBUH

Q
0.729

Bayfilter Cartridge
Water Quality Flow x (449 gpm/cfs) / (45.0 gpm/ Bayfilter 545 cartridge*)

0.73	cfs x 449/22.5=	**7.27**	cartridges

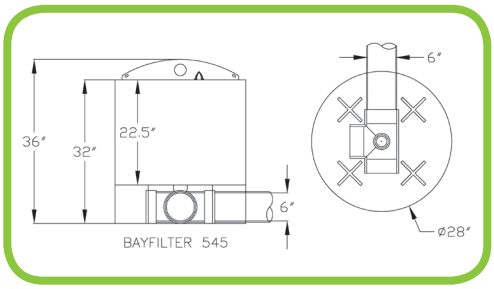
Use 8 bayfilter cartridges (BF-8-12-8)

* 45.0 GMP/Cartridge design flow for Bayfilter 545 Cartridge Approved by WES for Maintained Proprietary Systems

BAYFILTER PRODUCT DETAILS

BayFilter 545

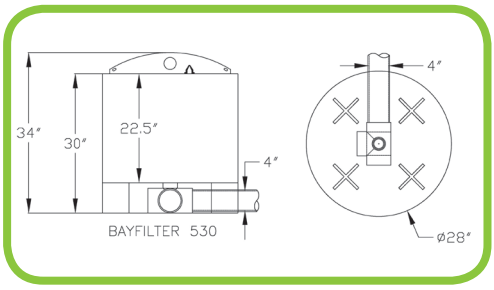
Size = 28” (711 mm) diameter
Weight = 250 lbs. (113 kg)
Media Area = 90 ft² (8.4 m²)
Flow Rate = 45 gpm (170 l/min)
Flow Rate per Square Foot = 0.50 gpm/ft² (20 l/min/m²)
Minimum Operational Head = 32” (813 mm)
Recommended Design Head = 34” (864 mm)
Sediment Capture Capacity = 350 lbs (159 kg)
Manifold Diameter = 6” (152 mm)



BayFilter 545

BayFilter 530*

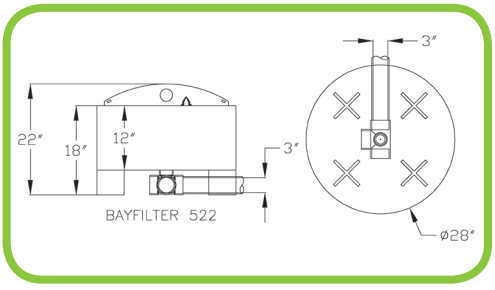
Size = 28” (711 mm) diameter
Weight = 250 lbs. (113 kg)
Media Area = 90 ft² (8.4 m²)
Flow Rate = 30 gpm (114 l/min)
Flow Rate per Square Foot = 0.33 gpm/ft² (13 l/min/m²)
Minimum Operational Head = 30” (762 mm)
Recommended Design Head = 32” (813 mm)
Sediment Capture Capacity = 350 lbs (159 kg)
Manifold Diameter = 4” (102 mm)



BayFilter 530

BayFilter 522**

Size = 28” (711 mm) diameter
Weight = 125 lbs. (57 kg)
Media Area = 45 ft² (4.2 m²)
Flow Rate = 22.5 gpm (85 l/min)
Flow Rate per Square Foot = 0.50 gpm/ft² (20 l/min/m²)
Minimum Operational Head = 18” (457 mm)
Recommended Design Head = 20” (508 mm)
Sediment Capture Capacity = 175 lbs (79 kg)
Manifold Diameter = 3” (76 mm)



BayFilter 522

NOTES: The 500 series is for Total Suspended Solids (TSS) and Phosphorous and utilizes EMC media.

*BayFilter 530 replaces BFC cartridge.

** BayFilter 522 replaces 545L cartridge.

WASHINGTON STATE DEPARTMENT OF ECOLOGY

July 2019

GENERAL USE LEVEL DESIGNATON FOR BASIC (TSS) AND PHOSPHORUS TREATMENT

For

BaySaver Technologies, LLC
BayFilter™ System
using Enhanced Media Cartridges (EMC)

Ecology's Decision:

1. **Based on BaySaver Technologies' application submissions, Ecology hereby issues a General Use Level Designation (GULD) for Basic and Phosphorus Treatment for the BayFilter™ System using Enhanced Media Cartridges (EMC).**

   - **Sized at a hydraulic loading rate of no greater than 0.50 gallons per minute (gpm) per square foot (sq ft.) of filter area.**
     - **45 gpm (0.10 cfs) per cartridge (example dimensions 28-inch diameter, 30-inches tall (90 sq ft filter area))**
     - **75 gpm (0.167 cfs) per cartridge (example dimensions 39-inch diameter, 30-inches tall (150 sq ft filter area))**
       - **Canisters that provide 0.50 gpm per sq ft filter area, regardless of dimensions meet this requirement**
   - **Using BaySaver's EMC Media Blend of Zeolite, Perlite, and Activated Alumina. Specifications of media shall match the specifications provided by the manufacturer and approved by Ecology.**

2. **Ecology approves use of BayFilter™ Enhanced Media Cartridges for treatment at the above flow rates per cartridge. Designers shall calculate the water quality design flow rates using the following procedures:**

   - **Western Washington: For treatment installed upstream of detention or retention, the water quality design flow rate is the peak 15-minute flow rate as calculated using the latest version of the Western Washington Hydrology Model or other Ecology-approved continuous runoff model.**

- **Eastern Washington: For treatment installed upstream of detention or retention, the water quality design flow rate is the peak 15-minute flow rate as calculated using one of the three methods described in Chapter 2.2.5 of the Stormwater Management Manual for Eastern Washington (SWMMEW) or local manual.**

- **Entire State: For treatment installed downstream of detention, the water quality design flow rate is the full 2-year release rate of the detention facility.**

3. **The GULD has no expiration date, but it may be amended or revoked by Ecology, and is subject to the conditions specified below.**

<u>Ecology's Conditions of Use:</u>

BayFilter™ units shall comply with these conditions:

1. **Design, assemble, install, operate, and maintain BayFilter™ units in accordance with BaySaver Technologies' applicable manuals and documents and the Ecology Decision.**

2. **Maintenance: The required inspection/maintenance interval for stormwater treatment devices is often dependent upon the efficiency of the device and the degree of pollutant loading from a particular drainage basin. Therefore, Ecology does not endorse or recommend a "one size fits all" maintenance cycle for a particular model/size of manufactured filter treatment device.**

- **BaySaver recommends that the following be considered during the design application of the BayFilter Cartridge systems:**
  - **Water Quality Flow Rate**
  - **Anticipated Pollutant Load**
  - **Maintenance Frequency**

- **A BayFilter System tested adjacent to construction activity required maintenance after 4-months of operation. Monitoring personnel observed construction washout in the device during the testing period; the construction activity may have resulted in a shorter maintenance interval.**

- **Ecology has found that pre-treatment device prior to the BayFilter system can provide a reduction in pollutant loads on these systems, thereby extending the maintenance interval.**

- **Test results provided to Ecology from other BayFilter Systems, including the above mentioned system that was evaluated again after construction activities had been completed, have indicated the BayFilter System typically has longer maintenance intervals, sometimes exceeding 12-months.**

- **The BayFilter system contains filter fabric that is highly oleophilic (oil absorptive). When sufficient quantities of oils are present in the runoff, the oil and subsequent sediment particles may become attached to the fabric. As a result, it may compromise the maintenance interval of the BayFilter system. Oil control BMP's should be installed upstream of BayFilter installations if warranted, and/or the BayFilter system should be inspected after any known oil spill or release.**

- **Owners/operators must inspect BayFilter systems for a minimum of twelve months from the start of post-construction operation to determine site-specific inspection/maintenance schedules and requirements. Owners/operators must conduct inspections monthly during the wet season, and every other month during the dry season. (According to the SWMMWW, the wet season in western Washington is October 1 to April 30. According to SWMMEW, the wet season in eastern Washington is October 1 to June 30.) After the first year of operation, owners/operators must conduct inspections based on the findings during the first year of inspections or the manufacturer's anticipated maintenance interval, whichever is more frequent.**

- **Conduct inspections by qualified personnel, follow manufacturer's guidelines, and must use methods capable of determining either a decrease in treated effluent flowrate and/or a decrease in pollutant removal ability.**

3. **When inspections are performed, the following findings typically serve as maintenance triggers:**
   - **Accumulated vault sediment depths exceed an average of 2 inches, or**
   - **Accumulated sediment depths on the tops of the cartridges exceed an average of 0.5 inches, or**
   - **Standing water remains in the vault between rain events.**
   - **Bypass during storms smaller than the design storm.**
   - **Note: If excessive floatables (trash and debris) are present, perform minor maintenance consisting of gross solids removal, not cartridge replacement.**

4. **Discharges from the BayFilter™ units shall not cause or contribute to water quality standards violations in receiving waters.**

WES BMP Sizing Software Version 1.6.0.2, May 2018

WES BMP Sizing Report

Project Information

Project Name	Oregon City Mixed-Use
Project Type	Commercial
Location	
Stormwater Management Area	11440
Project Applicant	Summit Development Group
Jurisdiction	OutofDistrict

Drainage Management Area

Name	Area (sq-ft)	Pre-Project Cover	Post-Project Cover	DMA Soil Type	BMP
1 - Impervious	25,537	Forested	ConventionalConcrete	D	Planter - Public Basin 1
1 - Pervious	3,741	Forested	LandscapeDsoil	D	Planter - Public Basin 1
2 -Impervious	17,125	Forested	ConventionalConcrete	D	Planter - Public Basin 2
2 - Pervious	8,115	Forested	LandscapeDsoil	D	Planter - Public Basin 2
3 - Impervious	36,830	Forested	ConventionalConcrete	D	Planter - Public Basin 3
3 - Pervious	15,335	Forested	LandscapeDsoil	D	Planter - Public Basin 3
4 - Impervious	10,522	Forested	ConventionalConcrete	D	Planter - Public Basin 4
4 - Pervious	1,300	Forested	LandscapeDsoil	D	Planter - Public Basin 4
5 - Impervious	9,801	Forested	ConventionalConcrete	D	Planter - Public Basin 5
5 - Pervious	1,362	Forested	LandscapeDsoil	D	Planter - Public Basin 5
6 - Impervious	15,756	Forested	ConventionalConcrete	D	Planter - Public Basin 6
6 - Pervious	2,053	Forested	LandscapeDsoil	D	Planter - Public Basin 6
7 - Impervious	26,259	Forested	ConventionalConcrete	D	Planter - Public Basin 7
7 - Pervious	7,043	Forested	LandscapeDsoil	D	Planter - Public Basin 7

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 - Public Basin 5	FlowControlAndTreatment	Stormwater Planter - Filtration	Lined	322.6	324.0	1.2
Planter - Public Basin 3	FlowControlAndTreatment	Stormwater Planter - Filtration	Lined	1,426.9	1,427.0	2.5
Planter - Public Basin 2	FlowControlAndTreatment	Stormwater Planter - Filtration	Lined	684.2	688.0	1.8
Planter - Public Basin 1	FlowControlAndTreatment	Stormwater Planter - Filtration	Lined	844.7	850.0	1.9
Planter - Public Basin 6	FlowControlAndTreatment	Stormwater Planter - Filtration	Lined	515.8	517.0	1.5
Planter - Public Basin 7	FlowControlAndTreatment	Stormwater Planter - Filtration	Lined	935.7	936.0	2.0
Planter - Public Basin 4	FlowControlAndTreatment	Vegetated Swale - Filtration	Lined	571.6	572.0	1.2

Pond Sizing Details

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.

APPENDIX D – CONVEYANCE CALCULATIONS

Oregon City Mixed Use

Conveyance Pipe Characteristics

Prepared by Harper Houf Peterson Righellis Inc.
Job No. LRS-20
March 2021

PIPE #	EXISTING OR PROPOSED	PROPOSED CONTRIBUTING BASINS	PIPE SIZE (IN)	PIPE AREA (SF)	PER. (FT)	N	$Q_{CAPACITY}$ (cfs)	Q_{10} (cfs)	MIN. SLOPE (%)	SLOPE (%)	VELOCITY (FPS)	CAPACITY MET?
1	PROPOSED	A,B, D, 4, 5	18	1.77	4.71	0.013	7.4	5.82	0.31	0.50	3.30	YES
2	PROPOSED	C, E, F, G, K, H, I, 6, 7	24	3.14	6.28	0.013	16.0	15.61	0.48	0.50	4.97	YES
3*	EXISTING	A1, W	48	12.57	12.56	0.013	106.6	105.68	0.54	0.55	8.41	YES
4	PROPOSED	J, L, M, N, O, P, U, V	24	3.14	6.28	0.013	19.6	19.60	0.75	0.75	6.24	YES
5	PROPOSED	K1, Q	24	3.14	6.28	0.013	16.0	10.61	0.22	0.50	3.38	YES
6	PROPOSED	K1, Q, R, 1, 2, 3	24	3.14	6.28	0.013	16.0	13.07	0.33	0.50	4.16	YES
7*	EXISTING	J, L, M, N, O, P, T, U, V, K2	24	3.14	6.28	0.013	20.0	54.68	5.84	0.78	17.40	NO
8	PROPOSED	J, L, M, N, O, P, T, U, V, K2	36	7.07	9.42	0.013	55.8	54.68	0.67	0.70	7.74	YES
9*	EXISTING	J, L, M, N, O, P, T, U, V, K2, K1, Q, R	36	7.07	9.42	0.013	94.4	67.75	1.03	2.00	9.58	YES

Refer to Appendix A Post-Developed Basin Map exhibits for pipe # identified in plan view.
*Assumed minimum slope. Topographic Survey being conducted to confirm all existing storm pipes

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SBUH Runoff	------	0.078	2.826	-------	3.571	4.620	6.002	-------	7.457	EX 1
2	SBUH Runoff	------	0.057	2.063	-------	2.607	3.373	4.382	-------	5.444	EX 2
3	SBUH Runoff	------	0.069	2.485	-------	3.141	4.063	5.279	-------	6.558	EX 3
4	SBUH Runoff	------	0.024	0.855	-------	1.080	1.398	1.816	-------	2.256	EX 4
5	SBUH Runoff	------	0.105	3.661	-------	4.648	6.040	7.877	-------	9.796	EX 5

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

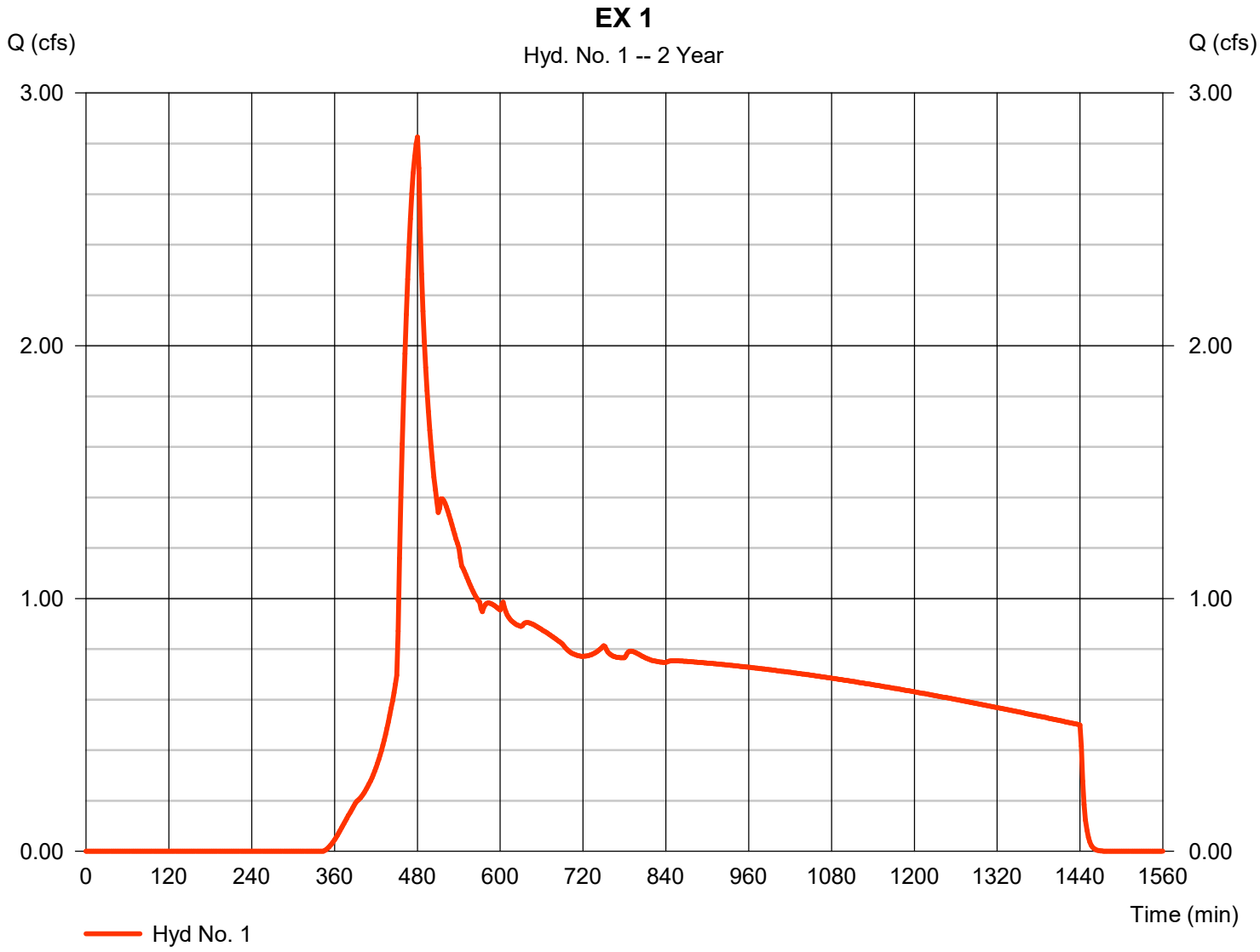
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SBUH Runoff	2.826	2	480	50,007	------	------	------	EX 1
2	SBUH Runoff	2.063	2	480	36,510	------	------	------	EX 2
3	SBUH Runoff	2.485	2	480	43,979	------	------	------	EX 3
4	SBUH Runoff	0.855	2	480	15,127	------	------	------	EX 4
5	SBUH Runoff	3.661	2	480	67,560	------	------	------	EX 5

Hydrograph Report

Hyd. No. 1

EX 1

Hydrograph type	=	SBUH Runoff	Peak discharge	=	2.826 cfs
Storm frequency	=	2 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	50,007 cuft
Drainage area	=	13.190 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.80 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

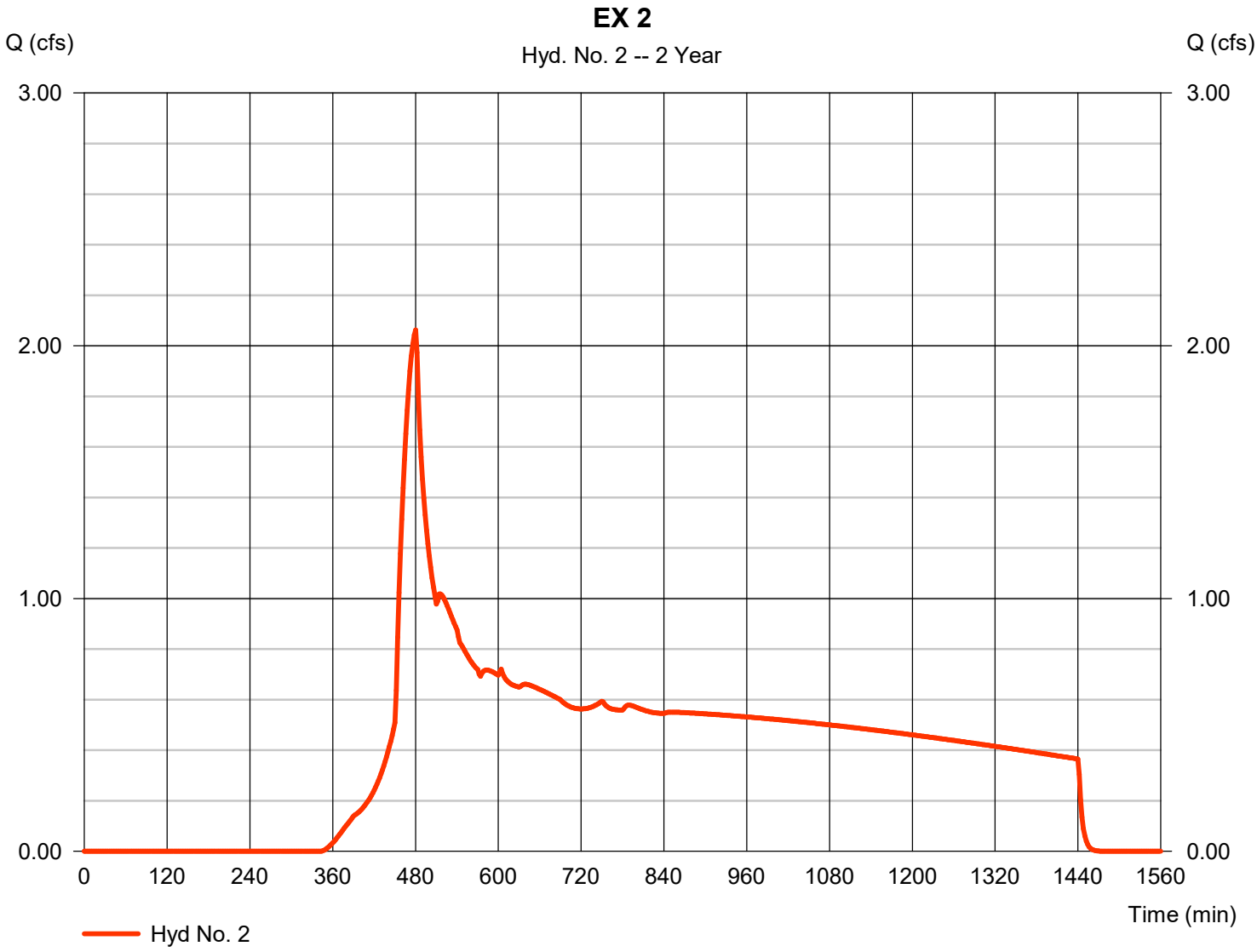


Hydrograph Report

Hyd. No. 2

EX 2

Hydrograph type	= SBUH Runoff	Peak discharge	= 2.063 cfs
Storm frequency	= 2 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 36,510 cuft
Drainage area	= 9.630 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.80 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

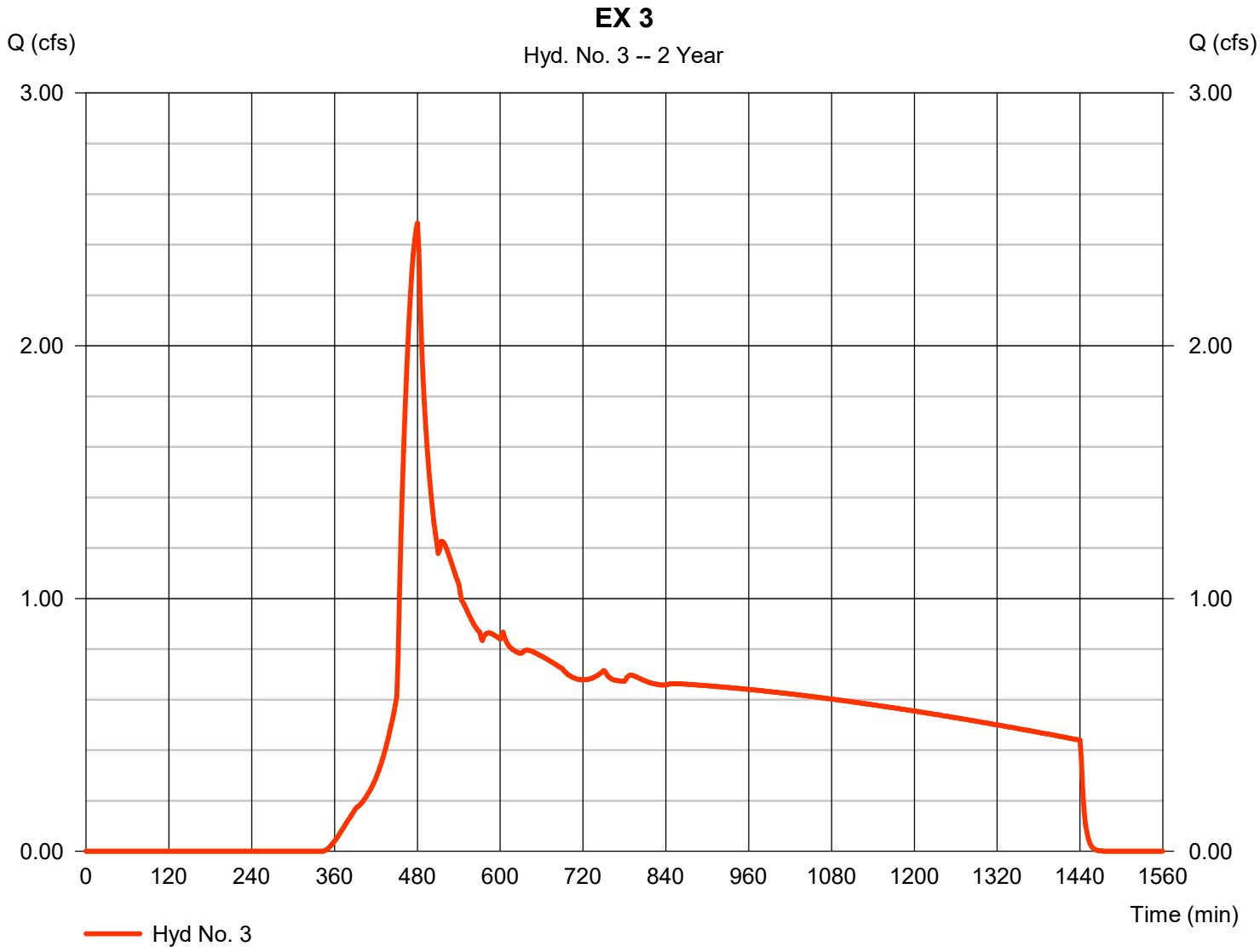


Hydrograph Report

Hyd. No. 3

EX 3

Hydrograph type	=	SBUH Runoff	Peak discharge	=	2.485 cfs
Storm frequency	=	2 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	43,979 cuft
Drainage area	=	11.600 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.80 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

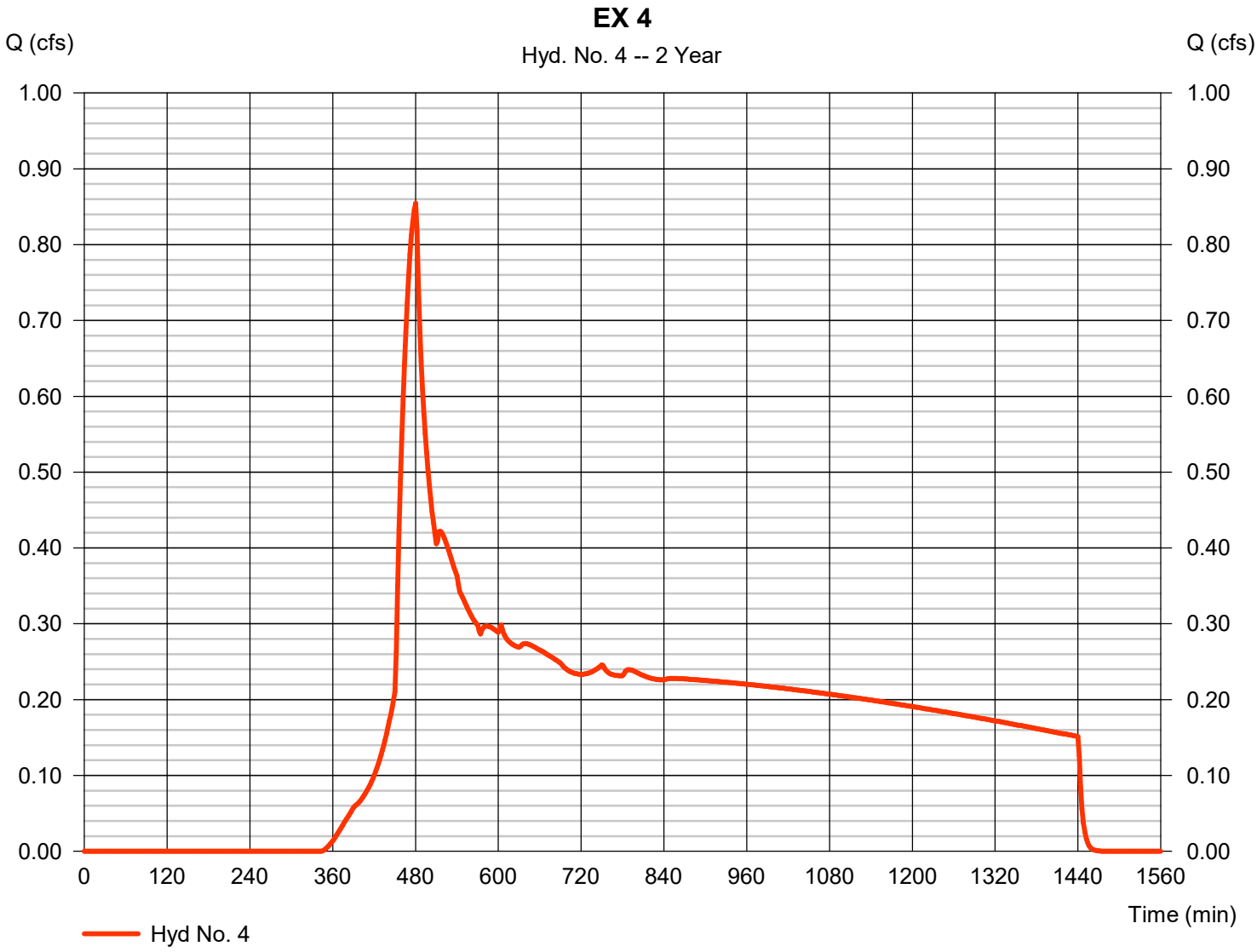


Hydrograph Report

Hyd. No. 4

EX 4

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.855 cfs
Storm frequency	=	2 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	15,127 cuft
Drainage area	=	3.990 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.80 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

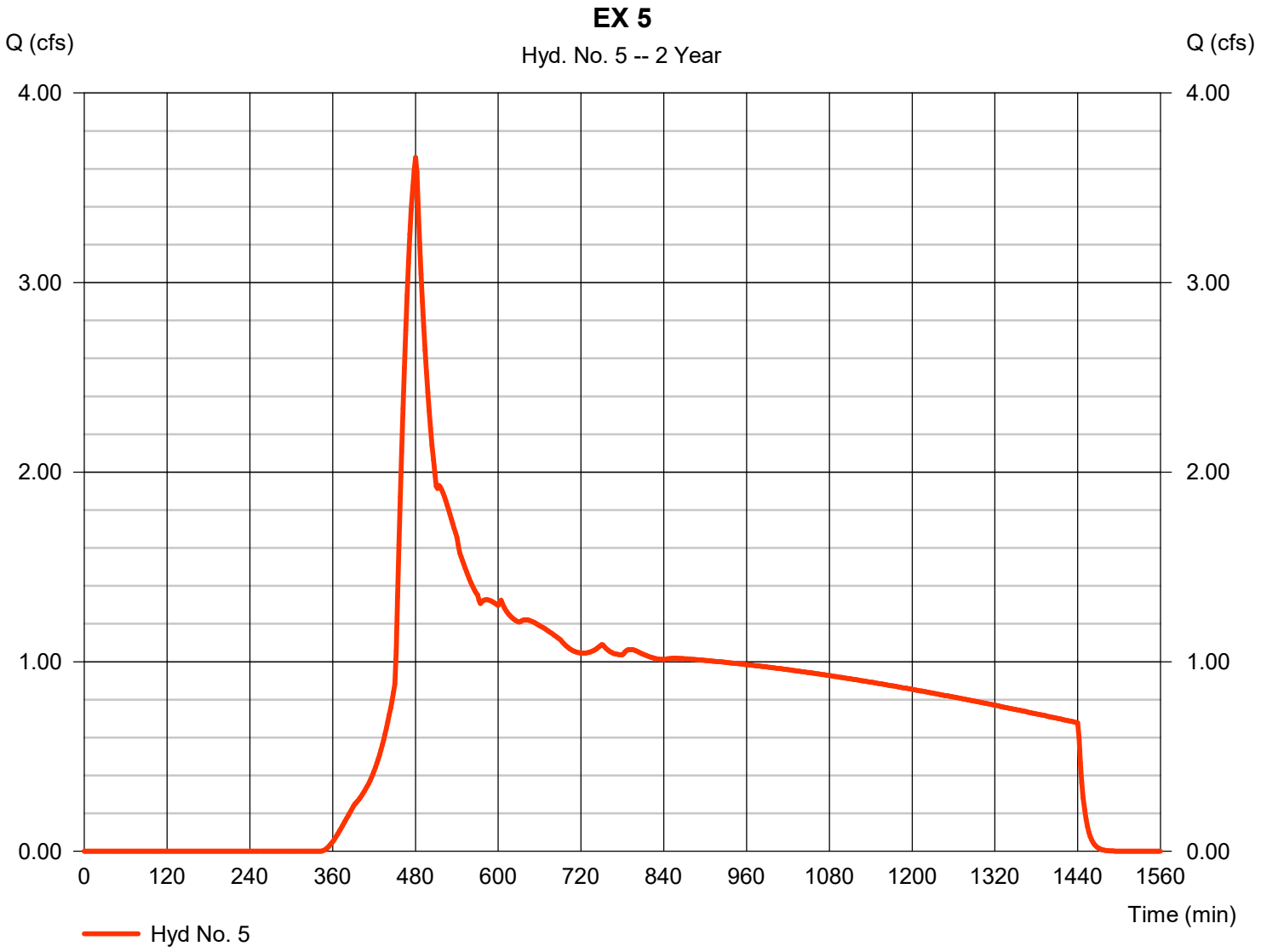


Hydrograph Report

Hyd. No. 5

EX 5

Hydrograph type	=	SBUH Runoff	Peak discharge	=	3.661 cfs
Storm frequency	=	2 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	67,560 cuft
Drainage area	=	17.820 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	7.90 min
Total precip.	=	2.80 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.2000	0.1000	0.0000	--------
2	71.8477	13.3000	0.8718	--------
3	0.0000	0.0000	0.0000	--------
5	75.7517	14.2000	0.8271	--------
10	86.7192	15.3000	0.8244	--------
25	103.3028	16.6000	0.8227	--------
50	116.5747	17.3000	0.8234	--------
100	124.5731	17.6000	0.8144	--------

File name: WQ Rational.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
2	5.70	4.62	3.90	3.38	2.99	2.69	2.45	2.24	2.08	1.93	1.81	1.70
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.58	5.43	4.65	4.08	3.64	3.30	3.02	2.79	2.59	2.42	2.28	2.15
10	7.25	6.05	5.21	4.59	4.12	3.74	3.43	3.17	2.95	2.77	2.60	2.46
25	8.25	6.95	6.03	5.34	4.81	4.38	4.03	3.73	3.48	3.26	3.08	2.91
50	9.05	7.66	6.67	5.92	5.34	4.87	4.48	4.16	3.88	3.64	3.43	3.25
100	9.83	8.35	7.30	6.49	5.87	5.36	4.94	4.59	4.29	4.03	3.80	3.60

Tc = time in minutes. Values may exceed 60.

\CLA (Clackamas County)\CLA-93 (Linwood Ave)\CLA93-DOCS\REPORTS\STORM - (Storm Report)\Calcs\WES.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	1.00	2.80	0.50	3.10	3.50	4.00	4.40	4.50
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

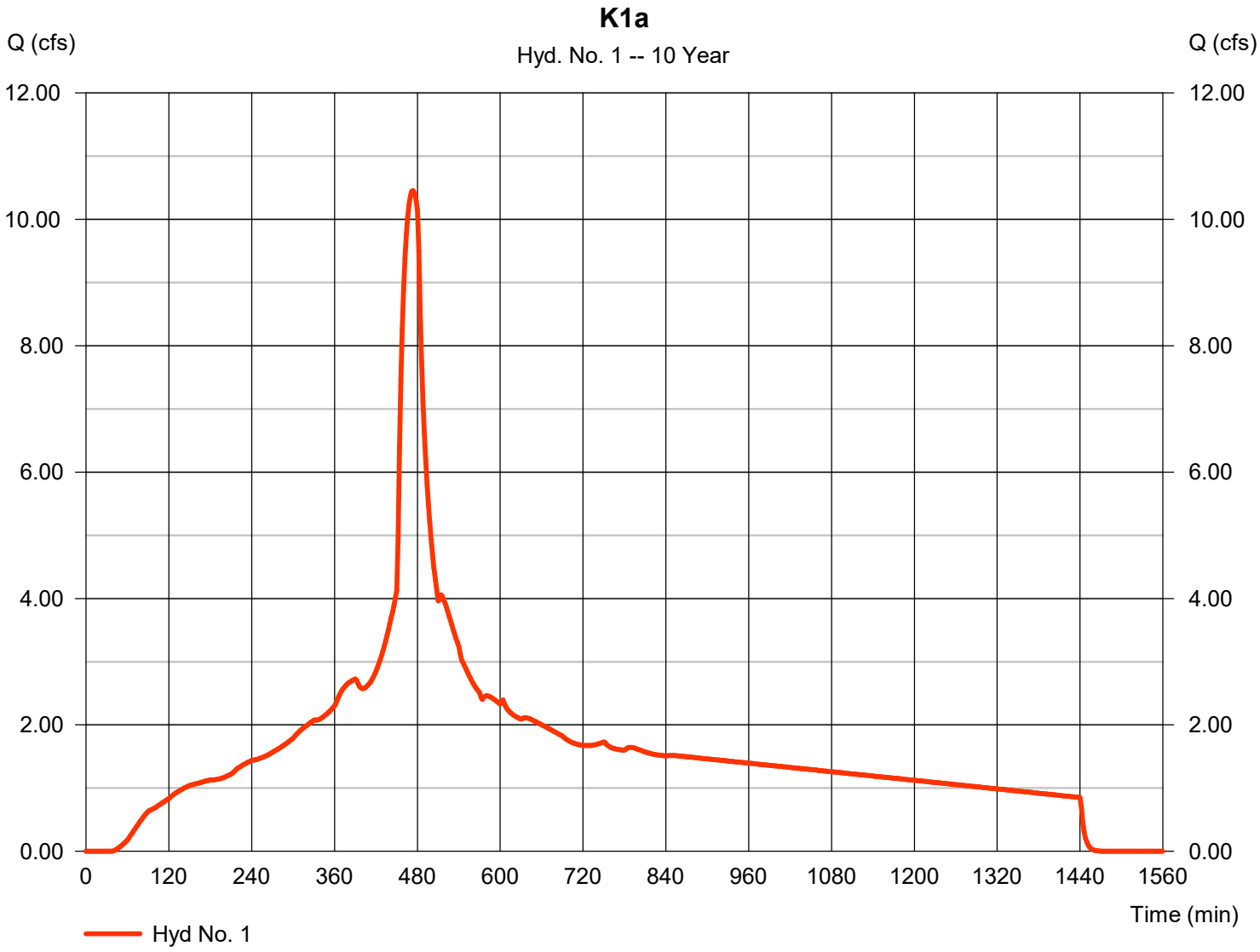
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SBUH Runoff	10.45	2	474	151,299	------	------	------	K1a
2	SBUH Runoff	0.023	2	1350	685	------	------	------	K1b
3	Combine	10.45	2	474	151,984	1, 2	------	------	K1 - Upstream Basin
4	SBUH Runoff	30.02	2	474	434,451	------	------	------	K2a
5	SBUH Runoff	4.992	2	480	81,004	------	------	------	K2b
6	Combine	34.86	2	474	515,455	4, 5	------	------	K2 - Upstream Basin
7	SBUH Runoff	73.54	2	474	1,064,429	------	------	------	A1a
8	SBUH Runoff	33.35	2	480	627,150	------	------	------	A1b
9	Combine	105.33	2	476	1,691,580	7, 8	------	------	A1 - Upstream Basin

Hydrograph Report

Hyd. No. 1

K1a

Hydrograph type	= SBUH Runoff	Peak discharge	= 10.45 cfs
Storm frequency	= 10 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 151,299 cuft
Drainage area	= 12.760 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

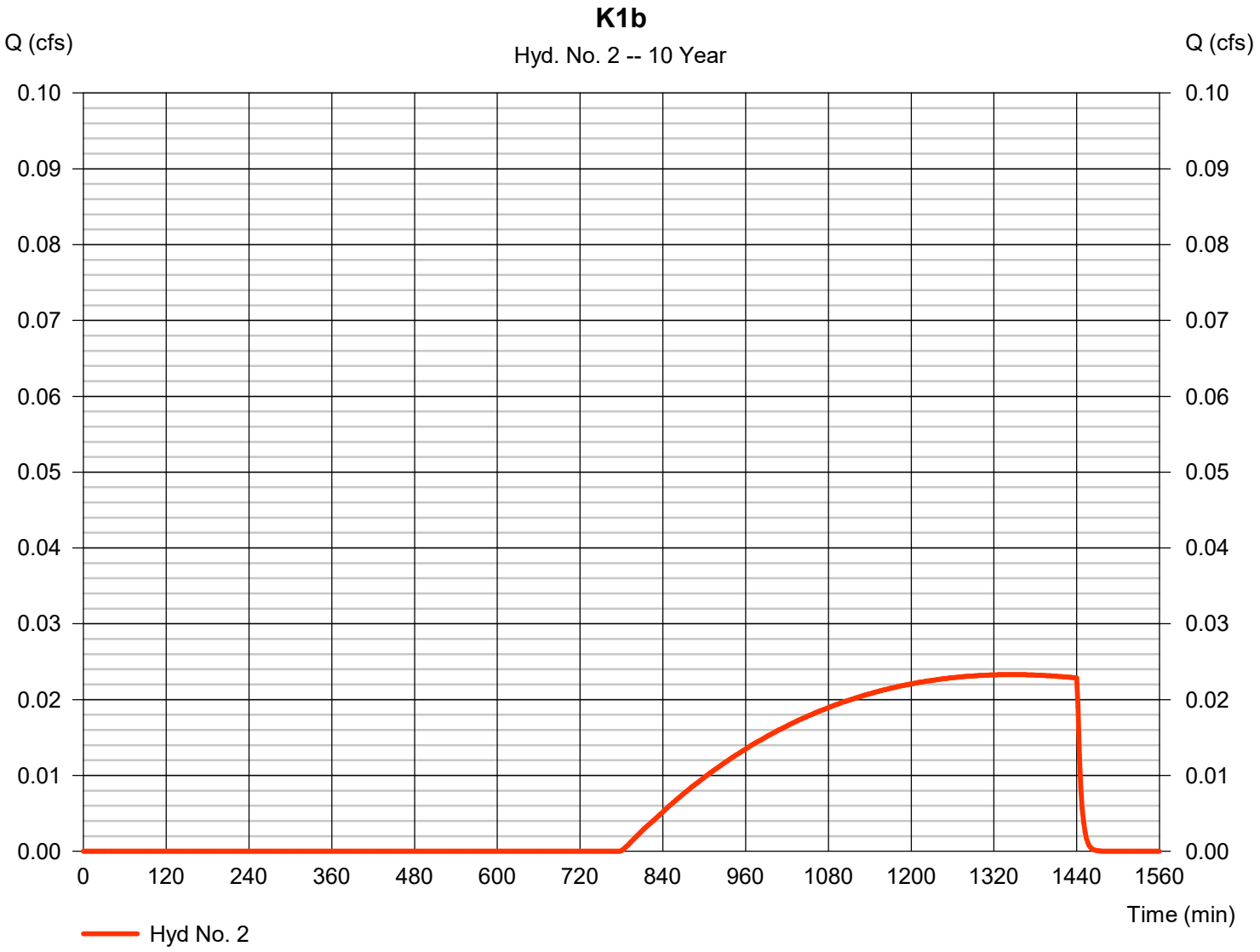


Hydrograph Report

Hyd. No. 2

K1b

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.023 cfs
Storm frequency	= 10 yrs	Time to peak	= 1350 min
Time interval	= 2 min	Hyd. volume	= 685 cuft
Drainage area	= 2.250 ac	Curve number	= 45
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

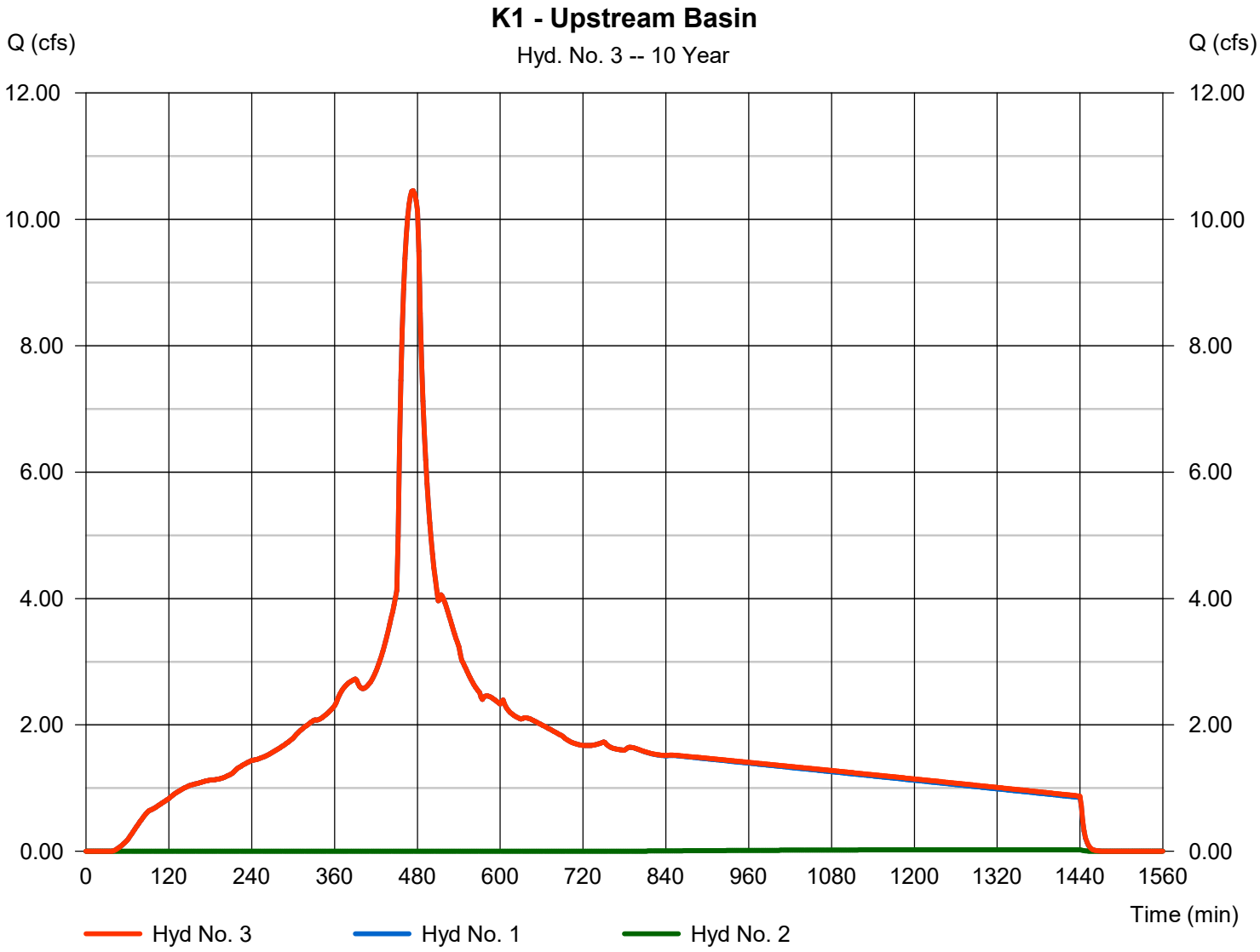


Hydrograph Report

Hyd. No. 3

K1 - Upstream Basin

Hydrograph type	= Combine	Peak discharge	= 10.45 cfs
Storm frequency	= 10 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 151,984 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 15.010 ac

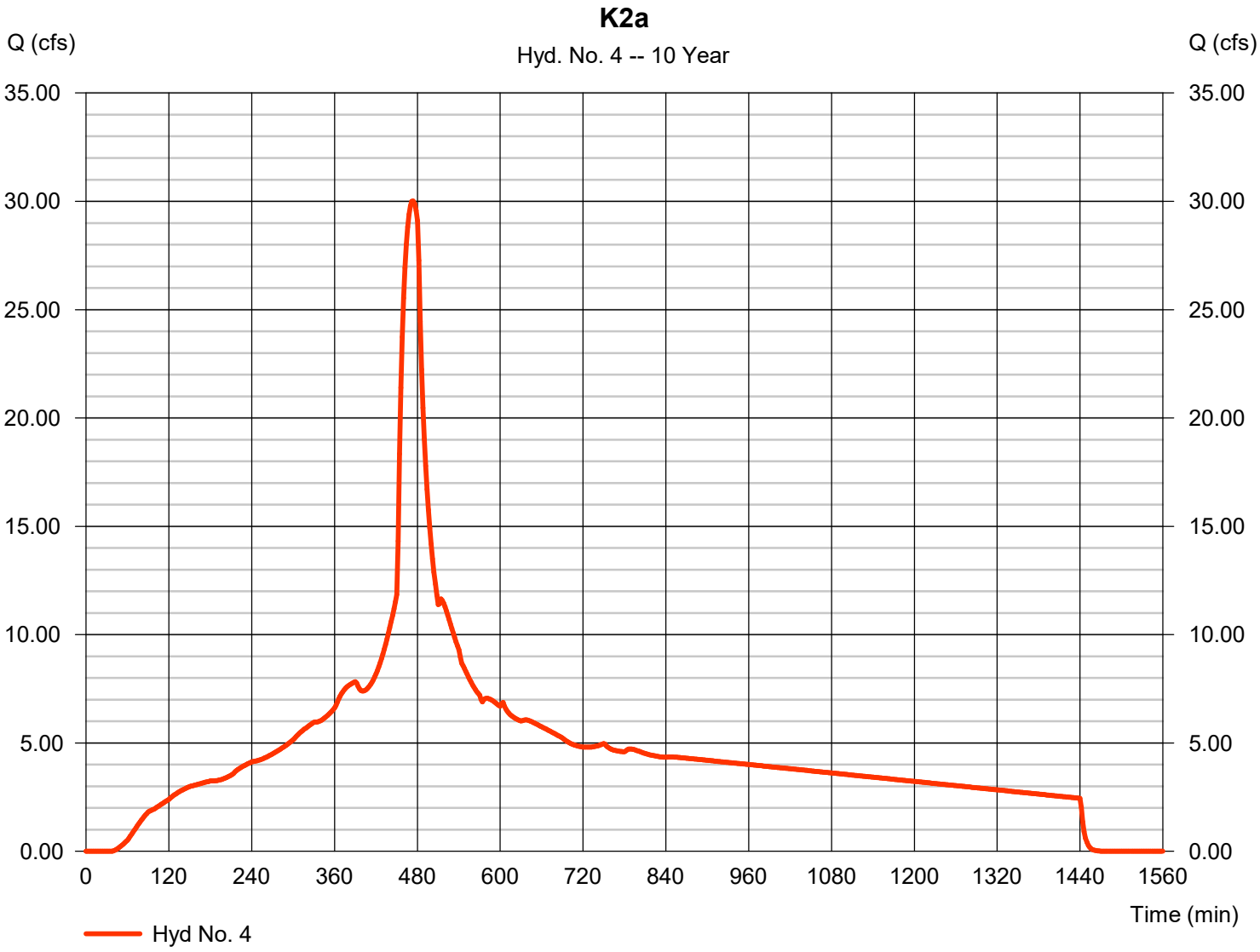


Hydrograph Report

Hyd. No. 4

K2a

Hydrograph type	= SBUH Runoff	Peak discharge	= 30.02 cfs
Storm frequency	= 10 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 434,451 cuft
Drainage area	= 36.640 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

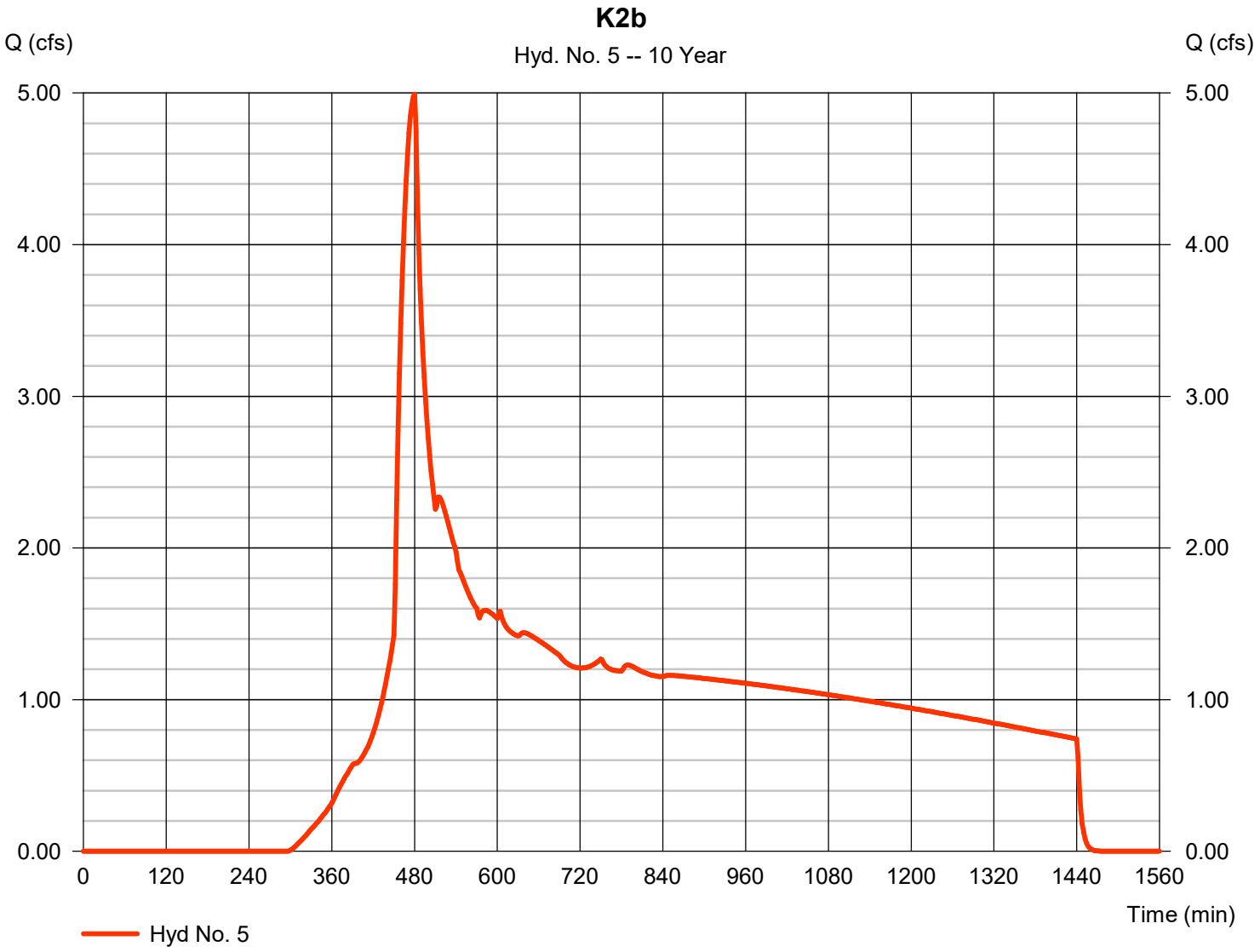


Hydrograph Report

Hyd. No. 5

K2b

Hydrograph type	= SBUH Runoff	Peak discharge	= 4.992 cfs
Storm frequency	= 10 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 81,004 cuft
Drainage area	= 14.250 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

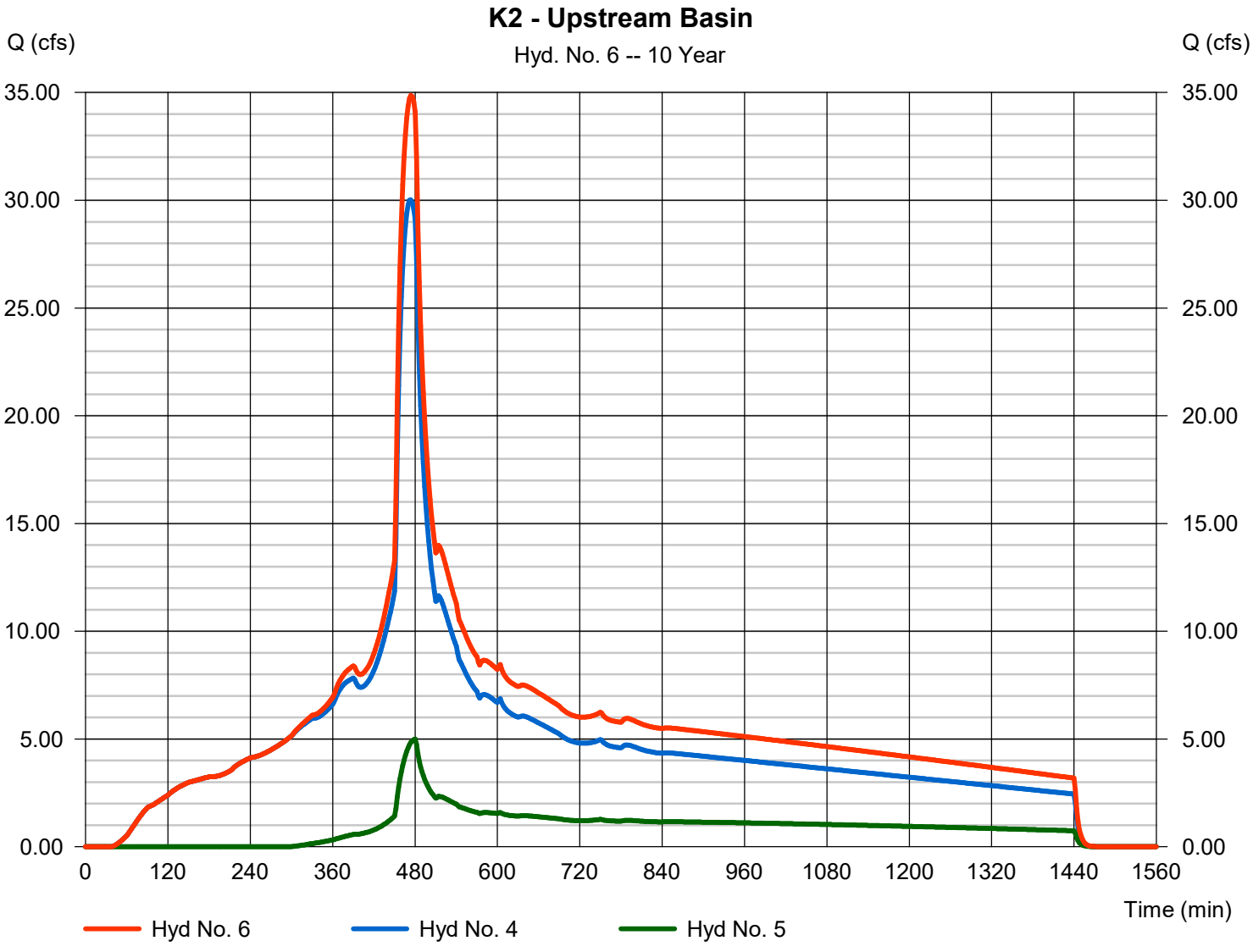


Hydrograph Report

Hyd. No. 6

K2 - Upstream Basin

Hydrograph type	= Combine	Peak discharge	= 34.86 cfs
Storm frequency	= 10 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 515,455 cuft
Inflow hyds.	= 4, 5	Contrib. drain. area	= 50.890 ac

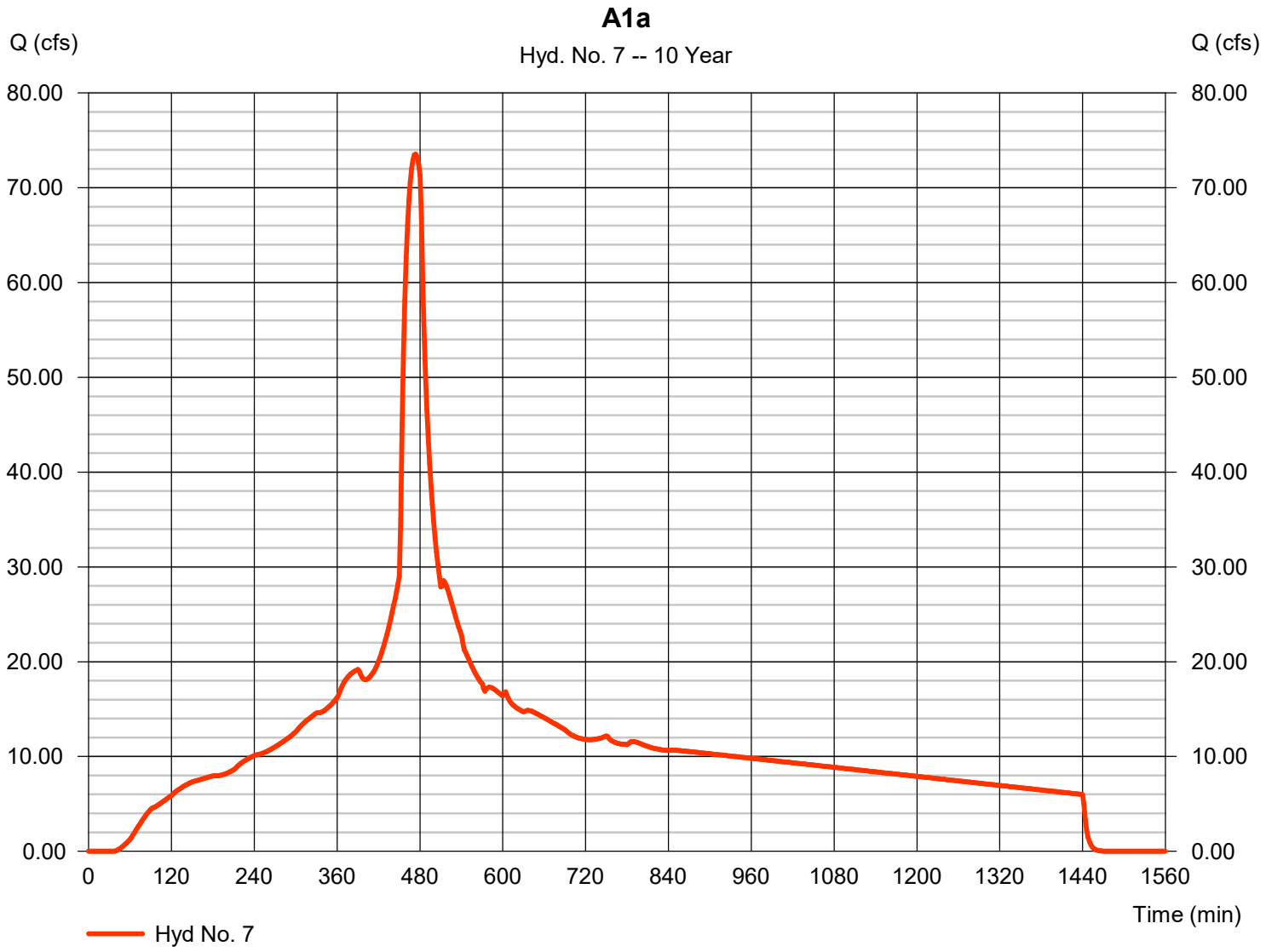


Hydrograph Report

Hyd. No. 7

A1a

Hydrograph type	=	SBUH Runoff	Peak discharge	=	73.54 cfs
Storm frequency	=	10 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	1,064,429 cuft
Drainage area	=	89.770 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

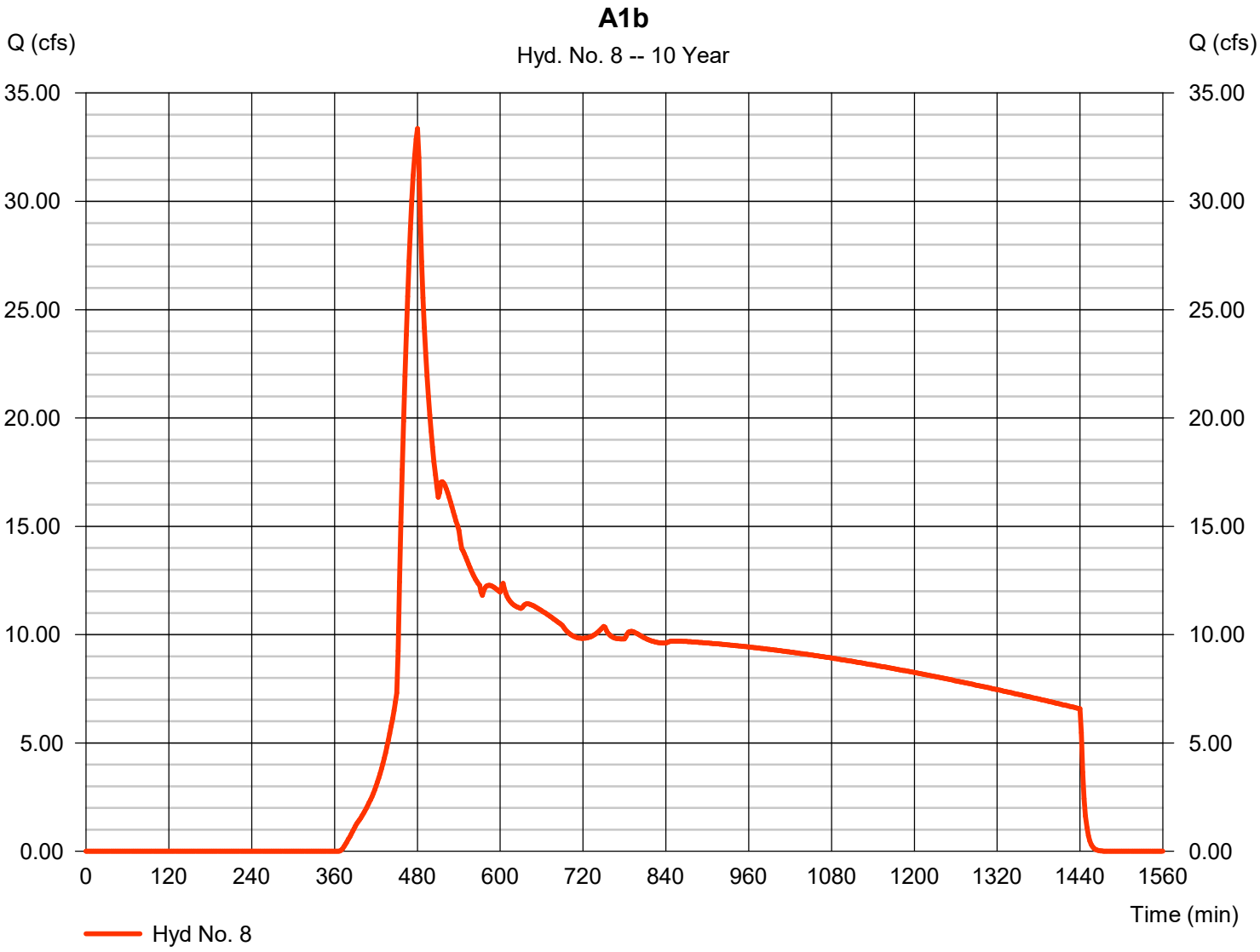


Hydrograph Report

Hyd. No. 8

A1b

Hydrograph type	=	SBUH Runoff	Peak discharge	=	33.35 cfs
Storm frequency	=	10 yrs	Time to peak	=	480 min
Time interval	=	2 min	Hyd. volume	=	627,150 cuft
Drainage area	=	146.460 ac	Curve number	=	73
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

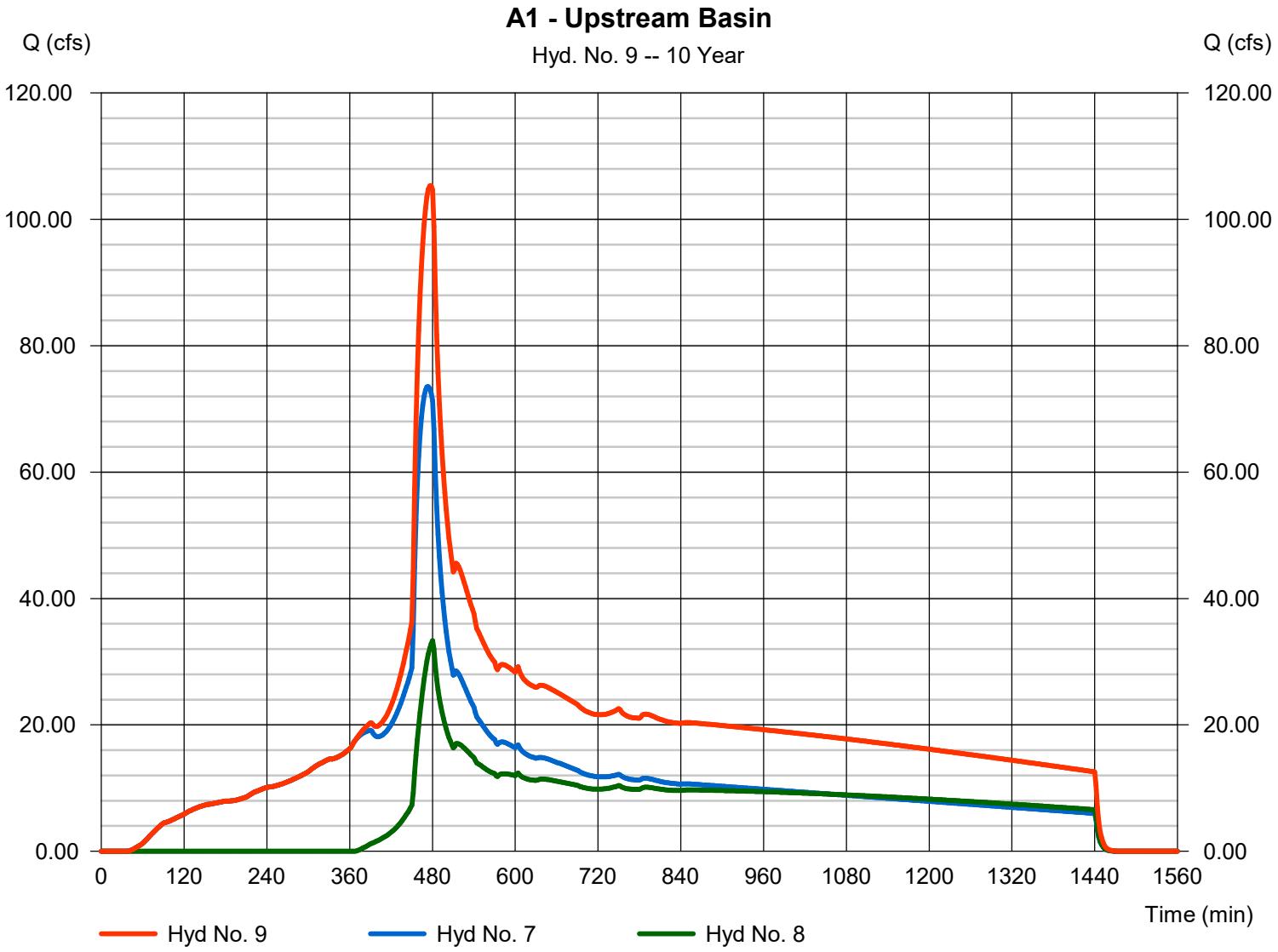


Hydrograph Report

Hyd. No. 9

A1 - Upstream Basin

Hydrograph type	= Combine	Peak discharge	= 105.33 cfs
Storm frequency	= 10 yrs	Time to peak	= 476 min
Time interval	= 2 min	Hyd. volume	= 1,691,580 cuft
Inflow hyds.	= 7, 8	Contrib. drain. area	= 236.230 ac



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.2000	0.1000	0.0000	--------
2	71.8477	13.3000	0.8718	--------
3	0.0000	0.0000	0.0000	--------
5	75.7517	14.2000	0.8271	--------
10	86.7192	15.3000	0.8244	--------
25	103.3028	16.6000	0.8227	--------
50	116.5747	17.3000	0.8234	--------
100	124.5731	17.6000	0.8144	--------

File name: WQ Rational.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
2	5.70	4.62	3.90	3.38	2.99	2.69	2.45	2.24	2.08	1.93	1.81	1.70
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.58	5.43	4.65	4.08	3.64	3.30	3.02	2.79	2.59	2.42	2.28	2.15
10	7.25	6.05	5.21	4.59	4.12	3.74	3.43	3.17	2.95	2.77	2.60	2.46
25	8.25	6.95	6.03	5.34	4.81	4.38	4.03	3.73	3.48	3.26	3.08	2.91
50	9.05	7.66	6.67	5.92	5.34	4.87	4.48	4.16	3.88	3.64	3.43	3.25
100	9.83	8.35	7.30	6.49	5.87	5.36	4.94	4.59	4.29	4.03	3.80	3.60

Tc = time in minutes. Values may exceed 60.

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Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.83	2.80	1.00	3.50	3.50	4.40	0.00	6.48
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

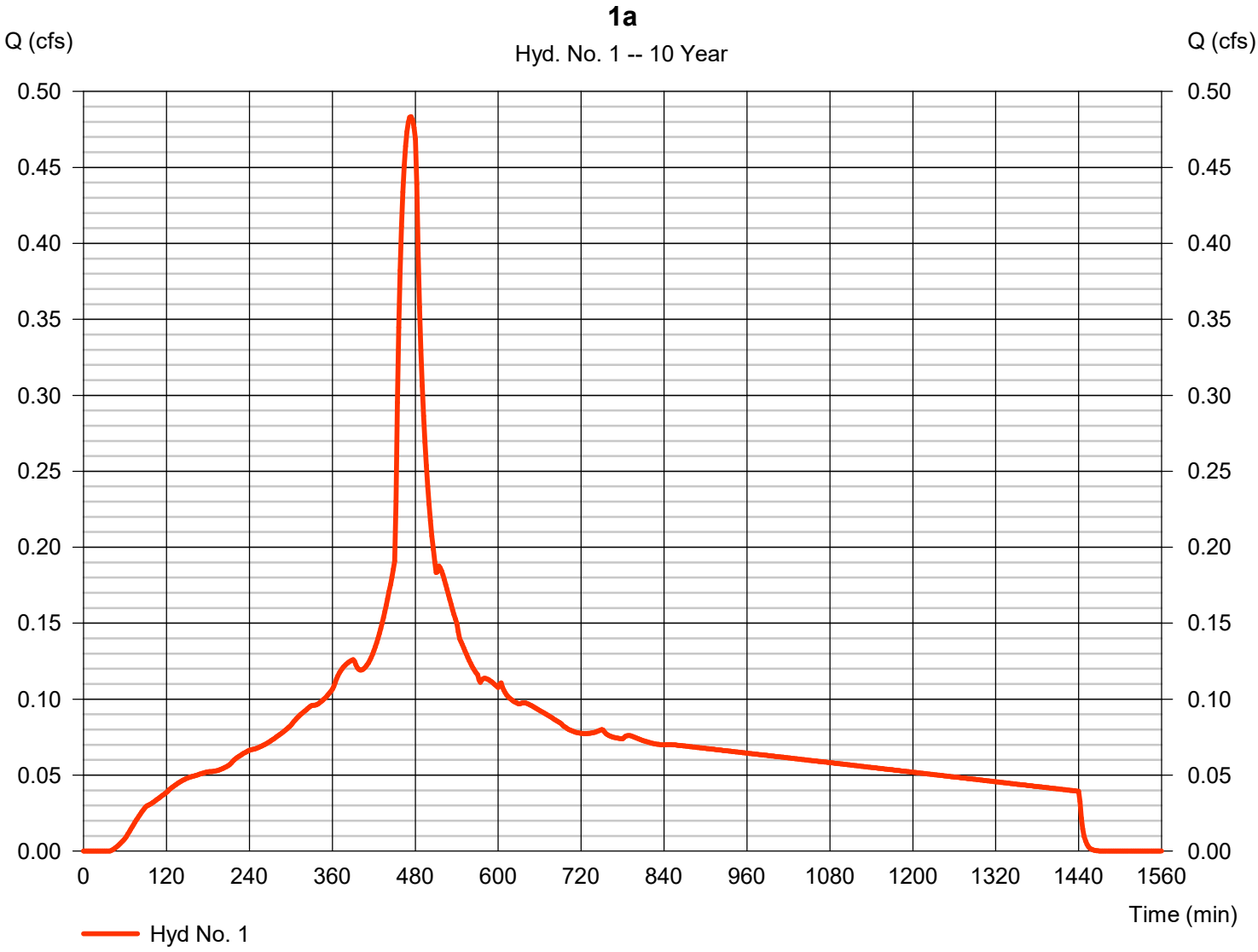
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SBUH Runoff	0.483	2	474	6,996	------	------	------	1a
2	SBUH Runoff	0.028	2	480	467	------	------	------	1b
3	Combine	0.510	2	474	7,463	1, 2	------	------	1 - Proposed Combined
4	SBUH Runoff	0.320	2	474	4,624	------	------	------	2a
5	SBUH Runoff	0.058	2	480	987	------	------	------	2b
6	Combine	0.376	2	474	5,611	4, 5	------	------	2 - Proposed Combined
7	SBUH Runoff	0.696	2	474	10,079	------	------	------	3a
8	SBUH Runoff	0.108	2	480	1,817	------	------	------	3b
9	Combine	0.800	2	474	11,896	7, 8	------	------	3 - Proposed Combined
10	SBUH Runoff	0.197	2	474	2,846	------	------	------	4a
11	SBUH Runoff	0.009	2	480	156	------	------	------	4b
12	Combine	0.205	2	474	3,002	10, 11	------	------	4 - Proposed Combined
13	SBUH Runoff	0.188	2	474	2,727	------	------	------	5a
14	SBUH Runoff	0.009	2	480	156	------	------	------	5b
15	Combine	0.197	2	474	2,883	13, 14	------	------	5 - Proposed Combined
16	SBUH Runoff	0.295	2	474	4,269	------	------	------	6a
17	SBUH Runoff	0.015	2	480	260	------	------	------	6b
18	Combine	0.310	2	474	4,528	16, 17	------	------	6 - Proposed Combined
19	SBUH Runoff	0.492	2	474	7,114	------	------	------	7a
20	SBUH Runoff	0.049	2	480	831	------	------	------	7b
21	Combine	0.539	2	474	7,945	19, 20	------	------	7 - Proposed Combined

Hydrograph Report

Hyd. No. 1

1a

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.483 cfs
Storm frequency	= 10 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 6,996 cuft
Drainage area	= 0.590 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

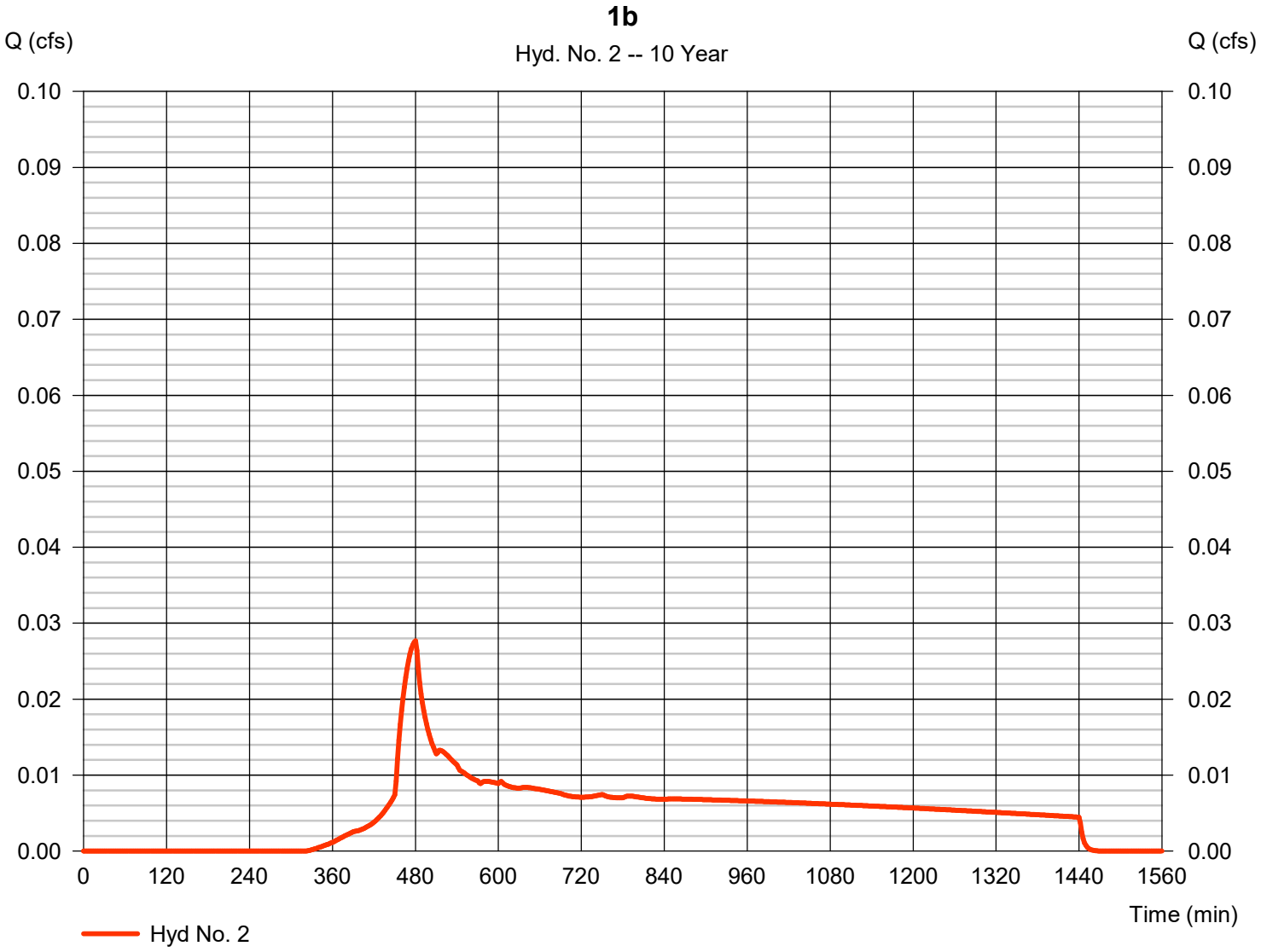


Hydrograph Report

Hyd. No. 2

1b

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.028 cfs
Storm frequency	= 10 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 467 cuft
Drainage area	= 0.090 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

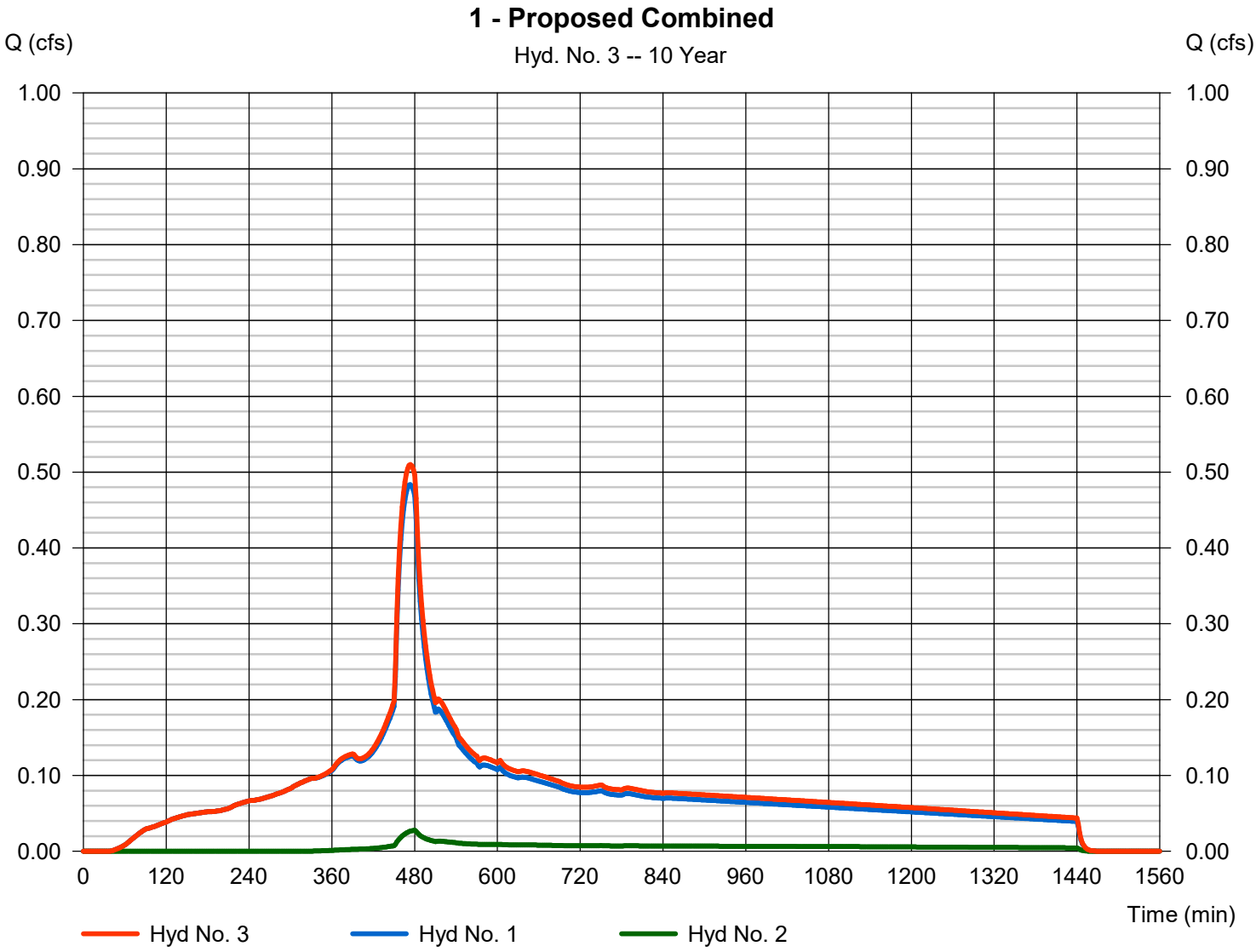


Hydrograph Report

Hyd. No. 3

1 - Proposed Combined

Hydrograph type	= Combine	Peak discharge	= 0.510 cfs
Storm frequency	= 10 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 7,463 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 0.680 ac

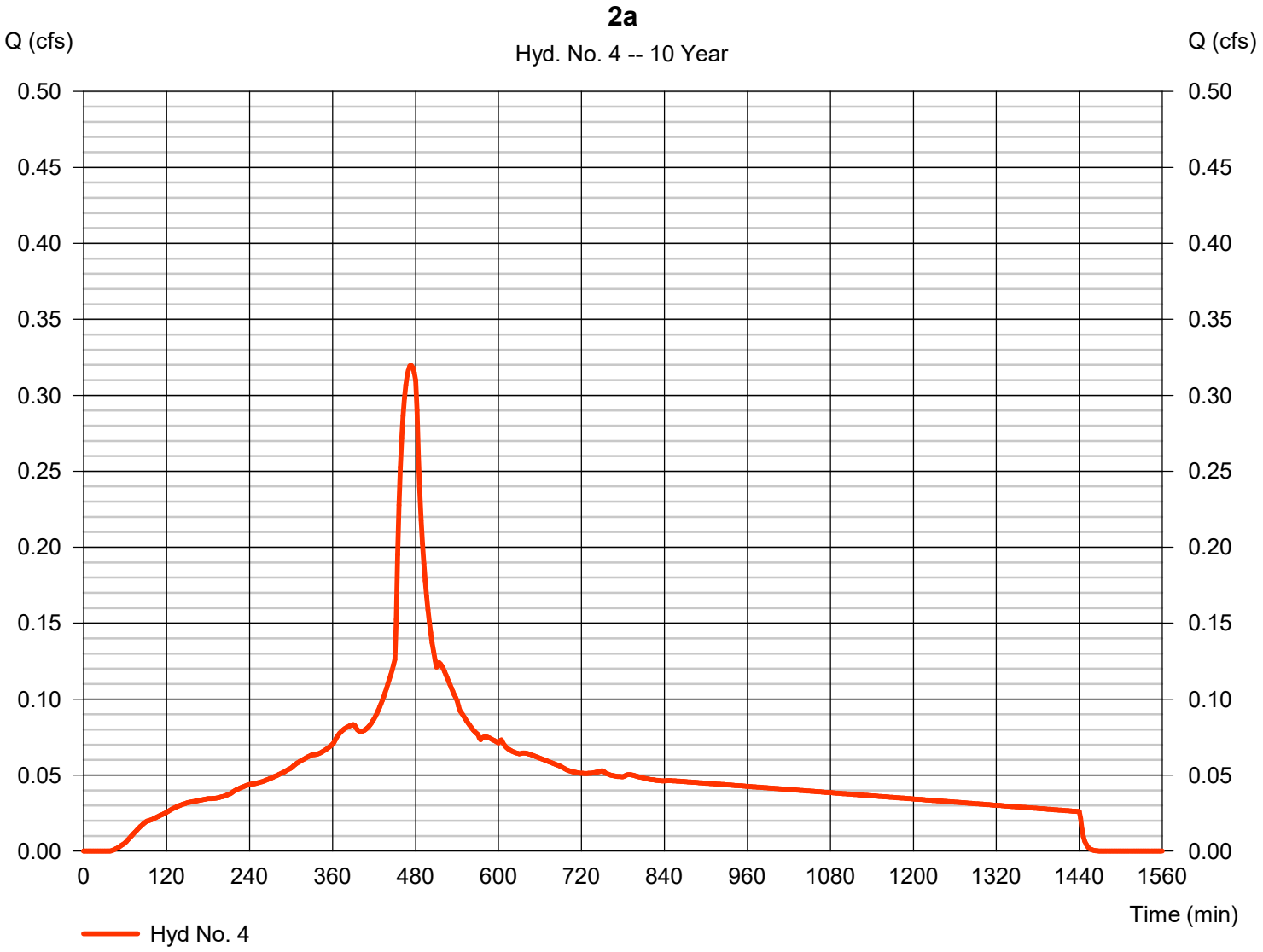


Hydrograph Report

Hyd. No. 4

2a

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.320 cfs
Storm frequency	= 10 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 4,624 cuft
Drainage area	= 0.390 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

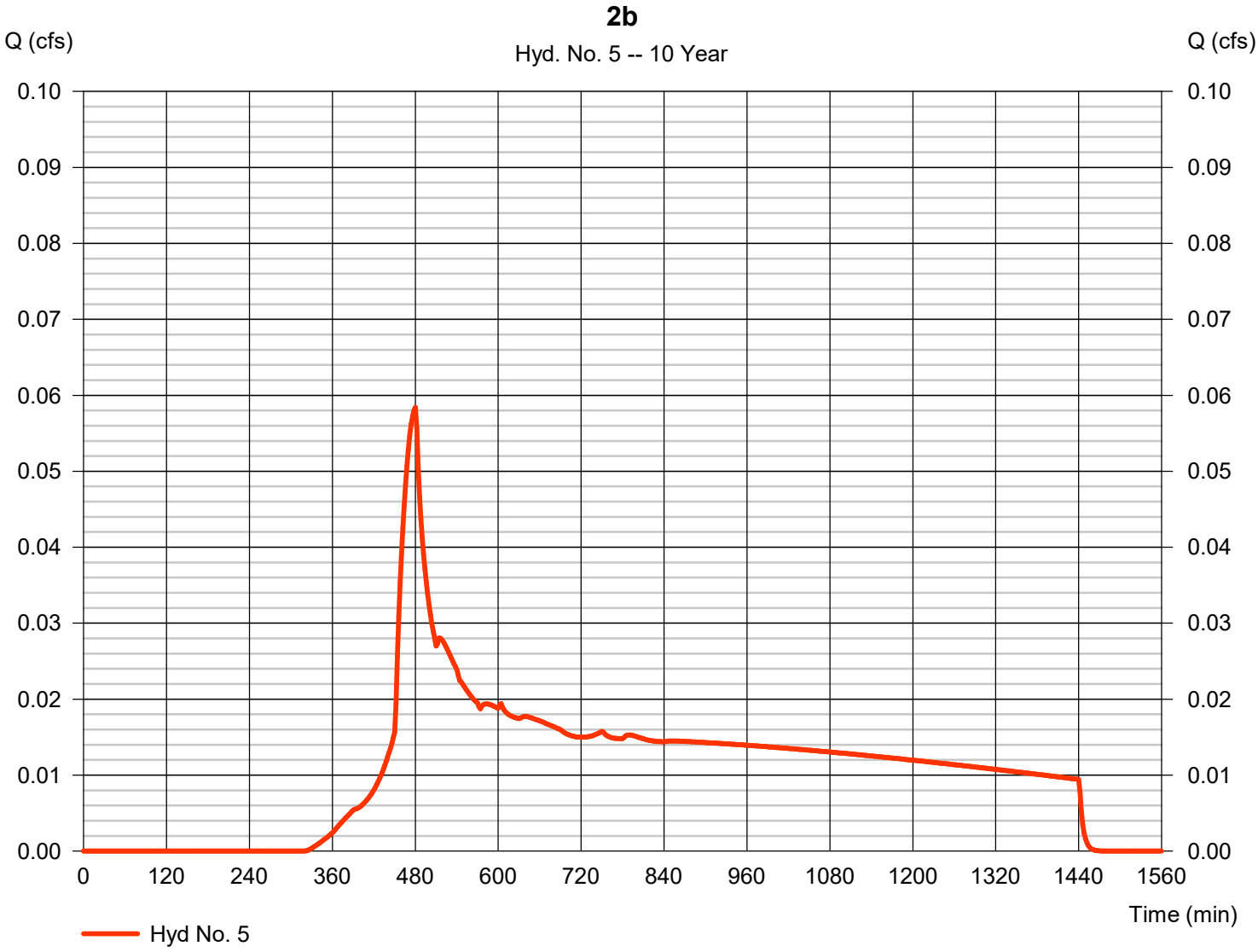


Hydrograph Report

Hyd. No. 5

2b

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.058 cfs
Storm frequency	= 10 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 987 cuft
Drainage area	= 0.190 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

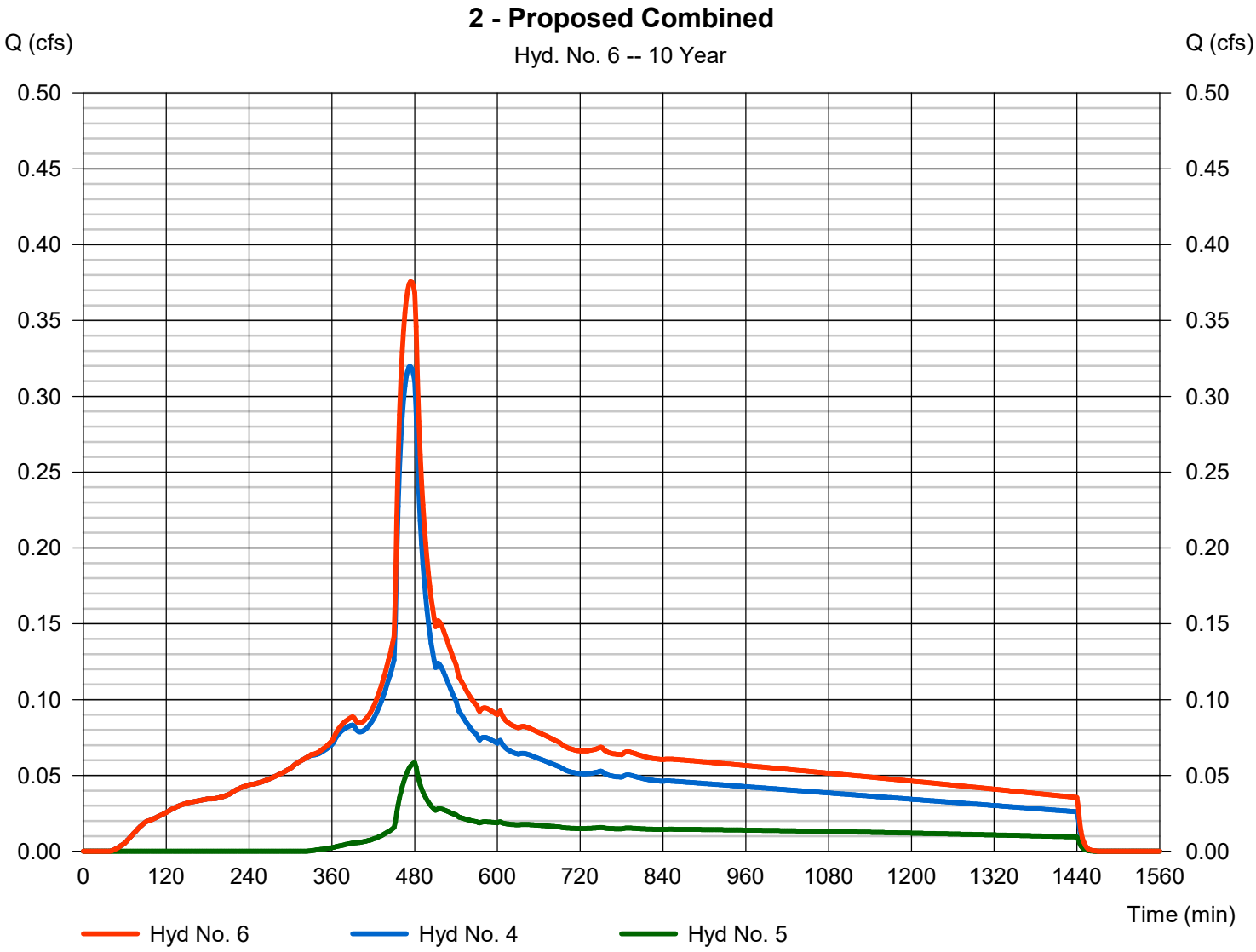


Hydrograph Report

Hyd. No. 6

2 - Proposed Combined

Hydrograph type	=	Combine	Peak discharge	=	0.376 cfs
Storm frequency	=	10 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	5,611 cuft
Inflow hyds.	=	4, 5	Contrib. drain. area	=	0.580 ac

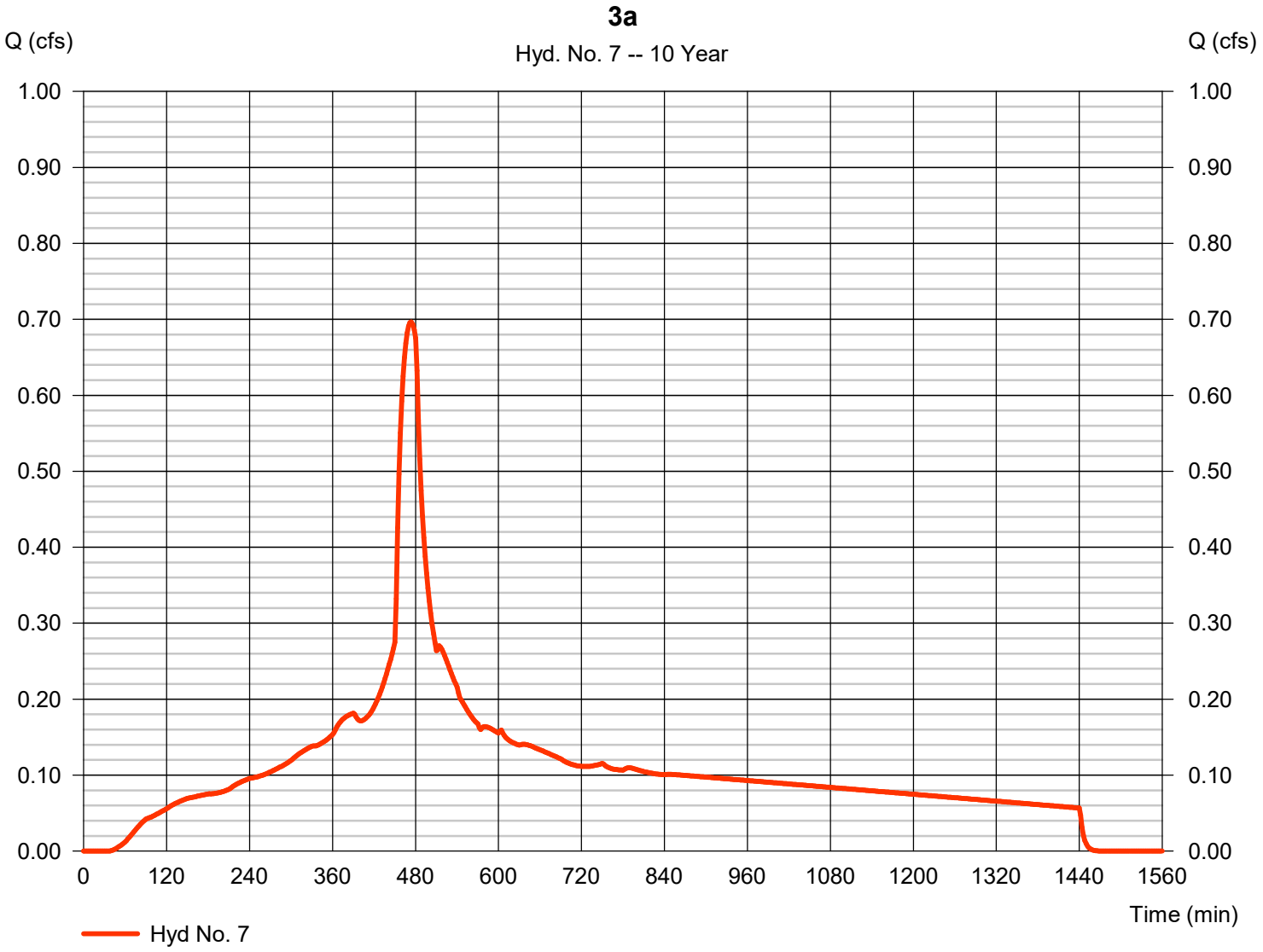


Hydrograph Report

Hyd. No. 7

3a

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.696 cfs
Storm frequency	=	10 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	10,079 cuft
Drainage area	=	0.850 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

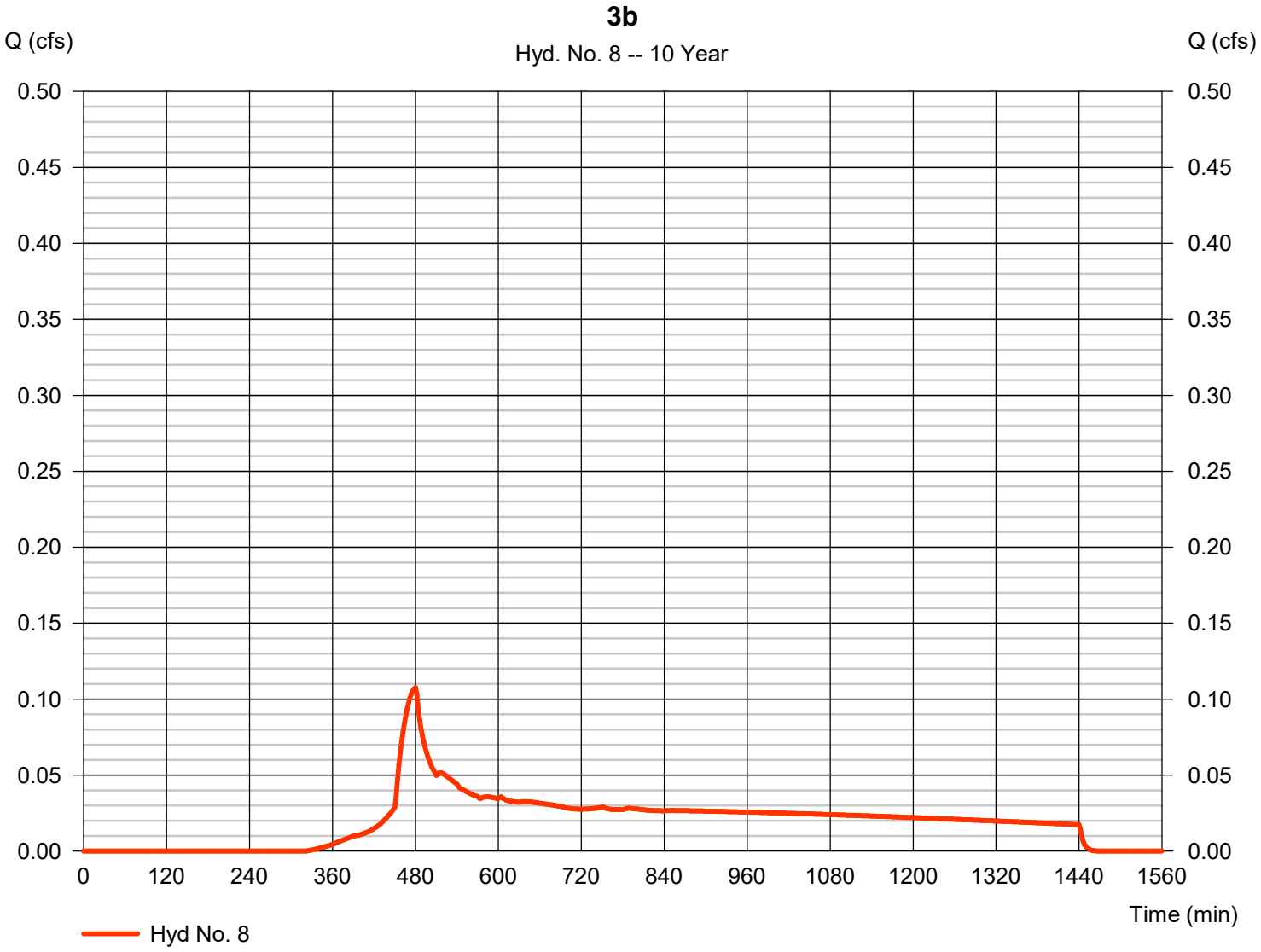


Hydrograph Report

Hyd. No. 8

3b

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.108 cfs
Storm frequency	= 10 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 1,817 cuft
Drainage area	= 0.350 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

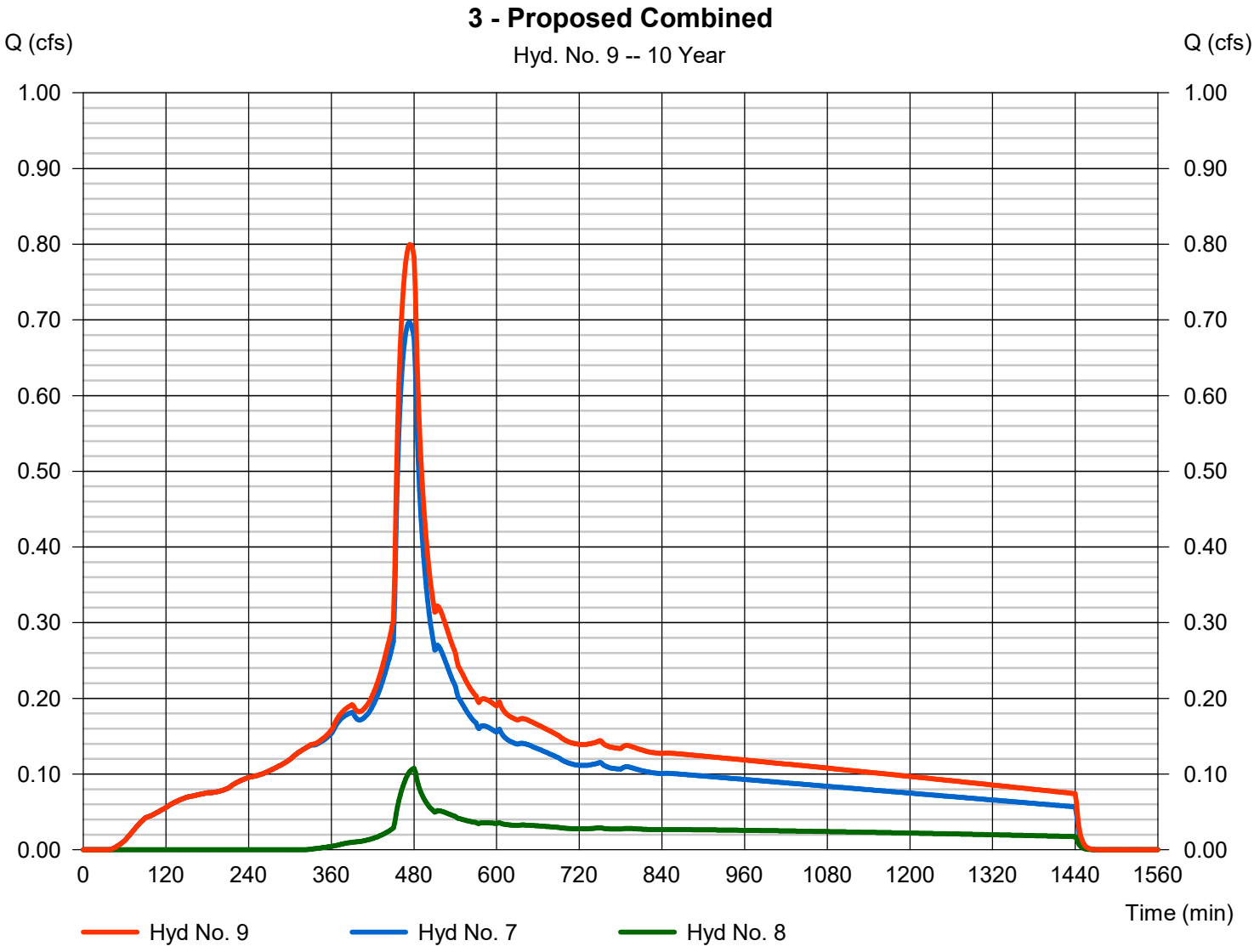


Hydrograph Report

Hyd. No. 9

3 - Proposed Combined

Hydrograph type	=	Combine	Peak discharge	=	0.800 cfs
Storm frequency	=	10 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	11,896 cuft
Inflow hyds.	=	7, 8	Contrib. drain. area	=	1.200 ac

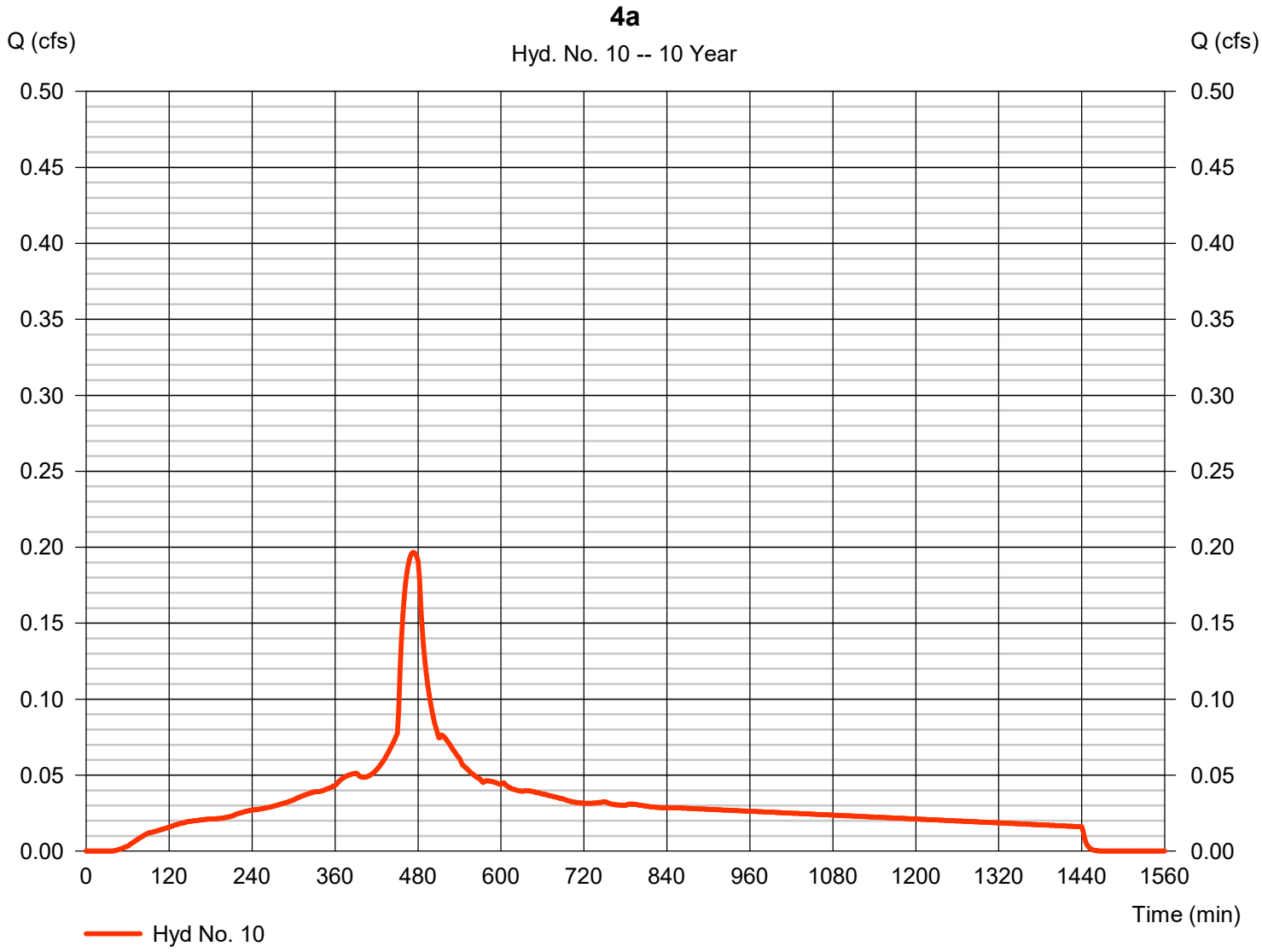


Hydrograph Report

Hyd. No. 10

4a

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.197 cfs
Storm frequency	=	10 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	2,846 cuft
Drainage area	=	0.240 ac	Curve number	=	98
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

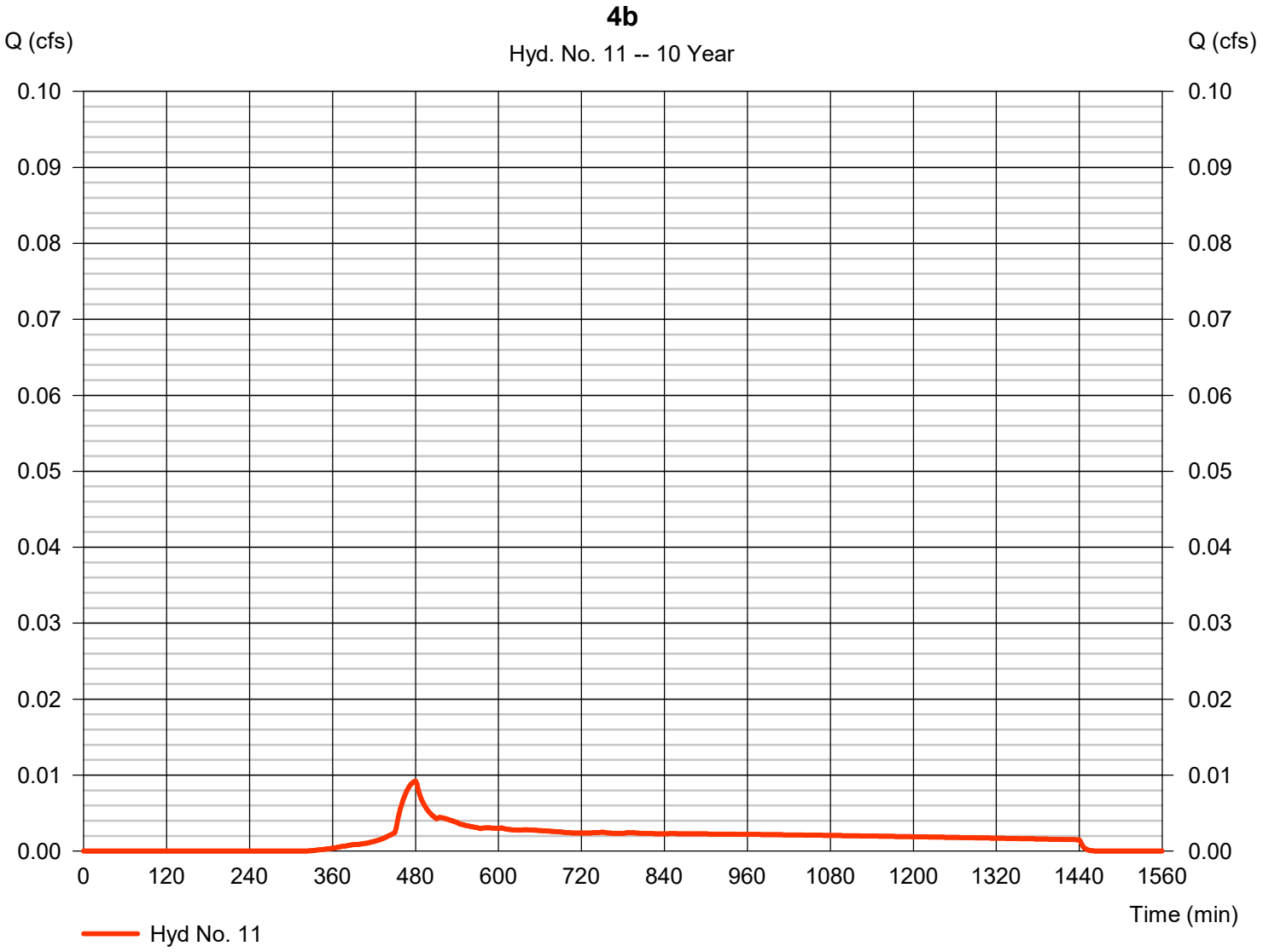


Hydrograph Report

Hyd. No. 11

4b

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.009 cfs
Storm frequency	= 10 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 156 cuft
Drainage area	= 0.030 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

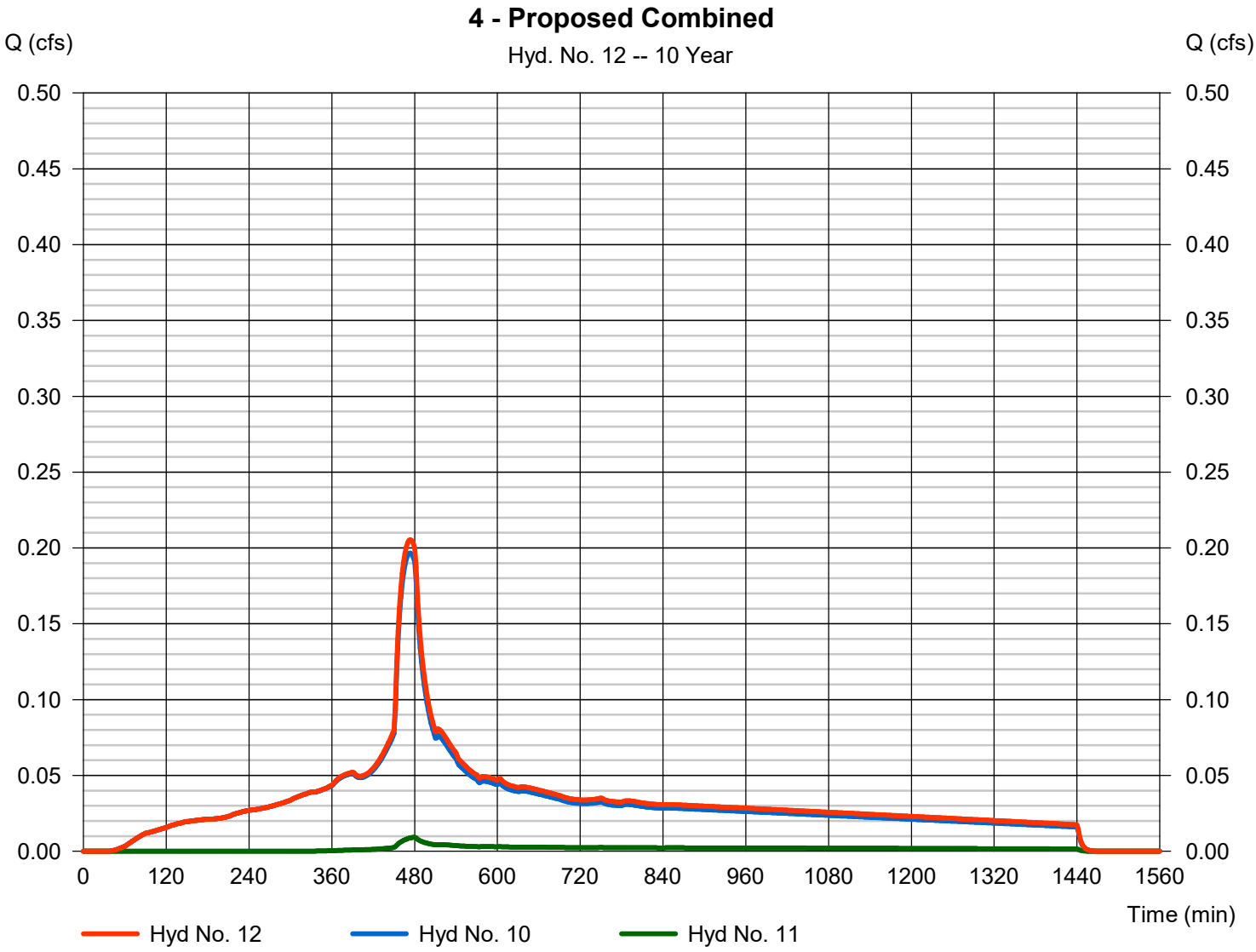


Hydrograph Report

Hyd. No. 12

4 - Proposed Combined

Hydrograph type	= Combine	Peak discharge	= 0.205 cfs
Storm frequency	= 10 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 3,002 cuft
Inflow hyds.	= 10, 11	Contrib. drain. area	= 0.270 ac

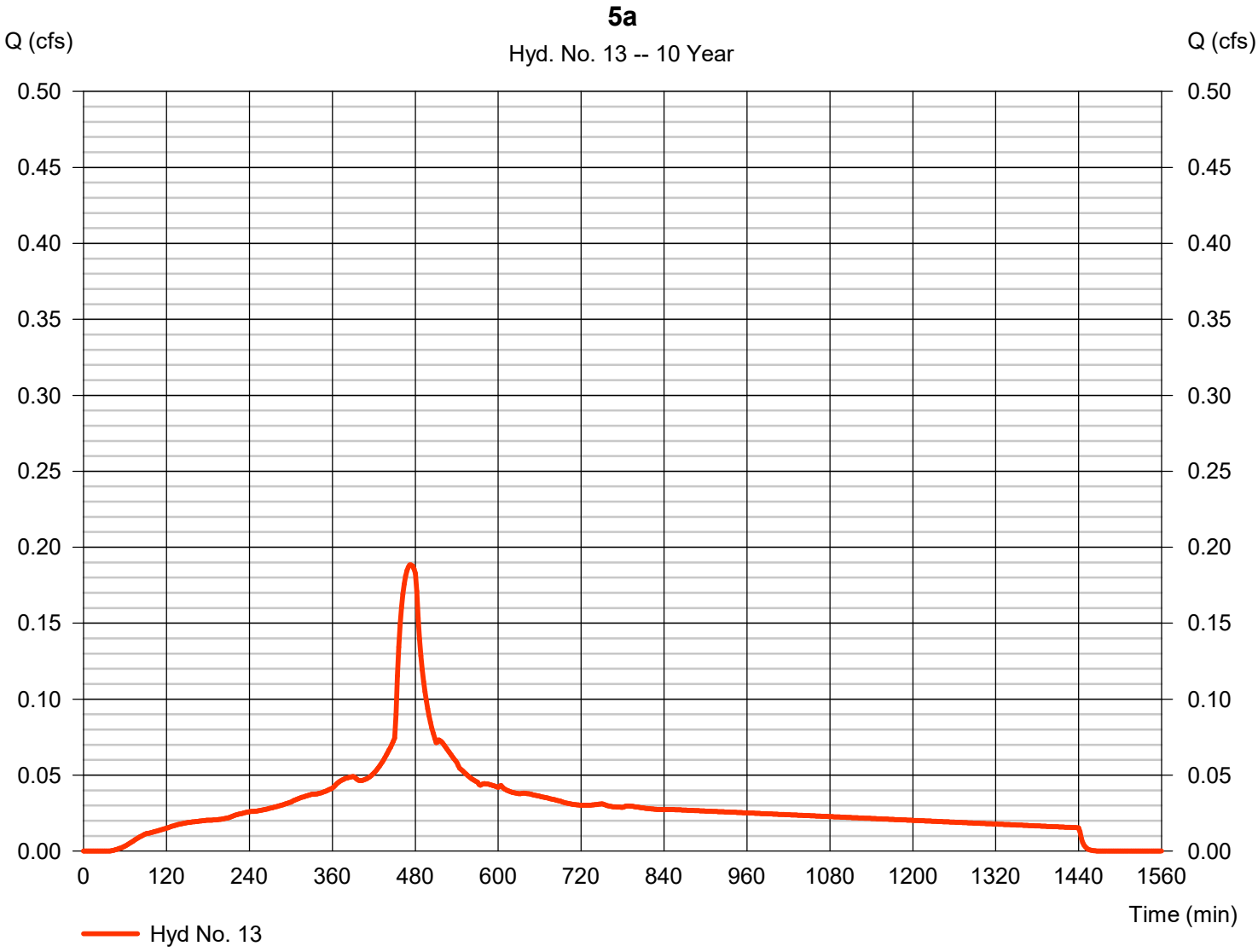


Hydrograph Report

Hyd. No. 13

5a

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.188 cfs
Storm frequency	= 10 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 2,727 cuft
Drainage area	= 0.230 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

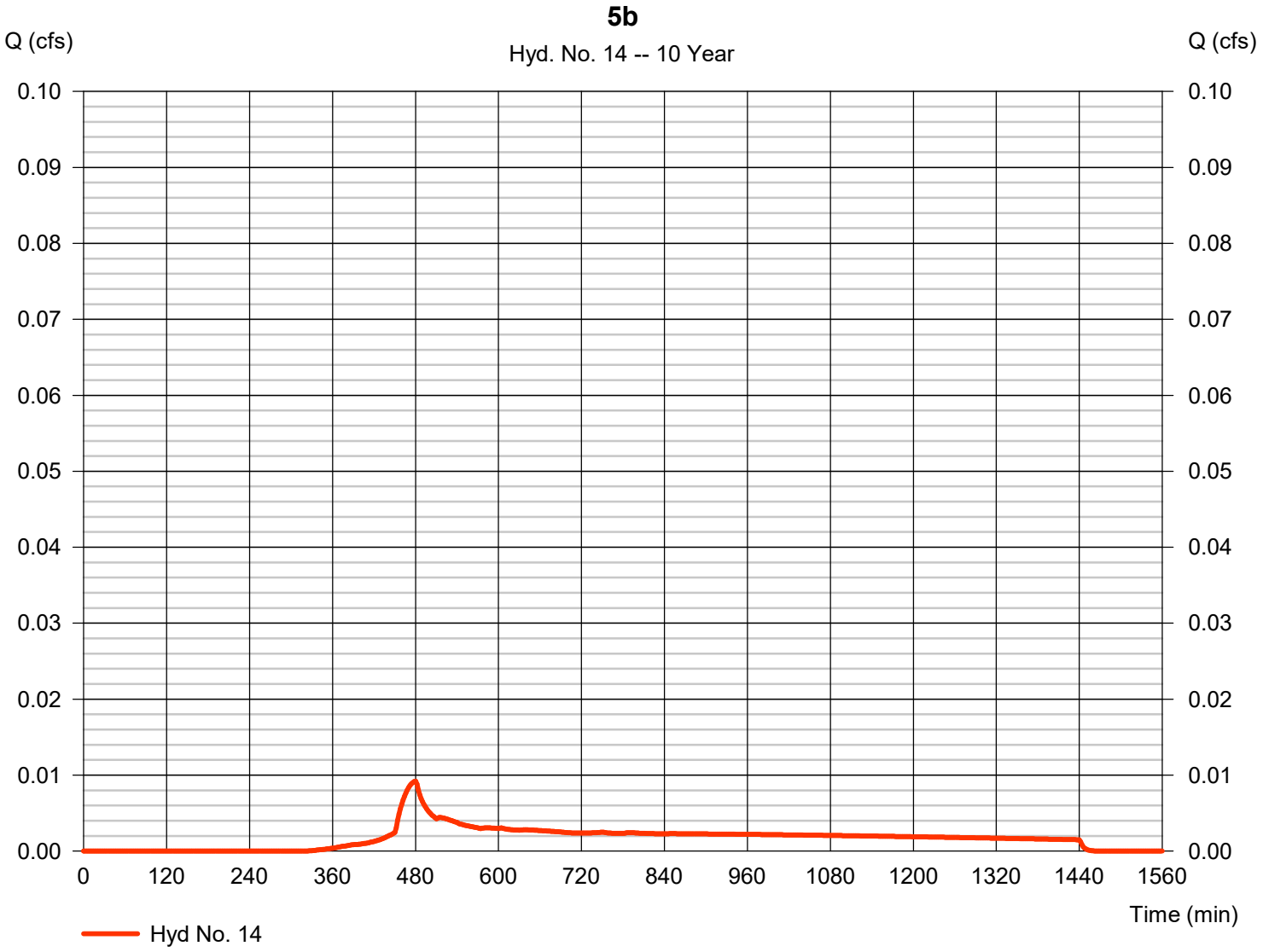


Hydrograph Report

Hyd. No. 14

5b

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.009 cfs
Storm frequency	= 10 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 156 cuft
Drainage area	= 0.030 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

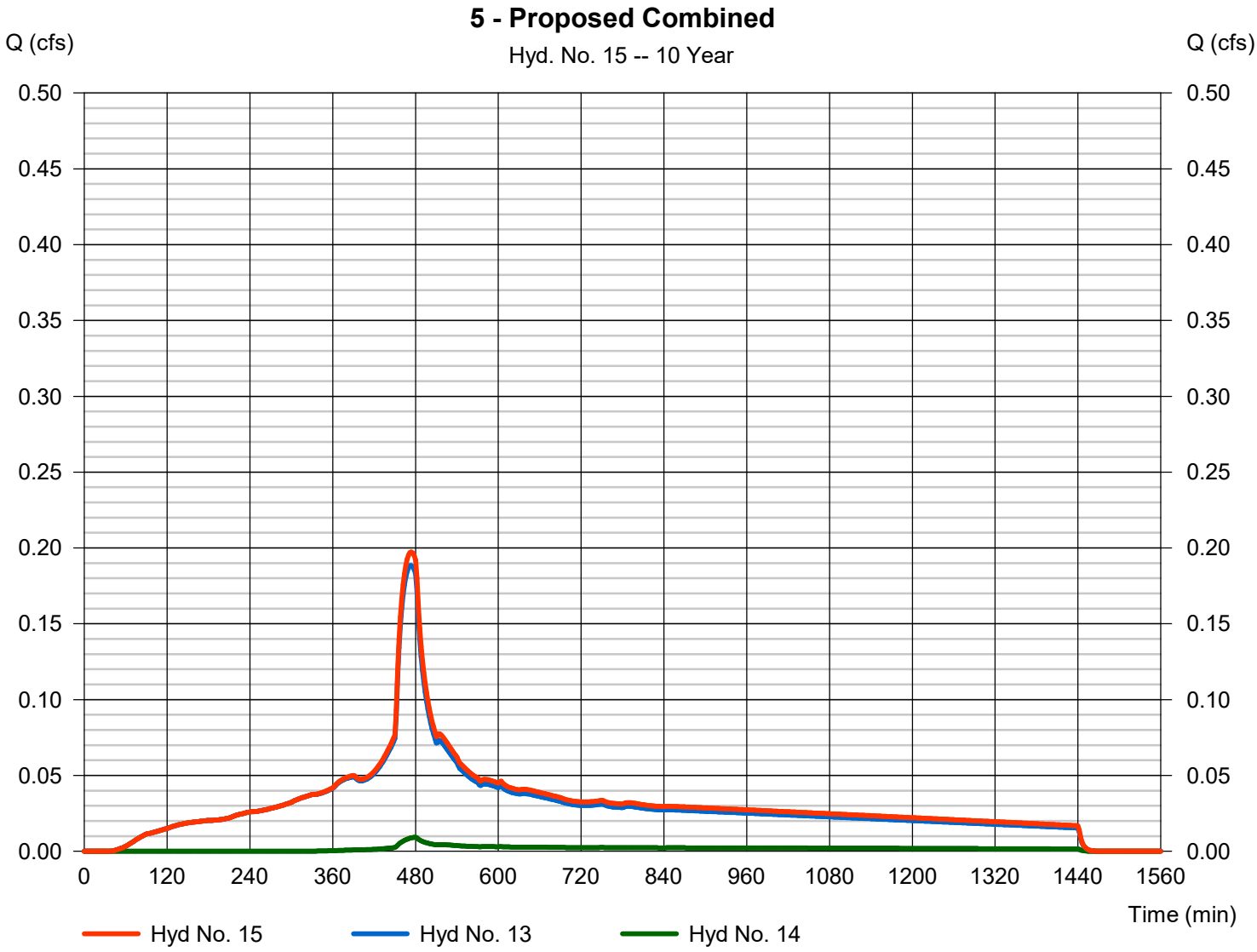


Hydrograph Report

Hyd. No. 15

5 - Proposed Combined

Hydrograph type	=	Combine	Peak discharge	=	0.197 cfs
Storm frequency	=	10 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	2,883 cuft
Inflow hyds.	=	13, 14	Contrib. drain. area	=	0.260 ac

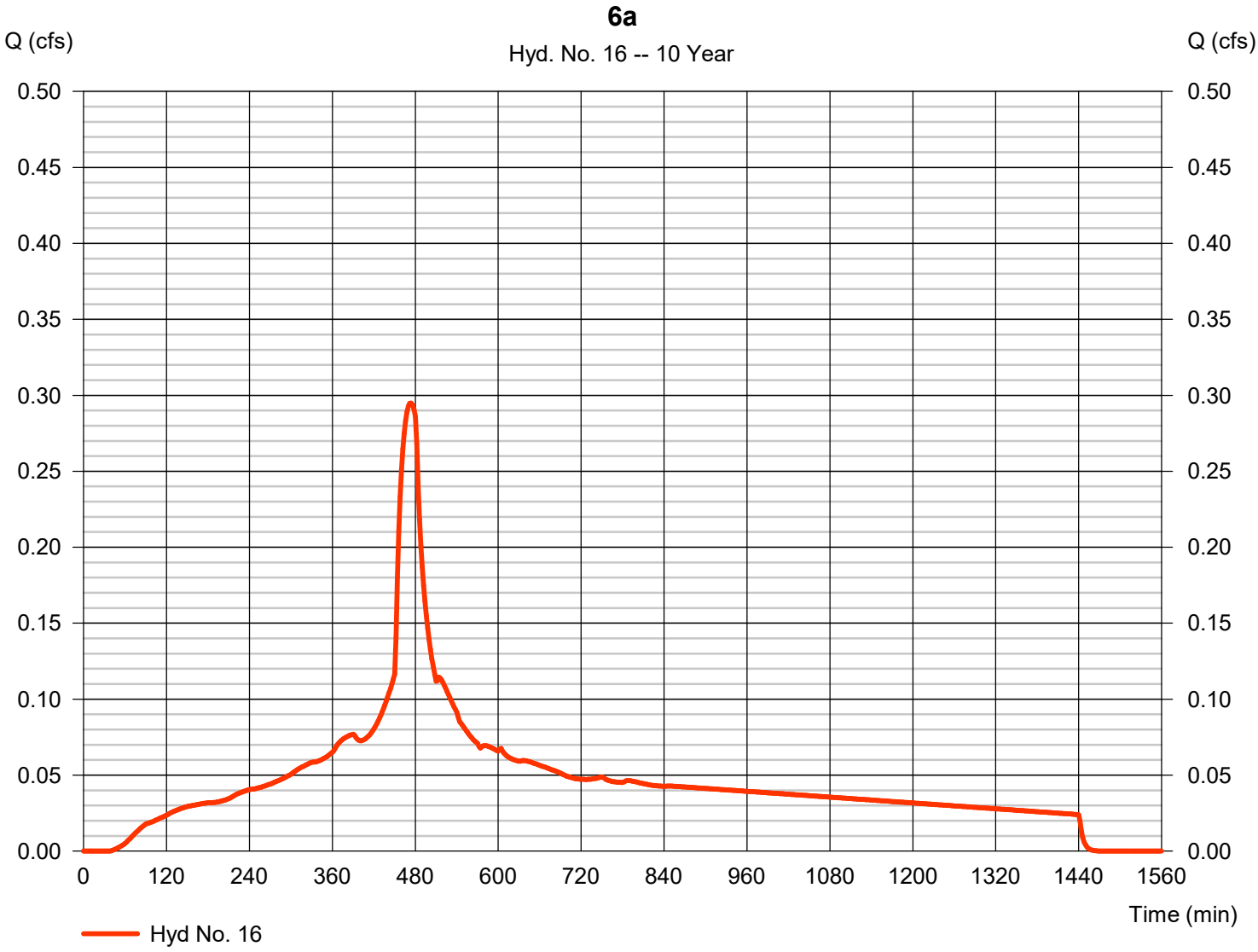


Hydrograph Report

Hyd. No. 16

6a

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.295 cfs
Storm frequency	= 10 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 4,269 cuft
Drainage area	= 0.360 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

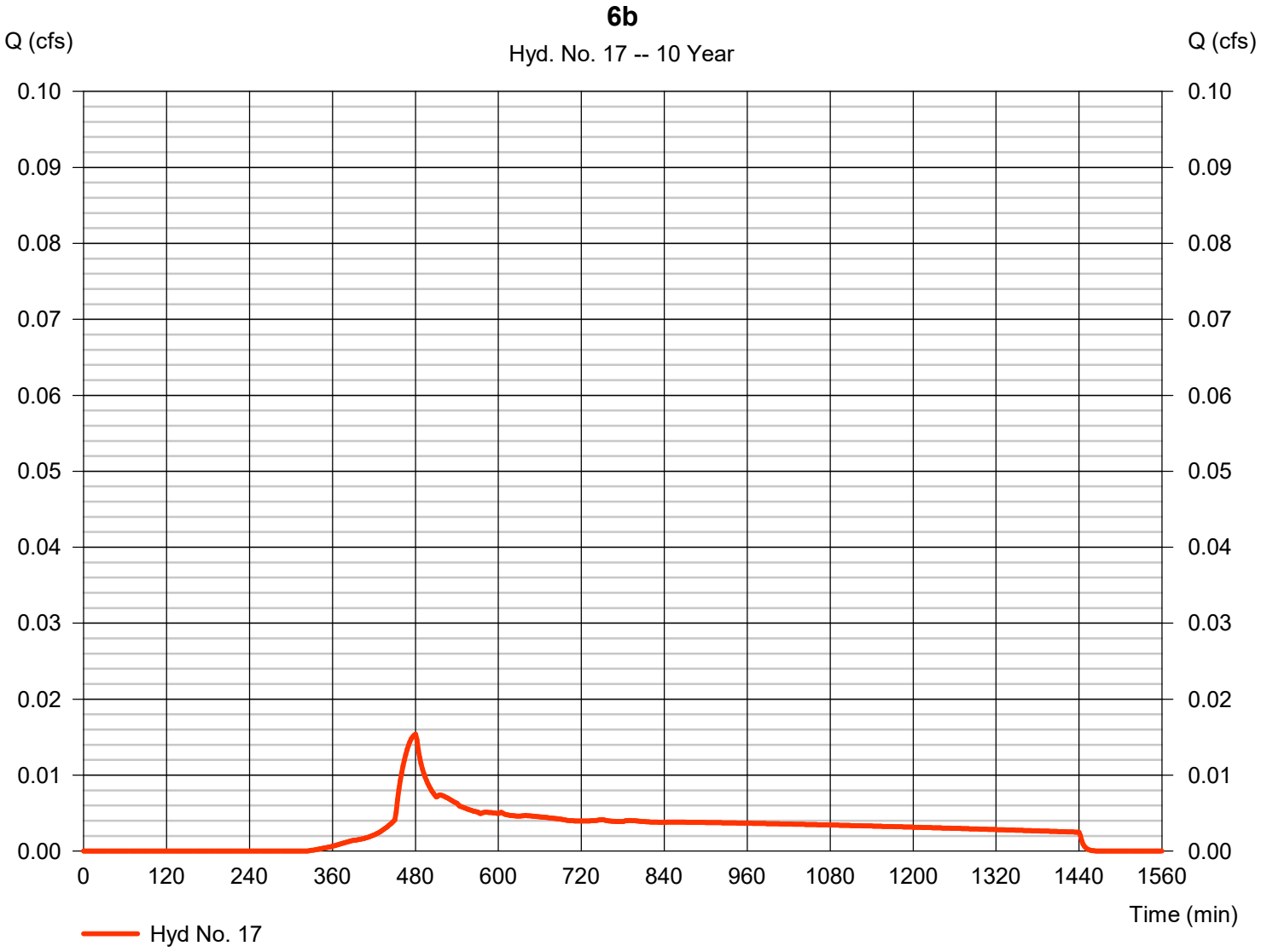


Hydrograph Report

Hyd. No. 17

6b

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.015 cfs
Storm frequency	= 10 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 260 cuft
Drainage area	= 0.050 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

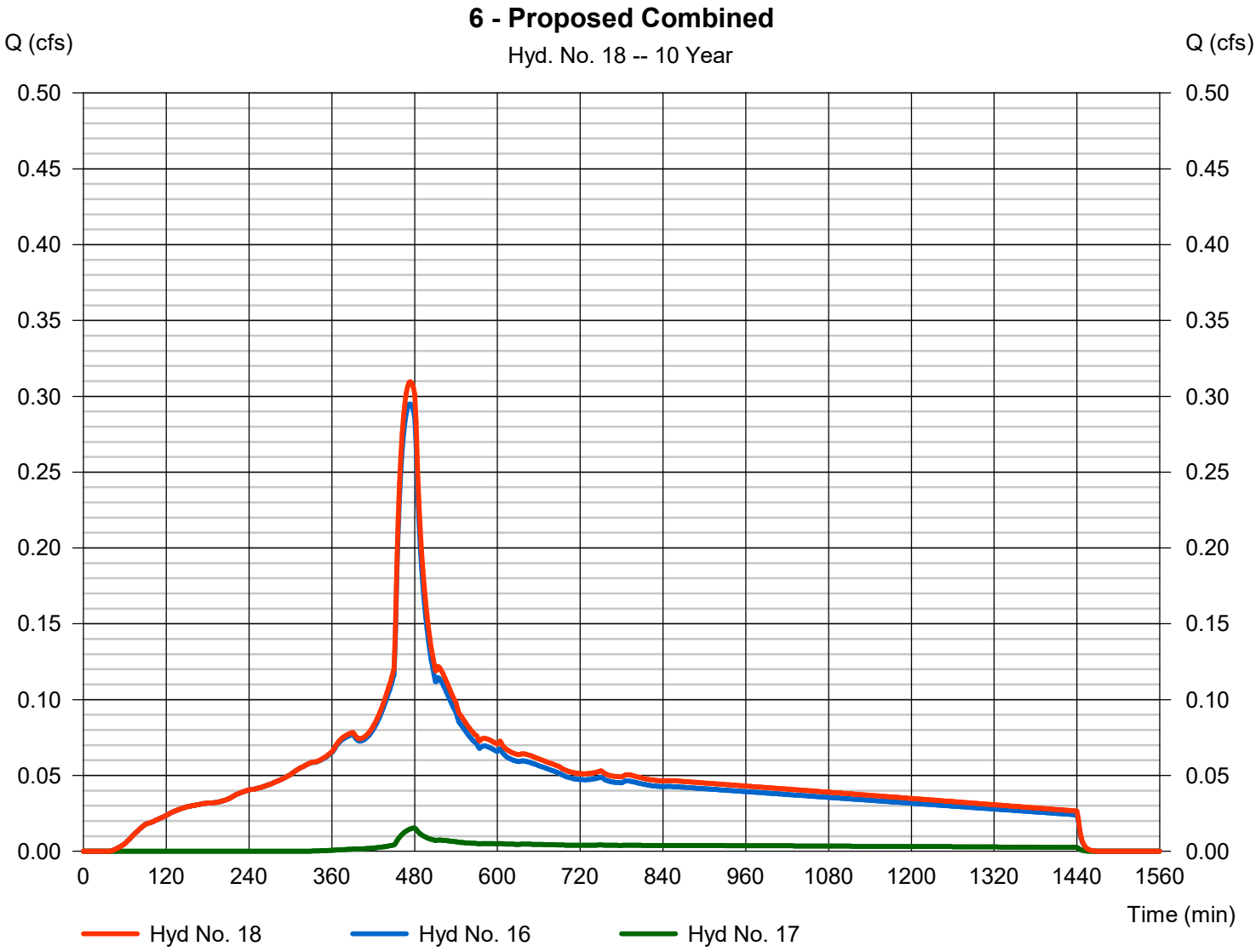


Hydrograph Report

Hyd. No. 18

6 - Proposed Combined

Hydrograph type	=	Combine	Peak discharge	=	0.310 cfs
Storm frequency	=	10 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	4,528 cuft
Inflow hyds.	=	16, 17	Contrib. drain. area	=	0.410 ac

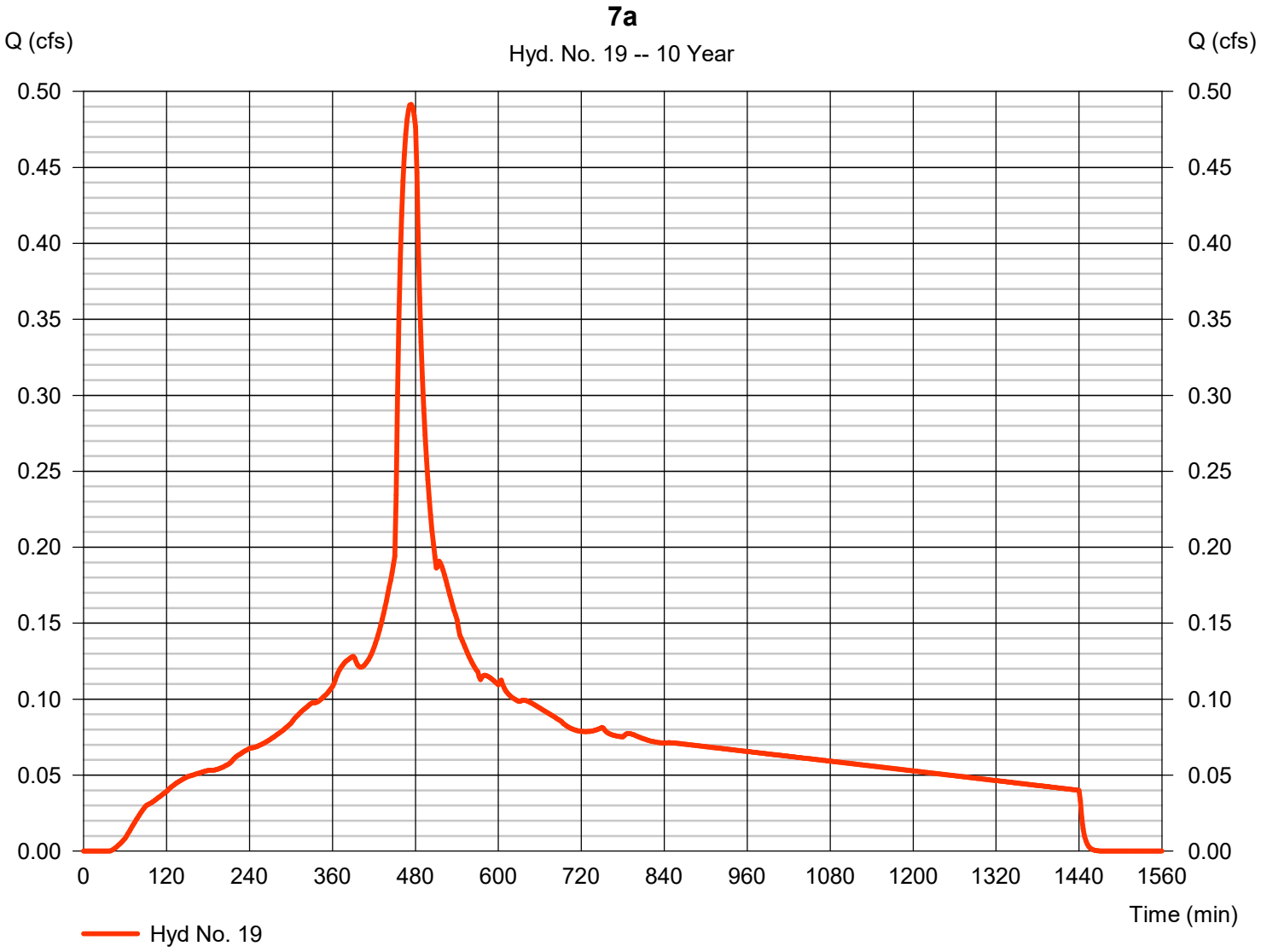


Hydrograph Report

Hyd. No. 19

7a

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.492 cfs
Storm frequency	= 10 yrs	Time to peak	= 474 min
Time interval	= 2 min	Hyd. volume	= 7,114 cuft
Drainage area	= 0.600 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

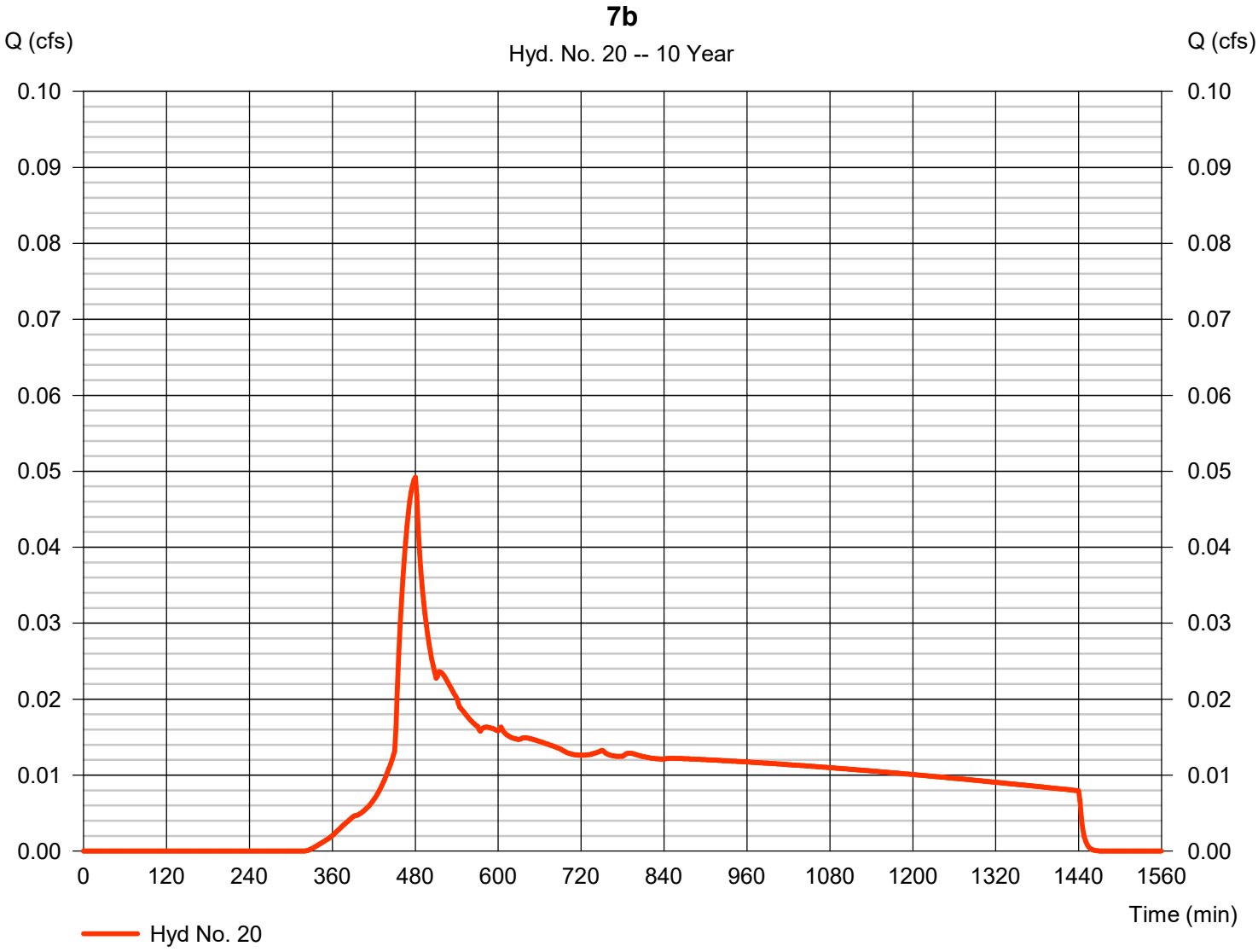


Hydrograph Report

Hyd. No. 20

7b

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.049 cfs
Storm frequency	= 10 yrs	Time to peak	= 480 min
Time interval	= 2 min	Hyd. volume	= 831 cuft
Drainage area	= 0.160 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

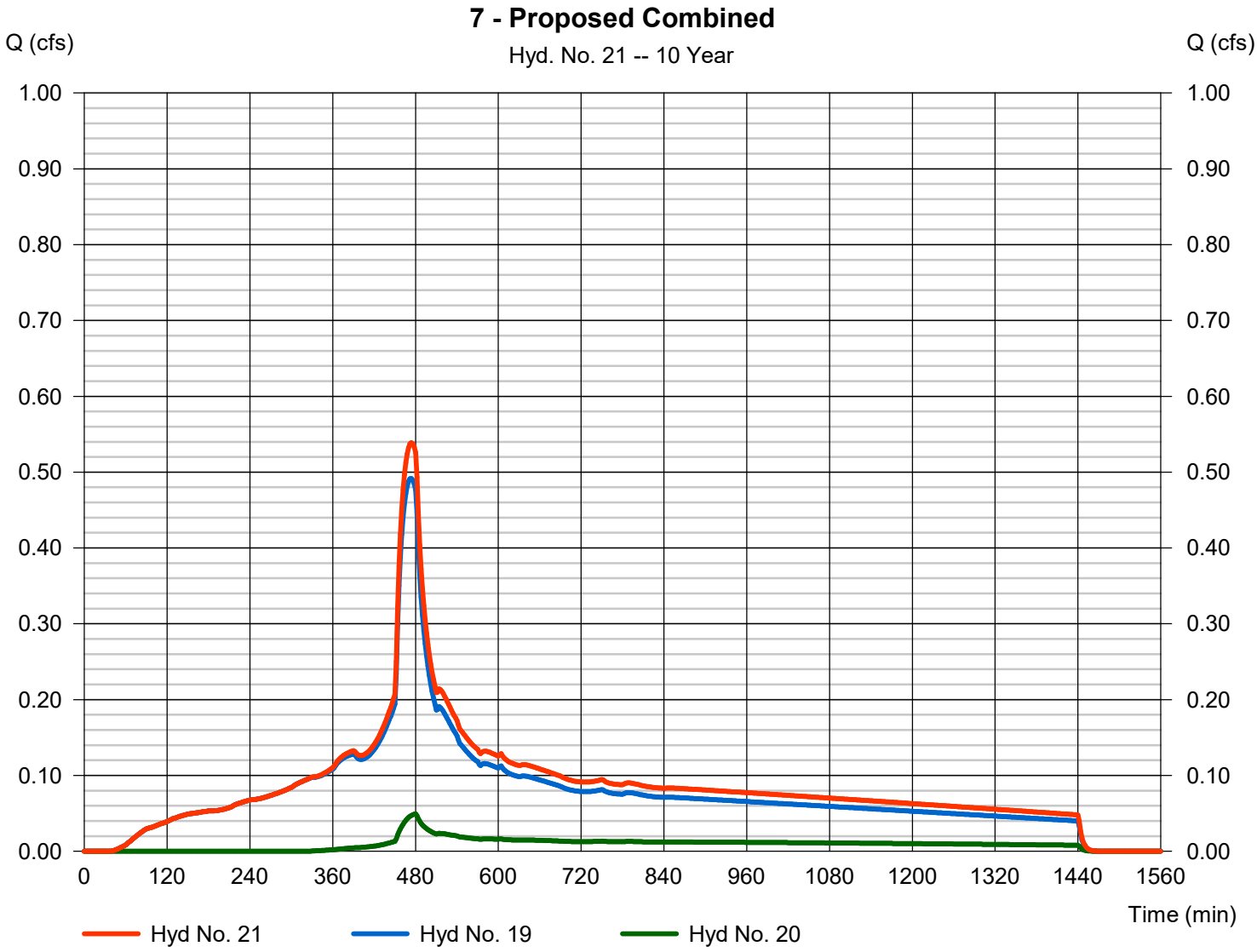


Hydrograph Report

Hyd. No. 21

7 - Proposed Combined

Hydrograph type	=	Combine	Peak discharge	=	0.539 cfs
Storm frequency	=	10 yrs	Time to peak	=	474 min
Time interval	=	2 min	Hyd. volume	=	7,945 cuft
Inflow hyds.	=	19, 20	Contrib. drain. area	=	0.760 ac



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.2000	0.1000	0.0000	--------
2	71.8477	13.3000	0.8718	--------
3	0.0000	0.0000	0.0000	--------
5	75.7517	14.2000	0.8271	--------
10	86.7192	15.3000	0.8244	--------
25	103.3028	16.6000	0.8227	--------
50	116.5747	17.3000	0.8234	--------
100	124.5731	17.6000	0.8144	--------

File name: WQ Rational.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
2	5.70	4.62	3.90	3.38	2.99	2.69	2.45	2.24	2.08	1.93	1.81	1.70
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.58	5.43	4.65	4.08	3.64	3.30	3.02	2.79	2.59	2.42	2.28	2.15
10	7.25	6.05	5.21	4.59	4.12	3.74	3.43	3.17	2.95	2.77	2.60	2.46
25	8.25	6.95	6.03	5.34	4.81	4.38	4.03	3.73	3.48	3.26	3.08	2.91
50	9.05	7.66	6.67	5.92	5.34	4.87	4.48	4.16	3.88	3.64	3.43	3.25
100	9.83	8.35	7.30	6.49	5.87	5.36	4.94	4.59	4.29	4.03	3.80	3.60

Tc = time in minutes. Values may exceed 60.

ortland\LRS (LRS Architects)\LRS 20 (OC Entertainment)\LRS20-DOCS\Reports\Stormwater\CALCS\OC PRECIP.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.83	2.80	1.00	3.50	3.50	4.40	0.00	6.48
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Abernethy Creek Tributary

Segment

Natural Channels

CIVIL TOOLS PRO
English Units
03-05-2021 11:10:41

Data Entered

Flow Rate	=	195.21 cfs
Channel Slope	=	0.0050 V:H

Distance (ft)	Elevation (ft)	Manning's N
0.00	46.03	0.013
16.80	35.00	0.240
59.80	32.00	0.240
78.50	32.00	0.240
150.00	60.00	0.013

Results

Flow Depth	=	4.08 ft
Flow Rate	=	195.21 cfs
Channel Slope	=	0.0050 V:H
Wetted Area	=	209.62 sq ft
Wetted Perimeter	=	74.98 ft
Flow Velocity	=	0.93 ft/s
Froude's Number	=	0.10
Flow Regime	=	sub-critical flow

APPENDIX E – OPERATIONS AND MAINTENANCE

Stormwater Planters
Operations & Maintenance Plan

What to Look For	What to Do
Structural Components, including inlets and outlets/overflows, shall freely convey stormwater.	
Clogged inlets or outlets	-Remove sediment and debris from catch basins, trench drains and curb inlets and pipes to maintain at least 50% conveyance capacity at all times.
Cracked Drain Pipes	-Repair/seal cracks. Replace when repair is insufficient.
Check Dams	-Maintain 4 to 10 inch deep rock check dams at design intervals.
Vegetation	
Dead or strained vegetation	-Replant per original planting plan, or substitute from Appendix A. -Irrigate as needed. Mulch banks annually. DO NOT apply fertilizers, herbicides, or pesticides.
Tall Grass and Vegetation	-Cut back grass and prune overgrowth 1-2 times per year. Remove cuttings.
Weeds	-Manually remove weeds. Remove all plant debris.
Growing/Filter Medium, including soil and gravels, shall sustain healthy plant cover and infiltrate within 72 hours.	
Gullies	-Fill, lightly compact, and plant vegetation to disperse flow.
Erosion	-Replace splash blocks or inlet gravel/rock.
Slope Slippage	-Stabilize 3:1 slopes/banks with plantings from Appendix A.
Ponding	-Rake, till, or amend to restore infiltration rate.

Annual Maintenance Schedule:

Summer. Make any structural repairs. Improve filter medium as needed. Clear drain. Irrigate as needed.
Fall. Replant exposed soil and replace dead plants. Remove sediment and plant debris.
Winter. Monitor infiltration/flow-through rates. Clear inlets and outlets/overflows to maintain conveyance.
Spring. Remove sediment and plant debris. Replant exposed soil and replace dead plants. Mulch.
All seasons. Weed as necessary. Clean scuppers or curb inlets as needed.
Maintenance Records: Record date, description, and contractor (if applicable) for all structural repairs, landscape maintenance, and facility cleanout activities. Keep work orders and invoices on file and make available upon request of the inspector.
Access: Maintain ingress/egress to design standards.
Infiltration/Flow Control: All facilities shall drain within 72 hours. Record time/date, weather, and site conditions when ponding occurs.
Pollution Prevention: All sites shall implement best management practices to prevent hazardous or solid wastes or excessive oil and sediment from contaminating stormwater. Contact emergency response agencies for immediate assistance responding to spills. Record time/date, weather, and site conditions if site activities contaminate stormwater.
Vectors (Mosquitoes & Rodents): Stormwater facilities shall not harbor mosquito larvae or rats that pose a threat to public health or that undermine the facility structure. Monitor standing water for small wiggling sticks perpendicular to the water's surface. Note holes/burrows in and around facilities. Call Clackamas County Vector Control for immediate assistance to eradicate vectors. Record time/date, weather, and site conditions when vector activity observed.

Rain Gardens
Operations & Maintenance Plan

What to Look For	What to Do
Structural Components, including inlets and outlets/overflows, shall freely convey stormwater.	
Clogged inlets or outlets	-Remove sediment and debris from catch basins, trench drains and curb inlets and pipes to maintain at least 50% conveyance capacity at all times.
Cracked Drain Pipes	-Repair/seal cracks. Replace when repair is insufficient.
Check Dams	-Maintain 4 to 10 inch deep rock check dams at design intervals.
Vegetation	
Dead or strained vegetation	-Replant per original planting plan, or substitute from Appendix A. -Irrigate as needed. Mulch banks annually. DO NOT apply fertilizers, herbicides, or pesticides.
Tall Grass and Vegetation	-Cut back grass and prune overgrowth 1-2 times per year. Remove cuttings.
Weeds	-Manually remove weeds. Remove all plant debris.
Growing/Filter Medium, including soil and gravels, shall sustain healthy plant cover and infiltrate within 72 hours.	
Gullies	-Fill, lightly compact, and plant vegetation to disperse flow.
Erosion	-Replace splash blocks or inlet gravel/rock.
Slope Slippage	-Stabilize 3:1 slopes/banks with plantings from Appendix A.
Ponding	-Rake, till, or amend to restore infiltration rate.

Annual Maintenance Schedule:

Summer. Make any structural repairs. Improve filter medium as needed. Clear drain. Irrigate as needed.
Fall. Replant exposed soil and replace dead plants. Remove sediment and plant debris.
Winter. Monitor infiltration/flow-through rates. Clear inlets and outlets/overflows to maintain conveyance.
Spring. Remove sediment and plant debris. Replant exposed soil and replace dead plants. Mulch.
All seasons. Weed as necessary. Clean scuppers or curb cuts as needed.
Maintenance Records: Record date, description, and contractor (if applicable) for all structural repairs, landscape maintenance, and facility cleanout activities. Keep work orders and invoices on file and make available upon request of the inspector.
Access: Maintain ingress/egress to design standards.
Infiltration/Flow Control: All facilities shall drain within 72 hours. Record time/date, weather, and site conditions when ponding occurs.
Pollution Prevention: All sites shall implement best management practices to prevent hazardous or solid wastes or excessive oil and sediment from contaminating stormwater. Contact emergency response agencies for immediate assistance responding to spills. Record time/date, weather, and site conditions if site activities contaminate stormwater.
Vectors (Mosquitoes & Rodents): Stormwater facilities shall not harbor mosquito larvae or rats that pose a threat to public health or that undermine the facility structure. Monitor standing water for small wiggling sticks perpendicular to the water's surface. Note holes/burrows in and around facilities. Call Clackamas County Vector Control for immediate assistance to eradicate vectors. Record time/date, weather, and site conditions when vector activity observed.

Vegetated Swales
Operations & Maintenance Plan

What to Look For	What to Do
Structural Components, including inlets and outlets/overflows, shall freely convey stormwater.	
Clogged inlets or outlets	-Remove sediment and debris from catch basins, trench drains, curb inlets and pipes to maintain at least 50% conveyance capacity at all times.
Cracked Drain Pipes	-Replace/seal cracks. Replace when repair is insufficient.
Check Dams	-Maintain 4 - 10 inch deep rock check dams at design intervals.
Vegetation	
Dead or strained vegetation	-Replant per original planting plan, or substitute from Appendix A. -Irrigate as needed. Mulch banks annually. DO NOT apply fertilizers, herbicides, or pesticides.
Tall Grass and Vegetation	-Cut back to 4-6 inches, 1-2 times per year. Remove cuttings.
Weeds	-Manually remove weeds. Remove all plant debris.
Growing/Filter Medium, including soil and gravels, shall sustain healthy plant cover and infiltrate within 72 hours.	
Gullies	-Fill, lightly compact, and plant vegetation to disperse flow.
Erosion	-Restore or create outfalls, check dams, or splash blocks where necessary.
Slope Slippage	-Stabilize slope.
Ponding	-Rake, till, or amend to restore infiltration rate.

Annual Maintenance Schedule:

Summer. Make any structural repairs. Improve filter medium as needed. Clear drain. Irrigate as needed.
Fall. Replant exposed soil and replace dead plants. Remove sediment and plant debris.
Winter. Monitor infiltration/flow-through rates. Clear inlets and outlets/overflows to maintain conveyance.
Spring. Remove sediment and plant debris. Replant exposed soil and replace dead plants. Mulch.
All seasons. Weed as necessary. Clean scuppers or curb cuts as needed.
Maintenance Records: Record date, description, and contractor (if applicable) for all structural repairs, landscape maintenance, and facility cleanout activities. Keep work orders and invoices on file and make available upon request of the inspector.
Access: Maintain ingress/egress to design standards.
Infiltration/Flow Control: All facilities shall drain within 72 hours. Record time/date, weather, and site conditions when ponding occurs.
Pollution Prevention: All sites shall implement best management practices to prevent hazardous or solid wastes or excessive oil and sediment from contaminating stormwater. Contact emergency response agencies for immediate assistance responding to spills. Record time/date, weather, and site conditions if site activities contaminate stormwater.
Vectors (Mosquitoes & Rodents): Stormwater facilities shall not harbor mosquito larvae or rats that pose a threat to public health or that undermine the facility structure. Monitor standing water for small wiggling sticks perpendicular to the water's surface. Note holes/burrows in and around facilities. Call Clackamas County Vector Control for immediate assistance to eradicate vectors. Record time/date, weather, and site conditions when vector activity observed.

Underground Infiltration System
Operations & Maintenance Plan

What to Look For	What to Do
Structural Components, include pipes, manholes, rock/sand reservoirs, storm chambers and silt traps.	
Clogged inlets or outlets	-Clean gutters, rain drains, and silt traps twice a year. -Clear piping to facility when blockage occurs.
Cracked Drain Pipes	-Repair/seal cracks. Replace when repair is insufficient.
Catch Basin	-Remove accumulated sediment annually.
Vegetation includes surface cover and nearby plantings.	
Large Shrubs and Trees	-Prevent large root systems from damaging subsurface structural components.
Filter Layer, includes rock/gravel bed.	
Ponding Water	-Clear piping through facility when ponding occurs. -Replace rock/sand reservoirs as necessary. -Tilling of subgrade below reservoir may be necessary (for trenches) prior to backfill. -May require decommissioning and replacement (for infiltrators or trenches).

Annual Maintenance Schedule:

Summer. Make necessary structural repairs. Clean silt traps.
Fall. Clean gutters and rain drains.
Winter. Monitor infiltration rates.
Spring. Clean gutters and rain drains.
Maintenance Records: Record date, description, and contractor (if applicable) for all structural repairs, landscape maintenance, and facility cleanout activities. Keep work orders and invoices on file and make available upon request of the inspector.
Access: Maintain ingress/egress to design standards.
Infiltration/Flow Control: All facilities shall drain within 72 hours. Record time/date, weather, and site conditions when ponding occurs.
Pollution Prevention: All sites shall implement best management practices to prevent hazardous or solid wastes or excessive oil and sediment from contaminating stormwater. Contact emergency response agencies for immediate assistance responding to spills. Record time/date, weather, and site conditions if site activities contaminate stormwater.
Vectors (Mosquitoes & Rodents): Stormwater facilities shall not harbor mosquito larvae or rats that pose a threat to public health or that undermine the facility structure. Monitor standing water for small wiggling sticks perpendicular to the water's surface. Note holes/burrows in and around facilities. Call Clackamas County Vector Control for immediate assistance to eradicate vectors. Record time/date, weather, and site conditions when vector activity observed.

BAYFILTER™ INSPECTION AND MAINTENANCE MANUAL

The BayFilter system requires periodic maintenance to continue operating at the design efficiency. The maintenance process is comprised of the removal and replacement of each BayFilter cartridge, vertical drain down module; and the cleaning of the vault or manhole with a vacuum truck.

The maintenance cycle of the BayFilter system will be driven mostly by the actual solids load on the filter. The system should be periodically monitored to be certain it is operating correctly. Since stormwater solids loads can be variable, it is possible that the maintenance cycle could be more or less than the projected duration.

BayFilter systems in volume-based applications are designed to treat the WQv in 24 to 48 hours initially. Late in the operational cycle of the BayFilter, the flow rate will diminish as a result of occlusion. When the drain down exceeds the regulated standard, maintenance should be performed.

When a BayFilter system is first installed, it is recommended that it be inspected every six (6) months. When the filter system exhibits flows below design levels the system should be maintained. Filter cartridge replacement should also be considered when sediment levels are at or above the level of the manifold system. Please contact the BaySaver Technologies Engineering Department for maintenance cycle estimations or assistance at **1.800.229.7283**.



BayFilter System Cleanout



Vactor Truck Maintenance



Jet Vactoring Through Access Hatch

Maintenance Procedures

1. Contact BaySaver Technologies for replacement filter cartridge pricing and availability at 1-800-229-7283.
2. Remove the manhole covers and open all access hatches.
3. Before entering the system make sure the air is safe per OSHA Standards or use a breathing apparatus. Use low O_2, high CO, or other applicable warning devices per regulatory requirements.
4. Using a vacuum truck remove any liquid and sediments that can be removed prior to entry.
5. Remove the hold down bars. Using a small lift or the boom of the vacuum truck, remove used cartridges by lifting them out.
6. Any cartridges that cannot be readily lifted can be easily slid along the floor or moved using the trolley system (if installed) to a location they can be lifted via a boom lift.
7. When all the cartridges have been removed, it is now practical to remove the balance of the solids and water. Loosen the stainless clamps on the Fernco couplings for the manifold and remove the drain pipes as well. Carefully cap the manifold and the Ferncos and rinse the floor, washing away the balance of any remaining collected solids.
8. Clean the manifold pipes, inspect, and reinstall.
9. Install the exchange cartridges, reinstall the hold down bars and close all covers.
10. The used cartridges may be sent back to BaySaver Technologies for recycling.

For more information please see the BaySaver website at www.baysaver.com or contact 1-800-229-7283.



Manifold Tee View of a Cleaned System



Cartridge Hoist Point

Advanced Drainage Systems, Inc.
4640 Trueman Blvd., Hilliard, OH 43026
1-800-821-6710 www.ads-pipe.c

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APPENDIX F – PRE-DEVELOPMENT SITE SURVEY

APPENDIX G – CONCEPT UTILITY PLAN

APPENDIX H – SITE SPECIFIC GEOTECHNICAL REPORT

SHEET LAYOUT

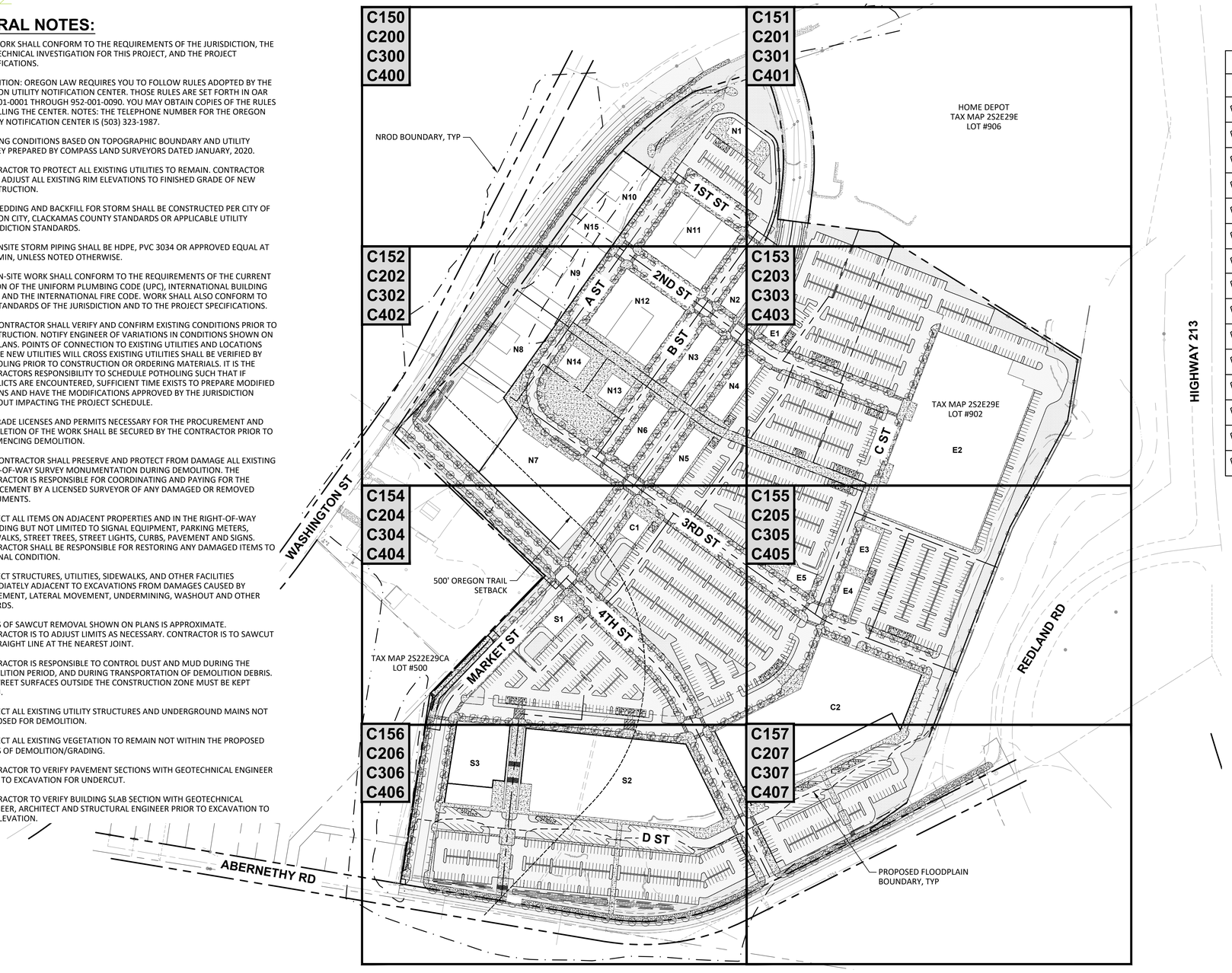
C102

GENERAL NOTES:

1. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE JURISDICTION, THE GEOTECHNICAL INVESTIGATION FOR THIS PROJECT, AND THE PROJECT SPECIFICATIONS.
2. ATTENTION: OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-0001 THROUGH 952-001-0090. YOU MAY OBTAIN COPIES OF THE RULES BY CALLING THE CENTER. NOTES: THE TELEPHONE NUMBER FOR THE OREGON UTILITY NOTIFICATION CENTER IS (503) 323-1987.
3. EXISTING CONDITIONS BASED ON TOPOGRAPHIC BOUNDARY AND UTILITY SURVEY PREPARED BY COMPASS LAND SURVEYORS DATED JANUARY, 2020.
4. CONTRACTOR TO PROTECT ALL EXISTING UTILITIES TO REMAIN. CONTRACTOR SHALL ADJUST ALL EXISTING RIM ELEVATIONS TO FINISHED GRADE OF NEW CONSTRUCTION.
5. PIPE BEDDING AND BACKFILL FOR STORM SHALL BE CONSTRUCTED PER CITY OF OREGON CITY, CLACKAMAS COUNTY STANDARDS OR APPLICABLE UTILITY JURISIDICTION STANDARDS.
6. ALL ONSITE STORM PIPING SHALL BE HDPE, PVC 3034 OR APPROVED EQUAL AT 0.5% MIN, UNLESS NOTED OTHERWISE.
7. ALL ON-SITE WORK SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT EDITION OF THE UNIFORM PLUMBING CODE (UPC), INTERNATIONAL BUILDING CODE, AND THE INTERNATIONAL FIRE CODE. WORK SHALL ALSO CONFORM TO THE STANDARDS OF THE JURISDICTION AND TO THE PROJECT SPECIFICATIONS.
8. THE CONTRACTOR SHALL VERIFY AND CONFIRM EXISTING CONDITIONS PRIOR TO CONSTRUCTION. NOTIFY ENGINEER OF VARIATIONS IN CONDITIONS SHOWN ON THE PLANS. POINTS OF CONNECTION TO EXISTING UTILITIES AND LOCATIONS WHERE NEW UTILITIES WILL CROSS EXISTING UTILITIES SHALL BE VERIFIED BY POTHOLING PRIOR TO CONSTRUCTION OR ORDERING MATERIALS. IT IS THE CONTRACTORS RESPONSIBILITY TO SCHEDULE POTHOLING SUCH THAT IF CONFLICTS ARE ENCOUNTERED, SUFFICIENT TIME EXISTS TO PREPARE MODIFIED DESIGNS AND HAVE THE MODIFICATIONS APPROVED BY THE JURISDICTION WITHOUT IMPACTING THE PROJECT SCHEDULE.
9. ALL TRADE LICENSES AND PERMITS NECESSARY FOR THE PROCUREMENT AND COMPLETION OF THE WORK SHALL BE SECURED BY THE CONTRACTOR PRIOR TO COMMENCING DEMOLITION.
10. THE CONTRACTOR SHALL PRESERVE AND PROTECT FROM DAMAGE ALL EXISTING RIGHT-OF-WAY SURVEY MONUMENTATION DURING DEMOLITION. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING AND PAYING FOR THE REPLACEMENT BY A LICENSED SURVEYOR OF ANY DAMAGED OR REMOVED MONUMENTS.
11. PROTECT ALL ITEMS ON ADJACENT PROPERTIES AND IN THE RIGHT-OF-WAY INCLUDING BUT NOT LIMITED TO SIGNAL EQUIPMENT, PARKING METERS, SIDEWALKS, STREET TREES, STREET LIGHTS, CURBS, PAVEMENT AND SIGNS. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING ANY DAMAGED ITEMS TO ORIGINAL CONDITION.
12. PROTECT STRUCTURES, UTILITIES, SIDEWALKS, AND OTHER FACILITIES IMMEDIATELY ADJACENT TO EXCAVATIONS FROM DAMAGES CAUSED BY SETTLEMENT, LATERAL MOVEMENT, UNDERMINING, WASHOUT AND OTHER HAZARDS.
13. LIMITS OF SAWCUT REMOVAL SHOWN ON PLANS IS APPROXIMATE. CONTRACTOR IS TO ADJUST LIMITS AS NECESSARY. CONTRACTOR IS TO SAWCUT AT STRAIGHT LINE AT THE NEAREST JOINT.

17 CONTRACTOR IS RESPONSIBLE TO CONTROL DUST AND MUD DURING THE DEMOLITION PERIOD, AND DURING TRANSPORTATION OF DEMOLITION DEBRIS. ALL STREET SURFACES OUTSIDE THE CONSTRUCTION ZONE MUST BE KEPT CLEAN.

18. PROTECT ALL EXISTING UTILITY STRUCTURES AND UNDERGROUND MAINS NOT PROPOSED FOR DEMOLITION.
19. PROTECT ALL EXISTING VEGETATION TO REMAIN NOT WITHIN THE PROPOSED LIMITS OF DEMOLITION/GRADING.
20. CONTRACTOR TO VERIFY PAVEMENT SECTIONS WITH GEOTECHNICAL ENGINEER PRIOR TO EXCAVATION FOR UNDERCUT.
21. CONTRACTOR TO VERIFY BUILDING SLAB SECTION WITH GEOTECHNICAL ENGINEER, ARCHITECT AND STRUCTURAL ENGINEER PRIOR TO EXCAVATION TO PAD ELEVATION.



EASEMENT TABLE				
NO.	PURPOSE	OWNER	REFERENCE	DEPOSITION
A	PUBLIC ACCESS AND UTILITY	CITY OF OREGON CITY		TO BE DEDICATED (NEW)
B	PUBLIC ACCESS	CITY OF OREGON CITY		TO BE DEDICATED (NEW)
C	PUBLIC UTILITY EASEMENT (PUE)	CITY OF OREGON CITY		TO BE DEDICATED (NEW)
8	SEWER AND WATER	CITY OF OREGON CITY	DOC. 68-016355	EXISTING (TO REMAIN)
9	LIMITED ACCESS PROVISION	CITY OF OREGON CITY	DOC. 69-004918	EXISTING (TO BE VACATED)
10	LIMITED ACCESS PROVISION	CITY OF OREGON CITY	DOC. 2001-063322	EXISTING (TO REMAIN)
11	10' WIDE COMM.	PAC NW BELL TELEPHONE	DOC. 74-007043	EXISTING (TO BE VACATED)
12	16' WIDE ELECTRICAL	PGE	DOC. 74-033236	EXISTING (TO REMAIN)
13	LIMITED ACCESS PROVISION	CLACKAMAS COUNTY	DOC. 84-004772	TO REMAIN (EXISTING)
14	DRAINAGE	STATE OF OREGON	DOC. 86-017577	TO REMAIN (EXISTING)
15	SANITARY SEWER	CITY OF OREGON CITY	DOC. 86-017652	TO REMAIN (EXISTING)
16	DRAINAGE	STATE OF OREGON	DOC. 86-038374	TO REMAIN (EXISTING)
18	COMMUNICATIONS	TCI CABLEVISION	DOC. 94-063875	TO REMAIN (EXISTING)
21	MAINTENANCE	STATE OF OREGON	DOC. 2002-049788	TO REMAIN (EXISTING)
22	6' WIDE ELECTRICAL	PGE	DOC. 2003-110133	EXISTING (TO BE VACATED)

LEGEND:

- NATURAL RESOURCE OVERLAY DISTRICT (NROD)
- FLOODPLAIN ELEVATION (50.7')
- 500' OREGON TRAIL SETBACK

0 75' 150' 300'

N

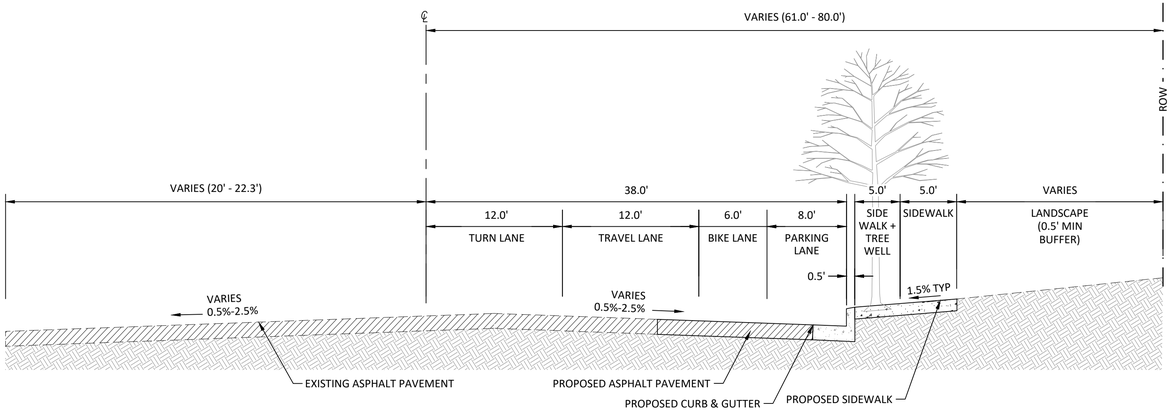
PLAN

Harper Houf Peterson Righellis Inc.
ENGINEERS/PLANNERS
LANDSCAPE ARCHITECTS/SURVEYORS
205 SE Spokane Street, Suite 200, Portland, OR 97202
phone: 503.221.1131 www.hhpr.com fax: 503.221.1171

SUMMIT DEVELOPMENT GROUP

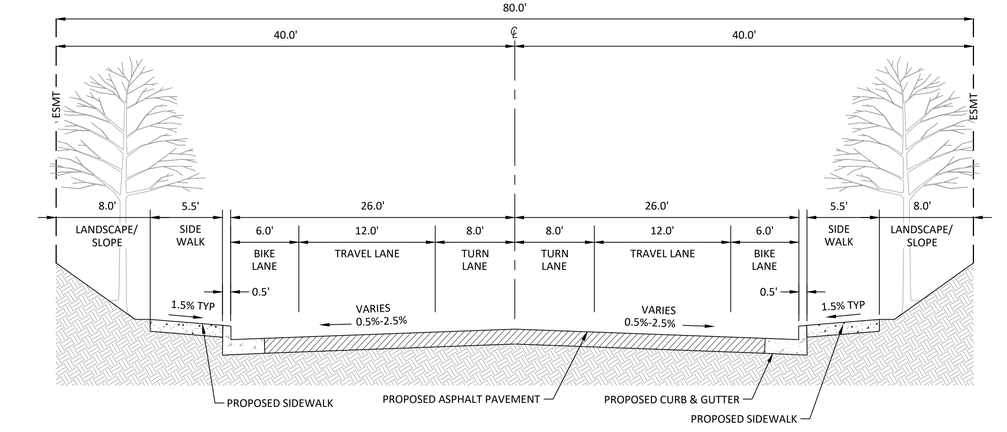
TYPICAL SECTIONS

C110



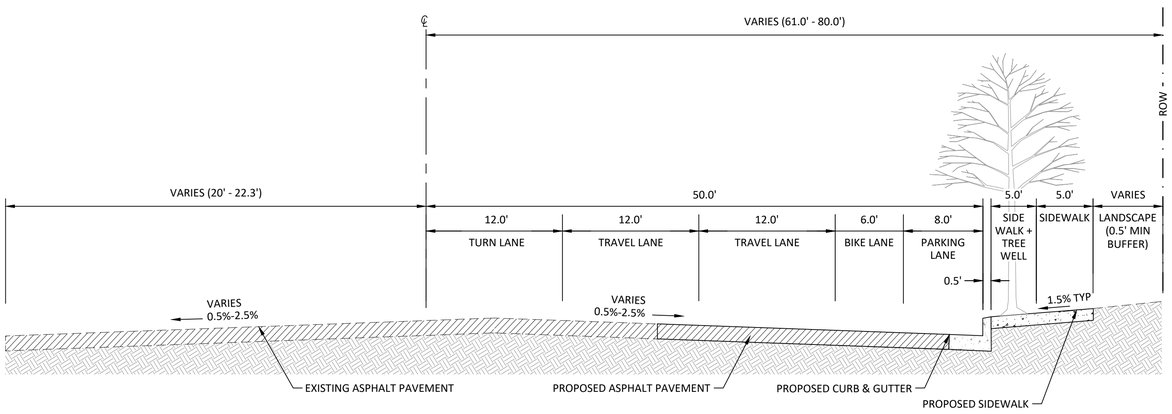
WASHINGTON STREET (HALF-STREET - 3 LANE)

N.T.S.



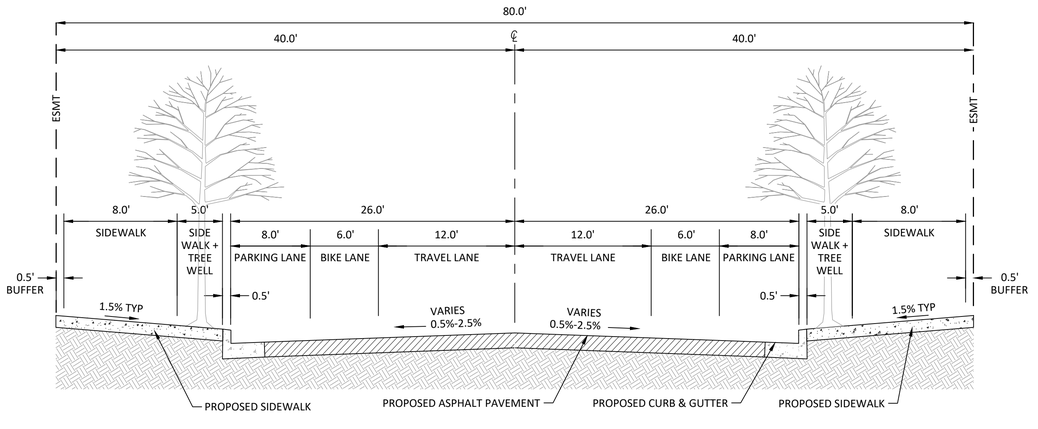
MARKET STREET (SECTION 1)

N.T.S.



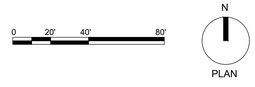
WASHINGTON STREET (HALF-STREET - 5 LANE)

N.T.S.



MARKET STREET (SECTION 2)

N.T.S.



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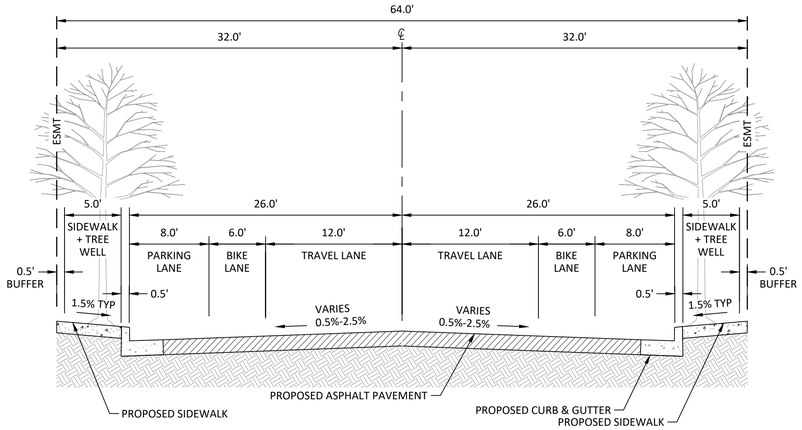
SUMMIT DEVELOPMENT GROUP

TYPICAL SECTIONS

C111



MARKET STREET (SECTION 3)

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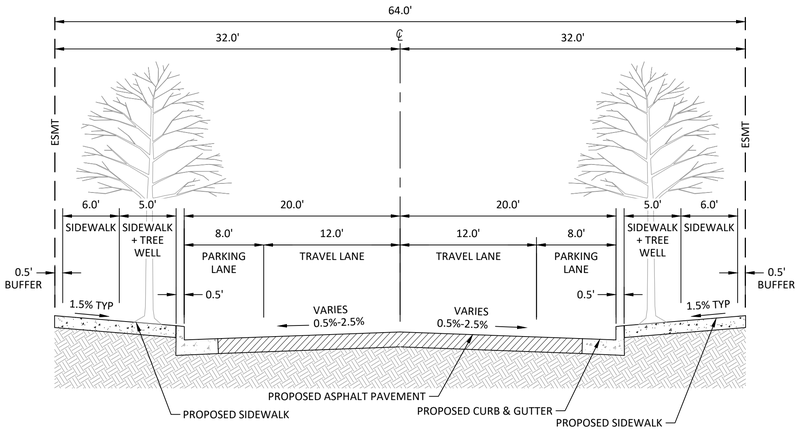

INTERNAL ROADS

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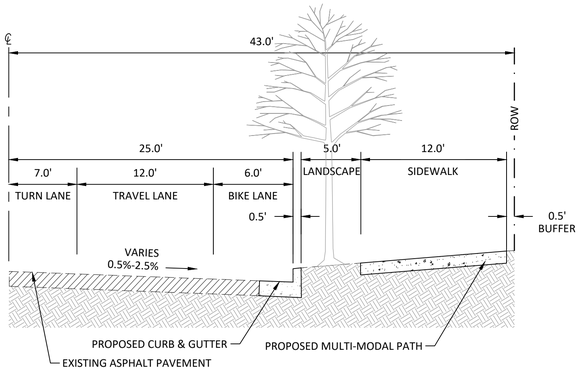
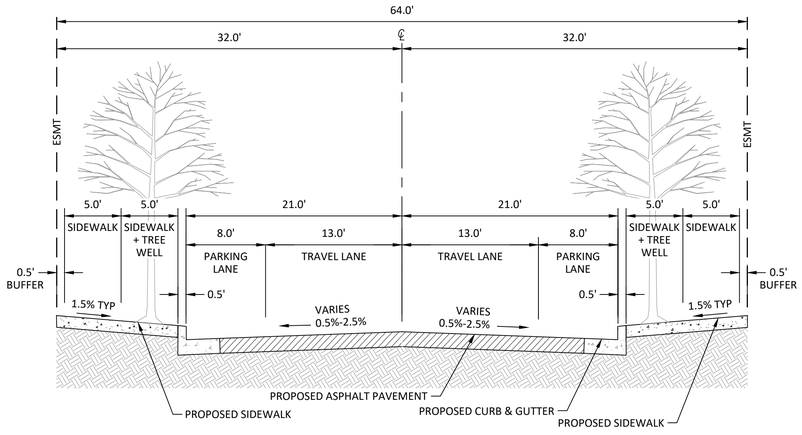


ABERNETHY ROAD (HALF-STREET)

N.T.S.



INTERNAL ROADS (W/ FIRE ACCESS)

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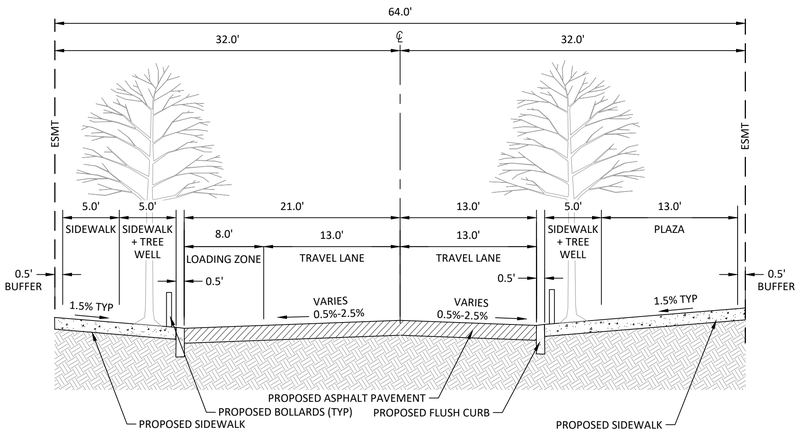
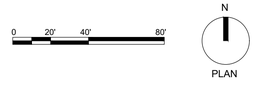


PLAZA FIRE ACCESS ROAD

N.T.S.



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SUMMIT DEVELOPMENT GROUP

EXISTING CONDITIONS PLAN

C150

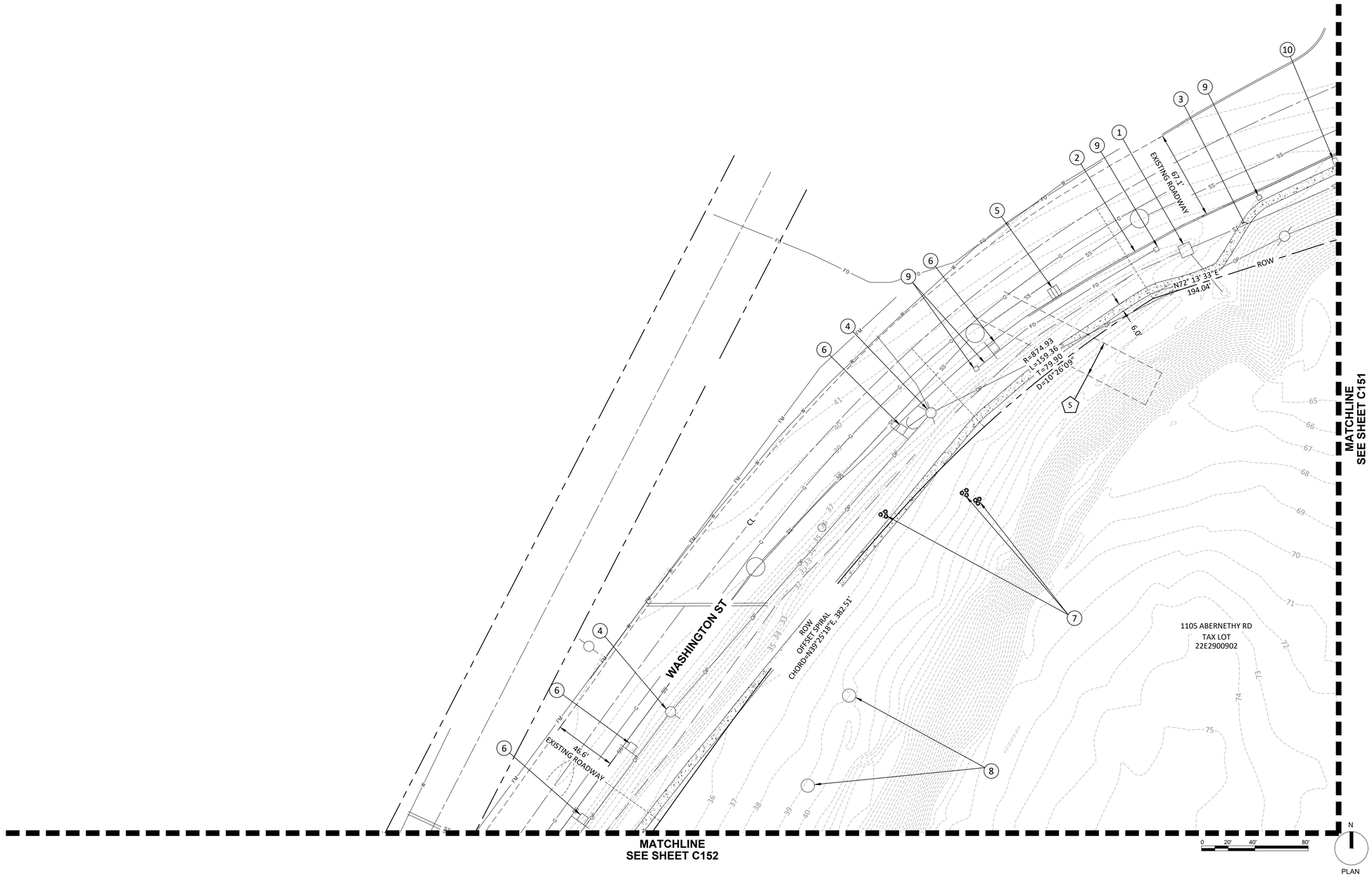
CONSTRUCTION NOTES:

1. EXISTING DITCH INLET TO BE REMOVED.
2. EXISTING CURB TO BE REMOVED. SEE SHEET SERIES C200 FOR LIMITS OF REMOVAL.
3. EXISTING SIDEWALK TO BE REMOVED. SEE SHEET SERIES C200 FOR LIMITS OF REMOVAL.
4. EXISTING POWER POLE TO BE RELOCATED.
5. EXISTING CATCH BASIN TO BE REMOVED.
6. EXISTING SIGN AND POST TO BE RELOCATED.
7. EXISTING METHANE GAS STANDPIPE AND BOLLARDS TO BE REMOVED.
8. EXISTING METHANE GAS MANHOLE TO BE REMOVED.
9. EXISTING FRANCHISE UTILITY TO BE RELOCATED. COORDIANTE WITH UTILITY.
10. EXISTING FRANCHISE UTILITY TO REMAIN. PROTECT IN PLACE.

LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- CENTERLINE
- DITCH
- CURB
- EDGE OF PAVEMENT
- FENCE LINE
- OP — OVERHEAD POWER LINE
- UGP — UNDERGROUND POWER LINE
- G — NATURAL GAS LINE
- ST — STORM SEWER LINE
- SS — SANITARY SEWER LINE
- W — WATER LINE
- PROPERTY BOUNDARY
- FOUND MONUMENT
- STORM MANHOLE
- CATCH BASIN
- CLEANOUT
- SANITARY MANHOLE
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- SIGN
- STREET LIGHT
- LB — LIGHT BOX
- JB — STORM JUNCTION BOX
- POWER POLE
- TB — TRAFFIC SIGNAL BOX
- MON. WELL — MONITORING WELL

SEE SHEET C102 FOR EASEMENT INFORMATION



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SUMMIT DEVELOPMENT GROUP

EXISTING CONDITIONS PLAN

C151

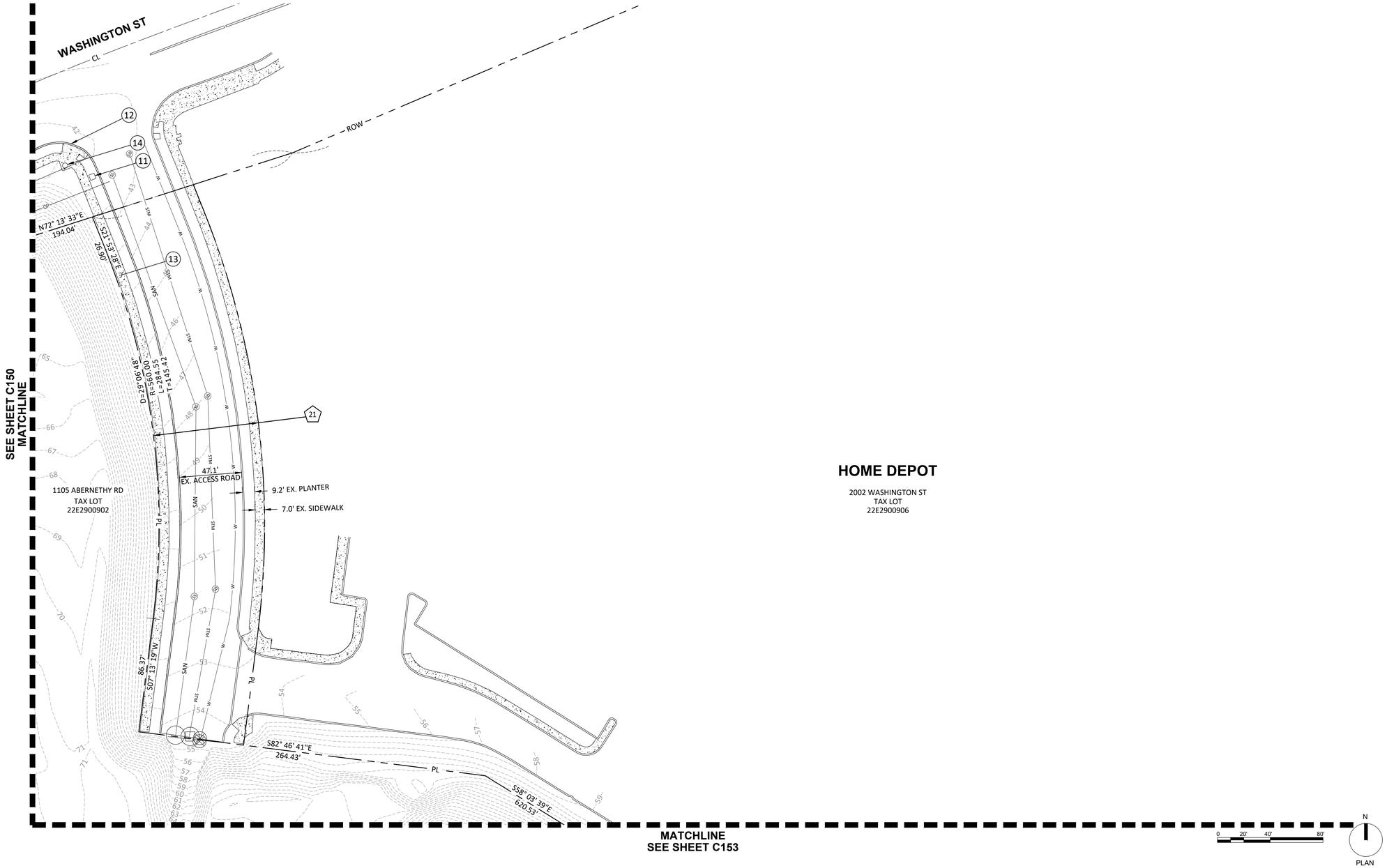
CONSTRUCTION NOTES:

11. EXISTING STREET LIGHT BOX AND POLE TO REMAIN. PROTECT IN PLACE.
12. EXISTING CURB TO REMAIN. PROTECT IN PLACE.
13. EXISTING SIDEWALK TO REMAIN. PROTECT IN PLACE.
14. EXISTING SIGNAL POLE TO REMAIN. PROTECT IN PLACE.

LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- CENTERLINE
- DITCH
- CURB
- EDGE OF PAVEMENT
- FENCE LINE
- OP — OVERHEAD POWER LINE
- UGP — UNDERGROUND POWER LINE
- G — NATURAL GAS LINE
- ST — STORM SEWER LINE
- SS — SANITARY SEWER LINE
- W — WATER LINE
- PROPERTY BOUNDARY
- FOUND MONUMENT
- STORM MANHOLE
- CATCH BASIN
- CLEANOUT
- SANITARY MANHOLE
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- SIGN
- STREET LIGHT
- LB — LIGHT BOX
- JB — STORM JUNCTION BOX
- POWER POLE
- TB — TRAFFIC SIGNAL BOX
- MON. WELL — MONITORING WELL

SEE SHEET C102 FOR EASEMENT INFORMATION



HOME DEPOT

2002 WASHINGTON ST
TAX LOT
22E2900906

0 20' 40' 80'

N

PLAN

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EXISTING CONDITIONS PLAN

C152

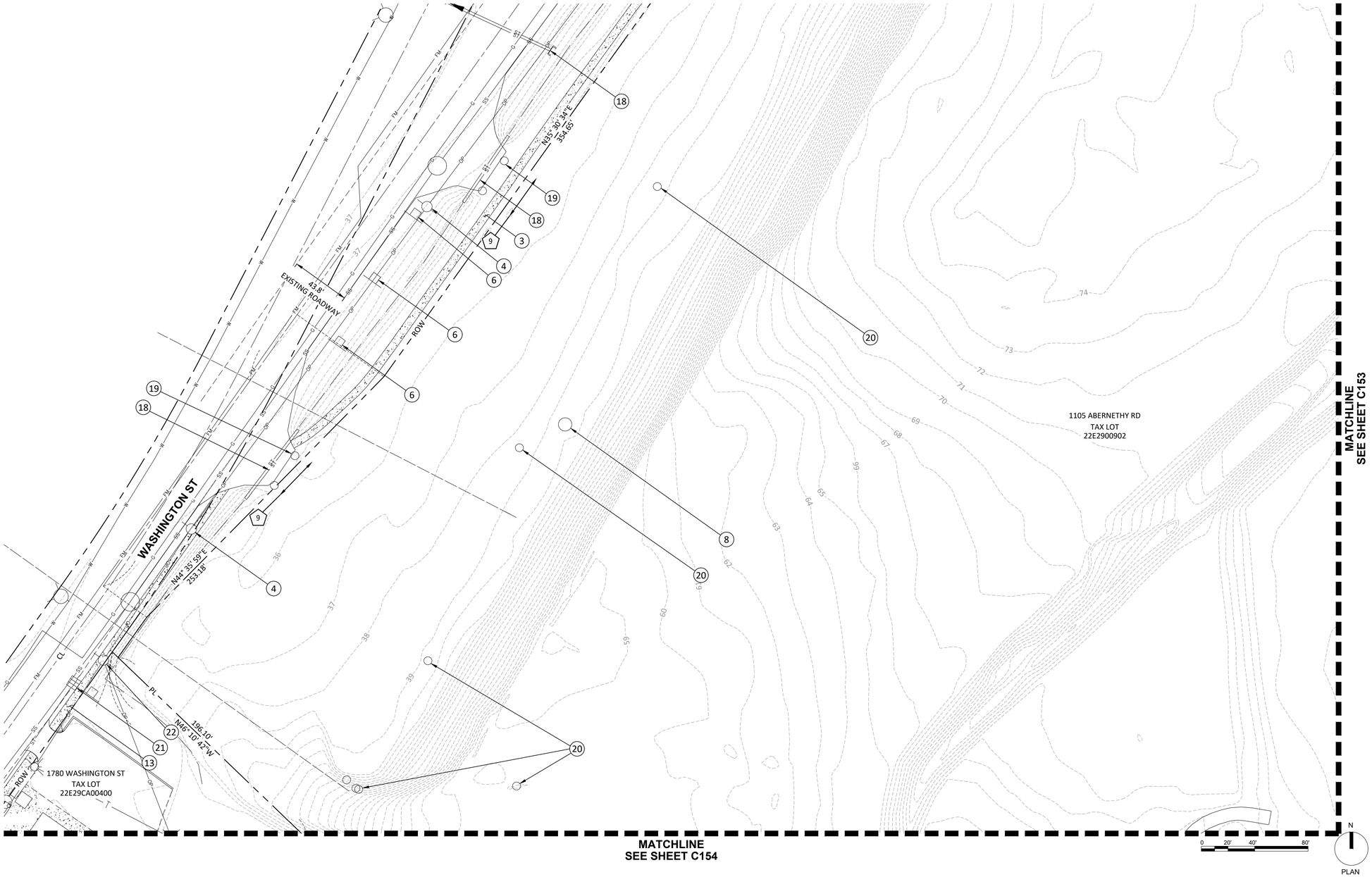
CONSTRUCTION NOTES:

3. EXISTING SIDEWALK TO BE REMOVED. SEE SHEET SERIES C200 FOR LIMITS OF REMOVAL.
4. EXISTING POWER POLE TO BE RELOCATED.
6. EXISTING SIGN AND POST TO BE RELOCATED.
8. EXISTING METHANE GAS MANHOLE TO BE REMOVED.
13. EXISTING SIDEWALK TO REMAIN. PROTECT IN PLACE.
18. EXISTING CULVERT AND HEADWALL TO BE REMOVED.
19. EXISTING FENCE AND GATE TO BE REMOVED.
20. EXISTING METHANE GAS RISER(S) TO BE REMOVED.
21. EXISTING CATCH BASIN TO REMAIN. PROTECT IN PLACE.
22. EXISTING POWER POLE TO REMAIN. PROTECT IN PLACE.

LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- CENTERLINE
- DITCH
- CURB
- EDGE OF PAVEMENT
- FENCE LINE
- OVERHEAD POWER LINE
- UNDERGROUND POWER LINE
- NATURAL GAS LINE
- STORM SEWER LINE
- SANITARY SEWER LINE
- WATER LINE
- PROPERTY BOUNDARY
- FOUND MONUMENT
- STORM MANHOLE
- CATCH BASIN
- CLEANOUT
- SANITARY MANHOLE
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- SIGN
- STREET LIGHT
- LB — LIGHT BOX
- JB — STORM JUNCTION BOX
- POWER POLE
- TB — TRAFFIC SIGNAL BOX
- MON. WELL — MONITORING WELL

SEE SHEET C102 FOR EASEMENT INFORMATION



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EXISTING CONDITIONS PLAN

C153

CONSTRUCTION NOTES:

15 EXISTING ARTIFICIAL TURF DRIVING RANGE TO BE REMOVED.

16 EXISTING POWER POLE TO BE REMOVED.

17 EXISTING LEACHATE FORCE MAIN TO REMAIN. ADJUST TO PROPOSED GRADES AS NECESSARY.

LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- CENTERLINE
- DITCH
- CURB
- EDGE OF PAVEMENT
- FENCE LINE
- OP — OVERHEAD POWER LINE
- UGP — UNDERGROUND POWER LINE
- G — NATURAL GAS LINE
- ST — STORM SEWER LINE
- SS — SANITARY SEWER LINE
- W — WATER LINE
- PROPERTY BOUNDARY
- FOUND MONUMENT
- STORM MANHOLE
- CATCH BASIN
- CLEANOUT
- SANITARY MANHOLE
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- SIGN
- STREET LIGHT
- LB — LIGHT BOX
- JB — STORM JUNCTION BOX
- POWER POLE
- TB — TRAFFIC SIGNAL BOX
- MON. WELL — MONITORING WELL

SEE SHEET C102 FOR EASEMENT INFORMATION

SEE SHEET C152
MATCHLINE

2002 WASHINGTON ST
TAX LOT
22E2900906

PL
S58° 03' 39"E
620.53'

R=128.00
L=140.81
T=78.49
D=63°01'54"

PL
N18° 11' 23"E
216.87'

1105 ABERNETHY RD
TAX LOT
22E2900902

15

16

16

17

MATCHLINE
SEE SHEET C155

0 20' 40' 80'

N

PLAN

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EXISTING CONDITIONS PLAN

C154

CONSTRUCTION NOTES:

19. EXISTING FENCE AND GATE TO BE REMOVED.
23. EXISTING WATER METER TO BE REMOVED.
24. EXISTING ASPHALT PARKING LOT BE REMOVED. REMOVAL TO INCLUDE ALL PARKING LOT ASSOCIATED CURB, SIDEWALK, PLANTERS, TREES, AND WHEEL STOPS.
25. EXISTING AREA DRAIN TO BE REMOVED.
26. EXISTING BUILDING TO BE REMOVED.
27. EXISTING ELECTRICAL RISER TO BE REMOVED.
28. EXISTING HYDRANT AND LATERALS TO BE REMOVED.
29. EXISTING WATER VALVE(S) TO BE REMOVED.
30. EXISTING STREET LIGHT AND POLE TO BE REMOVED.
31. EXISTING POWER VAULT AND UNDERGROUND CONDUITS TO BE REMOVED.
32. EXISTING WATER FAUCET TO BE REMOVED.

LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- CENTERLINE
- DITCH
- CURB
- EDGE OF PAVEMENT
- FENCE LINE
- OP — OVERHEAD POWER LINE
- UGP — UNDERGROUND POWER LINE
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- SS — SANITARY SEWER LINE
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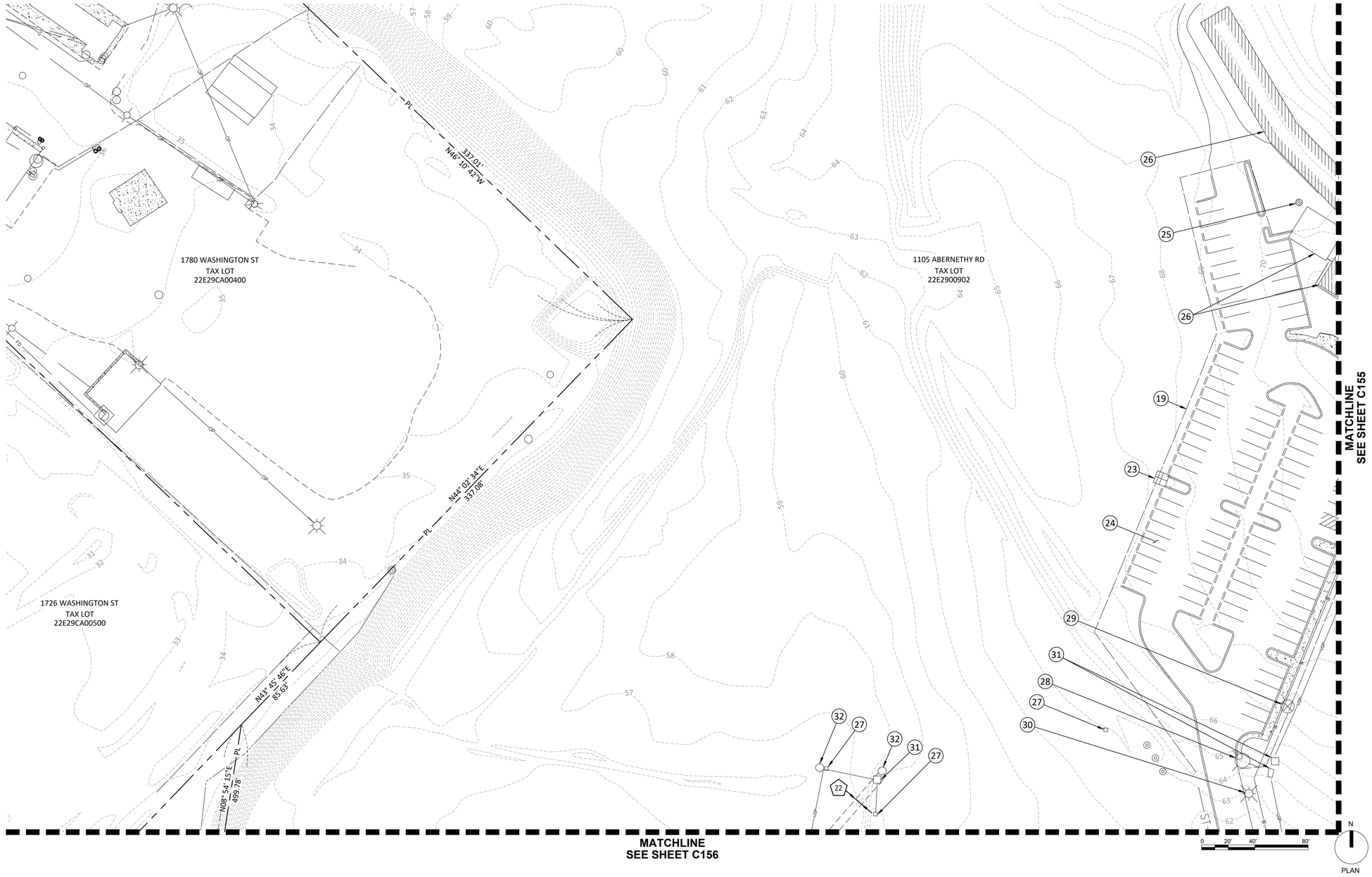
- STORM MANHOLE
- CATCH BASIN
- CLEANOUT
- SANITARY MANHOLE
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- SIGN
- STREET LIGHT
- LB — LIGHT BOX
- JB — STORM JUNCTION BOX
- POWER POLE
- TB — TRAFFIC SIGNAL BOX
- MON. WELL — MONITORING WELL

SEE SHEET C102 FOR EASEMENT INFORMATION



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EXISTING CONDITIONS PLAN

C155

CONSTRUCTION NOTES:

15 EXISTING ARTIFICIAL TURF DRIVING RANGE TO BE REMOVED.

19 EXISTING FENCE AND GATE TO BE REMOVED.

22 EXISTING POWER POLE TO REMAIN. PROTECT IN PLACE.

23 EXISTING WATER METER TO BE REMOVED.

24 EXISTING ASPHALT PARKING LOT BE REMOVED. REMOVAL TO INCLUDE ALL PARKING LOT ASSOCIATED CURB, SIDEWALK, PLANTERS, TREES, AND WHEEL STOPS.

26 EXISTING BUILDING TO BE REMOVED.

27 EXISTING ELECTRICAL RISER TO BE REMOVED.

28 EXISTING HYDRANT AND LATERALS TO BE REMOVED.

29 EXISTING WATER VALVE(S) TO BE REMOVED.

33 EXISTING ADA PARKING SIGN AND POLE TO BE REMOVED.

35 EXISTING SANITARY SERVICE TO BE REMOVED.

LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- CENTERLINE
- DITCH
- CURB
- EDGE OF PAVEMENT
- FENCE LINE
- OP — OVERHEAD POWER LINE
- UGP — UNDERGROUND POWER LINE
- G — NATURAL GAS LINE
- ST — STORM SEWER LINE
- SS — SANITARY SEWER LINE
- W — WATER LINE
- PROPERTY BOUNDARY
- FOUND MONUMENT
- STORM MANHOLE
- CATCH BASIN
- CLEANOUT
- SANITARY MANHOLE
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- SIGN
- STREET LIGHT
- LB — LIGHT BOX
- JB — STORM JUNCTION BOX
- POWER POLE
- TB — TRAFFIC SIGNAL BOX
- MON. WELL — MONITORING WELL

SEE SHEET C102 FOR EASEMENT INFORMATION

SEE SHEET C154 MATCHLINE

1105 ABERNETHY RD
TAX LOT
22E2900902

452.39'
S56° 18' 34"W

151.34'
S27° 36' 05"W

277.76'
S01° 18' 28"W

70.9'
EXISTING ROADWAY

REDLAND RD

PL

MATCHLINE
SEE SHEET C157

0 20' 40' 80'

N

PLAN

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EXISTING CONDITIONS PLAN

C156

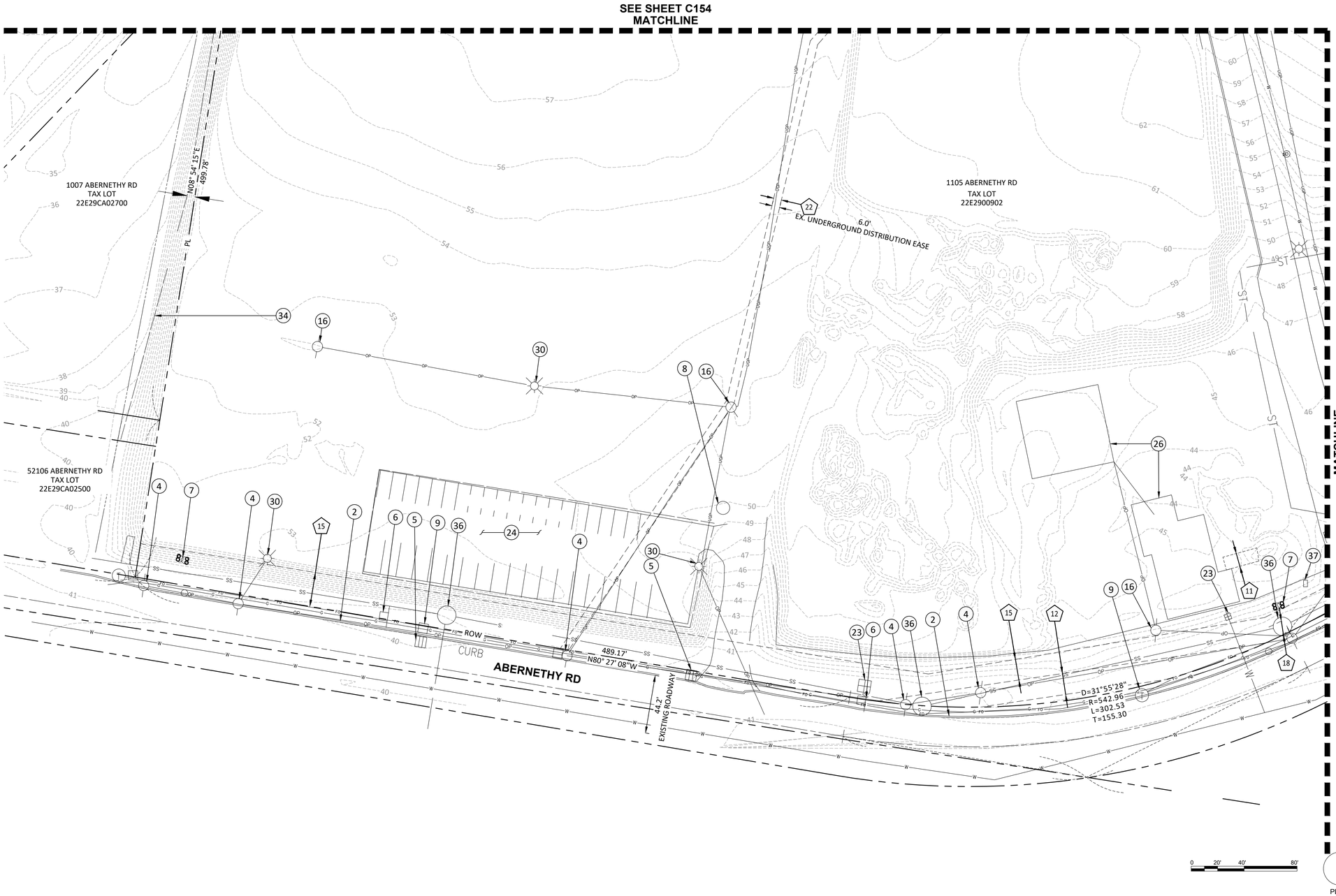
CONSTRUCTION NOTES:

2. EXISTING CURB TO BE REMOVED. SEE SHEET SERIES C200 FOR LIMITS OF REMOVAL.
4. EXISTING POWER POLE TO BE RELOCATED.
5. EXISTING CATCH BASIN TO BE REMOVED.
6. EXISTING SIGN AND POST TO BE RELOCATED.
7. EXISTING METHANE GAS STANDPIPE AND BOLLARDS TO BE REMOVED.
8. EXISTING METHANE GAS MANHOLE TO BE REMOVED.
9. EXISTING FRANCHISE UTILITY TO BE RELOCATED. COORDIANTE WITH UTILITY.
16. EXISTING POWER POLE TO BE REMOVED.
23. EXISTING WATER METER TO BE REMOVED.
24. EXISTING ASPHALT PARKING LOT BE REMOVED. REMOVAL TO INCLUDE ALL PARKING LOT ASSOCIATED CURB, SIDEWALK, PLANTERS, TREES, AND WHEEL STOPS.
26. EXISTING BUILDING TO BE REMOVED.
30. EXISTING STREET LIGHT AND POLE TO BE REMOVED.
34. EXISTING FENCE TO REMAIN. PROTECT IN PLACE.
36. EXISTING MANHOLE TO BE ADJUSTED TO PROPOSED GRADES. PROTECT IN PLACE.
37. EXISTING TRANSFORMER TO BE ADJUSTED TO PROPOSED GRADES. PROTECT IN PLACE.

LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- CENTERLINE
- DITCH
- CURB
- EDGE OF PAVEMENT
- FENCE LINE
- OVERHEAD POWER LINE
- UNDERGROUND POWER LINE
- NATURAL GAS LINE
- STORM SEWER LINE
- SANITARY SEWER LINE
- WATER LINE
- PROPERTY BOUNDARY
- FOUND MONUMENT
- STORM MANHOLE
- CATCH BASIN
- CLEANOUT
- SANITARY MANHOLE
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- SIGN
- STREET LIGHT
- LB — LIGHT BOX
- JB — STORM JUNCTION BOX
- POWER POLE
- TB — TRAFFIC SIGNAL BOX
- MON. WELL — MONITORING WELL

SEE SHEET C102 FOR EASEMENT INFORMATION



EXISTING CONDITIONS PLAN

C157

CONSTRUCTION NOTES:

2. EXISTING CURB TO BE REMOVED. SEE SHEET SERIES C200 FOR LIMITS OF REMOVAL.
3. EXISTING SIDEWALK TO BE REMOVED. SEE SHEET SERIES C200 FOR LIMITS OF REMOVAL.
4. EXISTING POWER POLE TO BE RELOCATED.
5. EXISTING CATCH BASIN TO BE REMOVED.
12. EXISTING CURB TO REMAIN. PROTECT IN PLACE.
16. EXISTING POWER POLE TO BE REMOVED.
19. EXISTING FENCE AND GATE TO BE REMOVED.
22. EXISTING POWER POLE TO REMAIN. PROTECT IN PLACE.
23. EXISTING WATER METER TO BE REMOVED.
29. EXISTING WATER VALVE(S) TO BE REMOVED.
30. EXISTING STREET LIGHT AND POLE TO BE REMOVED.
35. EXISTING SANITARY SERVICE TO BE REMOVED.
36. EXISTING MANHOLE TO BE ADJUSTED TO PROPOSED GRADES. PROTECT IN PLACE.
38. EXISTING WATER SERVICE AND VAULT TO BE REMOVED.
39. EXISTING SIGN TO BE REMOVED.
40. EXISTING JUNCTION BOX TO BE RELOCATED.
41. EXISTING WATER VAULT TO BE ADJUSTED TO PROPOSED GRADES. PROTECT IN PLACE.
42. EXISTING HYDRANT TO BE ADJUSTED TO PROPOSED GRADES. PROTECT IN PLACE

LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- CENTERLINE
- DITCH
- CURB
- EDGE OF PAVEMENT
- FENCE LINE
- OP — OVERHEAD POWER LINE
- UGP — UNDERGROUND POWER LINE
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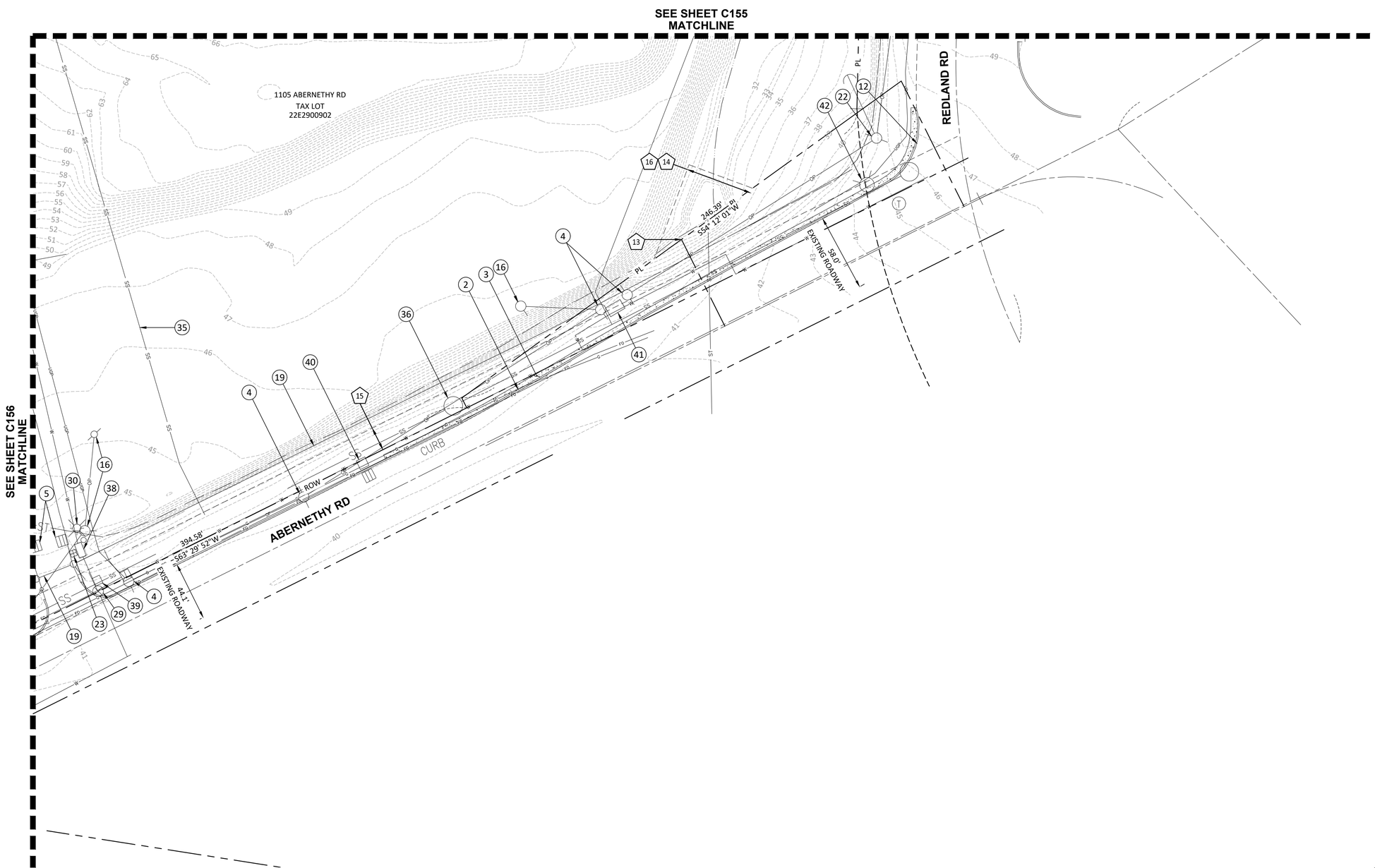
- SS — SANITARY SEWER LINE
- W — WATER LINE
- PROPERTY BOUNDARY
- FOUND MONUMENT
- STORM MANHOLE
- CATCH BASIN
- CLEANOUT
- SANITARY MANHOLE
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- SIGN
- STREET LIGHT
- LB — LIGHT BOX
- JB — STORM JUNCTION BOX
- POWER POLE
- TB — TRAFFIC SIGNAL BOX
- MON. WELL — MONITORING WELL

SEE SHEET C102 FOR EASEMENT INFORMATION



0 20' 40' 80'

N

PLAN

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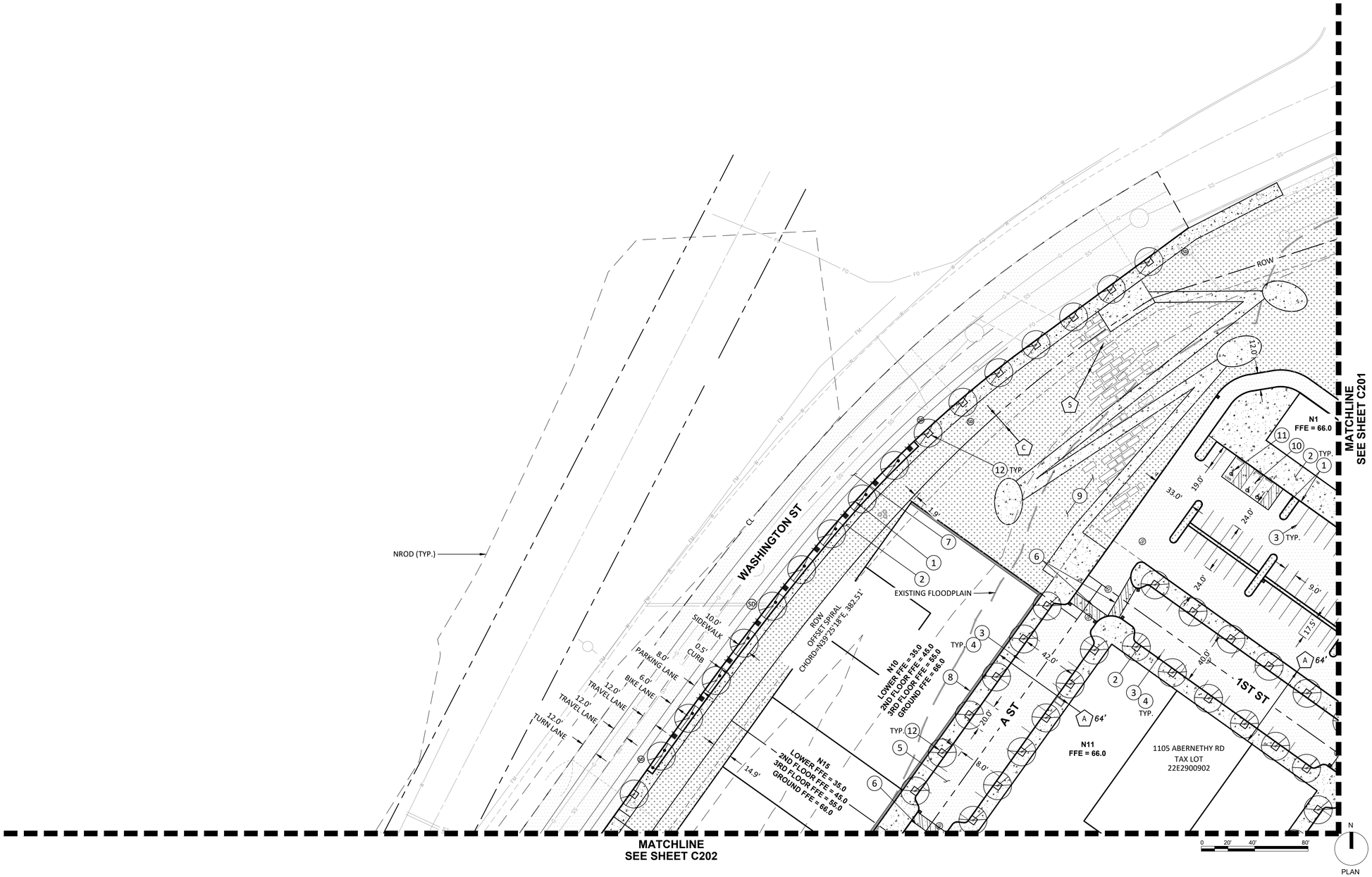
SUMMIT DEVELOPMENT GROUP

CIVIL SITE PLAN

C200

CONSTRUCTION NOTES:

1. CONSTRUCT STANDARD CURB PER OREGON CITY STANDARD DETAIL 510.
2. CONSTRUCT SIDEWALK PER OREGON CITY STANDARD DETAIL 508.
3. PROPOSED PARKING STALL STRIPING.
4. PROPOSED PARALLEL PARKING STALL.
5. CONSTRUCT ASPHALT PAVEMENT. SEE GRADING PLANS FOR PROPOSED GRADING.
6. CONSTRUCT CONCRETE PEDESTRIAN CROSSING AND STRIPING.
7. CONSTRUCT STREET SECTION AND STRIPING. SEE TYPICAL SECTIONS FOR INFORMATION.
8. PROPOSED WALL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
9. LANDSCAPE AREA. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
10. PROPOSED ADA ACCESSIBLE PARKING STALL, WHEEL STOP, AND SIGNAGE.
11. PROPOSED VAN ACCESSIBLE PARKING STALL, WHEEL STOP, AND SIGNAGE.
12. PROPOSED TREE WELL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.



SEE SHEET C102 FOR EASEMENT INFORMATION

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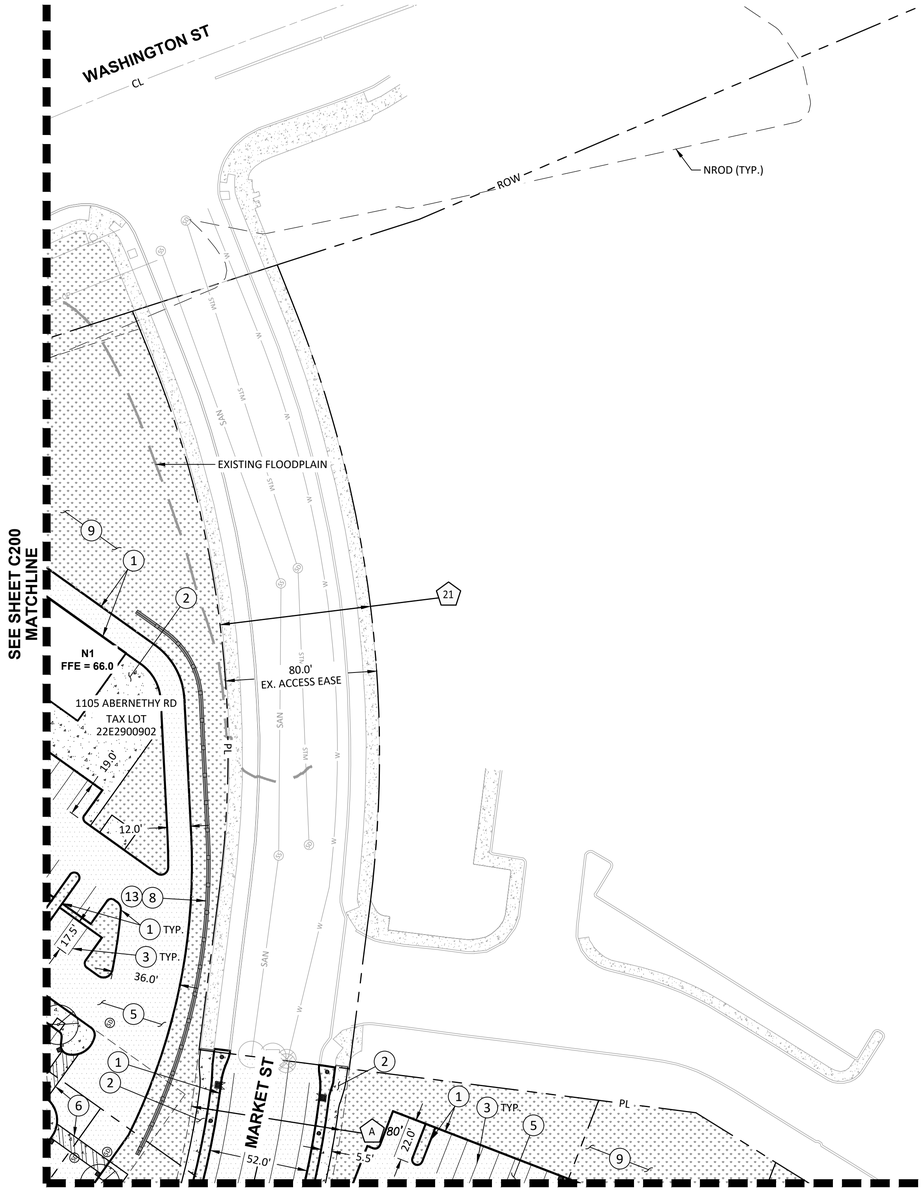
CIVIL SITE PLAN

C201

CONSTRUCTION NOTES:

1. CONSTRUCT STANDARD CURB PER OREGON CITY STANDARD DETAIL 510.
2. CONSTRUCT SIDEWALK PER OREGON CITY STANDARD DETAIL 508.
3. PROPOSED PARKING STALL STRIPING.
5. CONSTRUCT ASPHALT PAVEMENT. SEE GRADING PLANS FOR PROPOSED GRADING.
6. CONSTRUCT CONCRETE PEDESTRIAN CROSSING AND STRIPING.
8. PROPOSED WALL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
9. LANDSCAPE AREA. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
13. PROPOSED GUARDRAIL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.



SEE SHEET C102 FOR EASEMENT INFORMATION

HOME DEPOT

2002 WASHINGTON ST
TAX LOT
22E2900906

N

0 20' 40' 80'

PLAN

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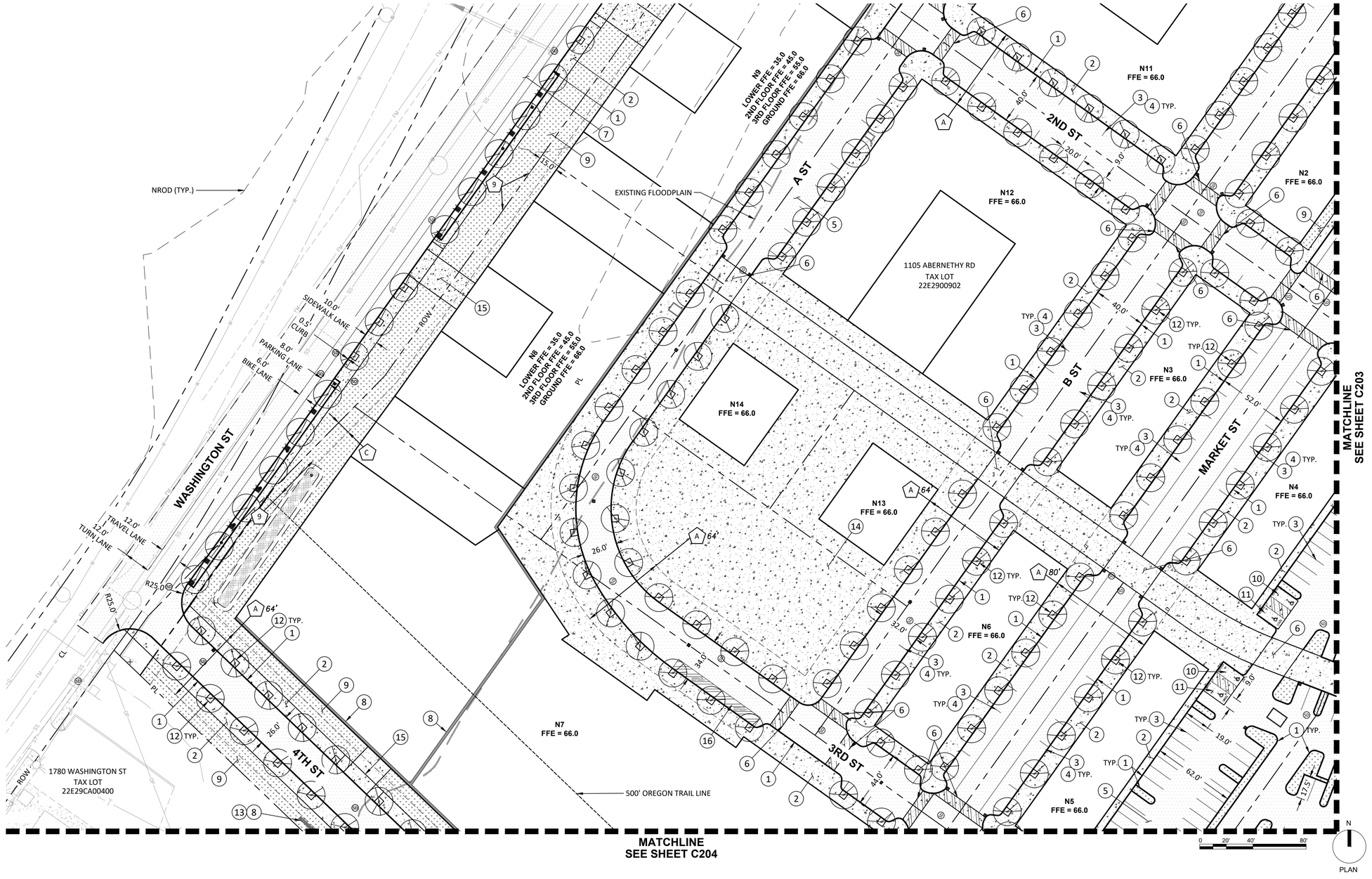
SUMMIT DEVELOPMENT GROUP

CIVIL SITE PLAN

C202

CONSTRUCTION NOTES:

1. CONSTRUCT STANDARD CURB PER OREGON CITY STANDARD DETAIL 510.
2. CONSTRUCT SIDEWALK PER OREGON CITY STANDARD DETAIL 508.
3. PROPOSED PARKING STALL STRIPING.
4. PROPOSED PARALLEL PARKING STALL.
5. CONSTRUCT ASPHALT PAVEMENT. SEE GRADING PLANS FOR PROPOSED GRADING.
6. CONSTRUCT CONCRETE PEDESTRIAN CROSSING AND STRIPING.
7. CONSTRUCT STREET SECTION AND STRIPING. SEE TYPICAL SECTIONS FOR INFORMATION.
8. PROPOSED WALL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
9. LANDSCAPE AREA. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
10. PROPOSED ADA ACCESSIBLE PARKING STALL, WHEEL STOP, AND SIGNAGE.
11. PROPOSED VAN ACCESSIBLE PARKING STALL, WHEEL STOP, AND SIGNAGE.
12. PROPOSED TREE WELL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
13. PROPOSED GUARDRAIL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
14. CONSTRUCT PRIVATE HARDSCAPE. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR MATERIALS, COLOR, SCORING AND FINISH.
15. CONSTRUCT COMMERCIAL DRIVEWAY PER OREGON CITY STANDARD DETAIL 505.
16. PROPOSED LOADING ZONE STRIPING.



SEE SHEET C102 FOR EASEMENT INFORMATION

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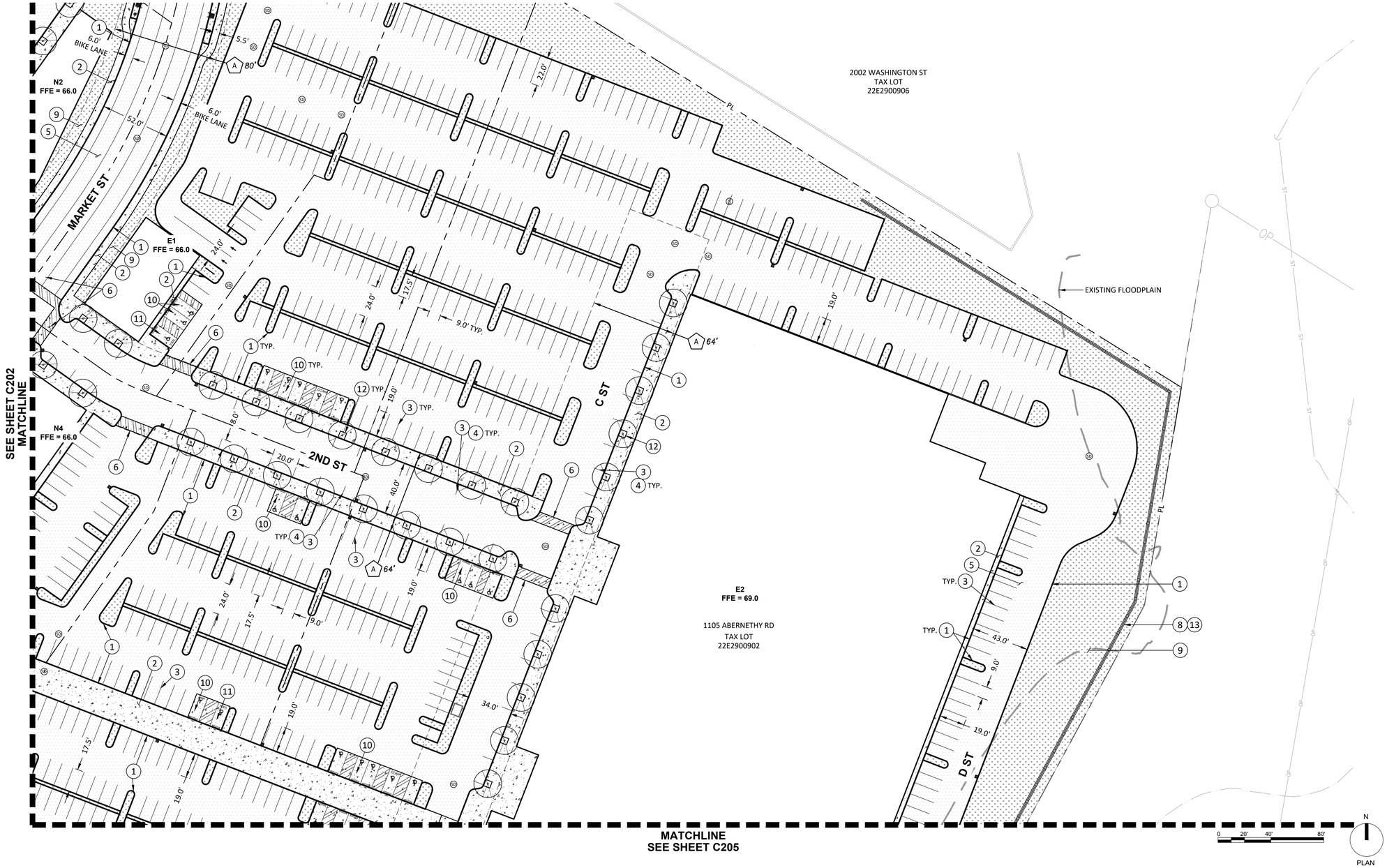
CIVIL SITE PLAN

C203

CONSTRUCTION NOTES:

1. CONSTRUCT STANDARD CURB PER OREGON CITY STANDARD DETAIL 510.
2. CONSTRUCT SIDEWALK PER OREGON CITY STANDARD DETAIL 508.
3. PROPOSED PARKING STALL STRIPING.
4. PROPOSED PARALLEL PARKING STALL.
5. CONSTRUCT ASPHALT PAVEMENT. SEE GRADING PLANS FOR PROPOSED GRADING.
6. CONSTRUCT CONCRETE PEDESTRIAN CROSSING AND STRIPING.
8. PROPOSED WALL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
9. LANDSCAPE AREA. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
10. PROPOSED ADA ACCESSIBLE PARKING STALL, WHEEL STOP, AND SIGNAGE.
11. PROPOSED VAN ACCESSIBLE PARKING STALL, WHEEL STOP, AND SIGNAGE.
12. PROPOSED TREE WELL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
13. PROPOSED GUARDRAIL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.



SEE SHEET C102 FOR EASEMENT INFORMATION

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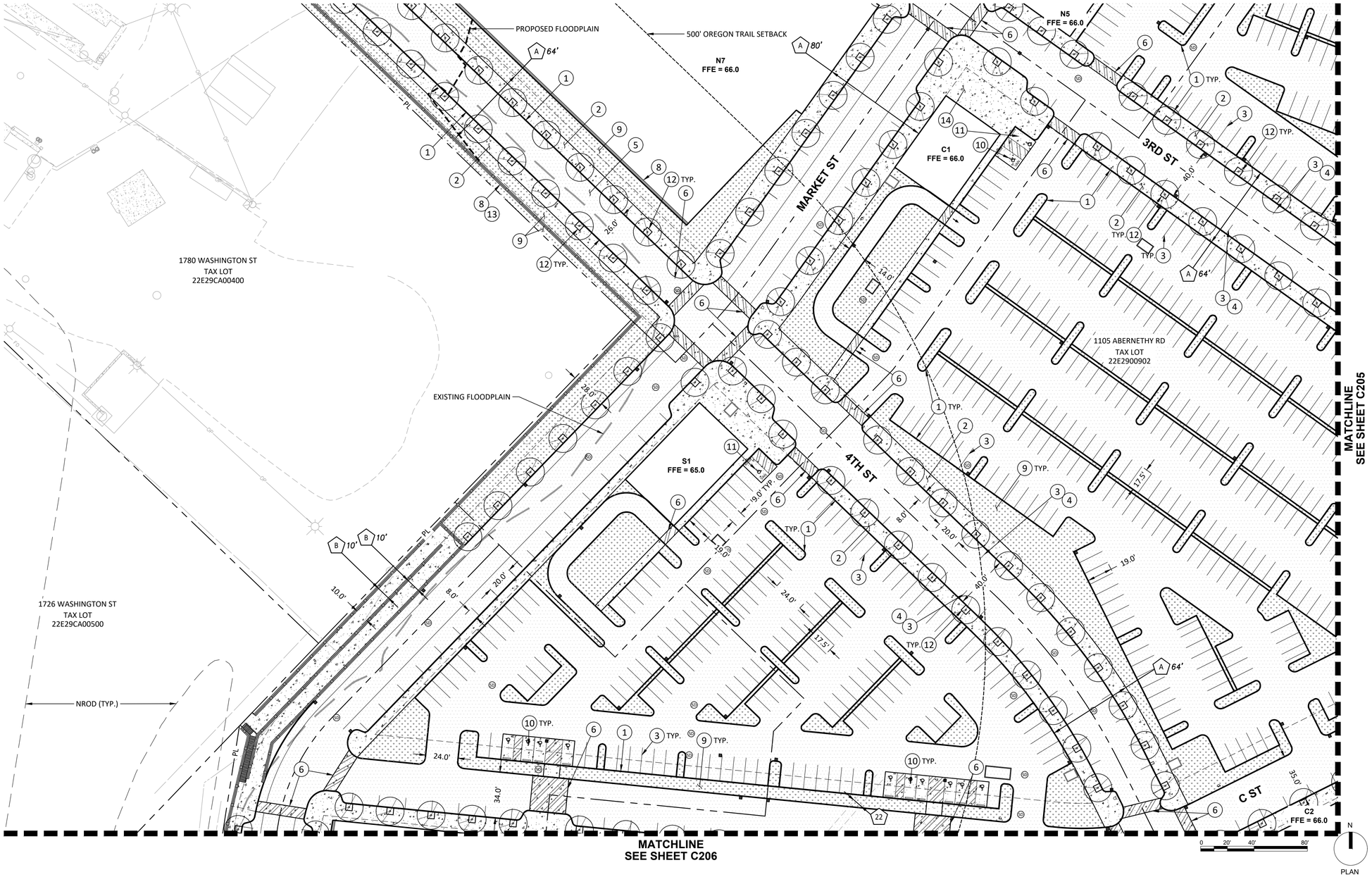
CIVIL SITE PLAN

C204

CONSTRUCTION NOTES:

1. CONSTRUCT STANDARD CURB PER OREGON CITY STANDARD DETAIL 510.
2. CONSTRUCT SIDEWALK PER OREGON CITY STANDARD DETAIL 508.
3. PROPOSED PARKING STALL STRIPING.
4. PROPOSED PARALLEL PARKING STALL.
5. CONSTRUCT ASPHALT PAVEMENT. SEE GRADING PLANS FOR PROPOSED GRADING.
6. CONSTRUCT CONCRETE PEDESTRIAN CROSSING AND STRIPING.
8. PROPOSED WALL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
9. LANDSCAPE AREA. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
10. PROPOSED ADA ACCESSIBLE PARKING STALL, WHEEL STOP, AND SIGNAGE.
11. PROPOSED VAN ACCESSIBLE PARKING STALL, WHEEL STOP, AND SIGNAGE.
12. PROPOSED TREE WELL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
13. PROPOSED GUARDRAIL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
14. CONSTRUCT PRIVATE HARDSCAPE. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR MATERIALS, COLOR, SCORING AND FINISH.



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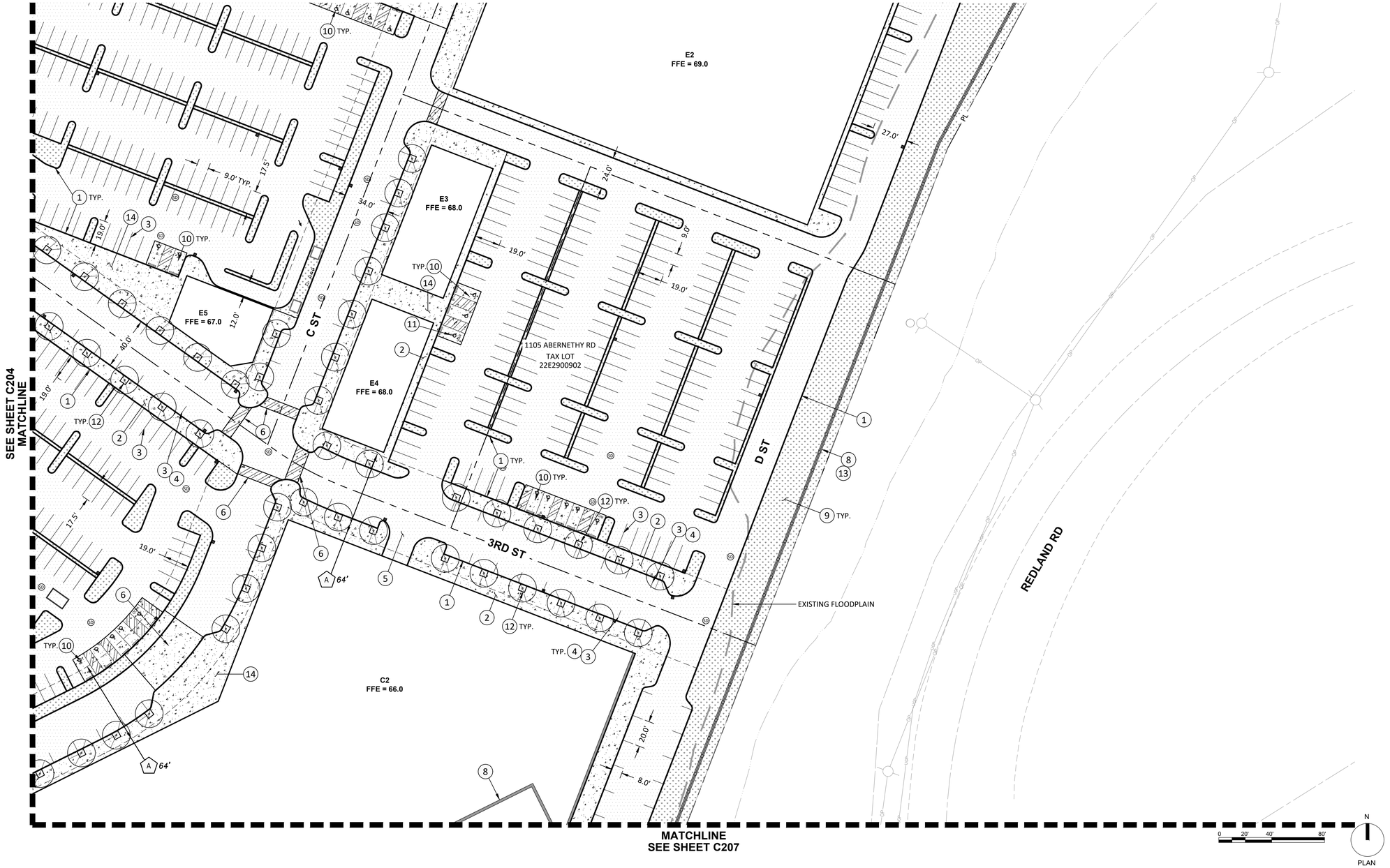
CIVIL SITE PLAN

C205

CONSTRUCTION NOTES:

1. CONSTRUCT STANDARD CURB PER OREGON CITY STANDARD DETAIL 510.
2. CONSTRUCT SIDEWALK PER OREGON CITY STANDARD DETAIL 508.
3. PROPOSED PARKING STALL STRIPING.
4. PROPOSED PARALLEL PARKING STALL.
5. CONSTRUCT ASPHALT PAVEMENT. SEE GRADING PLANS FOR PROPOSED GRADING.
6. CONSTRUCT CONCRETE PEDESTRIAN CROSSING AND STRIPING.
8. PROPOSED WALL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
9. LANDSCAPE AREA. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
10. PROPOSED ADA ACCESSIBLE PARKING STALL, WHEEL STOP, AND SIGNAGE.
11. PROPOSED VAN ACCESSIBLE PARKING STALL, WHEEL STOP, AND SIGNAGE.
12. PROPOSED TREE WELL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
13. PROPOSED GUARDRAIL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
14. CONSTRUCT PRIVATE HARDSCAPE. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR MATERIALS, COLOR, SCORING AND FINISH.



SEE SHEET C102 FOR EASEMENT INFORMATION

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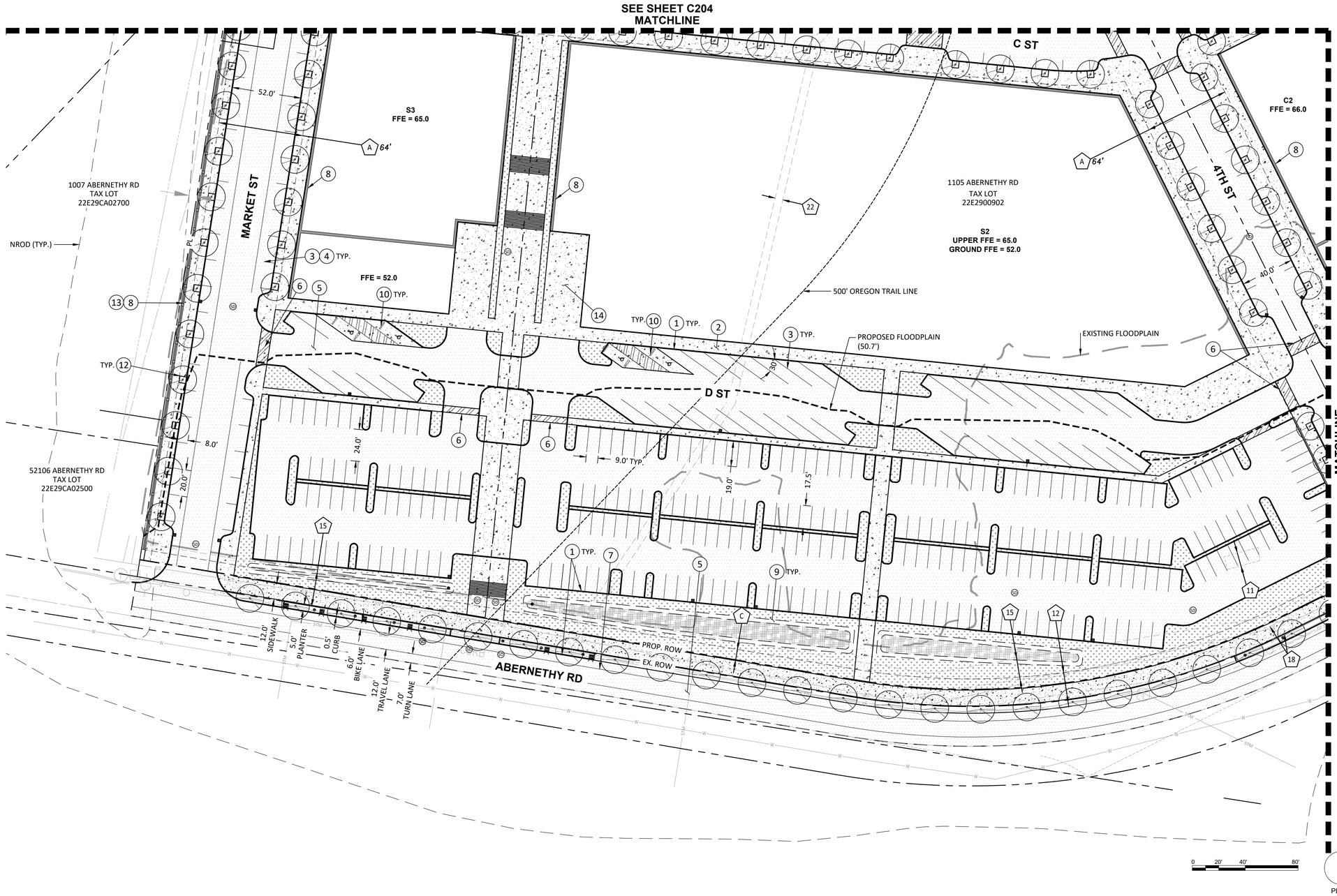
CIVIL SITE PLAN

C206

CONSTRUCTION NOTES:

1. CONSTRUCT STANDARD CURB PER OREGON CITY STANDARD DETAIL 510.
2. CONSTRUCT SIDEWALK PER OREGON CITY STANDARD DETAIL 508.
3. PROPOSED PARKING STALL STRIPING.
4. PROPOSED PARALLEL PARKING STALL.
5. CONSTRUCT ASPHALT PAVEMENT. SEE GRADING PLANS FOR PROPOSED GRADING.
6. CONSTRUCT CONCRETE PEDESTRIAN CROSSING AND STRIPING.
7. CONSTRUCT STREET SECTION AND STRIPING. SEE TYPICAL SECTIONS FOR INFORMATION.
8. PROPOSED WALL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
9. LANDSCAPE AREA. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
10. PROPOSED ADA ACCESSIBLE PARKING STALL, WHEEL STOP, AND SIGNAGE.
12. PROPOSED TREE WELL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
13. PROPOSED GUARDRAIL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
14. CONSTRUCT PRIVATE HARDSCAPE. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR MATERIALS, COLOR, SCORING AND FINISH.



SEE SHEET C102 FOR EASEMENT INFORMATION

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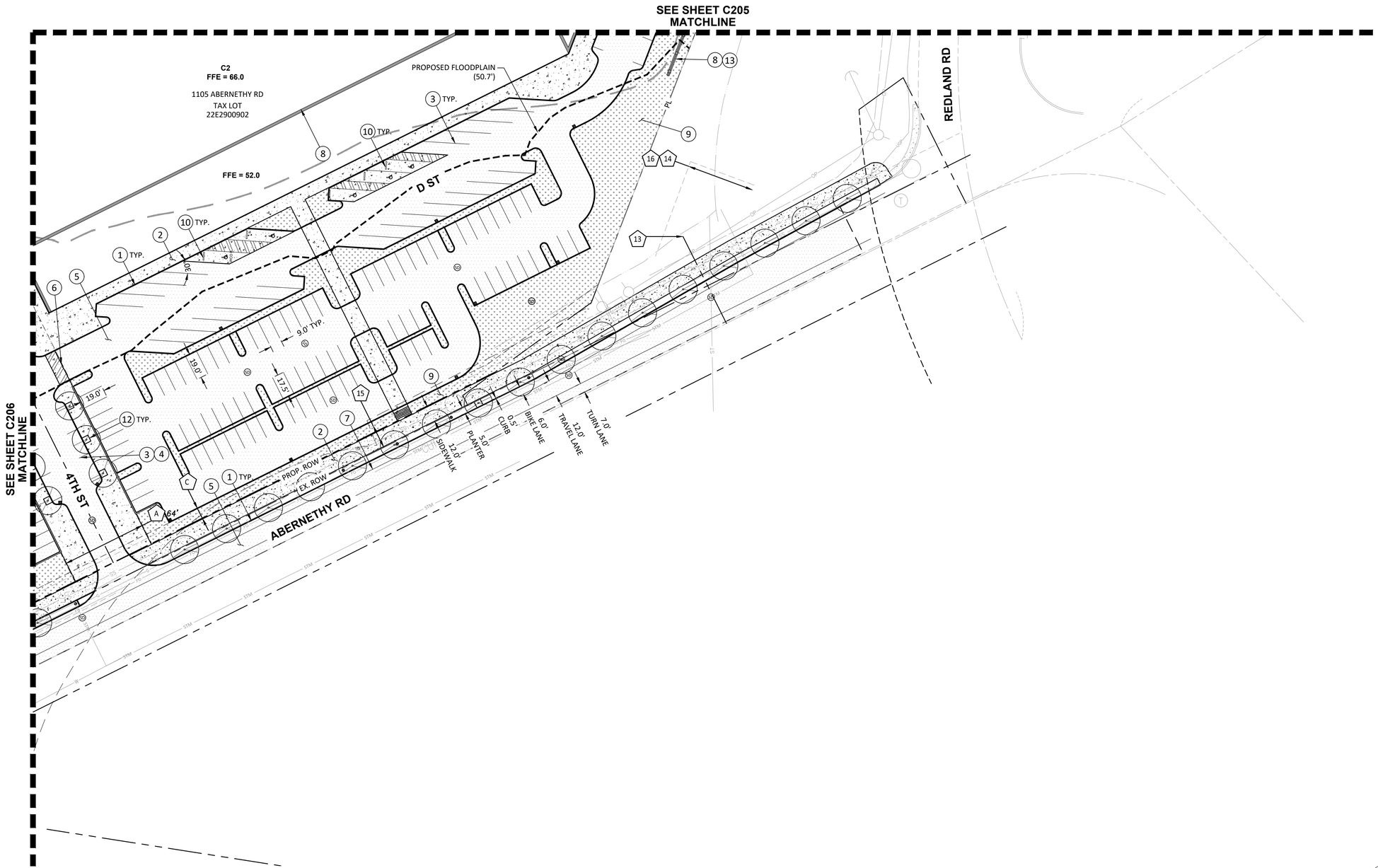
CIVIL SITE PLAN

C207

CONSTRUCTION NOTES:

1. CONSTRUCT STANDARD CURB PER OREGON CITY STANDARD DETAIL 510.
2. CONSTRUCT SIDEWALK PER OREGON CITY STANDARD DETAIL 508.
3. PROPOSED PARKING STALL STRIPING.
4. PROPOSED PARALLEL PARKING STALL.
5. CONSTRUCT ASPHALT PAVEMENT. SEE GRADING PLANS FOR PROPOSED GRADING.
6. CONSTRUCT CONCRETE PEDESTRIAN CROSSING AND STRIPING.
7. CONSTRUCT STREET SECTION AND STRIPING. SEE TYPICAL SECTIONS FOR INFORMATION.
8. PROPOSED WALL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
9. LANDSCAPE AREA. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
10. PROPOSED ADA ACCESSIBLE PARKING STALL, WHEEL STOP, AND SIGNAGE.
12. PROPOSED TREE WELL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.
13. PROPOSED GUARDRAIL. REFER TO LANDSCAPE ARCHITECT'S PLANS FOR INFORMATION.



0 20' 40' 80'

N

PLAN

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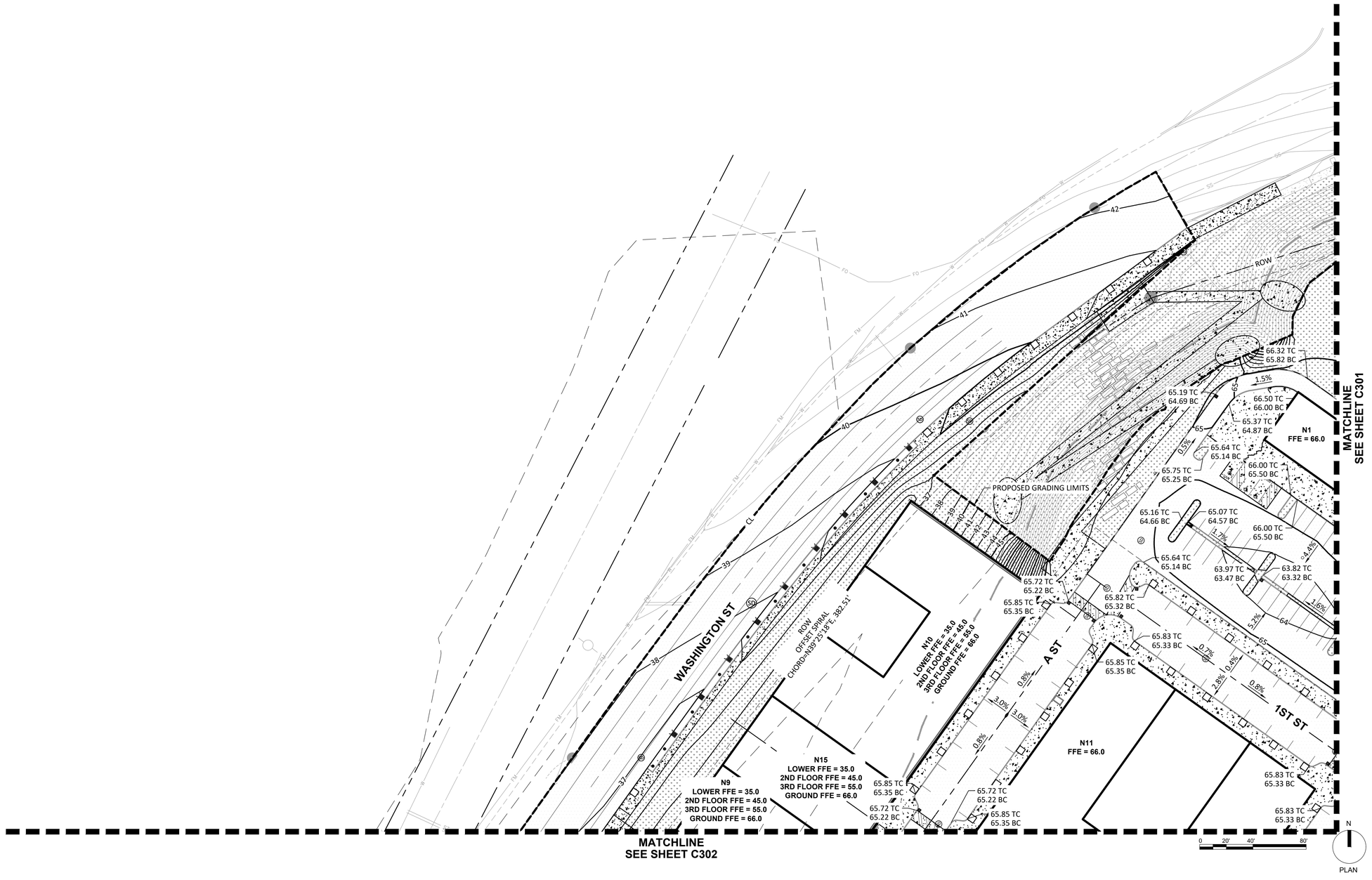
GRADING PLAN

C300

LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- CENTERLINE
- 170 — MAJ. CONTOUR - 5' INTERVAL
- 171 — MIN. CONTOUR - 1' INTERVAL
- GRADING LIMITS
- EXISTING FLOODPLAIN
- PROPOSED FLOODPLAIN
- 500' OREGON TRAIL LINE
- X.X% — GRADE SLOPE
- XXX.XX TC / XXX.XX G — SPOT GRADE
- PROPOSED ASPALT
- PROPOSED CONCRETE
- PROPOSED LANDSCAPE

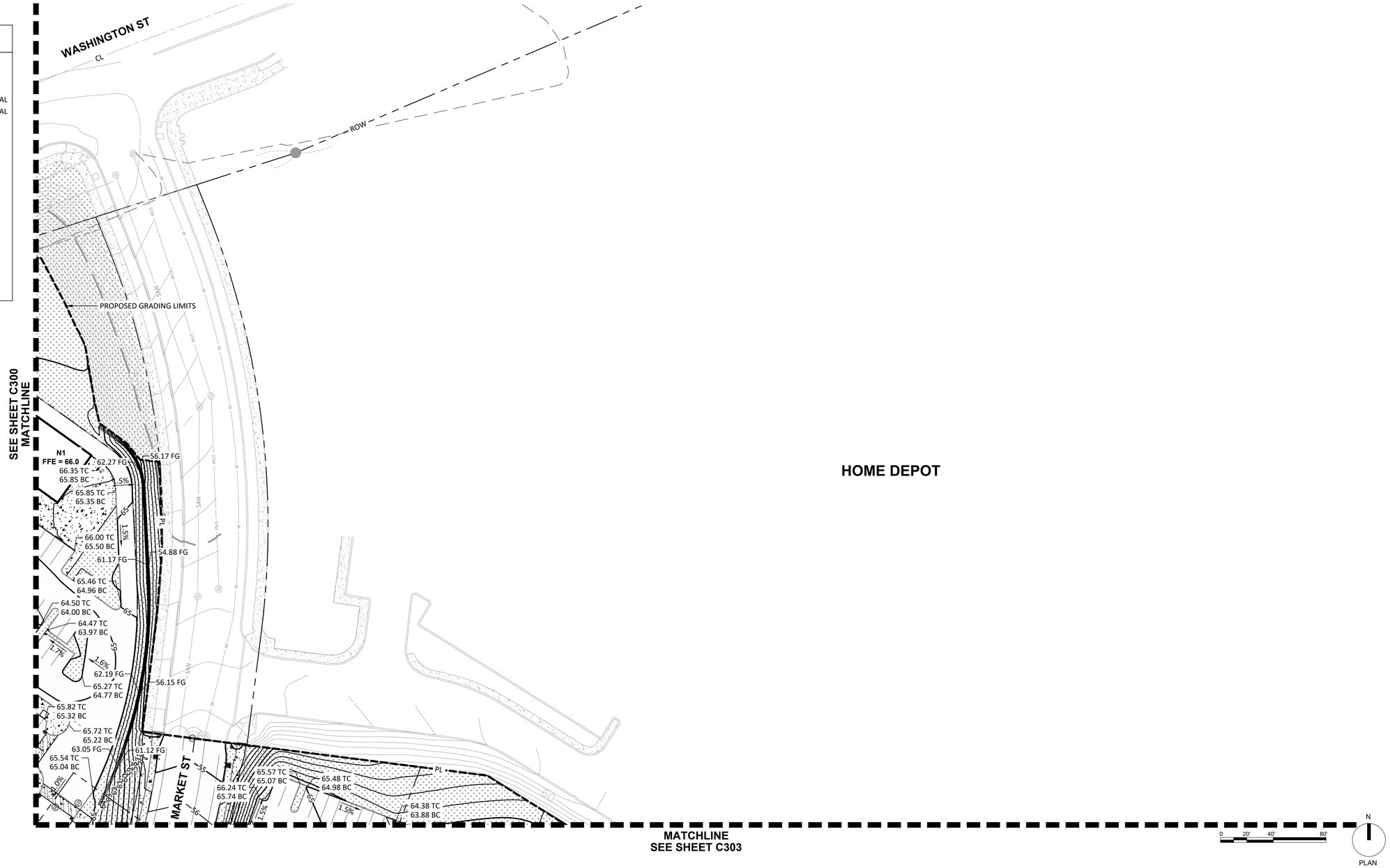


GRADING PLAN

C301

LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- CENTERLINE
- 170 MAJ. CONTOUR - 5' INTERVAL
- 171 MIN. CONTOUR - 1' INTERVAL
- GRADING LIMITS
- EXISTING FLOODPLAIN
- PROPOSED FLOODPLAIN
- 500' OREGON TRAIL LINE
- X.X% GRADE SLOPE
- XXX.XX TC / XXX.XX G SPOT GRADE
- PROPOSED ASPALT
- PROPOSED CONCRETE
- PROPOSED LANDSCAPE



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SUMMIT DEVELOPMENT GROUP

GRADING PLAN

C302

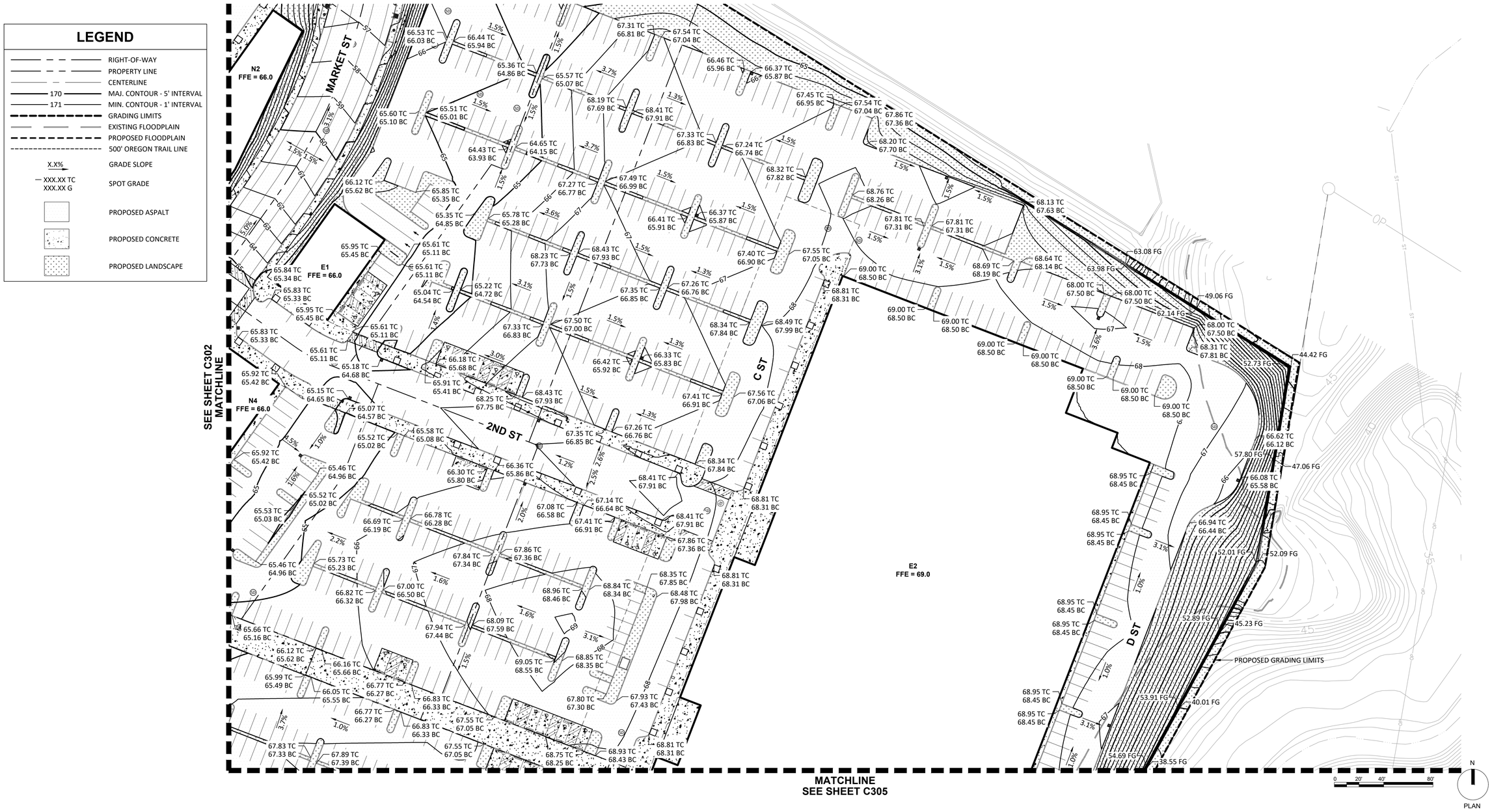
LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- CENTERLINE
- 170 — MAJ. CONTOUR - 5' INTERVAL
- 171 — MIN. CONTOUR - 1' INTERVAL
- GRADING LIMITS
- EXISTING FLOODPLAIN
- PROPOSED FLOODPLAIN
- 500' OREGON TRAIL LINE
- X.X% — GRADE SLOPE
- XXX.XX TC / XXX.XX G — SPOT GRADE
- PROPOSED ASPALT
- PROPOSED CONCRETE
- PROPOSED LANDSCAPE



GRADING PLAN

C303



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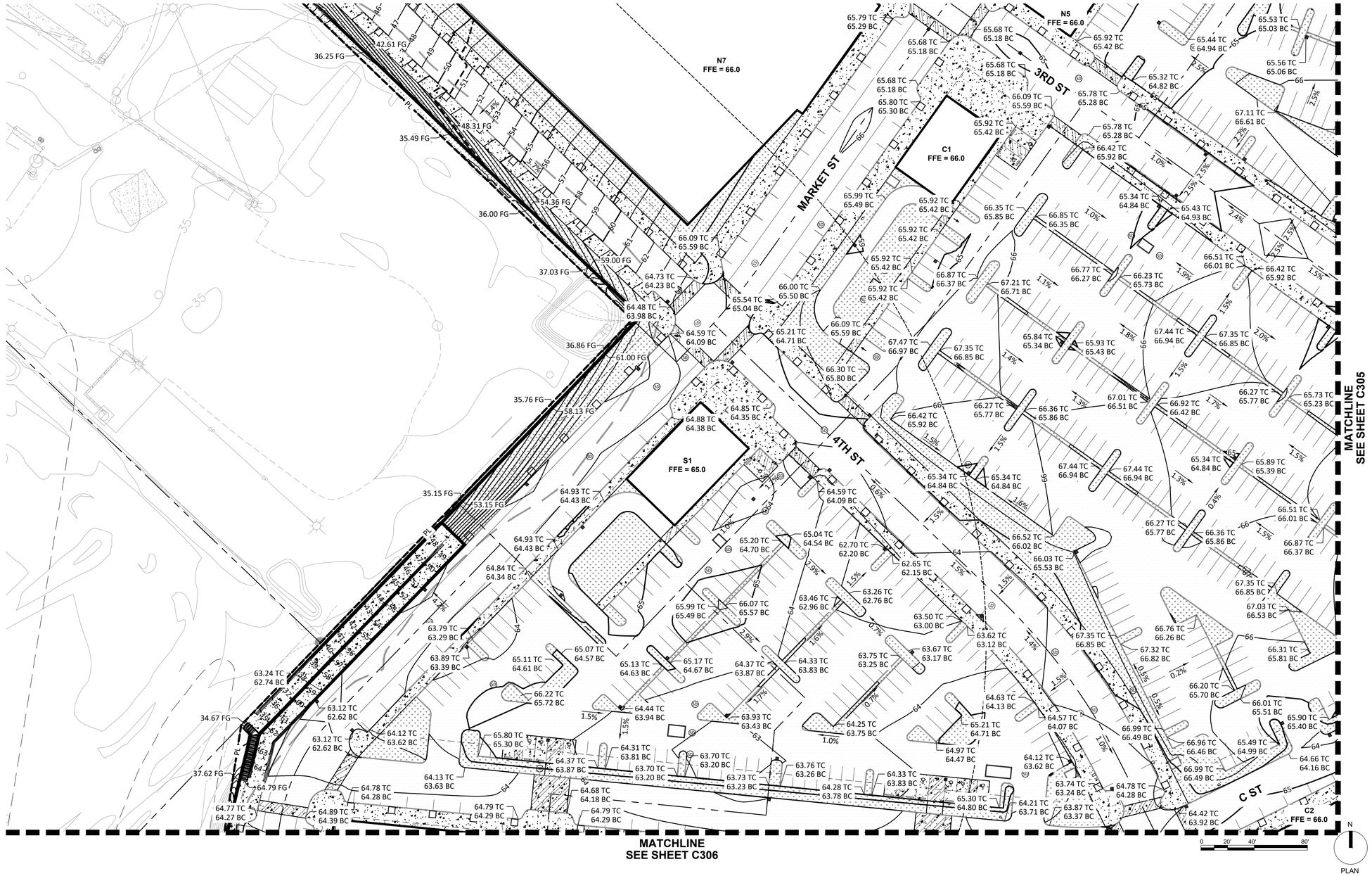
GRADING PLAN

C304

LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- CENTERLINE
- 170 — MAJ. CONTOUR - 5' INTERVAL
- 171 — MIN. CONTOUR - 1' INTERVAL
- GRADING LIMITS
- EXISTING FLOODPLAIN
- PROPOSED FLOODPLAIN
- 500' OREGON TRAIL LINE
- X.X% — GRADE SLOPE
- XXX.XX TC / XXX.XX G — SPOT GRADE
- PROPOSED ASPALT
- PROPOSED CONCRETE
- PROPOSED LANDSCAPE



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SUMMIT DEVELOPMENT GROUP

GRADING PLAN

C305



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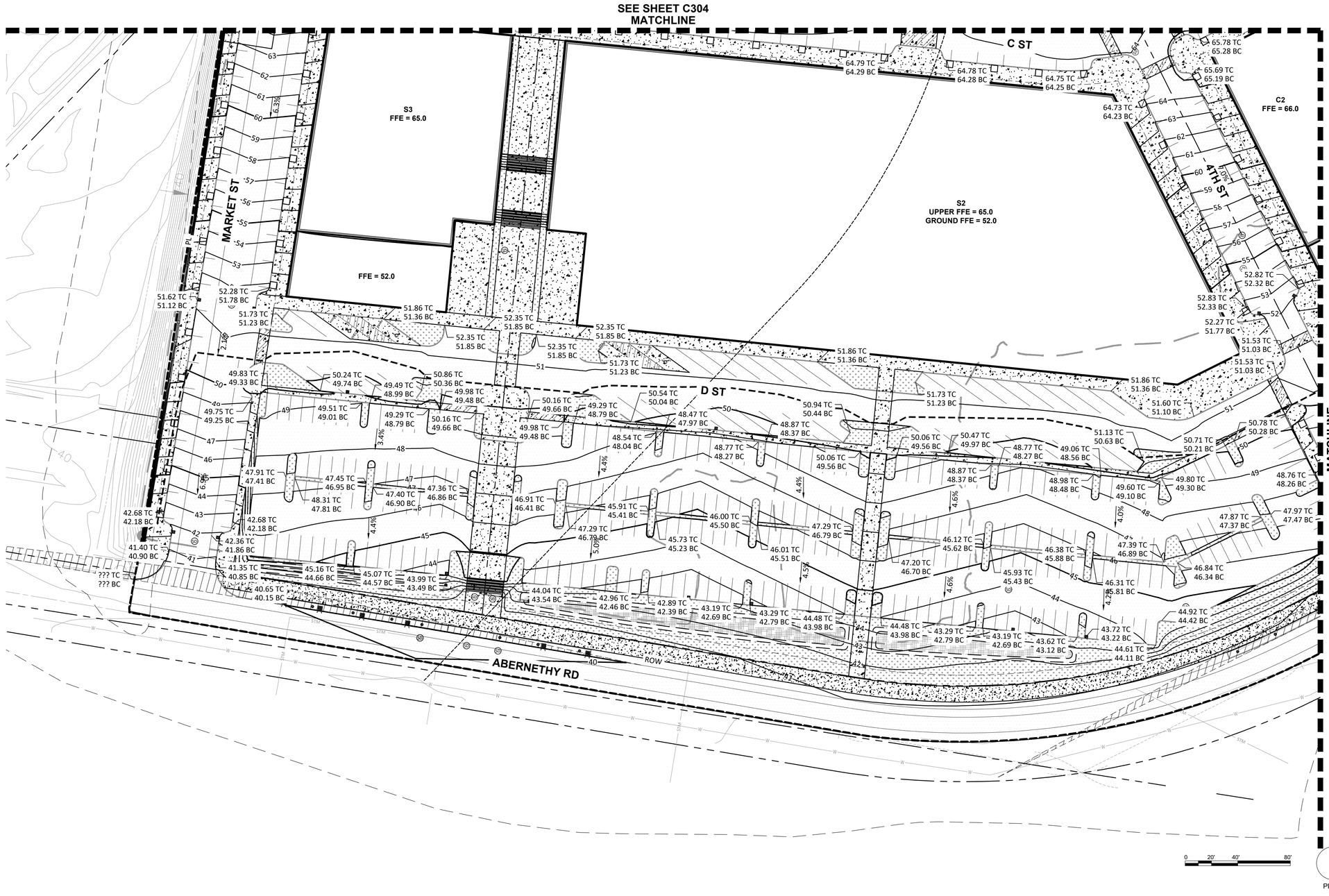
GRADING PLAN

C306

LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- CENTERLINE
- 170 MAJ. CONTOUR - 5' INTERVAL
- 171 MIN. CONTOUR - 1' INTERVAL
- GRADING LIMITS
- EXISTING FLOODPLAIN
- PROPOSED FLOODPLAIN
- 500' OREGON TRAIL LINE
- X.X% GRADE SLOPE
- XXX.XX TC / XXX.XX G SPOT GRADE
- PROPOSED ASPALT
- PROPOSED CONCRETE
- PROPOSED LANDSCAPE



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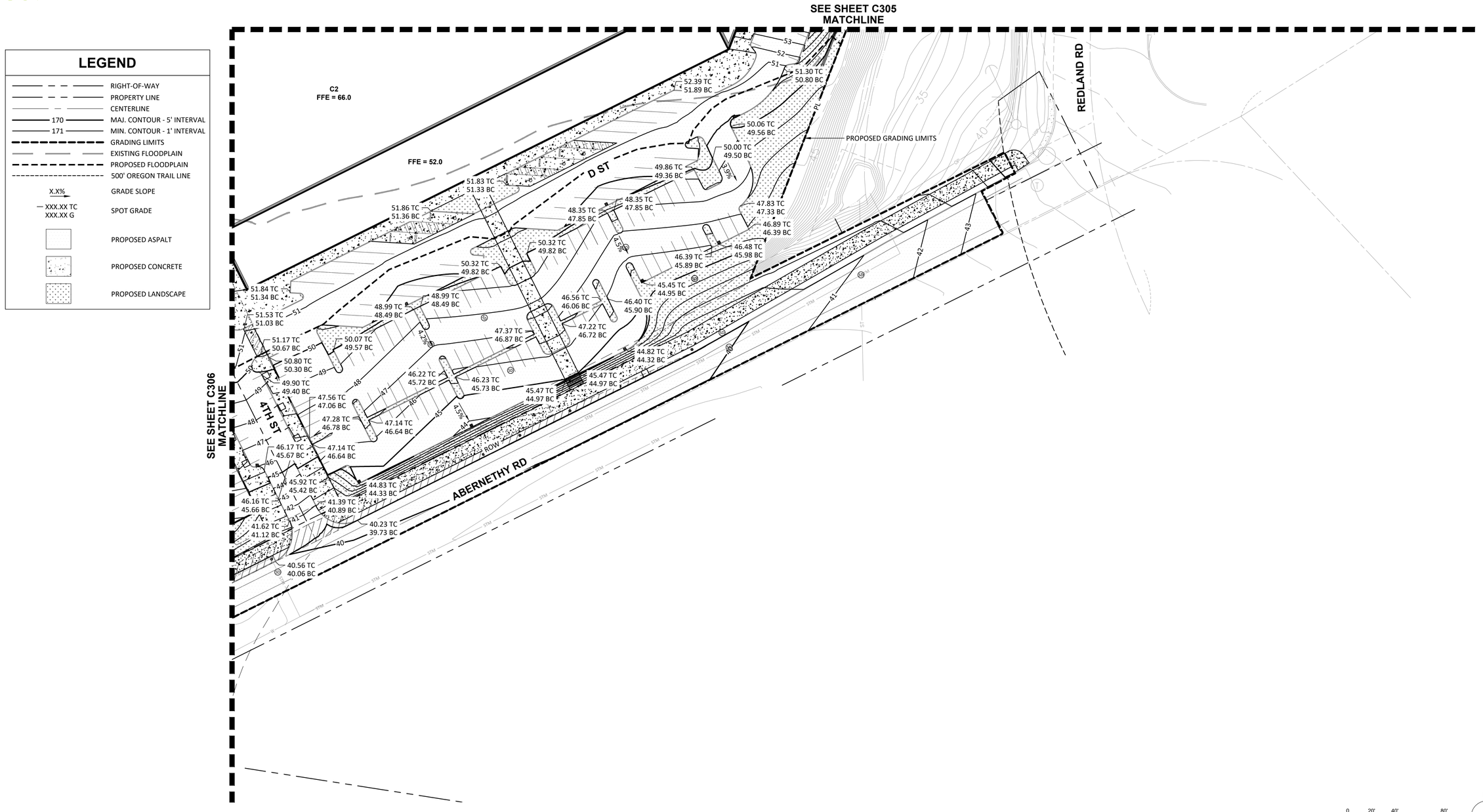
GRADING PLAN

C307



LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- CENTERLINE
- 170 MAJ. CONTOUR - 5' INTERVAL
- 171 MIN. CONTOUR - 1' INTERVAL
- GRADING LIMITS
- EXISTING FLOODPLAIN
- PROPOSED FLOODPLAIN
- 500' OREGON TRAIL LINE
- X.X% GRADE SLOPE
- XXX.XX TC / XXX.XX G SPOT GRADE
- PROPOSED ASPALT
- PROPOSED CONCRETE
- PROPOSED LANDSCAPE

0 20' 40' 80'

N

PLAN

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SUMMIT DEVELOPMENT GROUP

UTILITY PLAN

C400

STORM NOTES:

2 PROPOSED 48" STANDARD STORM MANHOLE.
3 PROPOSED STORM INLET.
4 PROPOSED STORM PIPE. SLOPE AT 0.5% MIN.
6 INSTALL 48" STORM MANHOLE OVER EXISTING STORM LINE.
7 PROPOSED BAYFILTER WATER QUALITY TREATMENT VAULT.
12 PROPOSED PUBLIC STORMWATER CURB PLANTER WITH CURB CUTS, TYP.
14 PROPOSED 5.0' DIAM. BARREL ADS STORMWATER DETENTION SYSTEM.
15 PROPOSED CONNECTION TO EXISTING CULVERT.
16 PROPOSED OVERFLOW INLET.
17 PROPOSED CONCRETE CURB INLET.
18 PROPOSED 6" PERFORATED STORM PIPE. SLOPE AT 1.0% MIN.

SANITARY NOTES:

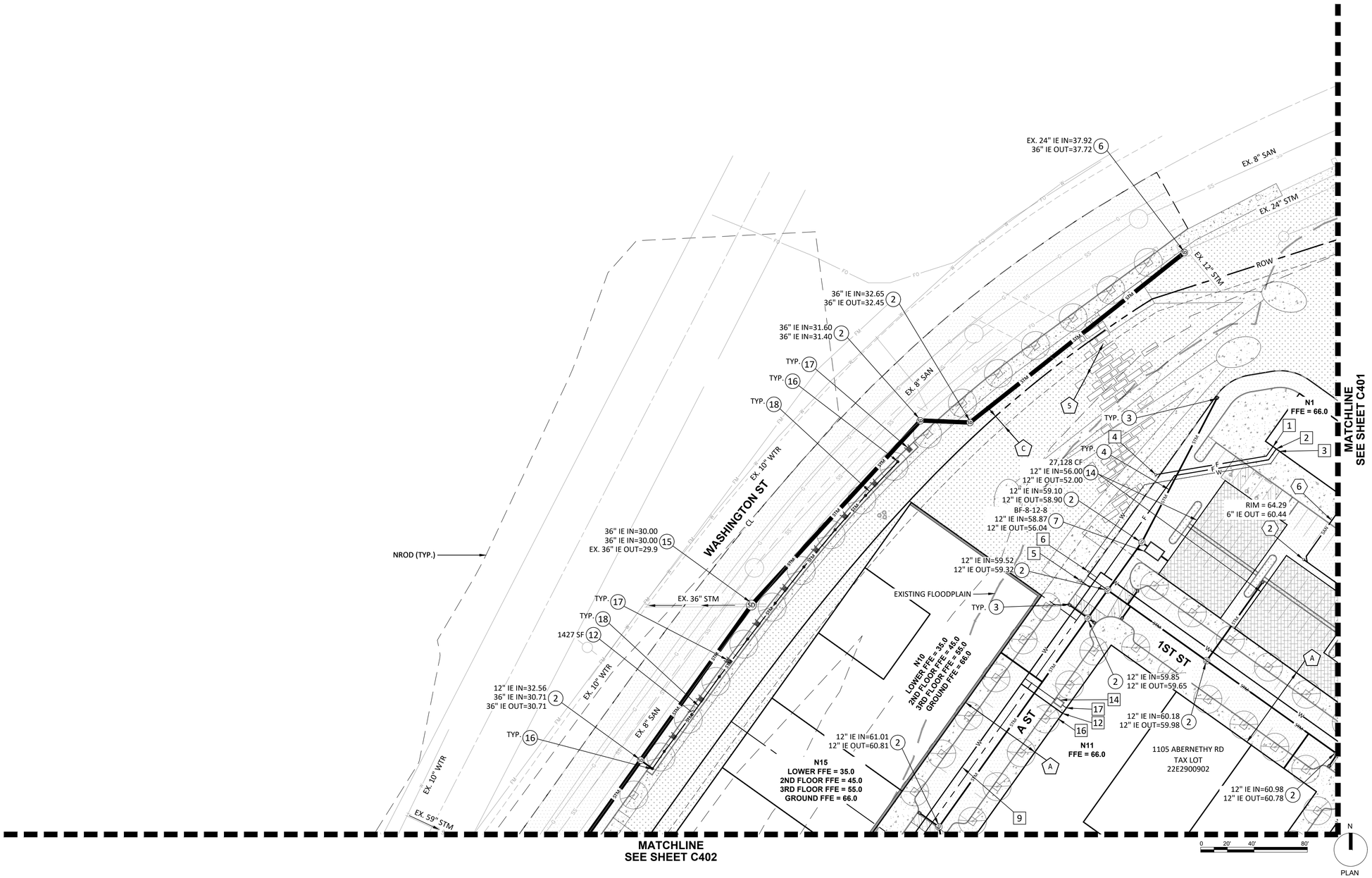
2 PROPOSED SANITARY CLEANOUT.
6 PROPOSED SANITARY SEWER PIPE.

WATER NOTES:

1 PROPOSED FDC LINE BUILDING CONNECTION.
2 PROPOSED FIRE SERVICE BUILDING CONNECTION.
3 PROPOSED DOMESTIC WATER SERVICE BUILDING CONNECTION.
4 PROPOSED FIRE DEPARTMENT CONNECTION (FDC).
5 PROPOSED FIRE HYDRANT.
6 PROPOSED 1" DOMESTIC WATER METER VAULT.
9 PROPOSED 8" PUBLIC WATER MAIN.
12 PROPOSED FIRE SERVICE BUILDING CONNECTION. PROPOSED DCDA TO BE INSTALLED ON THE IMMEDIATE INSIDE WALL OF BUILDING.
14 PROPOSED 3" DOMESTIC WATER METER VAULT.
16 PROPOSED WALL-MOUNTED FDC.
17 PROPOSED DOMESTIC WATER SERVICE BUILDING CONNECTION. PROPOSED DCVA TO BE INSTALLED ON THE IMMEDIATE INSIDE WALL OF BUILDING.

LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- STORM LINE
- WATER LINE
- FIRE LINE
- SANITARY LINE
- EXISTING FLOODPLAIN
- PROPOSED FLOODPLAIN
- 500' OREGON TRAIL LINE
- CATCH BASIN
- STORM MANHOLE
- SANITARY MANOLE
- CLEANOUT
- FIRE HYDRANT
- FDC



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SUMMIT DEVELOPMENT GROUP

UTILITY PLAN

C401

STORM NOTES:

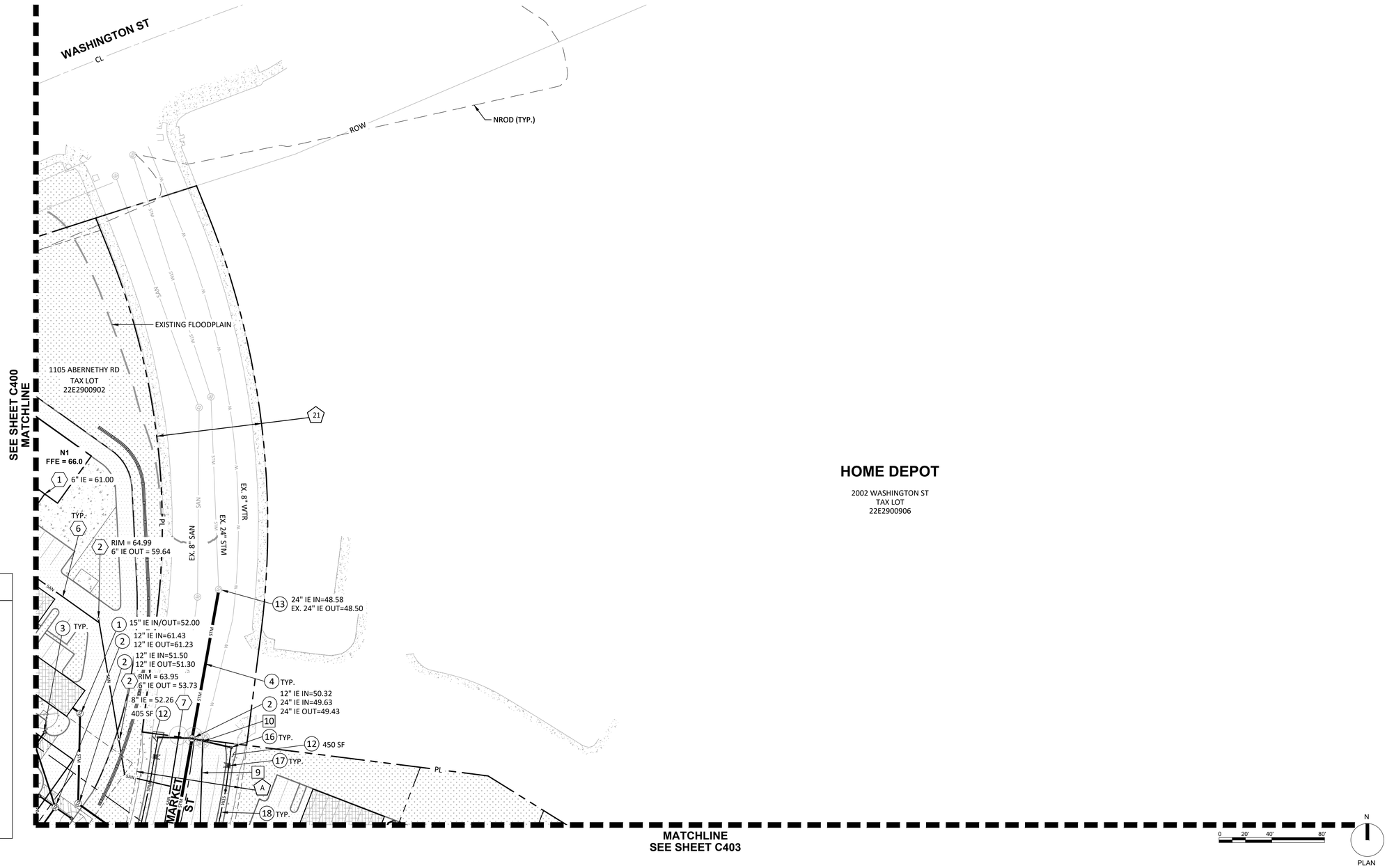
1. PROPOSED 60" FLOW CONTROL MANHOLE.
2. PROPOSED 48" STANDARD STORM MANHOLE.
3. PROPOSED STORM INLET.
4. PROPOSED STORM PIPE. SLOPE AT 0.5% MIN.
12. PROPOSED PUBLIC STORMWATER CURB PLANTER WITH CURB CUTS, TYP.
13. PROPOSED CONNECTION TO EXISTING MANHOLE.
16. PROPOSED OVERFLOW INLET.
17. PROPOSED CONCRETE CURB INLET.
18. PROPOSED 6" PERFORATED STORM PIPE. SLOPE AT 1.0% MIN.

SANITARY NOTES:

1. PROPOSED SANITARY BUILDING CONNECTION.
2. PROPOSED SANITARY CLEANOUT.
6. PROPOSED SANITARY SEWER PIPE.
7. PROPOSED CONNECTION TO EXISTING SANITARY MANHOLE.

WATER NOTES:

9. PROPOSED 8" PUBLIC WATER MAIN.
10. PROPOSED CONNECTION TO EXISTING PUBLIC WATER MAIN.



LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- STORM LINE
- WATER LINE
- FIRE LINE
- SANITARY LINE
- EXISTING FLOODPLAIN
- PROPOSED FLOODPLAIN
- 500' OREGON TRAIL LINE
- CATCH BASIN
- STORM MANHOLE
- SANITARY MANOLE
- CLEANOUT
- FIRE HYDRANT
- FDC

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SUMMIT DEVELOPMENT GROUP

UTILITY PLAN

C402

STORM NOTES:

1. PROPOSED 60" FLOW CONTROL MANHOLE.
2. PROPOSED 48" STANDARD STORM MANHOLE.
3. PROPOSED STORM INLET.
4. PROPOSED STORM PIPE. SLOPE AT 0.5% MIN.
7. PROPOSED BAYFILTER WATER QUALITY TREATMENT VAULT.
8. PROPOSED LINED RAIN GARDEN.
10. PROPOSED 4.0' DIAM. BARREL ADS STORMWATER DETENTION SYSTEM.
12. PROPOSED PUBLIC STORMWATER CURB PLANTER WITH CURB CUTS, TYP.
14. PROPOSED 5.0' DIAM. BARREL ADS STORMWATER DETENTION SYSTEM.
15. PROPOSED CONNECTION TO EXISTING CULVERT.
16. PROPOSED OVERFLOW INLET.
17. PROPOSED CONCRETE CURB INLET.
18. PROPOSED 6" PERFORATED STORM PIPE. SLOPE AT 1.0% MIN.
19. INSTALL 48" STORM MANHOLE OVER EXISTING CATCHBASIN. CONNECT TO EXISTING STORM LINE.

SANITARY NOTES:

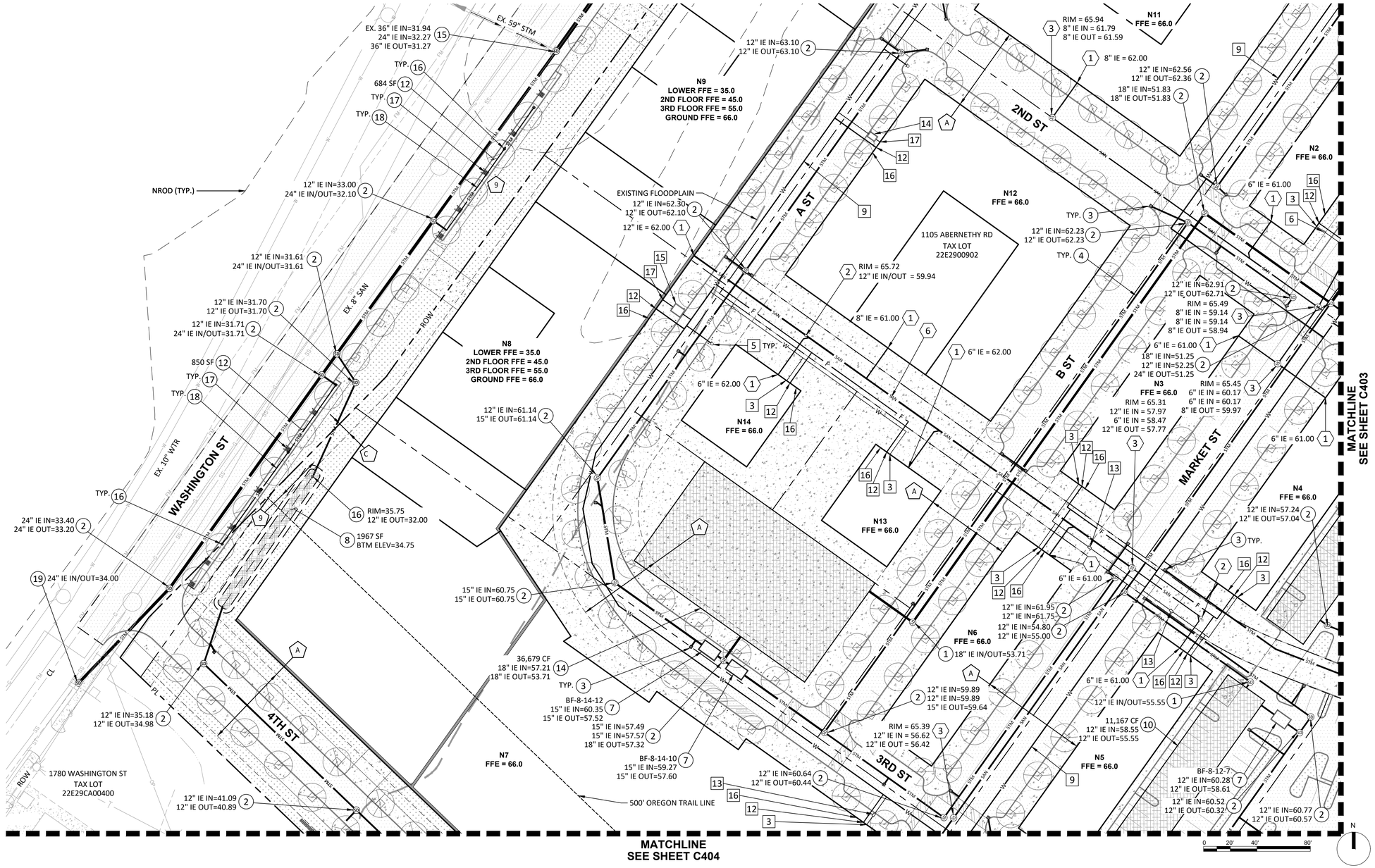
1. PROPOSED SANITARY BUILDING CONNECTION.
2. PROPOSED SANITARY CLEANOUT.
3. PROPOSED SANITARY MANHOLE.
6. PROPOSED SANITARY SEWER PIPE.

WATER NOTES:

3. PROPOSED DOMESTIC WATER SERVICE BUILDING CONNECTION.
5. PROPOSED FIRE HYDRANT.
6. PROPOSED 1" DOMESTIC WATER METER VAULT.
9. PROPOSED 8" PUBLIC WATER MAIN.
12. PROPOSED FIRE SERVICE BUILDING CONNECTION. PROPOSED DCDA TO BE INSTALLED ON THE IMMEDIATE INSIDE WALL OF BUILDING.
13. PROPOSED 2" DOMESTIC WATER METER VAULT.
14. PROPOSED 3" DOMESTIC WATER METER VAULT.
15. PROPOSED 6" DOMESTIC WATER METER VAULT.
16. PROPOSED WALL-MOUNTED FDC.
17. PROPOSED DOMESTIC WATER SERVICE BUILDING CONNECTION. PROPOSED DCVA TO BE INSTALLED ON THE IMMEDIATE INSIDE WALL OF BUILDING.

LEGEND

- RIGHT-OF-WAY
- PROPERTY LINE
- STORM LINE
- WATER LINE
- FIRE LINE
- SANITARY LINE
- EXISTING FLOODPLAIN
- PROPOSED FLOODPLAIN
- 500' OREGON TRAIL LINE
- CATCH BASIN
- STORM MANHOLE
- SANITARY MANOLE
- CLEANOUT
- FIRE HYDRANT
- FDC



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UTILITY PLAN

C403

STORM NOTES:

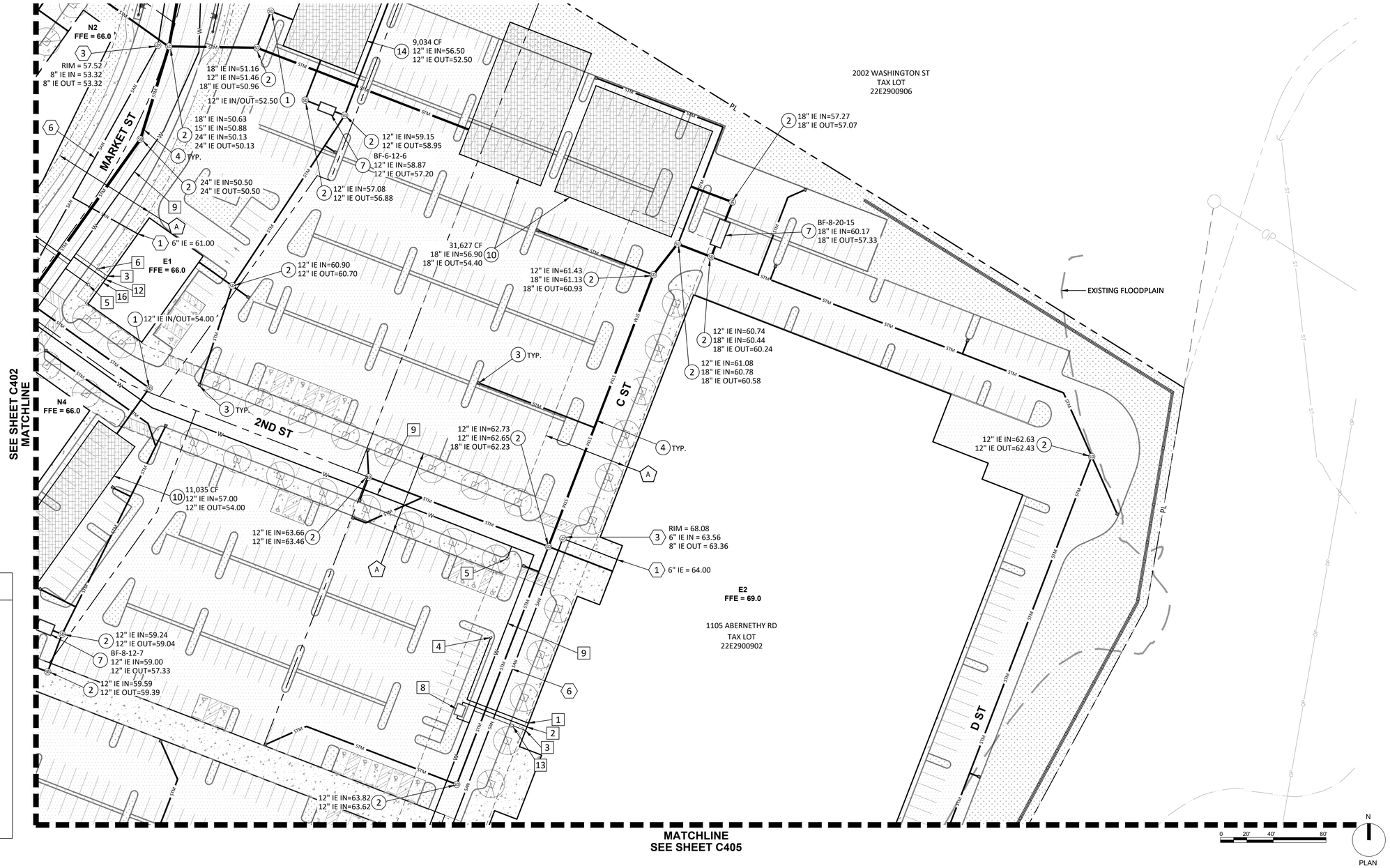
1. PROPOSED 60" FLOW CONTROL MANHOLE.
2. PROPOSED 48" STANDARD STORM MANHOLE.
3. PROPOSED STORM INLET.
4. PROPOSED STORM PIPE. SLOPE AT 0.5% MIN.
7. PROPOSED BAYFILTER WATER QUALITY TREATMENT VAULT.
10. PROPOSED 4.0' DIAM. BARREL ADS STORMWATER DETENTION SYSTEM.
14. PROPOSED 5.0' DIAM. BARREL ADS STORMWATER DETENTION SYSTEM.

SANITARY NOTES:

1. PROPOSED SANITARY BUILDING CONNECTION.
3. PROPOSED SANITARY MANHOLE.
6. PROPOSED SANITARY SEWER PIPE.

WATER NOTES:

1. PROPOSED FDC LINE BUILDING CONNECTION.
2. PROPOSED FIRE SERVICE BUILDING CONNECTION.
3. PROPOSED DOMESTIC WATER SERVICE BUILDING CONNECTION.
4. PROPOSED FIRE DEPARTMENT CONNECTION (FDC).
5. PROPOSED FIRE HYDRANT.
6. PROPOSED 1" DOMESTIC WATER METER VAULT.
8. PROPOSED FIRE SERVICE DCDA VAULT.
9. PROPOSED 8" PUBLIC WATER MAIN.
12. PROPOSED FIRE SERVICE BUILDING CONNECTION. PROPOSED DCDA TO BE INSTALLED ON THE IMMEDIATE INSIDE WALL OF BUILDING.
13. PROPOSED 2" DOMESTIC WATER METER VAULT.
16. PROPOSED WALL-MOUNTED FDC.



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- PROPOSED FLOODPLAIN
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- CATCH BASIN
- STORM MANHOLE
- SANITARY MANOLE
- CLEANOUT
- FIRE HYDRANT
- FDC

UTILITY PLAN

C404

STORM NOTES:

1. PROPOSED 60" FLOW CONTROL MANHOLE.
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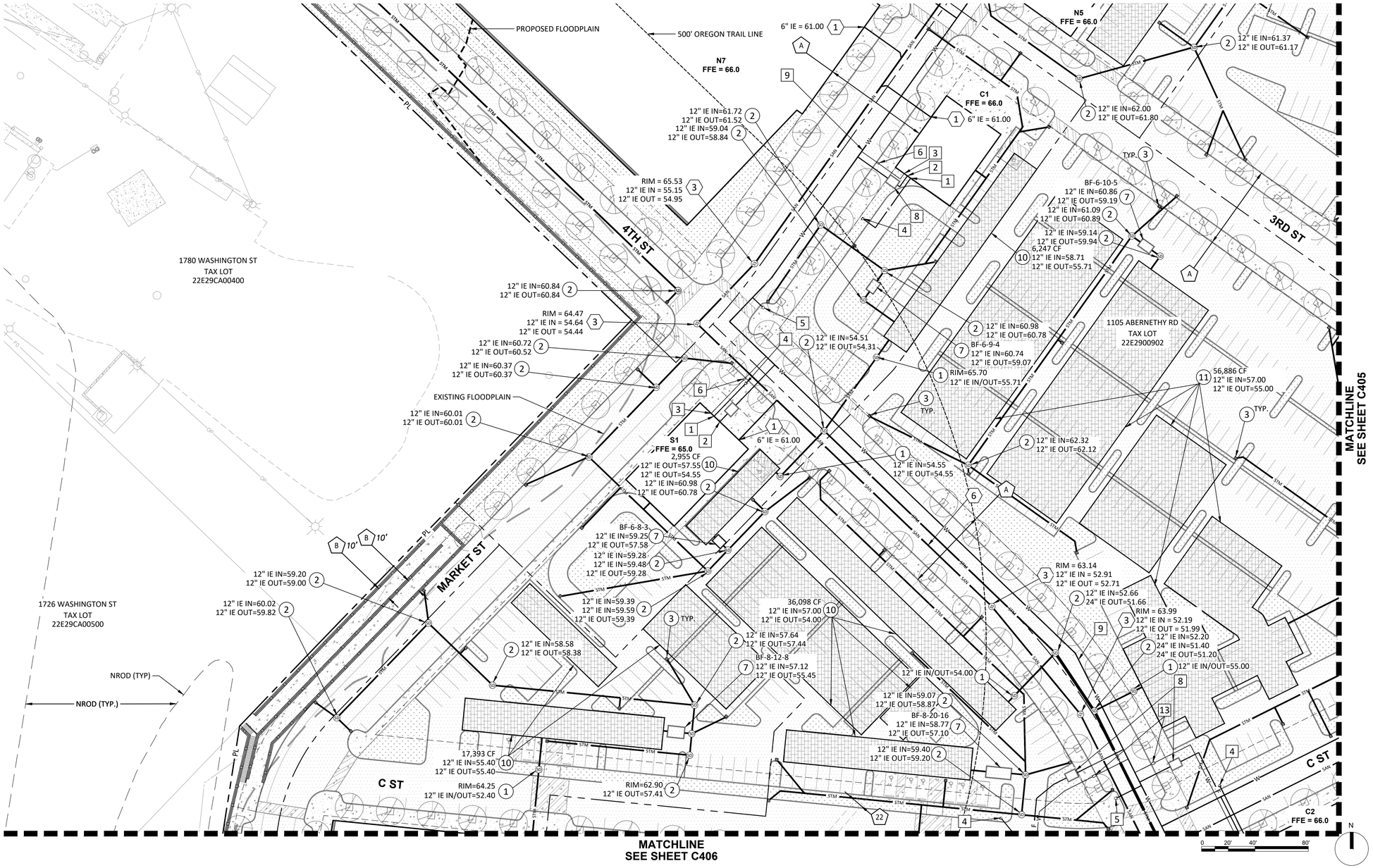
3. PROPOSED STORM INLET.
7. PROPOSED BAYFILTER WATER QUALITY TREATMENT VAULT.
10. PROPOSED 4.0' DIAM. BARREL ADS STORMWATER DETENTION SYSTEM.
11. PROPOSED 3.0' DIAM. BARREL ADS STORMWATER DETENTION SYSTEM.

SANITARY NOTES:

1. PROPOSED SANITARY BUILDING CONNECTION.
3. PROPOSED SANITARY MANHOLE.
6. PROPOSED SANITARY SEWER PIPE.

WATER NOTES:

1. PROPOSED FDC LINE BUILDING CONNECTION.
2. PROPOSED FIRE SERVICE BUILDING CONNECTION.
3. PROPOSED DOMESTIC WATER SERVICE BUILDING CONNECTION.
4. PROPOSED FIRE DEPARTMENT CONNECTION (FDC).
5. PROPOSED FIRE HYDRANT.
6. PROPOSED 1" DOMESTIC WATER METER VAULT.
8. PROPOSED FIRE SERVICE DCDA VAULT.
9. PROPOSED 8" PUBLIC WATER MAIN.
13. PROPOSED 2" DOMESTIC WATER METER VAULT.



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- FIRE LINE
- SANITARY LINE
- EXISTING FLOODPLAIN
- PROPOSED FLOODPLAIN
- 500' OREGON TRAIL LINE
- CATCH BASIN
- STORM MANHOLE
- SANITARY MANOLE
- CLEANOUT
- FIRE HYDRANT
- FDC

UTILITY PLAN

C405

STORM NOTES:

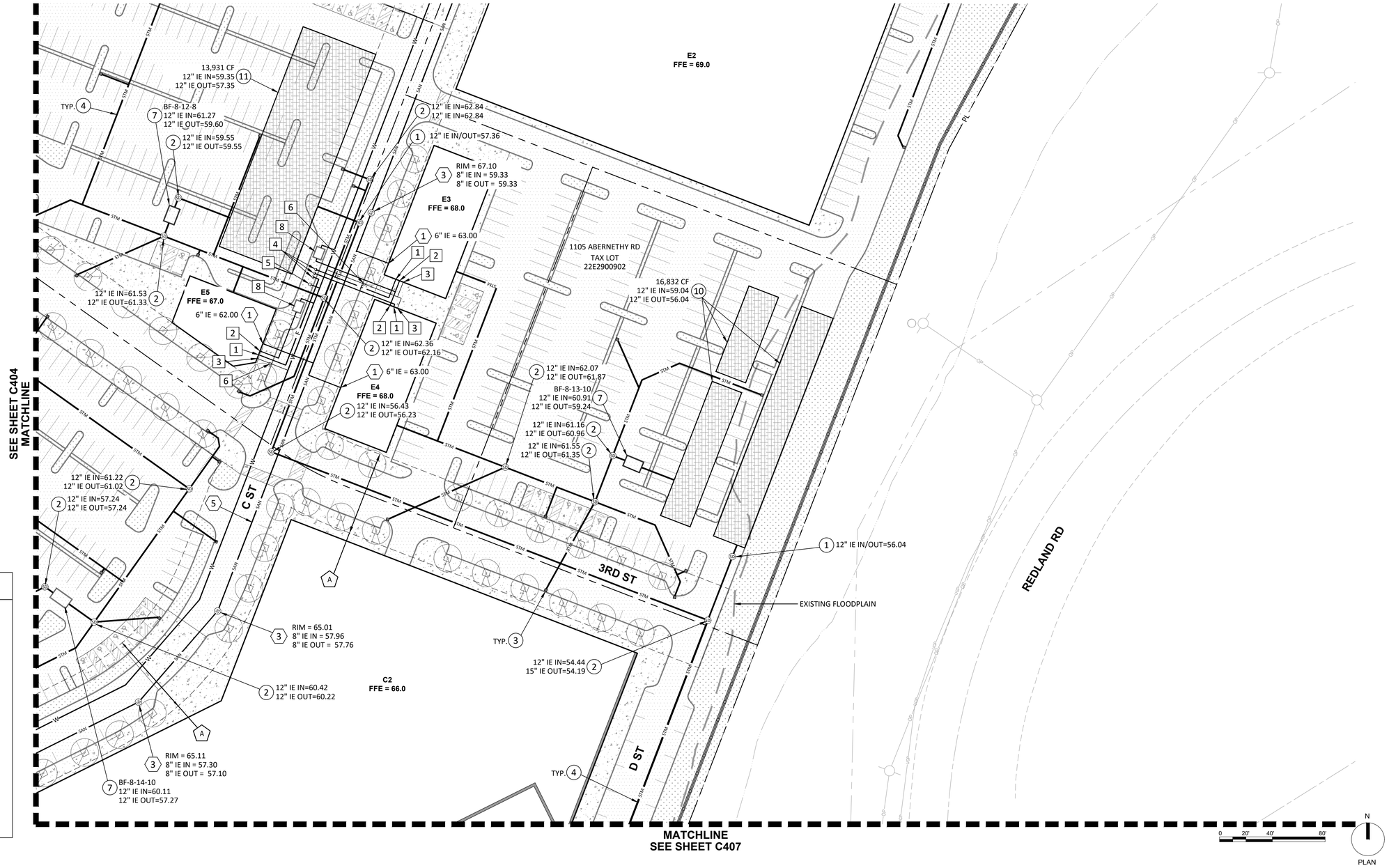
1. PROPOSED 60" FLOW CONTROL MANHOLE.
2. PROPOSED 48" STANDARD STORM MANHOLE.
3. PROPOSED STORM INLET.
4. PROPOSED STORM PIPE. SLOPE AT 0.5% MIN.
7. PROPOSED BAYFILTER WATER QUALITY TREATMENT VAULT.
10. PROPOSED 4.0' DIAM. BARREL ADS STORMWATER DETENTION SYSTEM.
11. PROPOSED 3.0' DIAM. BARREL ADS STORMWATER DETENTION SYSTEM.

SANITARY NOTES:

1. PROPOSED SANITARY BUILDING CONNECTION.
3. PROPOSED SANITARY MANHOLE.
5. PROPOSED PUBLIC SANITARY SEWER MAIN.

WATER NOTES:

1. PROPOSED FDC LINE BUILDING CONNECTION.
2. PROPOSED FIRE SERVICE BUILDING CONNECTION.
3. PROPOSED DOMESTIC WATER SERVICE BUILDING CONNECTION.
4. PROPOSED FIRE DEPARTMENT CONNECTION (FDC).
5. PROPOSED FIRE HYDRANT.
6. PROPOSED 1" DOMESTIC WATER METER VAULT.
8. PROPOSED FIRE SERVICE DCDA VAULT.



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- SANITARY MANOLE
- CLEANOUT
- FIRE HYDRANT
- FDC

UTILITY PLAN

C406

STORM NOTES:

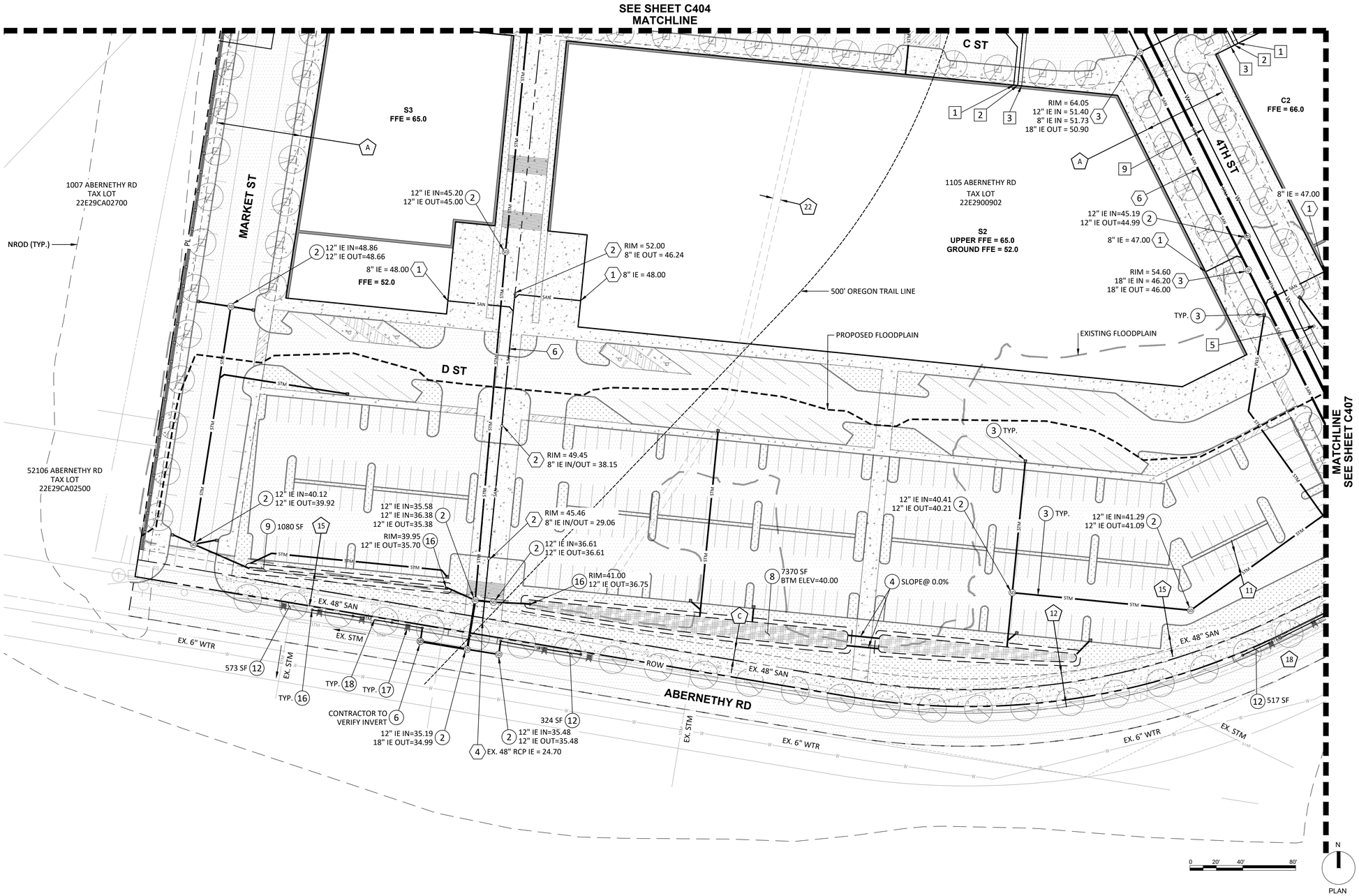
2. PROPOSED 48" STANDARD STORM MANHOLE.
3. PROPOSED STORM INLET.
4. PROPOSED STORM PIPE. SLOPE AT 0.5% MIN.
6. INSTALL 48" STORM MANHOLE OVER EXISTING STORM LINE.
8. PROPOSED LINED RAIN GARDEN.
9. PROPOSED LINED STORMWATER TREATMENT SWALE.
12. PROPOSED PUBLIC STORMWATER CURB PLANTER WITH CURB CUTS, TYP.
16. PROPOSED OVERFLOW INLET.
17. PROPOSED CONCRETE CURB INLET.
18. PROPOSED 6" PERFORATED STORM PIPE. SLOPE AT 1.0% MIN.

SANITARY NOTES:

1. PROPOSED SANITARY BUILDING CONNECTION.
2. PROPOSED SANITARY CLEANOUT.
3. PROPOSED SANITARY MANHOLE.
4. PROPOSED CONNECTION TO EXISTING SANITARY LINE.
6. PROPOSED SANITARY SEWER PIPE.

WATER NOTES:

1. PROPOSED FDC LINE BUILDING CONNECTION.
2. PROPOSED FIRE SERVICE BUILDING CONNECTION.
3. PROPOSED DOMESTIC WATER SERVICE BUILDING CONNECTION.
5. PROPOSED FIRE HYDRANT.
9. PROPOSED 8" PUBLIC WATER MAIN.



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UTILITY PLAN

C407

STORM NOTES:

(2) PROPOSED 48" STANDARD STORM MANHOLE.

(3) PROPOSED STORM INLET.

(4) PROPOSED STORM PIPE. SLOPE AT 0.5% MIN.

(6) INSTALL 48" STORM MANHOLE OVER EXISTING STORM LINE.

(7) PROPOSED BAYFILTER WATER QUALITY TREATMENT VAULT.

(12) PROPOSED PUBLIC STORMWATER CURB PLANTER WITH CURB CUTS, TYP.

(16) PROPOSED OVERFLOW INLET.

(17) PROPOSED CONCRETE CURB INLET.

(18) PROPOSED 6" PERFORATED STORM PIPE. SLOPE AT 1.0% MIN.

SANITARY NOTES:

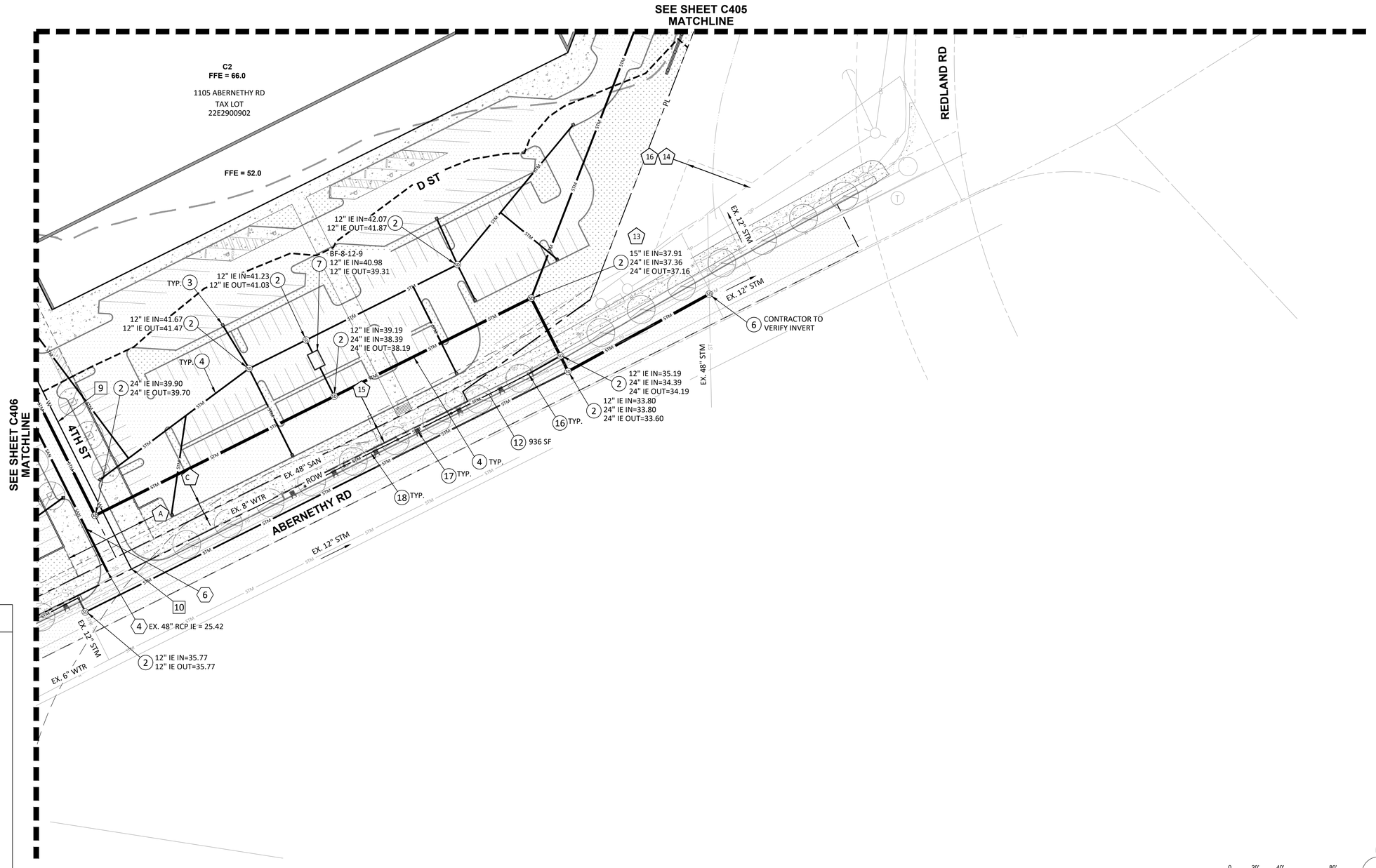
<4> PROPOSED CONNECTION TO EXISTING SANITARY LINE.

<6> PROPOSED SANITARY SEWER PIPE.

WATER NOTES:

[9] PROPOSED 8" PUBLIC WATER MAIN.

[10] PROPOSED CONNECTION TO EXISTING PUBLIC WATER MAIN.



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- STORM MANHOLE
- SANITARY MANOLE
- CLEANOUT
- FIRE HYDRANT
- FDC

0 20' 40' 80'

N

PLAN

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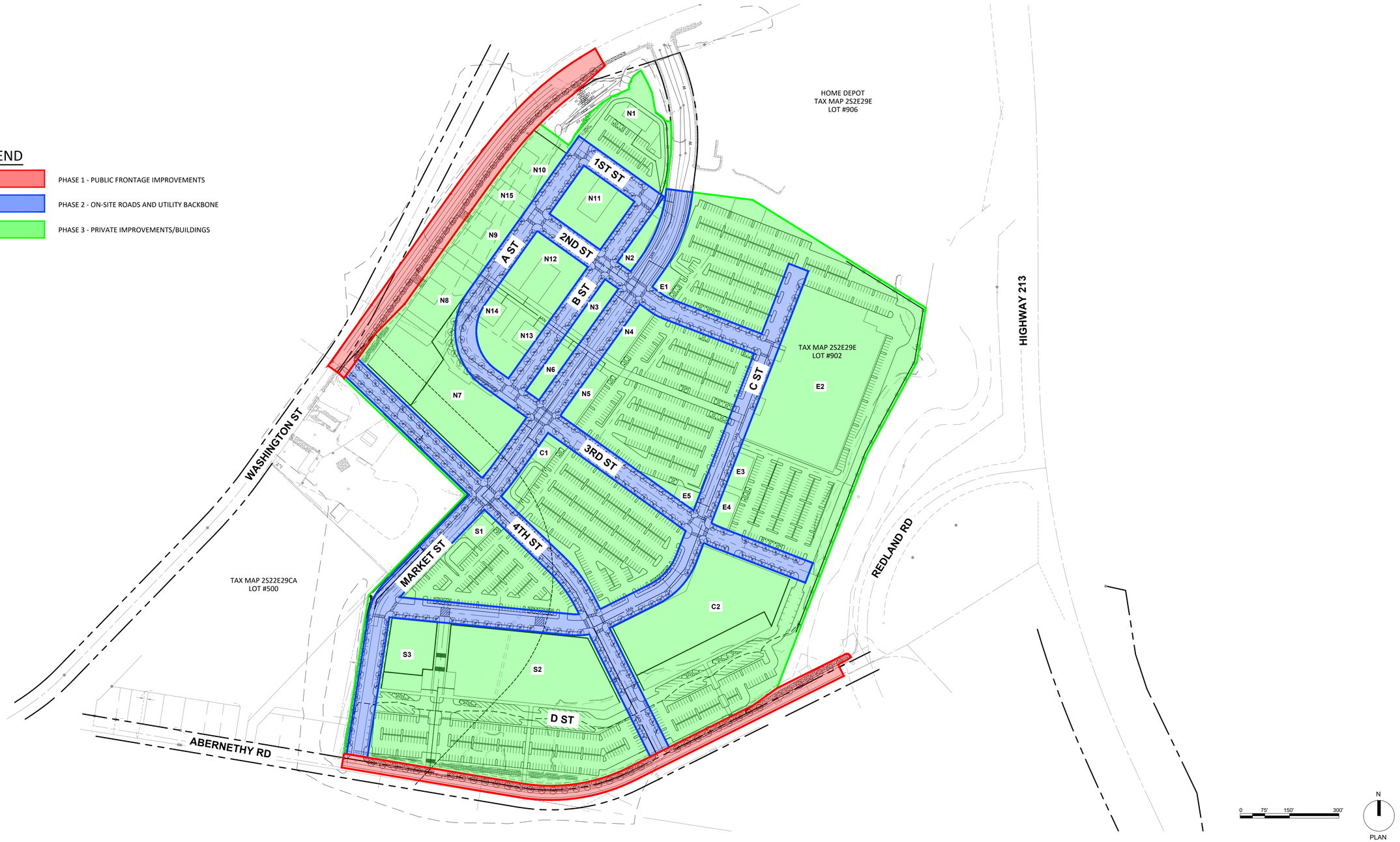
PHASING PLAN

C500

LEGEND

- PHASE 1 - PUBLIC FRONTAGE IMPROVEMENTS
- PHASE 2 - ON-SITE ROADS AND UTILITY BACKBONE
- PHASE 3 - PRIVATE IMPROVEMENTS/BUILDINGS



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SUMMIT DEVELOPMENT GROUP

GeoDesign Inc
An NV5 Company

PRELIMINARY REPORT OF GEOTECHNICAL ENGINEERING SERVICES

Proposed Rivers Edge Development
1105 Abernethy Road
Oregon City, Oregon

For
Summit Development Group
March 2, 2020

GeoDesign Project: SDG-4-01

GeoDesign Inc
AN NV5 COMPANY

March 2, 2020

Summit Development Group
2 Centerpointe Drive #500
Lake Oswego, OR 97035

Attention: John Falconer

Preliminary Report of Geotechnical Engineering Services
Proposed Rivers Edge Development
1105 Abernethy Road
Oregon City, Oregon
GeoDesign Project: SDG-4-01

GeoDesign, Inc. is pleased to submit this preliminary report of geotechnical engineering services for the proposed Rivers Edge development located at 1105 Abernethy Road in Oregon City, Oregon. Our services for this project were conducted in general accordance with our proposal dated December 26, 2019.

We appreciate the opportunity to be of service to you. Please call if you have questions regarding this report.

Sincerely,

GeoDesign, Inc.

Brett A. Shipton, P.E., G.E.
Principal Engineer

cc: Eric Saunders, Summit Development Group (via email only)

RTL:BAS:kt
Attachments
One copy submitted (via email only)
Document ID: SDG-4-01-030220-geor.docx
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EXECUTIVE SUMMARY

This preliminary report presents the results of our geotechnical engineering evaluation for the proposed Rivers Edge development located at 1105 Abernethy Road in Oregon City, Oregon. The development plans for this project are still preliminary, but they are anticipated to consist of assorted entertainment, retail, and dining options. The site is approximately 65 acres and was formerly a municipal waste landfill.

Based on our review of the available information and the results of our exploration, it is our opinion that the site can be developed as proposed. Our specific recommendations for site development and design are provided later in this report. The following items will have an impact on design and construction of the proposed project:

- The landfill trash and uncompacted landfill cap will not provide suitable foundation support for buildings and other structures. Buildings, utilities, and pedestrian sidewalks should be supported on deep foundations. We recommend that steel pipe piles or driven grout piles be used for this project. Corrosion protection will be required to prevent piles from degrading.
- Parking lot and road areas should be surcharged to minimize the amount of future settlement. Surcharge heights should be 10 feet above finished grade. Some additional settlement will still occur over the life of the project as the landfill trash gradually decomposes. We recommend that a budget be established for periodic maintenance of parking lots and roads.
- Methane gas will be generated as the landfill trash gradually decomposes. Methane gas mitigation will be required. We recommend that an environmental consultant be retained to design appropriate methane mitigation systems.
- The current ground surface consists of uncompacted landfill cap that will not provide suitable support for site improvements. We recommend that the upper 12 inches of subgrade be recompacted beneath buildings, sidewalks, pavement, and other improvements.
- Liquefaction, lateral spreading, fault rupture, and landslides are not considered hazards at the site.
- Our seismic analysis indicates that design levels of ground shaking can be computed assuming Site Class E in accordance with ASCE 7-16. It may be necessary to perform a site-specific seismic analysis of some of the buildings during final design.
- Stormwater infiltration will not be feasible at this site.
- The on-site soil is suitable for use as structural fill, provided it is properly moisture conditioned.

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ACRONYMS AND ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
AC	asphalt concrete
ASCE	American Society of Civil Engineers
ASTM	American Society for Testing and Materials
BGS	below ground surface
CAPWAP	case pile wave analysis program
CBR	California bearing ratio
CRBG	Columbia River Basalt Group
DEQ	Oregon Department of Environmental Quality
DOGAMI	Oregon Department of Geology and Mineral Industries
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
g	gravitational acceleration (32.2 feet/second^2)
GEM	gas electron multiplier
H:V	horizontal to vertical
IBC	International Building Code
MCE	maximum considered earthquake
MCE_G	maximum considered earthquake geometric mean
NAVD	North American Vertical Datum
OSHA	Occupational Safety and Health Administration
OSHPD	Office of Statewide Health Planning and Development
OSSC	Oregon Standard Specifications for Construction (2018)
PCB	polychlorinated biphenyl
pcf	pounds per cubic foot
PDA	Pile Driving Analyzer®
PGA	peak ground acceleration
PGA_M	maximum considered earthquake geometric mean peak ground acceleration adjusted for site affects
psf	pounds per square foot
psi	pounds per square inch
RCRA	Resource Conservation and Recovery Act
SEAOC	Structural Engineers Association of California
SOSSC	State of Oregon Structural Specialty Code
SPT	standard penetration test
TCLP	Toxicity Characteristic Leaching Procedure
USGS	U.S. Geological Survey

1.0 INTRODUCTION

This preliminary report presents the results of our geotechnical engineering evaluation for the proposed Rivers Edge development located at 1105 Abernethy Road in Oregon City, Oregon. This preliminary report provides a general overview of the geotechnical conditions at the site, but it is not suitable for performing final design of the proposed project. Additional data collection, analysis, and information regarding the proposed building types and locations will be required in order prepare a final geotechnical report. The development plans for the proposed project are still preliminary, but may include some combination of the following:

- 4.2-acre aquatic park that includes a large, one-story, enclosed space; shallow pools; and slides
- 4.9-acre Topgolf facility up to three stories tall at the location of the existing driving range
- 2.4-acre outdoor amphitheater
- Bowling alley or cinemas building
- Fitness center building
- Multi-story hotel building
- Single-story retail, restaurants, and other businesses that will complement the other entertainment facilities
- A big box retailer, such as Walmart or Costco
- Parking and on-site access roads

This report presents GeoDesign's preliminary geotechnical engineering recommendations for the project. At the time we prepared this report, structural loads and grading plans for the project had not yet been developed. For this report, we assume that structural loads for each building type will be similar to other projects we have worked on. We also assume that cuts and fills will generally be approximately 5 feet or less. The site location relative to surrounding physical features is shown on Figure 1.

Acronyms and abbreviations used herein are defined above, immediately following the Table of Contents.

2.0 PROJECT BACKGROUND

The site is located within the former Rossman Landfill, a large municipal landfill that was permitted to receive non-hazardous municipal waste from the Portland area between the late 1960s and early 1980s. The landfill was issued a closure permit in 1990. DEQ information indicates that shallow groundwater at the site was impacted, and remedial actions have been taken to address landfill gas generation, landfill leachate, and shallow groundwater in the site vicinity.

We understand that landfill operations included placing soil berms around the perimeter of the area to receive trash. The details of berm construction methods were not available, other than the outer slopes were as steep as approximately 1H:1V. Municipal trash was then placed within the bermed area. The landfill received waste primarily in two phases, with trash layers tens of feet thick each. After forming the first layer of trash, it was covered by a soil cap at least 2 feet

thick. The second trash layer was placed over the first soil cap, along with upward construction of the soil berms to maintain the boundaries of the landfill. This second layer of trash was then capped again by soil of varying thickness. The second layer of trash did not entirely cover the area of the first. The southeast site area, which is generally lower in elevation than the rest of the former landfill site, only received the first layer of trash. Also, during some of the landfill's operation, a thin layer of soil was spread over the active areas of the landfill each day to reduce odors emanating from the trash.

Following closure of the landfill, smaller areas of the site were leased to businesses for storage and other uses. Portions of the site are currently occupied by the Trails End Golf Center, several trash container rental companies, and other tenants. Site grading was completed for construction of the Trails End Golf Center, including the addition of more fill soil over some of the area occupied by the golf center.

Due to potential contamination from the landfill trash, we recommend that an environmental consultant be retained to evaluate environmental conditions at the site.

3.0 PURPOSE AND SCOPE

The purpose of this evaluation was to provide preliminary geotechnical engineering recommendations for the due diligence phase of the project. Specifically, we completed the following scope of services:

- Reviewed the existing subsurface information in our in-house files.
- Drilled three borings to collect subsurface soil data. The borings were drilled using mud rotary methods through the landfill trash and into the underlying native soil. The borings were drilled to depths up to 71.5 feet BGS.
- Monitored for methane and hydrogen sulfide gases during our subsurface explorations using a GEM gas detector.
- Stored the spoils from each geotechnical boring in appropriately labeled, 55-gallon drums.
- Collected one composite sample of the spoils and submitted the sample for the following analytical tests for disposal characterization:
  - RCRA 8 metals by TCLP analytical methods
  - Volatile organic compounds by EPA Method 8260
  - PCBs by EPA Method 8080
  - Hydrocarbon identification by NWTPH-HCID
- Analyzed the chemical data and arranged for permitted disposal of investigation-derived waste off site at approved facilities by licensed waste transporters.
- Conducted a geotechnical laboratory testing program that consisted of the following tests:
  - Fourteen moisture content determinations in general accordance with ASTM D2216
  - Four particle-size analyses in general accordance with ASTM D1140
  - Two Atterberg limits tests in general accordance with ASTM D2435
- Provided foundation support recommendations.
- Provided recommendations for improving the landfill material in roadway and parking areas.

- Provided preliminary design and construction recommendations, including the following:
  - Site preparation, grading, and earthwork, including dry/wet weather construction, cut and fill recommendations, and temporary excavations
  - Pavement and subgrade design
  - Utility trench construction
  - Retaining wall design criteria, including earth pressures and foundation support
- Prepared this preliminary geotechnical engineering report that presents our preliminary findings, conclusions, and recommendations.

4.0 SITE CONDITIONS

4.1 REGIONAL AND SITE GEOLOGY

The site is located on the southeast side of the Portland Basin, a fault-bounded basin situated between the Coast Ranges to the west and the Cascade Mountains to the east (Orr and Orr, 1999). Bedrock in this region consists of basalt flows emplaced approximately 15 million years ago as part of the CRBG, which is exposed in the hills of West Linn across the Willamette River from the site (Schlicker and Finlayson, 1979; Gannett and Caldwell, 1998).

Bedrock is overlain by silt, sand, and gravel of Miocene to Pleistocene age (14.5 million to 1 million years old), which form the majority of the basin-fill in the area. The basin-fill sediments generally are mapped as the Sandy River Mudstone toward the lower portion of the assemblage (mostly fine-grained sandstone and mudstone) overlain by the Troutdale Formation, a series of gravel, sand, and silt deposited by the ancestral Columbia River and smaller rivers running out of the Cascade Mountains (Schlicker and Finlayson, 1979).

The basin-fill sediments are overlain by late Pleistocene silt, sand, and gravel deposited during glacial outburst floods from Lake Missoula approximately 15,000 to 12,000 years ago (Waitt, 1985). Missoula Flood silt and sand form many of the relatively flat, elevated areas east of the Willamette River in the region surrounding the site (Schlicker and Finlayson, 1979; Madin, 1990). Down along the Willamette River floodplain and its tributaries, the Missoula flood deposits and older geologic units are unconformably overlain by more recent alluvial gravel, sand, and silt.

The total thickness of the basin-fill deposits in the site vicinity is interpreted to be approximately 150 feet to less than 30 feet (Madin, 1990; Gannett and Caldwell, 1998).

Subduction of the Juan de Fuca Plate beneath the west margin of the North American Plate presents the potential for great plate-interface earthquakes (magnitude greater than 8). Paleoseismic investigations indicate that plate interface earthquakes have an average recurrence of 500 to 600 years (Atwater and Hemphill-Haley, 1997; Goldfinger et al., 2003) and that the last subduction zone earthquake occurred in the year 1700 (Satake et al., 1996). Moderate intensity and long duration ground shaking would be expected at the site in the event of a large magnitude Cascadia plate-interface earthquake.

Northwest-striking crustal faults have been mapped in bedrock exposures surrounding the Portland Basin and inferred below sedimentary cover (Blakely et al., 2000; Personius, 2002). These faults are related to the compressional, right-lateral tectonics dominating the Portland

Basin. The Bolton fault and the Oatfield fault are two of these faults and are mapped approximately 0.5 mile southwest and 0.5 mile north of the site, respectively (Personius, 2002). The Bolton fault is mapped based on the linear escarpment formed in the CRBG along the southern bank of the Willamette River. The potential activity of the Bolton fault is not known, since offset of Quaternary deposits has not been observed, but the fault may be related to the Portland Hills-Clackamas River fault system, which has shown evidence of recent seismicity (Personius, 2002). The potential activity of the Oatfield fault is not known, since offset of Quaternary deposits has not been observed; core samples show that volcanic rocks approximately 1 million years old may be offset across the fault (Personius, 2002).

4.2 SURFACE CONDITIONS

The site is approximately 65 acres in size and located east of the Willamette River, south of the confluence with the Clackamas River. A smaller tributary (Abernethy Creek) runs south of the site toward the Willamette River. Site elevations typically vary from 50 to 75 feet, although some lower elevation areas are present around the edges of the property. The lower areas of the site lie within the Willamette River flood plain and were flooded in the February 1996 flood.

The site is bound by Washington Street to the west, Washington Street to the north with a Home Depot commercial development north of the road, a steep-sided stream to the east with Redland Road further east of the stream, and Abernethy Road to the south. The site consists of broad, relatively flat areas bound by moderately steep to steep-sided slopes that are tens of feet high, descending either to lower benches within the site or to the roads and stream adjacent to the site. Most of the site lies within the former Rossman Landfill. The flattened areas are a result of the filling that has occurred at this site. There is a triangular piece of property between Washington Street and a tall berm at the west extent of the former landfill that is gently sloped toward the west.

The ground surface across the site mostly consists of low grass and weeds, gravel work areas and driveways, or bare earth. Some trees, shrubs, and blackberry patches are also present. Most of the site is currently unoccupied or is used for equipment storage. The Trails End Golf Center in the east site area has a graded driving range, groomed greens and tee-off areas, and a large clubhouse. Several office and storage buildings were previously located along the south-central boundary that have since been demolished.

4.3 SUBSURFACE CONDITIONS

Our understanding of subsurface conditions is based on the information we obtained in the three borings (B-1 through and B-3) we drilled for the project. We drilled our borings to depths of up to 71.5 feet BGS at the approximate locations shown on Figure 2. Descriptions of the field exploration and laboratory testing programs, the exploration logs, and results of our laboratory testing are presented in the Appendix.

The geologic units encountered during our subsurface explorations generally consist of fill and landfill trash overlying silt, sand, and gravel alluvium deposited by the Willamette River. The alluvium is believed to be underlain by hard silt and clay of the Sandy River Mudstone. The following sections provide a detailed description of each geologic unit encountered at the site.

4.3.1 Fill

Beginning at the ground surface, we encountered fill soil in all our explorations that extends to depths of approximately 6 to 22 feet BGS. The fill we encountered is a soil cap that was placed over the trash. The cap fill includes a variety of soil types, but mostly consists of brown to gray, sandy silt, clay, and silty sand. The silt and clay consistency ranges from medium stiff to very stiff, but is primarily medium stiff. The silty sand is typically loose to medium dense. We occasionally observed organics and debris in the fill layer. Although not encountered in our borings, we anticipate that some concrete, asphalt, and wood are also present in the fill.

Laboratory testing of select samples indicates the moisture content of the fill at the time of our explorations ranged from 18 to 41 percent. Atterberg limits testing indicates the clay exhibits medium plasticity.

4.3.2 Trash

We encountered trash below the cap fill in all three explorations. The trash extends to depths of 40 to 48 feet BGS. The trash we observed includes rags, plastic bags, general plastic, wood, glass, wire, asphalt, cloth, and metal. We lost a significant amount of drilling mud while drilling through the trash, which indicates that some voids are present. We also experienced periodic caving in the trash layer, which indicates that some of the material is likely loose. We observed occasional oil sheen and hydrocarbon odors that indicate some contamination is likely present.

4.3.3 Silt and Clay Fill

We encountered silt and clay fill beneath the landfill trash in all three borings. The silt and clay fill extends to depths of 45 to 60 feet BGS. The silt and clay fill is generally gray, moist, soft to medium stiff, has medium to high plasticity, and contains varying amounts of fine- to medium-grained sand and varying amounts of debris consisting of plastic bags, general plastic, wire, and brick. It is possible that this material was placed as a landfill liner. Laboratory testing of samples indicates the moisture content of the silt and clay ranged from 44 to 52 percent at the time of our explorations.

4.3.4 Alluvial Silt and Silty Sand

We encountered alluvial silt and silty sand in all three borings. The silt and silty sand extend to depths of 50 to 68 feet BGS. The silt is typically brown, moist to wet, very soft to medium stiff, has medium to high plasticity, and contains varying amounts of fine-grained sand. The silty sand is typically brown to gray, loose to medium dense, moist to wet, fine to medium grained, and contains varying amounts of fines. Laboratory testing of samples indicates the moisture content of the silt ranged from 46 to 48 52 percent at the time of our explorations. Laboratory testing of one sample indicates the moisture content of the silty sand was approximately 40 percent at the time of our explorations. We interpret the alluvial silt and silty sand to represent unconsolidated sediments of the Willamette River floodplain.

4.3.5 Alluvial Gravel

We encountered alluvial gravel in all three borings. All of our borings were completed in the gravel layer. The gravel is generally very dense, gray to brown, moist to wet, subrounded to subangular, and contains medium to coarse sand. We interpret the alluvial gravel to represent

either coarse-grained Missoula flood deposits or more recent channel deposits from the Willamette River. Other borings we have seen in the area indicate the gravel layer is typically 3 to 15 feet thick and is underlain by hard Sandy River Mudstone.

4.3.6 Groundwater

The presence of drilling fluids during mud rotary drilling prevented observation of groundwater in the borings. Wet soil recovered from drilling was first observed at depths of approximately 60 and 65 feet BGS (elevations of 6 to 9 feet). We also anticipate that shallow zones of perched water and leachate fluids are present. Considering the site's proximity to the Willamette River, groundwater levels may be impacted by seasonal changes in river levels. We anticipate that the shallow perched water underlying the site will vary in response to seasonal changes and other factors not observed during our field work.

4.4 INFILTRATION TESTING

We did not perform infiltration testing during our field exploration programs. In our opinion, the soil at the site is not suitable for infiltration. In our experience, the silt and clay cap fill material will have a low permeability. Any infiltration water that penetrates the cap fill will enter the trash zone and increase the demand on the existing leachate system and will increase the potential for contaminants to be transported off site.

5.0 GEOLOGIC HAZARDS

We evaluated the presence of geologic hazards in the site vicinity based on a review of published literature and our experience with nearby projects. Individual geologic hazards are summarized in the following sections.

5.1 SEISMIC HAZARDS

5.1.1 Liquefaction

Liquefaction is caused by a rapid increase in pore water pressure that reduces the effective stress between soil particles to near zero. Granular soil, which relies on interparticle friction for strength, is susceptible to liquefaction until the excess pore pressures can dissipate. In general, loose, saturated sand soil with low silt and clay content is the most susceptible to liquefaction. Silty soil with low plasticity is moderately susceptible to liquefaction under relatively higher levels of ground shaking.

Based on the groundwater depth and soil at the site, it is our opinion that the soil at the site is not susceptible to liquefaction. It appears that groundwater is generally located below the trash layer, and the soil beneath the trash layer generally has sufficient plasticity, depth, or density that it will not liquefy.

5.1.2 Lateral Spreading

Lateral spreading is a liquefaction-related seismic hazard and occurs on gently sloping or flat sites underlain by liquefiable sediment adjacent to an open face, such as a riverbank. Liquefied soil adjacent to an open face can flow toward the open face, resulting in lateral ground displacement. Since the risk of liquefaction is low, it is also our opinion that the risk of lateral spreading is low.

5.1.3 Fault Rupture

There are no active faults mapped within approximately 0.5 mile of the site (USGS, 2020). Therefore, it is our opinion that the probability of surface fault rupture beneath the site is low.

5.2 LANDSLIDES

Hazard mapping shows that there are no mapped landslides at the site (DOGAMI, 2018). Most of the site is relatively level and is not prone to landslides. There are some relatively steep slopes along the edges of the property that may need to be evaluated for stability if buildings will be located at the top of the slopes.

5.3 FLOODING

Hazard mapping shows that the site is within a mapped flood zone (DOGAMI, 2018). FEMA mapping indicates the 100-year flood elevation is 48.3 feet. We understand that Oregon City considers the flood elevation to be 50.7 feet at the site. At least some portions of the site at lower elevations will likely be in a flood hazard zone.

6.0 DESIGN RECOMMENDATIONS

6.1 FOUNDATION SUPPORT

6.1.1 General

We recommend that all proposed buildings, receiving areas, floor slabs, and other settlement-sensitive structures be supported on deep foundations. Shallow foundations should not be used because they could experience excessive settlement as the trash layer in the landfill gradually decomposes. Steel pipe piles and driven grout piles are two common pile types in the Portland metropolitan area. Therefore, we have provided recommendations for these pile types. We recommend that pile-supported slabs extend approximately 10 feet beyond the exterior of the buildings to prevent these areas from settling differentially and making building access difficult.

6.1.2 Downward Axial Capacity

Table 1 presents our estimated ultimate compressive capacity of the piles. The capacities in Table 1 assume the piles are spaced at least 3 pile diameters on-center.

Table 1. Axial Compressive Capacity

Deep Foundation Type	Ultimate Compressive Capacity[1] (tons)	Downdrag Load[2] (tons)	Refusal Criteria	Estimated Tip Elevation (feet)
12-inch-diameter, steel pipe pile (closed end)	300	15	Driven at least 10 feet into gravel or refusal as determined by PDA and CAPWAP analysis	0 to -10
18-inch-diameter, steel pipe pile (closed end)	325	25		
16-inch-diameter, driven grout pile	250	20		
18-inch-diameter, driven grout pile	325	25		

1. Does not include downdrag loads.
2. Downdrag loads should be applied as a structural load.

A safety factor of 3 should be used for pile design, although this value can be reduced to 2 if PDA testing or a pile load testing program is implemented.

Piles will develop the majority of their capacity in the very dense gravel unit encountered in the borings. This gravel unit was encountered at depths between approximately 50 and 70 feet BGS in our borings, which we believe is generally representative of conditions across most of the site. All piles should be driven at least 10 feet into the gravel or to refusal in the gravel as determined by PDA and CAPWAP analysis, whichever is less. Depth of penetration of the foundations will vary depending on the depth and consistency of the gravel unit and could differ from the estimated tip elevations presented in Table 1.

6.1.3 Uplift Resistance

Uplift capacity of the piles will be mobilized through skin friction between the foundations and the surrounding soil. Table 2 shows our computed allowable uplift capacity for each deep foundation type.

Table 2. Ultimate Uplift Capacity

Deep Foundation Type	Ultimate Uplift Capacity[1] (tons)
12-inch-diameter, steel pipe pile (closed end)	50
18-inch-diameter, steel pipe pile (closed end)	80
16-inch-diameter, driven grout pile	70
18-inch-diameter, driven grout pile	80

1. A safety factor of 2 should be used to determine the allowable uplift capacity.

The computed uplift capacities assume the piles will penetrate at least 10 feet into the gravel or to refusal and that the piles are spaced at least 3 pile diameters on-center.

6.1.4 Lateral Resistance

Resistance to lateral loads can be developed by passive pressure on the face of pile caps, grade beams, tie beams, and other buried foundation elements. Sliding friction on the base of pile-supported foundation elements should be ignored. Adjacent floor slabs, pavement, or the upper 12-inch depth of adjacent, unpaved areas should not be considered when calculating passive resistance. Pile lateral resistance will depend on the specific pile type, size, material, reinforcing, and condition of the pile head. We can complete a lateral pile analysis once the pile type has been selected.

6.1.5 Other Considerations

If driven piles are used, the terminal blow counts will depend on the pile type and driving equipment. The structural integrity of the steel pipe pile or the mandrel should be evaluated to confirm that it will withstand the stresses induced by pile driving. GeoDesign should be consulted to select the appropriate hammer energy to develop the required capacity while avoiding excessive driving stresses. Terminal blow criteria should be based on CAPWAP analysis considering the pile type, required capacity, and the selected driving equipment. Our analysis should be verified in the field using a PDA.

The piles should be installed with suitable alignment tolerances. Vertical alignment should be within 3 percent of plumb or as determined by the structural engineer. Lateral alignment should be within tolerances determined by the structural engineer, considering the pile cap design. Settlement of piles supported on the dense gravel will be negligible beyond the elastic compression of the pile or shaft.

If buried obstructions are encountered during pile or shaft installation, the foundation installation equipment should be extracted and the obstruction removed. If the buried obstruction cannot be removed, the structural engineer should be consulted to select a new foundation location. Each pile should be carefully inspected for damage caused by impacting buried obstructions during driving.

To mitigate downdrag loads on the piles, we recommend that pile driving not commence until the surcharge program is complete. We also note the landfill debris might be corrosive to concrete and steel piles. Consequently, corrosion additives or protection may be required.

We recommend full-time observation of pile and drilled shaft installation to confirm that the foundations are installed in accordance with the recommendations in this report and with the project specifications.

6.2 FLOOR SLAB SUPPORT

The uncompacted pile cap material that is underlain by trash will not provide adequate floor slab support. We recommend that a structural floor slab be used that is supported on deep foundations. The structural engineer should determine if the floor slabs can span the distance

between the building deep foundations or if additional floor slab deep foundations are necessary. We recommend that a working pad be placed beneath the floor slabs.

6.3 SEISMIC DESIGN PARAMETERS

Seismic design will be performed in accordance with ASCE 7-16, which is prescribed by the 2019 SOSSC and 2018 IBC. A Site Class E designation can be used to compute design levels of ground shaking. Per ASCE 7-16 Section 11.4.8, a site response analysis is required for this project unless the structural engineer determines that exception 3 in the code applies, which is based on the period of the building and the method of analysis used by the structural engineer. If a site response analysis is needed, we will perform this additional analysis. If a site response analysis is not needed, the seismic design parameters presented in Table 3 from ASCE 7-16 may be used for design. These parameters were obtained from USGS seismic design maps (SEAOC/OSHPD, 2020).

Table 3. ASCE 7-16 Seismic Design Parameters

Parameter	Short Period (T_s = 0.2 second)	1 Second Period (T_1 = 1.0 second)
Spectral Acceleration (MCE)	S_s = 0.833 g	S_1 = 0.372 g
Site Class	E	
Site Coefficient	F_a = 1.300	F_v = 2.512
Spectral Acceleration Parameters	S_{MS} = 1.083 g	S_{M1} = 0.934 g
Design Spectral Acceleration Parameters	S_{DS} = 0.722 g	S_{D1} = 0.623 g
Spectral PGA	0.374 g	
Design Spectral PGA	0.249 g	
MCE_G PGA Adjusted for Site Class Effects[1]	PGA_M = 0.543 g	

1. From ASCE 7-16. Minimum PGA value to use when evaluating liquefaction and soil strength loss, as required by ASCE 7-16 Section 11.8.3.

6.4 SURCHARGE RECOMMENDATIONS

6.4.1 Surcharge Embankment Construction

The landfill trash and landfill cap material have a high potential for post-construction settlement, particularly if additional fill is placed over the existing landfill cap. We recommend that all buildings, receiving areas, pedestrian walkways between the shops, and utility corridors will be pile supported. All roadways and AC parking areas will be constructed on grade, and differential settlement of these areas will be repaired periodically during the life of the project. A final grading plan has not been established at this time. However, differential settlement on the order of several inches to a couple feet is possible over the design life of the development, depending on the height of fill required to achieve final grades and the composition of the trash beneath areas of development.

Based on the performance of the other facilities constructed over the landfill, it is our opinion that post-construction settlement of roadways and parking areas can be reduced significantly by pre-consolidating the landfill debris with a surcharge embankment. Based on our review of the available information generated during the surcharge at the neighboring facility and our conversations with contractors, we recommend the surcharge embankment height be constructed to 10 feet above finished grade.

All fill placed to achieve finished subgrade elevation should be placed and compacted as structural fill in accordance with the recommendations in the "Structural Fill" section. Surcharge material placed above finished building grades does not need to be compacted. We have assumed a total unit weight of 100 pcf for the uncompacted surcharge embankment material.

Figure 3 presents the estimated primary consolidation settlement for various fill heights. We anticipate that the majority of the settlement will occur within six weeks after the final fill elevations have been achieved. However, based on the variable nature of the landfill material, areas may require an extended surcharge period. The surcharge embankment should only be removed after settlement data shows that settlement is essentially complete. After the surcharge program is complete, secondary consolidation and settlement caused by decay of organic material is anticipated to continue over the life of the development.

6.4.2 Settlement Monitoring

Settlement should be monitored during and after fill placement using settlement plates installed in the proposed surcharge areas. Figure 4 shows a typical settlement plate detail. The settlement plates should be installed prior to site filling and the elevations surveyed prior to any fill placement. The monuments should be surveyed at least twice per week during fill construction and for at least one month after final fill elevations have been achieved, followed by a surveying frequency of once weekly. The settlement plates should be monitored using survey equipment with accuracy of $1/100^{th}$ of a foot and referenced to a stationary datum established at least 500 feet from the edge of the surcharge area and in an area not receiving fill. In addition to recording the elevation of the settlement plates during each survey event, a complete record of the surcharge history requires reading and recording the fill height at each settlement plate. We recommend at least one settlement plate for every 20,000 square feet (plan area) of fill. We request that GeoDesign establish the number and location of the settlement plates based on review the final grading plans

For ease in handling, the casing and rod portions of the settlement plate are usually installed in 5-foot sections. As filling progresses, couplings are used to install additional sections. Continuity in the monitoring data is maintained by reading and recording the top of the measurement rod immediately prior to and following the addition of new sections. Care must be taken during fill construction to prevent damage to the rods.

6.4.3 Post-Construction Settlement

Although surcharging will reduce the amount of post-construction settlement, some settlement is anticipated over the life of the development. The magnitude of the post-construction settlement will depend on the following factors:

- The amount of cutting or filling required to achieve site grades relative to current site elevations
- The time elapsed since the landfill material and capping material was placed
- The thickness of the cap and landfill debris
- The composition of the trash

Post-construction settlement on the order of 4 to 12 inches is anticipated over a 30-year period. We understand that post-construction settlement of roadways and parking areas will be addressed by periodic re-grading of the paved surfaces. We also recommend greater surface slope on all paved parking areas to minimize the formation puddles and decrease the need for periodic maintenance. In addition, all receiving areas surrounding buildings should be pile supported and hinged slabs should be used to provide a safe transition for pedestrians between pile-supported and unsupported hard surfaces.

6.5 METHANE MITIGATION

The organic material in the landfill will generate methane gas as it decomposes. If not properly mitigated, the methane gas can accumulate and present a hazard. Typical methane gas mitigation measures include installing impermeable barriers to prevent gas migration, active or passive gas ventilation systems, gas detection systems, and performing routine monitoring. We recommend that an environmental consultant be hired to evaluate methane conditions at the site and design appropriate methane mitigation measures for each new building.

6.6 PAVEMENT RECOMMENDATIONS

We recommend areas that received pavement be surcharged as described in the "Surcharge Recommendations" section. The pavement subgrade should be prepared as described in the "Site Preparation," "Wet Weather Construction," and "Structural Fill" sections. These recommendations result in a subgrade that consists of silty or sandy material that is either scarified and compacted to structural fill specifications in cut areas or compacted as structural fill. Subgrade could also be cement amended as described in the "Cement-Amended Soil" section. We were not provided with specific traffic volumes and have made the following assumptions for roadways and standard- and heavy-duty pavement sections:

1. Standard-Duty Paving: 200 automobiles per day with a 20-year design life
2. Heavy-Duty Paving: 400 automobiles and 20 trucks per day, 20-year design life
3. Roadways: 600 automobiles and 40 trucks per day, 20-year design life

We conducted our analyses using AASHTO methods and the following parameters:

- CBR equal to 4
- Reliability of 85 percent
- Terminal serviceability of 2.0
- Structural coefficient of 0.42 for AC
- Structural coefficient of 0.10 for crushed base rock

If these assumptions are incorrect, GeoDesign should be contacted to revise the design pavement section thicknesses. Our recommended pavement design sections are presented in Table 4, which includes consideration of subgrade that is not cement amended and subgrade that is cement amended in the upper 12 inches.

Table 4. Pavement Design Recommendation Options

Parameter	Material	No Cement Amendment of Subgrade	Cement-Amended Subgrade (12 inches)
Roadway Pavement	AC[1]	4.5 inches	4.5 inches
	Base Rock[2]	8 inches	8 inches
	Sub-Base[3]	12 inches	0 inches
	Geogrid[4]	Yes	Yes
Heavy-Duty Parking Lot Pavement	AC[1]	3.5 inches	3.5 inches
	Base Rock[2]	6 inches	6 inches
	Sub-Base[3]	6 inches	0 inches
	Geogrid[4]	Yes	Yes
Standard-Duty Parking Lot Pavement	AC[1]	2.5 inches	2.5 inches
	Base Rock[2]	6 inches	6 inches
	Sub-Base[3]	6 inches	0 inches
	Geogrid[4]	Yes	Yes

1. AC thickness
2. Crushed base rock thickness
3. Crushed sub-base rock thickness
4. Tensar DX 1100 Geogrid recommended for pavement section

All thicknesses are intended to be the minimum acceptable values. The design of the recommended pavement section is based on the assumption that construction will be completed during an extended period of dry weather and that the subgrade has been improved in accordance with the recommendations in this report. Wet weather construction will require an increased thickness of aggregate base.

The crushed aggregate base should conform to OSSC 02630 (Base Aggregate), with the addition that the material contains no more than 5 percent by dry weight passing the U.S. Standard No. 200 sieve. Crushed sub-base should conform to OSSC 02630 (Base Aggregate). The geogrid should consist of Tensar DX1100 or approved equivalent. Aggregate base should be placed in one lift and compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D1557. The AC should conform to OSSC 00745 (Asphalt Concrete Pavement – Statistical Acceptance) and should be compacted to 91 percent of the maximum specific gravity of the mix, or as required by the local jurisdiction.

6.7 RETAINING WALLS

6.7.1 Assumptions

These retaining wall recommendations apply to permanent above-grade retaining walls. Our retaining wall design recommendations are based on the following assumptions: (1) the walls consist of conventional, cantilevered retaining walls, (2) the walls are less than 10 feet in height, (3) drains are provided to prevent hydrostatic pressure from developing, and (4) the retained soil is level. Re-evaluation of our recommendations will be required if the retaining wall design criteria for the project varies from these assumptions.

We note that retaining walls will likely settle over time with the surrounding ground surface. This settlement should be accounted for in the retaining wall design. Concrete retaining walls could be supported on deep foundations, if necessary. Concrete retaining walls can also be constructed with additional batter. Other types of retaining walls or reinforced slopes that can better tolerate settlement can also be used on this project instead of concrete walls.

6.7.2 Wall Design Parameters

For unrestrained retaining walls, an active equivalent fluid pressure of 35 pcf should be used for design. Where retaining walls are restrained from rotation prior to being backfilled, an at-rest equivalent fluid pressure of 55 pcf should be used for design. A superimposed seismic lateral force should be calculated based on a dynamic force of $7H^2$ pounds per linear foot of wall (where H is the height of the wall in feet). The load should be applied as a distributed load with the centroid located at a distance of 0.6H above the base of the wall.

If surcharges (e.g., retained slopes, building foundations, vehicles, terraced walls, etc.) are located within a horizontal distance from the back of a wall equal to the height of the wall, additional pressures will need to be accounted for in the wall design. Figure 5 presents additional pressures resulting from some common loading scenarios. Our office should be contacted for additional pressures resulting from alternate loading scenarios. We recommend a vertical live load of 250 psf be applied at the surface of the retained soil where the wall retains roadways.

The base of the wall footing excavations should extend a minimum of 18 inches below the lowest adjacent grade. At locations where there is a slope in front of the retaining wall, we recommend a minimum 5-foot-wide, horizontal bench be placed between the wall and the top of the slope.

6.8 PERMANENT SLOPES

Permanent cut or fill slopes should not exceed a gradient of 2H:1V, unless specifically evaluated for stability. Upslope buildings, access roads, and hardscapes should be set back a minimum of 5 feet from the crest of such slopes. Slopes should be planted with appropriate vegetation to provide protection against erosion as soon as possible after grading. Surface water runoff should be collected and directed away from slopes to prevent water from running down the face of the slope.

6.9 DRAINAGE

6.9.1 Surface

The finished ground surface around the buildings should be sloped away from foundations at a minimum 2 percent gradient for a distance of at least 5 feet. Pavement surfaces and open space areas should be sloped such that surface water runoff is collected and routed to suitable discharge points. Runoff water should not be directed to the top of slopes.

6.9.2 Subsurface

In our opinion, it is not necessary to install footing drains for at-grade structures. However, we do recommend that perimeter footing drains be installed around buried or partially buried structures. We also recommend that roof downspouts or scuppers discharge to a solid pipe that carries the collected water to an appropriate stormwater system that is designed to prevent backflow.

6.9.3 Temporary

During grading the contractor should be made responsible for temporary drainage of surface water as necessary to prevent standing water and/or erosion at the working surface. The contractor should keep all footing excavations and building pads free of water during rough and finished grading of the building site.

7.0 CONSTRUCTION RECOMMENDATIONS

7.1 SITE PREPARATION

7.1.1 Stripping and Grubbing

Stripping and grubbing will be required to remove any tree and shrub roots that remain after cuts are performed. Root material should be removed from all building, pavement, and structural fill areas. The actual stripping and grubbing depth should be based on field observations at the time of construction. Stripping and grubbing should extend at least 5 feet beyond the limits of proposed building and pavement areas. Excavated roots should be transported off site for disposal or used as fill in landscaped areas.

7.1.2 Demolition

Demolition will be necessary to remove the existing buildings and pavement. We recommend that all abandoned footings, walls, slabs, utilities, basements, and other foundation elements beneath new structures be completely removed. Any monitoring wells or underground storage tanks should be abandoned in accordance with state and local regulations prior to site development. Excavations resulting from the demolition of existing improvements should be backfilled with compacted structural fill as recommended in this report. The bottom of the excavations should expose firm subgrade. The sides of the temporary excavations should be cut into firm material and sloped no steeper than 1½H:1V.

7.1.3 Subgrade Evaluation

The near-surface silt and sand that are part of the landfill cap were placed with little to no compactive effort. We recommend that the upper 12 inches of the cap soil intended for final subgrade be improved after any recommended surcharge program has been implemented.

Subgrade improvement should be completed in areas that support pavement and slab-on-grade structures. The cap soil can be improved with one or a combination of the following methods:

- Compact the soft material in place in accordance with the recommendations provided in the "Structural Fill" section. The moisture content of the soil was higher than optimum at the time of our explorations. Moisture conditioning (e.g., tilling and drying) will be required to remove the excess moisture from the soil. Tilling can be accomplished with a variety of equipment but is generally more effective with an agricultural disc.
- Amend the soil with cement as discussed in the "Cement-Amended Soil" section. If this option is selected, GeoDesign can provide specific recommendations for cement amendment.

7.1.4 Subgrade Evaluation

A member of our geotechnical staff should observe all footing, floor slab, pavement, and sidewalk subgrade after stripping, excavation, scarifying and compaction, and placement of structural fill have been completed to confirm that there are no areas of unsuitable or unstable soil. The subgrade should be evaluated using moisture-density testing, a hand probe, or proof rolling with a fully loaded dump truck (or similar heavy, rubber tire construction equipment). Soft, loose, or unsuitable soil found at the subgrade level should be over-excavated and replaced with structural fill.

7.2 EXCAVATION

7.2.1 General

Excavations will be required for construction of new foundations, utilities, pavement, and other improvements. Conventional earthmoving equipment in proper working condition should be capable of making the necessary excavations. Temporary excavation sidewalls should stand vertical to a depth of approximately 4 feet, provided groundwater seepage does not occur. Excavations deeper than 4 feet will require shoring or should be sloped. Sloped excavations may be used to vertical depths of 10 feet BGS and should have side slopes no steeper than 1½H:1V, provided groundwater seepage does not occur. We recommend a minimum horizontal distance of 5 feet from the edge of existing improvements to the top of any temporary slope. All cut slopes should be protected from erosion by covering them during wet weather. If seepage, sloughing, or instability is observed, the slope should be flattened or shored. Shoring will be required where slopes are not possible. The contractor should be responsible for selecting the appropriate shoring system. If excavations extend into the trash layer, we anticipate that any excavated trash will need to be transported off site to an approved disposal facility.

Excavations should not be allowed to undermine adjacent improvements. If existing roads or structures are located near a proposed excavation, unsupported excavations can be maintained outside of a 1H:1V downward projection that starts 5 feet from the base of the existing elements. Excavations that must be inside of this zone should be supported by temporary or permanent shoring designed for moment resistance for the full height of the excavation, including kick-out for the full buried depth of the retaining system.

While we have described certain approaches to performing excavations, it is the contractor's responsibility to select the excavation and dewatering methods, monitor the excavations for

safety, and provide any shoring required to protect personnel and adjacent improvements. All excavations should be in accordance with applicable OSHA and state regulations.

7.2.2 Excavation Dewatering

Excavations will be above the groundwater level. However, some perched water could still seep into the site excavations, especially after periods of heavy rain. We anticipate that dewatering methods consisting of pumping water from excavation sumps will generally be adequate. If possible, we recommend that construction be scheduled for the dry season. Water generated during dewatering operations should be treated, if necessary, and pumped to a suitable disposal point.

Where groundwater seepage occurs in excavations, we recommend placing at least 1 foot of stabilization material at the base of the excavations. The stabilization material should consist of 4- or 6-inch-minus pit- or quarry-run rock, crushed rock, or crushed gravel and sand. The material should have a maximum particle size of 6 inches, should have less than 5 percent by dry weight passing the U.S. Standard No. 4 sieve, and should have at least two mechanically fractured faces. The material should be free of organic and other deleterious materials.

We note that these recommendations are for guidance only. Dewatering of excavations is the sole responsibility of the contractor, as the contractor is in the best position to select the appropriate system based on their means and methods.

7.3 STRUCTURAL FILL

Structural fill includes fill placed beneath foundations, floor slabs, hardscapes, and other structures. Structural fill should generally consist of particles no larger than 3 inches in diameter and should be free of organic and other deleterious materials. Recommendations for suitable fill material are provided in the following sections.

7.3.1 On-Site Soil

The on-site sand will generally be suitable for use as structural fill. On-site sand should be placed in lifts with a maximum uncompacted thickness of 12 inches and compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D1557.

The on-site fine-grained soil will be suitable for use as structural fill only if it can be moisture conditioned. Based on our experience, this soil will be sensitive to small changes in moisture content and may be difficult, if not impossible, to compact adequately during wet weather or when the moisture content is more than a few percentage points above optimum. The soil may require extensive drying before it can be used as structural fill. The on-site fine-grained soil should be placed in lifts with a maximum uncompacted thickness of 8 inches and compacted to not less than 92 percent of the material's maximum dry density, as determined by ASTM D1557. We recommend using imported granular material for structural fill if the moisture content of the on-site soil cannot be reduced.

7.3.2 Imported Granular Material

Imported granular material should be pit- or quarry-run rock, crushed rock, or crushed gravel and sand that is fairly well graded between coarse and fine and has less than 5 percent by dry

weight passing the U.S. Standard No. 200 sieve. All granular material must be durable such that there is no degradation of the material during and after installation as structural fill. The material should be placed in lifts with a maximum uncompacted thickness of 12 inches and compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D1557. During the wet season or when wet subgrade conditions exist, the initial lift should have a maximum thickness of 18 inches and should be compacted by rolling with a smooth-drum, non-vibratory roller.

7.3.3 Recycled Concrete

Recycled concrete can be used for structural fill, provided the concrete is broken to a maximum particle size of 3 inches. This material must be durable such that there is no degradation of the material during and after installation as structural fill. Recycled concrete can be used as trench backfill if it meets the size requirements for that application and the requirements for imported granular material. The material should be placed in lifts with a maximum uncompacted thickness of 12 inches and compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D1557.

7.3.4 Trench Backfill Material

Oregon City trench backfill requirements should be followed for any public utilities that are installed. Our trench backfill recommendations for private utilities are provided below.

Trench backfill for the utility pipe base and pipe zone should consist of durable, well-graded, granular material that has a maximum particle size of 1 inch, has less than 5 percent by dry weight passing the U.S. Standard No. 200 sieve, and contains no organic or other deleterious materials. Backfill above the pipe zone should meet the requirements above, except that the maximum particle size may be increased to 1½ inches.

Backfill for the pipe base and within the pipe zone should be placed in maximum 12-inch-thick lifts and compacted to not less than 90 percent of the maximum dry density, as determined by ASTM D1557, or as recommended by the pipe manufacturer. Backfill above the pipe zone should be placed in maximum 12-inch-thick lifts and compacted to not less than 92 percent of the maximum dry density, as determined by ASTM D1557. Trench backfill located within 2 feet of finish subgrade elevation should be placed in maximum 12-inch-thick lifts and compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D1557. Outside of structural areas, trench backfill material should be compacted to at least 90 percent of the maximum dry density, as determined by ASTM D1557.

7.3.5 Stabilization Material

Stabilization material used in staging or haul road areas or in trenches should consist of 4- or 6-inch-minus pit- or quarry-run rock, crushed rock, or crushed gravel and sand. The material should have a maximum particle size of 6 inches, should have less than 5 percent by dry weight passing the U.S. Standard No. 4 sieve, and should have at least two mechanically fractured faces. The material should be free of organic and other deleterious materials. Stabilization material should be placed in lifts between 12 and 24 inches thick and compacted to a well-keyed, firm condition.

7.3.6 Cement-Amended Soil

As an alternative to the use of imported granular material for wet weather structural fill and/or to provide subgrade stabilization for wet weather earthwork, an experienced contractor can amend the on-site soil with portland cement to obtain suitable support properties. Successful use of soil amendment depends on the use of correct mixing techniques, soil moisture content, and amendment quantities. Soil amending should be conducted in accordance with the specifications provided in OSSC 00344 (Treated Subgrade). The amount of cement used during amendment should be based on an assumed soil dry unit weight of 100 pcf.

Specific recommendations based on exposed site conditions for soil amending can be provided if necessary. However, for preliminary design purposes, we recommend a target strength for cement-amended subgrade for building and pavement subbase (below aggregate base) soil of 80 to 100 psi. The amount of cement used to achieve this target generally varies with moisture content and soil type. It is difficult to predict field performance of soil to cement amendment due to variability in soil response, and we recommend laboratory testing to confirm expectations. For building and pavement subbase, we recommend assuming a minimum cement ratio of 6 percent (by dry weight). If the soil moistures are in excess of 30 percent, a cement ratio of 7 percent may be needed. The amount of cement added to the soil may need to be adjusted based on field observations and performance.

A minimum curing of four days is required between amendment and construction traffic access. Consecutive lifts of fill may be amended immediately after the previous lift has been amended and compacted (e.g., the four-day wait period does not apply). Construction traffic should not be allowed on unprotected, cement-amended subgrade. To protect the cement-amended surfaces from abrasion or damage, the finished surface should be covered with 4 to 6 inches of imported granular material.

Amendment depths for building/pavement, haul roads, and staging areas are typically on the order of 12, 16, and 12 inches, respectively. The actual thickness of the amended material and imported granular material for haul roads and staging areas will depend on the anticipated traffic, as well as the contractor's means and methods and, accordingly, should be the contractor's responsibility.

Portland cement-amended soil is hard and has low permeability. This soil does not drain well and it is not suitable for planting. Future planted areas should not be cement amended, if practical, or accommodations should be made for drainage and planting. Moreover, cement amending soil within building areas must be done carefully to avoid trapping water under floor slabs. We should be contacted if this approach is considered. Cement amendment should not be used if runoff during construction cannot be directed away from adjacent wetlands. It is not possible to amend soil during heavy or continuous rainfall. Cement amending should not be performed if the temperature is less than 40 degrees.

7.4 EROSION CONTROL

The on-site soil is susceptible to erosion. Consequently, we recommend that slopes be covered with an appropriate erosion control product if construction occurs during periods of wet weather. We recommend that all slope surfaces be planted as soon as practical to minimize erosion.

Surface water runoff should be collected and directed away from slopes to prevent water from running down the slope face. Erosion control measures such as straw bales, sediment fences, and temporary detention and settling basins should be used in accordance with local and state ordinances.

7.5 WET WEATHER CONSTRUCTION

Trafficability of soil at the ground surface may be difficult during extended wet periods or when the moisture content of the surface soil is more than a few percentage points above optimum. If not carefully executed, earthwork activities can create extensive soft areas, resulting in significant repair costs.

When the subgrade is wet of optimum, site preparation may need to be accomplished using track-mounted equipment loading into trucks supported on granular haul roads or working blankets. Based on our experience, at least 12 inches of granular material are typically required for light staging areas and at least 18 inches of granular material for haul roads subject to repeated equipment traffic. We typically recommend that imported granular material for haul roads and working blankets consist of durable crushed rock that is well graded and has less than 8 percent by dry weight passing the U.S. Standard No. 200 sieve. Where silt or clay is exposed at the ground surface, the performance of haul roads can typically be improved by placing a geotextile on the subgrade before placing the granular material. The granular material should be placed in a single lift and the surface compacted until well keyed. Although we have presented typical recommendations for haul road and working blankets, the actual thickness and material should be determined by the contractor based on their sequencing of the project and the type and frequency of construction equipment. The base rock thickness for building areas is intended to support post-construction design loads and will not support construction traffic when the subgrade soil is wet. If construction is planned for periods when the subgrade soil is wet, an increased thickness of base rock will be required.

8.0 OBSERVATION OF CONSTRUCTION

Satisfactory foundation and earthwork performance depends to a large degree on the quality of construction. Sufficient observation of the contractor's activities is a key part of determining that the work is completed in accordance with the construction drawings and specifications. Subsurface conditions observed during construction should be compared with those encountered during the subsurface exploration. Recognition of changed conditions often requires experience; therefore, qualified personnel should visit the site with sufficient frequency to detect if subsurface conditions change significantly from those anticipated.

We recommend that GeoDesign be retained to observe earthwork activities. We anticipate this will consist of evaluating foundation, floor slab, and pavement subgrade; observing the placement of structural fill and repair of soft subgrade areas, deep foundation installation, cement amending (if applicable), retaining wall construction, and the surcharge program; and performing laboratory compaction and field moisture-density tests.

9.0 LIMITATIONS

We have prepared this preliminary report for use by Summit Development Group and their design and construction teams for the proposed project. The data and report can be used for bidding or estimating purposes, but our report, conclusions, and interpretations should not be construed as warranty of the subsurface conditions and are not applicable to other sites.

Soil explorations indicate soil conditions only at specific locations and only to the depths penetrated. They do not necessarily reflect soil strata or water level variations that may exist between exploration locations. If subsurface conditions differing from those described are noted during the course of excavation and construction, re-evaluation will be necessary.

The site development plans and design details were preliminary at the time this report was prepared. When the design has been finalized and if there are changes in the site grades or location, configuration, design loads, or type of construction, the conclusions and recommendations presented may not be applicable. If design changes are made, we request that we be retained to review our conclusions and recommendations and to provide a written verification or modification.

The scope of our services does not include services related to construction safety precautions, and our recommendations are not intended to direct the contractor's methods, techniques, sequences, or procedures, except as specifically described in this report for consideration in design.

Within the limitations of scope, schedule, and budget, our services have been executed in accordance with generally accepted practices in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

♦ ♦ ♦

We appreciate the opportunity to be of continued service to you. Please call if you have questions concerning this report or if we can provide additional services.

Sincerely,

GeoDesign, Inc.

Ryan T. Lawrence, P.E.
Associate Engineer

Brett A. Shipton, P.E., G.E.
Principal Engineer



REFERENCES

ASCE, 2016. *Minimum Design Loads and Associated Criteria for Buildings and Other Structures*. Publication ASCE 7-16.

Atwater, B. F., and E. Hemphill-Haley, 1997. *Recurrence intervals for great earthquakes of the past 3500 years at northeastern Willapa Bay, Washington*: U.S. Geological Survey Professional Paper 1576, 108 pp.

Blakely, R.J., Wells, R.E., Tolan, T.L., Beeson, M.H., Trehu, A.M., and Liberty, L.M., 2000, *New aeromagnetic data reveal large strike-slip (?) faults in the northern Willamette Valley, Oregon*. Geological Society of America Bulletin, v.112, n.8, pp.1225-1233.

Gannett, M.W., and Caldwell, R.R., 1998, *Geologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington*. U.S. Geological Survey Professional Paper 1424-A, 32 p. text, 8 plates.

Goldfinger, C., C.H. Nelson, and J.E. Johnson, 2003. *Holocene earthquake records from the Cascadiasubduction zone and northern San Andreas Fault based on precise dating of offshore turbidities*: Annual Reviews Earth Planetary Science v.31, pp. 555–577.

DOGAMI, 2018. *Oregon HazVu: Statewide Geohazards Viewer.* Obtained from website: http://www.oregongeology.org/hazvu/index.htm. Last updated March 13, 2018. Accessed on February 26, 2020.

Madin, Ian P., 1990, *Earthquake-Hazard Geology Maps of the Portland Metropolitan Area, Oregon: Text and Map Explanation*: Oregon Department of Geology and Mineral Industries, Open-File Report O-90-2, 21 p., 8 maps, scale 1:24,000.

Orr, E.L. and Orr, W.N., 1999, *Geology of Oregon*. Kendall/Hunt Publishing, Iowa: 254 p.

Personius, S.F., compiler, 2002. *Quaternary fault and fold database of the United States, ver. 1.0*: U.S. Geological Survey Open-File Report 03-417, http://qfaults.cr.usgs.gov.

Satake, K., K. Shimazaki, Y. Tsuji, and K. Ueda, 1996. *Time and size of a giant earthquake in Cascadia inferred from Japanese tsunami records of January 1700*: Nature, v. 379, pp. 146-149.

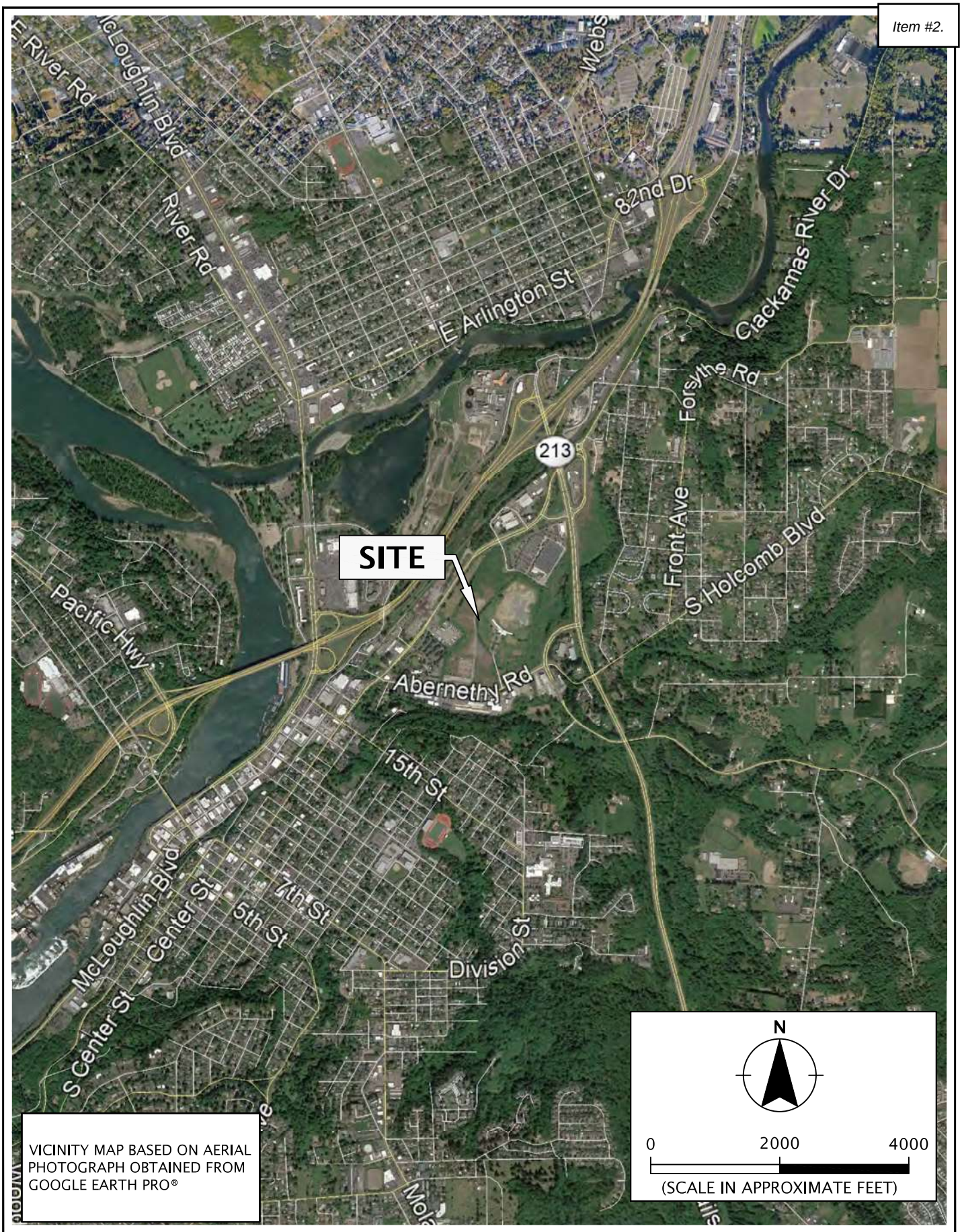
SEAOC/OSHPD, 2020. *Seismic Design Maps*. Accessed from website: https://seismicmaps.org/. Accessed on February 26, 2020.

Schlicker, H.G. and C.T. Finlayson, 1979. *Geology and Geologic Hazards of Northwestern Clackamas County, Oregon*: Oregon Department of Geology and Mineral Industries, Bulletin 99, 79 p., 8 maps, scale 1:24,000.

USGS, 2020. *Faults; Quaternary Fault and Fold Database of the United States*. Obtained from website: https://www.usgs.gov/natural-hazards/earthquake-hazards/faults. Accessed on February 26, 2020.

Waitt, R.B., Jr., 1985, *Case for periodic, colossal jökulhlaups from Pleistocene glacial Lake Missoula*: Geological Society of America Bulletin, v. 96, pp. 1271-1286.

FIGURES



VICINITY MAP BASED ON AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH PRO®

GEODESIGN INC AN NV5 COMPANY	SDG-4-01	**VICINITY MAP**	
	MARCH 2020	PROPOSED RIVERS EDGE DEVELOPMENT OREGON CITY, OR	FIG

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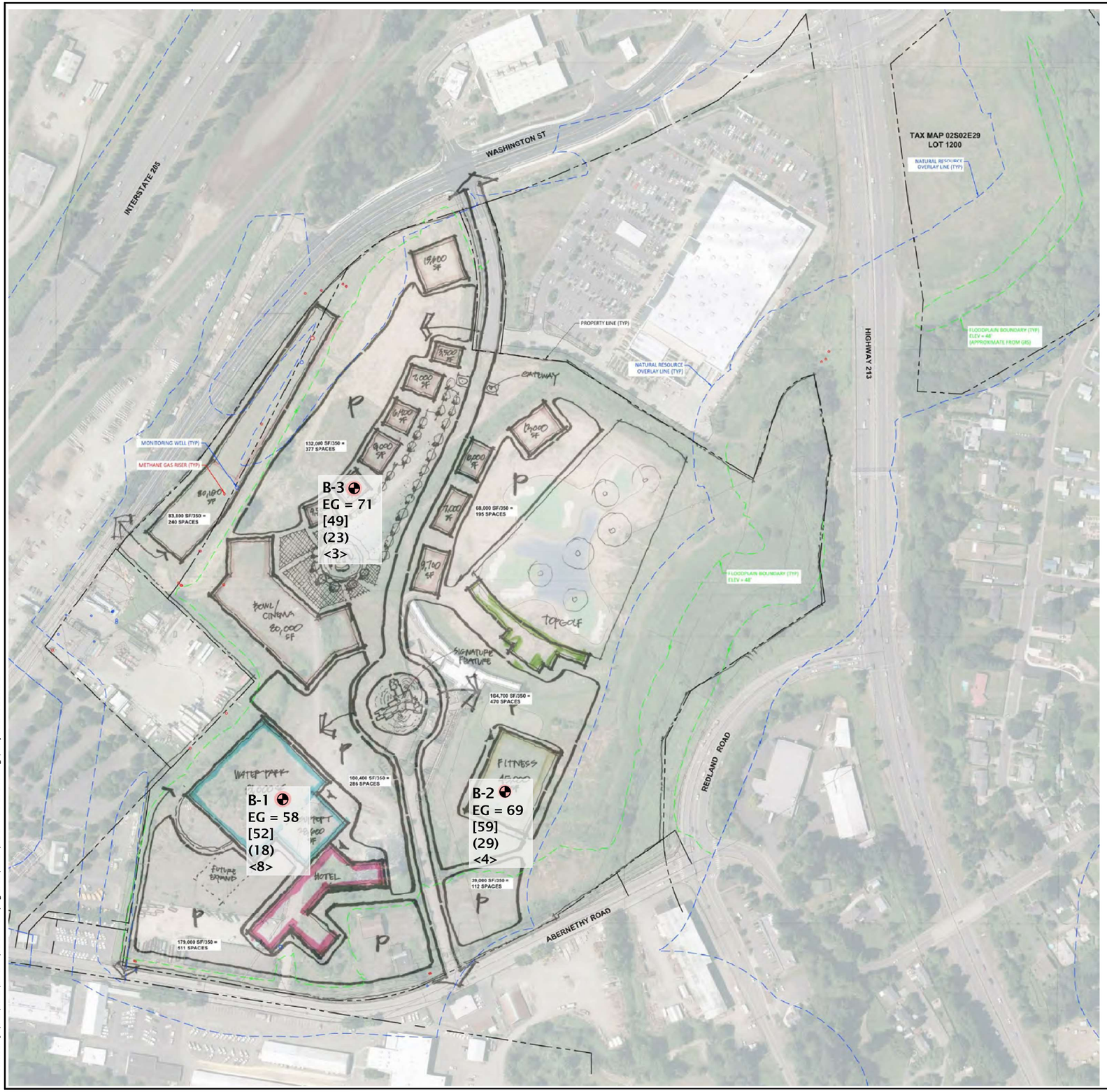

LEGEND:

B-1	BORING
EG = 58	EXISTING GROUND ELEVATION (FEET, NAVD88 DATUM)
[52]	ELEVATION OF TOP OF TRASH (FEET)
(18)	ELEVATION OF BOTTOM OF TRASH (FEET)
<8>	ELEVATION OF TOP OF DENSE GRAVEL (FEET)

N

0 300 600

(SCALE IN FEET)

SITE PLAN BASED ON IMAGE OBTAINED FROM SUMMIT DEVELOPMENT GROUP ON FEBRUARY 3, 2020

SITE PLAN

FIGURE 2

PROPOSED RIVERS EDGE DEVELOPMENT
OREGON CITY, OR

SDG-4-01

MARCH 2020

GEODESIGN INC
AN NV5 COMPANY

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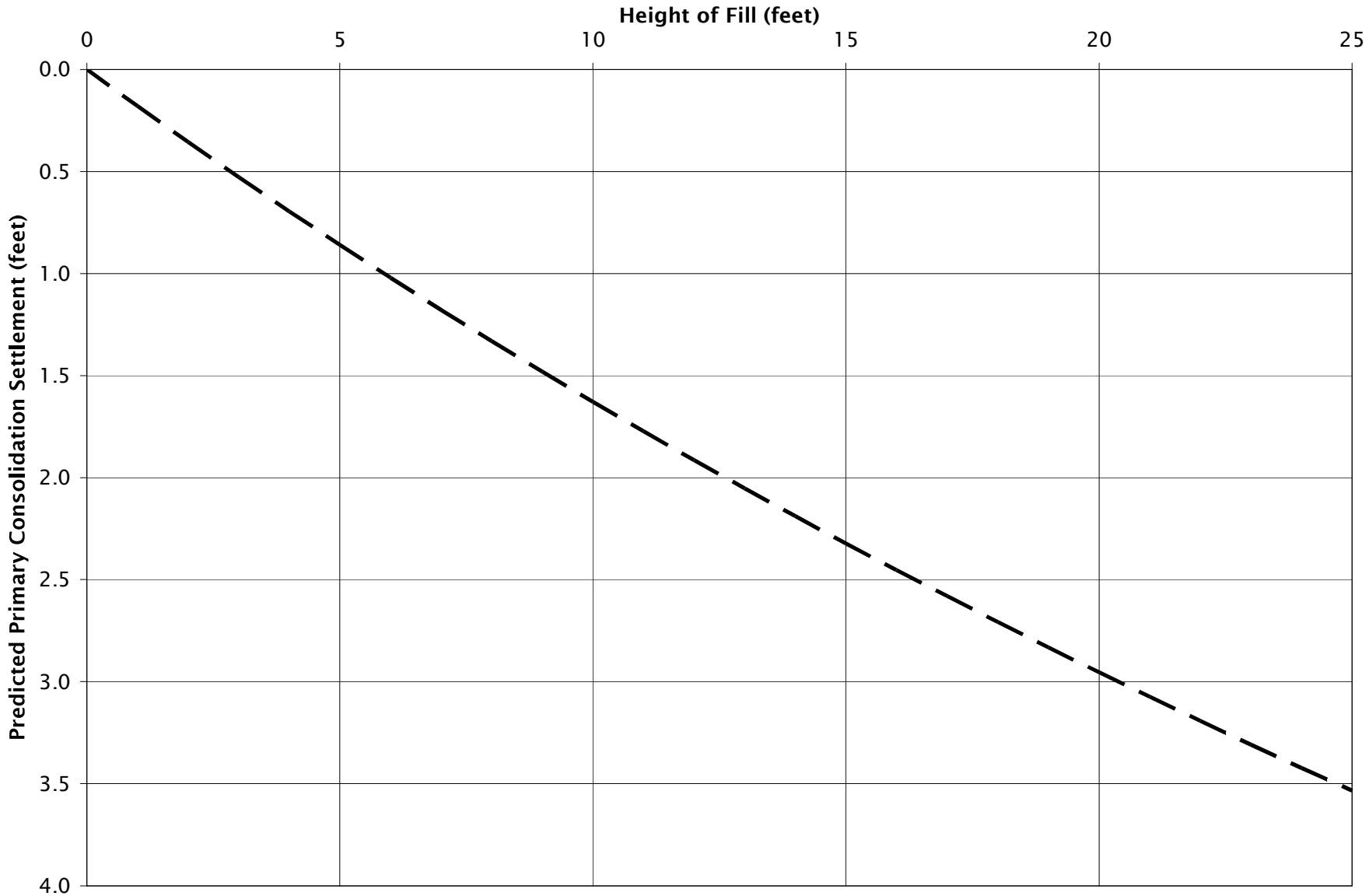
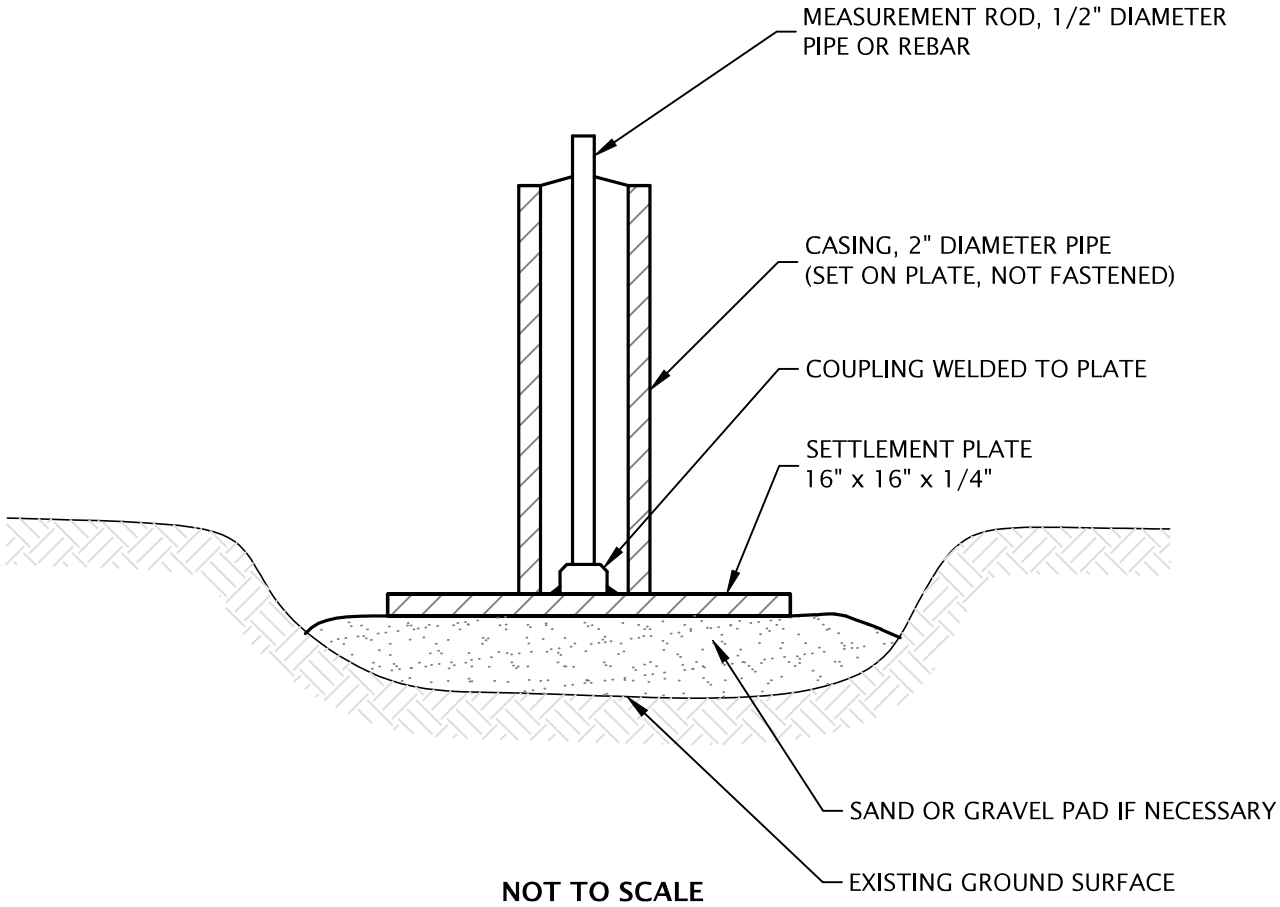
SDG-4-01-F3.doc Print Date: 2/29/20



GEODESIGN INC AN NV5 COMPANY	SDG-4-01	ESTIMATED PRIMARY CONSOLIDATION SETTLEMENT
	MARCH 2020	PROPOSED RIVERS EDGE DEVELOPMENT OREGON CITY, OR

FIG



NOT TO SCALE

NOTES:

1. INSTALL MARKERS ON FIRM GROUND OR ON SAND OR GRAVEL PADS IF NEEDED FOR STABILITY. TAKE INITIAL READING ON TOP OF ROD AND AT ADJACENT GROUND LEVEL PRIOR TO PLACING ANY FILL.
2. FOR EASE IN HANDLING, ROD AND CASING ARE USUALLY INSTALLED IN 5-FOOT SECTIONS. AS FILL PROGRESSES, COUPLINGS ARE USED TO INSTALL ADDITIONAL LENGTHS. CONTINUITY IS MAINTAINED BY READING THE TOP OF THE MEASUREMENT ROD, THEN IMMEDIATELY ADDING THE NEW SECTION AND READING THE TOP OF THE ADDED ROD. BOTH READINGS ARE RECORDED.
3. RECORD THE ELEVATION OF THE TOP OF THE MEASUREMENT ROD IN EACH MARKER AT THE RECOMMENDED TIME INTERVALS. EACH TIME, NOTE THE ELEVATION OF THE ADJACENT FILL SURFACE.
4. READ THE MARKER TO THE NEAREST 0.01 FOOT, OR 0.005 FOOT IF POSSIBLE. NOTE THE FILL ELEVATION TO THE NEAREST 0.1 FOOT.
5. THE ELEVATIONS SHOULD BE REFERENCED TO A TEMPORARY BENCHMARK LOCATED ON STABLE GROUND AT LEAST 500 FEET FROM THE EMBANKMENT.

GEODESIGN INC AN NV5 COMPANY	SDG-4-01	**SETTLEMENT PLATE DETAIL**	
	MARCH 2020	PROPOSED RIVERS EDGE DEVELOPMENT OREGON CITY, OR	FIG

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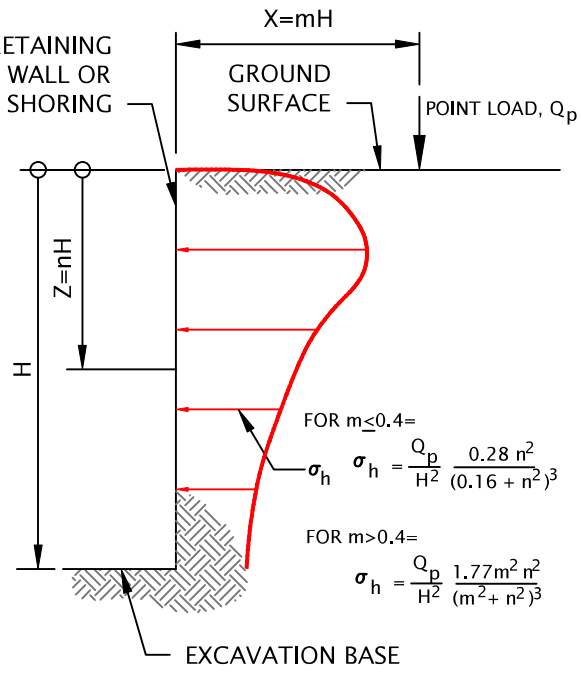
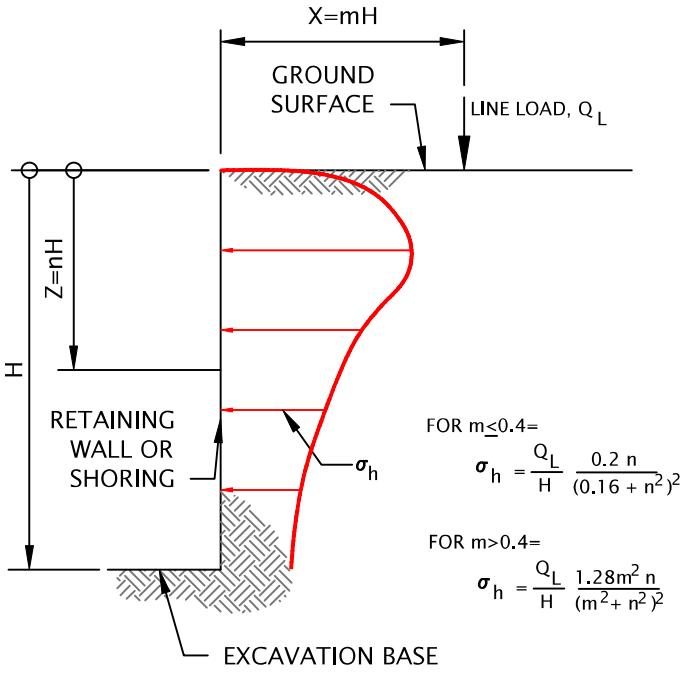
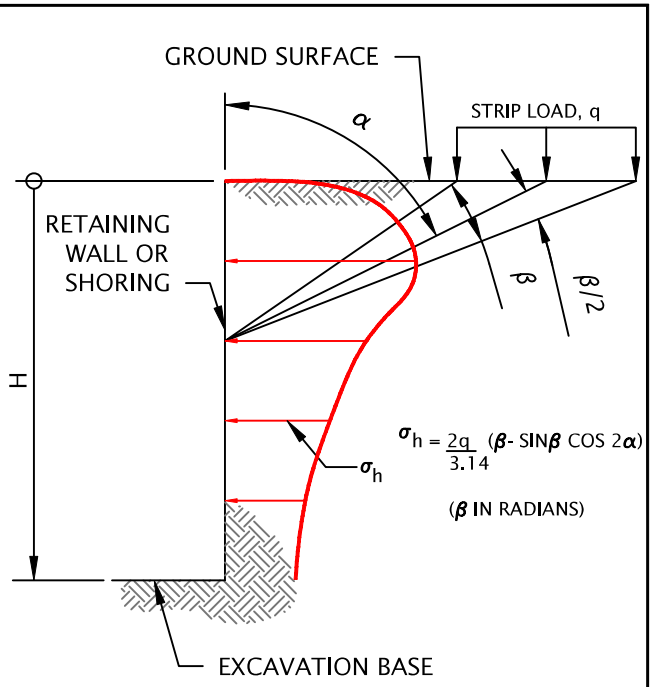
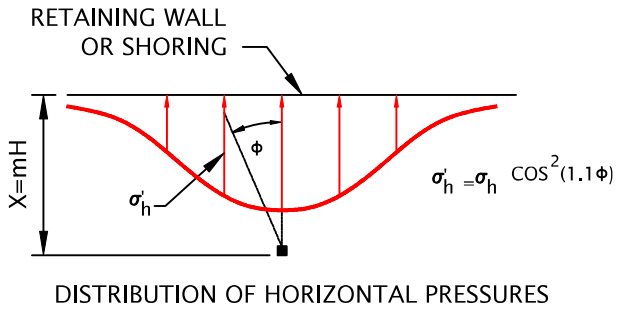








DISTRIBUTION OF HORIZONTAL PRESSURES

VERTICAL POINT LOAD

LINE LOAD PARALLEL TO WALL

STRIP LOAD PARALLEL TO WALL

NOT TO SCALE

NOTES:

1. FIGURE SHOULD BE USED IN CONJUNCTION WITH REPORT TEXT.
2. THESE GUIDELINES APPLY TO RIGID WALLS WITH POISSON'S RATIO ASSUMED TO BE 0.5 FOR BACKFILL MATERIALS.
3. LATERAL PRESSURES FROM ANY COMBINATION OF ABOVE LOADS MAY BE DETERMINED BY THE PRINCIPLE OF SUPERPOSITION.

GEODESIGN INC AN NV5 COMPANY	SDG-4-01	**SURCHARGE-INDUCED LATERAL EARTH PRESSURES**
	MARCH 2020	PROPOSED RIVERS EDGE DEVELOPMENT OREGON CITY, OR — **FIGU**

APPENDIX

APPENDIX

FIELD EXPLORATIONS

GENERAL

We conducted a subsurface exploration program that consisted of drilling three borings (B-1 through B-3) at the approximate location shown on Figure 2. The borings were drilled to depths of up to 71.5 feet BGS using mud rotary drilling methods. Drilling services were performed by Western States Soil Conservation, Inc. of Hubbard, Oregon, on February 10 through 12, 2020. The explorations were observed and logged by a member of our geotechnical staff. We collected representative samples of the various soil encountered in the exploration for visual classification and laboratory testing. The exploration logs are presented in this appendix.

The exploration location was marked in the field relative to visual site features. The exploration location should be considered accurate only to the degree implied by the methods used. The exploration elevation was estimated using Google Earth.

SOIL SAMPLING

We collected soil samples from the borings using SPTs that were performed in general conformance with ASTM D1586. The sampler was driven with a 140-pound automatic trip hammer free-falling 30 inches. The number of blows required to drive the sampler 12 inches, or as otherwise indicated, into the soil is shown adjacent to the sample symbols on the exploration logs. Disturbed samples were collected from the split barrel for subsequent classification and index testing. We also occasionally used a larger 3-inch-diameter sampler to collect additional sample recovery. Sampling methods and intervals are shown on the exploration logs.

The average efficiency of the automatic SPT hammer used by Western States Soil Conservation, Inc. was 85.8 percent. The results of the hammer calibration testing are presented at the end of this appendix.

SOIL CLASSIFICATION

The soil samples were classified in accordance with the "Exploration Key" (Table A-1) and "Soil Classification System" (Table A-2), which are presented in this appendix. The exploration logs indicate the depths at which the soils or their characteristics change, although the change could be gradual. A horizontal line between soil types indicates an observed (visual or digging action) change. If the change occurred between sample locations and was not observed or obvious, the depth was interpreted and the change is indicated using a dashed line. Classifications are shown on the exploration logs.

LABORATORY TESTING

We visually examined soil samples collected from the explorations to confirm field classifications. We also performed the following laboratory testing.

MOISTURE CONTENT

We determined the natural moisture content of select soil samples in general accordance with ASTM D2216. The natural moisture content is the ratio of the weight of the water to soil in a test sample and is expressed as a percentage. The test results are presented in this appendix.

ATTERBERG LIMITS TEST

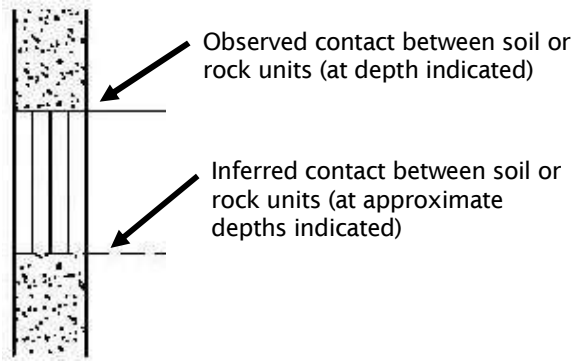
We determined the Atterberg limits of select soil samples in general accordance with ASTM D4318. Atterberg limits include the liquid limit, plastic limit, and the plasticity index of soil. These index properties are used to classify soil and for correlation with other engineering properties of soil. The test results are presented in this appendix.

PARTICLE-SIZE ANALYSIS

We completed particle-size analysis on select soil samples in general accordance with ASTM D1140. The percent fines is the ratio of the dry weight of the material passing the U.S. Standard No. 200 sieve to the dry weight of the overall sample. The test results are presented in this appendix.

SYMBOL	SAMPLING DESCRIPTION
	Location of sample collected in general accordance with ASTM D1586 using Standard Penetration Test with recovery
	Location of sample collected using thin-wall Shelby tube or Geoprobe® sampler in general accordance with ASTM D1587 with recovery
	Location of sample collected using Dames & Moore sampler and 300-pound hammer or pushed with recovery
	Location of sample collected using Dames & Moore sampler and 140-pound hammer or pushed with recovery
	Location of sample collected using 3-inch-O.D. California split-spoon sampler and 140-pound hammer with recovery
	Location of grab sample
	Rock coring interval
	Water level during drilling
	Water level taken on date shown

Graphic Log of Soil and Rock Types



GEOTECHNICAL TESTING EXPLANATIONS

ATT	Atterberg Limits	P	Pushed Sample
CBR	California Bearing Ratio	PP	Pocket Penetrometer
CON	Consolidation	P200	Percent Passing U.S. Standard No. 200 Sieve
DD	Dry Density		
DS	Direct Shear	RES	Resilient Modulus
HYD	Hydrometer Gradation	SIEV	Sieve Gradation
MC	Moisture Content	TOR	Torvane
MD	Moisture-Density Relationship	UC	Unconfined Compressive Strength
NP	Non-Plastic	VS	Vane Shear
OC	Organic Content	kPa	Kilopascal

ENVIRONMENTAL TESTING EXPLANATIONS

CA	Sample Submitted for Chemical Analysis	ND	Not Detected
P	Pushed Sample	NS	No Visible Sheen
PID	Photoionization Detector Headspace Analysis	SS	Slight Sheen
		MS	Moderate Sheen
ppm	Parts per Million	HS	Heavy Sheen

RELATIVE DENSITY - COARSE-GRAINED SOIL

Relative Density	Standard Penetration Resistance	Dames & Moore Sampler (140-pound hammer)	Dames & Moore Sampler (300-pound hammer)
Very Loose	0 – 4	0 – 11	0 – 4
Loose	4 – 10	11 – 26	4 – 10
Medium Dense	10 – 30	26 – 74	10 – 30
Dense	30 – 50	74 – 120	30 – 47
Very Dense	More than 50	More than 120	More than 47

CONSISTENCY - FINE-GRAINED SOIL

Consistency	Standard Penetration Resistance	Dames & Moore Sampler (140-pound hammer)	Dames & Moore Sampler (300-pound hammer)	Unconfined Compressive Strength (tsf)
Very Soft	Less than 2	Less than 3	Less than 2	Less than 0.25
Soft	2 – 4	3 – 6	2 – 5	0.25 – 0.50
Medium Stiff	4 – 8	6 – 12	5 – 9	0.50 – 1.0
Stiff	8 – 15	12 – 25	9 – 19	1.0 – 2.0
Very Stiff	15 – 30	25 – 65	19 – 31	2.0 – 4.0
Hard	More than 30	More than 65	More than 31	More than 4.0

PRIMARY SOIL DIVISIONS			GROUP SYMBOL	GROUP NAME
COARSE-GRAINED SOIL (more than 50% retained on No. 200 sieve)	GRAVEL (more than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVEL (< 5% fines)	GW or GP	GRAVEL
		GRAVEL WITH FINES (≥ 5% and ≤ 12% fines)	GW-GM or GP-GM	GRAVEL with silt
			GW-GC or GP-GC	GRAVEL with clay
		GRAVEL WITH FINES (> 12% fines)	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	SAND (50% or more of coarse fraction passing No. 4 sieve)	CLEAN SAND (<5% fines)	SW or SP	SAND
		SAND WITH FINES (≥ 5% and ≤ 12% fines)	SW-SM or SP-SM	SAND with silt
			SW-SC or SP-SC	SAND with clay
		SAND WITH FINES (> 12% fines)	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
FINE-GRAINED SOIL (50% or more passing No. 200 sieve)	SILT AND CLAY	Liquid limit less than 50	ML	SILT
			CL	CLAY
			CL-ML	silty CLAY
			OL	ORGANIC SILT or ORGANIC CLAY
		Liquid limit 50 or greater	MH	SILT
			CH	CLAY
			OH	ORGANIC SILT or ORGANIC CLAY
HIGHLY ORGANIC SOIL			PT	PEAT

MOISTURE CLASSIFICATION

Term	Field Test
dry	very low moisture, dry to touch
moist	damp, without visible moisture
wet	visible free water, usually saturated

ADDITIONAL CONSTITUENTS

Secondary granular components or other materials such as organics, man-made debris, etc.

Percent	Silt and Clay In: Fine-Grained Soil	Silt and Clay In: Coarse-Grained Soil	Percent	Sand and Gravel In: Fine-Grained Soil	Sand and Gravel In: Coarse-Grained Soil
< 5	trace	trace	< 5	trace	trace
5 – 12	minor	with	5 – 15	minor	minor
> 12	some	silty/clayey	15 – 30	with	with
			> 30	sandy/gravelly	Indicate %

DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION / DEPTH	TESTING	SAMPLE	INSTALLATION COMMENTS
0.0	Medium stiff, dark gray, sandy SILT with organics (ML); moist, sand is fine to medium, organics are wood chips - **FILL**.	58.0			
2.5			P200	7	P200 = 62% PID = 0.3 ppm
5.0				9	
	GARBAGE (rags, plastic) - **FILL**.	52.0 / 6.0			
7.5				12	Lost circulation going to 7.5 feet. PID = 6.1 ppm
10.0				15	No recovery in SPT sampler and 3-inch sampler at 10.0 feet.
12.5					Lost circulation at 12.0 feet.
15.0				6	PID = 4.1 ppm
17.5					
20.0	garbage consists of plastic bags, wood debris, and glass at 20.0 feet			4	PID = 2.3 ppm Lost circulation at 21.0 feet.
22.5					Lost circulation at 23.0 feet. Hole caved at 15.0 feet.
25.0	garbage consists of plastic, glass, plastic bag, possible asphalt concrete, and some silt at 25.0 feet			11	Noted oily sheen in wash bin while drilling at 25.0 feet. No recovery in SPT sampler. Used 3-inch sampler to obtain recovery at 25.0 feet. PID = 16.1 ppm
27.5					
30.0					Lost circulation at 29.0 feet.

▲ BLOW COUNT ● MOISTURE CONTENT % RQD% CORE REC%

0 50 100

DRILLED BY: Western States Soil Conservation, Inc. LOGGED BY: Z. Rogers COMPLETED: 02/10/20

BORING METHOD: mud rotary (see document text) BORING BIT DIAMETER: 4 7/8 inches

GeoDesign Inc an NV5 company

SDG-4-01

BORING B-1

MARCH 2020

PROPOSED RIVERS EDGE DEVELOPMENT
OREGON CITY, OR

FIGU

BORING LOG - GDI-NV5 - 1 PER PAGE SDG-4-01-B1_3.GPJ GDI_NV5.GDT PRINT DATE: 3/2/20:KM

DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION / DEPTH	SAMPLE	INSTALLATION COMMENTS
30.0	garbage consists of plastic bags and wood debris (chips and chunks) at 30.0 feet		15	PID = 34.2 ppm
35.0	garbage consists of plastic bags and wood debris (twigs) at 35.0 feet		7	No recovery in SPT sampler. Used 3-inch sampler to obtain recovery at 35.0 feet. PID = 15.4 ppm
40.0	Medium stiff, gray CLAY with debris (CL); moist, debris consists of plastic garbage - **FILL.**	18.0 / 40.0	7	No recovery in SPT sampler. Used 3-inch sampler to obtain recovery at 40.0 feet. Drilling mud loss; low circulation at 40.0 feet. PID = 1.8 ppm
45.0	Medium stiff, brown SILT (ML), trace sand; moist, sand is fine.	13.0 / 45.0	11	Used 3-inch sampler to obtain recovery. Garbage appears to be slough that fell into the hole at 45.0 feet. PID = 2.4 ppm
50.0	Very dense, gray-brown GRAVEL with sand (GP); moist, gravel is subrounded to subangular, sand is medium to coarse.	8.0 / 50.0	65	Garbage appears to be slough that fell into the hole at 50.0 feet. PID = 12.3 ppm
55.0			74	PID = 5.2 ppm
57.5	Exploration completed at a depth of 56.5 feet. Hammer efficiency factor is 85.8 percent.	1.5 / 56.5		
60.0				

GRAPHIC LOG

▲ BLOW COUNT
● MOISTURE CONTENT %
RQD% CORE REC%
0 50 100

TESTING

DRILLED BY: Western States Soil Conservation, Inc.
LOGGED BY: Z. Rogers
COMPLETED: 02/10/20

BORING METHOD: mud rotary (see document text)
BORING BIT DIAMETER: 4 7/8 inches

GEODESIGN INC AN NV5 COMPANY

SDG-4-01

BORING B-1
(continued)

MARCH 2020

PROPOSED RIVERS EDGE DEVELOPMENT
OREGON CITY, OR

FIGU

BORING LOG - GDI-NV5 - 1 PER PAGE SDG-4-01-B1_3.GPJ GDI_NV5.GDT PRINT DATE: 3/2/20:KM

DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION / DEPTH	TESTING	SAMPLE	INSTALLATION COMMENTS
0.0	Medium stiff to stiff, dark gray-brown CLAY with sand (CL); moist, clay has medium plasticity, sand is medium - **FILL.**	69.0			
2.5				8	PID = 0.2 ppm
5.0	medium stiff, gray; sand is fine at 5.0 feet		ATT	7	No recovery in SPT sampler. Used 3-inch sampler to obtain recovery at 5.0 feet PID = 0.1 ppm LL = 38% PL = 19%
7.5	very stiff at 7.5 feet			17	PID = 0.1 ppm
10.0	Loose, gray SAND with debris (SP); moist, sand is fine - **FILL.**	59.0 10.0		7	Sample has strong odor at 10.0 feet. PID = 10.4 ppm
	GARBAGE (plastic chunks, bags) - **FILL.**	58.5 10.5			Garbage starts at approximately 10.5 feet.
12.5					
15.0	garbage consists of plastic and wood debris at 15.0 feet			8	Sample has oily sheen and odor at 15.0 feet. PID = 1.1 ppm
17.5					Mixed additional drilling mud at 18.0 feet.
20.0				20-8-50/3"	Petroleum odor at 20.0 feet. Mixed additional drilling mud at 20.0 feet. PID = 3.4 ppm
22.5					Driller Comment: solid material at 22.0 feet. More solid material at 23.5 feet. Took 2 minutes to grind through wood.
25.0	garbage consists of wood, plastic bags, cloth, and soil at 25.0 feet			37	Added grout to seal void in hole, then reamed hole at 25.0 feet. PID = 1.4 ppm
27.5					
30.0					

▲ BLOW COUNT
● MOISTURE CONTENT %
RQD% CORE REC%
0 50 100

DRILLED BY: Western States Soil Conservation, Inc.
LOGGED BY: Z. Rogers
COMPLETED: 02/12/20

BORING METHOD: mud rotary (see document text)
BORING BIT DIAMETER: 4 7/8 inches

GeoDesign Inc
AN NV5 COMPANY

SDG-4-01

BORING B-2

MARCH 2020

PROPOSED RIVERS EDGE DEVELOPMENT
OREGON CITY, OR

FIGU

BORING LOG - GDI-NV5 - 1 PER PAGE SDG-4-01-B1_3.GPJ GDI_NV5.GDT PRINT DATE: 3/2/20:KM

DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION / DEPTH	TESTING	SAMPLE	INSTALLATION / COMMENTS
30.0	garbage consists of cooper wire, wood debris at 30.0 feet			35	PID = 1.6 ppm
35.0	garbage consists of plastic bag at 35.0 feet			50/1"	Sampler bouncing on blows at 35.0 feet. PID = 0.1 ppm
40.0	Very stiff, gray CLAY with debris (CL); moist, clay has high plasticity, debris consists of copper wire and plastic - **FILL**.	29.0 / 40.0		17	Organics observed in cuttings - possible tree stump. Mixed additional drilling mud at 39.0 feet. Mixed additional drilling mud at 40.0 feet. No recovery in SPT sampler. Used 3-inch sampler to obtain recovery. Hole caved in at 25.0 feet and re-drilled before driving 3-inch sampler at 40.0 feet. Hole caved in again at 30.0 feet. PID = 0.4 ppm
45.0	medium stiff at 45.0 feet		ATT	10	Garbage in shoe of sampler at 45.0 feet. PID = 0.2 ppm LL = 66% PL = 25%
50.0	soft to medium stiff; moist to wet at 50.0 feet			4	PID = 0.1 ppm
53.0					Mixed additional drilling mud at 53.0 feet.
55.0	Very soft, brown SILT with sand (ML), trace clay; moist to wet, sand is fine.	14.0 / 55.0		0	PID = 0.3 ppm
58.0					Mixed additional drilling mud at 58.0 feet.
60.0					

GRAPHIC LOG

▲ BLOW COUNT
● MOISTURE CONTENT %
RQD% CORE REC%
0 50 100

DRILLED BY: Western States Soil Conservation, Inc.
LOGGED BY: Z. Rogers
COMPLETED: 02/12/20

BORING METHOD: mud rotary (see document text)
BORING BIT DIAMETER: 4 7/8 inches

GeoDesign Inc
An NV5 Company

SDG-4-01

BORING B-2
(continued)

MARCH 2020

PROPOSED RIVERS EDGE DEVELOPMENT
OREGON CITY, OR

FIGU

BORING LOG - GDI-NV5 - 1 PER PAGE SDG-4-01-B1_3.GPJ GDI_NV5.GDT PRINT DATE: 3/2/20:KM

DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION / DEPTH	SAMPLE	INSTALLATION / COMMENTS
60.0	soft; wet at 60.0 feet		3	PID = 0.1 ppm
62.5				
65.0	Medium dense, gray-brown GRAVEL with sand (GP); moist to wet, gravel is subrounded to subangular, sand is medium to coarse.	4.0 / 65.0	15	Mixed additional drilling mud at 64.0 feet. PID = 0.1 ppm
67.5				
70.0	very dense at 70.0 feet		82	
	Exploration completed at a depth of 71.5 feet. Hammer efficiency factor is 85.8 percent.	-2.5 / 71.5		
72.5				
75.0				
77.5				
80.0				
82.5				
85.0				
87.5				
90.0				

▲ BLOW COUNT ● MOISTURE CONTENT % RQD% CORE REC%

0 50 100

DRILLED BY: Western States Soil Conservation, Inc. LOGGED BY: Z. Rogers COMPLETED: 02/12/20

BORING METHOD: mud rotary (see document text) BORING BIT DIAMETER: 4 7/8 inches

GEODESIGN INC AN NV5 COMPANY

SDG-4-01

BORING B-2
(continued)

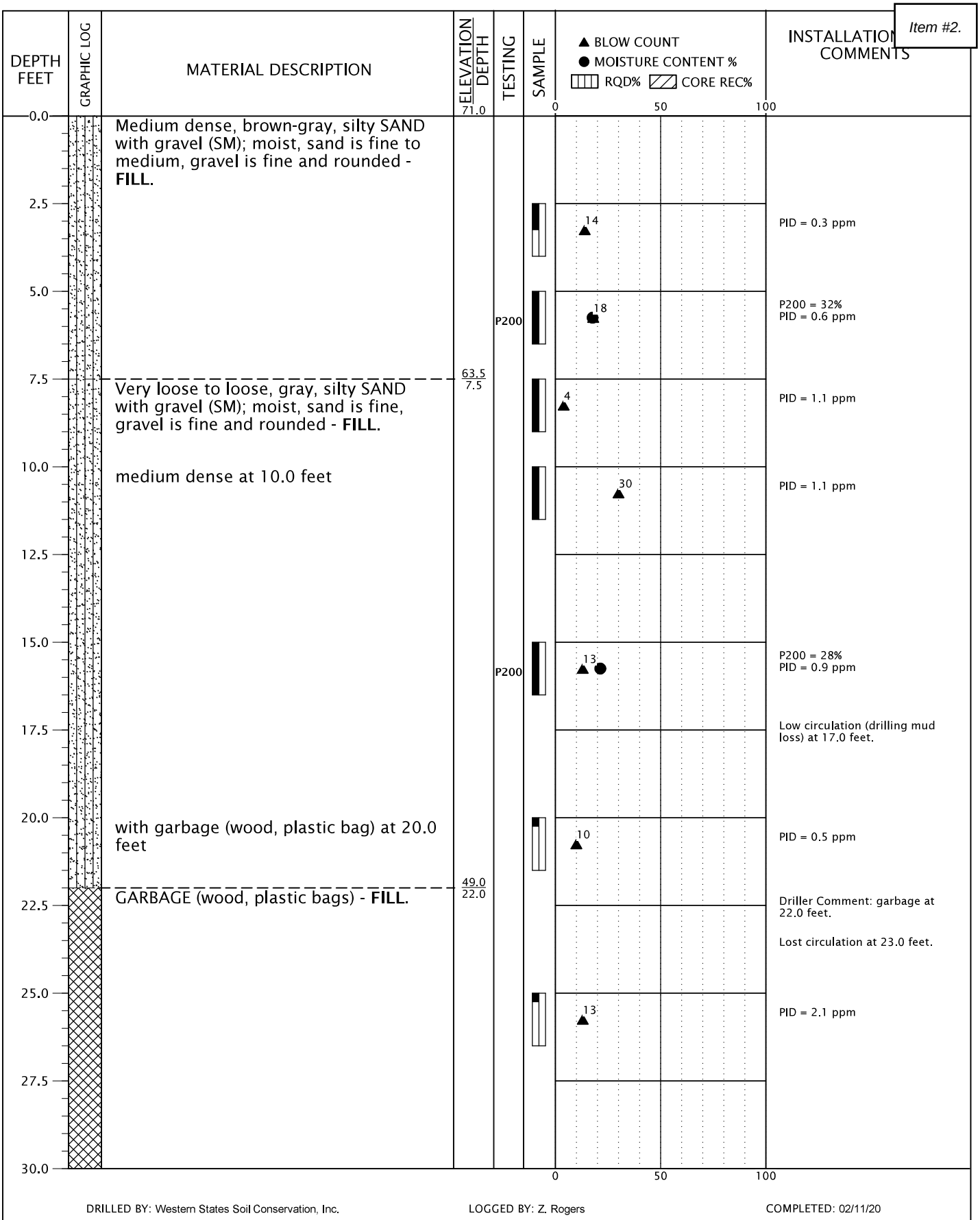
MARCH 2020

PROPOSED RIVERS EDGE DEVELOPMENT
OREGON CITY, OR

FIGU

BORING LOG - GDI-NV5 - 1 PER PAGE SDG-4-01-81_3.GPJ GDI_NV5.GDT PRINT DATE: 3/2/20:KM

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION / DEPTH	TESTING	SAMPLE	▲ BLOW COUNT ● MOISTURE CONTENT % RQD% CORE REC% (0 50 100)	INSTALLATION COMMENTS
0.0		Medium dense, brown-gray, silty SAND with gravel (SM); moist, sand is fine to medium, gravel is fine and rounded - **FILL**.	71.0				
2.5						14	PID = 0.3 ppm
5.0				P200		18	P200 = 32% PID = 0.6 ppm
7.5		Very loose to loose, gray, silty SAND with gravel (SM); moist, sand is fine, gravel is fine and rounded - **FILL**.	63.5 / 7.5			4	PID = 1.1 ppm
10.0		medium dense at 10.0 feet				30	PID = 1.1 ppm
12.5							
15.0				P200		13	P200 = 28% PID = 0.9 ppm
17.5							Low circulation (drilling mud loss) at 17.0 feet.
20.0		with garbage (wood, plastic bag) at 20.0 feet				10	PID = 0.5 ppm
22.5		GARBAGE (wood, plastic bags) - **FILL**.	49.0 / 22.0				Driller Comment: garbage at 22.0 feet. Lost circulation at 23.0 feet.
25.0						13	PID = 2.1 ppm
27.5							
30.0							



DRILLED BY: Western States Soil Conservation, Inc. LOGGED BY: Z. Rogers COMPLETED: 02/11/20

BORING METHOD: mud rotary (see document text) BORING BIT DIAMETER: 4 7/8 inches

GEODESIGN INC AN NV5 COMPANY

SDG-4-01

MARCH 2020

BORING B-3

PROPOSED RIVERS EDGE DEVELOPMENT
OREGON CITY, OR

FIGU

BORING LOG - GDI-NV5 - 1 PER PAGE SDG-4-01-B1_3.GPJ GDI_NV5.GDT PRINT DATE: 3/2/20:KM

DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION / DEPTH	SAMPLE	INSTALLATION / COMMENTS
30.0	(continued from previous page)		14	PID = 1.4 ppm
32.5				
35.0	garbage consists of plastic bags, metal, plastic wiring, wood (twigs) at 35.0 feet		16	PID = 11.4 ppm
37.5				Hole caved in at 20.0 feet. Re-drilled hole.
40.0	garbage consists of plastic debris at 40.0 feet		26	PID = 0.4 ppm Lost circulation at 41.0 feet.
42.5				Lost circulation at 43.0 feet.
45.0	garbage consists of cloth, plastic bags, wood, sand, and gravel at 45.0 feet		26	PID = 1.7 ppm Low circulation (drilling mud loss) at 46.0 feet and 47.0 feet.
47.5	Stiff, gray SILT with sand and debris (ML); moist, sand is medium, debris consists of plastic bags - **FILL**.	23.0 / 48.0		Driller Comment: felt soft at 48.0 feet.
50.0			13	6 inches of garbage on top of sample at 50.0 feet. PID = 0.3 ppm
52.5				
55.0	soft to medium stiff, gray, sandy, trace debris; sand is fine, debris consists of brick at 55.0 feet		4	Drill bit clogged with debris and lost mud at 55.0 feet. PID = 0.1 ppm
57.5				
60.0				

▲ BLOW COUNT ● MOISTURE CONTENT % RQD% CORE REC%

0 50 100

DRILLED BY: Western States Soil Conservation, Inc. LOGGED BY: Z. Rogers COMPLETED: 02/11/20

BORING METHOD: mud rotary (see document text) BORING BIT DIAMETER: 4 7/8 inches

GeoDesign Inc AN NV5 COMPANY

SDG-4-01

BORING B-3 (continued)

MARCH 2020

PROPOSED RIVERS EDGE DEVELOPMENT OREGON CITY, OR

FIGU

BORING LOG - GDI-NV5 - 1 PER PAGE SDG-4-01-B1_3.GPJ GDI_NV5.GDT PRINT DATE: 3/2/20:KM

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION / DEPTH	TESTING	SAMPLE	▲ BLOW COUNT ● MOISTURE CONTENT % RQD% CORE REC% (0 50 100)	INSTALLATION / COMMENTS
60.0		Loose, gray, silty SAND with debris (SM); moist, sand is fine to medium.	11.0 / 60.0			▲ 8	Garbage observed appears to have fallen into the hole at 60.0 feet. PID = 0.2 ppm
62.5							Drill bit clogged with debris at 62.0 feet.
65.0		medium dense, brown to gray, without garbage; wet at 65.0 feet		P200		▲ 18 ●	P200 = 35% PID = 0.1 ppm
67.5			3.0 / 68.0				Driller reports gravel at 68.0 feet.
70.0		Very dense, gray-brown GRAVEL with sand (GP), trace silt; wet, gravel is subrounded to subangular, sand is medium to coarse.				14-40-60/3" ▲	PID = 0.1 ppm
			-0.3 / 71.3				
72.5		Exploration completed at a depth of 71.3 feet. Hammer efficiency factor is 85.8 percent.					
75.0							
77.5							
80.0							
82.5							
85.0							
87.5							
90.0							

DRILLED BY: Western States Soil Conservation, Inc. LOGGED BY: Z. Rogers COMPLETED: 02/11/20

BORING METHOD: mud rotary (see document text) BORING BIT DIAMETER: 4 7/8 inches

GeoDesign Inc — An NV5 Company

SDG-4-01

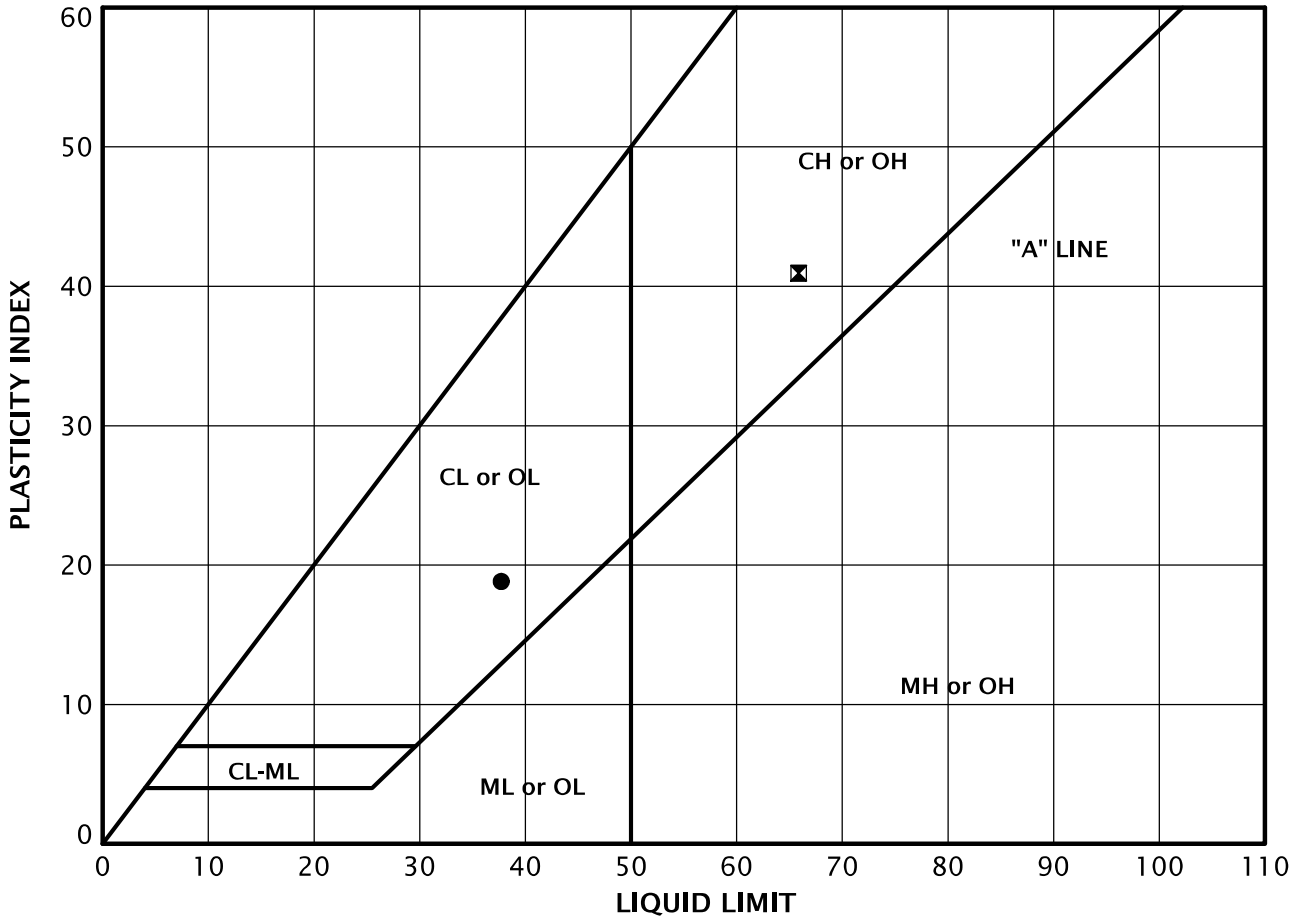
BORING B-3
(continued)

MARCH 2020

PROPOSED RIVERS EDGE DEVELOPMENT
OREGON CITY, OR

FIGU

BORING LOG - GDI-NV5 - 1 PER PAGE SDG-4-01-B1_3.GPJ GDI_NV5.GDT PRINT DATE: 3/2/20:KM



KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
●	B-2	5.0	26	38	19	19
⊠	B-2	45.0	44	66	25	41

ATTERBERG_LIMITS 7 SDG-4-01-B1_3.GPJ GEODESIGN.GDT PRINT DATE: 3/2/20:KM

GEODESIGN INC AN NV5 COMPANY

SDG-4-01

ATTERBERG LIMITS TEST RESULTS

MARCH 2020

PROPOSED RIVERS EDGE DEVELOPMENT
OREGON CITY, OR

FIGU

SAMPLE INFORMATION			MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	SIEVE			ATTERBERG LIMITS		
EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	ELEVATION (FEET)			GRAVEL (PERCENT)	SAND (PERCENT)	P200 (PERCENT)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
B-1	2.5	55.5	41				62			
B-1	40.0	18.0	50							
B-1	45.0	13.0	48							
B-2	5.0	64.0	26					38	19	19
B-2	40.0	29.0	48							
B-2	45.0	24.0	44					66	25	41
B-2	50.0	19.0	51							
B-2	55.0	14.0	52							
B-2	60.0	9.0	46							
B-3	5.0	66.0	18				32			
B-3	15.0	56.0	21				28			
B-3	50.0	21.0	52							
B-3	55.0	16.0	51							
B-3	65.0	6.0	40				35			

Pile Dynamics, Inc.
SPT Analyzer Results

RIG #2
PDA-S Ver. 2017.22 - Printed: 1/4/2019

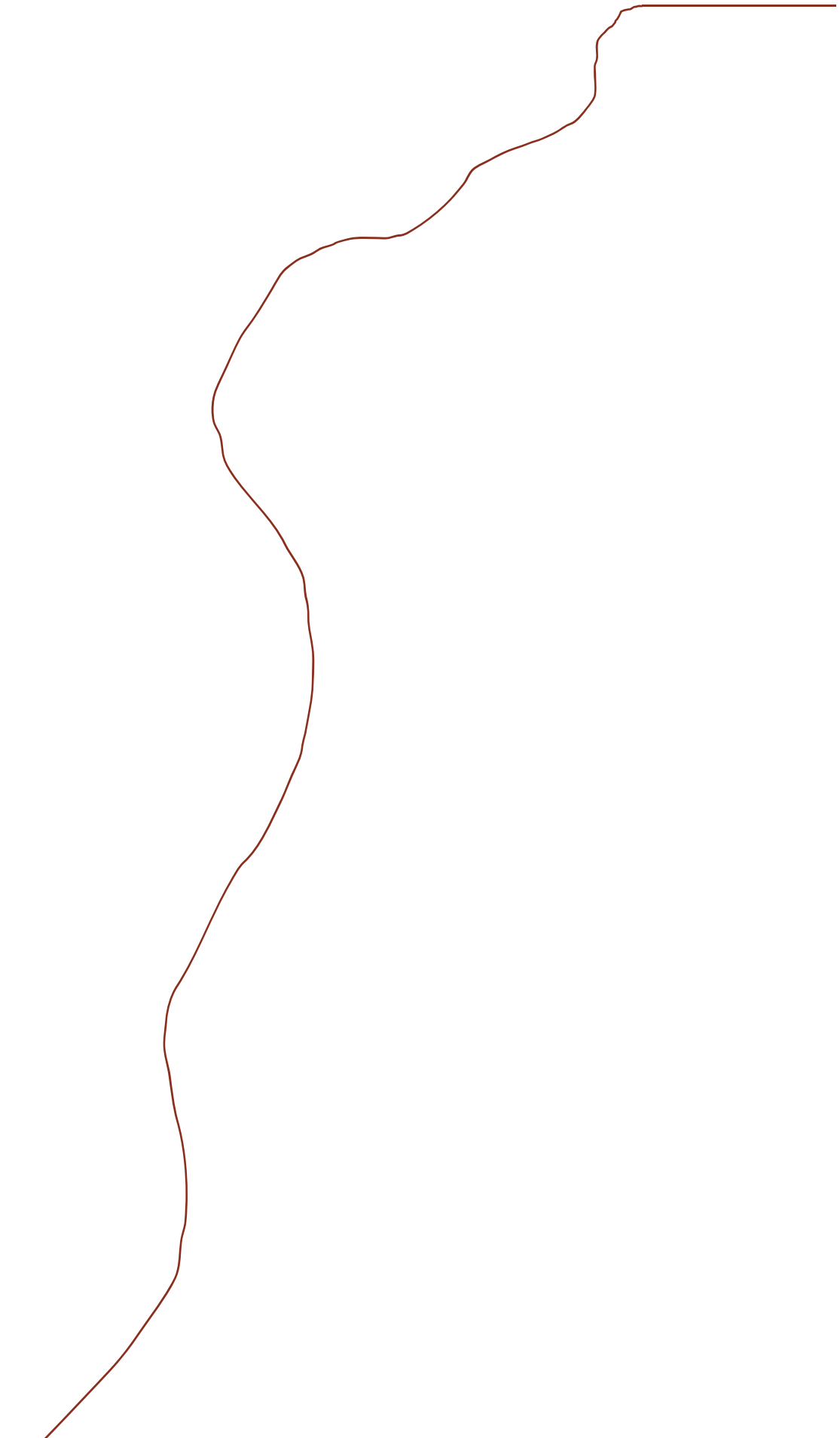
Summary of SPT Test Results

Project: WSSC-8-04, Test Date: 12/27/2018

EMX: Maximum Energy — ETR: Energy Transfer Ratio - Rated

Start Depth ft	Final Depth ft	N Value	N60 Value	Average EMX ft-lb	Average ETR %
25.00	26.50	**23**	**32**	300.42	85.8
30.00	31.50	**0**	**0**	0.00	0.0
35.00	36.50	**0**	**0**	0.00	0.0
40.00	41.50	**0**	**0**	0.00	0.0
			Overall Average Values:	300.42	85.8
			Standard Deviation:	50.45	14.4
			Overall Maximum Value:	368.54	105.3
			Overall Minimum Value:	102.15	29.2

www.geodesigninc.com



P:\SDV (Summit Development Group)\SDV-08 (22E29 TL902)\SDV08-DWGS\Exhibits\21-0324_NROD Removals 2\ 21-0324_NROD Removals Exhibit.dwg

AREA 1 - EXISTING ROAD IMPROVEMENTS
APPROXIMATE GIS LOCATION OF NROD BOUNDARY PER CITY OF OREGON PROVIDED GIS (TO BE REMOVED)

WASHINGTON ST

AREA 2 - ROADSIDE DITCH
APPROXIMATE GIS LOCATION OF NROD BOUNDARY PER CITY OF OREGON PROVIDED GIS (TO BE REMOVED)

APPROXIMATE GIS LOCATION OF NROD BOUNDARY PER CITY OF OREGON PROVIDED GIS (TO REMAIN)

PROPERTY LINE (TYP)

APPROXIMATE EXTENT OF SOIL CAP INCLUDING SIDE SLOPE PER FINDINGS IN EXHIBIT TWO, ARONSON LETTER DATED 12/17/20 OR APPROXIMATE LIMIT OF REFUSE PER CLOSURE FEASIBILITY STUDY (CH2M HILL, 1992)

HIGHWAY 213

PROPERTY LINE (TYP)

APPROXIMATE LOCATION OF LEACHATE COLLECTION SUMP PER COMPASS SURVEY DATED JAN 2020

ROAD REDLAND

APPROXIMATE GIS LOCATION OF NROD BOUNDARY PER CITY OF OREGON PROVIDED GIS (TO REMAIN)

PROPERTY LINE (TYP)

APPROXIMATE LOCATION OF LEACHATE CONVEYANCE LINE PER COMPASS SURVEY DATED JAN 2020

AREA 3 - ROADSIDE DITCH
APPROXIMATE GIS LOCATION OF NROD BOUNDARY PER CITY OF OREGON PROVIDED GIS (TO BE REMOVED)

AREA 5 - EXISTING ROAD IMPROVEMENTS
APPROXIMATE GIS LOCATION OF NROD BOUNDARY PER CITY OF OREGON PROVIDED GIS (TO BE REMOVED)

ABERNETHY ROAD

AREA 4 - EXISTING ROAD IMPROVEMENTS
APPROXIMATE GIS LOCATION OF NROD BOUNDARY PER CITY OF OREGON PROVIDED GIS (TO BE REMOVED)

APPROXIMATE GIS LOCATION OF NROD BOUNDARY PER CITY OF OREGON PROVIDED GIS (TO REMAIN)

PROPERTY LINE (TYP)

NOTE: TOPOGRAPHY AND BOUNDARY SHOWN PER COMPASS SURVEY DATED JAN 2020

N

0 50 100 200
SCALE: 1" = 100'

DATE	NO.	DESCRIPTION
		R E V I S I O N S

DESIGNED: HHPR
DRAWN: HHPR
CHECKED: HHPR
DATE: 03/24/2021

HHPR Harper Houf Peterson Righellis Inc.
ENGINEERS • PLANNERS
LANDSCAPE ARCHITECTS • SURVEYORS
205 SE Spokane Street, Suite 200, Portland, OR 97202
phone: 503.221.1131 www.hhpr.com fax: 503.221.1171

APPROXIMATE NROD REMOVAL EXHIBIT

OC MIXED USE/ENTERTAINMENT CENTER

OREGON CITY, OREGON

KITTELSON & ASSOCIATES
851 SW 6th AVENUE, SUITE 600
PORTLAND, OR 97204
P 503.228.5230 F 503.273.8169

MEMORANDUM

Date: March 23, 2021 Project #: 24824.0

To: John Replinger, Replinger & Associates, LLC
Oregon City Planning Dept.
695 Warner Parrott Road
Oregon City, OR 97045

From: Brian J. Dunn, PE, Phill Worth, and Ali Razmpa, PE
Project: The North End Master Plan (PA 20-11)
Subject: **Transportation Impact Analysis Report**



INTRODUCTION

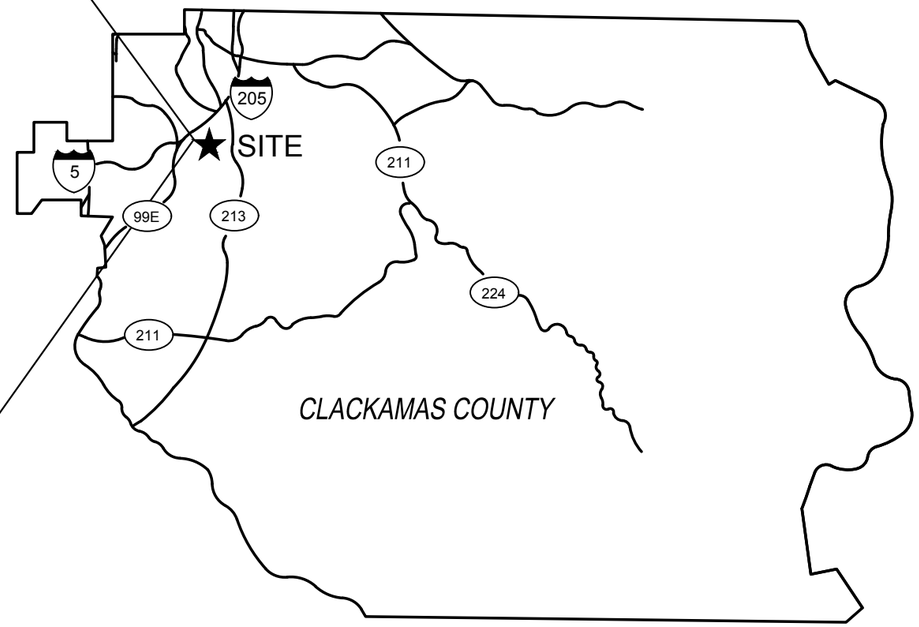
Summit Development Group is proposing an urban mixed-use development on approximately 62 acres of property located at 1105 Abernethy Road in Oregon City. Figures 1 and 2 display site vicinity maps showing the location of the proposed master plan site, which is bound by Abernethy Road to the south, Redland Road and OR 213 to the east, a Home Depot store to the northeast, and Washington Street to the northwest.

The proposed master plan concept, referred to as The North End (or master plan), is illustrated in Figure 3. As shown, the master plan incorporates a number of land uses including residential and various retail/commercial spaces. The concept plan is also divided into four distinct sub-areas (e.g., North, East, Central, and South Districts) to illustrate the different uses and functions that will occur within each district, and to delineate possible boundaries for individual phases of development. Full occupancy of the master plan uses is estimated to occur in 2025.

In terms of access, site traffic will rely primarily on the construction of a new collector-level street through the site. The street will extend from the current street terminus just west of the Home Depot store, proceed in a southwest direction before turning to the southeast to intersect with Abernethy Road in the general vicinity of an access to a golf range that exists on the site today.

Four other external connections are also envisioned as part of an interconnected network of streets. Three of these connections will occur along Washington Street, with one positioned in the northwest corner of the site and functioning as a private street connection, and two others which will function as private driveway connections into a structured parking facility that serves land uses in the North District. The fourth external access will be along Abernethy Road in southwest corner of the site.





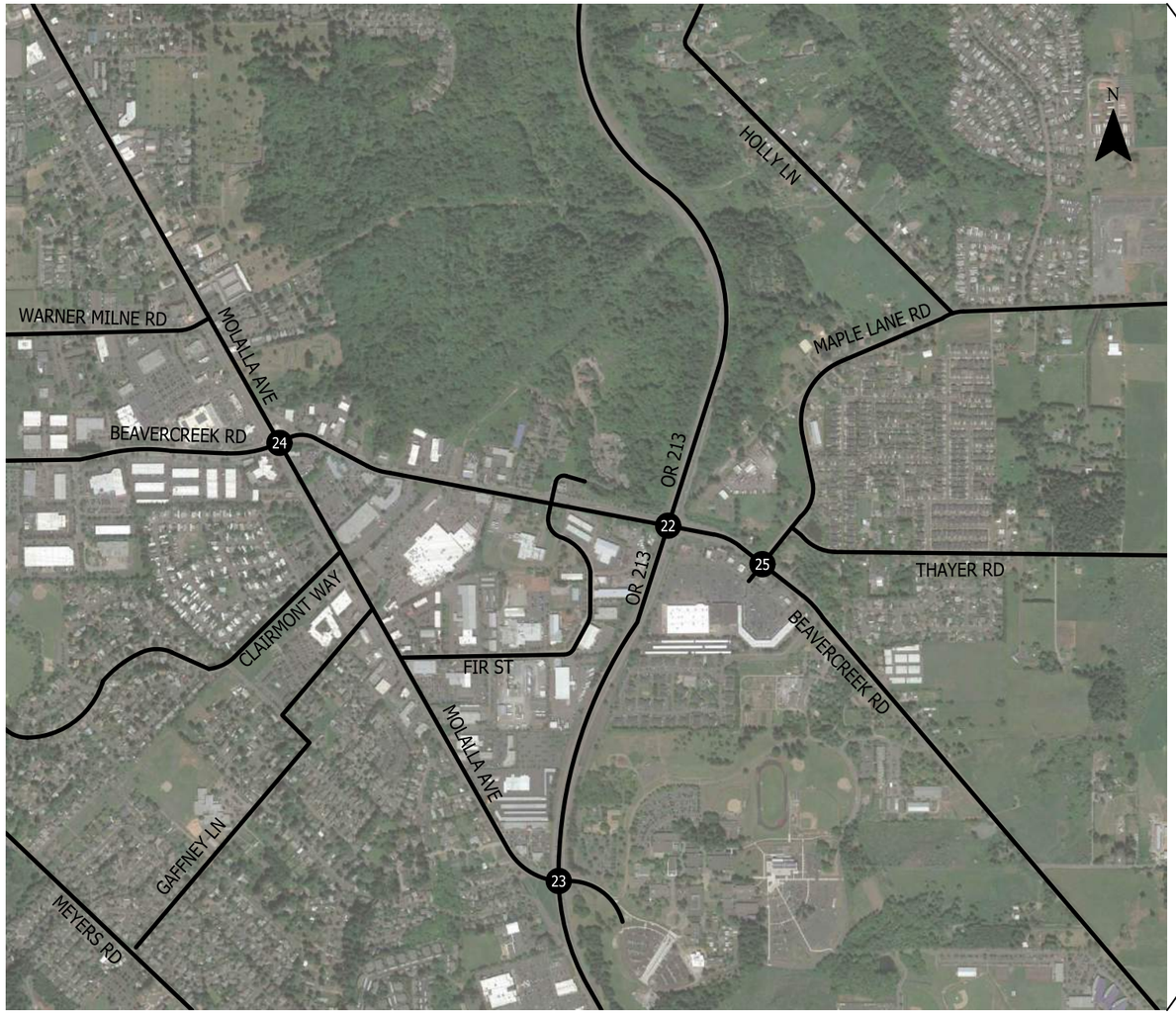
- Study Intersections

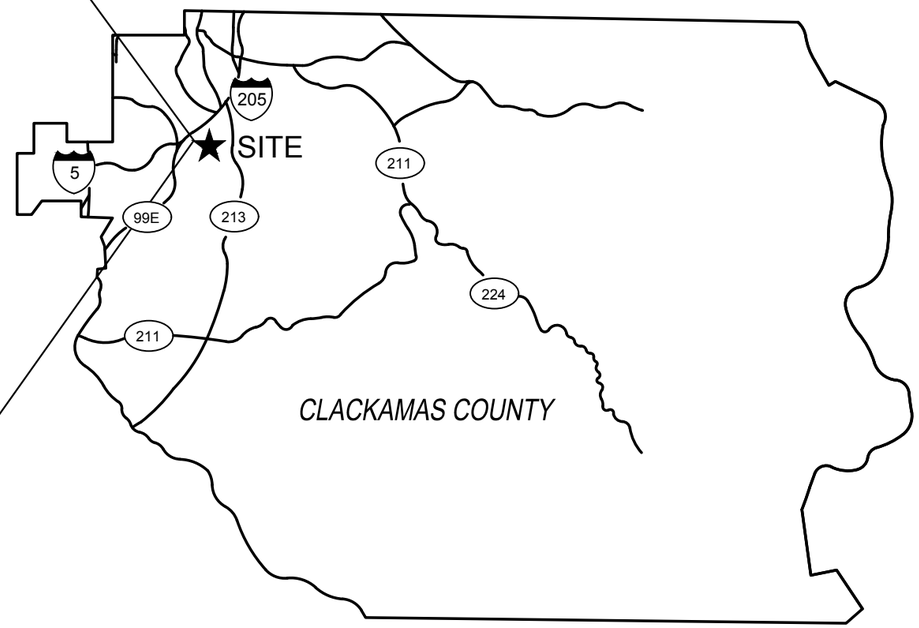
- Proposed Site Accesses

Site Vicinity Map
Oregon City, Oregon

Figure
1

H:\24\24824 - Rivers Edge Development\report\figs\24824 Fig.dwg Mar 17, 2021 - 10:12am - mruiz-leon Layout Tab: Site Vicinity Map





- Study Intersections

Site Vicinity Map
Oregon City, Oregon

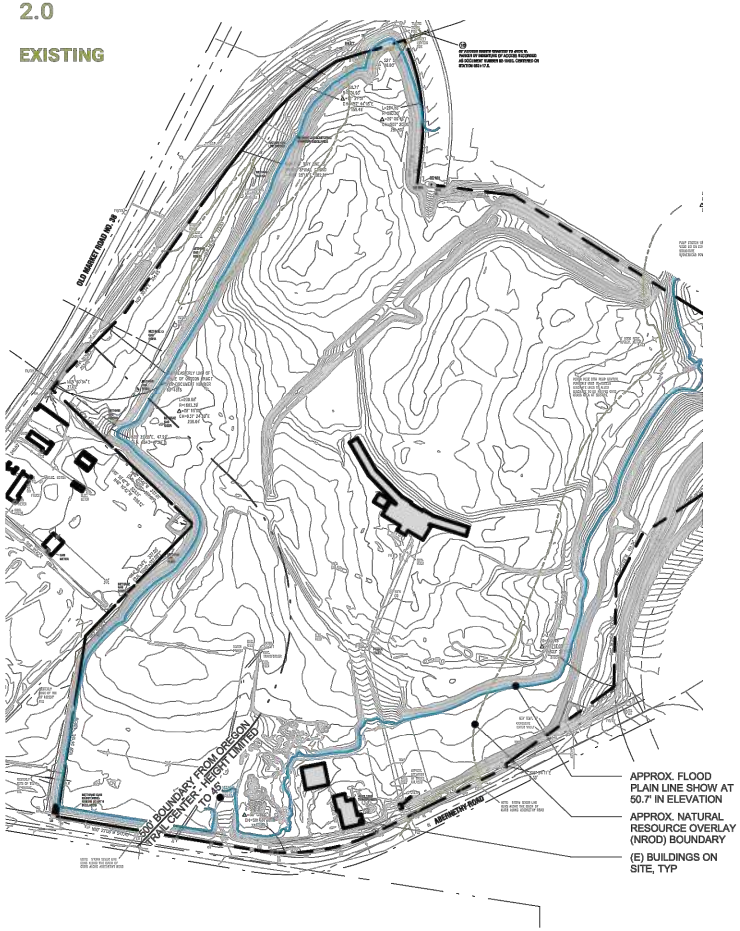
Figure
2

H:\24\24824 - Rivers Edge Development\report\figs\24824 Fig.dwg Mar 17, 2021 - 10:12am - mruiz-leon Layout Tab: Site Vicinity Map 2

SITE PLAN - EXISTING AND PROPOSED

2.0

EXISTING



PROPOSED SITE PLAN

BUILDING KEYS

NORTH DISTRICT
- N1 - DRIVE THRU
- N2 - RETAIL COMMERCIAL
- N3 - RETAIL COMMERCIAL
- N4 - RETAIL COMMERCIAL
- N5 - RETAIL COMMERCIAL
- N6 - RETAIL COMMERCIAL
- N7 - THEATRE AND COMMERCIAL
- N8 - MIXED USE W/ RESIDENTIAL (4-STORY)
- N9 - MIXED USE W/ RESIDENTIAL (4-STORY)
- N10 - MIXED USE W/ RESIDENTIAL (4-STORY)
- N11 - MIXED USE W/ RESIDENTIAL (5-STORY)
- N12 - MIXED USE W/ RESIDENTIAL (5-STORY)
- N13 - PAVILLION COMMERCIAL
- N14 - PAVILLION COMMERCIAL
- N15 - BELOW-GRADE PARKING GARAGE

EAST DISTRICT
- E1 - DRIVE THRU
- E2 - ANCHOR RETAIL COMMERCIAL
- E3 - RETAIL COMMERCIAL
- E4 - RETAIL COMMERCIAL
- E5 - DRIVE THRU

CENTRAL DISTRICT
- C1 - DRIVE THRU
- C2 - ANCHOR RETAIL COMMERCIAL

SOUTH DISTRICT
- S1 - DRIVE THRU
- S2 - ANCHOR RETAIL COMMERCIAL
- S3 - GROCER + RETAIL COMMERCIAL



LRS ARCHITECTS

220091 ||OREGON CITY MIXED USE | GENERAL DEVELOPMENT PLAN
01.25.21

SUMMIT DEVELOPMENT GROUP

RECEIVED FROM LRS ARCHITECTS : (1/28/2021)

Proposed Site Plan
Oregon City, Oregon

Figure
3

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As stated previously, a golf driving range exists on the subject property. This driving range will be removed once development occurs. Also, established land uses immediately adjacent to the master plan site, including the Home Depot store to the northeast and the Oregon Trail Interpretive Center to the southwest, are not part of this application and will remain unchanged.

STUDY METHODOLOGY

This study determines the transportation-related impacts associated with The North End master plan and was prepared in accordance with the City of Oregon City (City) *Guidelines for Transportation Impact Analyses* (TIA Guidelines – Reference 1). The study intersections and scope of this report were based on the TIA Guidelines and direction provided by City and Oregon Department of Transportation (ODOT) staff. The key assumptions and methodologies associated with this study were documented in a scoping memorandum prepared by Kittelson & Associates, Inc. (Kittelson) in January 2021. *Appendix "A" includes the scoping memorandum that was reviewed and approved by City staff.*

STUDY INTERSECTIONS

Per the City of Oregon City TIA Guidelines, the study area for the TIA should be based on the forecast trip generation of the development combined with engineering judgment and an understanding of existing and future land use and traffic conditions in the vicinity of the site. The City TIA guidelines identify the following considerations to form the basis for establishing the study area:

- All site access points and intersections adjacent to the site, including driveways serving parcels on the opposite side of the street;
- Roads through the site;
- Any intersection of two streets having a classification of arterial or collector, where site traffic will exceed 20 peak hour trips; and,
- Intersections where signal progression analysis is needed.

Based on the guidance above and per the outcome of the TIA scoping discussions, City staff support analysis of the following 25 existing and 5 proposed new intersections in the TIA report:

1. OR 99E / River Rd.-Arlington St.
2. OR 99E / Dunes Dr.
3. OR 99E / I-205 SB Ramp
4. OR 99 E / I-205 NB Ramp
5. OR 99E / 14th St.
6. OR 99E / 12th St.
7. OR 99E / 10th St.
8. Washington St. / Clackamas River Dr.
9. Washington St. / Prairie Schooner Wy.
10. Washington St. / Home Depot-Site Access A

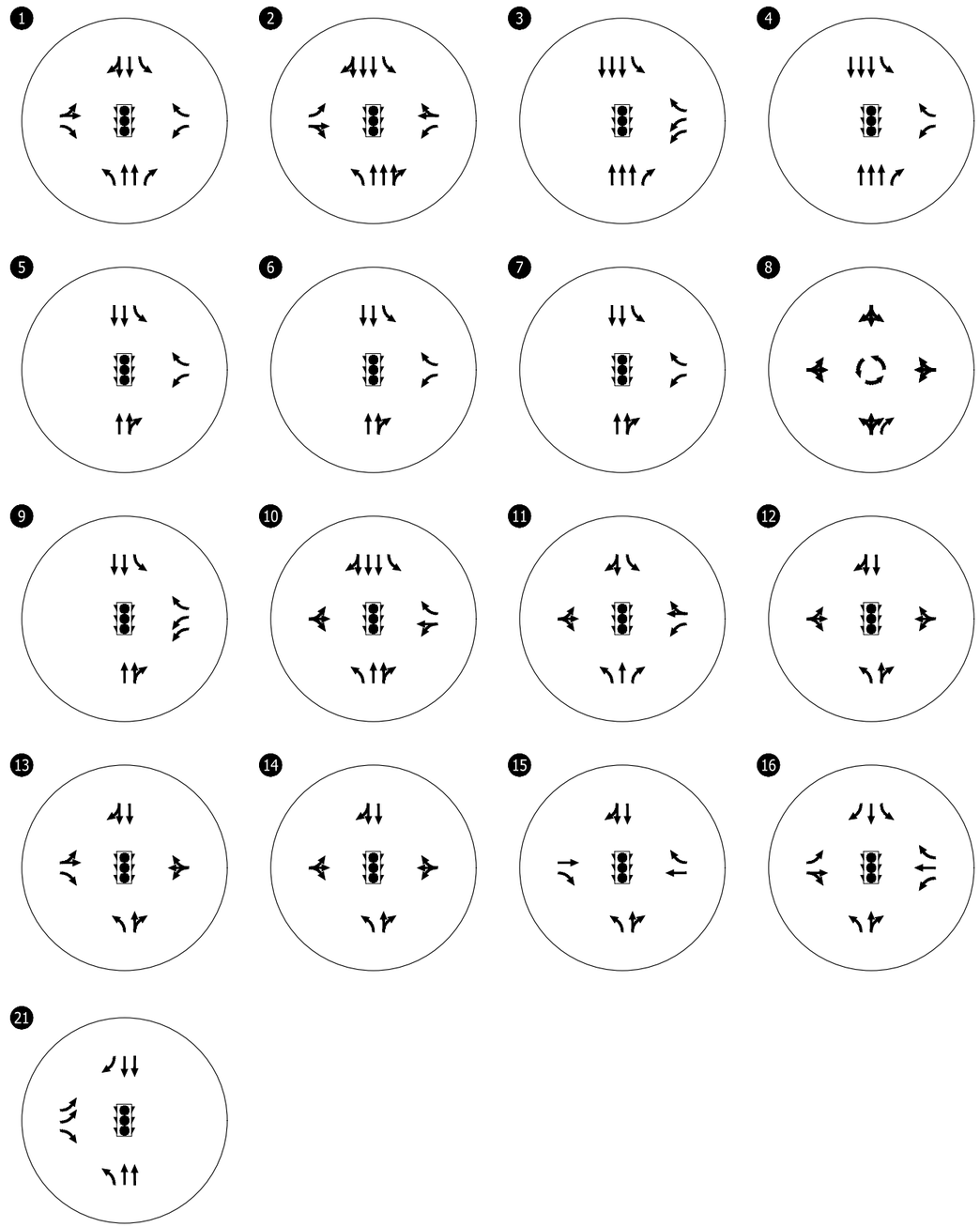
11. Washington St. / Abernethy Rd.
12. Washington St. / 15th St.
13. Washington St. / 14th St.
14. Washington St. / 12th St.
15. Washington St. / 7th St.
16. Redland Rd./ Abernethy Rd.-Holcomb Blvd.
17. Redland Rd. / Anchor Wy.
18. Redland Rd. / Holly Ln.
19. OR 213 / I-205 SB Loop Off-Ramp
20. OR 213 / Clackamas River Dr.
21. OR 213 / Redland Rd.
22. OR 213 / Beavercreek Rd.
23. OR 213 / Molalla Ave.
24. Beavercreek Rd. / Molalla Ave.
25. Beavercreek Rd. / Maplelane Rd.
26. Washington St. / Site Access D (proposed)
27. Abernethy Rd. / Site Access E (proposed)
28. Abernethy Rd. / Site Access F (proposed)
29. Washington St. / Site Access B (proposed)
30. Washington St. / Site Access C (proposed)

The existing lane configurations and traffic control devices present at the 25 existing study intersections above are also shown in Figures 4 and 5. As shown, 21 of the 25 intersections are signalized. As such, existing signal timing plans were obtained from Clackamas County, City, and/or ODOT and incorporated into the operational analyses for these intersections within the TIA.

TRAFFIC ANALYSIS PERIODS

All intersection operations analyses were performed over three peak hour analysis periods. These reflect the peak hours of weekday morning (7:00 AM - 9:00 AM), weekday afternoon (4:00 PM - 6:00 PM), and Saturday midday (11:15 AM - 1:15 PM) conditions. The need to analyze all three time periods stems from our scoping discussions with City and ODOT staff. In these discussions, preliminary site trip generation estimates revealed that the master plan would generate sufficient traffic to warrant analysis of all three time periods. The systemwide peak hour has been analyzed for each time period: the period when traffic volumes at all 25 existing study intersections collectively reach their highest levels in terms of total entering vehicles. Based on road tube count data collected in December 2020, the systemwide weekday morning peak hour occurs from 7:25 AM to 8:25 AM, with the afternoon peak hour occurring from 4:00 PM to 5:00 PM, and the Saturday midday peak hour occurring from 12:15 PM to 1:15 PM.





- Existing Traffic Signal
- Existing Lane Configuration
- Existing Stop Sign
- Existing Roundabout

Existing Lane Configurations & Traffic Control Devices
Oregon City, Oregon

Figure 4

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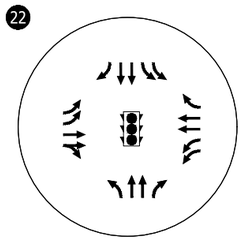

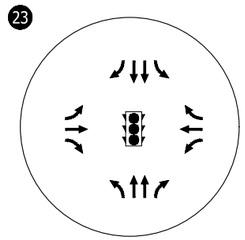

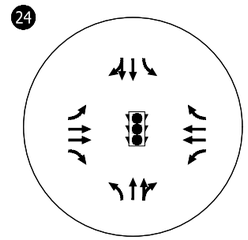

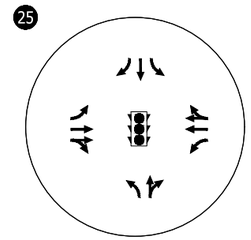

- Existing Traffic Signal
- Existing Lane Configuration

Existing Lane Configurations
& Traffic Control Devices
Oregon City, Oregon

Figure
5

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ANALYSIS SCENARIOS

This report evaluates the following analysis scenarios:

- Existing land use and transportation system conditions, including intersection volume-to-capacity (v/c) ratio, control delay, and level-of-service (LOS) during the weekday AM and PM peak hours, as well as the Saturday midday peak hour.
- Year 2025 background conditions (without the master plan), including intersection v/c ratio, control delay, level-of-service and 95th percentile queues during all three peak hour analysis periods.
- Year 2025 total traffic conditions (with the master plan), including intersection v/c ratio, control delay, level-of-service and 95th percentile queues during all three peak hour analysis periods.

PERFORMANCE MEASURES & OPERATING STANDARDS

All analyses described in this report were performed in accordance with the procedures stated in the *Highway Capacity Manual* (HCM – Reference 2) using Vistro 2020 software. HCM 6th Edition methodologies were used to evaluate operations and vehicle queue conditions for the peak 15-minute flow rates that occur during the weekday AM and PM peak hours and the Saturday midday peak hour.

Oregon City Mobility Standards

Section 16.12.033 of the Oregon City Municipal Code (OCMC) identifies the City's mobility standards for signalized and unsignalized intersections under City jurisdiction. Per the OCMC, the following mobility standards apply to the study area intersections:

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 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.*

For intersections outside 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 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.*

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.*

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:

1. *I-205/OR 99E Interchange.*

It should also be emphasized that the Oregon City *2013 Transportation System Plan* (TSP, Reference 3) states that for the purposes of land development proposals, the I-205/OR 213 interchange intersections shall be exempt from the state mobility targets until further solutions or alternative mobility targets are explored for the intersections.

ODOT Mobility Targets

ODOT operates and maintains all study intersections along OR 99E and OR 213 in the site vicinity. Per Table 7 of Highway Mobility Policy 1F in the Oregon Highway Plan (OHP, Reference 4), ODOT enforces varying mobility targets along OR 99E and OR 213. For intersections located along facilities designated either as a "*Corridor*" or listed as a "*Principal Arterial Route*", ODOT enforces an intersection V/C ratio no greater than 0.99 during the first and second highest peak hours. For facilities located on or within a "*Regional Center*" boundary, ODOT enforces an intersection V/C ratio no greater than 1.10 during the first peak hour and 0.99 during the second highest peak hour. There are two exceptions to the ODOT mobility standards listed in Table 7 of the OHP. As stated previously, by city code, the OR 99E/I-205 ramp terminal intersections are exempt from OHP mobility targets. Also stated previously, by city code, and as specified in an adopted amendment to the OHP in 2018, the mobility target for the OR 213/Beavercreek Road intersection is now a maximum v/c ratio of 1.00 for the first, second, and third peak hour periods.

For clarity, Table 1 summarizes the applicable mobility standards for all study intersections, based on jurisdictional ownership, area location relative to Metro's 2040 Growth Concept map, and facility designation.

Table 1: Applicable Mobility Standards for All Study Intersections

Study Intersection		Jurisdiction	Area Location/ Facility Designation	Operating Requirement
1	OR 99E / River Rd.-Arlington St.	ODOT	Corridor	0.99 v/c 1st hour, then 0.99 v/c 2nd hour
2	OR 99E / Dunes Dr.	ODOT	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
3	OR 99E / I-205 SB Ramp	ODOT	Regional Center	Exempt from mobility standards by City municipal code*
4	OR 99E / I-205 NB Ramp	ODOT	Regional Center	Exempt from mobility standards by City municipal code*
5	OR 99E / 14th St.	ODOT	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
6	OR 99E / 12th St.	ODOT	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
7	OR 99E / 10th St.	ODOT	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
8	Washington St. / Clackamas River Dr.	City	Outside Regional Center, but on Arterial and Throughway Network	0.99 v/c 1st hour, then 0.99 v/c 2nd hour
9	Washington St. / Prairie Schooner Wy.	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
10	Washington St./ Home Depot-Site Access A	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
11	Washington St. / Abernethy Rd.	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
12	Washington St. / 15th St.	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
13	Washington St. / 14th St.	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
14	Washington St. / 12th St.	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
15	Washington St. / 7th St.	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
16	Redland Rd. / Abernethy Rd.-Holcomb Blvd.	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
17	Redland Rd. / Anchor Wy.	City	Outside Regional Center, but on Arterial and Throughway Network	0.99 v/c 1st hour, then 0.99 v/c 2nd hour
18	Redland Rd. / Holly Ln.	City	Outside Regional Center, but on Arterial and Throughway Network	0.99 v/c 1st hour, then 0.99 v/c 2nd hour
19	I-205 SB Off-Ramp / OR 213	ODOT	Regional Center	Exempt from mobility standards by City municipal code**
20	OR 213 / Clackamas River Dr.	ODOT	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
21	OR 213 / Redland Rd.	ODOT	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
22	OR 213 / Beavercreek Rd.	ODOT	Principal Arterial Route	v/c ratio of 1.0 for 1st, 2nd, and 3rd peak hours***
23	OR 213 / Molalla Ave.	City	Principal Arterial Route	0.99 v/c 1st hour, then 0.99 v/c 2nd hour
24	Molalla Ave. / Beavercreek Rd.	City	Outside Regional Center, but on Arterial and Throughway Network	0.99 v/c 1st hour, then 0.99 v/c 2nd hour
25	Maplelane Rd. / Beavercreek Rd.	City	Outside Regional Center, but on Arterial and Throughway Network	0.99 v/c 1st hour, then 0.99 v/c 2nd hour
26	Washington St. / Site Access B (proposed)	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
27	Washington St. / Site Access C (proposed)	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
28	Washington St. / Site Access D (proposed)	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
29	Abernethy Rd / Site Access E (proposed)	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour
30	Abernethy Rd / Site Access F (proposed)	City	Regional Center	1.10 v/c 1st hour, then 0.99 v/c 2nd hour

* OR 99E/I-205 ramp terminal intersections are exempt from meeting state mobility targets, as per Oregon City Municipal Code Section 16.12.033.
** OR 213/I-205 SB ramp terminal intersection is exempt from meeting state mobility targets, as per the 2013 Oregon City TSP (see page 38).
*** Per a 2018 amendment to the Oregon Highway Plan (OHP).

EXISTING CONDITIONS

The existing conditions analysis identifies the site conditions and the current physical and operational characteristics of the roadways within the study area. These conditions will be compared with future conditions later in this report.

Kittelson staff visited and inventoried the proposed development site and surrounding study area in December 2020. At that time, Kittelson collected information regarding site conditions, adjacent land uses, and transportation facilities in the study area; however, due to executive order actions put in place by the Oregon State Governor to control the transmission of COVID-19, traffic volumes were not representative of normal conditions when the field visit was performed.

Site Conditions and Adjacent Land Uses

The project site is located within city limits and is zoned Mixed Use Downtown (MUD). At 62 acres in size, the property is bound by Washington Street to the northwest, a Home Depot store to the northeast, OR 213 and Redland Road to the east, Abernethy Road to the south, and an established group of small industrial businesses and the Oregon Trail Interpretive Center to the southwest. As a former landfill site, most of the site property is vacant. However, there is a small golf driving range business (Trails End Golf) that has direct access to Abernethy Road. Also, Clackamas County utilizes a portion of the property for vehicle parking and materials storage.

Land uses immediately adjacent to the site along Washington Street include the Home Depot, the Metro South Waste Transfer Station, a series of small industrial, retail power equipment, and landscaping materials businesses, the Oregon City Amtrak station, and the Oregon Trail Interpretive Center. Along Abernethy Road are a series of small industrial businesses and the Clackamas County Transportation buildings bordering both sides of the street from Washington Street to Redland Road. East of OR 213 and south of Abernethy Road lie established residential neighborhoods. To the west lies the town center of Oregon City. On the north side of I-205 lies a retail shopping center, the first phase of the Clackamette Cove master plan project (Edgewater Apartments), and the Willamette River.

Transportation Facilities

Table 2 provides a summary of transportation facilities (including pedestrian and bicycle facilities) in the site vicinity. The summary generally describes roadway features that are present at the study intersections.

Table 2: Existing Transportation Facilities

Roadway	Functional Classification[1, 2]	Number of Lanes	Posted Speed (MPH)	Sidewalks	Bicycle Lanes	On-Street Parking
OR 99E	City – Major Arterial ODOT – District/ Regional[3]	5-8	30	Yes[4]	Yes[5]	No[6]
River Rd.	City of Gladstone Arterial	2-3	30	Yes	Yes- North Partial - South	No
Arlington St.	City of Gladstone Arterial	2-3	25	Yes	No	Partial
Dunes Dr.	Collector	3	Not Posted	Yes	Yes	No
I-205	City- Freeway ODOT – Interstate	4-6	55	No	No	No
15th St.	Collector	2	Not Posted	Yes	Yes	Yes- South
14th St.	Collector	2-4	Not Posted	Yes	No	Partial
12th St.	Collector	2-3	Not Posted	Yes	No	Partial
10th St.	Major Arterial	3-4	Not Posted	Yes	No	No
7th St.	Major Arterial	3	Not Posted	Yes	No	Partial
Clackamas River Dr.	Minor Arterial	2-4	30	Yes-West	Yes	No
Washington St.	Minor Arterial	2-5	35	Yes[7]	Yes	No
Prairie Schooner Wy.	Minor Arterial	5	Not Posted	No	Yes	No
Home Depot-Site Access A	Collector	3	Not Posted	Yes	Yes	No
Abernethy Rd.	Minor Arterial	3	35	Yes- South Partial - North	Yes	Partial
Redland Rd.	Minor Arterial	2-5	45	No	Yes[8]	No
Holcomb Blvd.	Minor Arterial	2-3	Not Posted	No	No	No
Anchor Wy.	Collector	2	Not Posted	No[9]	No	No
Holly Ln.	Minor Arterial	2	40	No	No	No
OR 213	City – Expressway ODOT - Expressway	2-6	55	Partial[10]	Yes	No
Beavercreek Rd.	Major Arterial	5-6	35	Yes	Yes	No
Molalla Ave.	Major Arterial	2-3	35	Yes	Yes	No
Maplelane Rd.	Minor Arterial	2-4	40	Partial - East	Yes	Partial- East

MPH = miles per hour
[1] 2013 Oregon City Transportation System Plan (TSP - Reference 3).
[2] 1999 Oregon Highway Plan (OHP – Reference 4).
[3] OR 99E is a District level highway north of I-205 and a Regional level highway south of I-205.
[4] Sidewalks are present on both sides north of Dunes Drive, east side only from Dunes to 14th Street, then both sides south of 14th Street.
[5] A combined two-way bike facility and multi-use path is present on the west side of the highway along Clackamette Drive beginning at Dunes Drive and continuing down to 14th Street.
[6] On-street parking is not allowed along OR 99E, except for limited parking between 14th Street and 11th Street.
[7] Sidewalks are on both sides, except sidewalk segments missing on west side from south of Clackamas River Drive to Prairie Schooner Way, and from south of the Metro South Transfer Station to Abernethy Road.
[8] Bicycle lanes are present between OR 213 and Abernethy Road, with striped shoulders for bicycling south of Abernethy Road to beyond Holly Lane.
[9] Sidewalks are only provided on the bridge overcrossing of Abernethy Creek next to Redland Road.
[10] Sidewalks are present on both sides from I-205 to Prairie Schooner Way, and a multi-use path is present on the east side of the highway from Beavercreek Road to Molalla Avenue.

Pedestrian and Bicycle Facilities

Table 22 highlights pedestrian and bicycle facilities available in the larger area surrounding the site. In the immediate vicinity of the site, a continuous sidewalk is present along the site frontage on Washington Street, with a connection to the crosswalks at the traffic signal at Prairie Schooner Way and additional

sidewalk extending further to the roundabout at Clackamas River Drive. A continuous sidewalk also extends southwest of the site along Washington Street. Beginning at the site property boundary, the sidewalk passes in front of the adjacent retail property and the Oregon Trail Interpretive Center before reaching the crosswalks at the traffic signal with Abernethy Road.

Along Abernethy Road, there is a 400-foot section of sidewalk that extends west along the site frontage from the signalized intersection and crosswalks at Redland Road, with the remaining property frontage having no sidewalk. Further west beyond the site frontage, sidewalk is lacking for most of the distance to the next traffic signal at Washington Street.

There are no sidewalk facilities along the limited site frontages on Redland Road and OR 213, but there are continuous bicycle lanes provided along the surrounding street facilities including Washington Street, Abernethy Road, Redland Road, and OR 213. Also, it should be emphasized that the Home Depot collector-type street that extends up to the site property from Washington Street has striped bicycle lanes and sidewalks on both sides of the street.

Transit Facilities

Local transit service is conveniently provided by TriMet in the immediate site vicinity by the following two bus lines:

- **TriMet Line 79 (Clackamas/Oregon City):** Provides service between Clackamas Town Center and Oregon City Transit Center, with bus stops conveniently located along Washington Street right at the traffic signal with the Home Depot/site access street. Weekday and weekend service is generally provided at 40-minute headways.
- **TriMet Line 154 (Willamette/Clackamas Heights):** Provides service that connects the Clackamas Heights area up along Holcomb Boulevard with the Oregon City Transit Center, with additional service to the West Linn area via Willamette Falls Drive. Bus stops are conveniently located along Abernethy Road at the traffic signal with Redland Road and at the west end of the property frontage. Only weekday service is provided at 1-hour headways.

It should be emphasized that the master plan site is just over three-quarters of a mile (approximately 17 minute walk) from the Oregon City Transit Center located in the downtown core of Oregon City at Main Street and 11th Street. This means that visitors, residents, and employees associated with the master plan area can walk (or use Route 79) to the Oregon City Transit Center and access a variety of other bus lines, including the following:

- **TriMet Line 31 (Webster Road)**: Provides service on weekdays and weekends between the Oregon City Transit Center and the Clackamas Town Center, generally at 40-minute headways.
- **TriMet Line 32 (Oatfield):** Provides service on weekdays between Clackamas Community College and the Milwaukie Transit Center, generally at 30-minute to 1-hour headways. On weekends, service is only provided between Clackamas Community College and the Oregon City Transit Center at 1-hour headways.

- **TriMet Line 33 (McLoughlin/King Road):** Provides frequent service (15 minutes or better) on weekdays and weekends between Clackamas Community College and Clackamas Town Center via downtown Milwaukie.
- **TriMet Line 34 (Linwood/River Road):** Provides weekday service only between Clackamas Community College and Clackamas Town Center via downtown Milwaukie with headways of just over 1 hour.
- **TriMet Line 35 (Macadam/Greeley)**: Provides service between the Oregon City Transit Center and the Portland City Center via Lake Oswego at approximately 15- to 30-minute headways on weekdays and at 45-minute headways on weekends.
- **TriMet Line 99 (Macadam/McLoughlin):** Provides weekday AM and PM "rush hour" service between Clackamas Community College and Portland City Center at approximately 15 to 30-minute headways.

Traffic Volumes & Peak Hour Operations

The disruption to travel patterns resulting from the COVID-19 pandemic precludes the ability to directly rely on existing traffic volumes to be representative of normal conditions. Therefore, proxy volume estimates were prepared by developing and applying COVID Adjustment Factors (CAF's) to turn movement traffic counts collected at all 25 existing study intersections in mid-December 2020. In all cases, the CAF produced a proxy volume estimate greater than what was measured. For study intersections of city or county roadways, unique CAF's were determined for the weekday AM and PM peak hours and the Saturday midday peak hour by comparing current counts with historical (pre-COVID) traffic count data available for the streets that surround the master plan site, such as Washington Street, Abernethy Road, Redland Road, and Prairie Schooner Way. For study intersections located along the OR 213 and OR 99E corridors, separate CAF's were developed by looking at fluctuations in 2018-2020 vehicle detection data available from the ODOT signal controllers within the site vicinity. Additional adjustments were then made at specific highway locations to ensure that adjusted volume estimates either matched or exceeded historical traffic demand data from 2017-2019. Table 3 presents the CAF's calculated for the weekday AM and PM peak hours, as well as for the Saturday midday peak hour. *See Appendix B for further detail on the development of these adjustment factors.*

Table 3: COVID Adjustment Factors (By Facility and Analysis Period)*

Facility	Weekday AM Peak Hour	Weekday PM Peak Hour	Saturday Midday Peak Hour
City/County Streets (All Study Intersections)	1.41	1.12	1.01
OR 99E (All Study Intersections)	1.50	1.16	1.03
OR 213 Intersections			
at I-205 SB Ramps	1.39	1.17	1.04
at Clackamas River Drive	1.39	1.17	1.04
at Redland Road	1.39	1.17	1.04
at Beavercreek Road	1.37	1.13	1.04
at Molalla Avenue	1.48	1.17	1.04

* Engineering judgment, knowledge of local land uses, and historical traffic count patterns were used when applying and adjusting these factors in specific locations.

The CAF's shown in Table 3 were applied to the mid-December 2020 traffic count data to arrive at estimated existing year 2020 traffic volumes during the weekday AM weekday PM and Saturday midday peak hours as shown in Figures 6 through 11. *Appendix "B" includes the December 2020 traffic count data.*

Current Intersection Operations

Figures 6 through 11 also summarize the existing traffic operations at the study intersections during the first hour of the weekday AM, weekday PM, and Saturday midday peak periods. As shown, all 25 existing study intersections currently operate at levels that meet the mobility standards of the governing agency, and because of this, the second hour was not analyzed. *Appendix "C" includes the existing traffic conditions worksheets.*

It is noted that even while agency mobility standards are satisfied, or exempt in several cases, three study intersections are showing v/c ratios over 1.00, indicating a possible oversaturated condition where demand is estimated to exceed capacity.

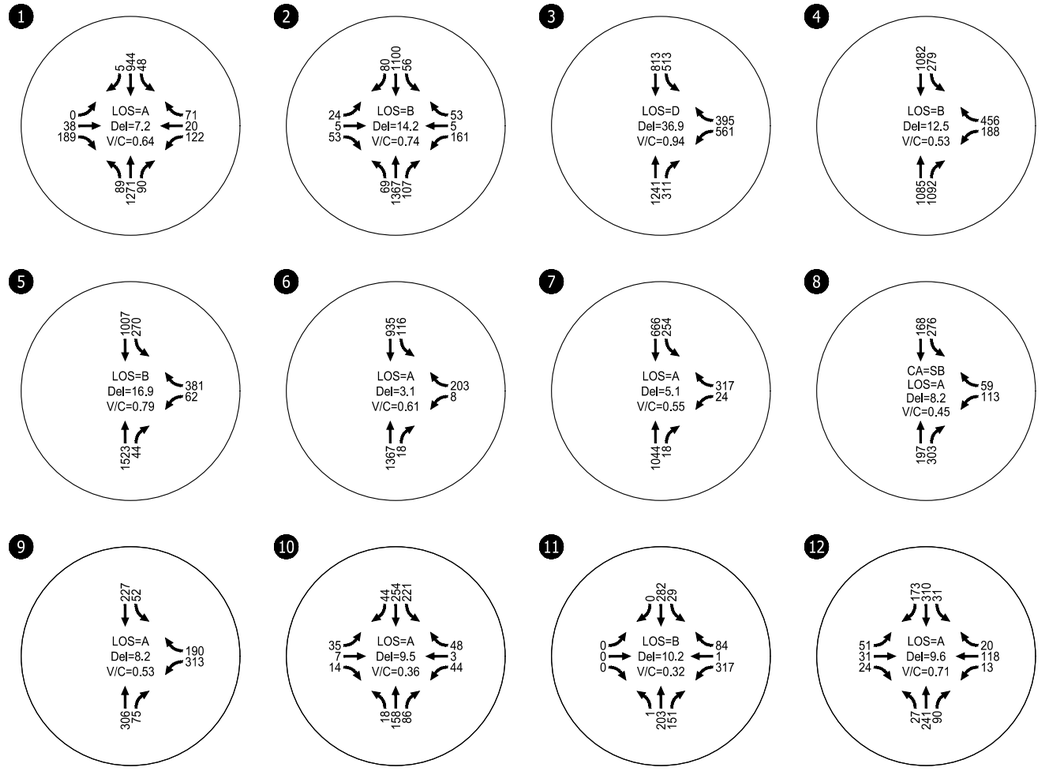
Intersection #2: OR 99E/Dunes Drive

The calculated v/c ratio is 1.04 at this intersection during the Saturday midday peak hour. Further inspection of the traffic signal timing records for this intersection indicate that the overall intersection v/c ratio could be reduced below 1.0 if the lag phasing for the critical southbound left-turn movement (from the highway into the adjacent shopping center) were switched to the lead phase concurrent with the opposing left-turn movement. *Appendix "C" includes the theoretical analysis with this signal phasing change in place.*

Intersection #19: I-205 SB Ramp/OR 213

Although this intersection is exempt from the ODOT mobility targets (in accordance with City's TSP), the stop-controlled eastbound left-turn (from loop off-ramp) and the stop-controlled southbound through movement (from city street approach on north side of interchange) are operating with v/c ratios of 1.50 during the weekday AM peak hour and 1.70 during weekday PM peak hour, respectively. While demand for these stop-controlled movements are very low (compared to all other movements), it is the mainline traffic between OR 213 and I-205 SB that is leaving little to no gaps for the minor stop-controlled traffic movements. Closer inspection of the operations reports indicates the eastbound left-turn movement has adequate storage to support 95th percentile queues. However, the southbound through movement has an estimated 95th percentile queue of 124 feet in the PM peak hour which exceeds available lane storage of 90 feet. Potential safety measures should be considered by ODOT for the southbound through movement to ensure vehicle queues do not spill back into the next adjacent intersection and conflict with the northbound left-turn movement from OR 213 to the I-205 SB on-ramp. One such measure could include posting a yellow warning sign indicating that "Oncoming Traffic Does Not Stop". Another option would be to install "Keep Intersection Clear" signage with associated striping on the ground.



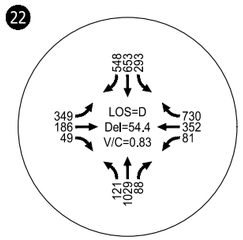


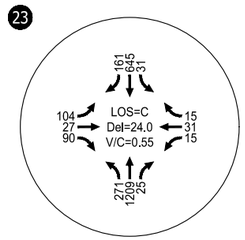
V/C = VOLUME TO CAPACITY RATIO
LOS = CRITICAL INTERSECTION LEVEL OF SERVICE
Del = CRITICAL INTERSECTION CONTROL DELAY
CA = CRITICAL APPROACH
CM = CRITICAL MOVEMENT

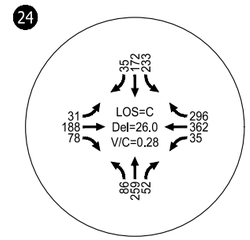
Estimated Existing Traffic Conditions
Weekday AM Peak Hour
Oregon City, Oregon

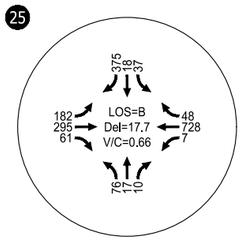
Figure
6











V/C = VOLUME TO CAPACITY RATIO

LOS = CRITICAL INTERSECTION LEVEL OF SERVICE

Del = CRITICAL INTERSECTION CONTROL DELAY

Estimated Existing Traffic Conditions
Weekday AM Peak Hour
Oregon City, Oregon

Figure
7

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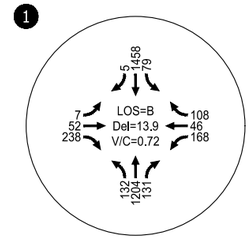

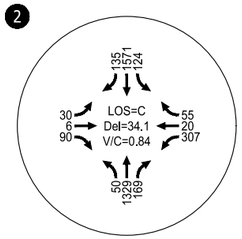

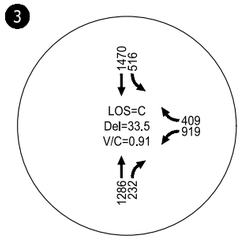

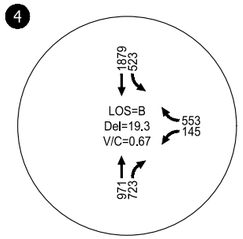

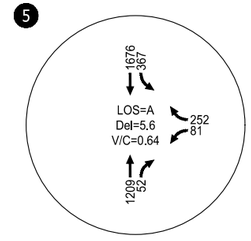

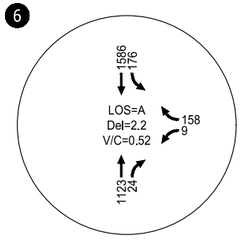

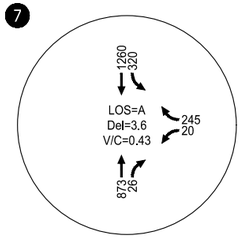

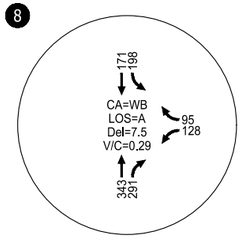

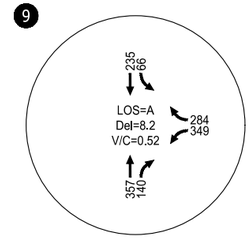

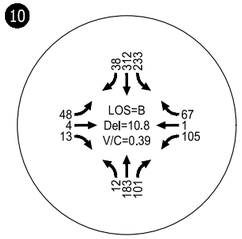

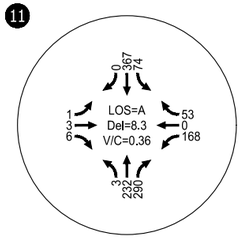

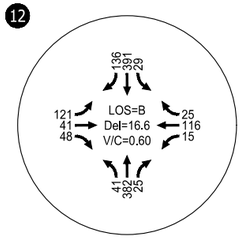

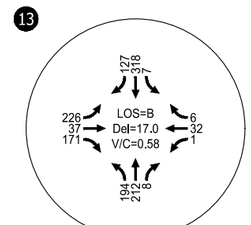

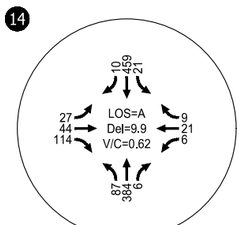

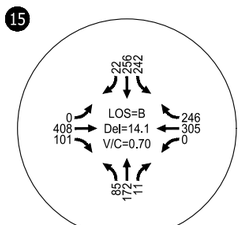

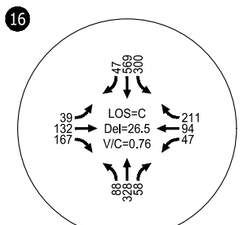

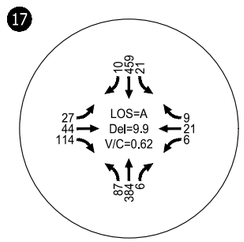

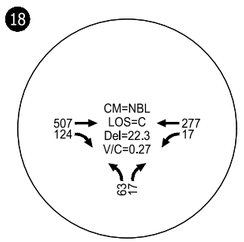

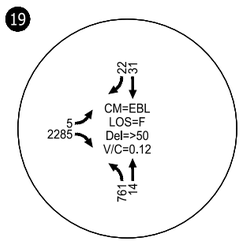

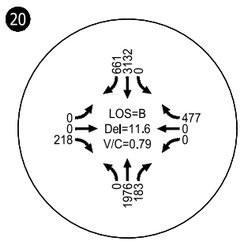

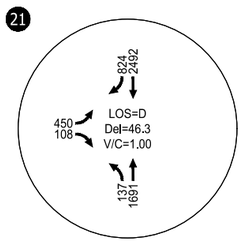

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Estimated Existing Traffic Conditions
Weekday PM Peak Hour
Oregon City, Oregon

Figure
8

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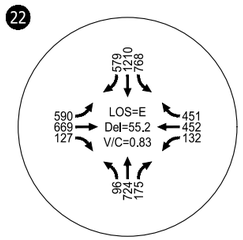

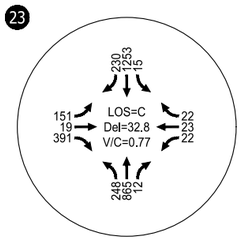

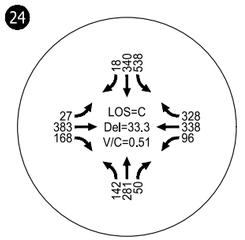

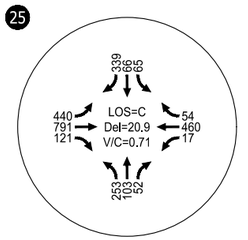

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Estimated Existing Traffic Conditions
Weekday PM Peak Hour
Oregon City, Oregon

Figure
9

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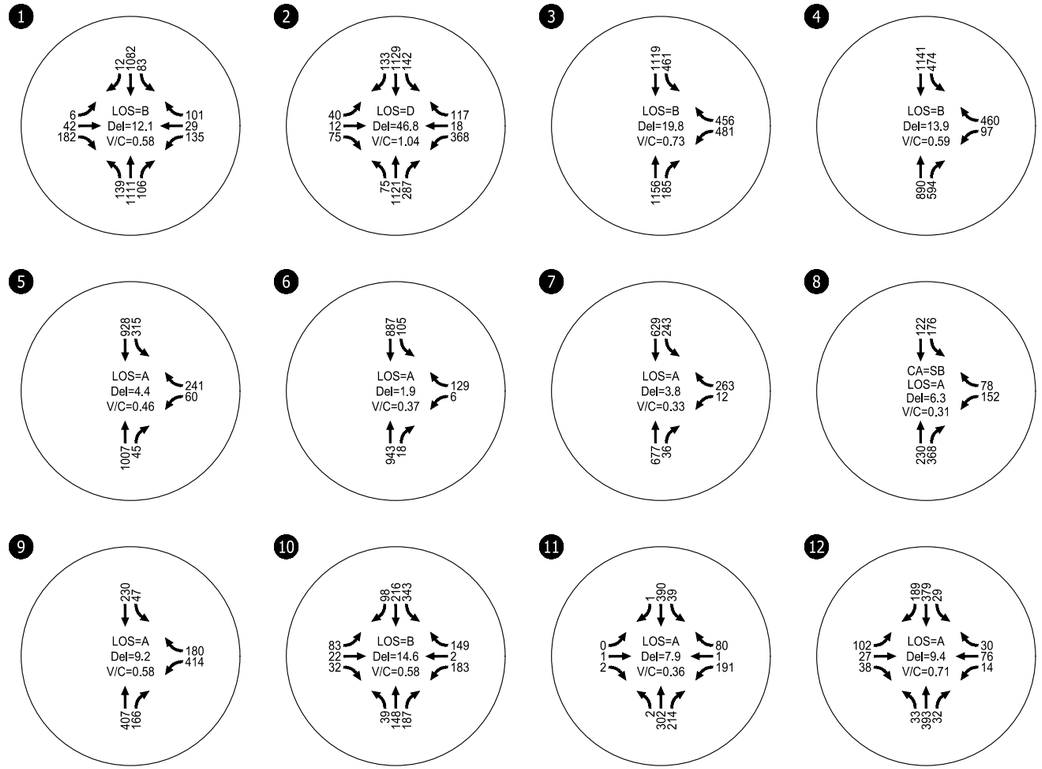

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Estimated Existing Traffic Conditions
Saturday Midday Peak Hour
Oregon City, Oregon

Figure
10

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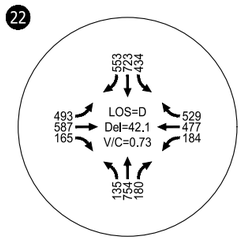

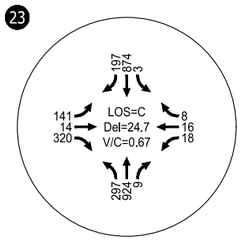

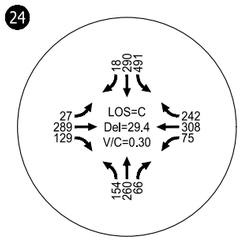

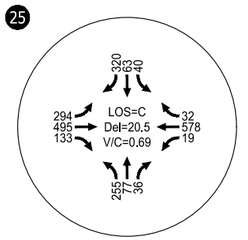

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Estimated Existing Traffic Conditions
Saturday Midday Peak Hour
Oregon City, Oregon

Figure
11

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Intersection #21: OR 213/Redland Road

The intersection v/c ratio is 1.01 during the weekday AM peak hour and 1.00 during the weekday PM peak hour.

Traffic Safety Analysis

Reported crash histories for the most recent five-year period (two years more than required by the City) of available data was obtained from ODOT for review. Data covered the period from January 1, 2014, through December 31, 2018. Table 4 provides a general summary of the crash data over the five-year reporting period, with crashes summarized by collision type and severity.

Table 4: Intersection Crash History (January 1, 2014 through December 31, 2018)

Location		Collision Type								Severity			Total
		Angle	Turn	Rear -End	Side Swipe	Fixed Object	Ped/ Bike	Back- ing	Other	PDO[1]	Injury	Fatal	
1	OR 99E / River Rd.-Arlington St.	3	29	19	0	1	4	0	0	18	38	0	56
2	OR 99E / Dunes Dr.	8	13	20	2	0	4	1	0	15	33	0	48
3	OR 99E / I-205 SB Ramp	0	22	21	1	1	1	0	0	17	29	0	46
4	OR 99E / I-205 NB Ramp	0	12	22	0	0	1	0	0	15	20	0	35
5	OR 99E / 14th St.	0	10	11	2	0	2	0	0	11	14	0	25
6	OR 99E / 12th St.	0	6	8	0	0	1	0	0	4	11	0	15
7	OR 99E / 10th St.	0	9	5	0	0	0	0	0	7	7	0	14
8	Washington St. / Clackamas River Dr.	0	1	2	0	0	0	0	0	3	0	0	3
9	Washington St. / Prairie Schooner Wy.	0	3	0	1	0	0	0	0	3	1	0	4
10	Washington St./ Home Depot-Site Access A	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
11	Washington St. / Abernethy Rd.	0	0	0	0	0	0	0	0	0	0	0	0
12	Washington St. / 15th St.	6	9	1	0	1	1	0	0	11	6	1	18
13	Washington St. / 14th St.	2	2	4	0	1	0	0	0	2	7	0	9
14	Washington St. / 12th St.	39	7	4	0	0	2	0	0	25	26	1	52
15	Washington St. / 7th St.	4	3	2	1	0	0	0	0	6	4	0	10
16	Redland Rd. / Abernethy Rd.	1	4	7	0	0	0	0	0	6	6	0	12
17	Redland Rd. / Anchor Wy.	0	3	1	0	0	0	0	0	0	4	0	4
18	Redland Rd. / Holly Ln.	0	3	4	0	0	0	0	0	2	5	0	7
19	I-205 SB Off-Ramp / OR 213	1	8	5	6	2	0	0	0	14	8	0	22
20	OR 213 / Clackamas River Dr.	1	4	16	0	3	0	0	1	12	13	0	25
21	OR 213 / Redland Rd.	0	10	42	1	0	0	0	0	20	33	0	53
22	OR 213 / Beavercreek Rd.	4	6	119	2	1	3	0	0	69	65	1	135
23	OR 213 / Molalla Ave.	1	6	20	0	1	0	1	0	13	16	0	29
24	Molalla Ave. / Beavercreek Rd.	3	30	17	1	2	1	2	0	22	34	0	56
25	Maplelane Rd. / Beavercreek Rd.	3	34	12	1	0	0	0	0	19	31	0	50

[1]PDO – Property damage only

[2]No crash data was reported by ODOT for this intersection.

As shown in the data in Table 4, three reported crashes resulted in a fatality involving a bicyclist or pedestrian at the Washington Street/15th Street, Washington Street/12th Street, and the OR 213/Beavercreek Road intersections. While 57% (411 of 728) of the total reported crashes over the last five years resulted in an injury, approximately 1.8% (13 of 728) of the total reported crashes resulted in a fatality or serious injury (crash Type A). About half of all crashes (362 of 728) were rear-end collisions, and about a third (234 of 728) were turning-type collisions, both indicative of crashes at intersections. *Appendix "D" contains the crash data reports provided by ODOT.*

Critical crash rates were also calculated for each of the study intersections following the analysis methodology presented in ODOT's Analysis Procedures Manual (APM - Reference 5). APM Chapter 4 provides 90th-percentile crash rates per million entering vehicles at a variety of intersection configurations in the State of Oregon based on number of approaches and traffic control types. In addition, a critical crash rate was also identified for each study intersection following APM guidance on determining crash rates by intersection type. Per the APM, intersections with observed crash rates that exceed the 90th percentile values shown in APM Exhibit 4-1 or with observed crash rates that exceed the critical crash rates should be flagged for further analysis.

Table 5 summarizes the critical crash rate assessment for each intersection and compares those values to the observed crash rate. As shown in the table, observed crash rates exceed the 90th-percentile rates for eight of the 25 existing study intersections. These same eight intersections, plus another three study intersections, show observed crash rates exceeding the calculated critical crash rates based on a statewide comparison. A more refined analysis of these 11 high crash locations are discussed in the following section. Also, it should be mentioned that, although study intersection #12 (Washington Street/15th Street) has a 90th-percentile rate that meets the critical crash rate, it does not exceed it. Therefore, no further analysis was warranted.

Additional Safety Analysis of 11 High Crash Rate Locations

Guidance provided by the Highway Safety Manual (Reference 6) includes quantitative methods for identifying systemic approaches to reducing the severity of crashes**. It should be noted that while simply increasing the volume of traffic on a roadway or at an intersection increases the exposure to the potential for a crash, it does not portend a higher rate of crashes or that more severe crashes will occur.** As such, the analysis summarized below focuses on the fatal and severe injury crashes that have been reported, to understand their underlying causes.

Evaluation of the fatal and severe injury crash records was completed for the 11 intersections identified as having high crash rates. The causes for reported crashes, repeat crash patterns, and severity of injury or fatality were identified. Particular attention was given to contributing factors identified in the crash reports. *Details of this analysis are contained in a technical memorandum provided in Appendix "D".*

Table 5: Intersection Crash Rate Assessment (January 1, 2014 through December 31, 2018)

	Location	Total Crashes	Observed Crash Rate[1]	90th Percentile Rate by Intersection Type[1,2]	Observed Crash Rate > 90th Percentile Rate	Critical Crash Rate by Intersection Type[3]	Observed Crash Rate > Critical Crash Rate by Intersection
1	OR 99E / River Rd.-Arlington St.	56	0.85	0.86	No	0.62	Yes
2	OR 99E / Dunes Dr.	48	0.68	0.86	No	0.62	Yes
3	OR 99E / I-205 SB Ramp	46	0.52	0.51	Yes	0.37	Yes
4	OR 99 E / I-205 NB Ramp	35	0.40	0.51	No	0.37	Yes
5	OR 99E / 14th St.	25	0.38	0.51	No	0.39	No
6	OR 99E / 12th St.	15	0.27	0.51	No	0.40	No
7	OR 99E / 10th St.	14	0.28	0.51	No	0.41	No
8	Washington St. / Clackamas River Dr.	3	0.13	0.41	No	0.38	No
9	Washington St. / Prairie Schooner Wy.	4	0.15	0.51	No	0.46	No
10	Washington St./Home Depot-Site Access A	n/a	n/a	n/a	n/a	n/a	n/a
11	Washington St. / Abernethy Rd.	0	0.00	0.86	No	0.74	No
12	Washington St. / 15th St.	18	0.73	0.86	No	0.73	No
13	Washington St. / 14th St.	9	0.37	0.86	No	0.73	No
14	Washington St. / 12th St.	52	2.42	0.86	Yes	0.75	Yes
15	Washington St. / 7th St.	10	0.30	0.86	No	0.69	No
16	Redland Rd. / Abernethy Rd.	12	0.32	0.86	No	0.68	No
17	Redland Rd. / Anchor Wy.	4	0.17	0.29	No	0.28	No
18	Redland Rd. / Holly Ln.	7	0.39	0.29	Yes	0.30	Yes
19	I-205 SB Off-Ramp / OR 213	22	0.39	0.29	Yes	0.22	Yes
20	OR 213 / Clackamas River Dr.	25	0.22	0.51	No	0.36	No
21	OR 213 / Redland Rd.	53	0.54	0.51	Yes	0.37	Yes
22	OR 213 / Beavercreek Rd.	135	1.27	0.86	Yes	0.59	Yes
23	OR 213 / Molalla Ave.	29	0.52	0.86	No	0.64	No
24	Molalla Ave. / Beavercreek Rd.	56	1.14	0.86	Yes	0.65	Yes
25	Maplelane Rd. / Beavercreek Rd.	50	1.00	0.86	Yes	0.65	Yes

[1] Crash rate – Crashes per million entering vehicles (MEV)

[2] Values shown obtained from APM Exhibit 4-1, Intersection Crash Rates per MEV by Land Type and Traffic Control

[3] Values shown calculated per APM Section 4.3.4 and APM Example 4-4, HSM Critical Crash Rates for Intersections with Statewide Reference Population

Table 6 provides a brief description of each crash that involved a fatality or severe injury over the five-year period of crash history at the 11 intersections. Two crashes resulted in fatalities, both pedestrians, at two separate intersections. In one case, the driver failed to yield the right-of-way to the pedestrian. In the other, the pedestrian attempted to cross the street against the traffic signal. The fatality at Washington St./12th St. occurred in 2014. In 2018, the City installed a traffic signal at this location, providing protected crossings for pedestrians.

Table 6: Assessment of Severe Crashes at 11 High Crash Rate Locations

Location		Total Crashes	Fatal Crashes	Severe Crashes (Type A)	Severe Crash Description/Cause
1	OR 99E / River Rd.-Arlington St.	56	0	0	-
2	OR 99E / Dunes Dr.	48	0	0	-
3	OR 99E / I-205 SB Ramp	46	0	1	Injury A 5/19/2018; Saturday, 10PM Clear, Dry Southbound left turning vehicle did not have ROW / left turn in front of oncoming traffic
4	OR 99 E / I-205 NB Ramp	35	0	0	-
14	Washington St. / 12th St.	52	1	0	Fatality 1/3/2014; Friday 6 PM Cloudy, Dry, Daylight Driver failed to yield ROW to pedestrian, pedestrian was killed
18	Redland Rd. / Holly Ln.	7	0	0	-
19	I-205 SB Off-Ramp / OR 213	22	0	0	-
21	OR 213 / Redland Rd.	53	0	1	Injury A 12/27/2017; Wednesday 9PM Fog, Wet, Dark Driver disregarded traffic signal
22	OR 213 / Beavercreek Rd.	135	1	0	Fatality 1/2/2017; Monday 12PM Cloudy, Wet, Daylight Pedestrian disregarded traffic signal, vehicle skidded, pedestrian was killed
24	Molalla Ave. / Beavercreek Rd.	56	0	2	Injury A 9/16/2018; Thursday 3 PM Clear, Dry, Daylight Left turning driver did not have ROW / left turn in front of oncoming traffic Injury A 5/12/2014; Monday 4 PM Clear, Dry, Daylight Left turning driver turned into the wrong lane, the right turning driver turned right on red after stopping. The left turning driver was recorded as being in error.
25	Maplelane Rd. / Beavercreek Rd.	50	0	2	Injury A 2/7/2016; Saturday 2 PM Rain, Wet, Daylight Left turning driver did not have ROW / left turn in front of oncoming traffic Injury A 9/9/2017; Saturday 8 PM Rain, Wet, Daylight Southbound driver disregarded the traffic signal

As shown in Table 6, five of the 11 high crash locations had no severe injuries or fatalities. Six other crashes (out of 560) resulted in severe injury. Four were due to the driver turning left without having the right-of-way, at four separate intersections. The remaining two severe injury crashes, at separate intersections, were due to the driver disregarding the traffic signal. No apparent trends are evident among these crashes at these locations.

Systemwide Safety Approach

ODOT and Clackamas County are actively pursuing systemic actions to achieve vision zero goals. The County has a Drive to Zero Transportation Safety Action Plan and ODOT has a Safety Priority Index System. These analytical approaches guide decisions for prioritizing investments that seek to provide safety benefits to the use of transportation facilities.

ODOT Safety Priority Index System (SPIS) List

ODOT provides an annual list of safety priority index system (SPIS) locations that are based on reported crash data. The intent of the SPIS list is to identify roadway segments exhibiting an unusually high occurrence of crashes and is used to select locations for investigation. Based on the latest 2018 ODOT data, the following highway segments are listed in the top 15 percent of SPIS locations in the ODOT Region 1 area:

- OR 99E in the vicinity of Arlington Street (Milepost 10.94 to 11.11) – top 90th percentile
- OR 99E in the vicinity of Dunes Drive (Milepost 11.44 to 11.62) – top 95th percentile
- OR 99E in the vicinity of I-205 SB Ramps (Milepost 11.55 to 11.71) – top 90th percentile
- OR 99E in the vicinity of I-205 NB Ramps (Milepost 11.71 to 11.89) – top 90th percentile
- OR 213 in the vicinity of Washington Street (Milepost 0.05 to 0.23) – top 90th percentile
- OR 213 in the vicinity of Beavercreek Road (Milepost 2.89 to 3.07) – top 95th percentile
- I-205 in the vicinity of OR 213 Interchange (Milepost 10.40 to 10.57) – top 90th percentile

Each of the SPIS segments listed above are covered by the detailed crash analysis for those study intersections along the highways of OR 99E and OR 213. Historical crash data for the OR 213/Washington Street intersection did not exceed ODOT's critical crash rates for similar intersections.

Clackamas County Drive to Zero Transportation Safety Action Plan

The Clackamas County Drive to Zero Transportation Safety Action Plan establishes an ongoing program of education, analysis, project development, and funding of actions to achieve the goal of zero deaths on the transportation system. Recent actions include education campaigns for proper use of child seat devices and planned construction of left-turn lanes on Redland road at certain intersections.

Site Safety Contributions

Expected safety benefits of the proposed master plan include locating housing in immediate proximity to jobs, services, retail, and recreation. The resulting trips between these uses are most likely to be pedestrian trips occurring within the site. For example, over 400 trips just during the Saturday midday peak hour are estimated to occur entirely within the site. Site driveways will be positioned and designed to meet all City requirements for sight distance, driveway spacing, and appropriate traffic control. The surrounding neighborhoods will have more jobs to choose from and service, retail, and recreational

opportunities in close proximity, which will reduce their trip length and increase their options for walking, biking, and using transit to access these uses. Reducing the trip length and converting some existing trips from motor vehicle to walking, biking, and/or transit trips can reduce overall exposure on a systemwide level.

TRANSPORTATION IMPACT ANALYSIS

The transportation impact analysis identifies how the study area's transportation system will operate in 2025, the year the proposed master plan is expected to be fully built and operational. The impact of traffic generated by the proposed master plan was examined as follows:

- In-process developments and planned transportation improvements were identified for the five-year forecast period of the master plan;
- Year 2025 background traffic conditions (without master plan development), including intersection v/c ratio, level of service, and control delay during the weekday AM and PM peak hours and the Saturday midday peak hour;
- Site trip generation estimates for the anticipated land uses under all three peak hour analysis periods;
- Site trip distribution and assignment patterns based on the nature of the proposed uses, review of previous studies in the area, and knowledge of major local travel generators and destinations;
- Year 2025 total traffic conditions analysis, including intersection v/c ratio, level of service, and control delay for all three peak hour analysis periods;
- Vehicle queuing analyses for year 2025 background and total traffic conditions at key highway intersections nearby, key study intersections around the site perimeter, and at proposed site accesses; and
- Analysis of turn lane capacity needs and intersection traffic control measures.

YEAR 2025 BACKGROUND TRAFFIC CONDITIONS

The year 2025 background traffic conditions analysis identifies how the study area's transportation system will operate without the proposed master plan development. This analysis includes traffic related to approved in-process developments and general traffic growth in the region, but does not include traffic from the proposed development.

In-Process Developments

Based on scoping conversations with the City, trips associated with the following four approved in-process developments have been accounted for in the background traffic forecast for this study:

1. The Cove Master Plan (Phase 2)
2. Red Soils Master Plan (Final Phase 2)
3. North Beavercreek Industrial Project
4. Oregon City Operations Center

For each of the four in-process developments, trip assignments were collected from available resources (e.g., prior traffic impact study reports) and only those trips approved but not yet realized from the occupancy of each development were included. In most cases, the in-process trips from these developments were assigned to an isolated study area and had to be extended to cover the larger study area of this master plan report. Also, where the prior studies did not analyze trip impacts during the Saturday midday peak hour period, trip estimates were prepared using standard industry resources such as the ITE Trip Generation Manual, 10th Edition, and assigned to the street system based on the patterns observed for other peak hour periods.

Planned Transportation Improvements

The following planned transportation improvements were identified through a review of Oregon City's list of active transportation infrastructure projects as well as projects specified in ODOT's historical 2018-2021 and active 2021-2024 Statewide Transportation Improvement Program (STIP). As noted below, these projects are not anticipated to change the existing capacities of the study intersections for this master plan, at least within the five-year forecast window of this transportation study.

City Projects

- **Meyers Road West Extension Project (TSP Project # D46):** This project was completed at the end of December 2020. It consisted of extending Meyers Road east from OR 213 to High School Avenue as a Minor Arterial roadway, which consists of a three-lane cross-section with bike lanes and sidewalks on both sides of the road. *(Note: This project is not anticipated to change the capacity characteristics of any master plan study intersections by the year 2025).*
- **Meyers Road East Extension Project (TSP Project # D47)**: This project will consist of extending Meyers Road from Beavercreek Road to Meadow Lane as an Industrial Minor Arterial. The roadway extension is estimated to occur by 2022 in conjunction with the Villages at Beavercreek mixed-use housing development. *(Note: This project is not anticipated to change the capacity characteristics of any master plan study intersections by the year 2025).*
- **Beavercreek Road/OR 213 Project (Amendment to City TSP – Alternative Mobility Targets)**: In 2018, a refinement plan was adopted by Oregon City and ODOT that identifies new alternative mobility targets and physical improvements for the Beavercreek Road/OR 213 intersection, given that the intersection was projected to exceed state mobility targets by the planning horizon year 2035. In addition to pedestrian safety measures, the primary physical improvement includes construction of a westbound-to-northbound right-turn merging lane onto OR 213 from Beavercreek Road. Although funds for the project are not yet secure, Oregon City is collecting proportionate share cost contributions from developments that send

traffic through this intersection. *(Note: Because this project is not yet funded, it is not anticipated to change the capacity characteristics of this study intersection by the year 2025).*

ODOT Projects

- **I-205 Improvements: Stafford Road to OR 213 (Design Phase Only)** – Per the 2018-2021 STIP, ODOT is currently designing the I-205 Improvements Project, which will address congestion and traveler safety issues on a seven-mile stretch of I-205 between Stafford Road and OR 213. The project will ultimately add a third travel lane in each direction on the highway and will include upgrades to the OR 43 interchange, widening and seismic upgrades to the Abernethy Bridge and eight other I-205 bridges in the project area to withstand a major earthquake. Based on the project description on ODOT's project website, no capacity changes will result at the OR 213 ramp terminals and it is unclear whether the OR 99E ramp terminal study intersections with I-205 will be modified as a result of this project. Although ODOT's project website anticipates construction to begin in 2022 and continue through 2026, construction funding for the project is currently pending. *(Note: This project is not anticipated to change the capacity characteristics of any master plan study intersections by the year 2025).*

Year 2025 Background Traffic Volumes

Year 2025 background traffic volumes were developed by increasing current year 2020 traffic volumes consistent with the annual traffic growth rates shown in Table 7 over a five-year period. The growth rates shown in the table were determined from a review of historical ODOT highway volume data for the OR 99E, OR 213, and I-205 corridors, and from an analysis of historical population growth patterns for Oregon City over the past five years.

Table 7: Annual Traffic Growth Rates for Study Intersections (By Facility and Analysis Period)

Facility	Weekday AM Peak Hour	Weekday PM Peak Hour	Saturday Midday Peak Hour
OR 99E[1]	0.27%	0.27%	0.27%
OR 213[1]	0.31%	0.31%	0.31%
I-205[1]	0.26%	0.26%	0.26%
City/County Streets[2]	1.15%	1.15%	1.15%

[1] Growth rates shown for the highway corridors were derived from historical ODOT average daily traffic volumes (2014-2019).

[2] For intersections that involve City or County roadways, the growth rate is equivalent to the historical 5-year population growth rate for Oregon City.

It should be emphasized that the annual growth rates shown for the highway corridors above were used to develop growth estimates of traffic traveling through the highway corridors (through movements only). For intersections having legs that involve either City or County roadways, the annual growth rate of 1.15% was applied to the associated minor movements.

Figures 12 through 17 illustrate the resulting forecast year 2025 background traffic volumes during the weekday AM and PM peak hours, and for the Saturday midday peak hour. Volumes shown reflect the growth assumptions detailed above plus the in-process development trip assignments. *Additional details on how current volumes were adjusted to derive projected 2025 background traffic volumes can be found in the operations analysis worksheets provided in Appendix "E". Specific adjustments made for each study intersection can be found in the volume tabs on the worksheets under line items entitled "Growth Factor", "In-Process Volume", and "Other Volume."*

Year 2025 Background Intersection Operations

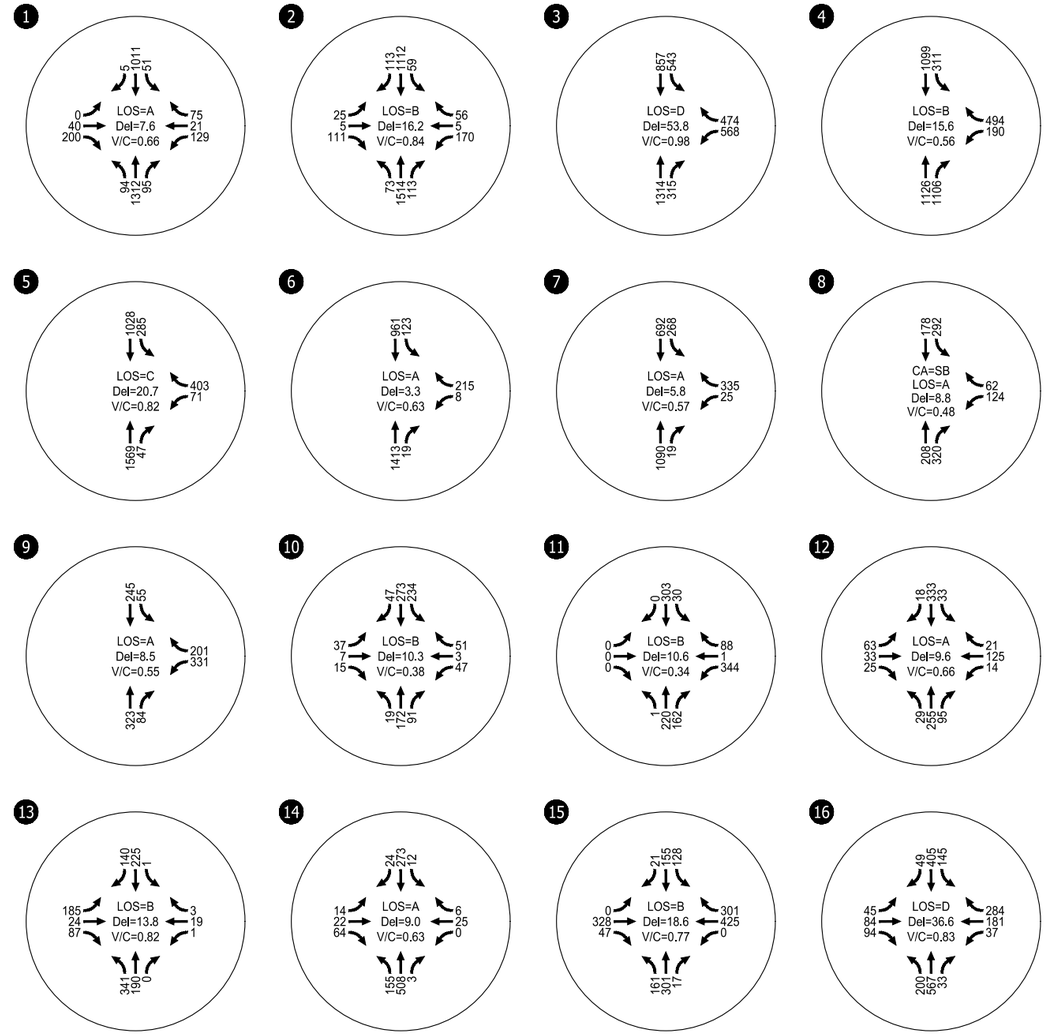
The peak hour turning-movement volumes shown in Figures 12 through 17 were used to conduct an operations analysis of all existing study intersections to determine the year 2025 background traffic conditions. The results of the analysis indicate that all but one of the study intersections are forecast to operate at levels which meet the applicable mobility standards of the governing agency. *Appendix "E" contains the year 2025 background traffic conditions worksheets.*

It should be noted that even while Intersection #19 (I-205 SB Ramp/OR 213) is exempt from the ODOT mobility standards and Intersection #21 (OR 213/Redland Road) is forecast to operate below the v/c ratio mobility standard of 1.10, both intersections are still forecast to exceed v/c ratios of 1.00, indicating an oversaturated condition.

Intersection #2: OR 99E/Dunes Drive

This intersection is forecast to operate with a v/c ratio of 1.17 during the Saturday midday peak hour, which exceeds the ODOT mobility target of 1.10 or less. As detailed earlier in this report, the current signal timing for this intersection has been set to favor progression of through-traffic movements on the highway. However, further analysis indicates the overall intersection v/c ratio can be reduced to below 1.00 if the lag phasing for the critical southbound left-turn movement from the highway into the adjacent shopping center were switched to the lead phase, concurrent with the opposing left-turn movement. *Detailed calculations showing the operational impact of this phasing change are included at the end of Appendix "E".*





V/C = VOLUME TO CAPACITY RATIO

LOS = CRITICAL INTERSECTION LEVEL OF SERVICE

Del = CRITICAL INTERSECTION CONTROL DELAY

CA = CRITICAL APPROACH

CM = CRITICAL MOVEMENT

Year 2025 Background Traffic Conditions
Weekday AM Peak Hour
Oregon City, Oregon

Figure
12

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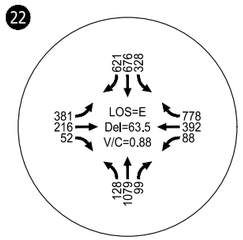

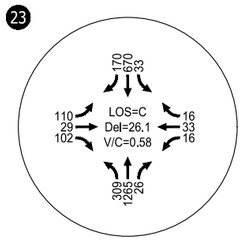

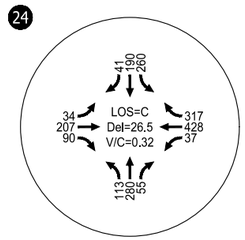

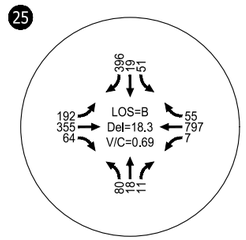

V/C = VOLUME TO CAPACITY RATIO

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Year 2025 Background Traffic Conditions
Weekday AM Peak Hour
Oregon City, Oregon

Figure
13

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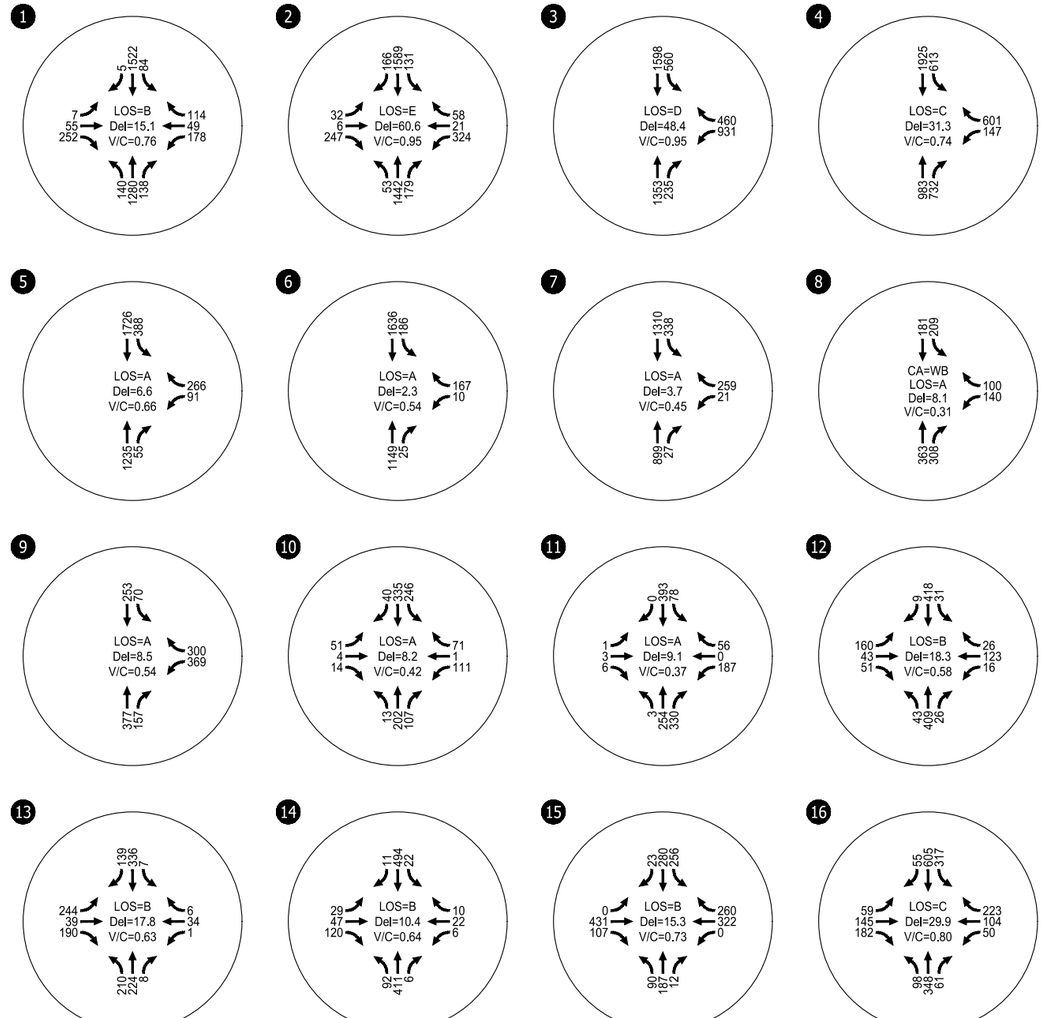

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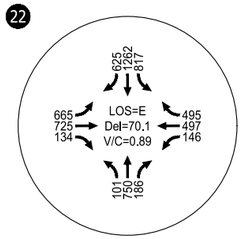
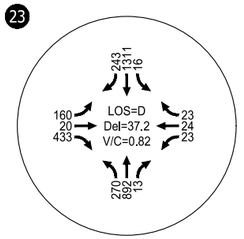
CM = CRITICAL MOVEMENT

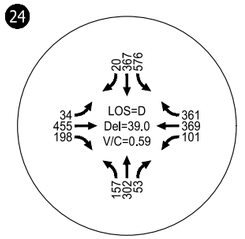
Year 2025 Background Traffic Conditions
Weekday PM Peak Hour
Oregon City, Oregon

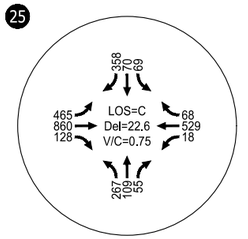
Figure
14











V/C = VOLUME TO CAPACITY RATIO

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Del = CRITICAL INTERSECTION CONTROL DELAY

Year 2025 Background Traffic Conditions
Weekday PM Peak Hour
Oregon City, Oregon

Figure
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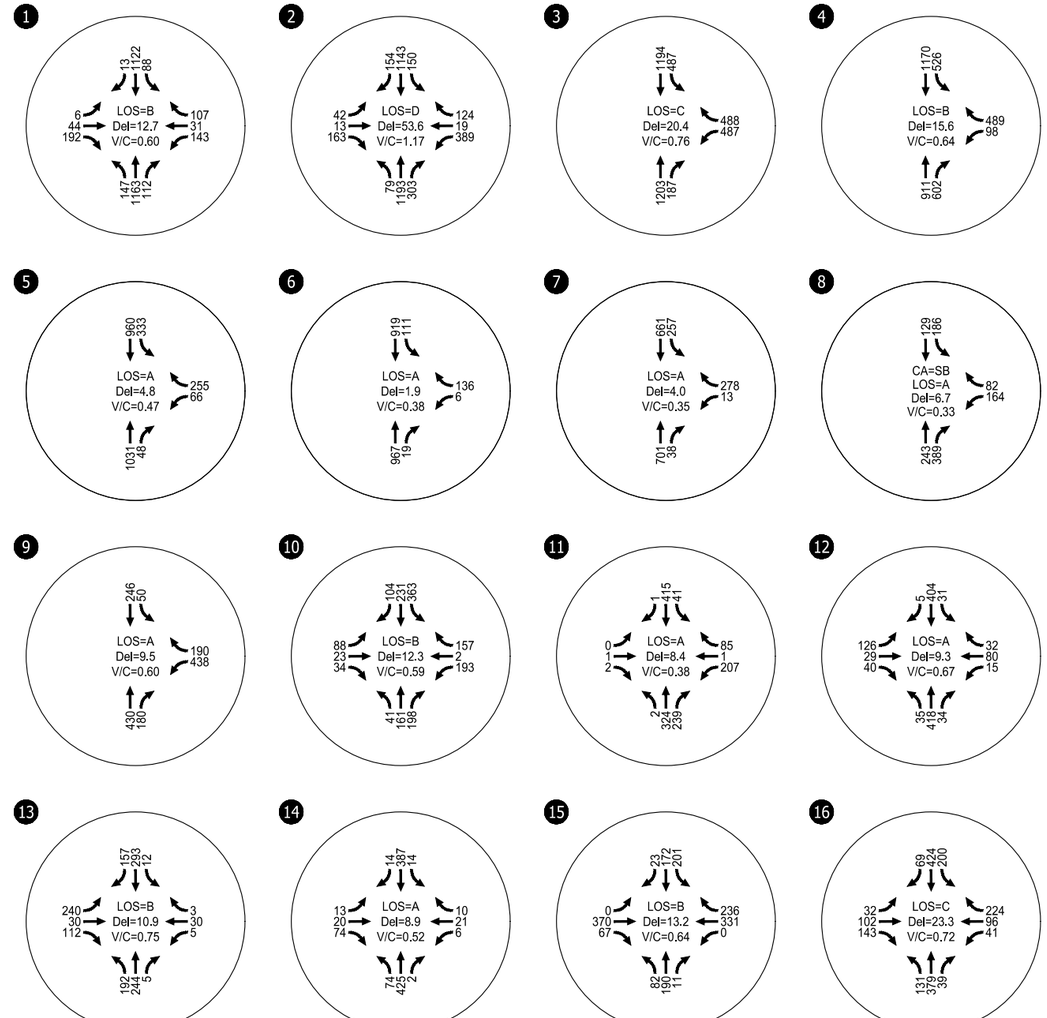

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Year 2025 Background Traffic Conditions
Saturday Midday Peak Hour
Oregon City, Oregon

Figure
16

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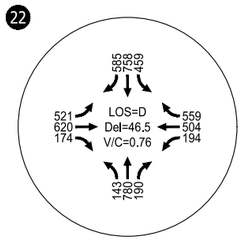

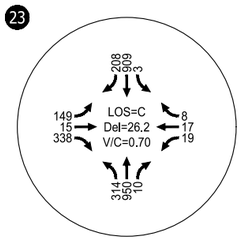

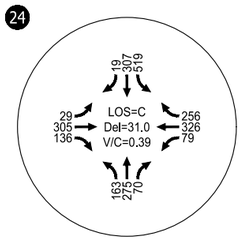

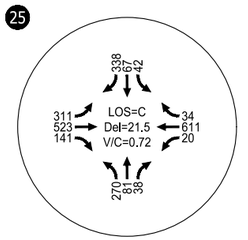

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Year 2025 Background Traffic Conditions
Saturday Midday Peak Hour
Oregon City, Oregon

Figure
17

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PROPOSED DEVELOPMENT PLAN

The proposed master plan project is an urban mixed-use development on approximately 62 acres of property. As shown in the master plan concept in Figure 3, the project envisions uses that are allowed outright by the property's Mixed Use Downtown (MUD) zoning, including mixed-use housing, retail, commercial, office, grocery stores, movie cinemas, and restaurants. Specific uses that are conditionally allowed by the City in the master plan include an anchor retail store with the option of a fuel station as an accessory use, as well as fast-food restaurants having drive-through windows.

The concept plan is divided into four distinct sub-areas (e.g., North, East, Central, and South Districts) to illustrate the different uses and functions that will occur within each district, and to delineate possible boundaries for individual phases of development. Full occupancy of all master plan uses is expected to occur in 2025. Also, the golf driving range that exists on the subject property today will be removed once development occurs.

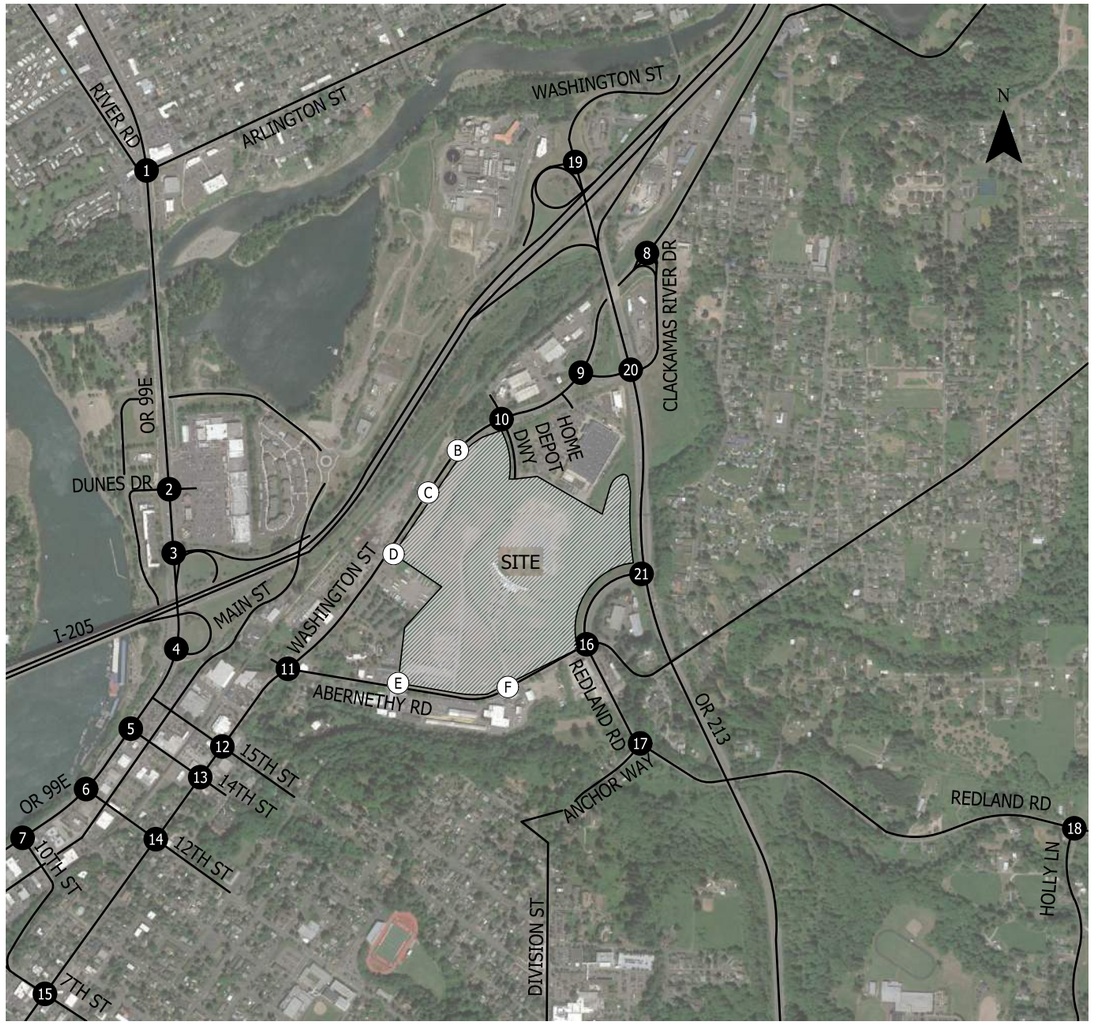
Site Frontage Improvements

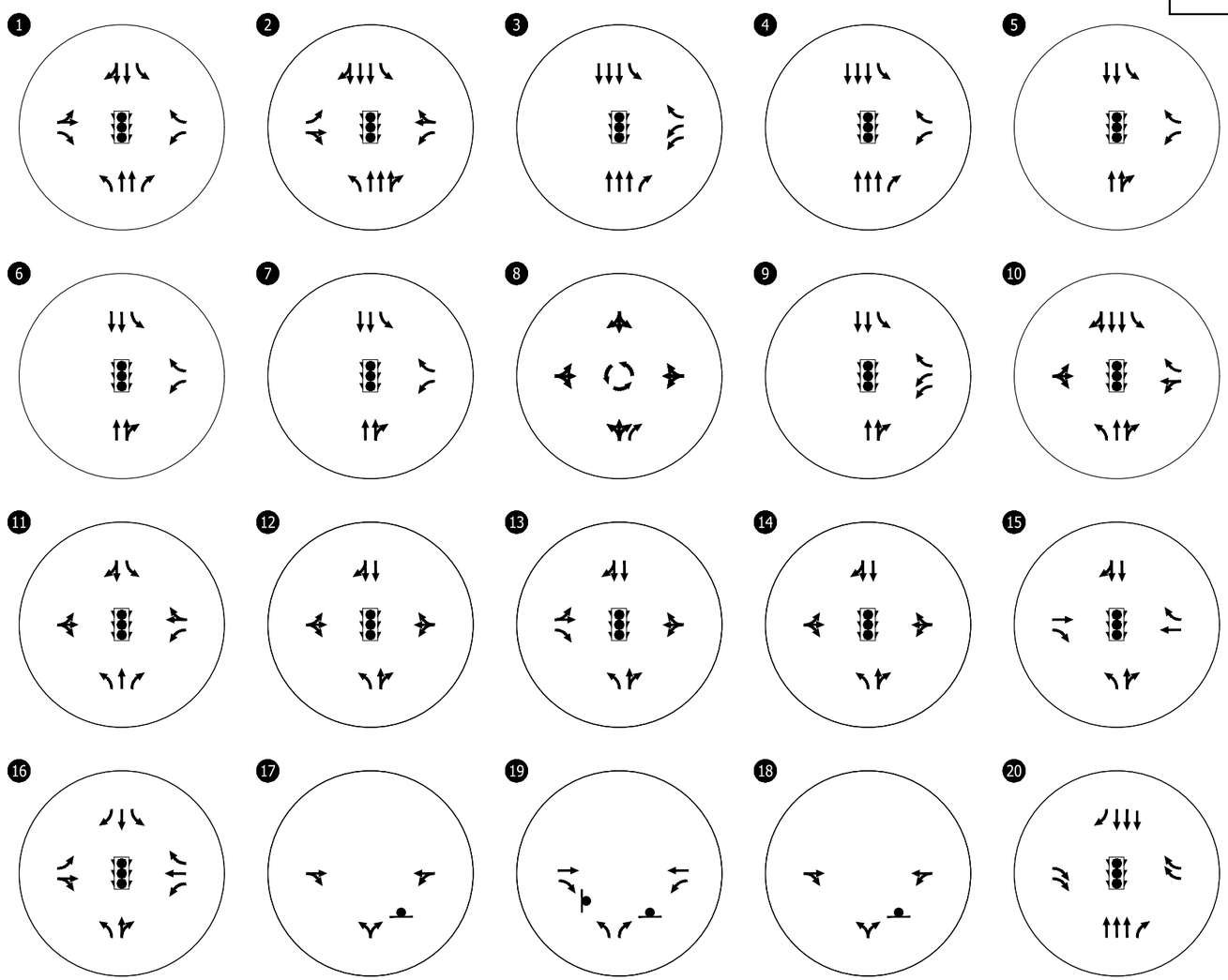
Frontage improvements along Washington Street and Abernethy Road will consist of the required half-street improvements consistent with Oregon City's *Minor Arterial* street design standards. This will include additional pavement width, where needed, to support a continuous left-turn lane, a single travel lane in each direction, and bicycle lanes. Frontage improvements will also include respective planter strip and sidewalk treatments as required by the City's design standards, and on-street parking where stipulated by the City Engineer.

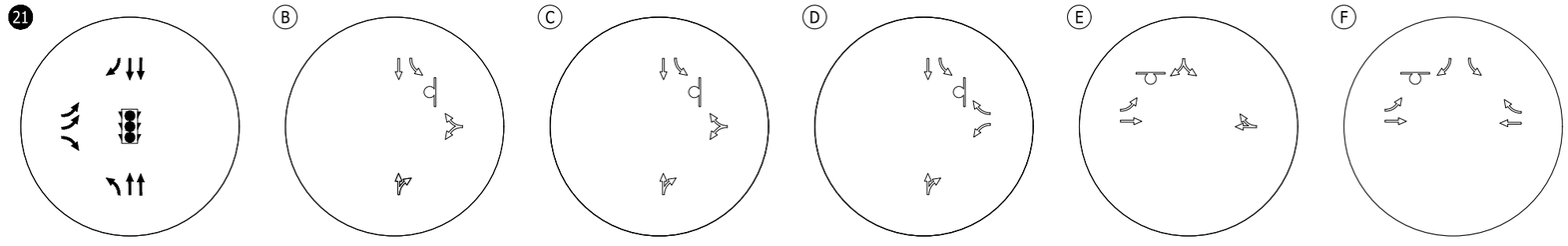
External Site Access Descriptions

The lane configurations and traffic control devices assumed to be in place at all study intersections and proposed site accesses upon build-out of the master plan are shown in Figures 18 and 19. As shown, the master plan envisions a total of six external site access points (Shown as site Accesses "A" through "F" on all subsequent report figures).

Two of the primary accesses will be from the extension of a new collector-level street through the site. Starting from the current street terminus just south of the signalized Washington Street/Home Depot access intersection (Site Access "A"), the new collector street will proceed in a southwest direction between the North and East Districts of the master plan area. Approximately two-thirds of the way into the site, the collector street will veer to the southeast, splitting the Central and South Districts, and ending with a new intersection at Abernethy Road (Site Access "F"). Per our analysis of traffic operating conditions, the new intersection with Abernethy Road will benefit from signalization, separate left- and right-turn exit lanes, a westbound right-turn entry lane and an eastbound left-turn lane from Abernethy Road.







- Existing Traffic Signal
- Existing Lane Configuration
- Existing Stop Sign
- Existing Roundabout
- Proposed Stop Sign
- Proposed Lane Configuration

Assumed Lane Configurations & Traffic Control Devices
Oregon City, Oregon

Figure 18

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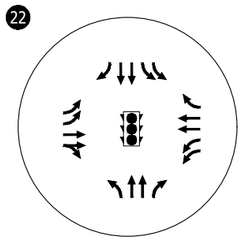

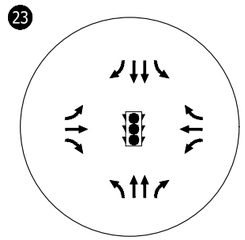

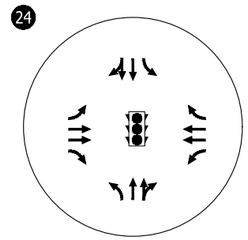

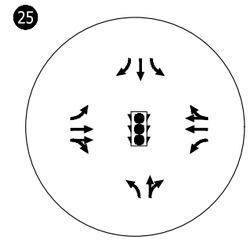

- Existing Traffic Signal
- Existing Lane Configuration

Assumed Lane Configurations &
Traffic Control Devices
Oregon City, Oregon

Figure
19

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Three other external accesses will be established on Washington Street, each having an approximate spacing of 500 feet relative to the signalized Washington Street/Home Depot access intersection. The two northernmost accesses (Site Accesses "B" and "C") will be designed as private driveways leading into a parking structure to service the land uses in the North District. The third new access (Site Access "D") will be in the northwest corner of the site and designed as a private street linking Washington Street with the South and Central Districts of the master plan area. All three accesses will be stop-controlled on the minor approaches, and the presence of a continuous Washington Street left-turn lane will allow left-turn drivers to access the site.

The sixth external site access will be in the southwest corner of the site with direct access to Abernethy Road (Site Access "E"). Similar to the other new site accesses, stop-control will be placed on the minor approach, with separate left- and right-turn egress lanes, and use of the continuous left-turn lane on Abernethy Road for site access.

Site Trip Generation

Site trip generation estimates for the master plan were prepared for the weekday AM, weekday PM, and Saturday midday peak hours of the adjacent street network. Trip estimates for the proposed master plan are presented in Table 8, with trip totals shown for individual land uses and for the master plan as a whole. Trips are also shown broken out by trip types (i.e., total, internal, pass-by, and diverted trips). The methodology for estimating master plan trips is detailed in the following paragraphs.

It should be noted here that the land uses shown in Table 8 reflect one possible development scenario. Ultimately, the individual land uses, building types, sizes, and orientation may change upon preparation of a Detailed Development Plan. Nevertheless, for the purposes of this master plan, the total trips presented at the bottom of the table reflect a reasonable estimate of maximum trip potential for vesting purposes.

Site Trip Generation Methodology

The total trips shown for each land use in Table 8 are based on the rates or equations contained in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 10th Edition (Reference 7), using the most relevant ITE land use category. Total trips shown for proposed residential uses are represented by ITE 221 (*Multifamily Housing Mid-Rise*). Total trips shown for the preponderance of retail/commercial uses are represented by ITE 820 (*Shopping Center*) and account for all general retail spaces, including the potential for a grocery store, cinema, small and large-scale retailers, coffee shops and fast-food restaurants, and sit-down restaurants. In order to achieve a higher total trip generation estimate for the proposed master plan, two retail uses were separated out. ITE 813 (*Free-Standing Discount Superstore*) was used to represent one of the large-scale retail sites within the master plan. ITE 934 (*Fast-Food Restaurant with Drive-Through Window)* was used to represent one of the master planned fast-food restaurants that could have a drive-through window. Again, this method produces a higher overall trip generation than if all retail uses were estimated using ITE 820 (*Shopping Center)*.

Table 8: Site Trip Generation Estimate

Master Plan Uses		Land Use	Size	AM Peak Hour Trips			PM Peak Hour Trips			Saturday Peak Hour Trips		
				Total	In	Out	Total	In	Out	Total	In	Out
Residential	Total	ITE 221 (Multifamily Housing Mid-Rise)	524 DU	174	45	129	217	132	85	231	113	118
	Internal			*(20)*	*(3)*	*(17)*	*(116)*	*(72)*	*(44)*	*(135)*	*(70)*	*(65)*
Fast-Food w/ Drive-Thru	Total	ITE 934 (Fast-Food Restaurant with Drive-Through Window)	3,830 GFA	153	78	75	124	64	60	208	106	102
	Internal			*(64)*	*(50)*	*(13)*	*(63)*	*(27)*	*(36)*	*(105)*	*(45)*	*(60)*
	Pass-by			*(22)*	*(11)*	*(11)*	*(14)*	*(7)*	*(7)*	*(24)*	*(12)*	*(12)*
	Diverted			*(46)*	*(23)*	*(23)*	*(28)*	*(14)*	*(14)*	*(48)*	*(24)*	*(24)*
Retail/ Commercial	Total	ITE 820 (Shopping Center)	500,000 GFA	402	249	153	1788	858	930	2207	1148	1059
	Internal			*(29)*	*(8)*	*(21)*	*(104)*	*(44)*	*(60)*	*(135)*	*(72)*	*(63)*
	Pass-by			*(32)*	*(16)*	*(16)*	*(286)*	*(143)*	*(143)*	*(268)*	*(134)*	*(134)*
	Diverted			*(80)*	*(40)*	*(40)*	*(724)*	*(362)*	*(362)*	*(994)*	*(497)*	*(497)*
Anchor or *Large-Scale Retail*	Total	ITE 813 (Free-Standing Discount Superstore)	138,000 GFA	255	143	112	598	293	305	658	329	329
	Internal			*(19)*	*(5)*	*(15)*	*(35)*	*(16)*	*(19)*	*(39)*	*(20)*	*(19)*
	Pass-by			*(16)*	*(8)*	*(8)*	*(82)*	*(41)*	*(41)*	*(64)*	*(32)*	*(32)*
	Diverted			*(56)*	*(28)*	*(28)*	*(278)*	*(139)*	*(139)*	*(206)*	*(103)*	*(103)*
Total Trips				**984**	**515**	**469**	**2727**	**1347**	**1380**	**3304**	**1696**	**1608**
Internal Trips				***(132)***	***(66)***	***(66)***	***(318)***	***(159)***	***(159)***	***(414)***	***(207)***	***(207)***
Pass-by Trips				***(70)***	***(35)***	***(35)***	***(382)***	***(191)***	***(191)***	***(356)***	***(178)***	***(178)***
Diverted Trips				***(182)***	***(91)***	***(91)***	***(1030)***	***(515)***	***(515)***	***(1248)***	***(624)***	***(624)***
Primary Trips				**600**	**323**	**277**	**997**	**482**	**515**	**1286**	**687**	**599**

It should be noted that it would be reasonable to include all retail uses shown in Table 8 under the single category of Shopping Center (ITE 820), as all proposed uses are commonly found at shopping centers of this scale and/or specifically highlighted as common land uses in the definition of ITE 820. By separating the fast-food restaurant and the free-standing discount superstore from the shopping center land uses, our approach provides a higher trip generation result and forms a more conservative analysis of the trip generation potential of the site.

Once total trips were accounted for, estimates of internal trip capture were made to reflect the internalization of trips between individual land uses within the master plan area. The process of internal capture was carried out using ITE's OTISS (Online Traffic Impact Study Software), which follows the procedures of *NCHRP Report 684 – Enhancing Internal Trip Capture Estimation for Mixed-Use Developments* (Reference 9).

Next, pass-by trips were estimated for all retail uses in the master plan. By definition, pass-by trips reflect vehicles already present on the site frontage streets of Washington Street and Abernethy Road that turn into the project using one of the site accesses, visit a use on the site, and then return back onto the adjacent street in the direction they were originally heading. Pass-by trip estimates were prepared using pass-by rate information contained in ITE's *Trip Generation Handbook*, 3rd Edition (Reference 9). For

instances where ITE pass-by rate information was unavailable for certain peak hour periods, the lower pass-by rates of adjacent peak hour periods were applied to reflect a conservative minimum reduction.

The final step in the trip generation process was to account for diverted trips also associated with uses on the site. By definition, diverted trips reflect those vehicles that are passing nearby, but deviate onto a non-contiguous street facility to reach the site (e.g., I-205, OR 213, Holcomb Boulevard, Redland Road, Clackamas River Drive). Similar to the pass-by trip capture process, diverted trips were estimated using available rate information in ITE's *Trip Generation Handbook*, 3rd Edition. For instances where ITE diverted rate information was not available for certain peak hour periods, the lower pass-by rates of adjacent peak hour periods were applied to reflect a conservative minimum reduction.

It should, finally, be noted that the results shown in Table 8 reflect an engineering judgment decision to shift a larger percentage of the pass-by trips calculated in this process into the diverted trip category. The reason for this shift is because the current traffic levels on the frontage streets of Washington Street and Abernethy Road are not high enough to support the calculated pass-by demand for this project. However, the high volumes of traffic and proximity of non-contiguous facilities such as I-205, OR 213, Redland Road, and Holcomb Boulevard present significant opportunities for trip diversion to this site. Therefore, 50% of the calculated pass-by trips were shifted over to the diverted trip category to reflect the project's attraction of trips from other major or adjacent streets nearby.

Trip Distribution and Assignment

Estimated site trip distribution patterns were developed based upon the nature of the land uses in the master plan, the location of the site relative to major travel routes in the area, and a review of previous traffic studies for similar land developments in Oregon City. These distribution patterns are shown in Figures 20 through 25 for the roadways throughout the site vicinity and reflect the following distribution for all primary (net new) site trips:

- 24% of trips to/from I-205 (North);
- 12% of trips to/from OR 99E (North via McLoughlin Blvd.);
- 22% of trips to/from I-205 (South);
- 7% of trips to/from OR 99E (South to Canby);
- 6% of trips to/from central Oregon City (West via Washington St.);
- 3% of trips to/from Clackamas River Dr. (Northeast);
- 2% of trips to/from Anchor Wy. (South via Redland Rd.);
- 3% of trips to/from Beavercreek Rd. (West of OR 213);
- 4% of trips to/from Beavercreek Rd. (East of OR 213);
- 8% of trips to/from OR 213 (South of Beavercreek Rd.);
- 5% of trips to/from Redland Rd. (towards Holly Ln.); and,
- 4% of trips to/from Holcomb Blvd.

Figures 20 through 25 also display the resulting trip assignments for all site trips on the street system during the weekday AM, weekday PM, and Saturday midday peak hour periods at all existing study intersections and proposed new site accesses. The volumes shown in these figures reflect external site trips, which are the combination of primary, pass-by, and diverted trips. *Figures illustrating the individual site trip assignments for primary, pass-by, and diverted trips are provided in Appendix "F".*

YEAR 2025 TOTAL TRAFFIC CONDITIONS

The total traffic conditions analysis forecasts how the study area's transportation system will operate with traffic generated by the proposed master plan development. The year 2025 background traffic volumes shown in Figures 12 through 17 were added to the site-generated traffic shown in Figures 20 through 25 to arrive at the respective total traffic volumes shown in Figures 26 through 31.

Intersection Operations

Year 2025 total traffic volumes shown in Figures 26 and 31 were used to conduct an operational analysis at all study intersections and site accesses. The analysis results indicate that all but two of the study intersections are forecast to operate at levels that meet the applicable mobility standards of the governing agency. *Appendix "G" contains the year 2025 total traffic conditions worksheets.*

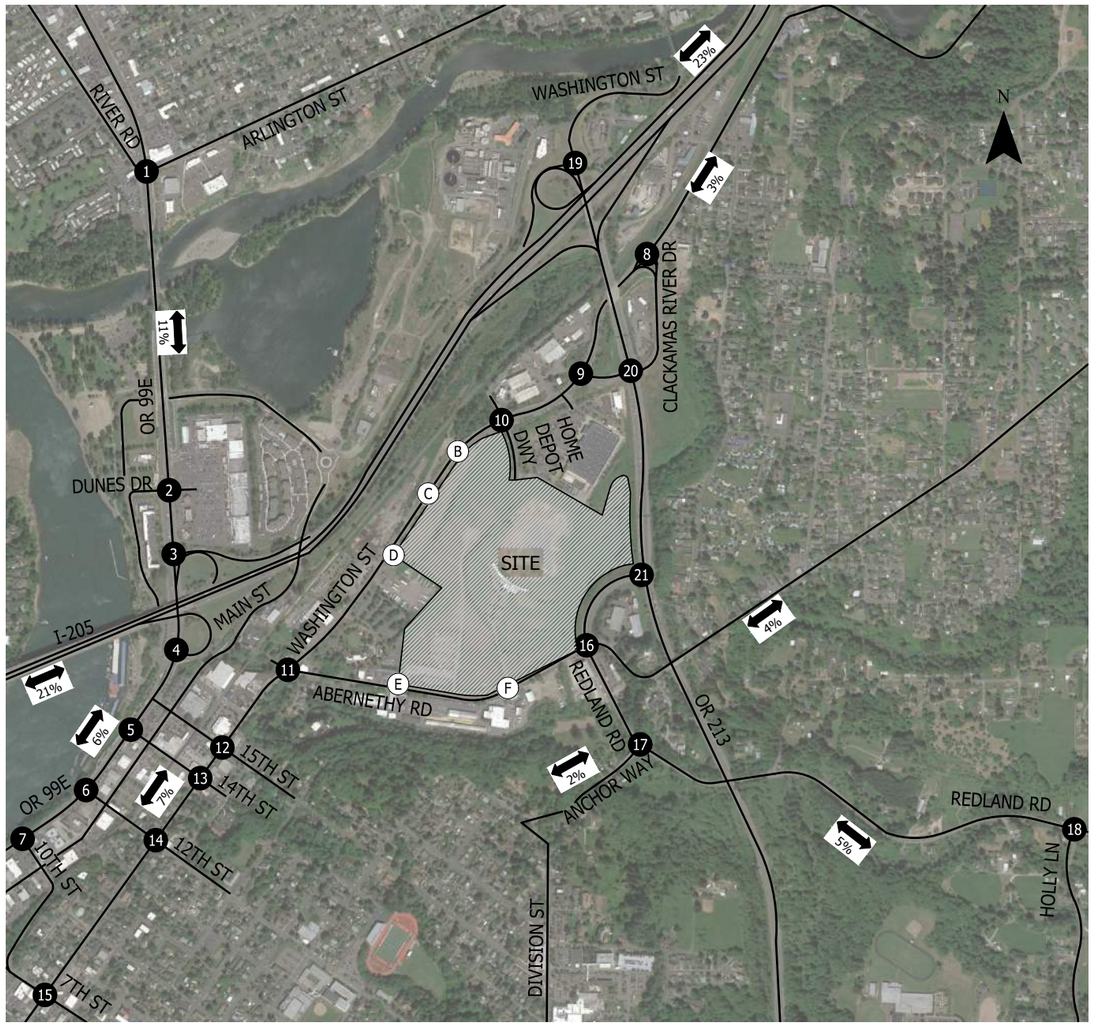
It should be noted again that even while Intersection #19 (I-205 SB Ramp/OR 213) is exempt from the ODOT mobility standards, this intersection is still forecast to exceed v/c ratios of 1.00, indicating an oversaturated condition. Also, Intersection #20 (OR 213/Clackamas River Dr.) is forecast to operate with a v/c of 1.02 during the weekday AM peak hour, which is still below the mobility standard of 1.10 or less.

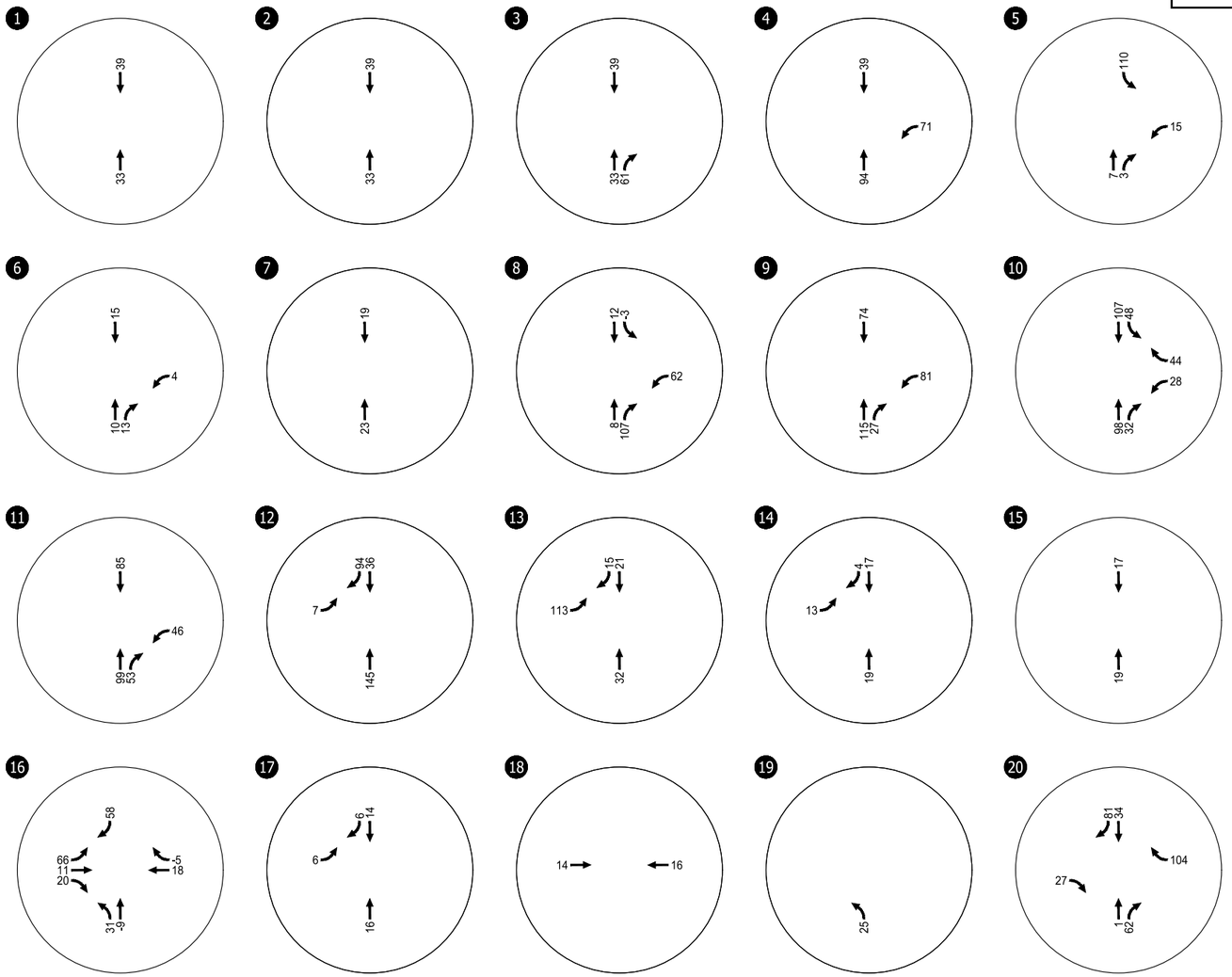
Intersection #2: OR 99E/Dunes Drive

This intersection is forecast to operate with a v/c ratio of 1.22 during the Saturday midday peak hour, which exceeds the ODOT mobility target of 1.10 or less. As detailed earlier in the existing and background conditions sections of this report, the current signal timing for this intersection has been set to favor progression of through-traffic movements on the highway. However, further analysis indicates the overall intersection v/c ratio can be reduced to below 1.00 if the lag phasing for the critical southbound left-turn movement from the highway into the adjacent shopping center were switched to the lead phase concurrent with the opposing left-turn movement. *Detailed calculations showing the operational impact of this phasing change are included at the end of Appendix "G".*

Intersection #21: OR 213/Redland Road

This intersection is forecast to operate with a v/c ratio of 1.12 during the weekday PM peak hour, which exceeds the ODOT mobility target of 1.10 or less. Project #D79 from the Oregon City TSP includes the addition of a third southbound through-lane on OR 213 at this intersection. Analysis of this improvement concept confirms that it would provide adequate capacity to meet the ODOT mobility target.





Total External Site Trip Assignment
Weekday AM Peak Hour
Oregon City, Oregon

Figure
20

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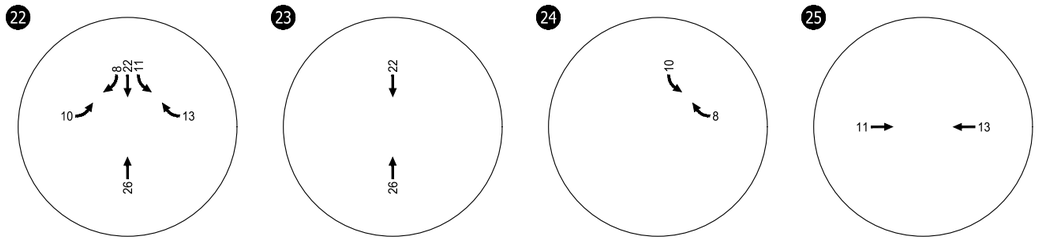
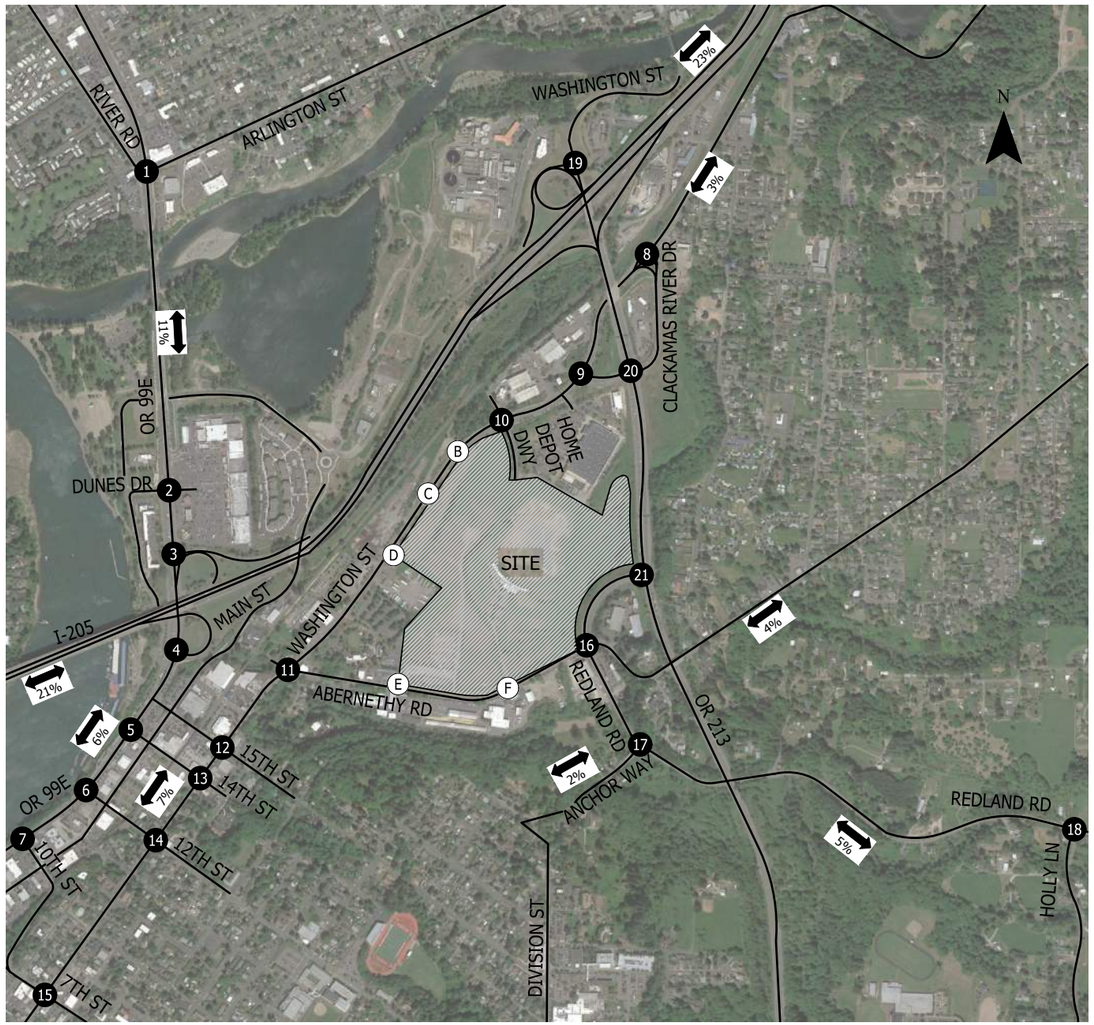
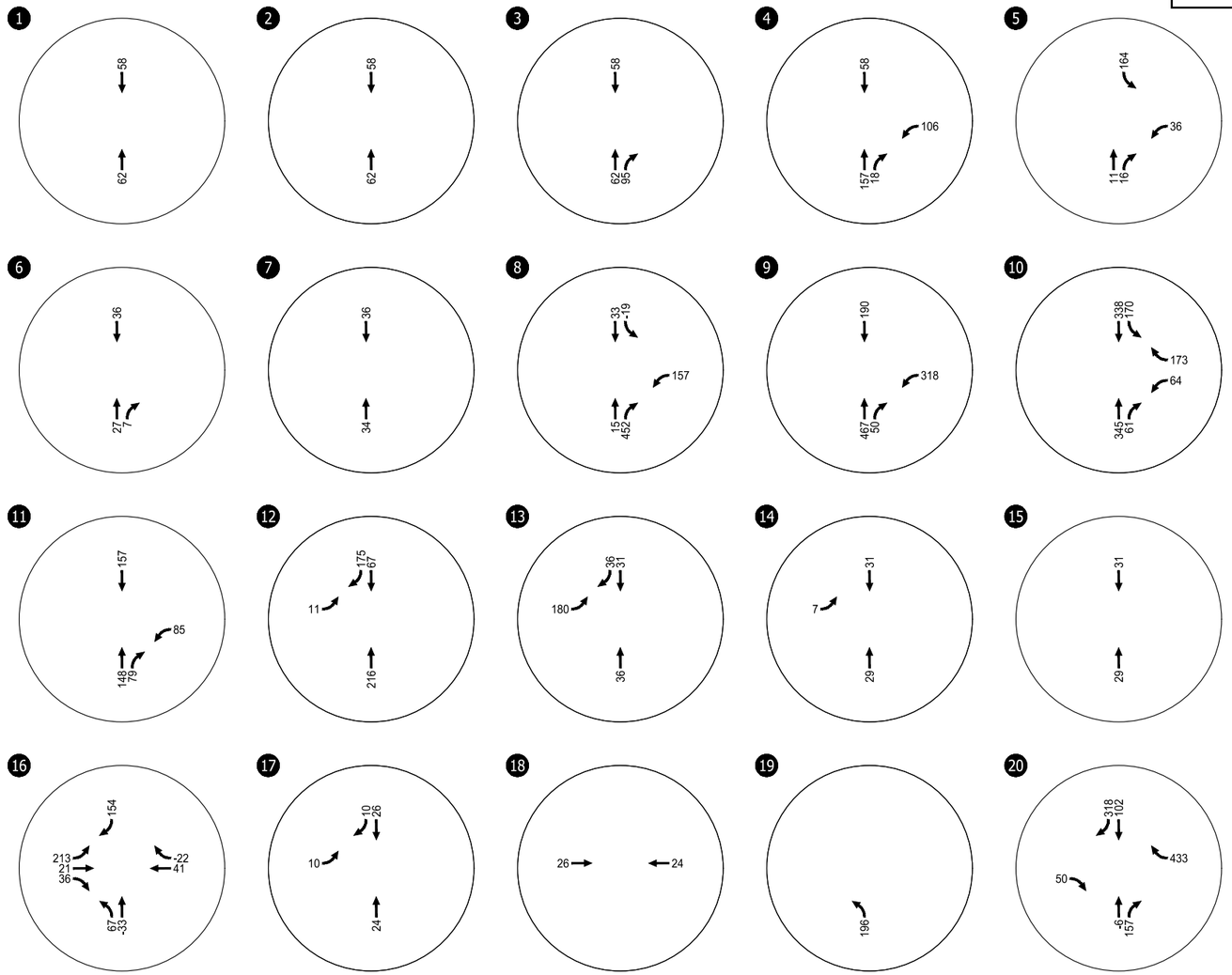
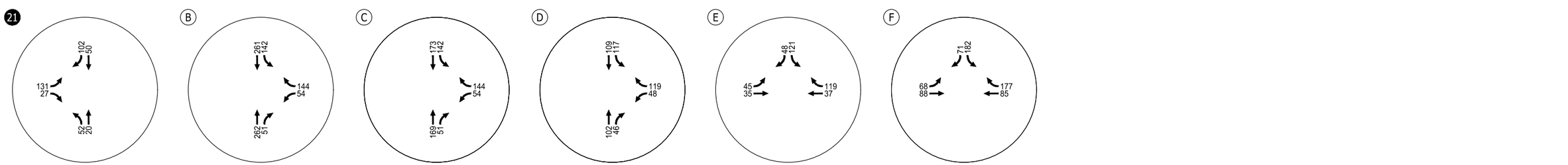


Total External Site Trip Assignment
Weekday AM Peak Hour
Oregon City, Oregon

Figure
21







Total External Site Trip Assignment
Weekday PM Peak Hour
Oregon City, Oregon

Figure
22

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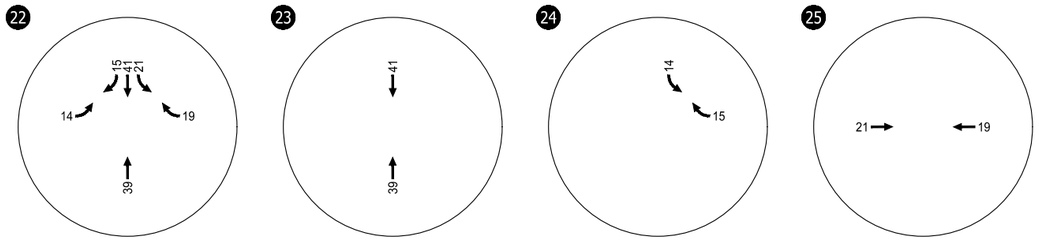
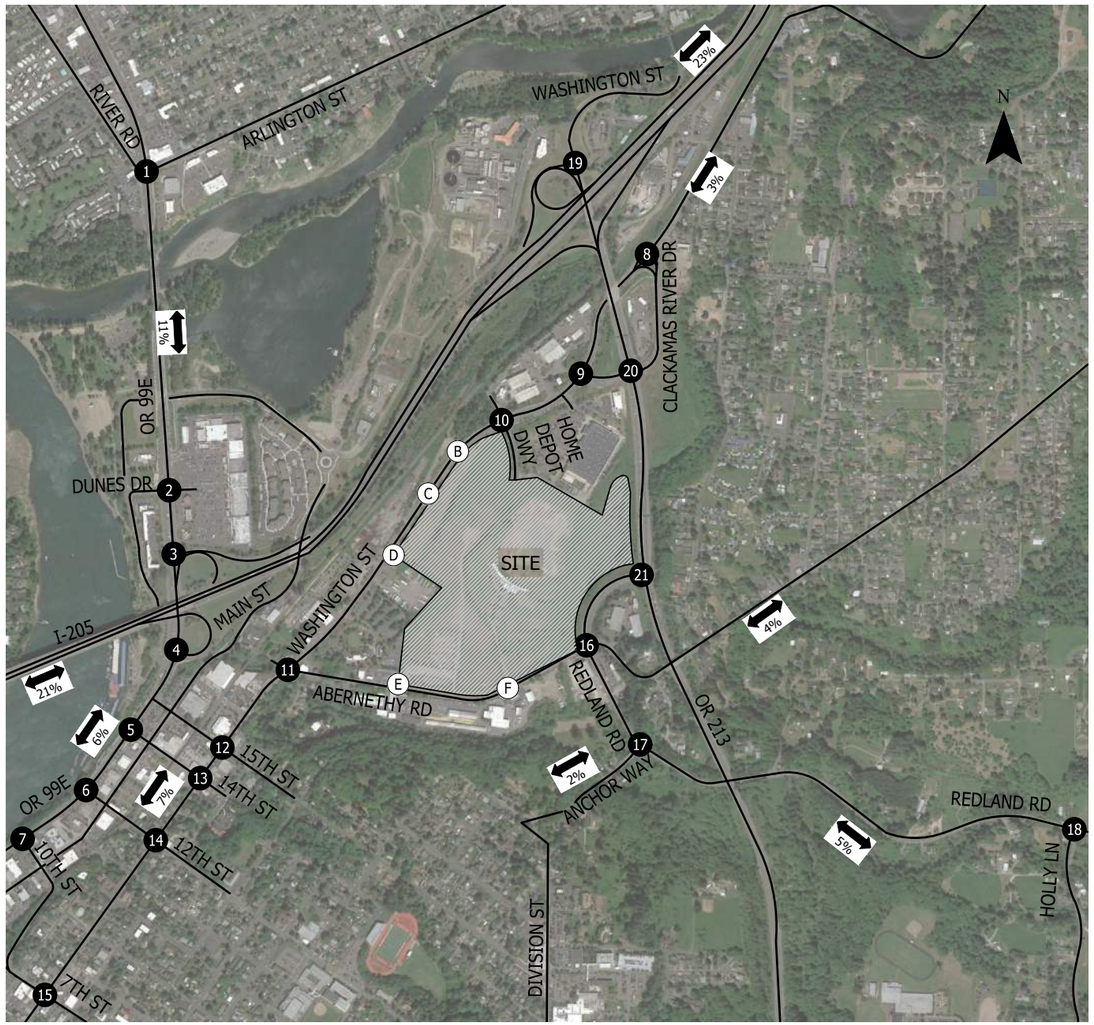
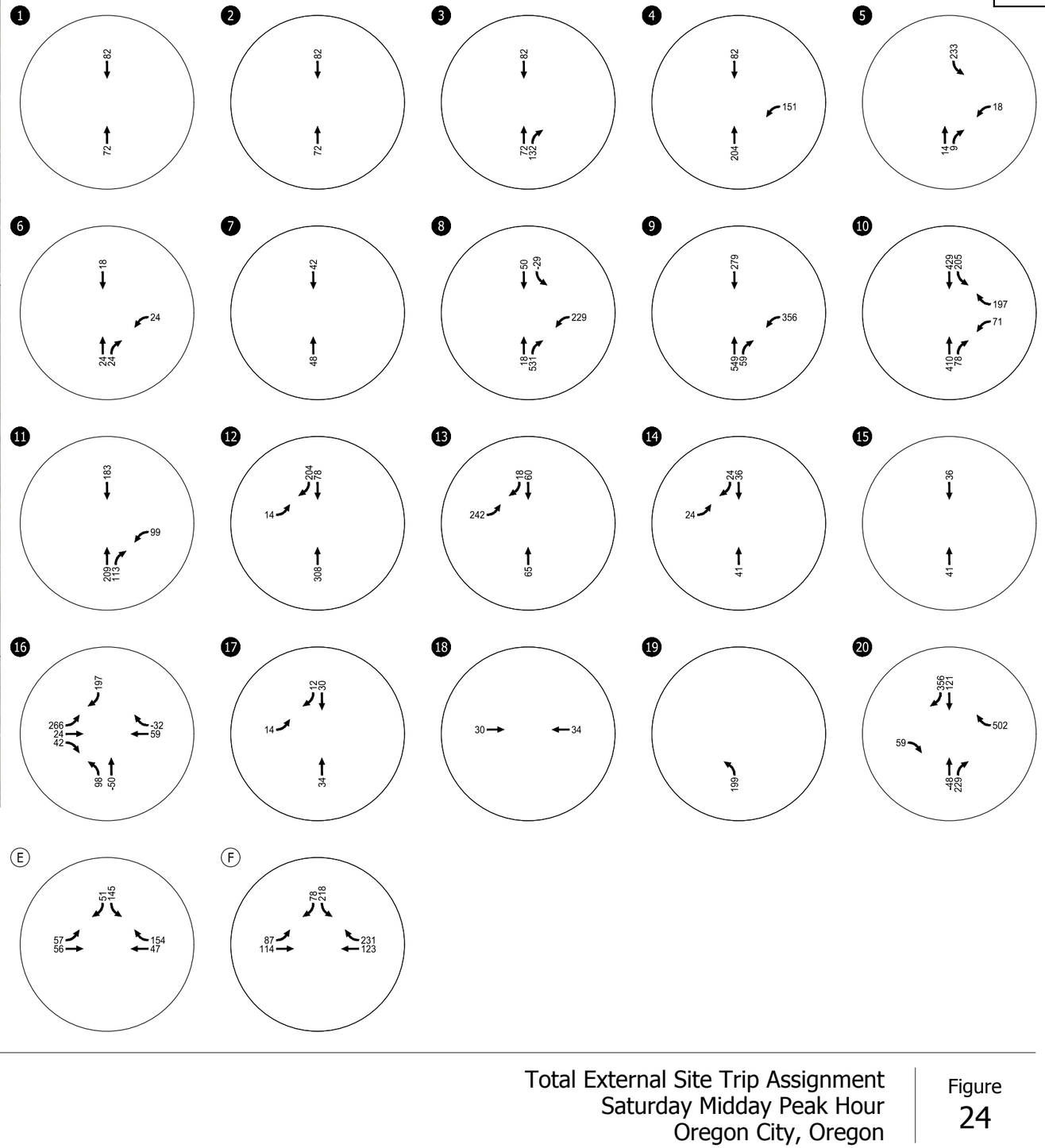


Total External Site Trip Assignment
Weekday PM Peak Hour
Oregon City, Oregon

Figure
23





Total External Site Trip Assignment
Saturday Midday Peak Hour
Oregon City, Oregon

Figure
24

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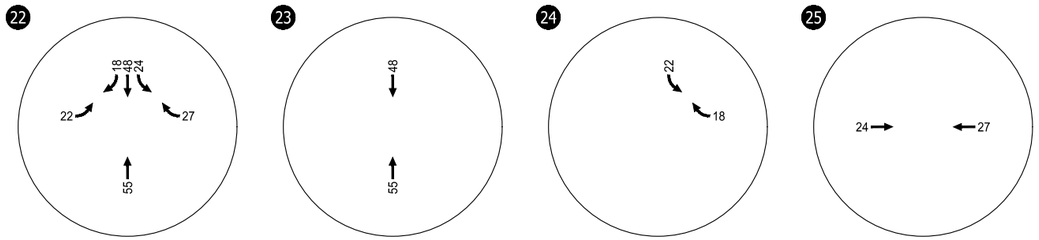

Total External Site Trip Assignment
Saturday Midday Peak Hour
Oregon City, Oregon

Figure
25

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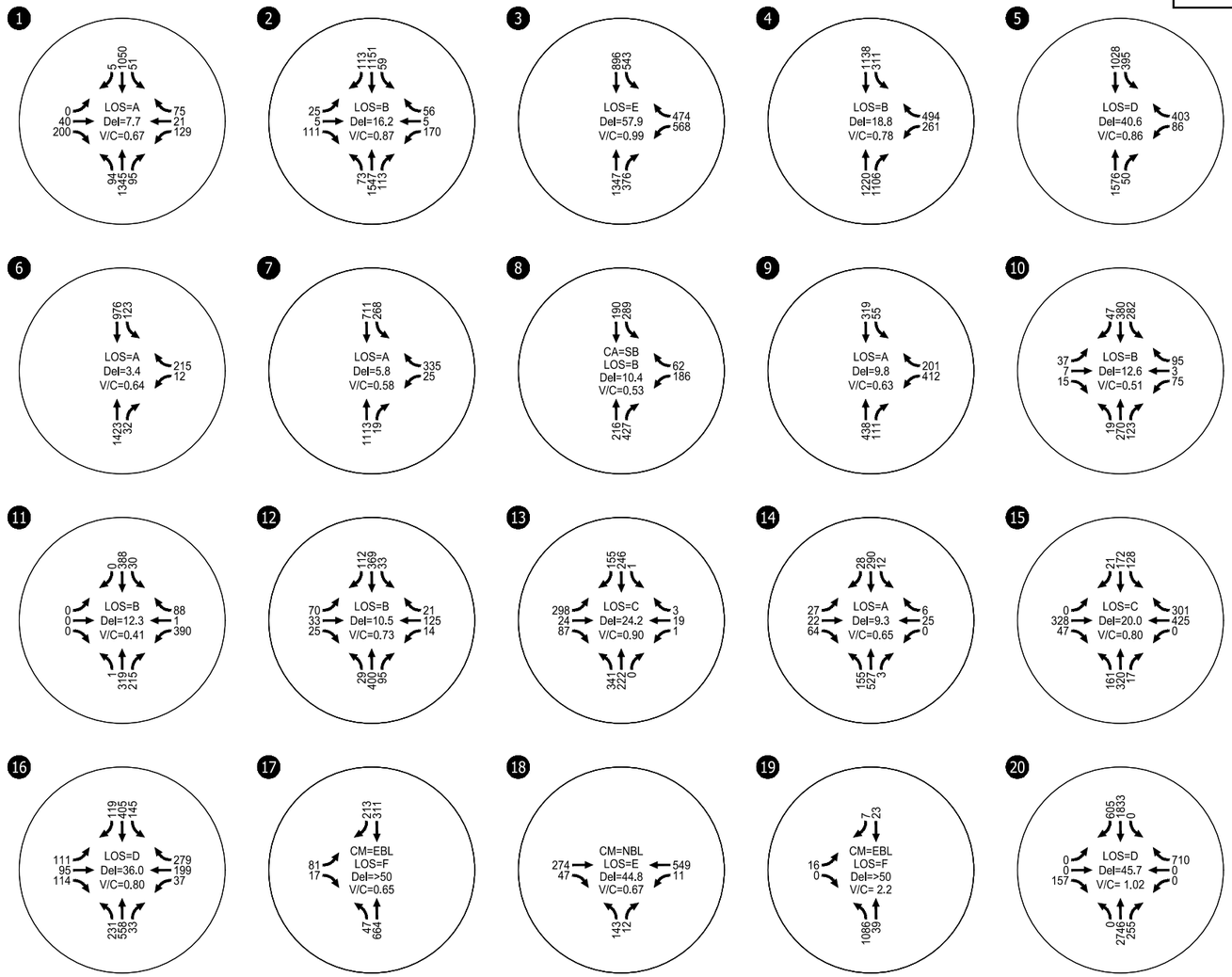


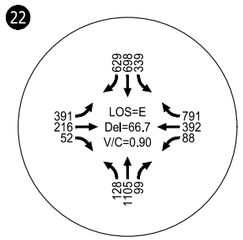
V/C = VOLUME TO CAPACITY RATIO
LOS = CRITICAL INTERSECTION LEVEL OF SERVICE
Del = CRITICAL INTERSECTION CONTROL DELAY

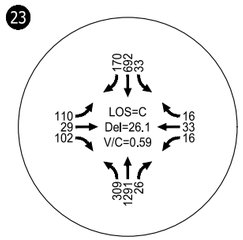
CA = CRITICAL APPROACH
CM = CRITICAL MOVEMENT

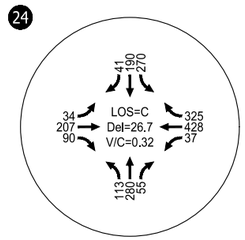
Year 2025 Total Traffic Conditions
Weekday AM Peak Hour
Oregon City, Oregon

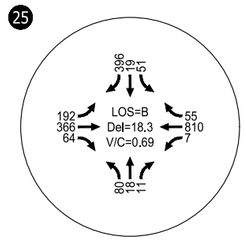
Figure 26











V/C = VOLUME TO CAPACITY RATIO

LOS = CRITICAL INTERSECTION LEVEL OF SERVICE

Del = CRITICAL INTERSECTION CONTROL DELAY

Year 2025 Total Traffic Conditions
Weekday AM Peak Hour
Oregon City, Oregon

Figure
27

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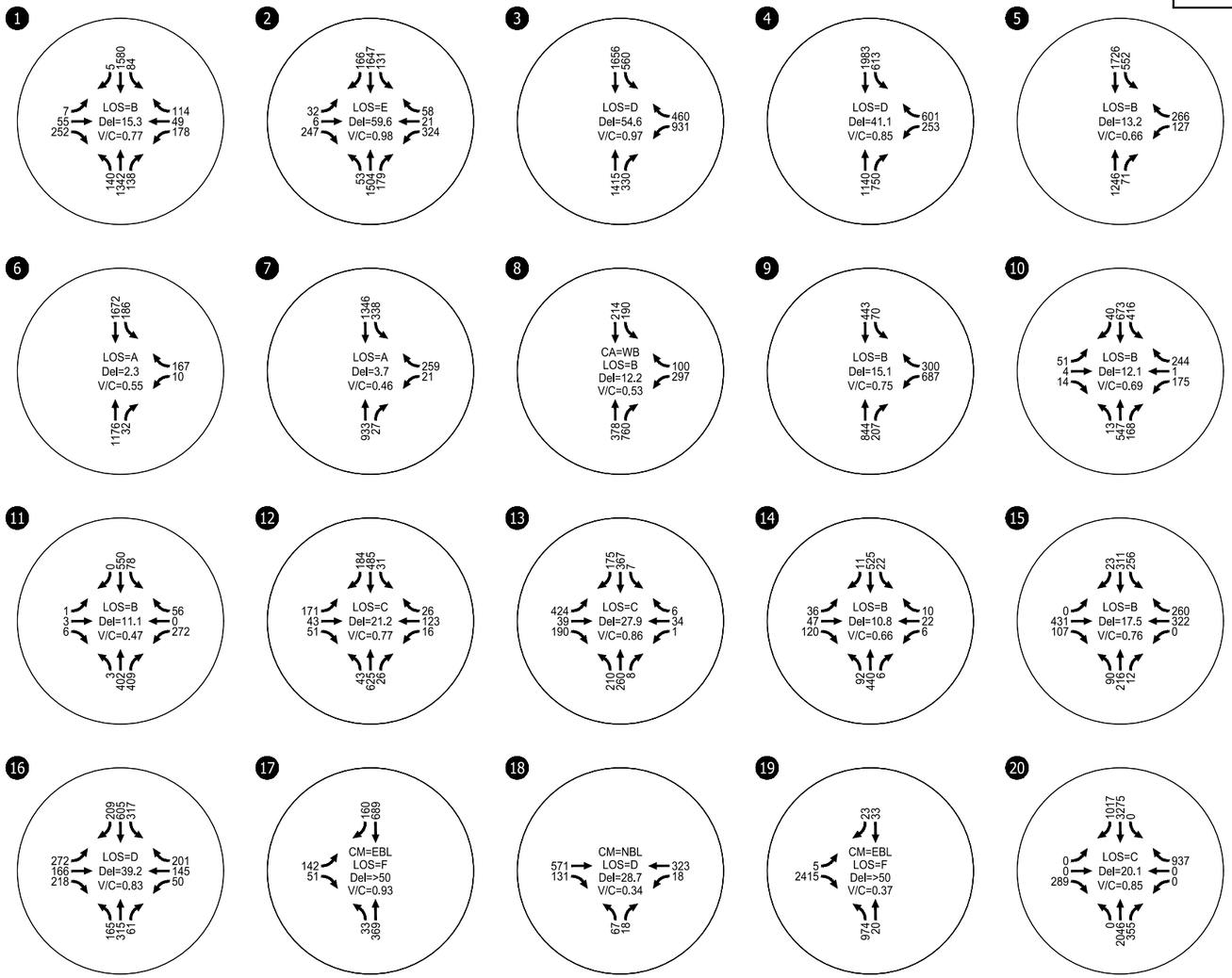

V/C = VOLUME TO CAPACITY RATIO
LOS = CRITICAL INTERSECTION LEVEL OF SERVICE
Del = CRITICAL INTERSECTION CONTROL DELAY
CA = CRITICAL APPROACH
CM = CRITICAL MOVEMENT

Year 2025 Total Traffic Conditions
Weekday PM Peak Hour
Oregon City, Oregon

Figure
28

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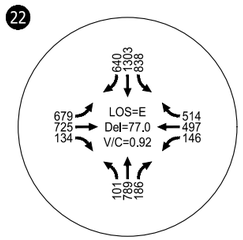

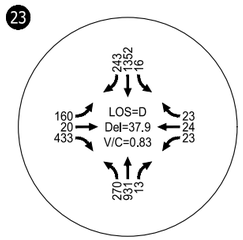

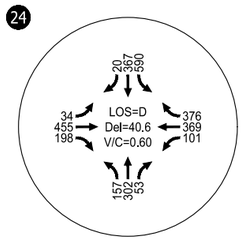

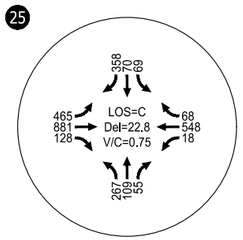

V/C = VOLUME TO CAPACITY RATIO

LOS = CRITICAL INTERSECTION LEVEL OF SERVICE

Del = CRITICAL INTERSECTION CONTROL DELAY

Year 2025 Total Traffic Conditions
Weekday PM Peak Hour
Oregon City, Oregon

Figure
29

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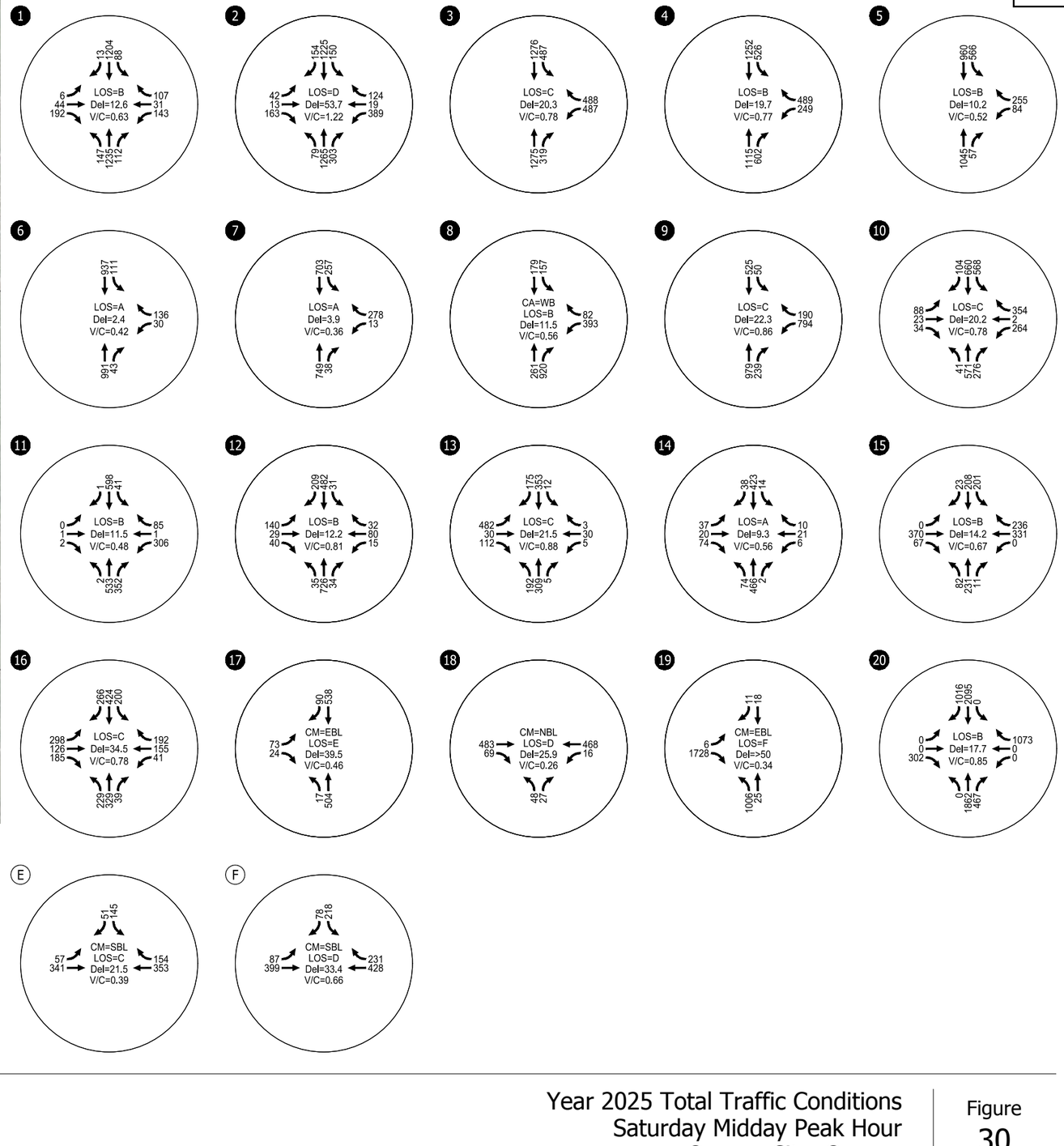


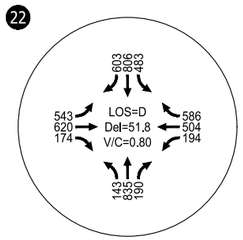
V/C = VOLUME TO CAPACITY RATIO
LOS = CRITICAL INTERSECTION LEVEL OF SERVICE
Del = CRITICAL INTERSECTION CONTROL DELAY

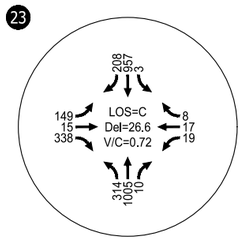
CA = CRITICAL APPROACH
CM = CRITICAL MOVEMENT

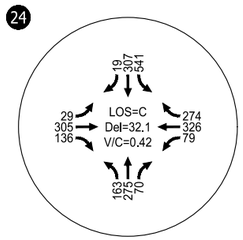
Year 2025 Total Traffic Conditions
Saturday Midday Peak Hour
Oregon City, Oregon

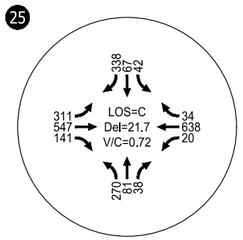
Figure
30











V/C = VOLUME TO CAPACITY RATIO

LOS = CRITICAL INTERSECTION LEVEL OF SERVICE

Del = CRITICAL INTERSECTION CONTROL DELAY

Year 2025 Total Traffic Conditions
Saturday Midday Peak Hour
Oregon City, Oregon

Figure
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VEHICLE QUEUING IMPACT ASSESSMENT

A vehicle queue impact assessment was performed at key study intersections, including all proposed external site accesses. The analysis was conducted to ensure that queues can be adequately accommodated within available or proposed lane storage distances. For the analysis, 95th-percentile vehicle queue information for the weekday AM, weekday PM, and Saturday midday peak hours was taken from the Vistro operations analyses reports for the year 2025 background and total traffic conditions. Results were compared to determine the relative changes in estimated vehicle queue lengths without and with proposed development and for comparison against available or proposed lane storage. The results of the queue analyses for year 2025 background traffic conditions are shown in Table 8 and with year 2025 total traffic conditions presented in Table 9.

Year 2025 Background Traffic Queue Results

As shown in Table 9, under background conditions without trips from the master plan development, two intersections are forecast to have movements where queues exceed available lane storage. These locations and conditions are described in the sections below.

Intersection #16: Redland Rd. / Abernethy Rd.-Holcomb Blvd.

Weekday AM peak hour vehicle queues are forecast to exceed available striped lane storage within the left-turn lane on the northbound approach of Redland Road and within the westbound right-turn lane on Holcomb Boulevard.

Intersection #21: OR 213 / Redland Rd.

Weekday AM peak hour queues are forecast to exceed available lane storage within the inside lane of the dual left-turn lanes on the eastbound approach of Redland Road. The 95th-percentile left-turn queue could cause vehicles to spill back into the adjacent intersection at Redland Road/Abernethy Road. Excessive vehicle queues at this intersection may also be exacerbated by the oversaturated operating conditions forecasted for the weekday AM peak hour (v/c ratio greater than 1.0).

Table 9. Queue Analysis Results (Year 2025 Background Traffic Conditions)

Intersection	Movement	Lane Storage Available (feet)	95th-percentile Queue (feet)			Queue Storage Adequate?
			AM Peak Hour	PM Peak Hour	Saturday Peak Hour	
9) Washington St. / Prairie Schooner Wy.	NB TR	690	44	53	71	Yes
	SB L	150	4	4	4	Yes
	SB TH	1,050	9	9	11	Yes
	WB L	250*	34	39	55	Yes
	WB R	250*	10	17	13	Yes
10) Washington St./Home Depot-Site Access A	NB L	335	3	1	7	Yes
	NB TR	335**	53	38	87	Yes
	SB L	275	45	20	78	Yes
	SB T	670*	37	26	32	Yes
	SB R	185	7	3	15	Yes
	EB LTR	Cont.	23	20	50	Yes
	WB LT	400*	17	32	69	Yes
	WB R	400*	8	10	25	Yes
11) Washington St. / Abernethy Rd.	NB L	115	1	1	1	Yes
	NB T	475*	58	37	46	Yes
	NB R	225	19	23	15	Yes
	SB L	125***	11	18	9	Yes
	SB TR	1,100*	92	72	71	Yes
	EB LTR	240*	0	2	1	Yes
	WB L	170***	86	45	32	Yes
	WB TR	900*	15	9	12	Yes
16) Redland Rd. / Abernethy Rd.-Holcomb Blvd.	NB L	125	**166**	90	88	**No**
	NB TR	Cont.	377	308	238	Yes
	SB L	320	119	244	125	Yes
	SB T	780*	234	360	204	Yes
	SB R	260	10	11	12	Yes
	EB L	115***	58	59	26	Yes
	EB TR	665*	139	257	154	Yes
	WB L	90	37	52	34	Yes
	WB T	Cont.	148	72	51	Yes
	WB R	90	**114**	79	61	**No**
20) OR 213 / Clackamas River Dr.	NB T	1,270**	474	61	82	Yes
	NB R	460	0	0	0	Yes
	SB T	1,050*	73	379	103	Yes
	SB R	425	0	0	0	Yes
	EB R	320*	112	192	140	Yes
	WB R	420*	413	342	285	Yes
21) OR 213 / Redland Rd.	NB L	350	190	307	145	Yes
	NB T	Cont.	1,310	346	291	Yes
	SB T	1,580*	298	1,112	237	Yes
	SB R	1,580*	7	22	7	Yes
	EB L (L)	340 (750)	**665** (665)	323 (323)	264 (264)	**No**
	EB R	750*	68	73	52	Yes

WB= Westbound, SB = Southbound, EB = Eastbound, NB = Northbound, L = Left, T = Through, R = Right, LTR = Shared left/through/right
Cont. = Continuous storage available for turn lane. ( ) Parentheses indicate where dual turn lanes exist with varying storage lengths.
*Lane storage shown reflects distance to accommodate queues up to next public intersection or major driveway approach.
**Lane storage shown reflects distance available within multiple through lanes before the roadway tapers down by one through lane.
*** Additional lane storage available within continuous left-turn lane that is beyond the exclusive turn lane.

Year 2025 Total Traffic Queue Results

As shown in Table 10, under conditions that include trips from the master plan development, three intersections are forecast to have movements where queues exceed available lane storage. These locations and conditions are described in the sections below. It should be noted that all six external site accesses are forecast to have sufficient lane storage at their locations along Washington Street and Abernethy Road.

Table 10. Queue Analysis Results (Year 2025 Total Traffic Conditions)

Intersection	Movement	Lane Storage Available (feet)	95th-percentile Queue (feet)			Queue Storage Adequate?
			AM Peak Hour	PM Peak Hour	Saturday Peak Hour	
9) Washington St. / Prairie Schooner Wy.	NB TR	690	75	237	419	Yes
	SB L	150	5	13	13	Yes
	SB TH	1,050	18	45	80	Yes
	WB L	250*	58	172	244	Yes
	WB R	250*	16	46	38	Yes
10) Washington St./Home Depot-Site Access A	NB L	335	4	2	10	Yes
	NB TR	335**	103	158	230	Yes
	SB L	275	70	75	270	Yes
	SB T	670*	62	80	129	Yes
	SB R	185	7	4	18	Yes
	EB LTR	Cont.	28	33	89	Yes
	WB LT	400*	31	86	184	Yes
	WB R	400*	18	60	106	Yes
11) Washington St. / Abernethy Rd.	NB L	115	1	2	1	Yes
	NB T	475*	92	107	147	Yes
	NB R	225	26	47	37	Yes
	SB L	125***	12	32	16	Yes
	SB TR	1,100*	130	186	188	Yes
	EB LTR	240*	0	3	1	Yes
	WB L	170***	143	93	97	Yes
	WB TR	900*	18	15	21	Yes
16) Redland Rd. / Abernethy Rd.-Holcomb Blvd.	NB L	125	**237**	**182**	**223**	**No**
	NB TR	Cont.	509	321	291	Yes
	SB L	320	157	304	198	Yes
	SB T	780*	322	502	346	Yes
	SB R	260	40	64	98	Yes
	EB L	115***	**130**	**269**	**276**	**No**
	EB TR	665*	190	364	245	Yes
	WB L	90	49	62	51	Yes
	WB T	Cont.	209	159	159	Yes
	WB R	90	**143**	**106**	**93**	**No**
20) OR 213 / Clackamas River Dr.	NB T	1,270**	982	372	315	Yes
	NB R	460	0	0	0	Yes
	SB T	1,050*	98	500	149	Yes
	SB R	425	0	0	0	Yes
	EB R	320*	134	222	173	Yes
	WB R	420*	**467**	**553**	**449**	**No**
21) OR 213 / Redland Rd.	NB L	350	235	**527**	236	**No**
	NB T	Cont.	1,365	360	364	Yes
	SB T	1,580*	370	1,257	533	Yes
	SB R	1,580*	12	26	12	Yes
	EB L (L)	340 (750)	**768** (**768**)	**533** (533)	327 (327)	**No**
	EB R	750*	73	89	55	Yes
26) Washington St. / Site Access D (proposed)	*SB L*	*500**	3	11	14	Yes
	WB L	*>100*	5	45	22	Yes
	WB R	*>100*	5	23	30	Yes
27) Abernethy Rd. / Site Access E (proposed)	*SB LR*	*>100*	15	63	64	Yes
	EB L	*600*	2	4	5	Yes
28) Abernethy Rd. / Site Access F (proposed)	*SB L*	*>250*	14	71	113	Yes
	SB R	*>100*	5	9	12	Yes
	EB L	*950*	3	6	9	Yes
29) Washington St. / Site Access B (proposed)	*SB L*	*50*	4	16	22	Yes
	WB LR	*>100*	15	124	184	Yes
30) Washington St. / Site Access C (proposed)	*SB L*	*500**	4	15	19	Yes
	WB LR	*>100*	14	94	135	Yes

WB= Westbound, SB = Southbound, EB = Eastbound, NB = Northbound, L = Left, T = Through, R = Right, LTR = Shared left/through/right
Cont. = Continuous storage available for turn lane. ( ) Parentheses indicate where dual turn lanes exist with varying storage lengths.
*Lane storage shown reflects distance to accommodate queues up to next public intersection or major driveway approach.
**Lane storage shown reflects distance available within multiple through lanes before the roadway tapers down by one through lane.
******* Additional lane storage available within continuous left-turn lane that is beyond the exclusive turn lane.

Intersection #16: Redland Rd. / Abernethy Rd.-Holcomb Blvd.

Relative to background traffic conditions, the addition of site-generated trips are projected to increase excessive 95th-percentile queues further beyond available storage within the northbound left-turn lane on Redland Road and within the westbound right-turn lane on Holcomb Boulevard during all three peak hour analysis periods. Furthermore, the added site trips will result in a new state of excessive vehicle queues within the eastbound left-turn lane on Abernethy Road. Based on these findings, mitigation is needed to reduce excessive vehicle queues to within available storage distances, or at least reduce queues back to levels under background conditions.

Intersection #20: OR 213 / Clackamas River Dr.

During all three of the peak hour analysis periods, vehicle queues are forecast to extend just beyond the first driveway to an adjacent Chevron Gas Station and Red Barn Car Wash facility. Further inspection of roadway conditions along Clackamas River Drive indicates that there is a secondary driveway to the gas station facility further east (more than 700 feet from the signal) where vehicle queues on Clackamas River Drive will not obstruct exiting vehicles. Also, the two westbound travel lanes on Clackamas River Drive are continuous and extend hundreds of feet further east to the roundabout at Washington Street, thus providing more stacking space for cars if needed. Based on these findings, no mitigation measures are necessary to address the queueing conditions.

Intersection #21: OR 213 / Redland Rd.

Relative to background traffic conditions, the addition of site-generated trips are projected to increase 95th-percentile queues beyond available striped lane storage during the weekday PM peak hour within the northbound left-turn lane on OR 213. Within the eastbound left-turn lanes on Redland Road, excessive vehicle queuing already forecasted in the background conditions will become worse during the weekday AM and PM peak hours. Based on these findings, mitigation is needed to reduce excessive vehicle queues to within available storage distances, or at least reduce queues back to levels under background conditions.

ON-SITE CIRCULATION/SITE-ACCESS OPERATIONS

Per the year 2025 total traffic analysis described above, the six external site accesses to Washington Street and Abernethy Road are expected to operate acceptably under the proposed traffic control measures during all three study periods. The projected 95th percentile vehicle queues for the three time periods at all six external accesses also can be accommodated. On-site parking shall be present only in locations with sufficient throat depth such that parking vehicles do not cause queueing to occur at the public street entrances. In addition, intersection sight distance is expected to satisfy applicable City requirements at the new external accesses on Washington Street and Abernethy Road and shall be documented within the project civil engineering plans. Landscaping, above ground utilities, and signing should be located and maintained along the site frontage and throughout the site in a manner that provides adequate intersection sight distance per City Code.

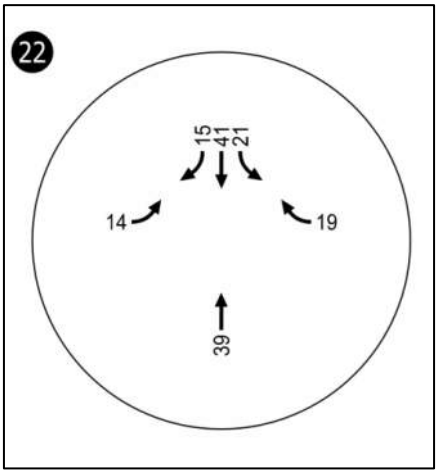
ACCESS SPACING

Washington Street and Abernethy Road are both classified as a *Minor Arterial*. Section 12.04.195 of the Oregon City Municipal Code requires that the minimum driveway spacing along a *Minor Arterial* is 175 feet. As described previously, the three new site accesses proposed along Washington Street will be positioned at equal spacings of approximately 500 feet relative to the signalized intersection at Washington Street/Home Depot-Site Access "A". The two new site accesses proposed along Abernethy will be approximately 1,000 feet apart, with the closest driveway at approximately 750 feet west of the signalized Abernethy Road/Redland Road intersection. Accordingly, the access spacing scheme for the master plan can comply with the access spacing requirements of the Oregon City Municipal Code.

OR 213/BEAVERCREEK ROAD PROPORTIONATE SHARE TRIP TRACKING

Development stemming from the proposed master plan is expected to be assessed its proportional share contribution for planned improvements at the OR 213/Beavercreek Road intersection. Exhibit 1 below illustrates the total number of weekday PM peak hour site-generated trips that are projected to travel through the OR 213/Beavercreek Road intersection in terms of total entering vehicles. This trip assignment is provided for the purposes of proportional share mitigation per direction from City staff.

Exhibit 1: Weekday Peak Hour Site Trips though OR 213/Beavercreek Road Intersection



The City of Oregon City will determine and collect proportionate share mitigation fees at the time of building permits as individual phases of the master plan are implemented. However, for estimating purposes only, based on **149** weekday PM peak hour site-generated trips projected to use the intersection, and the current **$219** cost per weekday PM peak hour trip[1], the total proportional share fee is estimated at **$32,631**.

[1] A $219 cost per weekday PM peak hour trip was identified by the City's traffic consultant in February 2020. The fee per trip was noted to be subject to change if a new cost estimate for the intersection project is developed in conjunction with an update of the City's capital improvement program prior to fee payment.

FINDINGS AND RECOMMENDATIONS

The following presents our findings of the transportation impact analysis for the proposed master plan, followed by recommendations for next steps to evaluate appropriate measures to mitigate off-site transportation impacts from development.

Existing Conditions

- Based on the analysis of traffic operations, all 25 existing study intersections currently operate at levels that meet the mobility standards of the governing agencies for the analysis periods.
- Crash records for the most recent five-year period available from ODOT at the 25 study area intersection include 728 reported crashes that resulted in three fatalities (0.4%) and 10 serious injuries (1.4%). Driver or pedestrian error were contributing factors in most of these instances.
- Based on the analysis of historical crash data, the following 11 study intersections currently have crash rates that exceed critical crash rates for similar facilities in the state:
    - Intersection #1: OR 99E / River Rd.-Arlington St.
    - Intersection #2: OR 99E / Dunes Dr.
    - Intersection #3: OR 99E / I-205 SB Ramp
    - Intersection #4: OR 99 E / I-205 NB Ramp
    - Intersection #14: Washington St. / 12th St. (recently signalized)
    - Intersection #18: Redland Rd. / Holly Ln.
    - Intersection #19: OR 213 / I-205 SB Loop Off-Ramp
    - Intersection #21: OR 213 / Redland Rd.
    - Intersection #22: OR 213 / Beavercreek Rd.
    - Intersection #24: Beavercreek Rd. / Molalla Ave.
    - Intersection #25: Beavercreek Rd. / Maplelane Rd.

Year 2025 Background Traffic Conditions (without development)

- Based on the analysis of traffic operations, all but one of the 25 existing study intersections are forecast to operate at levels which meet the mobility standards of the governing agency.
    - **Intersection #2: OR 99E / Dunes Dr:** This intersection is forecast to operate with a v/c ratio of 1.17 during the Saturday midday peak hour, which exceeds the ODOT mobility target of 1.10 or less. As detailed in this report, the current signal timing for this intersection has been set to favor progression of through-traffic movements on the highway. Further analysis indicates the overall intersection v/c ratio can be reduced to below 1.00 if the lag phasing for the critical southbound left-turn movement from the highway into the adjacent shopping center were switched to the lead phase concurrent with the opposing left-turn movement.

Proposed Development Plan

- The master plan envisions uses that are allowed outright by the property's Mixed Use Downtown (MUD) zoning, including mixed-use housing, retail, commercial, office, grocery stores, movie cinemas, coffee shops, and restaurants. Specific uses that are conditionally allowed by the City and also envisioned in the master plan include an anchor retail store with the option of a fuel station as an accessory use, as well as fast-food restaurants having drive-through windows.
- The concept plan is divided into four distinct sub-areas (e.g., North, East, Central, and South Districts) to illustrate the different uses and functions that will occur within each district, and to delineate possible boundaries for individual phases of development.
- Full occupancy of all master plan uses is expected to occur in 2025.
- The golf driving range that exists on the subject property today will be removed once development occurs.
- The proposed master plan is forecast to have the following trip generation characteristics:

The North End Master Plan	AM Peak Hour Trips			PM Peak Hour Trips			Saturday Peak Hour Trips		
	Total	In	Out	Total	In	Out	Total	In	Out
Total Trips	984	515	469	2727	1347	1380	3304	1696	1608
Internal Trips	*(132)*	*(66)*	*(66)*	*(318)*	*(159)*	*(159)*	*(414)*	*(207)*	*(207)*
Pass-by Trips	*(70)*	*(35)*	*(35)*	*(382)*	*(191)*	*(191)*	*(356)*	*(178)*	*(178)*
Diverted Trips	*(182)*	*(91)*	*(91)*	*(1030)*	*(515)*	*(515)*	*(1248)*	*(624)*	*(624)*
Primary Trips	600	323	277	997	482	515	1286	687	599

- Frontage improvements proposed along Washington Street will consist of the required half-street improvements, per the City's Minor Arterial street design standards. This will include additional pavement width, where needed, to support the transition of the roadway from five lanes to three lanes southbound, including the extension of a continuous left-turn lane. Frontage improvements will also support respective bike lanes, planter strip and sidewalk treatments as required by the City's design standards, and on-street parking where required by the City Engineer.
- Frontage improvements proposed along Abernethy Road will consist of the required half-street improvements consistent with the City's Minor Arterial street design standards. This will include additional pavement width, where needed, to support the existing three-lane cross-section with a continuous left-turn lane. Frontage improvements will also support respective bike lanes, planter strip and sidewalk treatments as required by the City's design standards, and on-street parking where required by the City Engineer.
- A new collector-level street will extend through the site, starting from the current street terminus just south of the signalized Washington Street/Home Depot access intersection and

ending with a new intersection at Abernethy Road. The roadway will also be designed to include bike lanes and a shared-use facility, per the City's TSP.

- A second shared-use facility will be constructed on the site, per the City's TSP. The two shared-use facilities will be fully interconnected with a system of pedestrian facilities that extend to every building, pedestrian plaza, and other pedestrian destination on the site.
- The master plan envisions a total of six external site access points. These accesses, including proposed traffic control measures are as follows:
    - **Washington St./Home Depot-Site Access "A":** Existing access with no proposed changes.
    - **Washington St./Site Access "B":** This is a new private driveway leading into a parking structure. Improvements include stop-control on the minor approach, with a single egress lane for shared left- and right-turn movements. This access will rely on the presence of a continuous left-turn lane on Washington Street to allow for left-turn ingress.
    - **Washington St./Site Access "C":** This access is identical to Site Access "B".
    - **Washington St./Site Access "D":** This is a new private street connection leading into the site. Improvements include stop-control on the minor approach, with separate left- and right-turn egress lanes. This access will rely on the presence of a continuous left-turn lane on Washington Street to allow for left-turn ingress.
    - **Abernethy Rd./Site Access "E":** This is a new private street connection leading into the site. Improvements include stop-control on the minor approach, with a single egress lane for shared left- and right-turn movements. This access will rely on the presence of a continuous left-turn lane on Abernethy Road to allow for left-turn ingress.
    - **Abernethy Rd./Site Access "F":** This is part of the new collector-level street leading into the site. Improvements include signalization, with separate left- and right-turn egress lanes. This access will rely on a left-turn lane on Abernethy Road to allow for left-turn ingress. Improvements also include the construction of a westbound right-turn lane from Abernethy into the site.
- Expected safety benefits of the proposed master plan include:
    - Locating housing in immediate proximity to jobs, services, retail, and recreation.
    - More than 400 trips during the Saturday midday peak hour are estimated to occur entirely within the site, likely as pedestrians.
    - Site driveways will be positioned and designed to meet all City requirements for sight distance, driveway spacing, and appropriate traffic control.

- Surrounding neighborhoods will have proximate access to jobs and service, retail, and recreational opportunities in close proximity, which will reduce their trip length and increase their options for walking, biking, and using transit to access these uses.
- Reducing the trip length and converting some existing trips from motor vehicle to walking, biking, and/or transit trips can reduce overall exposure on a systemwide level.

Year 2025 Total Traffic Conditions (with development)

- Based on the analysis of traffic operations, all but two of the 25 existing study intersections are forecast to operate at levels that meet the mobility standards of the governing agency.
  - **Intersection #2: OR 99E / Dunes Dr. -** This intersection is forecast to operate with a v/c ratio of 1.22 during the Saturday midday peak hour, which exceeds the ODOT mobility target of 1.10 or less. As detailed in this report, the current signal timing for this intersection has been set to favor progression of through-traffic movements on the highway. Further analysis indicates the overall intersection v/c ratio can be reduced to below 1.00 if the lag phasing for the critical southbound left-turn movement from the highway into the adjacent shopping center were switched to the lead phase concurrent with the opposing left-turn movement.
  - **Intersection #21: OR 213/Redland Road -** This intersection is forecast to operate with a v/c ratio of 1.12 during the weekday PM peak hour, which exceeds the ODOT mobility target of 1.10 or less.
- Based on the analysis of vehicle queuing operations, the following intersections around the perimeter of the master plan site are forecast to experience an increased impact on queuing deficiencies:
  - **Intersection #16: Abernethy Rd./Redland Rd. -** This intersection is forecast to have queue deficiencies within the northbound left-turn lane on Redland Road, within the eastbound left-turn lane on Abernethy Road, and within the westbound right-turn lane on Holcomb Boulevard.
  - **Intersection #21: OR 213/Redland Road -** This intersection is forecast to have queue deficiencies within the northbound left-turn lane on OR 213 and the eastbound left-turn lane on Redland.
- Based on a review of the locations of the proposed external site accesses, the proposed access schemes for Washington Street and Abernethy Road meet the City's access spacing standards for a *Minor Arterial* roadway designation.
- The City of Oregon City is collecting proportionate share mitigation fees for the OR 213/Beavercreek Road intersection at the time of building permits. For estimating purposes only, based on 149 weekday PM peak hour site-generated trips projected to use the

intersection, and the anticipated $219 cost per weekday PM peak hour trip, the total proportional share fee is estimated at $32,631.

- Landscaping, above ground utilities, and signing should be located and maintained along the site frontages and throughout the site in a manner that provides adequate intersection sight distance per City Code.

Recommendations for Mitigation or Further Analysis

- OR 213/Dunes Road – Further document how signal timing/phasing optimization can improve intersection operations.
- OR 213/Redland Road – To address operational and vehicle queue deficiencies, evaluate the construction of a third southbound travel lane on OR 213 through the intersection with taper transition back to two lanes prior to the Holcomb Boulevard overcrossing. This improvement would also include 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 lanes prior to the sign bridge across OR 213.
- Abernethy Road/Redland Road – To address queue deficiencies, research installation of a right-turn overlap signal phasing on the southbound approach of Redland Road. As necessary, evaluate the construction of a second eastbound left-turn lane on Abernethy Road and retiming of the traffic signal to minimize vehicle queues.
- Abernethy Road/Site Access "F" - Evaluate signal warrants and increased multimodal benefits under a scenario that includes a traffic signal at this primary access to Abernethy Road.

REFERENCES

1. City of Oregon City. *Guidelines for Transportation Impact Analyses*. 2005.
2. Transportation Research Board. *Highway Capacity Manual, 6th Edition*. 2016.
3. City of Oregon City. *Oregon City Transportation System Plan*. 2013.
4. Oregon Department of Transportation. *Oregon Highway Plan*. 1999 (Including amendments through 2019).
5. Oregon Department of Transportation. Analysis Procedures Manual Version 2. Last Update October 2020.
6. American Association of State Highway and Transportation Officials. *Highway Safety Manual*. 2010
7. Institute of Transportation Engineers. *Trip Generation Manual, 10th Edition*. 2017.
8. Transportation Research Board. *NCHRP Report 684 – Enhancing Internal Trip Capture Estimation for Mixed-Use Developments.* 2011.
9. Institute of Transportation Engineers. *Trip Generation Handbook, 3rd Edition*. 2014.

APPENDICES

A. TIA Scoping Memorandum

B. Traffic Count Data

C. Existing Traffic Conditions Analysis Worksheets

D. ODOT Crash Data

E. Year 2025 Background Traffic Conditions Analysis Worksheets

F. Additional Site Trip Assignment Figures

G. Year 2025 Total Traffic Conditions Analysis Worksheets

Appendix A
TIA Scoping Memorandum

Appendix B
Traffic Count Data

Appendix C
Existing Traffic Conditions
Analysis Worksheets

Appendix D
ODOT Crash Data

Appendix E
Year 2025 Background Traffic Conditions Analysis Worksheets

Appendix F
Additional Site Trip Assignment Figures

Appendix G
Year 2025 Total Traffic Conditions Analysis Worksheets

Appendix A
TIA Scoping Memorandum

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TIA SCOPING MEMORANDUM

Date: January 26, 2021 Project #: 24824

To: John Replinger, Replinger & Associates, LLC
Oregon City Planning Dept.
695 Warner Parrott Road
Oregon City, OR 97045

From: Brian J. Dunn, PE, Phill Worth, and Ali Razmpa
Project: Oregon City Master Plan Concept (PA 20-11)
Subject: **Transportation Impact Analysis Scoping Memorandum**

Per the City of Oregon City Guidelines for Transportation Impact Analysis (November 2005), this memorandum summarizes the proposed scope of the transportation impact analysis (TIA) for the proposed Oregon City Master Plan Concept. The applicant, Summit Development Group, is proposing an urban mixed-use development on approximately 62 acres of property located at 1105 Abernethy Road in Oregon City. Figures 1 and 2 display site vicinity maps showing the location of the proposed master plan site and surrounding study intersections. As shown, the site is bound by Abernethy Road to the south, Redland Road and OR 213 to the east, and Washington Street to the north. Established land uses immediately adjacent to the master plan site, including Home Depot to the northeast and the Oregon Trail Interpretive Center to the southwest, are not part of this application and will remain unchanged.

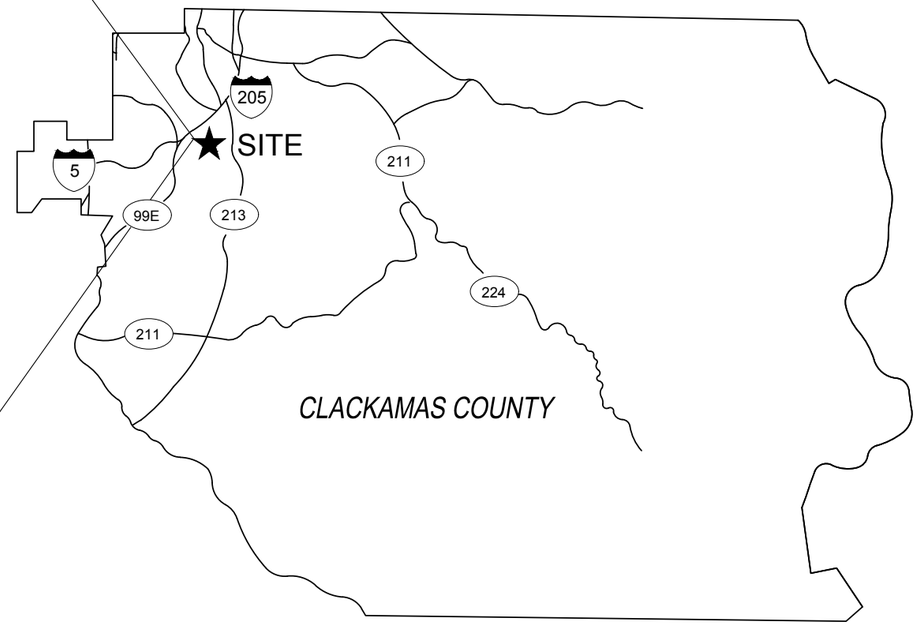
The remaining sections of this memorandum provide additional information regarding the master plan land uses, site accessibility, vehicle trip generation and distribution characteristics of the project, identified study intersections for inclusion in the TIA report as well as analysis methodology, and other assumptions that require coordination and confirmation with City and ODOT traffic engineering staff.

DEVELOPMENT DESCRIPTION

The proposed Oregon City Master Plan concept is illustrated in Figure 3. As shown, the master plan incorporates a variety of land uses including residential, retail/commercial, and potential office space. Specific uses allowed outright by the Mixed Use Downtown (MUD) zoning that applies to the property include mixed use housing, retail, commercial, office, grocery stores, movie cinemas, and restaurants. Specific uses that are conditionally allowed in the concept plan include an anchor retail store with fuel station as an accessory use, as well as a fast-food restaurant with drive through window.

The concept plan shown in Figure 3 is also divided into four distinct sub-areas (e.g. North, East, Central, and South Districts) to illustrate the different uses and functions that will occur within each district, and to delineate possible boundaries for individual phases of development.





Site Vicinity Map
Oregon City, Oregon

Figure
1

(##)- Study Intersections

(##)- Proposed Site Accesses

KITTELSON & ASSOCIATES

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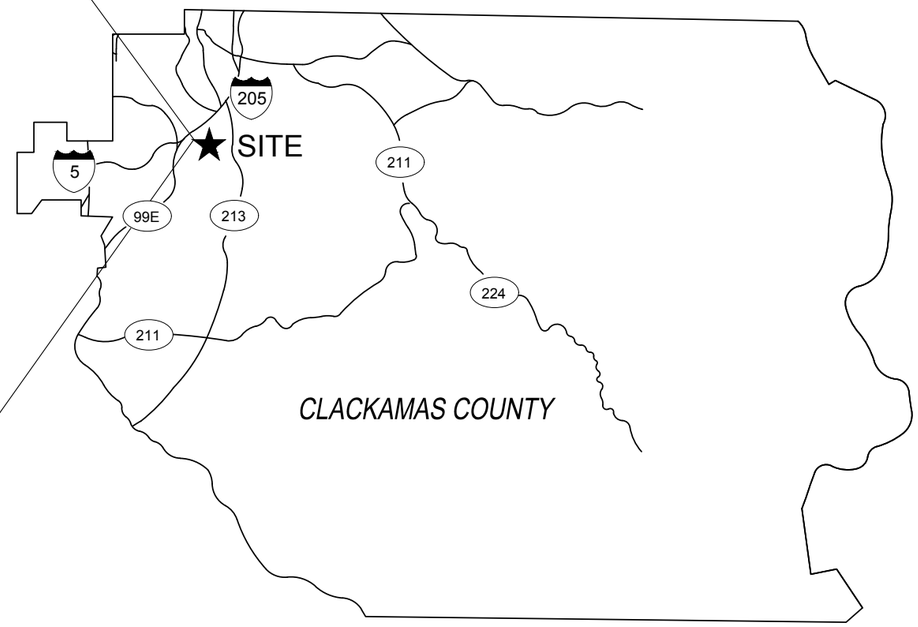

- Study Intersections

Site Vicinity Map
Oregon City, Oregon

Figure
2

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RECEIVED FROM LRS ARCHITECTS : (11/20/2020)

Proposed Site Plan
Oregon City, Oregon

Figure
3

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In terms of access, most site traffic will rely on a new collector-level street constructed through the center of the site. The collector street would extend from the current street terminus that accesses Washington Street, west of Home Depot, proceed in a southwest direction, and then turn southeast to intersect with Abernethy Road roughly in the same location as the existing driveway that leads to the golfing range on-site. Two other external private street connections are also envisioned as part of the master plan street network. One street access would occur at Washington Street in the northwest corner of the site and the other at Abernethy Road in southwest corner of the site. Use of these private external connections is intended to be secondary to the collector street but are necessary to distribute site trips efficiently and between internal land uses.

As stated above, a golf driving range exists on the subject property. The driving range will be removed once development occurs.

SITE TRIP GENERATION ESTIMATES

Site trip generation estimates for the master plan were prepared for the weekday a.m., weekday p.m., and Saturday midday peak hours of the adjacent street network. The need to address three separate peak hour periods in our TIA report stems from the outcome of a scoping discussion with traffic engineering staff from Oregon City and ODOT on December 11, 2020. In that discussion, preliminary trip generation estimates were reviewed and a determination was made that the intensity and variety of land uses proposed in the master plan concept have the potential to generate sufficient traffic on the surrounding street system to warrant analysis of all three peak hour periods.

Trip estimates for the proposed master plan are shown on the following page in Table 1, with trip totals shown for the individual land uses and for the master plan as a whole. Trips are also shown broken out by trip types (e.g. total, internal, pass-by, and diverted trips).

The total trips shown for each land use in Table 1 are based on trip rates or equations contained in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 10th Edition (Reference 1), using the most relevant ITE land use category. The total trips shown for residential uses reflect ITE 221 (*Multifamily Housing Mid-Rise*). Total trips for the fast-food restaurant reflect ITE 934 (*Fast-Food Restaurant with Drive-Through Window), and t*otal trips shown for the retail/commercial uses, which include all retail spaces as well as the grocery store, cinema, and restaurants, were estimated using ITE 820 (*Shopping Center*). For the remaining large retail anchor building, total trips were estimated using ITE 813 (*Free-Standing Discount Superstore*).

It should be noted that a higher trip generation results from separating out the fast-food restaurant and the free-standing discount superstore from the shopping center land use. It would be reasonable to include all proposed retail uses under the shopping center land use, as all proposed uses are commonly found at shopping centers of this scale. This approach is proposed to provide a more conservative analysis of the trip generation potential of the site.

After total trips were accounted for, estimates of internal trip capture were made, which reflect the internalization of trips between individual land uses of the master plan. The process of internal capture was carried out using ITE's OTISS (online traffic impact study software), which follows the procedures of *NCHRP Report 684 – Enhancing Internal Trip Capture Estimation for Mixed-Use Developments* (Reference 2).

Next, pass-by trips were estimated for all the retail uses in the master plan. By definition, pass-by trips reflect vehicles already present on the site frontage streets of Washington and Abernethy Streets that turn into the project using one of the site accesses, visit a use on site, and then return back onto the adjacent street in the direction they were originally heading. Pass-by trip estimates were prepared using pass-by rate information contained in ITE's *Trip Generation Handbook*, 3rd Edition (Reference 3). For instances where ITE pass-by rate information was not available for certain peak hour periods, the lower pass-by rates of adjacent peak hour periods were applied to reflect a conservative minimum reduction.

The final step in the trip generation process was to account for diverted trips also associated with uses on the site. By definition, diverted trips reflect those vehicles that are passing nearby, but deviate onto a non-contiguous street facility to reach the site (e.g. I-205, OR 213, Holcomb Road, Redland Road, Clackamas River Drive). Similar to the pass-by trip capture process, diverted trips were estimated using available rate information in ITE's *Trip Generation Handbook*, 3rd Edition. For instances where ITE diverted rate information was not available for certain peak hour periods, the lower pass-by rates of adjacent peak hour periods were applied to reflect a conservative minimum reduction.

It should be noted that the results shown in Table 1 reflect an engineering judgment decision to shift a larger percentage of the pass-by trips calculated in this process into the diverted trip category. The reason for this shift is because the current traffic levels on the frontage streets of Washington Street and Abernethy Road are not high enough to support the calculated pass-by demand for this project. The high volumes of traffic and proximity of OR 213 and I-205 present significant opportunities for trip diversion to this site. Therefore, 50% of the calculated pass-by trips were shifted over into the diverted trip category to reflect the project's attraction of trips from other major streets nearby (e.g. Holcomb Road, Redland Road, Clackamas River Drive, OR 213, and I-205.

Table 1: Site Trip Generation Estimate

Master Plan Uses		Land Use	Size	AM Peak Hour Trips			PM Peak Hour Trips			Saturday Peak Hour Trips		
				Total	In	Out	Total	In	Out	Total	In	Out
Residential	Total	ITE 221 (Multifamily Housing Mid-Rise)	524 DU	174	45	129	217	132	85	231	113	118
	Internal			*(20)*	*(3)*	*(17)*	*(116)*	*(72)*	*(44)*	*(135)*	*(70)*	*(65)*
Fast-Food w/ Drive-Thru	Total	ITE 934 (Fast-Food Restaurant with Drive-Through Window)	3,830 GFA	153	78	75	124	64	60	208	106	102
	Internal			*(64)*	*(51)*	*(13)*	*(63)*	*(27)*	*(36)*	*(105)*	*(45)*	*(60)*
	Pass-by			*(22)*	*(11)*	*(11)*	*(14)*	*(7)*	*(7)*	*(24)*	*(12)*	*(12)*
	Diverted			*(46)*	*(23)*	*(23)*	*(28)*	*(14)*	*(14)*	*(48)*	*(24)*	*(24)*
Retail/ Commercial	Total	ITE 820 (Shopping Center)	500,000 GFA	402	249	153	1788	858	930	2207	1148	1059
	Internal			*(29)*	*(8)*	*(21)*	*(104)*	*(44)*	*(60)*	*(135)*	*(72)*	*(63)*
	Pass-by			*(32)*	*(16)*	*(16)*	*(286)*	*(143)*	*(143)*	*(268)*	*(134)*	*(134)*
	Diverted			*(80)*	*(40)*	*(40)*	*(724)*	*(362)*	*(362)*	*(994)*	*(497)*	*(497)*
Anchor Retail	Total	ITE 813 (Free-Standing Discount Superstore)	138,000 GFA	255	143	112	598	293	305	658	329	329
	Internal			*(19)*	*(5)*	*(15)*	*(35)*	*(16)*	*(19)*	*(39)*	*(20)*	*(19)*
	Pass-by			*(16)*	*(8)*	*(8)*	*(82)*	*(41)*	*(41)*	*(64)*	*(32)*	*(32)*
	Diverted			*(56)*	*(28)*	*(28)*	*(278)*	*(139)*	*(139)*	*(206)*	*(103)*	*(103)*
Total Trips				**984**	**515**	**469**	**2727**	**1347**	**1380**	**3304**	**1696**	**1608**
Internal Trips				***(132)***	***(66)***	***(66)***	***(318)***	***(159)***	***(159)***	***(414)***	***(207)***	***(207)***
Pass-by Trips				***(69)***	***(35)***	***(34)***	***(382)***	***(191)***	***(191)***	***(357)***	***(178)***	***(179)***
Diverted Trips				***(182)***	***(91)***	***(91)***	***(1031)***	***(515)***	***(516)***	***(1248)***	***(624)***	***(624)***
Primary Trips				**601**	**323**	**278**	**996**	**482**	**514**	**1285**	**687**	**598**

Site Trip Distribution and Assignment

Estimated site trip distribution patterns were developed based upon the nature of the land uses in the master plan, the location of the site relative to major travel routes in the area, and a review of previous traffic studies for similar land developments in Oregon City. These patterns are shown in Figures 4 and 5 on roadways throughout the site vicinity and reflect the following distribution patterns for all primary (net new) site trips:

- 24% of trips to/from I-205 (North);
- 12% of trips to/from OR 99E (North via McLoughlin Blvd.);
- 22% of trips to/from I-205 (South);
- 7% of trips to/from OR 99E (South to Canby);
- 6% to/from central Oregon City (West via Washington St.);
- 3% of trips to/from Clackamas River Dr. (Northeast);
- 2% of trips to/from Anchor Wy. (South via Redland Rd.);
- 3% of trips to/from Beavercreek Rd. (West of OR 213);

- 4% of trips to/from Beavercreek Rd. (East of OR 213);
- 8% of trips to/from OR 213 (South of Beavercreek Rd.);
- 5% of trips to/from Redland Rd.; and,
- 4% of trips to/from Holcomb Rd.

Table 2 summarizes preliminary estimates of the two-way traffic assignment of all primary trips to/from the major travel routes in the site vicinity, using the percentage distribution patterns above. This table was used to identify the 25 respective study intersections identified for analysis in the TIA report.

Table 2: Preliminary Distribution and Assignment of Primary Site Trips

Route	Site Trip Distribution	Weekday AM Peak Hour	Weekday PM Peak Hour	Saturday Midday Peak Hour
I-205 (North)	24.0%	145	234	301
OR 99E (North via McLoughlin)	12.0%	72	117	151
I-205 (South)	22.0%	133	214	276
OR 99E (South to Canby)	7.0%	42	68	88
Central Oregon City (via Washington)	6.0%	36	58	75
Clackamas River Drive (Northeast)	3.0%	18	29	38
Anchor Way (via Redland)	2.0%	12	19	25
Beavercreek Rd (West of OR 213)	3.0%	18	29	38
Beavercreek Rd (East of OR 213)	4.0%	24	39	50
OR 213 (South of Beavercreek)	8.0%	48	78	100
Redland Rd	5.0%	30	49	63
Holcomb Rd	4.0%	24	39	50
Total Primary Trips	**100.0%**	**604**	**974**	**1,256**

STUDY AREA INTERSECTIONS

Per the City of Oregon City TIA Guidelines the study area for the TIA should be based on the forecast trip generation of the development combined with engineering judgment and an understanding of existing and future land use and traffic conditions in the vicinity of the site. The guidelines identify the following considerations to form the basis for establishing the study area:

- All site access points and intersections adjacent to the site, including driveways serving parcels on the opposite side of the street;
- Roads through the site;
- Any intersection of two streets having a classification of arterial or collector, where site traffic will exceed 20 peak hour trips.

- Intersections where signal progression analysis is needed.

Based on the guidance above, the estimated peak hour assignment of primary site trips onto the surrounding roadways, and per the outcome of the scoping discussion, city staff have identified the following 27 study intersections for analysis in the TIA report:

1. I-205 WB Loop Off-Ramp / OR 213
2. Washington St, / Clackamas River Dr.
3. OR 213 / Clackamas River Dr.
4. Washington St. / Clackamas River Dr.
5. Washington St. / Street Access to Home Depot
6. OR 99E / River Rd.
7. OR 99E / Dunes Dr.
8. OR 99E / I-205 WB Loop off-Ramp
9. OR 99 E / I-205 EB Loop off-Ramp
10. OR 99E / 14th St.
11. OR 99E / 12th St.
12. OR 99E / 10th St.
13. Washington St. / 7th St.
14. Washington St. / 12th St.
15. Washington St. / 14th St.
16. Washington St. / 15th St.
17. Washington St. / 17th St.
18. OR 213 / Redland Rd.
19. Abernethy Rd. / Redland Rd.
20. Redland Rd. / Anchor Wy.
21. Holly Ln. / Redland Rd.
22. OR 213 / Beavercreek Rd.
23. Beavercreek Rd. / Molalla Ave.
24. Beavercreek Rd. / Maple Lane Rd.
25. OR 213 / Molalla Ave.

The existing lane configurations and traffic control devices present at the 25 existing study intersections above are also shown in Figures 4 and 5. As shown, 21 of the 25 intersections are signalized. As such, existing signal timing plans will be obtained from Clackamas County, City, or ODOT and incorporated into the operational analyses for this intersection within the TIA.

ESTABLISHING BASELINE (PRE-COVID) TRAFFIC VOLUMES

Due to the current atypical traffic patterns associated with the COVID-19 pandemic, the collection of traffic counts that reflect pre-COVID conditions is not possible. Therefore, we are proposing to develop proxy volume estimates by applying COVID Adjustment Factors (CAF's) to the turn movement traffic

counts we have collected recently at all 25 study intersections in the middle of December 2020. For intersections involving city or county roadways, we have devised a CAF by comparing recent and historical traffic counts available for four of the city intersections. For those study intersections located along the OR 213 and OR 99E corridors, we have devised separate CAF's using vehicle detection data available from ODOT for the signal controllers in these highway corridors, with detection data collected for the years 2018-2020 over the months of November and December, which are consistent with the seasonal period of the traffic counts we collected in December 2020. Table 3 presents the CAF's calculated for the weekday a.m. peak hour, weekday p.m. peak hour, and Saturday midday peak hour periods.

Table 3: COVID Adjustment Factors (By Facility and Analysis Period)[1]

Facility	Weekday AM Peak Hour	Weekday PM Peak Hour	Saturday Midday Peak Hour
City/County Streets	1.41	1.11	1.01
OR 213	1.25	1.10	1.04
OR 99E	1.50	1.16	1.03

1 – Engineering judgment and knowledge of local land use and travel patterns will be used when applying and adjusting these factors in specific locations.

TRAFFIC ANALYSIS PERIODS

As shown in Table 1, site trip generation estimates for the master plan were prepared for three separate analysis periods. These periods reflect the weekday morning (7:00 a.m. - 9:00 a.m.), weekday afternoon (4:00 p.m. - 6:00 p.m.), and Saturday midday (11:15 a.m. - 1:15 p.m.) peak hour periods. Inclusion of all three time periods in our TIA report stems from our scoping discussion with traffic engineering staff from Oregon City and ODOT on December 11, 2020. In that discussion, preliminary trip generation estimates revealed that the master plan would generate sufficient traffic to warrant analysis of all three time periods. Additionally, the scoping discussion focused on prevailing traffic conditions on the surrounding street system and the consistency of peak traffic demand patterns during the weekday commute periods as well as weekend patterns.

For the operations analysis, we are proposing to analyze the systemwide peak hours; the periods when traffic volumes at all 25 study intersections reach their highest levels in terms of totaling entering vehicles. Based on early road tube count data we have collected in December 2020, the systemwide weekday morning peak hour appears to occur from 7:25 a.m. to 8:25 a.m., with the afternoon peak hour occurring from 4:00 p.m. to 5:00 p.m., and the Saturday midday peak hour occurring from 12:15 p.m. to 1:15 p.m.

OPERATIONS ANALYSIS METHODOLOGY

The proposed methodology for analyzing intersection operations will be consistent with the procedures and standards outlined in the Oregon City TIA Guidelines. Vistro 2020, a software tool designed to

analyze intersection operations and vehicle queues in accordance with Highway Capacity Manual methodologies, will be used.

ANNUAL TRAFFIC GROWTH ASSUMPTIONS

The TIA report will address a five-year forecast of future traffic conditions. To prepare future traffic estimates, baseline year traffic volumes at all study intersections will be increased by the annual traffic growth rates shown in Table 4. These growth rates were determined from a review of the last five years of historical highway volume traffic data available from ODOT for various locations along the OR 213 and OR 99E corridors and a comparative analysis for historical and recent traffic counts collected at four city intersections.

Table 4: Annual Traffic Growth Rates for Study Intersections (By Facility and Analysis Period)

Facility	Weekday AM Peak Hour	Weekday PM Peak Hour	Saturday Midday Peak Hour
City/County Streets[1]	1.15%	1.15%	1.15%
OR 213[2]	2.0%*	2.0%*	2.0%*
OR 99E[2]	1.2%*	1.2%*	1.2%*

1 – For intersection legs that involve City or County roadways, the annual growth rate of 1.15% for these facilities will be applied to the associated minor movements. This rate is equivalent to the population growth rate for the past 5 years in Oregon City.

2 – Growth rates shown for the highway corridors are appropriate for application to the volume of traffic traveling through the area. They are derived from historical average daily traffic volumes provided by the Oregon Department of Transportation for the past five years ending 2019.

It should be emphasized that the annual growth rates presented in the table above are consistent with assumptions made in prior traffic studies conducted in the City of Oregon City, where annual traffic growth trends range between negative one percent and positive four percent.

IN-PROCESS DEVELOPMENTS

Based on our scoping conversations with the City, the following in-process developments have been identified for inclusion in the background traffic forecast for the master plan TIA:

1. The Cove Project
2. Red Soils Master Plan (final Phase 2)
3. North Beavercreek Industrial Project
4. Oregon City Operations Center

Trip assignments for the in-process developments listed above will be collected from available resources (e.g. prior traffic studies) and only those trips not yet realized from development will be accounted for. If trip information for unique time periods (e.g. Saturday midday peak hour) are not available, trip estimates will be made using standard industry resources such as the ITE Trip Generation Manual, with reasonable trip assignments that reflect available information for other peak hour periods.

TRAFFIC IMPACT ANALYSIS SCOPE

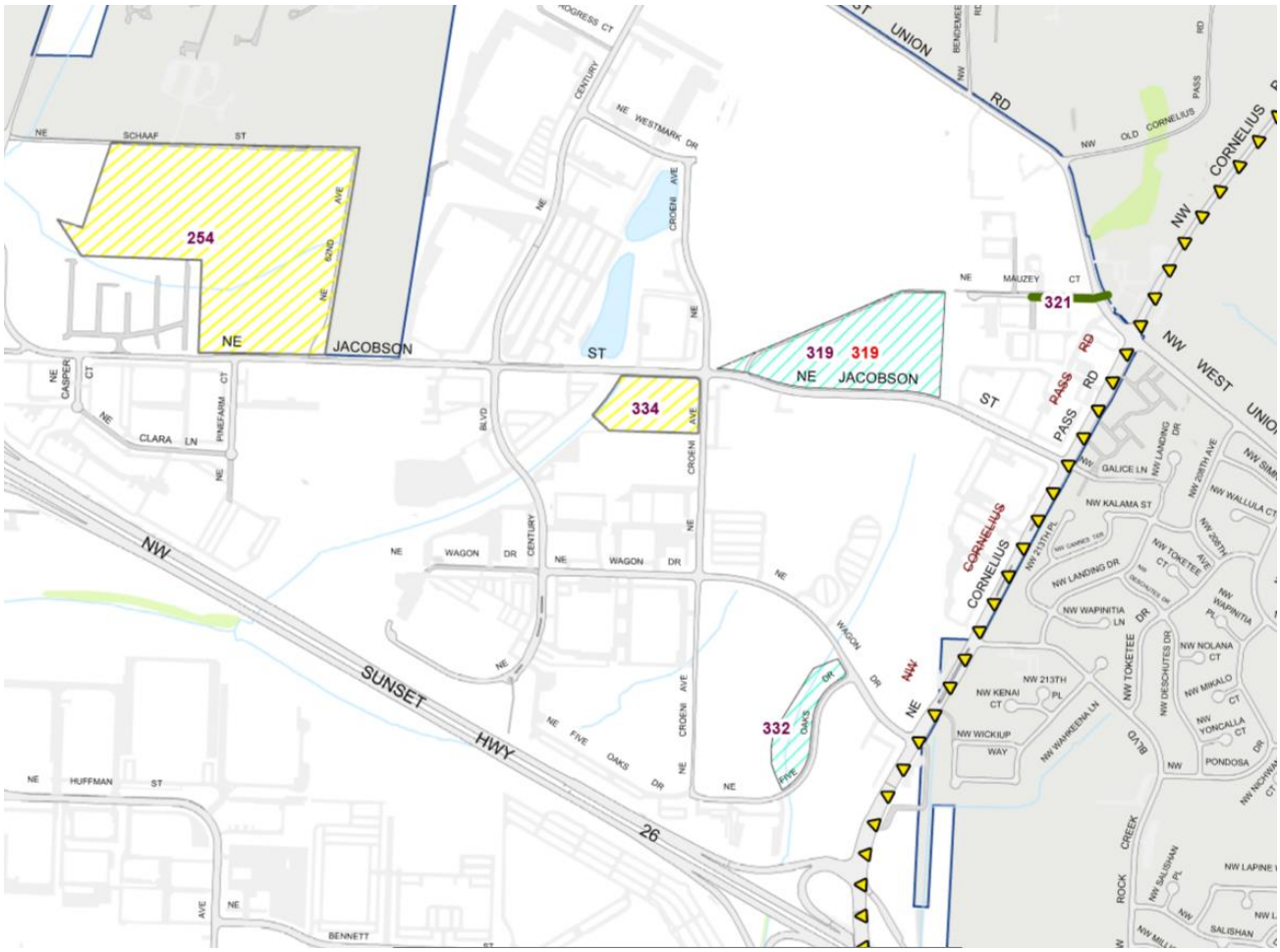
The TIA report for the proposed master plan will include an evaluation of the following items:

- Development of proxy volume estimates for all study intersections, in a manner which reflect pre-COVID 19 traffic conditions.
- Existing conditions analysis, including intersection v/c ratio, control delay, and 95th percentile queues during the weekday a.m. and p.m. peak hours, as well as the Saturday midday peak hour.
- Crash data analysis of all study intersections for the most recent five-year period listing for potential trends or deficiencies.
- Build-out year (assumed 2025) background conditions analysis, including intersection v/c ratio, control delay, and 95th percentile queues during all three peak hour analysis periods.
- Site trip generation estimates for the anticipated land uses under all three peak hour analysis periods.
- Peak hour trip distribution and assignment patterns based on the nature of the proposed uses, review of previous studies in the area, and knowledge of major local travel generators and destinations.
- Build-Out Year (assumed 2025) total traffic conditions analysis, including intersection v/c ratio, control delay, and 95th percentile queues for all three peak hour analysis periods.
- Analysis of turn lane needs and traffic signal warrants at key intersections.
- Analysis of intersection sight distance following AASHTO guidelines, where applicable at site driveways.
- Analysis of site circulation patterns and turning movement needs of large trucks at site accesses, where applicable.

We request City staff confirm our study scope assumptions. If you have any questions, please contact us at 503-228-5230.

Appendix A Historical Traffic Counts

Appendix B City's Current and Upcoming Projects Citywide Map


254
NE JACOBSON ST
319 319
NE JACOBSON ST
334
321
332
NW CORNELIUS PASS RD
NW WEST UNION
SUNSET HWY 26
NE SCHAAF ST
NE CLARA LN
NE WAGON DR
NE FIVE OAKS DR
NE HUFFMAN ST
NE BENNETT
NE CENTURY BLVD
NE CROENI AVE
NE WESTMARK DR
NE MAUZEY CT
NW GALICE LN
NW KALAMA ST
NW LANDING DR
NW WAPINITIA LN
NW TOKETEE DR
NW DESCHUTES DR
NW NOLANA CT
NW MIKALO CT
NW YONCALLA CT
NW KENAI CT
NW 213TH PL
NW WICKIUP WAY
NW WAKEENA LN
PONDOSA
NW ROCK CREEK BLVD
NW SALISHAN PL
SALISHAN

Appendix B
Traffic Count Data

Development of Covid Adjustment Factors

		AM Peak Hour (two-way flow)		
Perimeter Site Streets	**Notes**	**Adjusted Dec. 2020 Count***	**Source: Historical Count****	**% Diff Check**
Washington (north of HD driveway)	Applied 1.41 COVID adjustment factor to December counts	822	758	108%
Washington (north of Abernethy)	Applied 1.41 COVID adjustment factor to December counts	568	533	107%
Abernethy (east of Washington)	Applied 1.41 COVID factor, plus 158 through trips on Abernethy	582	582	100%
Abernethy (west of Redland)	Applied 1.41 COVID factor, plus 141 through trips on Abernethy	588	588	100%
Redland (north of Abernethy)	Applied 1.41 COVID adjustment factor to December counts	1386	1233	112%

* Using COVID adjustment factor of 1.41 for AM

** Historical counts collected by City in October 2017.

		PM Peak Hour (two-way flow)		
Perimeter Site Streets	**Notes**	**Adjusted Dec. 2020 Count***	**Source: Historical Count****	**% Diff Check**
Prairie Schooner (east of Washington)	Applied 1.12 COVID adjustment factor to December counts	697	697	100%
Washington (north of HD driveway)	Applied 1.12 COVID adjustment factor to December counts	767	770	100%
Washington (north of Abernethy)	Applied 1.12 COVID adjustment factor to December counts	726	657	111%
Abernethy (east of Washington)	Applied 1.12 COVID adjustment factor to December counts	587	589	100%
Abernethy (west of Redland)	Applied 1.12 COVID factor, plus 17 through trips on Abernethy	585	585	100%
Redland (north of Abernethy)	Applied 1.12 COVID adjustment factor to December counts	1494	1435	104%

* Using COVID adjustment factor of 1.12 for PM

** Historical counts collected by City in October 2017.

		AM Peak Hour (TEV)		
OR 213 Intersections	**Notes**	**Adjusted Dec. 2020 Count**	**Source: Historical Count***	**% Diff**
I-205 SB Ramps	Applied 1.39 COVID adjustment factor to December counts		n/a	
Clackamas River Drive	Applied 1.39 COVID adjustment factor to December counts		n/a	
Redland Road	Applied 1.39 COVID adjustment factor to December counts	4932	4952	100%
Beavercreek	Applied 1.37 COVID adjustment factor to December counts	4480	4470	100%
Molalla	Applied 1.48 COVID adjustment factor to December counts	2625	2624	100%

* Historical count collected for Redland Road on October 2019, for Beavercreek on May 2017, and for Molalla on November 2018

		PM Peak Hour (TEV)		
OR 213 Intersections	**Notes**	**Adjusted Dec. 2020 Count**	**Source: Historical Count***	**% Diff**
I-205 SB Ramps	Applied 1.17 COVID adjustment factor to December counts		n/a	
Clackamas River Drive	Applied 1.17 COVID adjustment factor to December counts		n/a	
Redland Road	Applied 1.17 COVID adjustment factor to December counts	5702	5693	100%
Beavercreek	Applied 1.13 COVID adjustment factor to December counts	5974	5984	100%
Molalla	Applied 1.17 COVID adjustment factor to December counts	3245	3246	100%

* Historical count collected for Redland Road on October 2019, for Beavercreek on May 2017, and for Molalla on November 2018

		Saturday Peak Hour		
OR 213 Intersections	**Source: Vehicle Detection Data***	**Notes**		
I-205 SB Ramps	Vehicle Detection Data Growth Rate (Dec. 2019-Dec. 2020)	Applied 1.04 COVID adjustment factor to December counts		
Clackamas River Drive	Vehicle Detection Data Growth Rate (Dec. 2019-Dec. 2020)	Applied 1.04 COVID adjustment factor to December counts		
Redland Road	Vehicle Detection Data Growth Rate (Dec. 2019-Dec. 2020)	Applied 1.04 COVID adjustment factor to December counts		
Beavercreek	Vehicle Detection Data Growth Rate (Dec. 2019-Dec. 2020)	Applied 1.04 COVID adjustment factor to December counts		
Molalla	Vehicle Detection Data Growth Rate (Dec. 2019-Dec. 2020)	Applied 1.04 COVID adjustment factor to December counts		

* Covid adjustment factor determined from ODOT traffic signal vehicle detection data

		Analysis Period		
OR 99E Intersections	**Source: Vehicle Detection Data***	**AM**	**PM**	**Saturday**
River Rd - Arlington	Vehicle Detection Data Growth Rate (Dec. 2019-Dec. 2020)	1.50	1.16	1.03
Dunes Dr.	Vehicle Detection Data Growth Rate (Dec. 2019-Dec. 2020)	1.50	1.16	1.03
I-205 SB Ramps	Vehicle Detection Data Growth Rate (Dec. 2019-Dec. 2020)	1.50	1.16	1.03
I-205 NB Ramps	Vehicle Detection Data Growth Rate (Dec. 2019-Dec. 2020)	1.50	1.16	1.03
14th St.	Vehicle Detection Data Growth Rate (Dec. 2019-Dec. 2020)	1.50	1.16	1.03
12th St.	Vehicle Detection Data Growth Rate (Dec. 2019-Dec. 2020)	1.50	1.16	1.03
10th St.	Vehicle Detection Data Growth Rate (Dec. 2019-Dec. 2020)	1.50	1.16	1.03

* Covid adjustment factor determined from ODOT traffic signal vehicle detection data

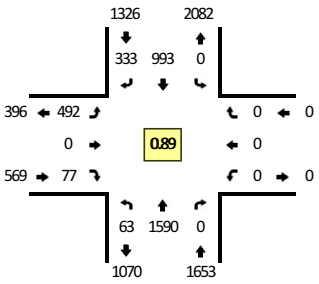
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering

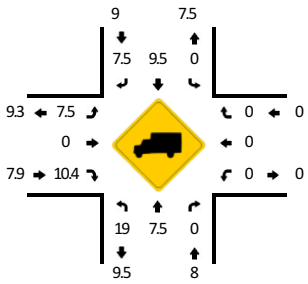
LOCATION: Cascade Hwy -- Redland Rd
CITY/STATE: Oregon City, OR

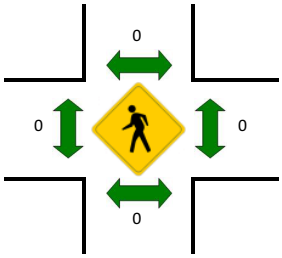
QC JOB #: 15328601
DATE: Wed, Dec 2 2020

Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

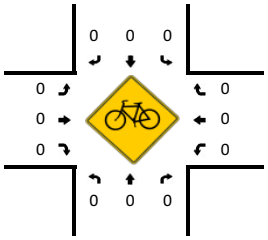


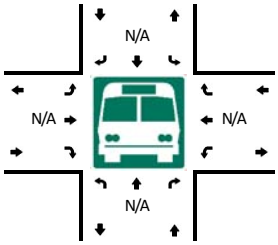


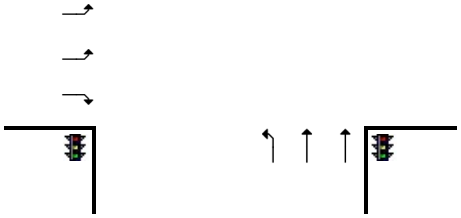


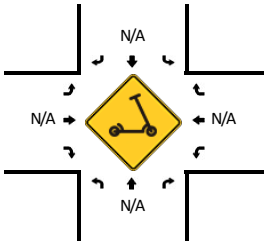












5-Min Count Period Beginning At	Cascade Hwy (Northbound)				Cascade Hwy (Southbound)				Redland Rd (Eastbound)				Redland Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	1	103	0	0	0	57	18	0	37	0	5	0	0	0	0	0	221	
7:05 AM	3	90	0	0	0	45	19	0	31	0	4	0	0	0	0	0	192	
7:10 AM	4	117	0	0	0	70	16	0	45	0	4	0	0	0	0	0	256	
7:15 AM	1	108	0	0	0	67	17	0	37	0	2	0	0	0	0	0	232	
7:20 AM	1	98	0	0	0	78	20	0	55	0	6	0	0	0	0	0	258	
7:25 AM	5	107	0	0	0	77	28	0	30	0	4	0	0	0	0	0	251	
7:30 AM	5	162	0	0	0	84	16	0	49	0	6	0	0	0	0	0	322	
7:35 AM	3	192	0	0	0	69	31	0	57	0	8	0	0	0	0	0	360	
7:40 AM	6	141	0	0	0	79	31	0	53	0	7	0	0	0	0	0	317	
7:45 AM	9	123	0	0	0	105	33	0	42	0	5	0	0	0	0	0	317	
7:50 AM	6	139	0	0	0	72	43	0	28	0	6	0	0	0	0	0	294	
7:55 AM	5	112	0	0	0	78	16	0	54	0	13	0	0	0	0	0	278	3298
8:00 AM	7	111	0	0	0	100	30	0	40	0	4	0	0	0	0	0	292	3369
8:05 AM	3	125	0	0	0	83	21	0	35	0	6	0	0	0	0	0	273	3450
8:10 AM	5	121	0	0	0	61	30	0	37	0	5	0	0	0	0	0	259	3453
8:15 AM	6	136	0	0	0	99	26	0	36	0	9	0	0	0	0	0	312	3533
8:20 AM	3	121	0	0	0	86	28	0	31	0	4	0	0	0	0	0	273	3548
8:25 AM	3	100	0	0	0	80	25	0	48	0	4	0	0	0	0	0	260	3557
8:30 AM	5	128	0	0	0	72	26	0	34	0	7	0	0	0	0	0	272	3507
8:35 AM	2	115	0	0	0	102	24	0	25	0	9	0	0	0	0	0	277	3424
8:40 AM	1	118	0	0	0	78	27	0	39	0	13	0	0	0	0	0	276	3383
8:45 AM	12	127	0	0	0	84	29	0	29	0	3	0	0	0	0	0	284	3350
8:50 AM	4	105	0	0	0	99	25	0	28	0	6	0	0	0	0	0	267	3323
8:55 AM	5	94	0	0	0	89	27	0	28	0	7	0	0	0	0	0	250	3295

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	56	1980	0	0	0	928	312	0	636	0	84	0	0	0	0	0	3996
Heavy Trucks	16	104	0		0	100	16		20	0	4		0	0	0		260
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

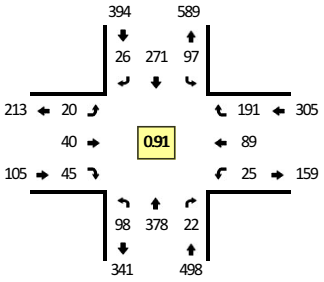
Type of peak hour being reported: User-Defined

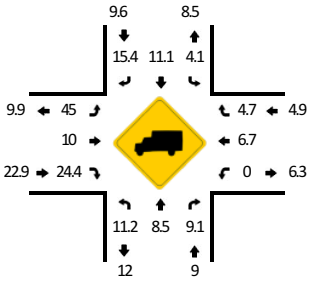
Method for determining peak hour: Total Entering

LOCATION: Redland Rd -- Abernethy Rd/Holcomb Blvd
CITY/STATE: Oregon City, OR

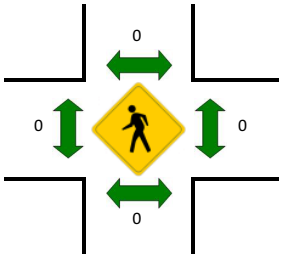
QC JOB #: 15328604
DATE: Wed, Dec 2 2020

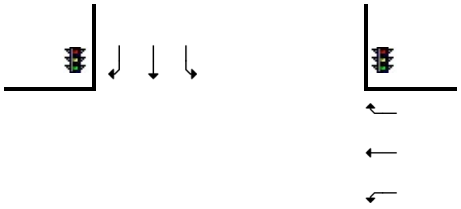
Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:35 AM -- 7:50 AM

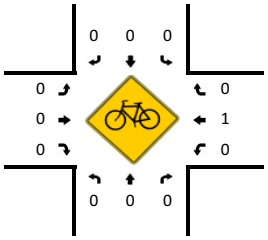


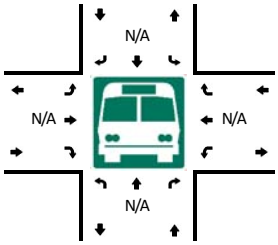


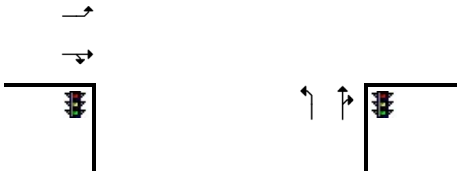
Quality Counts
DATA THAT DRIVES COMMUNITIES

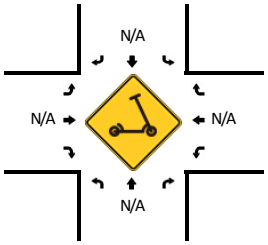












5-Min Count Period Beginning At	Redland Rd (Northbound)				Redland Rd (Southbound)				Abernethy Rd/Holcomb Blvd (Eastbound)				Abernethy Rd/Holcomb Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	9	26	0	0	4	12	2	0	0	1	3	0	0	2	14	0	73	
7:05 AM	8	21	1	0	5	15	2	0	1	0	4	0	2	4	10	0	73	
7:10 AM	7	39	0	0	4	10	3	0	4	2	1	0	1	5	17	0	93	
7:15 AM	7	31	1	0	2	20	0	0	2	2	2	0	1	6	13	0	87	
7:20 AM	7	27	2	0	3	15	2	0	2	3	3	0	2	9	19	0	94	
7:25 AM	12	31	2	0	6	22	2	0	2	2	3	0	1	5	6	0	94	
7:30 AM	10	45	0	0	2	18	3	0	1	4	1	0	2	5	20	0	111	
7:35 AM	13	46	2	0	6	24	1	0	0	4	2	0	1	9	16	0	124	
7:40 AM	8	34	2	0	10	27	1	0	1	3	2	0	2	10	17	0	117	
7:45 AM	9	26	2	0	10	27	4	0	1	5	3	0	5	4	20	0	116	
7:50 AM	9	31	3	0	15	34	1	0	0	3	3	0	3	5	12	0	119	
7:55 AM	4	38	5	0	7	13	2	0	4	5	6	0	3	8	22	0	117	1218
8:00 AM	4	26	0	0	15	23	2	0	2	1	3	0	2	5	18	0	101	1246
8:05 AM	2	23	3	0	2	21	1	0	3	1	6	0	2	14	22	0	100	1273
8:10 AM	14	20	0	0	9	21	1	0	0	4	4	0	3	8	12	0	96	1276
8:15 AM	3	33	1	0	6	23	7	0	2	4	8	0	0	7	15	0	109	1298
8:20 AM	10	25	2	0	9	18	1	0	4	4	4	0	1	9	11	0	98	1302
8:25 AM	8	27	3	0	4	24	1	0	1	3	4	0	2	8	15	0	100	1308
8:30 AM	5	27	2	0	5	21	3	0	0	5	4	0	2	6	17	0	97	1294
8:35 AM	9	22	0	0	7	18	1	0	3	6	6	0	1	5	12	0	90	1260
8:40 AM	10	25	2	0	3	22	2	0	0	5	4	0	0	13	21	0	107	1250
8:45 AM	7	20	1	0	11	27	1	0	0	3	2	0	2	11	12	0	97	1231
8:50 AM	9	26	2	0	6	25	1	0	2	6	2	0	3	8	7	0	97	1209
8:55 AM	2	23	3	0	9	19	4	0	3	3	1	0	4	11	16	0	98	1190

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	120	424	24	0	104	312	24	0	8	48	28	0	32	92	212	0	1428
Heavy Trucks	16	36	8		0	40	4		0	0	0		0	4	4		112
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	4	0		4
Scooters																	

Comments:

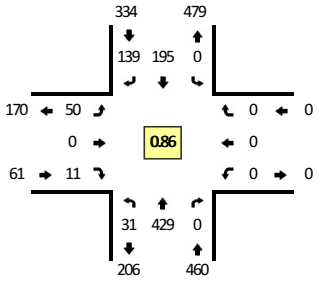
Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

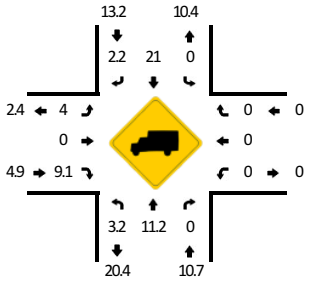
LOCATION: S Redland Rd -- S Anchor Way
CITY/STATE: Oregon City, OR

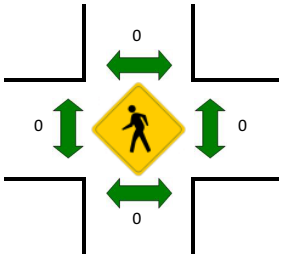
QC JOB #: 15328607
DATE: Wed, Dec 2 2020

Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

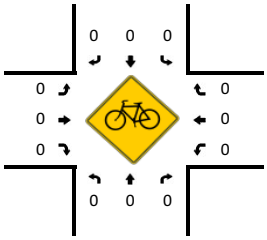


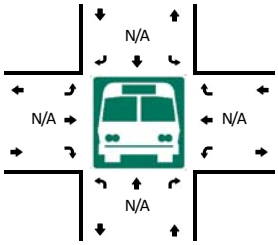




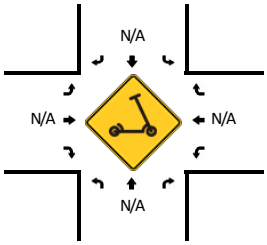












5-Min Count Period Beginning At	S Redland Rd (Northbound)				S Redland Rd (Southbound)				S Anchor Way (Eastbound)				S Anchor Way (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	3	30	0	0	0	11	5	0	3	0	0	0	0	0	0	0	52	
7:05 AM	1	26	0	0	0	14	5	0	5	0	0	0	0	0	0	0	51	
7:10 AM	1	34	0	0	0	7	6	0	7	0	0	0	0	0	0	0	55	
7:15 AM	4	35	0	0	0	11	9	0	5	0	1	0	0	0	0	0	65	
7:20 AM	5	37	0	0	0	9	9	0	3	0	0	0	0	0	0	0	63	
7:25 AM	1	34	0	0	0	18	9	0	3	0	1	0	0	0	0	0	66	
7:30 AM	4	51	0	0	0	7	12	0	3	0	2	0	0	0	0	0	79	
7:35 AM	3	52	0	0	0	14	15	0	4	0	1	0	0	0	0	0	89	
7:40 AM	6	44	0	0	0	11	16	0	3	0	0	0	0	0	0	0	80	
7:45 AM	2	31	0	0	0	24	6	0	4	0	0	0	0	0	0	0	67	
7:50 AM	3	43	0	0	0	17	19	0	5	0	2	0	0	0	0	0	89	
7:55 AM	5	32	0	0	0	17	7	0	8	0	1	0	0	0	0	0	70	826
8:00 AM	2	22	0	0	0	16	12	0	5	0	0	0	0	0	0	0	57	831
8:05 AM	1	30	0	0	0	18	12	0	2	0	1	0	0	0	0	0	64	844
8:10 AM	2	25	0	0	0	18	9	0	3	0	2	0	0	0	0	0	59	848
8:15 AM	0	28	0	0	0	20	10	0	8	0	1	0	0	0	0	0	67	850
8:20 AM	2	37	0	0	0	15	12	0	2	0	0	0	0	0	0	0	68	855
8:25 AM	3	30	0	0	0	17	12	0	8	0	1	0	0	0	0	0	71	860
8:30 AM	2	27	0	0	0	12	13	0	3	0	4	0	0	0	0	0	61	842
8:35 AM	5	25	0	0	0	22	2	0	7	0	1	1	0	0	0	0	63	816
8:40 AM	3	25	0	0	0	11	9	0	6	0	1	0	0	0	0	0	55	791
8:45 AM	3	23	0	0	0	20	9	0	7	0	4	0	0	0	0	0	66	790
8:50 AM	4	27	0	0	0	16	15	0	10	0	3	0	0	0	0	0	75	776
8:55 AM	0	21	0	0	0	18	9	0	7	0	0	0	0	0	0	0	55	761

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	52	588	0	0	0	128	172	0	40	0	12	0	0	0	0	0	992
Heavy Trucks	0	48	0		0	24	0		0	0	0		0	0	0		72
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

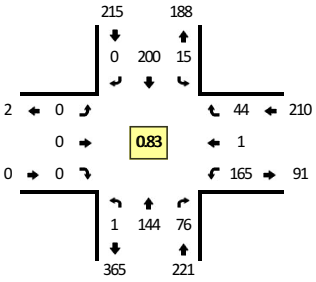
Type of peak hour being reported: User-Defined

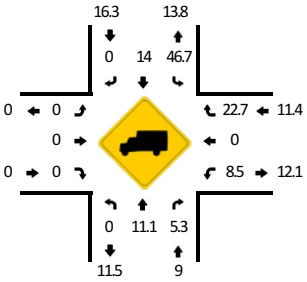
Method for determining peak hour: Total Entering

LOCATION: Washington St -- 17th St/Abernethy Rd
CITY/STATE: Oregon City, OR

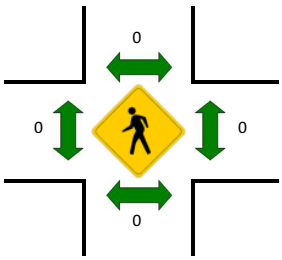
QC JOB #: 15328610
DATE: Wed, Dec 2 2020

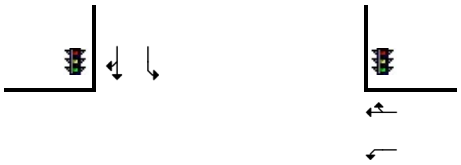
Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:40 AM -- 7:55 AM

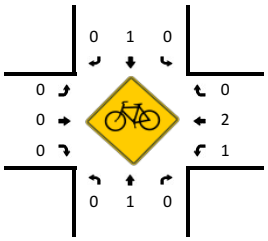


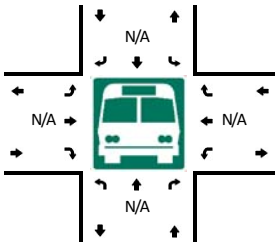


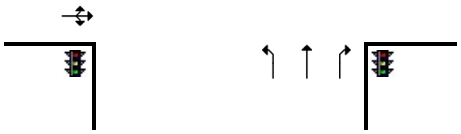
Quality Counts
DATA THAT DRIVES COMMUNITIES

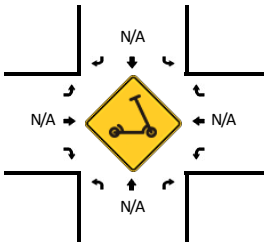












5-Min Count Period Beginning At	Washington St (Northbound)				Washington St (Southbound)				17th St/Abernethy Rd (Eastbound)				17th St/Abernethy Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	8	2	0	0	12	0	0	0	0	0	0	9	0	1	0	32	
7:05 AM	0	5	2	0	1	12	0	0	0	0	0	0	15	0	2	0	37	
7:10 AM	0	8	2	0	1	14	0	0	0	0	0	0	18	0	2	0	45	
7:15 AM	0	14	1	0	2	9	0	0	0	0	0	0	11	0	2	0	39	
7:20 AM	0	8	7	0	1	11	0	0	0	0	0	0	17	0	0	0	44	
7:25 AM	0	19	3	0	0	13	0	0	0	0	0	0	13	1	4	0	53	
7:30 AM	0	13	4	0	0	10	0	0	0	0	0	0	13	0	2	0	42	
7:35 AM	0	8	6	0	0	18	0	0	0	0	0	0	21	0	2	0	55	
7:40 AM	0	9	5	0	0	22	0	0	0	0	0	0	20	0	5	0	61	
7:45 AM	0	12	9	0	2	27	0	0	0	0	0	0	11	0	5	0	66	
7:50 AM	0	27	6	0	0	19	0	0	0	0	0	0	13	0	2	0	67	
7:55 AM	0	19	7	0	4	18	0	0	0	0	0	0	9	0	4	0	61	602
8:00 AM	1	7	7	0	0	17	0	0	0	0	0	0	9	0	4	0	45	615
8:05 AM	0	6	8	0	3	10	0	0	0	0	0	0	14	0	5	0	46	624
8:10 AM	0	7	4	0	2	17	0	0	0	0	0	0	17	0	5	0	52	631
8:15 AM	0	7	11	0	3	21	0	0	0	0	0	0	12	0	4	0	58	650
8:20 AM	0	10	6	0	1	8	0	0	0	0	0	0	13	0	2	0	40	646
8:25 AM	0	5	10	0	2	14	0	0	0	0	0	0	22	0	2	0	55	648
8:30 AM	1	9	11	0	2	16	0	0	0	0	0	0	13	0	2	0	54	660
8:35 AM	0	12	10	0	2	19	0	0	0	0	0	0	13	2	1	0	59	664
8:40 AM	1	14	6	0	2	12	0	0	0	0	0	0	21	0	6	0	62	665
8:45 AM	0	11	6	0	0	18	0	0	0	0	0	0	17	0	3	0	55	654
8:50 AM	0	9	5	0	0	19	0	0	0	0	0	0	14	0	5	0	52	639
8:55 AM	0	13	3	0	0	12	0	0	0	0	0	0	13	0	4	0	45	623

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	192	80	0	8	272	0	0	0	0	0	0	176	0	48	0	776
Heavy Trucks	0	8	4		0	48	0		0	0	0		12	0	12		84
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		4	0	0		4
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

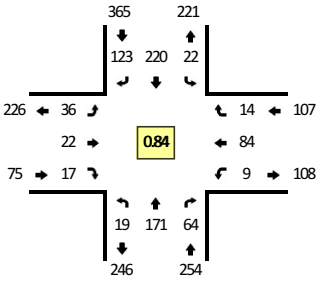
Type of peak hour being reported: User-Defined

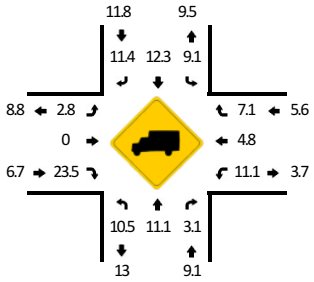
Method for determining peak hour: Total Entering

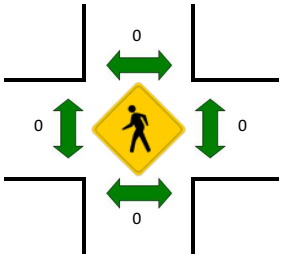
LOCATION: Washington St -- 15th St
CITY/STATE: Oregon City, OR

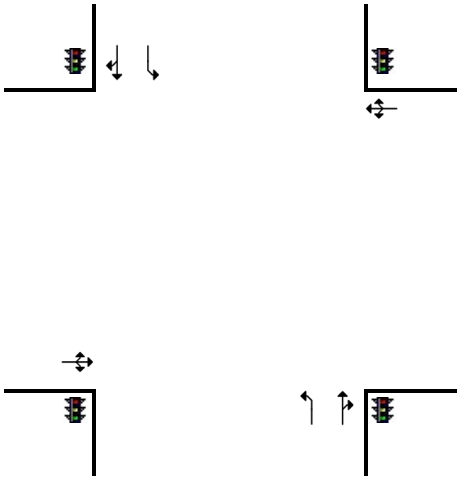
QC JOB #: 15328613
DATE: Wed, Dec 2 2020

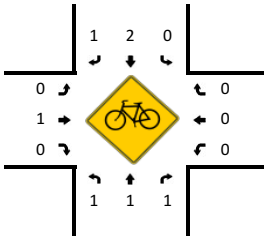
Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:40 AM -- 7:55 AM

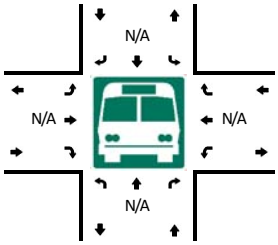


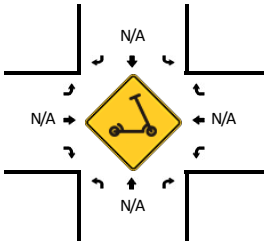












5-Min Count Period Beginning At	Washington St (Northbound)				Washington St (Southbound)				15th St (Eastbound)				15th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	6	2	0	1	15	6	0	2	1	1	0	1	4	0	0	39	
7:05 AM	1	6	5	0	2	10	10	0	1	2	1	0	1	3	1	0	43	
7:10 AM	2	8	2	0	3	21	10	0	1	2	3	0	0	5	1	0	58	
7:15 AM	3	11	4	0	0	11	10	0	0	0	0	0	0	3	1	0	43	
7:20 AM	2	7	7	0	1	15	5	0	6	0	0	0	1	9	3	0	56	
7:25 AM	2	20	1	0	1	17	12	0	1	3	1	0	1	6	1	0	66	
7:30 AM	4	13	10	0	0	14	8	0	2	1	3	0	0	11	1	0	67	
7:35 AM	2	8	2	0	1	24	13	0	4	0	1	0	1	14	3	0	73	
7:40 AM	2	10	11	0	2	26	13	0	2	3	2	0	2	8	0	0	81	
7:45 AM	0	20	10	0	3	21	11	0	6	5	1	0	0	5	1	0	83	
7:50 AM	0	23	4	0	1	24	11	0	3	1	0	0	1	5	2	0	75	
7:55 AM	0	26	3	0	1	21	8	0	1	4	1	0	1	6	1	0	73	757
8:00 AM	3	9	2	0	3	10	10	0	3	0	2	0	1	7	1	0	51	769
8:05 AM	1	10	4	0	1	12	8	0	4	0	2	0	1	4	1	0	48	774
8:10 AM	3	10	5	0	3	19	14	0	4	2	1	0	0	9	0	0	70	786
8:15 AM	1	9	8	0	5	18	8	0	2	0	0	0	1	3	2	0	57	800
8:20 AM	1	13	4	0	1	14	7	0	4	3	3	0	0	6	1	0	57	801
8:25 AM	1	10	9	0	2	18	15	0	2	3	3	0	0	8	3	0	74	809
8:30 AM	1	19	6	0	3	22	5	0	3	1	1	0	0	7	2	0	70	812
8:35 AM	1	12	2	0	1	22	8	0	5	1	1	0	0	6	2	0	61	800
8:40 AM	2	19	2	0	3	22	9	0	1	2	3	0	0	6	2	0	71	790
8:45 AM	1	15	6	0	4	21	14	0	4	2	1	0	0	8	0	0	76	783
8:50 AM	3	10	6	0	8	17	7	0	2	2	1	0	2	11	2	0	71	779
8:55 AM	3	13	7	0	1	16	7	0	2	2	1	0	1	7	0	0	60	766

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	8	212	100	0	24	284	140	0	44	36	12	0	12	72	12	0	956
Heavy Trucks	0	8	4		4	36	16		4	0	0		4	0	0		76
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	4	0		0	0	0		0	0	0		4
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

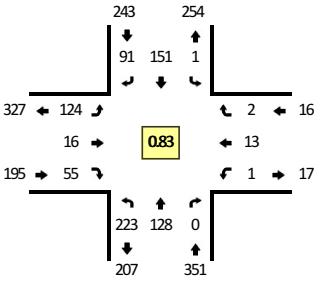
Type of peak hour being reported: User-Defined

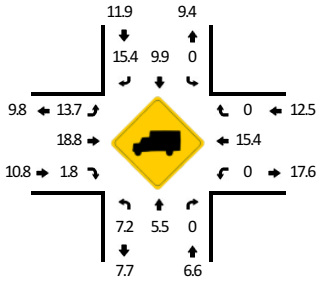
Method for determining peak hour: Total Entering

LOCATION: Washington St -- 14th St
CITY/STATE: Oregon City, OR

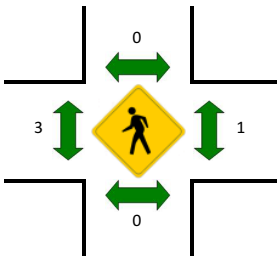
QC JOB #: 15328616
DATE: Wed, Dec 2 2020

Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:40 AM -- 7:55 AM

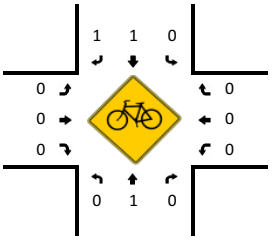


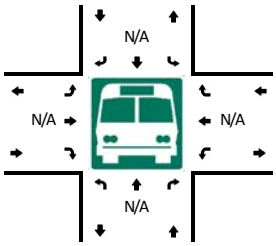


Quality Counts
DATA THAT DRIVES COMMUNITIES

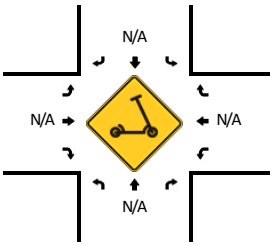












5-Min Count Period Beginning At	Washington St (Northbound)				Washington St (Southbound)				14th St (Eastbound)				14th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	10	4	0	0	0	7	8	0	5	0	5	0	0	0	0	0	39	
7:05 AM	16	6	1	0	0	4	12	0	7	0	1	0	0	0	0	0	47	
7:10 AM	14	7	0	0	0	11	12	0	5	0	3	0	0	0	0	0	52	
7:15 AM	28	9	0	0	0	7	3	0	9	1	4	0	0	4	0	0	65	
7:20 AM	22	6	0	0	0	7	10	0	12	0	3	0	0	2	0	0	62	
7:25 AM	27	17	0	0	0	11	9	0	8	1	10	0	0	3	0	0	86	
7:30 AM	31	12	0	0	0	9	5	0	15	1	1	0	0	0	0	0	74	
7:35 AM	24	5	0	0	0	16	12	0	7	2	6	0	0	4	0	0	76	
7:40 AM	21	10	0	0	0	16	13	0	12	0	3	0	0	0	0	0	75	
7:45 AM	26	12	0	0	0	14	8	0	18	1	9	0	0	0	1	0	89	
7:50 AM	15	17	0	0	1	18	7	0	11	3	4	0	0	2	0	0	78	
7:55 AM	7	15	0	0	0	8	12	0	11	2	4	0	0	1	0	0	60	803
8:00 AM	18	7	0	0	0	11	3	0	7	2	3	0	0	1	0	0	52	816
8:05 AM	16	9	0	0	0	8	3	0	7	0	6	0	0	0	0	0	49	818
8:10 AM	13	11	0	0	0	16	5	0	8	0	4	0	0	2	0	0	59	825
8:15 AM	16	4	0	0	0	14	6	0	13	4	2	0	1	0	0	0	60	820
8:20 AM	9	9	0	0	0	10	8	0	7	0	3	0	0	0	1	0	47	805
8:25 AM	18	9	0	0	1	10	9	0	12	0	5	0	0	1	0	0	65	784
8:30 AM	11	15	1	0	0	7	13	0	11	1	1	0	0	2	0	0	62	772
8:35 AM	15	7	0	0	0	18	5	0	9	0	2	0	0	1	0	0	57	753
8:40 AM	13	9	0	0	0	13	11	0	13	1	9	0	0	0	0	0	69	747
8:45 AM	8	5	1	0	0	14	10	0	17	2	3	0	0	1	0	0	61	719
8:50 AM	11	13	0	0	0	12	7	0	11	1	6	0	0	0	0	0	61	702
8:55 AM	5	8	4	0	0	10	7	0	9	4	2	0	0	1	1	0	51	693

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	248	156	0	0	4	192	112	0	164	16	64	0	0	8	4	0	968
Heavy Trucks	12	8	0		0	20	16		8	0	4		0	0	0		68
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	4	0		0	0	0		0	0	0		4
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

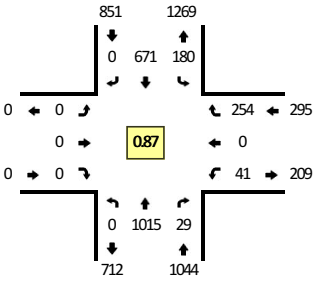
Type of peak hour being reported: User-Defined

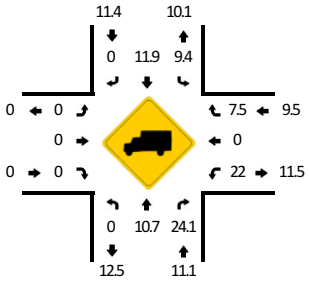
Method for determining peak hour: Total Entering

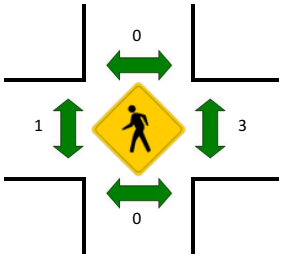
LOCATION: McLoughlin Blvd -- 14th St
CITY/STATE: Oregon City, OR

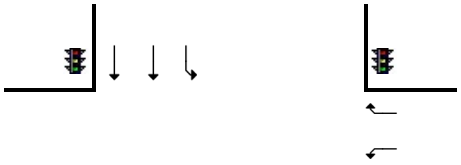
QC JOB #: 15328619
DATE: Wed, Dec 2 2020

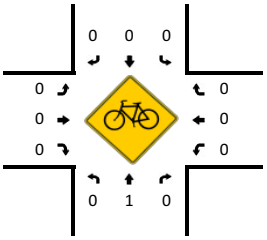
Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:35 AM -- 7:50 AM

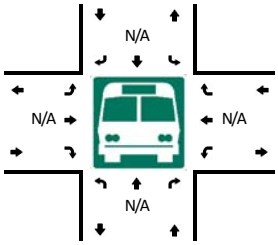




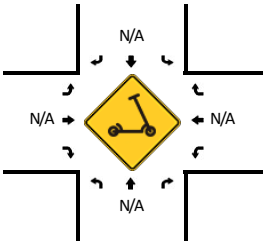












5-Min Count Period Beginning At	McLoughlin Blvd (Northbound)				McLoughlin Blvd (Southbound)				14th St (Eastbound)				14th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	67	0	0	10	25	0	0	0	0	0	0	5	0	10	0	117	
7:05 AM	0	89	3	0	11	42	0	1	0	0	0	0	5	0	20	0	171	
7:10 AM	0	86	1	0	9	35	0	0	0	0	0	0	4	0	19	0	154	
7:15 AM	0	79	1	0	13	38	0	0	0	0	0	0	2	0	24	0	157	
7:20 AM	0	81	1	0	21	48	0	0	0	0	0	0	4	0	31	0	186	
7:25 AM	0	101	2	0	17	47	0	0	0	0	0	0	9	0	29	0	205	
7:30 AM	0	108	4	0	10	40	0	0	0	0	0	0	1	0	22	0	185	
7:35 AM	0	92	1	0	14	61	0	0	0	0	0	0	3	0	34	0	205	
7:40 AM	0	93	0	0	20	63	0	0	0	0	0	0	6	0	27	0	209	
7:45 AM	0	111	1	0	21	57	0	0	0	0	0	0	2	0	23	0	215	
7:50 AM	0	81	4	0	18	49	0	0	0	0	0	0	6	0	21	0	179	
7:55 AM	0	79	5	0	14	58	0	0	0	0	0	0	6	0	12	0	174	2157
8:00 AM	0	78	3	0	6	58	0	0	0	0	0	0	2	0	16	0	163	2203
8:05 AM	0	56	1	0	12	59	0	0	0	0	0	0	3	0	20	0	151	2183
8:10 AM	0	57	3	0	15	67	0	0	0	0	0	0	1	0	16	0	159	2188
8:15 AM	0	83	0	0	17	58	0	0	0	0	0	0	1	0	14	0	173	2204
8:20 AM	0	76	5	0	16	54	0	0	0	0	0	0	1	0	20	0	172	2190
8:25 AM	0	74	2	0	15	55	0	0	0	0	0	0	4	0	23	0	173	2158
8:30 AM	0	62	2	0	11	45	0	0	0	0	0	0	4	0	17	0	141	2114
8:35 AM	0	74	6	0	8	47	0	0	0	0	0	0	6	0	20	0	161	2070
8:40 AM	0	63	2	0	22	56	0	0	0	0	0	0	5	0	8	0	156	2017
8:45 AM	0	61	4	0	21	39	0	0	0	0	0	0	4	0	21	0	150	1952
8:50 AM	0	57	2	0	11	58	0	0	0	0	0	0	5	0	14	0	147	1920
8:55 AM	0	55	0	0	22	69	0	0	0	0	0	0	7	0	6	0	159	1905

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1184	8	0	220	724	0	0	0	0	0	0	44	0	336	0	2516
Heavy Trucks	0	132	4		16	68	0		0	0	0		4	0	32		256
Buses																	
Pedestrians		0				0				4				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

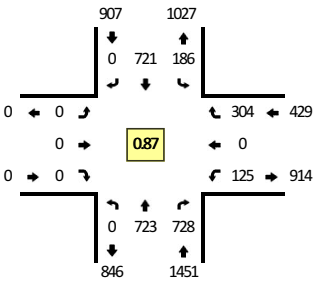
Type of peak hour being reported: User-Defined

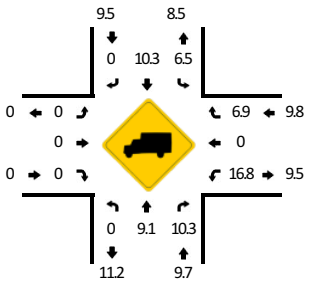
Method for determining peak hour: Total Entering

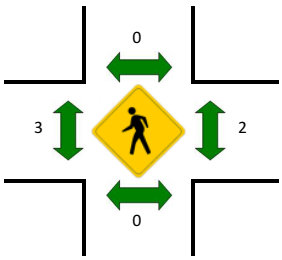
LOCATION: McLoughlin Blvd -- I-205 NB Off-Ramp
CITY/STATE: Oregon City, OR

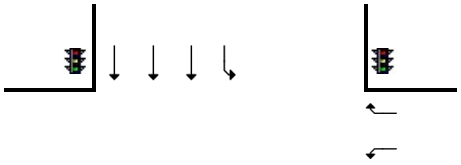
QC JOB #: 15328622
DATE: Wed, Dec 2 2020

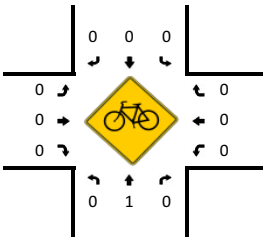
Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:35 AM -- 7:50 AM

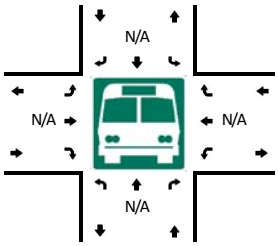


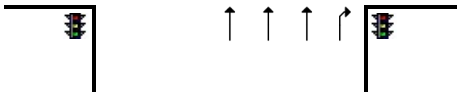


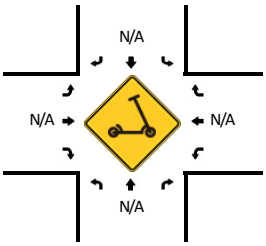












5-Min Count Period Beginning At	McLoughlin Blvd (Northbound)				McLoughlin Blvd (Southbound)				I-205 NB Off-Ramp (Eastbound)				I-205 NB Off-Ramp (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	38	47	0	6	35	0	0	0	0	0	0	4	0	12	0	142	
7:05 AM	0	60	62	0	11	51	0	0	0	0	0	0	4	0	19	0	207	
7:10 AM	0	47	64	0	12	34	0	0	0	0	0	0	5	0	21	0	183	
7:15 AM	0	62	63	0	15	49	0	0	0	0	0	0	10	0	13	0	212	
7:20 AM	0	59	60	0	12	47	0	1	0	0	0	0	12	0	23	0	214	
7:25 AM	0	63	68	0	20	59	0	0	0	0	0	0	9	0	20	0	239	
7:30 AM	0	74	80	0	15	44	0	0	0	0	0	0	7	0	23	0	243	
7:35 AM	0	79	82	0	17	65	0	0	0	0	0	0	8	0	27	0	278	
7:40 AM	0	75	54	0	19	66	0	0	0	0	0	0	12	0	33	0	259	
7:45 AM	0	64	77	0	16	62	0	0	0	0	0	0	13	0	28	0	260	
7:50 AM	0	52	69	0	16	72	0	0	0	0	0	0	7	0	34	0	250	
7:55 AM	0	49	55	0	15	48	0	0	0	0	0	0	10	0	24	0	201	2688
8:00 AM	0	59	56	0	12	65	0	0	0	0	0	0	5	0	18	0	215	2761
8:05 AM	0	50	41	0	13	59	0	0	0	0	0	0	17	0	19	0	199	2753
8:10 AM	0	47	37	0	21	57	0	0	0	0	0	0	17	0	30	0	209	2779
8:15 AM	0	53	50	0	11	60	0	0	0	0	0	0	15	0	25	0	214	2781
8:20 AM	0	58	59	0	11	64	0	0	0	0	0	0	5	0	23	0	220	2787
8:25 AM	0	51	49	0	24	52	0	0	0	0	0	0	15	0	26	0	217	2765
8:30 AM	0	55	45	0	21	54	0	0	0	0	0	0	5	0	31	0	211	2733
8:35 AM	0	54	59	0	11	58	0	0	0	0	0	0	6	0	27	0	215	2670
8:40 AM	0	49	31	0	27	58	0	0	0	0	0	0	7	0	23	0	195	2606
8:45 AM	0	52	43	0	7	57	0	0	0	0	0	0	7	0	25	0	191	2537
8:50 AM	0	50	43	0	16	75	0	0	0	0	0	0	3	0	27	0	214	2501
8:55 AM	0	47	31	0	21	74	0	0	0	0	0	0	7	0	39	0	219	2519

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	872	852	0	208	772	0	0	0	0	0	0	132	0	352	0	3188
Heavy Trucks	0	80	72		16	68	0		0	0	0		12	0	12		260
Buses																	
Pedestrians		0				0				8				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

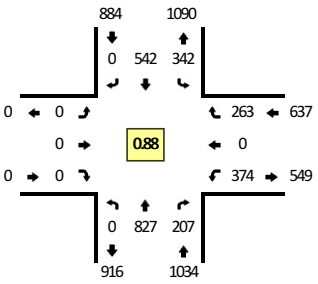
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering

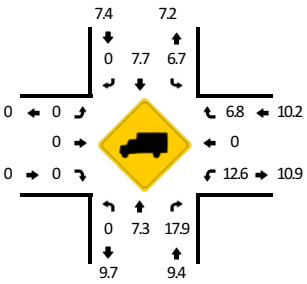
LOCATION: McLoughlin Blvd -- I-205 SB Ramps
CITY/STATE: Oregon City, OR

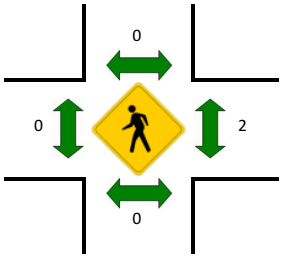
QC JOB #: 15328625
DATE: Wed, Dec 2 2020

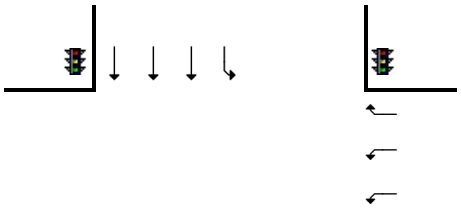
Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:40 AM -- 7:55 AM

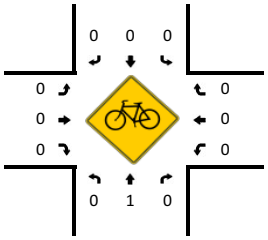


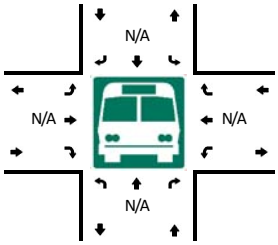


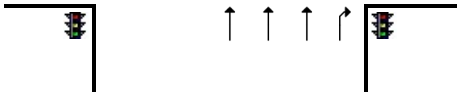


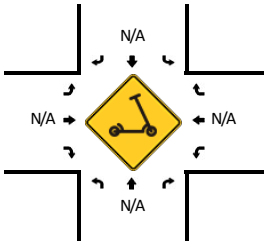












5-Min Count Period Beginning At	McLoughlin Blvd (Northbound)				McLoughlin Blvd (Southbound)				I-205 SB Ramps (Eastbound)				I-205 SB Ramps (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	31	10	0	29	21	0	0	0	0	0	0	25	0	18	0	134	
7:05 AM	0	65	25	0	21	32	0	0	0	0	0	0	21	0	14	0	178	
7:10 AM	0	54	15	0	30	38	0	0	0	0	0	0	13	0	17	0	167	
7:15 AM	0	44	18	0	38	46	0	0	0	0	0	0	23	0	16	0	185	
7:20 AM	0	79	20	0	23	42	0	0	0	0	0	0	15	0	11	0	190	
7:25 AM	0	67	19	0	42	45	0	0	0	0	0	0	27	0	21	0	221	
7:30 AM	0	61	18	0	28	39	0	0	0	0	0	0	31	0	17	0	194	
7:35 AM	0	87	29	0	30	50	0	0	0	0	0	0	25	0	14	0	235	
7:40 AM	0	85	29	0	39	49	0	0	0	0	0	0	36	0	23	0	261	
7:45 AM	0	67	15	0	29	56	0	0	0	0	0	0	33	0	26	0	226	
7:50 AM	0	92	13	0	33	50	0	0	0	0	0	0	35	0	19	0	242	
7:55 AM	0	52	18	0	35	38	0	0	0	0	0	0	26	0	27	0	196	2429
8:00 AM	0	54	11	0	14	43	0	0	0	0	0	0	36	0	18	0	176	2471
8:05 AM	0	69	15	0	19	35	0	0	0	0	0	0	31	0	17	0	186	2479
8:10 AM	0	65	11	0	27	57	0	0	0	0	0	0	27	0	28	0	215	2527
8:15 AM	0	51	12	0	25	32	0	0	0	0	0	0	41	0	27	0	188	2530
8:20 AM	0	77	17	0	21	48	0	0	0	0	0	0	26	0	26	0	215	2555
8:25 AM	0	61	14	0	24	49	0	0	0	0	0	0	23	0	28	0	199	2533
8:30 AM	0	60	15	0	36	51	0	0	0	0	0	0	32	0	24	0	218	2557
8:35 AM	0	80	10	0	36	54	0	0	0	0	0	0	18	0	30	0	228	2550
8:40 AM	0	63	11	0	48	56	0	0	0	0	0	0	21	0	26	0	225	2514
8:45 AM	0	59	13	0	20	41	0	0	0	0	0	0	32	0	20	0	185	2473
8:50 AM	0	79	8	0	21	45	0	0	0	0	0	0	40	0	24	0	217	2448
8:55 AM	0	77	8	0	24	56	0	0	0	0	0	0	32	0	39	0	236	2488

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	976	228	0	404	620	0	0	0	0	0	0	416	0	272	0	2916
Heavy Trucks	0	76	44		28	40	0		0	0	0		48	0	20		256
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

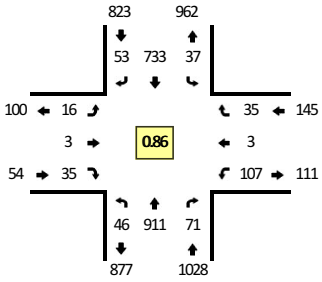
Type of peak hour being reported: User-Defined

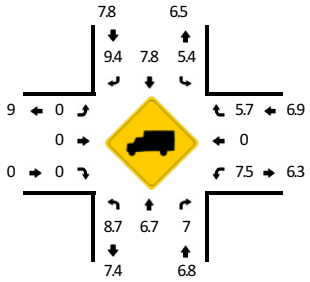
Method for determining peak hour: Total Entering

LOCATION: McLoughlin Blvd -- Dunes Dr
CITY/STATE: Oregon City, OR

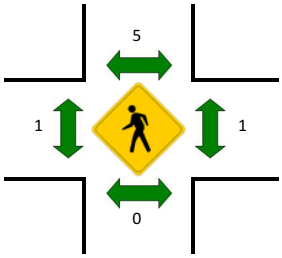
QC JOB #: 15328628
DATE: Wed, Dec 2 2020

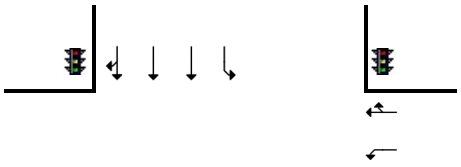
Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:40 AM -- 7:55 AM

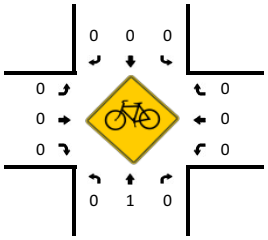


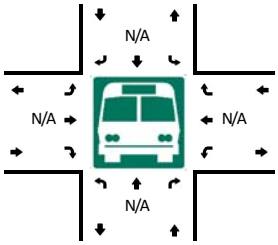


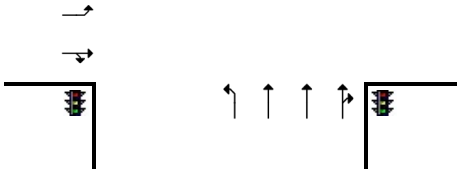
Quality Counts
DATA THAT DRIVES COMMUNITIES

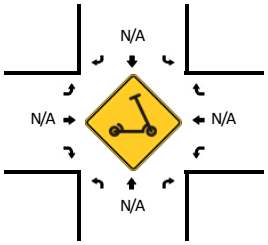












5-Min Count Period Beginning At	McLoughlin Blvd (Northbound)				McLoughlin Blvd (Southbound)				Dunes Dr (Eastbound)				Dunes Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	1	36	4	0	2	49	3	0	2	1	2	0	4	0	2	0	106	
7:05 AM	2	67	2	0	1	55	4	0	1	0	2	0	2	0	2	0	138	
7:10 AM	3	60	3	1	3	50	1	0	0	0	4	0	7	0	2	0	134	
7:15 AM	1	54	4	0	1	75	5	0	0	0	6	0	5	0	3	0	154	
7:20 AM	1	72	5	0	2	55	2	0	0	0	6	0	4	0	1	0	148	
7:25 AM	3	76	6	0	3	69	5	0	0	0	3	0	8	1	3	0	177	
7:30 AM	6	64	2	0	2	57	3	0	1	0	2	0	12	0	1	0	150	
7:35 AM	1	77	4	0	2	80	4	0	3	1	1	0	10	0	3	0	186	
7:40 AM	2	99	4	0	4	62	9	0	0	0	2	0	6	0	4	0	192	
7:45 AM	6	76	10	0	3	74	2	0	2	0	3	0	13	0	2	0	191	
7:50 AM	0	96	5	0	6	72	7	0	4	0	5	0	13	0	5	0	213	
7:55 AM	3	67	10	1	5	55	2	0	0	0	3	0	4	0	2	0	152	1941
8:00 AM	4	64	5	0	2	44	4	0	0	1	4	0	7	0	3	0	138	1973
8:05 AM	2	50	7	1	5	49	4	0	0	1	3	0	9	0	3	0	134	1969
8:10 AM	3	98	8	0	1	62	4	0	3	0	2	0	11	0	4	0	196	2031
8:15 AM	6	62	7	0	2	46	4	0	3	0	3	0	9	1	1	0	144	2021
8:20 AM	8	82	3	0	2	63	5	0	0	0	4	0	5	1	4	0	177	2050
8:25 AM	5	72	7	0	8	55	3	0	5	1	5	0	6	0	3	0	170	2043
8:30 AM	2	68	9	0	4	72	2	0	1	1	2	0	14	0	2	0	177	2070
8:35 AM	2	98	8	0	9	84	5	0	3	0	3	0	9	1	1	0	223	2107
8:40 AM	1	77	5	0	2	74	7	0	0	0	6	0	12	1	4	0	189	2104
8:45 AM	4	65	2	1	4	51	6	0	3	0	3	0	11	0	5	0	155	2068
8:50 AM	2	78	5	0	6	61	4	1	1	0	0	0	5	0	1	0	164	2019
8:55 AM	3	93	10	0	3	67	5	0	2	0	3	0	7	1	1	0	195	2062

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	32	1084	76	0	52	832	72	0	24	0	40	0	128	0	44	0	2384
Heavy Trucks	4	68	4		0	64	0		0	0	0		4	0	0		144
Buses																	
Pedestrians		0				8				0				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

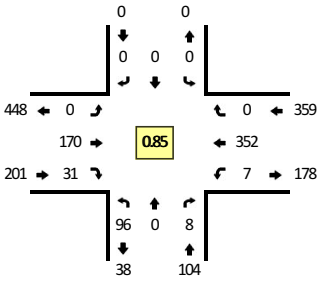
Type of peak hour being reported: User-Defined

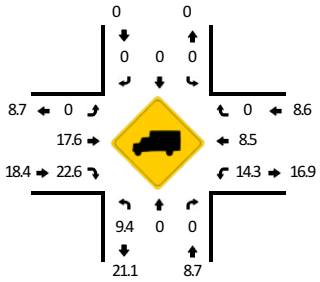
Method for determining peak hour: Total Entering

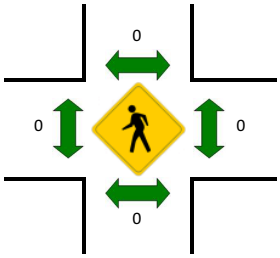
LOCATION: S Holly Ln -- S Redland Rd
CITY/STATE: Oregon City, OR

QC JOB #: 15328631
DATE: Wed, Dec 2 2020

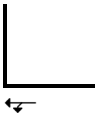
Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

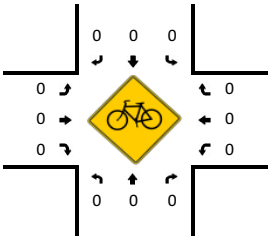


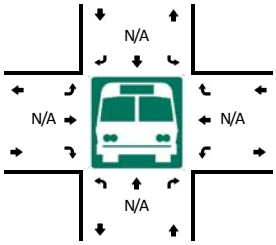


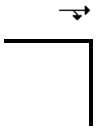


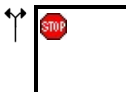


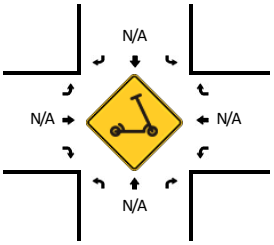












5-Min Count Period Beginning At	S Holly Ln (Northbound)				S Holly Ln (Southbound)				S Redland Rd (Eastbound)				S Redland Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	4	0	0	0	0	0	0	0	0	16	6	0	0	25	0	0	51	
7:05 AM	1	0	0	0	0	0	0	0	0	13	1	0	0	26	0	0	41	
7:10 AM	8	0	0	0	0	0	0	0	0	4	1	0	0	26	0	0	39	
7:15 AM	3	0	0	0	0	0	0	0	0	11	2	0	2	33	0	0	51	
7:20 AM	7	0	0	0	0	0	0	0	0	10	2	0	0	37	0	0	56	
7:25 AM	19	0	1	0	0	0	0	0	0	15	1	0	0	20	0	0	56	
7:30 AM	19	0	0	0	0	0	0	0	0	11	1	0	2	38	0	0	71	
7:35 AM	14	0	0	0	0	0	0	0	0	12	1	0	0	37	0	0	64	
7:40 AM	9	0	1	0	0	0	0	0	0	13	1	0	0	37	0	0	61	
7:45 AM	5	0	4	0	0	0	0	0	0	14	7	0	1	35	0	0	66	
7:50 AM	5	0	1	0	0	0	0	0	0	19	2	0	1	31	0	0	59	
7:55 AM	5	0	0	0	0	0	0	0	0	14	2	0	0	28	0	0	49	664
8:00 AM	4	0	0	0	0	0	0	0	0	16	3	0	0	18	0	0	41	654
8:05 AM	5	0	0	0	0	0	0	0	0	9	2	0	1	30	0	0	47	660
8:10 AM	5	0	0	0	0	0	0	0	0	20	3	0	1	14	0	0	43	664
8:15 AM	4	0	0	0	0	0	0	0	0	14	5	0	1	22	0	0	46	659
8:20 AM	2	0	1	0	0	0	0	0	0	13	3	0	0	42	0	0	61	664
8:25 AM	5	0	0	0	0	0	0	0	0	17	4	0	1	29	0	0	56	664
8:30 AM	7	0	0	0	0	0	0	0	0	13	3	0	0	23	0	0	46	639
8:35 AM	3	0	0	0	0	0	0	0	0	22	3	0	0	22	0	0	50	625
8:40 AM	6	0	1	0	0	0	0	0	0	8	6	0	2	20	0	0	43	607
8:45 AM	4	0	0	0	0	0	0	0	0	12	5	0	2	23	0	0	46	587
8:50 AM	4	0	0	0	0	0	0	0	0	18	7	0	0	24	0	0	53	581
8:55 AM	9	0	0	0	0	0	0	0	0	9	6	0	2	25	0	0	51	583

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	168	0	4	0	0	0	0	0	0	144	12	0	8	448	0	0	784
Heavy Trucks	16	0	0		0	0	0		0	32	0		0	28	0		76
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

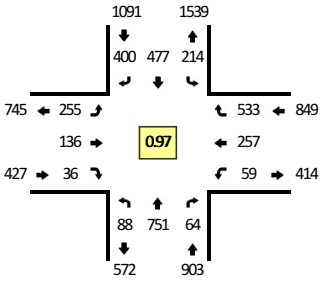
Type of peak hour being reported: User-Defined

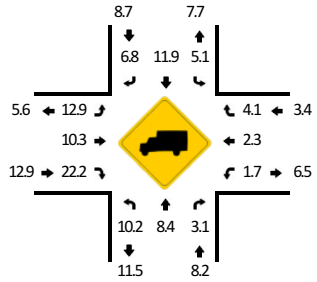
Method for determining peak hour: Total Entering

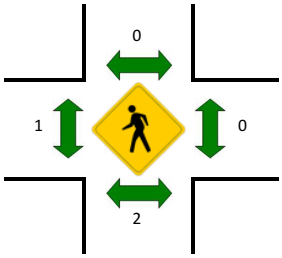
LOCATION: Cascade Hwy -- S Beavercreek Rd
CITY/STATE: Oregon City, OR

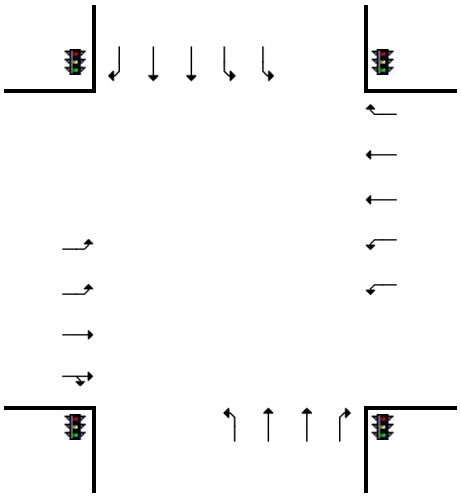
QC JOB #: 15328634
DATE: Wed, Dec 2 2020

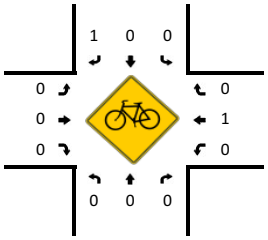
Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:25 AM -- 7:40 AM

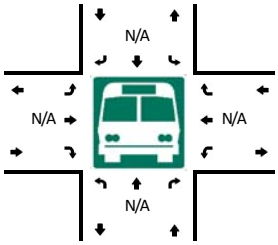


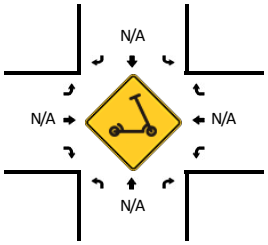












5-Min Count Period Beginning At	Cascade Hwy (Northbound)				Cascade Hwy (Southbound)				S Beavercreek Rd (Eastbound)				S Beavercreek Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	8	42	4	0	10	27	34	0	13	11	1	0	3	11	48	0	212	
7:05 AM	7	45	7	0	5	25	25	0	23	5	0	0	3	7	27	0	179	
7:10 AM	7	58	4	0	10	23	30	0	14	5	2	0	3	15	44	0	215	
7:15 AM	4	53	2	0	14	36	41	0	11	5	4	0	2	24	52	0	248	
7:20 AM	14	70	7	0	18	31	58	0	13	7	3	0	0	27	34	0	282	
7:25 AM	14	55	7	0	19	39	48	0	16	5	1	0	6	20	42	0	272	
7:30 AM	8	60	4	0	17	46	26	0	26	6	2	0	3	20	55	0	273	
7:35 AM	7	78	6	0	18	43	28	0	22	18	1	0	3	21	57	0	302	
7:40 AM	5	60	3	0	22	33	29	0	20	9	4	0	5	27	45	0	262	
7:45 AM	6	46	4	0	18	41	44	0	28	18	2	0	3	18	41	0	269	
7:50 AM	6	83	5	0	20	30	37	0	15	10	3	0	5	30	38	0	282	
7:55 AM	10	63	7	0	16	52	37	0	18	11	1	0	1	19	36	0	271	3067
8:00 AM	9	57	7	0	15	32	31	0	16	5	3	0	6	25	47	0	253	3108
8:05 AM	5	69	4	0	14	47	33	0	25	12	6	0	8	20	59	0	302	3231
8:10 AM	6	48	5	0	22	30	37	0	21	18	3	0	8	22	44	0	264	3280
8:15 AM	5	66	5	0	15	47	22	0	29	11	5	0	6	13	35	0	259	3291
8:20 AM	7	66	7	0	18	37	28	0	19	13	5	0	5	22	34	0	261	3270
8:25 AM	6	59	7	0	22	43	34	0	24	10	2	0	8	21	29	0	265	3263
8:30 AM	4	69	3	0	21	37	25	0	17	10	4	0	10	17	35	0	252	3242
8:35 AM	4	56	0	0	9	26	36	0	31	24	2	0	3	32	31	0	254	3194
8:40 AM	11	74	5	0	25	42	49	0	19	19	2	0	3	21	33	0	303	3235
8:45 AM	3	61	5	0	19	42	26	0	28	19	4	0	11	25	44	0	287	3253
8:50 AM	7	49	7	0	21	39	40	0	20	16	1	0	9	32	33	0	274	3245
8:55 AM	9	39	6	0	14	33	42	0	23	13	6	0	1	11	36	0	233	3207

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	116	772	68	0	216	512	408	0	256	116	16	0	48	244	616	0	3388
Heavy Trucks	12	52	4		16	64	28		32	16	4		4	8	4		244
Buses																	
Pedestrians		0				0				4				0			4
Bicycles	0	0	0		0	0	4		0	0	0		0	0	0		4
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

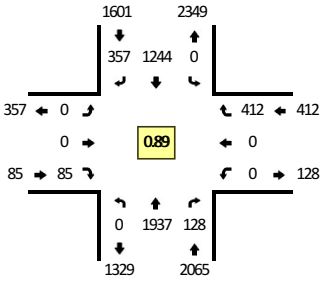
Type of peak hour being reported: User-Defined

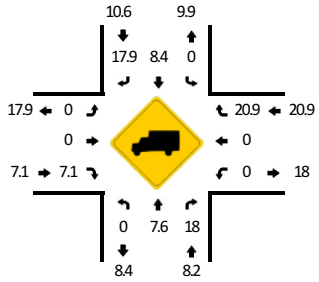
Method for determining peak hour: Total Entering

LOCATION: Cascade Hwy -- Clackamas River Dr
CITY/STATE: Oregon City, OR

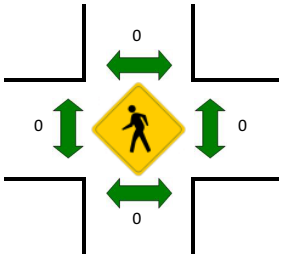
QC JOB #: 15328637
DATE: Wed, Dec 2 2020

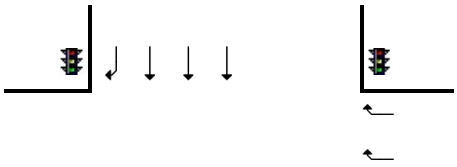
Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

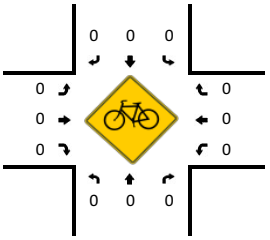


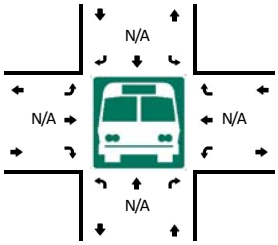


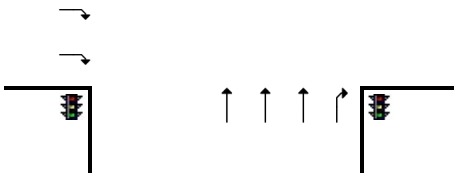
Quality Counts
DATA THAT DRIVES COMMUNITIES

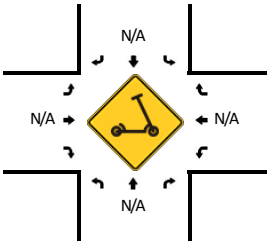












5-Min Count Period Beginning At	Cascade Hwy (Northbound)				Cascade Hwy (Southbound)				Clackamas River Dr (Eastbound)				Clackamas River Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	138	10	0	0	72	21	0	0	0	8	0	0	0	25	0	274	
7:05 AM	0	109	8	0	0	68	17	0	0	0	2	0	0	0	18	0	222	
7:10 AM	0	139	10	0	0	79	26	0	0	0	2	0	0	0	37	0	293	
7:15 AM	0	149	11	0	0	80	22	0	0	0	0	0	0	0	32	0	294	
7:20 AM	0	141	8	0	0	99	28	0	0	0	5	0	0	0	30	0	311	
7:25 AM	0	116	5	0	0	91	31	0	0	0	7	0	0	0	49	0	299	
7:30 AM	0	208	7	0	0	98	30	0	0	0	1	0	0	0	25	0	369	
7:35 AM	0	233	15	0	0	99	39	0	0	0	10	0	0	0	39	0	435	
7:40 AM	0	166	12	0	0	120	33	0	0	0	5	0	0	0	35	0	371	
7:45 AM	0	178	10	0	0	112	23	0	0	0	4	0	0	0	37	0	364	
7:50 AM	0	146	14	0	0	113	31	0	0	0	5	0	0	0	27	0	336	
7:55 AM	0	145	13	0	0	98	29	0	0	0	8	0	0	0	46	0	339	3907
8:00 AM	0	150	5	0	0	116	30	0	0	0	8	0	0	0	42	0	351	3984
8:05 AM	0	159	7	0	0	92	37	0	0	0	12	0	0	0	24	0	331	4093
8:10 AM	0	133	16	0	0	104	25	0	0	0	10	0	0	0	29	0	317	4117
8:15 AM	0	159	11	0	0	98	24	0	0	0	7	0	0	0	38	0	337	4160
8:20 AM	0	144	13	0	0	103	25	0	0	0	8	0	0	0	21	0	314	4163
8:25 AM	0	138	7	0	0	112	26	0	0	0	12	0	0	0	30	0	325	4189
8:30 AM	0	137	13	0	0	79	29	0	0	0	8	0	0	0	40	0	306	4126
8:35 AM	0	147	13	0	0	116	41	0	0	0	10	0	0	0	30	0	357	4048
8:40 AM	0	144	7	0	0	93	28	0	0	0	15	0	0	0	22	0	309	3986
8:45 AM	0	141	5	0	0	118	36	0	0	0	7	0	0	0	26	0	333	3955
8:50 AM	0	130	11	0	0	108	35	0	0	0	2	0	0	0	23	0	309	3928
8:55 AM	0	118	12	0	0	113	27	0	0	0	13	0	0	0	23	0	306	3895

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	2428	136	0	0	1268	408	0	0	0	64	0	0	0	396	0	4700
Heavy Trucks	0	140	8		0	112	68		0	0	4		0	0	60		392
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

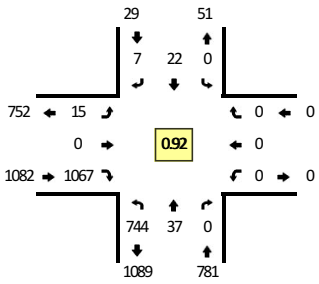
Type of peak hour being reported: User-Defined

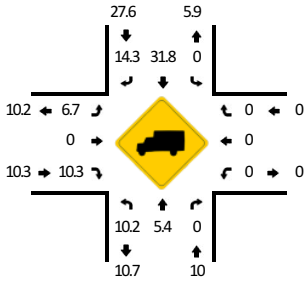
Method for determining peak hour: Total Entering

LOCATION: Cascade Hwy -- I-205 SB Ramps
CITY/STATE: Oregon City, OR

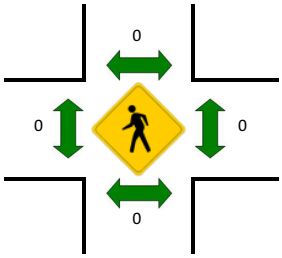
QC JOB #: 15328640
DATE: Wed, Dec 2 2020

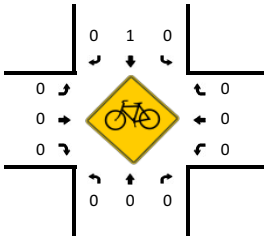
Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:40 AM -- 7:55 AM

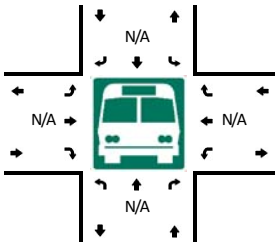


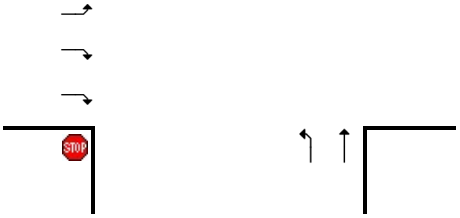


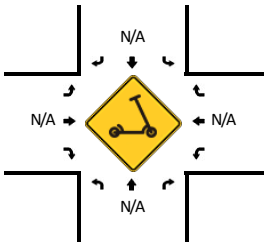












5-Min Count Period Beginning At	Cascade Hwy (Northbound)				Cascade Hwy (Southbound)				I-205 SB Ramps (Eastbound)				I-205 SB Ramps (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	55	1	0	0	0	0	0	0	2	0	56	0	0	0	0	0	114	
7:05 AM	36	1	0	0	0	0	2	0	0	0	68	0	0	0	0	0	107	
7:10 AM	56	2	0	0	0	0	0	0	1	0	65	0	0	0	0	0	124	
7:15 AM	62	4	0	0	0	0	0	0	1	0	65	0	0	0	0	0	132	
7:20 AM	55	2	0	0	0	2	2	0	2	0	80	0	0	0	0	0	143	
7:25 AM	58	5	0	0	0	0	0	0	0	0	79	0	0	0	0	0	142	
7:30 AM	66	0	0	0	0	2	0	0	0	0	89	0	0	0	0	0	157	
7:35 AM	80	1	0	0	0	1	0	0	2	0	91	1	0	0	0	0	176	
7:40 AM	56	3	0	0	0	2	0	0	3	0	108	0	0	0	0	0	172	
7:45 AM	67	3	0	0	0	1	1	0	1	0	94	0	0	0	0	0	167	
7:50 AM	62	4	0	0	0	0	1	0	2	0	108	0	0	0	0	0	177	
7:55 AM	67	6	0	0	0	5	0	0	2	0	73	0	0	0	0	0	153	1764
8:00 AM	51	7	0	0	0	3	3	0	1	0	98	0	0	0	0	0	163	1813
8:05 AM	67	1	0	0	0	1	0	0	0	0	86	0	0	0	0	0	155	1861
8:10 AM	57	4	0	0	0	2	1	0	0	0	80	0	0	0	0	0	144	1881
8:15 AM	61	1	0	0	0	4	0	0	2	0	70	0	0	0	0	0	138	1887
8:20 AM	52	2	0	0	0	1	1	0	1	0	91	0	0	0	0	0	148	1892
8:25 AM	67	1	0	0	0	0	0	0	1	0	87	0	0	0	0	0	156	1906
8:30 AM	72	1	0	0	0	1	0	0	1	0	80	0	0	0	0	0	155	1904
8:35 AM	57	0	0	0	0	1	0	0	0	0	98	0	0	0	0	0	156	1884
8:40 AM	49	1	0	0	0	4	0	0	1	0	89	0	0	0	0	0	144	1856
8:45 AM	50	3	0	0	0	1	0	0	1	0	87	0	0	0	0	0	142	1831
8:50 AM	52	1	0	0	0	5	0	0	1	0	102	0	0	0	0	0	161	1815
8:55 AM	50	2	0	0	0	0	0	0	1	0	93	0	0	0	0	0	146	1808

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	740	40	0	0	0	12	8	0	24	0	1240	0	0	0	0	0	2064
Heavy Trucks	88	4	0		0	4	0		4	0	120		0	0	0		220
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	4	0		0	0	0		0	0	0		4
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

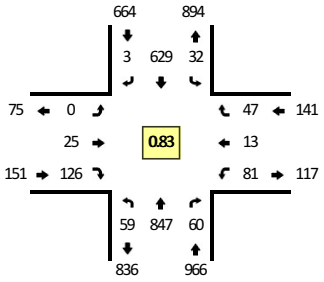
Type of peak hour being reported: User-Defined

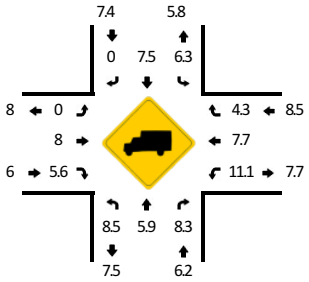
Method for determining peak hour: Total Entering

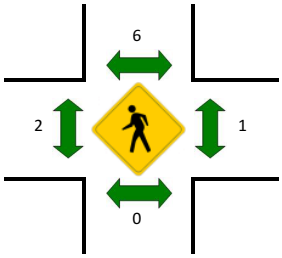
LOCATION: McLoughlin Blvd -- River Rd
CITY/STATE: Gladstone, OR

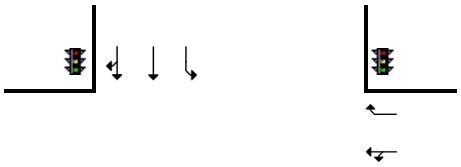
QC JOB #: 15328643
DATE: Wed, Dec 2 2020

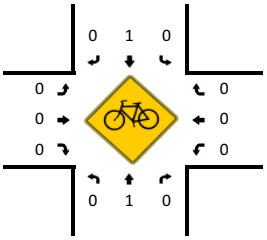
Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:40 AM -- 7:55 AM

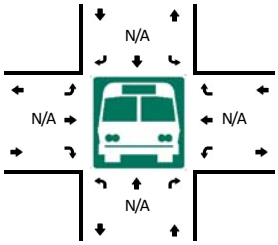


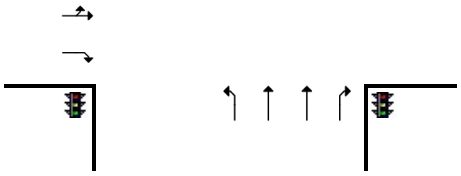


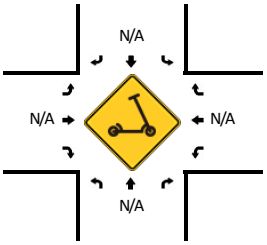












5-Min Count Period Beginning At	McLoughlin Blvd (Northbound)				McLoughlin Blvd (Southbound)				River Rd (Eastbound)				River Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	3	40	2	0	1	37	0	0	0	1	11	0	5	1	0	0	101	
7:05 AM	2	51	6	0	1	50	0	0	0	3	4	0	5	1	0	0	123	
7:10 AM	6	50	3	0	3	40	0	0	1	1	16	0	4	0	4	0	128	
7:15 AM	2	53	4	0	1	65	0	0	1	1	7	0	5	5	1	0	145	
7:20 AM	6	67	5	0	1	55	0	0	0	2	7	0	2	2	8	0	155	
7:25 AM	4	60	6	0	3	56	0	0	0	3	13	0	6	0	4	0	155	
7:30 AM	5	72	5	0	2	47	0	0	0	2	10	0	5	2	2	0	152	
7:35 AM	5	63	7	0	1	64	0	0	0	1	13	0	7	2	2	0	165	
7:40 AM	3	96	2	0	0	66	0	0	0	4	11	0	7	0	3	0	192	
7:45 AM	6	93	5	0	7	69	1	0	0	4	7	0	4	0	3	0	199	
7:50 AM	5	85	7	0	5	59	0	0	0	1	15	0	7	0	4	0	188	
7:55 AM	4	61	2	0	2	54	0	0	0	2	4	0	7	2	4	0	142	1845
8:00 AM	6	68	2	0	1	37	1	0	0	2	6	0	12	1	3	0	139	1883
8:05 AM	1	47	4	0	3	31	0	0	0	3	17	0	7	1	3	0	117	1877
8:10 AM	9	76	3	0	1	45	0	0	0	0	10	0	7	0	4	0	155	1904
8:15 AM	5	55	5	0	2	42	0	0	0	3	8	0	5	1	7	0	133	1892
8:20 AM	6	71	12	0	5	59	1	0	0	0	12	0	7	4	8	0	185	1922
8:25 AM	4	76	7	0	3	58	0	0	0	4	12	0	6	0	2	0	172	1939
8:30 AM	4	55	9	0	2	60	0	0	0	1	6	0	11	1	3	0	152	1939
8:35 AM	4	90	7	0	3	85	0	0	0	0	9	0	3	1	6	0	208	1982
8:40 AM	3	62	4	0	2	53	0	0	1	1	13	0	10	3	5	0	157	1947
8:45 AM	5	69	5	0	6	55	0	0	1	2	11	0	6	2	3	0	165	1913
8:50 AM	8	79	8	0	2	56	1	0	1	0	7	0	6	0	4	0	172	1897
8:55 AM	5	76	3	0	3	57	0	0	0	0	8	0	6	0	2	0	160	1915

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	56	1096	56	0	48	776	4	0	0	36	132	0	72	0	40	0	2316
Heavy Trucks	4	44	8		4	56	0		0	0	8		0	0	4		128
Buses																	
Pedestrians		0				4				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

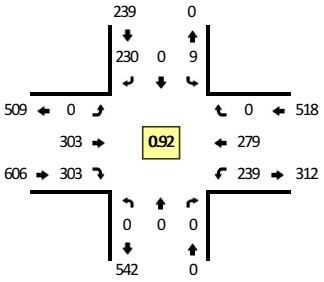
Type of peak hour being reported: User-Defined

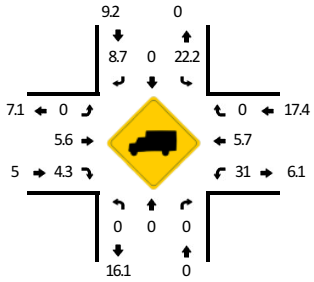
Method for determining peak hour: Total Entering

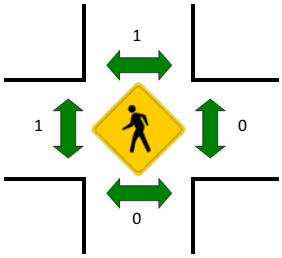
LOCATION: I-205 SB Ramps -- 82nd Dr
CITY/STATE: Gladstone, OR

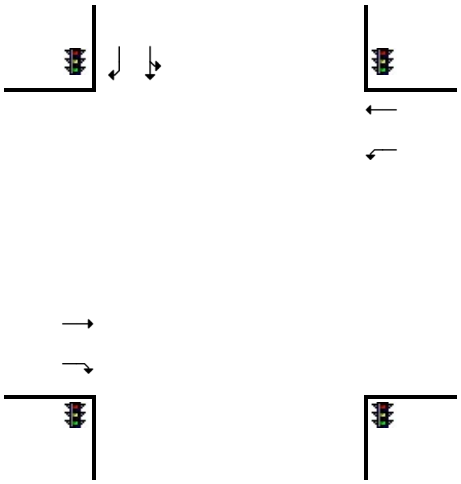
QC JOB #: 15328653
DATE: Wed, Dec 2 2020

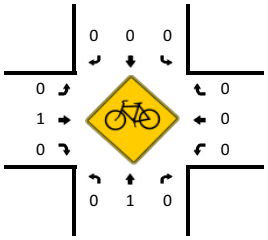
Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:35 AM -- 7:50 AM

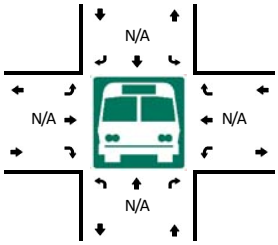


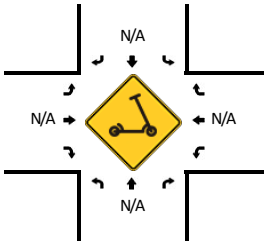












5-Min Count Period Beginning At	I-205 SB Ramps (Northbound)				I-205 SB Ramps (Southbound)				82nd Dr (Eastbound)				82nd Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	9	0	0	19	14	0	13	14	0	0	69	
7:05 AM	0	0	0	0	0	1	18	0	0	17	17	0	15	6	0	0	74	
7:10 AM	0	0	0	0	0	1	10	0	0	27	20	0	18	15	0	0	91	
7:15 AM	0	0	0	0	4	0	15	0	0	20	20	0	19	20	0	0	98	
7:20 AM	0	0	0	0	1	0	7	0	0	32	23	0	17	23	0	0	103	
7:25 AM	0	0	0	0	0	0	14	0	0	28	16	0	22	11	0	0	91	
7:30 AM	0	0	0	0	0	0	19	0	0	26	33	0	13	22	0	0	113	
7:35 AM	0	0	0	0	2	0	19	0	0	34	27	0	22	21	0	0	125	
7:40 AM	0	0	0	0	1	0	14	0	0	28	39	0	20	19	0	0	121	
7:45 AM	0	0	0	0	0	0	27	0	0	25	22	0	28	24	0	0	126	
7:50 AM	0	0	0	0	1	0	29	0	0	27	23	0	20	24	0	0	124	
7:55 AM	0	0	0	0	3	0	28	0	0	21	21	0	19	26	0	0	118	1253
8:00 AM	0	0	0	0	0	0	13	0	0	23	15	0	24	26	0	0	101	1285
8:05 AM	0	0	0	0	0	0	15	0	0	20	32	0	15	24	0	0	106	1317
8:10 AM	0	0	0	0	0	0	17	0	0	23	23	0	23	27	0	0	113	1339
8:15 AM	0	0	0	0	0	0	20	0	0	19	24	0	17	32	0	0	112	1353
8:20 AM	0	0	0	0	2	0	15	0	0	29	28	0	16	23	0	0	113	1363
8:25 AM	0	0	0	0	3	0	18	0	0	20	23	0	13	27	0	0	104	1376
8:30 AM	0	0	0	0	1	0	12	0	0	16	24	0	24	17	0	0	94	1357
8:35 AM	0	0	0	0	4	0	13	0	0	21	29	0	13	11	0	0	91	1323
8:40 AM	0	0	0	0	0	1	25	0	0	18	21	0	22	19	0	0	106	1308
8:45 AM	0	0	0	0	0	1	13	0	0	26	35	0	12	29	0	0	116	1298
8:50 AM	0	0	0	0	2	0	13	0	0	15	21	0	17	28	0	0	96	1270
8:55 AM	0	0	0	0	0	0	15	0	0	19	16	0	21	21	0	0	92	1244

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	12	0	240	0	0	348	352	0	280	256	0	0	1488
Heavy Trucks	0	0	0		4	0	24		0	12	8		108	16	0		172
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	4	0		0	0	0		0	0	0		0	0	0		4
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

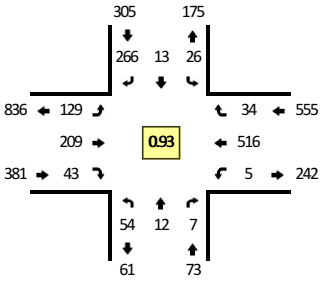
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering

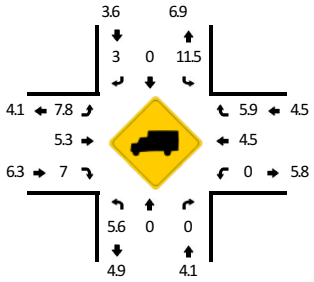
LOCATION: S Maple Lane Rd -- S Beavercreek Rd
CITY/STATE: Oregon City, OR

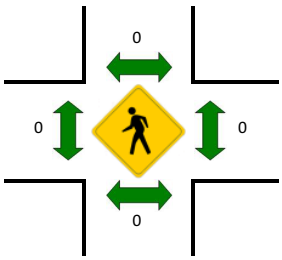
QC JOB #: 15328656
DATE: Wed, Dec 2 2020

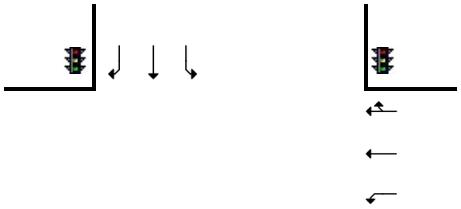
Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

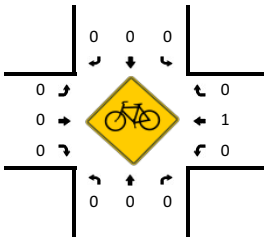


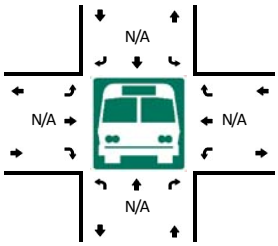


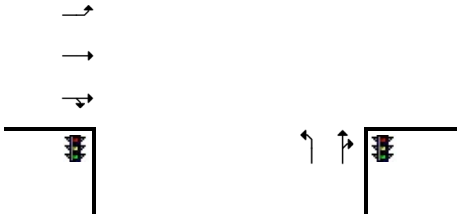


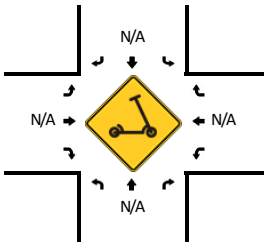












5-Min Count Period Beginning At	S Maple Lane Rd (Northbound)				S Maple Lane Rd (Southbound)				S Beavercreek Rd (Eastbound)				S Beavercreek Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	2	1	0	0	0	3	13	0	12	5	4	0	1	34	2	0	77	
7:05 AM	3	0	1	0	2	1	12	0	3	7	4	0	0	29	2	0	64	
7:10 AM	1	1	0	0	1	3	16	0	6	9	2	0	0	45	3	0	87	
7:15 AM	3	2	0	0	2	2	19	0	5	16	1	0	1	50	3	0	104	
7:20 AM	6	0	0	0	2	0	17	0	11	13	1	1	0	44	5	0	100	
7:25 AM	7	2	0	0	1	3	22	0	18	10	0	0	1	38	2	0	104	
7:30 AM	6	1	1	0	1	1	32	0	10	18	2	0	0	44	4	0	120	
7:35 AM	3	2	1	0	1	2	24	0	14	20	3	0	0	53	3	0	126	
7:40 AM	6	0	1	0	2	2	22	0	9	19	4	0	0	40	2	0	107	
7:45 AM	3	1	1	0	5	0	22	0	8	18	2	0	0	46	4	0	110	
7:50 AM	1	2	0	0	1	0	19	0	12	17	5	0	0	45	1	0	103	
7:55 AM	4	0	0	0	6	1	21	0	10	18	3	0	0	39	5	0	107	1209
8:00 AM	1	0	0	0	1	3	23	0	9	11	8	0	0	39	3	0	98	1230
8:05 AM	5	1	0	0	3	0	25	0	9	16	3	0	1	54	2	0	119	1285
8:10 AM	6	0	2	0	3	1	22	0	11	21	6	0	0	40	0	0	112	1310
8:15 AM	6	1	1	0	0	0	13	0	9	16	4	0	1	43	5	0	99	1305
8:20 AM	6	2	0	0	2	0	21	0	10	25	3	0	2	35	3	0	109	1314
8:25 AM	9	1	0	0	4	0	18	0	6	14	2	0	0	36	2	0	92	1302
8:30 AM	8	1	0	0	1	3	25	0	9	25	1	0	0	33	2	0	108	1290
8:35 AM	2	3	3	0	0	4	23	0	8	19	4	0	0	33	0	0	99	1263
8:40 AM	10	2	1	0	3	4	13	0	8	23	9	0	0	38	1	0	112	1268
8:45 AM	8	2	1	0	2	2	23	0	6	29	4	0	0	45	3	0	125	1283
8:50 AM	6	0	1	0	3	3	21	0	13	20	6	0	1	46	7	0	127	1307
8:55 AM	6	0	0	0	2	1	13	0	6	15	5	0	1	31	2	0	82	1282

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	60	12	12	0	16	20	312	0	132	228	36	0	0	548	36	0	1412
Heavy Trucks	0	0	0		0	0	4		20	16	4		0	4	4		52
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

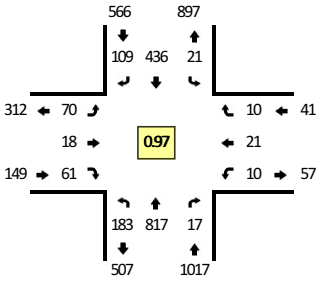
Type of peak hour being reported: User-Defined

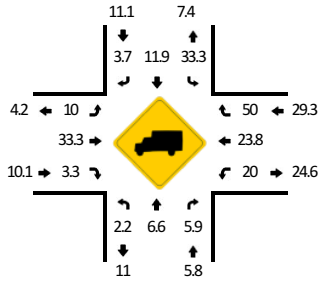
Method for determining peak hour: Total Entering

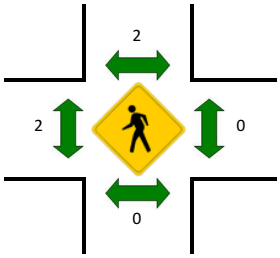
LOCATION: Cascade Hwy -- S Molalla Ave
CITY/STATE: Oregon City, OR

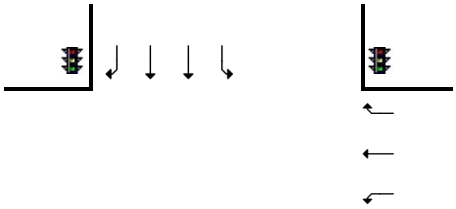
QC JOB #: 15328659
DATE: Wed, Dec 2 2020

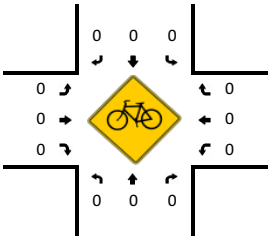
Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

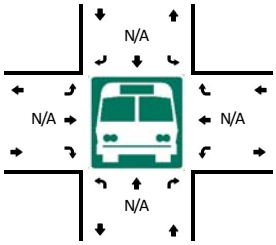


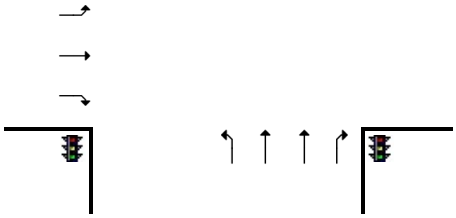


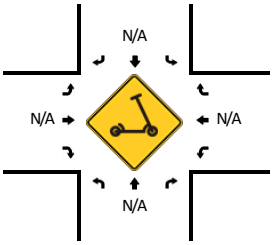












5-Min Count Period Beginning At	Cascade Hwy (Northbound)				Cascade Hwy (Southbound)				S Molalla Ave (Eastbound)				S Molalla Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	14	46	1	0	0	21	7	0	4	1	5	0	0	2	0	0	101	
7:05 AM	8	64	1	0	0	15	12	0	6	2	3	0	1	0	0	0	112	
7:10 AM	9	56	0	0	2	26	7	0	2	2	5	0	1	0	1	0	111	
7:15 AM	12	76	1	0	1	29	3	0	3	1	8	0	0	1	0	0	135	
7:20 AM	9	71	1	0	2	34	4	0	5	2	9	0	0	0	0	0	137	
7:25 AM	15	68	1	0	0	30	8	0	3	0	3	0	1	0	0	1	130	
7:30 AM	10	72	3	0	3	49	6	0	5	2	3	0	2	3	0	0	158	
7:35 AM	18	81	0	1	1	31	12	0	3	0	3	0	1	0	1	0	152	
7:40 AM	10	69	1	0	2	30	10	0	6	1	4	0	1	3	2	0	139	
7:45 AM	25	65	2	0	3	39	8	0	3	3	4	0	0	2	1	0	155	
7:50 AM	13	80	3	0	1	33	8	0	2	2	4	0	0	2	2	0	150	
7:55 AM	12	53	2	0	1	33	4	0	6	2	7	0	1	2	1	0	124	1604
8:00 AM	13	79	0	0	1	35	9	0	3	1	3	0	0	2	0	0	146	1649
8:05 AM	19	68	0	0	2	42	9	0	8	2	7	0	1	3	0	0	161	1698
8:10 AM	10	65	0	0	3	37	16	0	10	1	5	0	2	0	2	0	151	1738
8:15 AM	22	63	2	0	3	21	13	0	5	1	10	0	0	1	0	0	141	1744
8:20 AM	15	54	3	0	1	56	6	0	16	3	8	0	0	3	1	0	166	1773
8:25 AM	12	71	3	0	2	37	7	0	3	0	11	0	0	2	2	0	150	1793
8:30 AM	12	64	2	0	2	49	11	0	5	1	13	0	1	3	1	0	164	1799
8:35 AM	15	73	1	0	0	28	7	0	2	0	11	0	1	0	3	0	141	1788
8:40 AM	12	63	0	0	0	37	4	0	8	1	4	0	0	0	1	0	130	1779
8:45 AM	10	59	1	0	0	31	15	0	9	0	9	0	1	1	2	0	138	1762
8:50 AM	13	57	0	0	3	39	20	0	3	1	6	0	0	1	0	0	143	1755
8:55 AM	6	44	1	0	1	32	6	0	3	0	10	0	1	1	1	0	106	1737

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	168	848	0	0	24	456	136	0	84	16	60	0	12	20	8	0	1832
Heavy Trucks	0	36	0		8	72	4		12	4	4		4	4	4		152
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

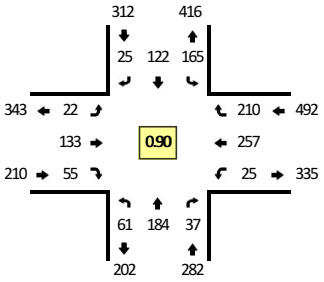
Type of peak hour being reported: User-Defined

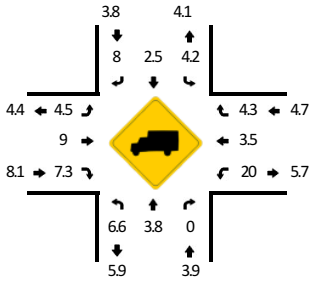
Method for determining peak hour: Total Entering

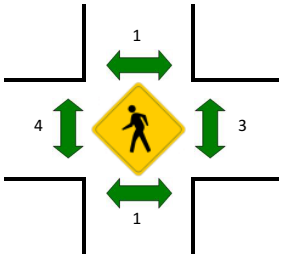
LOCATION: Molalla Ave -- Beavercreek Rd
CITY/STATE: Oregon City, OR

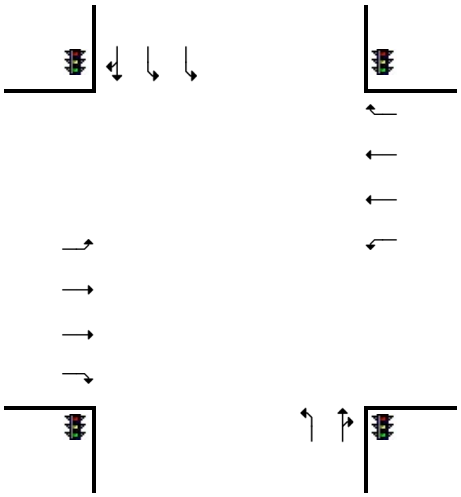
QC JOB #: 15328662
DATE: Wed, Dec 2 2020

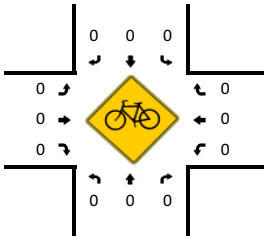
Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

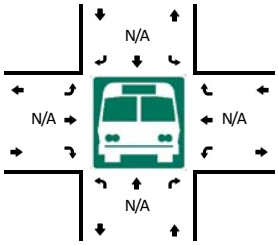


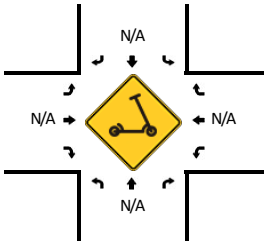












5-Min Count Period Beginning At	Molalla Ave (Northbound)				Molalla Ave (Southbound)				Beavercreek Rd (Eastbound)				Beavercreek Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	6	12	2	0	10	8	2	0	4	8	6	0	2	19	13	0	92	
7:05 AM	5	13	3	0	9	4	1	0	2	6	3	0	3	8	9	0	66	
7:10 AM	7	13	3	0	7	5	1	0	2	8	2	0	2	12	10	0	72	
7:15 AM	1	14	2	0	12	4	2	0	1	11	6	0	1	15	21	0	90	
7:20 AM	8	9	0	0	8	8	3	0	4	7	2	0	4	21	39	0	113	
7:25 AM	4	14	2	0	7	7	1	0	1	11	6	0	2	18	35	0	108	
7:30 AM	8	21	7	0	9	11	1	0	4	10	3	0	0	17	23	0	114	
7:35 AM	6	10	3	0	14	7	3	0	5	14	4	0	2	20	20	0	108	
7:40 AM	6	15	2	0	17	5	2	0	1	9	5	0	1	21	19	0	103	
7:45 AM	6	13	1	0	15	13	5	0	0	21	4	0	4	32	14	0	128	
7:50 AM	6	20	4	0	15	9	0	0	1	9	5	0	6	21	20	0	116	
7:55 AM	4	9	4	0	18	14	4	0	2	9	5	0	4	26	19	0	118	1228
8:00 AM	8	13	2	0	13	13	3	0	0	10	5	0	2	18	12	0	99	1235
8:05 AM	4	18	0	0	13	16	2	0	3	10	6	0	2	25	10	0	109	1278
8:10 AM	1	16	2	0	18	10	1	0	2	13	2	0	2	24	14	0	105	1311
8:15 AM	4	16	5	0	15	7	1	0	1	8	5	0	0	19	9	0	90	1311
8:20 AM	4	19	5	0	11	10	2	0	2	9	5	0	0	16	15	0	98	1296
8:25 AM	7	13	1	0	17	11	3	0	1	14	5	0	3	16	15	0	106	1294
8:30 AM	5	15	1	0	12	8	1	0	1	14	9	0	3	15	15	0	99	1279
8:35 AM	12	15	1	0	23	10	1	0	1	8	1	0	0	22	20	0	114	1285
8:40 AM	3	13	1	0	12	15	1	0	2	15	7	0	3	27	16	0	115	1297
8:45 AM	5	9	6	0	12	12	2	0	0	13	10	0	3	16	23	0	111	1280
8:50 AM	5	16	4	0	16	11	2	0	3	15	7	0	1	20	21	0	121	1285
8:55 AM	4	16	3	0	19	11	6	0	1	14	6	0	3	28	15	0	126	1293

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	64	168	36	0	192	144	36	0	12	156	56	0	56	316	212	0	1448
Heavy Trucks	4	8	0		4	4	8		4	28	4		12	16	16		108
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

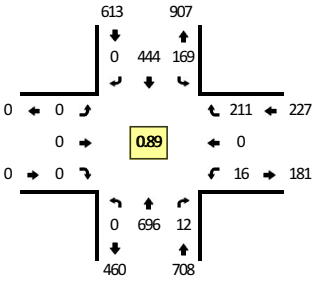
Type of peak hour being reported: User-Defined

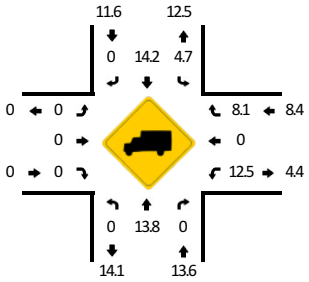
Method for determining peak hour: Total Entering

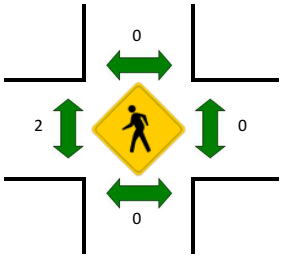
LOCATION: McLoughlin Blvd -- 10th St
CITY/STATE: Oregon City, OR

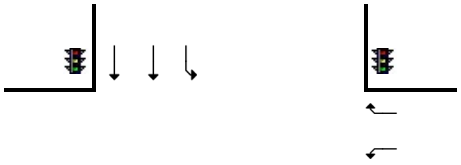
QC JOB #: 15328665
DATE: Wed, Dec 2 2020

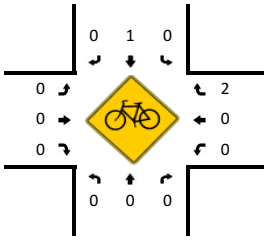
Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:35 AM -- 7:50 AM

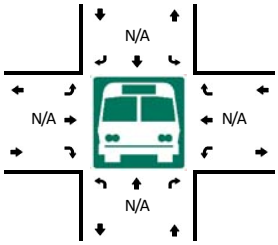




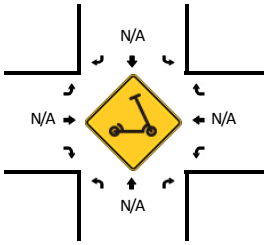












5-Min Count Period Beginning At	McLoughlin Blvd (Northbound)				McLoughlin Blvd (Southbound)				10th St (Eastbound)				10th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	45	1	0	2	27	0	0	0	0	0	0	1	0	13	0	89	
7:05 AM	0	61	0	0	14	31	0	0	0	0	0	0	0	0	17	0	123	
7:10 AM	0	57	1	0	10	21	0	0	0	0	0	0	0	0	16	0	105	
7:15 AM	0	53	1	0	11	29	0	0	0	0	0	0	0	0	18	0	112	
7:20 AM	0	57	2	0	13	27	0	0	0	0	0	0	0	0	21	0	120	
7:25 AM	0	80	0	0	9	39	0	0	0	0	0	0	2	0	29	0	159	
7:30 AM	0	59	3	0	10	36	0	0	0	0	0	0	1	0	24	0	133	
7:35 AM	0	54	1	0	12	38	0	0	0	0	0	0	1	0	23	0	129	
7:40 AM	0	69	2	0	13	38	0	0	0	0	0	0	3	0	24	0	149	
7:45 AM	0	79	2	0	18	45	0	0	0	0	0	0	2	0	9	0	155	
7:50 AM	0	51	1	0	25	25	0	0	0	0	0	0	1	0	20	0	123	
7:55 AM	0	55	1	0	13	38	0	0	0	0	0	0	2	0	19	0	128	1525
8:00 AM	0	45	1	0	12	43	0	0	0	0	0	0	1	0	19	0	121	1557
8:05 AM	0	50	1	0	11	40	0	0	0	0	0	0	1	0	5	0	108	1542
8:10 AM	0	44	0	0	18	34	0	0	0	0	0	0	0	0	14	0	110	1547
8:15 AM	0	55	0	0	21	41	0	0	0	0	0	0	1	0	11	0	129	1564
8:20 AM	0	55	0	0	7	27	0	0	0	0	0	0	1	0	14	0	104	1548
8:25 AM	0	46	0	0	19	37	0	0	0	0	0	0	3	0	11	0	116	1505
8:30 AM	0	44	1	0	13	44	0	0	0	0	0	0	1	0	19	0	122	1494
8:35 AM	0	55	0	0	5	30	0	0	0	0	0	0	1	0	10	0	101	1466
8:40 AM	0	49	1	0	13	48	0	0	0	0	0	0	0	0	11	0	122	1439
8:45 AM	0	43	2	0	13	33	0	0	0	0	0	0	0	0	8	0	99	1383
8:50 AM	0	42	3	0	16	41	0	0	0	0	0	0	1	0	9	0	112	1372
8:55 AM	0	38	1	0	16	47	0	0	0	0	0	0	1	0	8	0	111	1355

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	808	20	0	172	484	0	0	0	0	0	0	24	0	224	0	1732
Heavy Trucks	0	124	0		8	48	0		0	0	0		0	0	20		200
Buses																	
Pedestrians		0				0				8				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	4		4
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

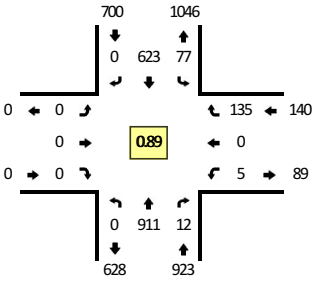
Type of peak hour being reported: User-Defined

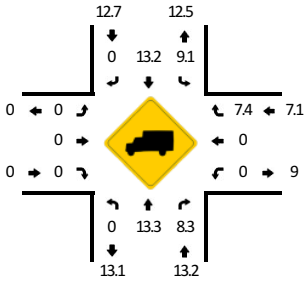
Method for determining peak hour: Total Entering

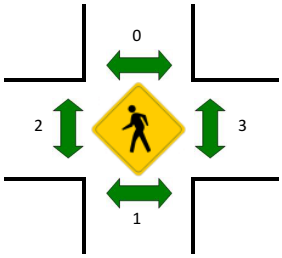
LOCATION: McLoughlin Blvd -- 12th St
CITY/STATE: Oregon City, OR

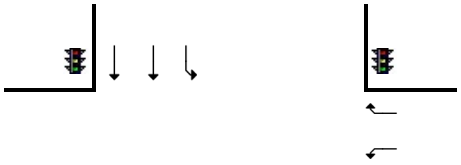
QC JOB #: 15328668
DATE: Wed, Dec 2 2020

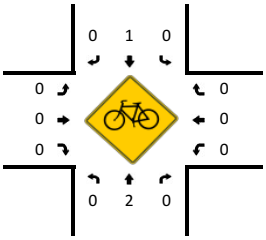
Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:35 AM -- 7:50 AM

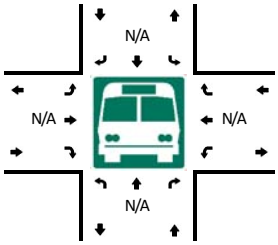




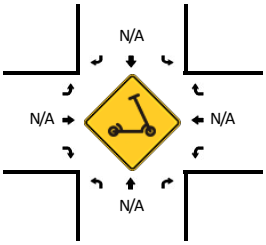












5-Min Count Period Beginning At	McLoughlin Blvd (Northbound)				McLoughlin Blvd (Southbound)				12th St (Eastbound)				12th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	61	0	0	0	31	0	0	0	0	0	0	0	0	9	0	101	
7:05 AM	0	76	0	0	3	42	0	0	0	0	0	0	0	0	15	0	136	
7:10 AM	0	80	0	0	6	34	0	0	0	0	0	0	0	0	13	0	133	
7:15 AM	0	68	0	0	4	34	0	0	0	0	0	0	1	0	11	0	118	
7:20 AM	0	73	0	0	7	44	0	0	0	0	0	0	0	0	14	0	138	
7:25 AM	0	111	2	0	2	51	0	0	0	0	0	0	0	0	12	0	178	
7:30 AM	0	81	1	0	5	41	0	0	0	0	0	0	0	0	16	0	144	
7:35 AM	0	78	3	0	4	53	0	0	0	0	0	0	0	0	12	0	150	
7:40 AM	0	93	1	0	6	56	0	0	0	0	0	0	1	0	16	0	173	
7:45 AM	0	88	1	0	12	56	0	0	0	0	0	0	0	0	13	0	170	
7:50 AM	0	71	2	0	6	50	0	0	0	0	0	0	0	0	13	0	142	
7:55 AM	0	78	0	0	11	54	0	0	0	0	0	0	1	0	9	0	153	1736
8:00 AM	0	62	1	0	5	56	0	0	0	0	0	0	0	0	11	0	135	1770
8:05 AM	0	58	0	0	6	55	0	0	0	0	0	0	0	0	4	0	123	1757
8:10 AM	0	59	0	0	8	56	0	0	0	0	0	0	0	0	4	0	127	1751
8:15 AM	0	66	0	0	7	52	0	0	0	0	0	0	3	0	9	0	137	1770
8:20 AM	0	66	1	0	5	43	0	0	0	0	0	0	0	0	16	0	131	1763
8:25 AM	0	64	1	0	6	57	0	0	0	0	0	0	0	0	8	0	136	1721
8:30 AM	0	59	1	0	7	50	0	0	0	0	0	0	0	0	7	0	124	1701
8:35 AM	0	65	1	0	5	40	0	0	0	0	0	0	2	0	14	0	127	1678
8:40 AM	0	56	0	0	6	60	0	0	0	0	0	0	1	0	8	0	131	1636
8:45 AM	0	53	0	0	3	39	0	0	0	0	0	0	1	0	15	0	111	1577
8:50 AM	0	55	0	0	5	55	0	0	0	0	0	0	1	0	8	0	124	1559
8:55 AM	0	51	1	0	7	69	0	0	0	0	0	0	0	0	8	0	136	1542

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1036	20	0	88	660	0	0	0	0	0	0	4	0	164	0	1972
Heavy Trucks	0	148	0		0	68	0		0	0	0		0	0	8		224
Buses																	
Pedestrians		0				0				4				0			4
Bicycles	0	4	0		0	0	0		0	0	0		0	0	0		4
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

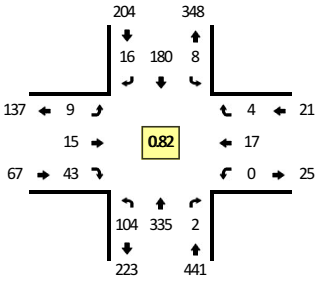
Type of peak hour being reported: User-Defined

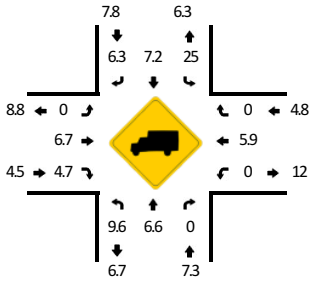
Method for determining peak hour: Total Entering

LOCATION: Washington St -- 12th St
CITY/STATE: Oregon City, OR

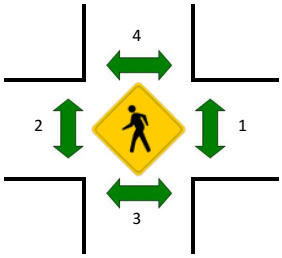
QC JOB #: 15328671
DATE: Wed, Dec 2 2020

Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:25 AM -- 7:40 AM

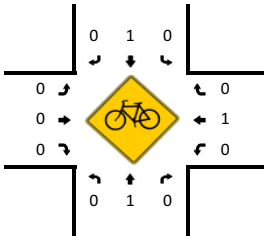


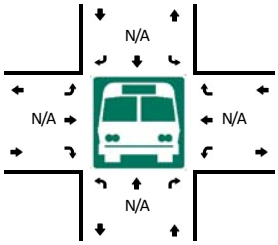


Quality Counts
DATA THAT DRIVES COMMUNITIES

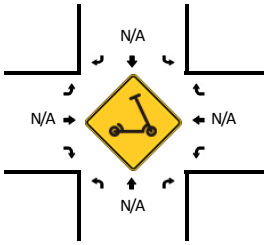












5-Min Count Period Beginning At	Washington St (Northbound)				Washington St (Southbound)				12th St (Eastbound)				12th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	4	15	0	0	0	14	0	0	0	1	1	0	0	4	1	0	40	
7:05 AM	5	21	0	0	0	5	0	0	0	0	1	0	0	6	0	0	38	
7:10 AM	10	22	1	0	1	11	1	0	0	2	2	0	0	3	0	0	53	
7:15 AM	4	33	0	0	0	12	1	0	1	0	1	0	0	0	0	0	52	
7:20 AM	11	29	0	0	1	8	0	0	0	1	4	0	0	3	1	0	58	
7:25 AM	14	43	1	0	1	18	2	0	1	2	3	0	0	1	0	0	86	
7:30 AM	10	41	0	0	0	10	0	0	1	2	2	0	0	2	0	0	68	
7:35 AM	16	29	0	0	1	20	0	0	0	3	1	0	0	0	0	0	70	
7:40 AM	7	24	0	0	0	18	1	0	2	1	4	0	0	3	1	0	61	
7:45 AM	11	35	0	0	1	18	2	0	0	1	9	0	0	0	0	0	77	
7:50 AM	9	31	0	0	0	21	3	0	2	2	5	0	0	1	0	0	74	
7:55 AM	9	21	0	0	2	8	2	0	1	1	5	0	0	4	1	0	54	731
8:00 AM	5	21	0	0	0	13	1	0	0	0	1	0	0	2	1	0	44	735
8:05 AM	4	25	0	0	1	11	2	0	0	0	2	0	0	0	1	0	46	743
8:10 AM	3	23	1	0	0	18	2	0	1	2	5	0	0	0	0	0	55	745
8:15 AM	10	21	0	0	2	14	1	0	1	0	3	0	0	1	0	0	53	746
8:20 AM	6	21	0	0	0	11	0	0	0	1	3	0	0	3	0	0	45	733
8:25 AM	9	23	1	0	0	15	0	0	1	1	3	0	0	2	0	0	55	702
8:30 AM	5	22	0	0	0	8	0	0	5	1	3	0	1	0	0	0	45	679
8:35 AM	8	19	0	0	1	18	1	0	0	0	2	0	0	1	1	0	51	660
8:40 AM	11	22	1	0	1	18	2	0	0	3	2	0	1	1	0	0	62	661
8:45 AM	7	13	0	0	0	15	3	0	0	1	2	0	0	2	0	0	43	627
8:50 AM	5	25	1	0	0	17	2	0	1	1	4	0	0	3	0	0	59	612
8:55 AM	6	14	2	0	0	11	1	0	0	1	3	0	0	2	0	0	40	598

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	160	452	4	0	8	192	8	0	8	28	24	0	0	12	0	0	896
Heavy Trucks	12	28	0		4	16	0		0	0	4		0	0	0		64
Buses																	
Pedestrians		0				12				0				0			12
Bicycles	0	4	0		0	0	0		0	0	0		0	4	0		8
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

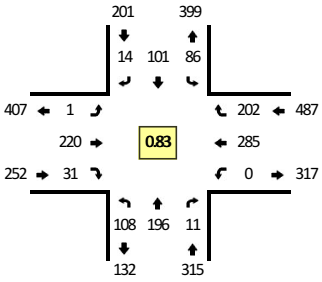
Type of peak hour being reported: User-Defined

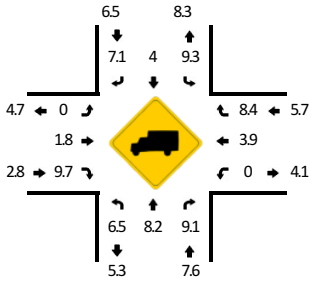
Method for determining peak hour: Total Entering

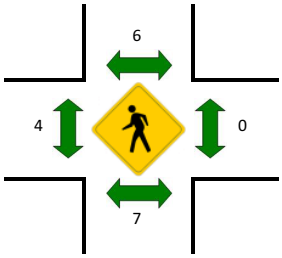
LOCATION: Washington St -- 7th St
CITY/STATE: Oregon City, OR

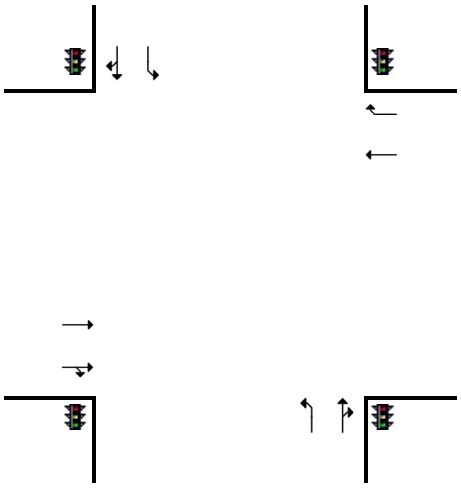
QC JOB #: 15328674
DATE: Wed, Dec 2 2020

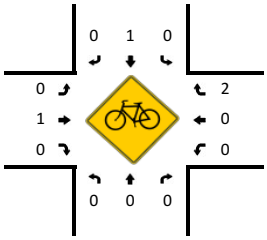
Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:25 AM -- 7:40 AM

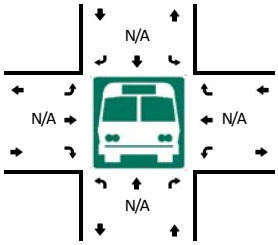


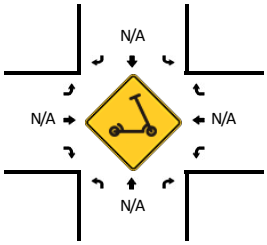












5-Min Count Period Beginning At	Washington St (Northbound)				Washington St (Southbound)				7th St (Eastbound)				7th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	4	7	0	0	4	6	1	0	0	5	2	0	0	24	5	0	58	
7:05 AM	4	9	0	0	4	4	1	0	0	11	3	0	0	18	19	0	73	
7:10 AM	10	15	1	0	8	2	2	0	0	8	1	0	0	28	9	0	84	
7:15 AM	7	22	0	0	4	8	1	0	0	13	1	0	0	25	14	0	95	
7:20 AM	2	15	0	0	7	5	1	0	0	12	4	0	0	25	25	0	96	
7:25 AM	9	24	1	0	9	5	0	0	0	17	2	0	0	43	28	0	138	
7:30 AM	6	16	0	0	8	5	2	0	0	17	0	0	0	39	27	0	120	
7:35 AM	8	14	0	0	7	3	2	0	0	18	0	0	0	39	27	0	118	
7:40 AM	13	12	0	0	10	15	3	0	0	13	2	0	0	29	9	0	106	
7:45 AM	11	27	0	0	7	11	1	0	1	10	1	0	0	17	21	0	107	
7:50 AM	12	14	2	0	9	17	1	0	0	34	4	0	0	14	15	0	122	
7:55 AM	10	18	5	0	9	2	1	0	0	22	8	0	0	19	12	0	106	1223
8:00 AM	7	17	0	0	6	10	2	0	0	18	2	0	0	10	8	0	80	1245
8:05 AM	5	14	1	0	6	3	0	0	0	14	1	0	0	22	13	0	79	1251
8:10 AM	9	8	0	0	10	10	1	0	0	21	3	0	0	24	13	0	99	1266
8:15 AM	5	14	0	0	0	13	0	0	0	24	6	0	0	15	15	0	92	1263
8:20 AM	13	18	2	0	5	7	1	0	0	12	2	0	0	14	14	0	88	1255
8:25 AM	5	6	0	0	9	7	1	0	0	14	4	0	0	20	15	0	81	1198
8:30 AM	7	12	0	0	8	7	0	0	0	13	4	0	0	19	14	0	84	1162
8:35 AM	7	11	0	0	6	4	2	0	0	10	1	0	0	14	11	0	66	1110
8:40 AM	9	11	1	0	10	4	0	0	0	13	1	0	0	15	14	0	78	1082
8:45 AM	7	12	1	0	3	8	1	0	0	23	3	0	0	13	7	0	78	1053
8:50 AM	8	8	0	0	11	9	1	0	0	24	4	0	0	12	19	0	96	1027
8:55 AM	2	6	0	0	3	5	2	0	0	21	3	0	0	12	11	0	65	986

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	92	216	4	0	96	52	16	0	0	208	8	0	0	484	328	0	1504
Heavy Trucks	8	12	0		12	0	0		0	4	0		0	16	28		80
Buses																	
Pedestrians		0				8				0				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	4		4
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

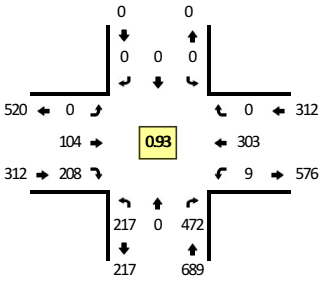
Type of peak hour being reported: User-Defined

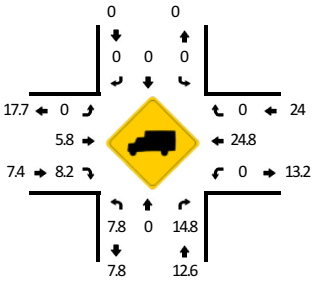
Method for determining peak hour: Total Entering

LOCATION: I-205 NB Ramps -- 82nd Dr
CITY/STATE: Gladstone, OR

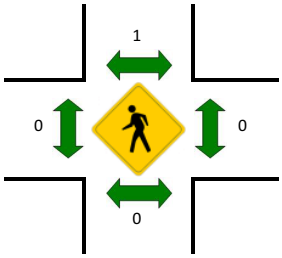
QC JOB #: 15328677
DATE: Wed, Dec 2 2020

Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:35 AM -- 7:50 AM

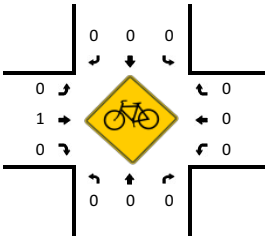


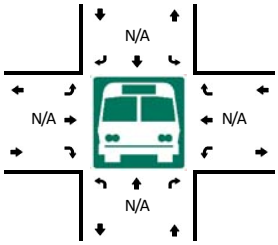


Quality Counts
DATA THAT DRIVES COMMUNITIES

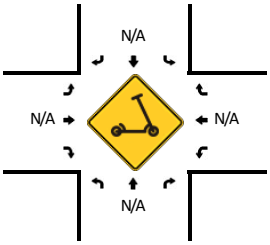












5-Min Count Period Beginning At	I-205 NB Ramps (Northbound)				I-205 NB Ramps (Southbound)				82nd Dr (Eastbound)				82nd Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	10	0	33	0	0	0	0	0	0	4	14	0	1	15	0	0	77	
7:05 AM	7	0	31	0	0	0	0	0	0	5	12	0	1	17	0	0	73	
7:10 AM	8	0	31	0	0	0	0	0	0	8	16	0	0	22	0	0	85	
7:15 AM	16	0	35	0	0	0	0	0	0	12	13	0	0	19	0	0	95	
7:20 AM	12	0	35	0	0	0	0	0	0	8	26	0	1	33	0	0	115	
7:25 AM	8	0	41	0	0	0	0	0	0	14	14	0	1	21	0	0	99	
7:30 AM	17	0	40	0	0	0	0	0	0	6	18	0	1	27	0	0	109	
7:35 AM	18	0	55	0	0	0	0	0	0	15	26	0	0	19	0	0	133	
7:40 AM	13	0	33	0	0	0	0	0	0	5	18	0	2	27	0	0	98	
7:45 AM	20	0	40	0	0	0	0	0	0	5	24	0	2	31	0	0	122	
7:50 AM	20	0	35	0	0	0	0	0	0	10	16	0	0	23	0	0	104	
7:55 AM	20	0	44	0	0	0	0	0	0	13	20	0	1	29	0	0	127	1237
8:00 AM	22	0	42	0	0	0	0	0	0	6	15	0	0	32	0	0	117	1277
8:05 AM	15	0	38	0	0	0	0	0	0	6	10	0	1	23	0	0	93	1297
8:10 AM	23	0	34	0	0	0	0	0	0	10	13	0	0	24	0	0	104	1316
8:15 AM	22	0	35	0	0	0	0	0	0	7	14	0	1	28	0	0	107	1328
8:20 AM	19	0	35	0	0	0	0	0	0	7	20	0	0	19	0	0	100	1313
8:25 AM	20	0	26	0	0	0	0	0	0	7	13	0	0	28	0	0	94	1308
8:30 AM	11	0	22	0	0	0	0	0	0	7	16	0	0	22	0	0	78	1277
8:35 AM	6	0	20	0	0	0	0	0	0	10	13	0	2	18	0	0	69	1213
8:40 AM	10	0	32	0	0	0	0	0	0	8	12	0	0	28	0	0	90	1205
8:45 AM	25	0	27	0	0	0	0	0	0	4	20	0	2	24	0	0	102	1185
8:50 AM	19	0	28	0	0	0	0	0	0	8	9	0	0	17	0	0	81	1162
8:55 AM	19	0	28	0	0	0	0	0	0	8	12	0	4	23	0	0	94	1129

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	204	0	512	0	0	0	0	0	0	100	272	0	16	308	0	0	1412
Heavy Trucks	12	0	56		0	0	0		0	0	16		0	96	0		180
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

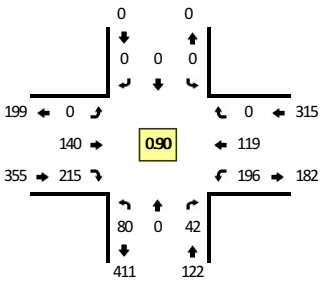
Type of peak hour being reported: User-Defined

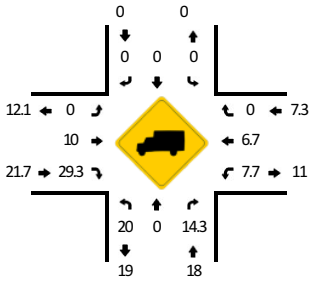
Method for determining peak hour: Total Entering

LOCATION: Clackamas River Dr -- Washington St
CITY/STATE: Oregon City, OR

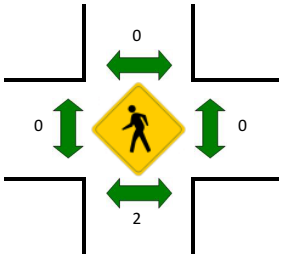
QC JOB #: 15328680
DATE: Wed, Dec 2 2020

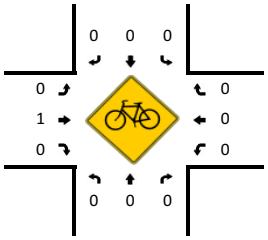
Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:40 AM -- 7:55 AM

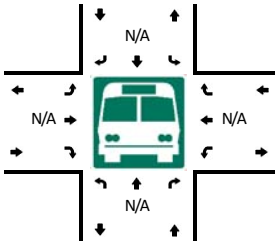


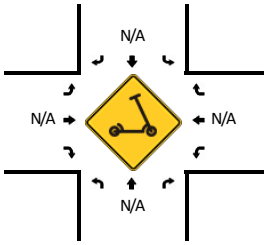


Quality Counts
DATA THAT DRIVES COMMUNITIES









5-Min Count Period Beginning At	Clackamas River Dr (Northbound)				Clackamas River Dr (Southbound)				Washington St (Eastbound)				Washington St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	8	0	2	0	0	0	0	0	0	6	8	1	13	6	0	0	44	
7:05 AM	5	0	0	0	0	0	0	0	0	4	9	0	16	4	0	0	38	
7:10 AM	3	0	1	0	0	0	0	0	0	11	18	0	13	7	0	0	53	
7:15 AM	7	0	2	0	0	0	0	0	0	4	25	0	10	7	0	0	55	
7:20 AM	6	0	1	0	0	0	0	0	0	8	11	0	15	8	0	0	49	
7:25 AM	3	0	5	0	0	0	0	0	0	10	19	0	24	5	0	0	66	
7:30 AM	5	0	0	0	0	0	0	0	0	10	21	0	17	8	0	0	61	
7:35 AM	7	0	1	0	0	0	0	0	0	3	18	0	13	7	0	0	49	
7:40 AM	12	0	3	0	0	0	0	0	0	10	14	0	13	14	0	0	66	
7:45 AM	3	0	6	0	0	0	0	0	0	12	18	0	18	11	0	0	68	
7:50 AM	8	0	1	0	0	0	0	0	0	18	20	0	20	18	0	0	85	
7:55 AM	7	0	4	0	0	0	0	0	0	15	14	0	16	10	0	0	66	700
8:00 AM	2	0	0	0	0	0	0	0	0	9	29	0	14	14	0	0	68	724
8:05 AM	5	0	5	0	0	0	0	0	0	19	15	0	10	6	0	0	60	746
8:10 AM	8	0	6	0	0	0	0	0	0	14	19	0	17	6	0	0	70	763
8:15 AM	11	0	4	0	0	0	0	0	0	11	13	0	18	10	0	0	67	775
8:20 AM	9	0	7	0	0	0	0	0	0	9	15	0	16	10	0	0	66	792
8:25 AM	2	0	2	0	0	0	0	0	0	16	21	0	16	7	0	0	64	790
8:30 AM	18	0	2	0	0	0	0	0	0	8	9	0	18	8	0	0	63	792
8:35 AM	3	0	2	0	0	0	0	0	0	14	19	0	14	8	0	0	60	803
8:40 AM	7	0	2	0	0	0	0	0	0	15	14	1	7	7	0	0	53	790
8:45 AM	3	0	4	0	0	0	0	0	0	6	14	0	8	14	0	0	49	771
8:50 AM	6	0	1	0	0	0	0	0	0	7	24	0	7	5	0	0	50	736
8:55 AM	10	0	4	0	0	0	0	0	0	7	19	1	8	4	0	0	53	723

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	92	0	40	0	0	0	0	0	0	160	208	0	204	172	0	0	876
Heavy Trucks	12	0	0		0	0	0		0	28	76		20	12	0		148
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

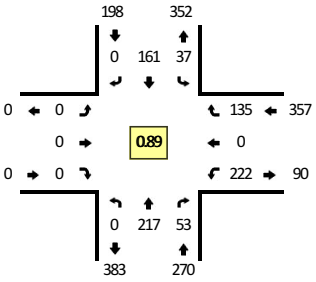
Type of peak hour being reported: User-Defined

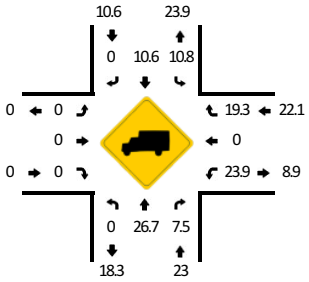
Method for determining peak hour: Total Entering

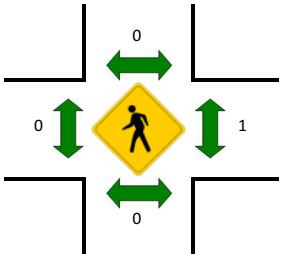
LOCATION: Washington St -- Prairie Schooner Way
CITY/STATE: Oregon City, OR

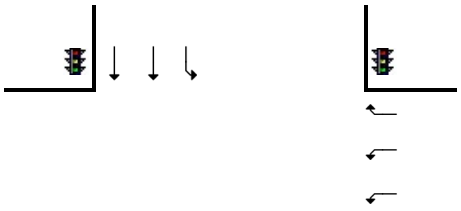
QC JOB #: 15328683
DATE: Wed, Dec 2 2020

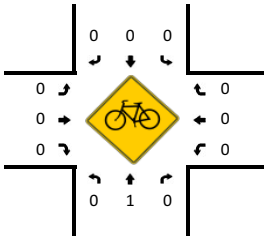
Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:50 AM -- 8:05 AM

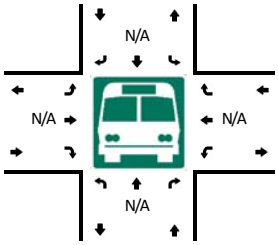




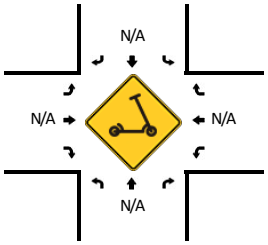












5-Min Count Period Beginning At	Washington St (Northbound)				Washington St (Southbound)				Prairie Schooner Way (Eastbound)				Prairie Schooner Way (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	9	2	0	4	10	0	0	0	0	0	0	16	0	6	0	47	
7:05 AM	0	8	1	0	1	11	0	0	0	0	0	0	12	0	4	0	37	
7:10 AM	0	17	0	0	2	6	0	0	0	0	0	0	13	0	14	0	52	
7:15 AM	0	19	0	0	1	14	0	0	0	0	0	0	13	0	10	0	57	
7:20 AM	0	13	1	0	4	10	0	0	0	0	0	0	20	0	7	0	55	
7:25 AM	0	18	2	0	4	7	0	0	0	0	0	0	19	0	10	0	60	
7:30 AM	0	16	2	0	0	9	0	0	0	0	0	0	20	0	14	0	61	
7:35 AM	0	16	5	0	4	13	0	0	0	0	0	0	33	0	6	0	77	
7:40 AM	0	17	3	0	2	21	0	0	0	0	0	0	19	0	11	0	73	
7:45 AM	0	19	3	0	3	14	0	0	0	0	0	0	19	0	7	0	65	
7:50 AM	0	23	3	0	2	20	0	0	0	0	0	0	15	0	16	0	79	
7:55 AM	0	20	4	0	2	17	0	0	0	0	0	0	19	0	8	0	70	733
8:00 AM	0	26	9	0	5	14	0	0	0	0	0	0	17	0	12	0	83	769
8:05 AM	0	14	4	0	2	8	0	0	0	0	0	0	17	0	20	0	65	797
8:10 AM	0	17	8	0	4	10	0	0	0	0	0	0	12	0	13	0	64	809
8:15 AM	0	15	4	0	4	16	0	0	0	0	0	0	16	0	10	0	65	817
8:20 AM	0	16	6	0	5	12	0	0	0	0	0	0	16	0	8	0	63	825
8:25 AM	0	16	3	0	4	9	0	0	0	0	0	0	13	0	15	0	60	825
8:30 AM	0	8	9	0	4	18	0	0	0	0	0	0	18	0	9	0	66	830
8:35 AM	0	16	6	0	3	10	0	0	0	0	0	0	22	0	18	0	75	828
8:40 AM	0	13	7	0	3	13	0	0	0	0	0	0	11	0	14	0	61	816
8:45 AM	0	12	2	0	3	9	0	0	0	0	0	0	32	0	6	0	64	815
8:50 AM	0	19	4	0	1	14	0	0	0	0	0	0	24	0	11	0	73	809
8:55 AM	0	19	7	0	3	9	0	0	0	0	0	0	17	0	9	0	64	803

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	276	64	0	36	204	0	0	0	0	0	0	204	0	144	0	928
Heavy Trucks	0	52	4		4	24	0		0	0	0		48	0	40		172
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

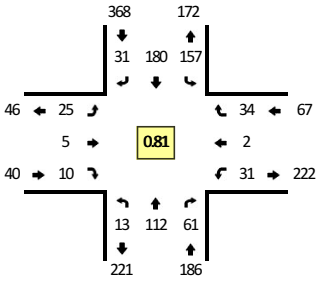
Type of peak hour being reported: User-Defined

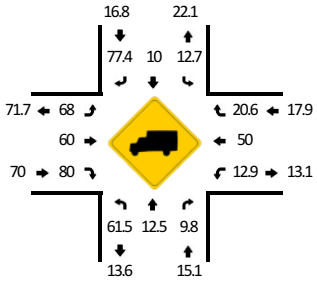
Method for determining peak hour: Total Entering

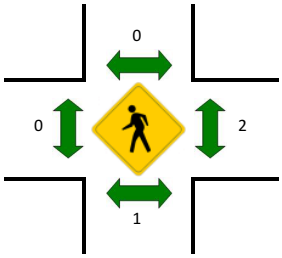
LOCATION: Washington St -- Home Depot West Dwy
CITY/STATE: Oregon City, OR

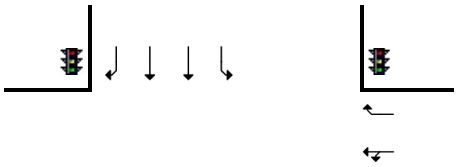
QC JOB #: 15328686
DATE: Wed, Dec 2 2020

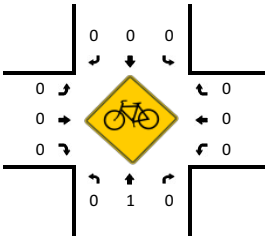
Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:40 AM -- 7:55 AM

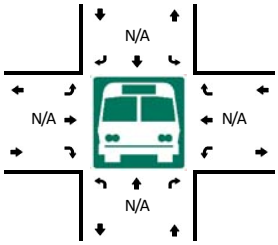


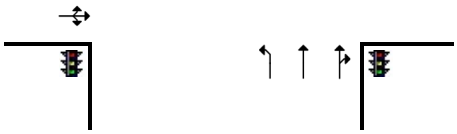


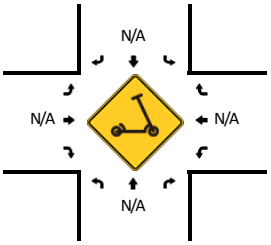












5-Min Count Period Beginning At	Washington St (Northbound)				Washington St (Southbound)				Home Depot West Dwy (Eastbound)				Home Depot West Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	7	2	0	8	12	5	0	0	0	2	0	0	0	1	0	37	
7:05 AM	0	3	4	0	14	9	1	0	1	0	0	0	3	0	0	0	35	
7:10 AM	0	6	3	0	8	10	2	0	3	0	0	0	1	0	2	0	35	
7:15 AM	1	9	4	0	14	8	1	0	2	1	0	0	5	0	1	0	46	
7:20 AM	0	2	2	0	11	14	3	0	3	0	0	0	0	0	1	0	36	
7:25 AM	1	15	6	0	15	7	3	0	2	1	1	0	2	0	0	0	53	
7:30 AM	2	10	4	0	9	16	1	0	1	2	0	0	1	0	4	0	50	
7:35 AM	0	6	0	0	17	16	2	0	1	0	2	0	0	0	2	0	46	
7:40 AM	3	8	6	0	15	19	5	0	4	0	0	0	6	0	3	0	69	
7:45 AM	0	8	5	0	14	20	3	1	2	1	0	0	3	0	2	0	59	
7:50 AM	3	19	10	0	13	22	3	0	2	1	2	0	1	0	1	0	77	
7:55 AM	1	10	5	0	17	17	2	0	2	0	1	0	2	0	0	0	57	600
8:00 AM	0	10	7	0	13	15	0	0	2	0	0	0	3	1	6	0	57	620
8:05 AM	1	5	4	0	9	10	4	0	3	0	1	0	3	0	2	0	42	627
8:10 AM	1	6	4	0	9	10	5	0	1	0	3	0	5	0	8	0	52	644
8:15 AM	0	8	4	0	13	16	2	0	1	0	0	0	2	1	2	0	49	647
8:20 AM	1	7	6	0	12	12	1	0	4	0	0	0	3	0	4	0	50	661
8:25 AM	0	2	5	0	9	13	3	0	2	2	0	0	2	0	6	0	44	652
8:30 AM	0	7	6	0	13	18	4	0	1	1	0	0	5	0	1	0	56	658
8:35 AM	1	3	7	0	6	17	6	1	3	0	0	0	3	0	3	0	50	662
8:40 AM	1	10	13	0	14	6	2	0	2	1	2	0	4	0	2	0	57	650
8:45 AM	2	3	4	0	16	14	7	0	4	2	0	0	6	0	1	0	59	650
8:50 AM	5	7	8	0	16	16	5	0	3	0	1	0	2	0	2	0	65	638
8:55 AM	3	7	6	0	15	12	5	0	4	0	0	0	3	0	3	0	58	639

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	24	140	84	0	168	244	44	4	32	8	8	0	40	0	24	0	820
Heavy Trucks	12	12	8		16	28	36		20	0	8		4	0	4		148
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

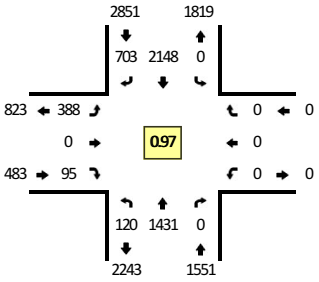
Type of peak hour being reported: User-Defined

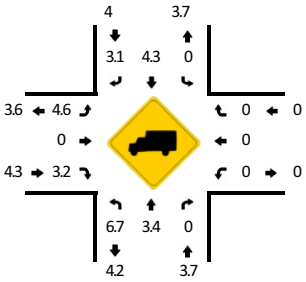
Method for determining peak hour: Total Entering

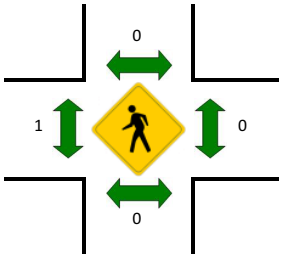
LOCATION: Cascade Hwy -- Redland Rd
CITY/STATE: Oregon City, OR

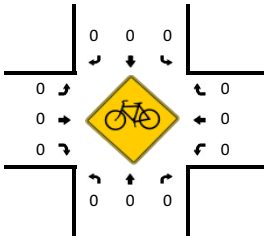
QC JOB #: 15328602
DATE: Wed, Dec 2 2020

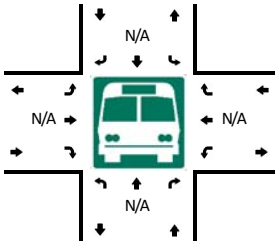
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:10 PM -- 4:25 PM

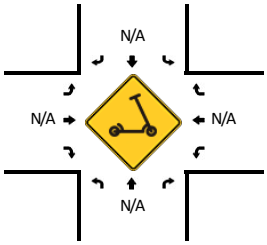












5-Min Count Period Beginning At	Cascade Hwy (Northbound)				Cascade Hwy (Southbound)				Redland Rd (Eastbound)				Redland Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	10	106	0	0	0	152	55	0	37	0	10	0	0	0	0	0	370	
4:05 PM	10	112	0	0	0	177	53	0	30	0	10	0	0	0	0	0	392	
4:10 PM	9	137	0	0	0	190	62	0	30	0	6	0	0	0	0	0	434	
4:15 PM	10	117	0	0	0	188	64	0	34	0	9	0	0	0	0	0	422	
4:20 PM	19	126	0	0	0	174	51	0	29	0	6	0	0	0	0	0	405	
4:25 PM	12	109	0	0	0	199	67	0	29	0	4	0	0	0	0	0	420	
4:30 PM	6	117	0	0	0	174	64	0	31	0	12	0	0	0	0	0	404	
4:35 PM	7	125	0	0	0	154	50	0	43	0	5	0	0	0	0	0	384	
4:40 PM	9	115	0	0	0	191	72	0	28	0	5	0	0	0	0	0	420	
4:45 PM	8	129	0	0	0	179	56	0	33	0	7	0	0	0	0	0	412	
4:50 PM	8	95	0	0	0	180	47	0	36	0	16	0	0	0	0	0	382	
4:55 PM	12	143	0	0	0	190	62	0	28	0	5	0	0	0	0	0	440	4885
5:00 PM	9	121	0	0	0	158	59	0	26	0	3	0	0	0	0	0	376	4891
5:05 PM	8	111	0	0	0	153	50	0	38	0	14	0	0	0	0	0	374	4873
5:10 PM	8	137	0	0	0	175	63	0	27	0	13	0	0	0	0	0	423	4862
5:15 PM	12	90	0	0	0	186	58	0	36	0	14	0	0	0	0	0	396	4836
5:20 PM	5	105	0	0	0	163	57	0	41	0	10	0	0	0	0	0	381	4812
5:25 PM	9	103	0	0	0	146	60	0	38	0	14	0	0	0	0	0	370	4762
5:30 PM	4	133	0	0	0	209	62	0	23	0	5	0	0	0	0	0	436	4794
5:35 PM	5	92	0	0	0	173	68	0	17	0	11	0	0	0	0	0	366	4776
5:40 PM	7	98	0	0	0	142	56	0	39	0	7	0	0	0	0	0	349	4705
5:45 PM	4	97	0	0	0	163	44	0	24	0	7	0	0	0	0	0	339	4632
5:50 PM	5	85	0	0	0	141	44	0	19	0	8	0	0	0	0	0	302	4552
5:55 PM	6	83	0	0	0	95	35	0	22	0	6	0	0	0	0	0	247	4359

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	152	1520	0	0	0	2208	708	0	372	0	84	0	0	0	0	0	5044
Heavy Trucks	8	56	0		0	124	24		32	0	4		0	0	0		248
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

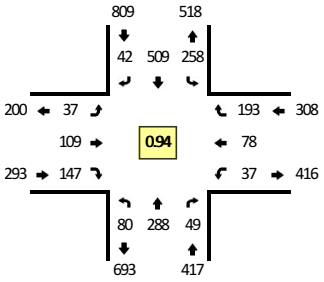
Type of peak hour being reported: User-Defined

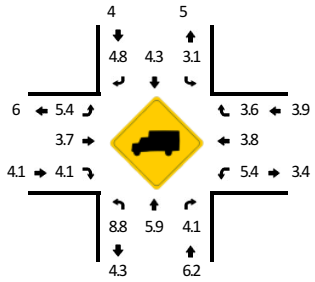
Method for determining peak hour: Total Entering

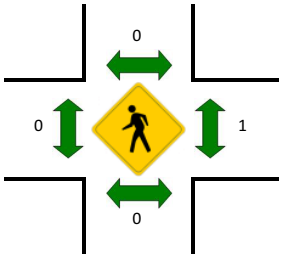
LOCATION: Redland Rd -- Abernethy Rd/Holcomb Blvd
CITY/STATE: Oregon City, OR

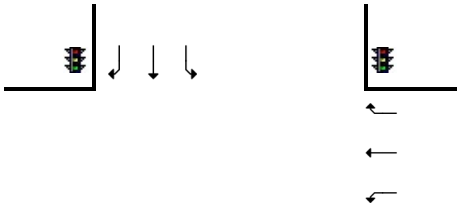
QC JOB #: 15328605
DATE: Wed, Dec 2 2020

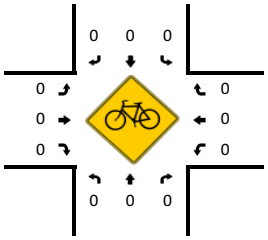
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:30 PM -- 4:45 PM

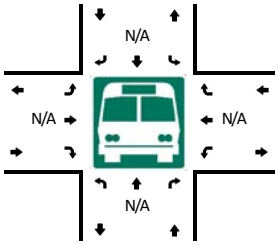


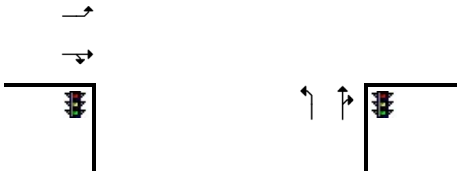


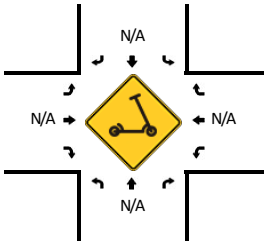












5-Min Count Period Beginning At	Redland Rd (Northbound)				Redland Rd (Southbound)				Abernethy Rd/Holcomb Blvd (Eastbound)				Abernethy Rd/Holcomb Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	8	21	3	0	25	45	3	0	4	7	12	0	0	3	15	0	146	
4:05 PM	6	25	5	0	18	36	4	0	6	5	12	0	2	3	17	0	139	
4:10 PM	5	33	1	0	22	37	2	0	4	9	13	0	2	11	19	0	158	
4:15 PM	4	21	2	0	25	55	3	0	2	7	11	0	3	6	14	0	153	
4:20 PM	5	20	6	0	25	34	4	0	2	9	15	0	4	2	10	0	136	
4:25 PM	3	17	2	0	20	52	7	0	2	12	11	0	3	8	19	0	156	
4:30 PM	6	32	5	0	14	52	2	0	1	3	12	0	4	9	28	0	168	
4:35 PM	12	20	4	0	25	34	2	0	2	14	9	0	4	8	11	0	145	
4:40 PM	9	36	5	0	22	55	2	0	1	8	10	0	2	9	13	0	172	
4:45 PM	9	15	1	0	21	38	6	0	7	12	22	0	2	8	15	0	156	
4:50 PM	7	26	6	0	19	31	7	0	3	14	8	0	7	7	18	0	153	
4:55 PM	6	22	9	0	22	40	0	0	3	9	12	0	4	4	14	0	145	1827
5:00 PM	6	23	4	0	26	44	3	0	5	15	16	0	3	7	10	0	162	1843
5:05 PM	7	28	7	0	27	36	4	0	3	6	10	0	4	5	17	0	154	1858
5:10 PM	9	35	6	0	24	34	7	0	7	10	9	0	0	4	13	0	158	1858
5:15 PM	2	22	6	0	27	33	5	0	12	14	23	0	1	8	18	0	171	1876
5:20 PM	7	26	5	0	21	44	4	0	4	15	16	0	1	10	12	0	165	1905
5:25 PM	2	31	2	0	21	39	5	0	4	4	12	0	2	4	14	0	140	1889
5:30 PM	6	9	7	0	23	29	2	0	6	10	21	0	2	4	10	0	129	1850
5:35 PM	2	32	6	0	22	52	3	0	0	9	12	0	3	5	12	0	158	1863
5:40 PM	10	21	6	0	35	37	1	0	0	10	12	0	3	3	12	0	150	1841
5:45 PM	5	17	1	0	18	25	3	0	1	10	5	0	1	6	17	0	109	1794
5:50 PM	2	19	4	0	14	26	5	0	5	8	9	0	5	2	4	0	103	1744
5:55 PM	1	16	1	0	22	26	2	0	3	7	7	0	5	2	5	0	97	1696

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	108	352	56	0	244	564	24	0	16	100	124	0	40	104	208	0	1940
Heavy Trucks	12	24	0		12	24	8		0	4	4		0	0	0		88
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

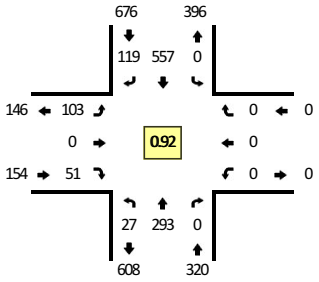
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering

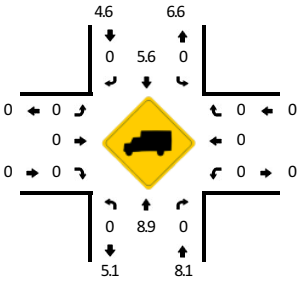
LOCATION: S Redland Rd -- S Anchor Way
CITY/STATE: Oregon City, OR

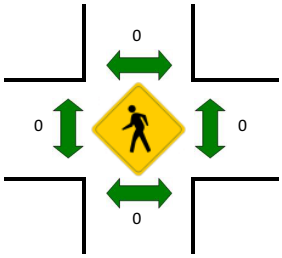
QC JOB #: 15328608
DATE: Wed, Dec 2 2020

Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:30 PM -- 4:45 PM

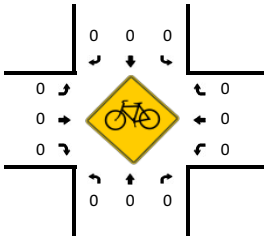


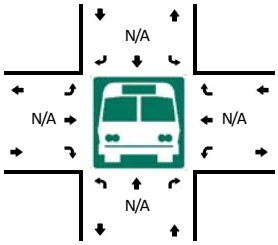




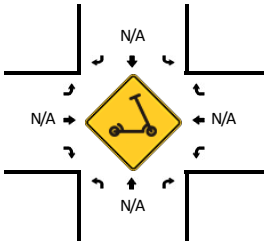












5-Min Count Period Beginning At	S Redland Rd (Northbound)				S Redland Rd (Southbound)				S Anchor Way (Eastbound)				S Anchor Way (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	2	22	0	0	0	55	8	0	10	0	4	0	0	0	0	0	101	
4:05 PM	2	25	0	0	0	38	8	0	10	0	11	0	0	0	0	0	94	
4:10 PM	3	24	0	0	0	45	10	0	8	0	2	0	0	0	0	0	92	
4:15 PM	1	23	0	0	0	55	9	0	5	0	3	0	0	0	0	0	96	
4:20 PM	2	22	0	0	0	40	10	0	10	0	4	0	0	0	0	0	88	
4:25 PM	5	23	0	0	0	51	10	0	7	0	2	0	0	0	0	0	98	
4:30 PM	1	22	0	0	0	63	9	0	11	0	3	0	0	0	0	0	109	
4:35 PM	2	24	0	0	0	32	12	0	14	0	6	0	0	0	0	0	90	
4:40 PM	0	45	0	0	0	50	9	0	4	0	7	0	0	0	0	0	115	
4:45 PM	3	13	0	0	0	48	14	0	3	0	4	0	0	0	0	0	85	
4:50 PM	5	29	0	0	0	41	6	0	10	0	1	0	0	0	0	0	92	
4:55 PM	1	21	0	0	0	39	14	0	11	0	4	0	0	0	0	0	90	1150
5:00 PM	3	19	0	0	0	46	14	0	13	0	4	0	0	0	0	0	99	1148
5:05 PM	2	22	0	0	0	43	10	0	16	0	3	0	0	0	0	0	96	1150
5:10 PM	0	35	0	0	0	40	9	0	16	0	10	0	0	0	0	0	110	1168
5:15 PM	0	18	0	0	0	44	6	0	9	0	6	0	0	0	0	0	83	1155
5:20 PM	6	21	0	0	0	41	13	0	16	0	2	0	0	0	0	0	99	1166
5:25 PM	2	19	0	0	0	47	9	0	9	0	5	0	0	0	0	0	91	1159
5:30 PM	1	18	0	0	0	38	9	0	11	0	2	0	0	0	0	0	79	1129
5:35 PM	1	21	0	0	0	55	10	0	18	0	3	0	0	0	0	0	108	1147
5:40 PM	0	25	0	0	0	36	13	0	7	0	3	0	0	0	0	0	84	1116
5:45 PM	1	14	0	0	0	27	6	0	7	0	4	0	0	0	0	0	59	1090
5:50 PM	3	16	0	0	0	40	7	0	11	0	3	0	0	0	0	0	80	1078
5:55 PM	3	11	0	0	0	26	8	0	2	0	0	0	0	0	0	0	50	1038

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	12	364	0	0	0	580	120	0	116	0	64	0	0	0	0	0	1256
Heavy Trucks	0	36	0		0	32	0		0	0	0		0	0	0		68
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

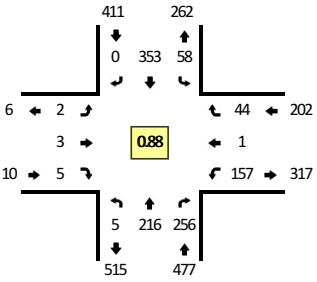
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering

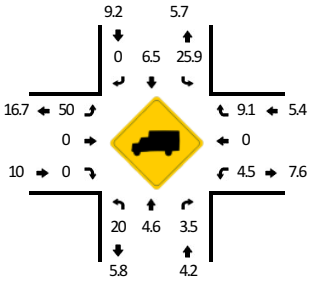
LOCATION: Washington St -- 17th St/Abernethy Rd
CITY/STATE: Oregon City, OR

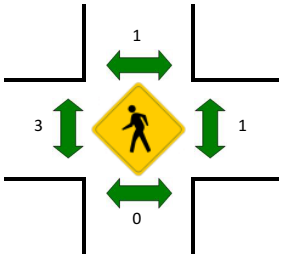
QC JOB #: 15328611
DATE: Wed, Dec 2 2020

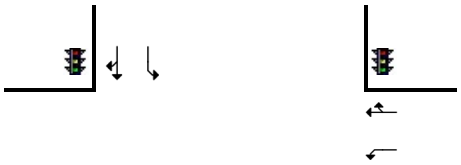
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:35 PM -- 4:50 PM

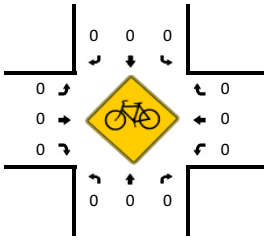


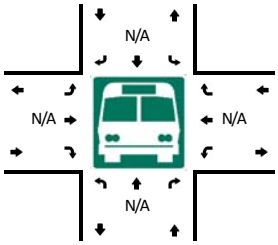


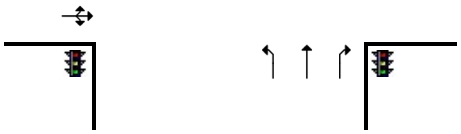


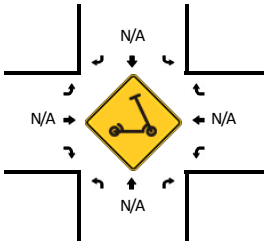












5-Min Count Period Beginning At	Washington St (Northbound)				Washington St (Southbound)				17th St/Abernethy Rd (Eastbound)				17th St/Abernethy Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	19	19	0	2	30	0	0	0	0	0	0	11	1	4	0	86	
4:05 PM	2	20	19	0	5	39	0	0	1	0	0	0	15	0	1	0	102	
4:10 PM	0	16	24	0	4	20	0	0	1	3	2	0	7	0	4	0	81	
4:15 PM	0	21	9	0	2	26	0	0	0	0	0	0	11	0	3	0	72	
4:20 PM	0	17	27	0	6	29	0	0	0	0	0	0	12	0	4	0	95	
4:25 PM	1	20	19	0	6	26	0	0	0	0	1	0	11	0	4	0	88	
4:30 PM	0	19	19	0	3	21	0	0	0	0	0	0	15	0	1	0	78	
4:35 PM	0	17	21	0	3	36	0	0	0	0	0	0	20	0	3	0	100	
4:40 PM	1	14	25	0	5	35	0	0	0	0	1	0	17	0	6	0	104	
4:45 PM	1	14	31	0	9	37	0	0	0	0	0	0	12	0	5	0	109	
4:50 PM	0	19	20	0	4	22	0	0	0	0	1	0	16	0	5	0	87	
4:55 PM	0	20	23	0	9	32	0	0	0	0	0	0	10	0	4	0	98	1100
5:00 PM	0	15	18	0	12	20	0	0	0	0	0	0	9	0	5	0	79	1093
5:05 PM	0	15	23	0	3	24	0	0	0	0	0	0	10	0	3	0	78	1069
5:10 PM	0	17	24	0	3	18	0	0	0	1	0	0	17	0	4	0	84	1072
5:15 PM	0	10	24	0	5	15	0	0	0	0	0	0	20	0	6	0	80	1080
5:20 PM	0	17	18	0	4	19	0	0	0	0	0	0	22	0	5	0	85	1070
5:25 PM	0	12	21	0	5	21	0	0	0	0	0	0	9	0	1	0	69	1051
5:30 PM	0	14	28	0	3	26	0	0	0	0	0	0	13	0	1	0	85	1058
5:35 PM	0	9	16	0	4	22	0	0	0	0	0	0	10	0	4	0	65	1023
5:40 PM	0	16	20	0	0	16	0	0	0	0	0	0	13	0	0	0	65	984
5:45 PM	1	11	20	0	1	16	0	0	0	0	0	0	11	0	3	0	63	938
5:50 PM	0	12	17	0	2	25	0	0	0	0	0	0	7	0	3	0	66	917
5:55 PM	0	10	21	0	0	17	0	0	0	0	0	0	7	0	1	0	56	875

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	8	180	308	0	68	432	0	0	0	0	4	0	196	0	56	0	1252
Heavy Trucks	0	8	8		24	24	0		0	0	0		12	0	0		76
Buses																	
Pedestrians		0				0				0				4			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

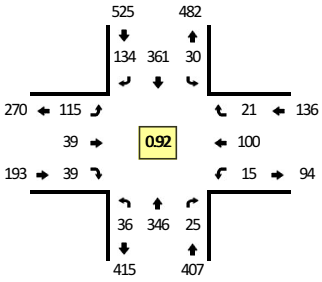
Type of peak hour being reported: User-Defined

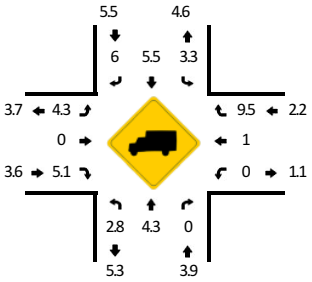
Method for determining peak hour: Total Entering

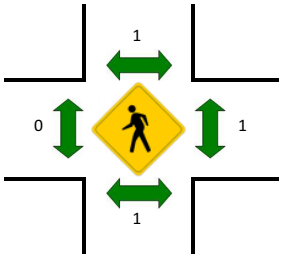
LOCATION: Washington St -- 15th St
CITY/STATE: Oregon City, OR

QC JOB #: 15328614
DATE: Wed, Dec 2 2020

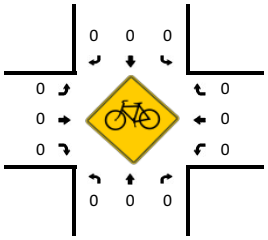
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:35 PM -- 4:50 PM

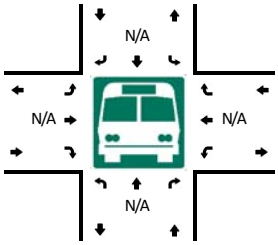




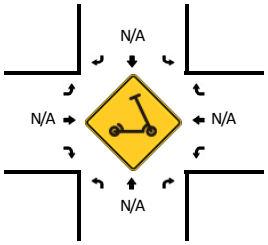












5-Min Count Period Beginning At	Washington St (Northbound)				Washington St (Southbound)				15th St (Eastbound)				15th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	4	29	4	0	2	38	7	0	6	2	2	0	1	8	2	0	105	
4:05 PM	2	26	4	0	2	28	15	0	13	5	4	0	2	5	3	0	109	
4:10 PM	2	26	1	0	2	27	13	0	14	3	5	0	1	6	2	0	102	
4:15 PM	2	31	2	0	5	29	6	0	2	3	3	0	2	18	0	0	103	
4:20 PM	2	31	4	0	1	29	10	0	10	2	4	0	0	5	0	0	98	
4:25 PM	3	29	2	0	4	21	9	0	9	4	2	0	1	10	1	0	95	
4:30 PM	2	28	2	0	1	29	5	0	8	5	3	0	0	9	3	0	95	
4:35 PM	4	29	1	0	0	34	20	0	11	2	5	0	2	10	1	0	119	
4:40 PM	4	25	0	0	3	38	9	0	8	2	3	0	1	9	3	0	105	
4:45 PM	4	29	3	0	4	32	14	0	15	4	2	0	1	7	3	0	118	
4:50 PM	3	28	1	0	2	28	14	0	8	5	1	0	3	4	1	0	98	
4:55 PM	4	35	1	0	4	28	12	0	11	2	5	0	1	9	2	0	114	1261
5:00 PM	3	19	2	0	0	25	5	0	7	3	2	0	1	7	2	0	76	1232
5:05 PM	4	31	3	0	0	29	4	0	5	2	8	0	0	10	4	0	100	1223
5:10 PM	3	23	3	0	3	28	6	0	12	7	2	0	2	14	5	0	108	1229
5:15 PM	2	26	4	0	3	28	7	0	5	0	4	0	1	4	2	0	86	1212
5:20 PM	1	29	4	0	0	30	11	0	7	4	2	0	0	11	1	0	100	1214
5:25 PM	4	24	4	0	2	21	8	0	6	0	6	0	1	8	2	0	86	1205
5:30 PM	4	34	4	0	1	30	11	0	9	3	3	0	0	7	1	0	107	1217
5:35 PM	2	16	1	0	4	20	9	0	4	3	4	0	3	11	1	0	78	1176
5:40 PM	1	26	1	0	0	24	8	0	10	2	1	0	0	7	2	0	82	1153
5:45 PM	3	24	2	0	2	17	8	0	4	1	3	0	0	6	1	0	71	1106
5:50 PM	3	26	2	0	0	26	6	0	4	0	5	0	1	4	1	0	78	1086
5:55 PM	0	20	3	0	1	13	6	0	3	2	4	0	0	4	4	0	60	1032

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	48	332	16	0	28	416	172	0	136	32	40	0	16	104	28	0	1368
Heavy Trucks	4	12	0		0	20	12		4	0	0		0	0	4		56
Buses																	
Pedestrians		4				0				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

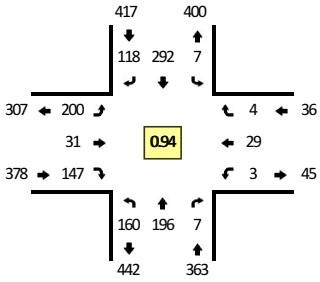
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering

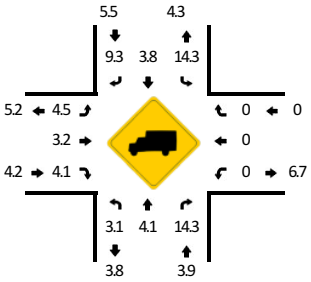
LOCATION: Washington St -- 14th St
CITY/STATE: Oregon City, OR

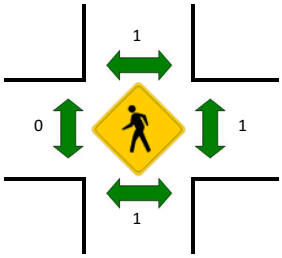
QC JOB #: 15328617
DATE: Wed, Dec 2 2020

Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:30 PM -- 4:45 PM

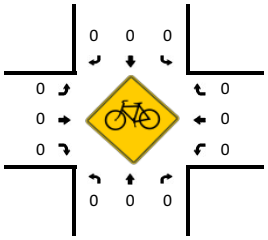


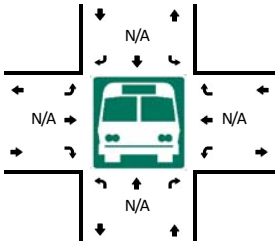


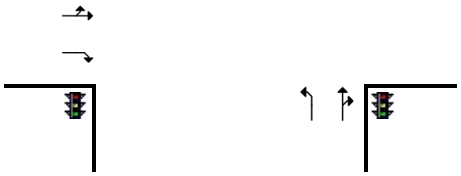


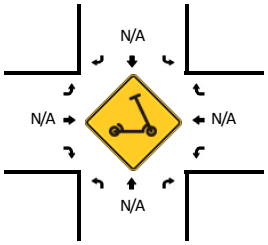












5-Min Count Period Beginning At	Washington St (Northbound)				Washington St (Southbound)				14th St (Eastbound)				14th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	6	18	0	0	1	29	12	0	12	2	5	0	0	1	1	0	87	
4:05 PM	13	18	1	0	0	25	11	0	17	0	17	0	2	4	0	0	108	
4:10 PM	13	16	0	0	1	22	8	0	12	6	14	0	0	1	0	0	93	
4:15 PM	15	19	2	0	0	23	8	0	19	4	10	0	1	4	0	0	105	
4:20 PM	15	15	0	0	2	23	9	0	16	1	12	0	0	2	0	0	95	
4:25 PM	18	11	1	0	0	15	9	0	25	2	10	0	0	1	1	0	93	
4:30 PM	16	14	0	0	1	26	7	0	16	3	11	0	0	2	0	0	96	
4:35 PM	16	16	2	0	0	24	10	0	16	2	19	0	0	4	1	0	110	
4:40 PM	13	18	0	0	0	36	13	0	14	2	14	0	0	1	0	0	111	
4:45 PM	6	21	1	0	0	23	9	0	14	2	13	0	0	2	0	0	91	
4:50 PM	15	13	0	0	0	21	12	0	19	3	15	0	0	4	1	0	103	
4:55 PM	14	17	0	0	2	25	10	0	20	4	7	0	0	3	0	0	102	1194
5:00 PM	11	12	0	0	0	22	6	0	15	2	16	0	0	1	1	0	86	1193
5:05 PM	21	17	1	0	0	24	12	0	16	2	12	0	0	4	1	0	110	1195
5:10 PM	11	14	0	0	1	23	9	0	22	6	11	0	0	3	0	0	100	1202
5:15 PM	22	12	2	0	1	27	4	0	14	3	13	0	0	1	0	0	99	1196
5:20 PM	14	16	0	0	0	19	11	0	16	3	13	0	0	2	0	0	94	1195
5:25 PM	10	19	0	0	0	24	8	0	12	0	11	0	0	1	1	0	86	1188
5:30 PM	9	24	2	0	2	18	11	0	18	0	14	0	0	2	0	0	100	1192
5:35 PM	18	8	0	0	1	18	9	0	11	0	8	0	0	1	0	0	74	1156
5:40 PM	15	17	0	0	0	16	6	0	14	1	20	0	0	1	0	0	90	1135
5:45 PM	10	17	0	0	0	18	6	0	10	0	9	0	0	1	0	0	71	1115
5:50 PM	14	12	0	0	0	24	7	0	16	3	11	0	0	1	1	0	89	1101
5:55 PM	16	10	0	0	0	13	5	0	13	4	5	0	0	1	0	0	67	1066

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	180	192	8	0	4	344	120	0	184	28	176	0	0	28	4	0	1268
Heavy Trucks	16	4	0		4	12	8		4	0	0		0	0	0		48
Buses																	
Pedestrians		0				0				0				4			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

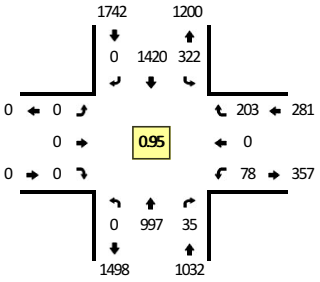
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering

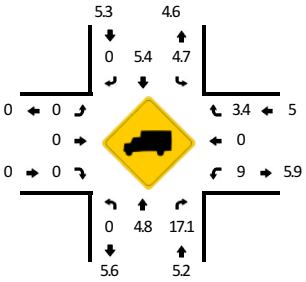
LOCATION: McLoughlin Blvd -- 14th St
CITY/STATE: Oregon City, OR

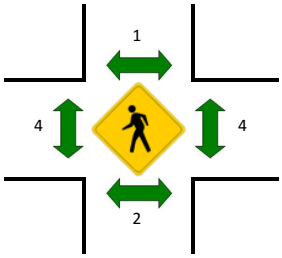
QC JOB #: 15328620
DATE: Wed, Dec 2 2020

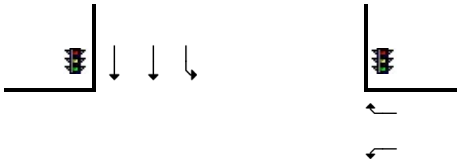
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:10 PM -- 4:25 PM

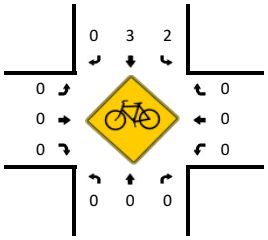


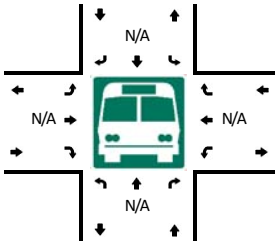




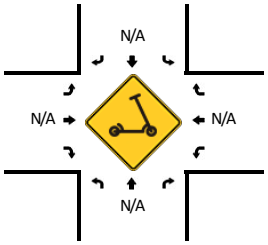












5-Min Count Period Beginning At	McLoughlin Blvd (Northbound)				McLoughlin Blvd (Southbound)				14th St (Eastbound)				14th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	77	0	0	31	121	0	0	0	0	0	0	4	0	10	0	243	
4:05 PM	0	86	3	0	24	107	0	0	0	0	0	0	11	0	16	0	247	
4:10 PM	0	90	6	0	33	135	0	0	0	0	0	0	4	0	15	0	283	
4:15 PM	0	71	2	0	22	119	0	0	0	0	0	0	7	0	21	0	242	
4:20 PM	0	100	5	0	26	121	0	0	0	0	0	0	6	0	17	0	275	
4:25 PM	0	97	4	0	20	120	0	0	0	0	0	0	9	0	21	0	271	
4:30 PM	0	75	1	0	35	106	0	0	0	0	0	0	4	0	15	0	236	
4:35 PM	0	75	5	0	29	112	0	0	0	0	0	0	4	0	21	0	246	
4:40 PM	0	76	3	0	35	122	0	0	0	0	0	0	6	0	15	0	257	
4:45 PM	0	87	2	0	14	109	0	0	0	0	0	0	6	0	13	0	231	
4:50 PM	0	86	2	0	34	138	0	0	0	0	0	0	9	0	14	0	283	
4:55 PM	0	77	2	0	19	110	0	0	0	0	0	0	8	0	25	0	241	3055
5:00 PM	0	112	2	0	30	129	0	0	0	0	0	0	5	0	16	0	294	3106
5:05 PM	0	96	11	0	19	124	0	0	0	0	0	0	2	0	24	0	276	3135
5:10 PM	0	102	4	0	28	133	0	0	0	0	0	0	2	0	12	0	281	3133
5:15 PM	0	112	9	0	28	142	0	0	0	0	0	0	5	0	19	0	315	3206
5:20 PM	0	79	2	0	18	139	0	0	0	0	0	0	5	0	23	0	266	3197
5:25 PM	0	82	3	0	22	100	0	0	0	0	0	0	5	0	19	0	231	3157
5:30 PM	0	71	4	0	20	133	0	0	0	0	0	0	5	0	13	0	246	3167
5:35 PM	0	74	1	0	14	101	0	0	0	0	0	0	5	0	21	0	216	3137
5:40 PM	0	62	1	0	29	111	0	0	0	0	0	0	2	0	15	0	220	3100
5:45 PM	0	66	3	0	20	106	0	0	0	0	0	0	4	0	15	0	214	3083
5:50 PM	0	58	4	0	15	78	0	0	0	0	0	0	2	0	16	0	173	2973
5:55 PM	0	50	1	0	17	91	0	0	0	0	0	0	2	0	16	0	177	2909

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1044	52	0	324	1500	0	0	0	0	0	0	68	0	212	0	3200
Heavy Trucks	0	36	12		16	104	0		0	0	0		4	0	4		176
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		8	0	0		0	0	0		0	0	0		8
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

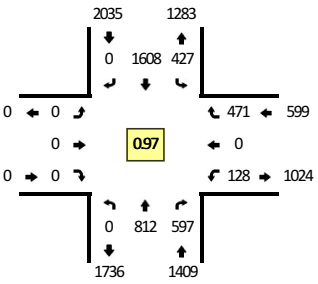
Type of peak hour being reported: User-Defined

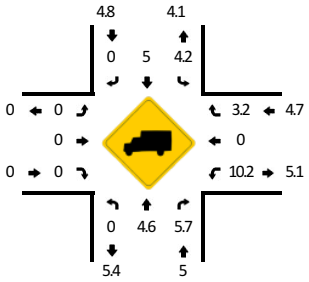
Method for determining peak hour: Total Entering

LOCATION: McLoughlin Blvd -- I-205 NB Off-Ramp
CITY/STATE: Oregon City, OR

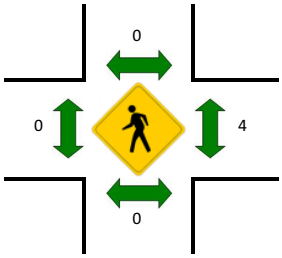
QC JOB #: 15328623
DATE: Wed, Dec 2 2020

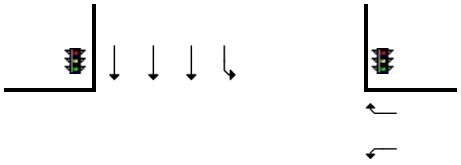
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:15 PM -- 4:30 PM

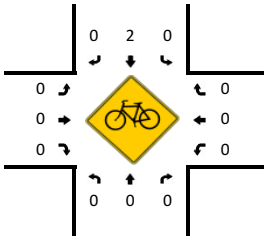


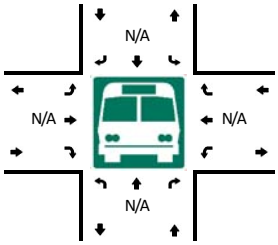


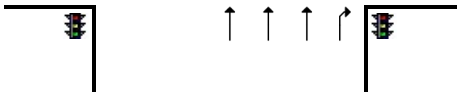
Quality Counts
DATA THAT DRIVES COMMUNITIES

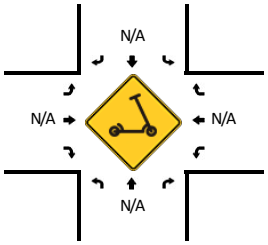












5-Min Count Period Beginning At	McLoughlin Blvd (Northbound)				McLoughlin Blvd (Southbound)				I-205 NB Off-Ramp (Eastbound)				I-205 NB Off-Ramp (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	53	41	0	29	130	0	0	0	0	0	0	16	0	43	0	312	
4:05 PM	0	64	59	0	30	131	0	0	0	0	0	0	10	0	34	0	328	
4:10 PM	0	57	52	0	38	141	0	0	0	0	0	0	9	0	40	0	337	
4:15 PM	0	81	44	0	36	145	0	0	0	0	0	0	6	0	41	0	353	
4:20 PM	0	56	54	0	35	120	0	0	0	0	0	0	18	0	36	0	319	
4:25 PM	0	101	50	0	40	137	0	0	0	0	0	0	6	0	39	0	373	
4:30 PM	0	49	43	0	35	116	0	0	0	0	0	0	9	0	34	0	286	
4:35 PM	0	80	56	0	39	142	0	0	0	0	0	0	11	0	46	0	374	
4:40 PM	0	60	45	0	34	136	0	0	0	0	0	0	13	0	40	0	328	
4:45 PM	0	86	48	0	36	122	0	0	0	0	0	0	11	0	31	0	334	
4:50 PM	0	49	43	0	37	150	0	0	0	0	0	0	9	0	42	0	330	
4:55 PM	0	76	62	0	38	138	0	0	0	0	0	0	10	0	45	0	369	4043
5:00 PM	0	55	61	0	40	126	0	0	0	0	0	0	15	0	39	0	336	4067
5:05 PM	0	87	65	0	43	147	0	0	0	0	0	0	8	0	44	0	394	4133
5:10 PM	0	42	57	0	33	129	0	0	0	0	0	0	13	0	31	0	305	4101
5:15 PM	0	83	62	0	26	158	0	0	0	0	0	0	10	0	36	0	375	4123
5:20 PM	0	55	45	0	34	140	0	0	0	0	0	0	15	0	30	0	319	4123
5:25 PM	0	65	60	0	38	124	0	0	0	0	0	0	6	0	30	0	323	4073
5:30 PM	0	46	50	0	41	133	0	0	0	0	0	0	11	0	23	0	304	4091
5:35 PM	0	64	55	0	25	122	0	0	0	0	0	0	5	0	36	0	307	4024
5:40 PM	0	53	55	0	24	100	0	0	0	0	0	0	12	0	29	0	273	3969
5:45 PM	0	42	46	0	31	112	0	0	0	0	0	0	13	0	36	0	280	3915
5:50 PM	0	41	35	0	32	91	0	0	0	0	0	0	5	0	24	0	228	3813
5:55 PM	0	53	33	0	34	109	0	0	0	0	0	0	8	0	32	0	269	3713

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	952	592	0	444	1608	0	0	0	0	0	0	120	0	464	0	4180
Heavy Trucks	0	36	20		20	84	0		0	0	0		8	0	12		180
Buses																	
Pedestrians		0				0				0				4			4
Bicycles	0	0	0		0	8	0		0	0	0		0	0	0		8
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

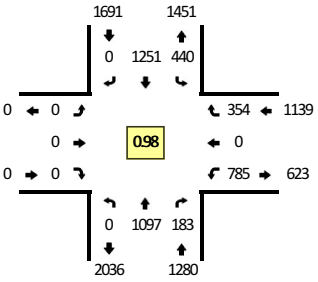
Type of peak hour being reported: User-Defined

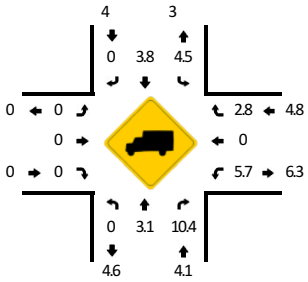
Method for determining peak hour: Total Entering

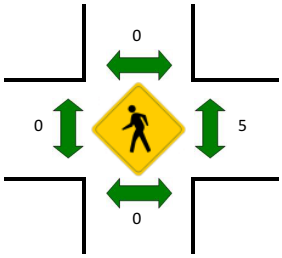
LOCATION: McLoughlin Blvd -- I-205 SB Ramps
CITY/STATE: Oregon City, OR

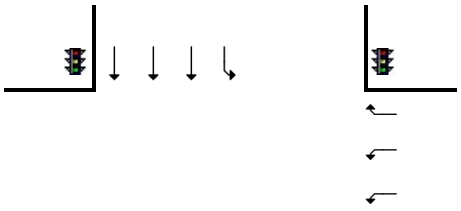
QC JOB #: 15328626
DATE: Wed, Dec 2 2020

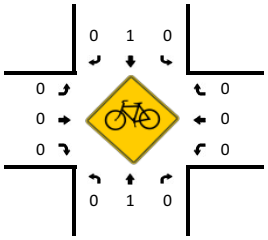
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:40 PM -- 4:55 PM

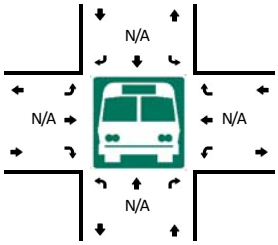


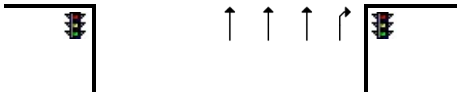


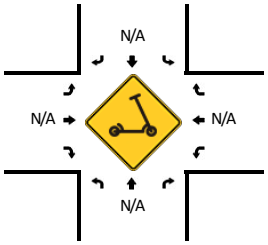












5-Min Count Period Beginning At	McLoughlin Blvd (Northbound)				McLoughlin Blvd (Southbound)				I-205 SB Ramps (Eastbound)				I-205 SB Ramps (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	88	6	0	48	115	0	0	0	0	0	0	46	0	28	0	331	
4:05 PM	0	82	13	0	25	95	0	0	0	0	0	0	76	0	34	0	325	
4:10 PM	0	81	17	0	49	108	0	0	0	0	0	0	63	0	40	0	358	
4:15 PM	0	95	18	0	27	99	0	0	0	0	0	0	89	0	23	0	351	
4:20 PM	0	84	15	0	44	102	0	0	0	0	0	0	48	0	28	0	321	
4:25 PM	0	119	24	0	28	93	0	0	0	0	0	0	80	0	27	0	371	
4:30 PM	0	73	15	0	38	111	0	0	0	0	0	0	49	0	33	0	319	
4:35 PM	0	104	16	0	33	90	0	0	0	0	0	0	83	0	21	0	347	
4:40 PM	0	84	16	0	44	122	0	0	0	0	0	0	49	0	30	0	345	
4:45 PM	0	87	14	0	35	89	0	0	0	0	0	0	78	0	35	0	338	
4:50 PM	0	93	13	0	38	133	0	0	0	0	0	0	53	0	33	0	363	
4:55 PM	0	107	16	0	31	94	0	0	0	0	0	0	71	0	22	0	341	4110
5:00 PM	0	75	12	0	45	117	0	0	0	0	0	0	47	0	36	0	332	4111
5:05 PM	0	107	24	0	33	109	0	0	0	0	0	0	82	0	25	0	380	4166
5:10 PM	0	61	19	0	50	121	0	0	0	0	0	0	55	0	28	0	334	4142
5:15 PM	0	84	20	0	37	84	0	0	0	0	0	0	98	0	27	1	351	4142
5:20 PM	0	86	15	0	44	110	0	0	0	0	0	0	59	0	25	0	339	4160
5:25 PM	0	71	16	0	27	91	0	0	0	0	0	0	76	0	23	0	304	4093
5:30 PM	0	68	9	0	36	94	0	0	0	0	0	0	58	0	27	0	292	4066
5:35 PM	0	92	11	0	28	88	0	0	0	0	0	0	72	0	22	0	313	4032
5:40 PM	0	67	14	0	50	79	0	0	0	0	0	0	46	0	31	0	287	3974
5:45 PM	0	73	11	0	23	68	0	0	0	0	0	0	68	0	24	0	267	3903
5:50 PM	0	54	9	0	33	88	0	0	0	0	0	0	38	0	24	0	246	3786
5:55 PM	0	83	5	0	26	81	0	0	0	0	0	0	61	0	12	0	268	3713

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1056	172	0	468	1376	0	0	0	0	0	0	720	0	392	0	4184
Heavy Trucks	0	40	16		24	36	0		0	0	0		32	0	4		152
Buses																	
Pedestrians		0				0				0				4			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

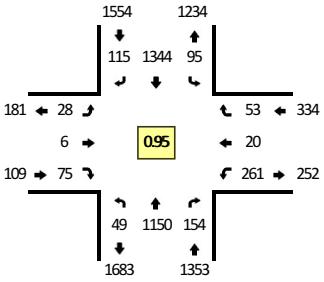
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering

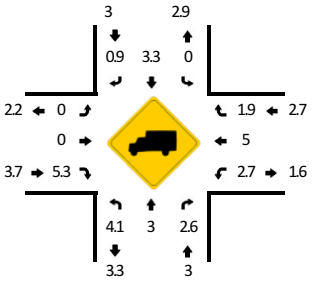
LOCATION: McLoughlin Blvd -- Dunes Dr
CITY/STATE: Oregon City, OR

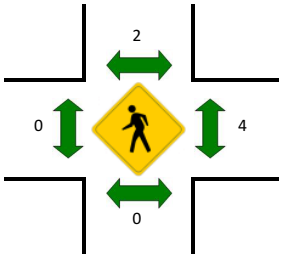
QC JOB #: 15328629
DATE: Wed, Dec 2 2020

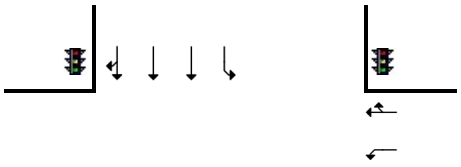
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:40 PM -- 4:55 PM

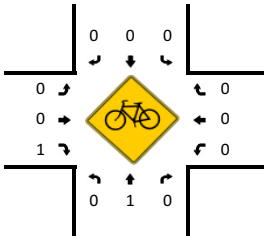


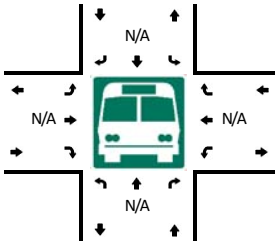


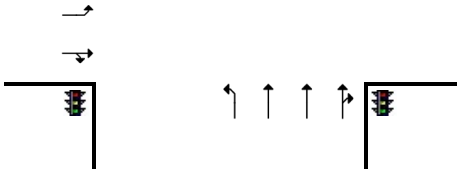


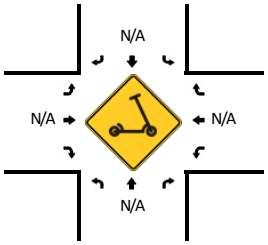












5-Min Count Period Beginning At	McLoughlin Blvd (Northbound)				McLoughlin Blvd (Southbound)				Dunes Dr (Eastbound)				Dunes Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	5	124	16	0	8	138	10	0	2	0	5	0	19	1	9	0	337	
4:05 PM	4	75	13	1	5	99	11	0	5	1	8	0	26	3	4	0	255	
4:10 PM	4	99	17	1	13	115	10	0	1	0	5	0	20	1	5	0	291	
4:15 PM	4	80	15	0	4	87	5	1	5	1	6	0	29	2	6	0	245	
4:20 PM	4	101	16	0	8	118	8	0	1	1	9	0	14	2	1	0	283	
4:25 PM	4	103	10	0	2	101	10	0	2	1	7	0	21	3	3	0	267	
4:30 PM	4	91	15	1	13	121	10	0	2	1	6	0	18	1	5	0	288	
4:35 PM	4	83	12	0	6	93	10	0	4	0	7	0	21	1	6	0	247	
4:40 PM	1	118	8	0	7	138	14	0	1	0	8	0	20	0	5	0	320	
4:45 PM	2	83	10	0	9	87	8	0	0	0	8	0	32	1	2	0	242	
4:50 PM	5	105	15	0	8	146	12	1	2	1	3	0	20	0	4	0	322	
4:55 PM	5	88	7	0	9	101	7	1	3	0	3	0	21	5	3	0	253	3350
5:00 PM	0	103	15	0	10	139	14	0	2	0	8	0	17	0	2	0	310	3323
5:05 PM	4	92	6	0	15	108	8	0	3	0	8	0	32	1	5	0	282	3350
5:10 PM	1	86	13	0	10	140	11	0	3	0	2	0	23	1	7	0	297	3356
5:15 PM	7	76	6	0	13	101	4	0	1	0	3	0	19	0	6	0	236	3347
5:20 PM	0	96	18	0	13	124	7	0	4	0	7	0	15	0	4	0	288	3352
5:25 PM	4	57	12	1	4	89	10	0	0	1	5	0	29	2	5	0	219	3304
5:30 PM	1	94	9	0	4	117	7	0	1	0	1	0	5	1	8	0	248	3264
5:35 PM	3	69	13	0	5	93	18	0	4	1	5	0	34	0	4	0	249	3266
5:40 PM	1	83	21	0	9	89	9	0	0	0	5	0	22	1	4	0	244	3190
5:45 PM	6	51	8	0	11	67	9	0	2	0	4	0	24	1	4	0	187	3135
5:50 PM	3	80	14	0	7	103	8	0	0	0	5	0	9	0	3	0	232	3045
5:55 PM	1	60	7	0	6	82	12	0	5	0	8	0	24	2	4	0	211	3003

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	32	1224	132	0	96	1484	136	4	12	4	76	0	288	4	44	0	3536
Heavy Trucks	4	44	0		0	40	0		0	0	0		4	0	4		96
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

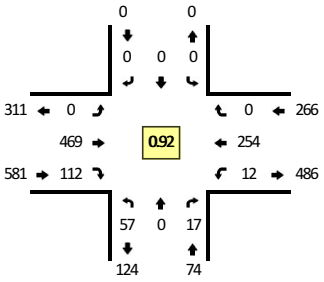
Type of peak hour being reported: User-Defined

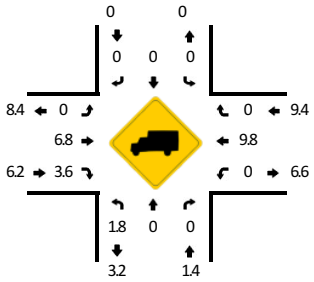
Method for determining peak hour: Total Entering

LOCATION: S Holly Ln -- S Redland Rd
CITY/STATE: Oregon City, OR

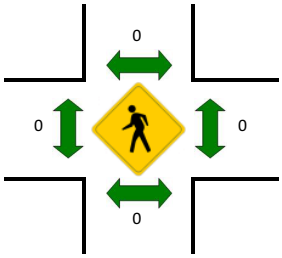
QC JOB #: 15328632
DATE: Wed, Dec 2 2020

Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:35 PM -- 4:50 PM

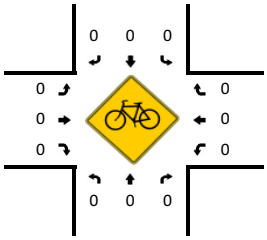


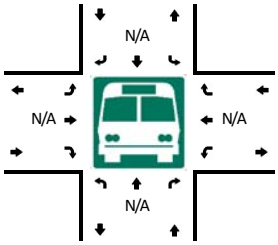


Quality Counts
DATA THAT DRIVES COMMUNITIES

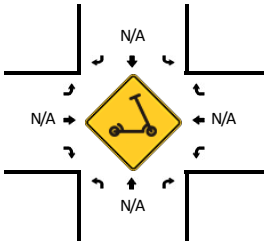












5-Min Count Period Beginning At	S Holly Ln (Northbound)				S Holly Ln (Southbound)				S Redland Rd (Eastbound)				S Redland Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	0	2	0	0	0	0	0	0	44	4	0	1	23	0	0	75	
4:05 PM	3	0	2	0	0	0	0	0	0	39	14	0	0	20	0	0	78	
4:10 PM	3	0	3	0	0	0	0	0	0	37	10	0	1	26	0	0	80	
4:15 PM	5	0	1	0	0	0	0	0	0	46	7	0	1	12	0	0	72	
4:20 PM	8	0	1	0	0	0	0	0	0	40	6	0	1	24	0	0	80	
4:25 PM	4	0	1	0	0	0	0	0	0	39	11	0	1	18	0	0	74	
4:30 PM	4	0	1	0	0	0	0	0	0	43	9	0	3	25	0	0	85	
4:35 PM	4	0	2	0	0	0	0	0	0	38	10	0	0	17	0	0	71	
4:40 PM	9	0	2	0	0	0	0	0	0	35	10	0	1	34	0	0	91	
4:45 PM	6	0	1	0	0	0	0	0	0	47	12	0	1	22	0	0	89	
4:50 PM	7	0	1	0	0	0	0	0	0	24	9	0	1	16	0	0	58	
4:55 PM	3	0	0	0	0	0	0	0	0	37	10	0	1	17	0	0	68	921
5:00 PM	2	0	2	0	0	0	0	0	0	35	5	0	1	16	0	0	61	907
5:05 PM	1	0	0	0	0	0	0	0	0	32	12	0	3	20	0	0	68	897
5:10 PM	3	0	1	0	0	0	0	0	0	38	15	0	1	26	0	0	84	901
5:15 PM	2	0	0	0	0	0	0	0	0	32	14	0	1	22	0	0	71	900
5:20 PM	2	0	2	0	0	0	0	0	0	30	9	0	1	16	0	0	60	880
5:25 PM	4	0	1	0	0	0	0	0	0	33	10	0	1	17	0	0	66	872
5:30 PM	1	0	2	0	0	0	0	0	0	31	12	0	0	20	0	0	66	853
5:35 PM	4	0	4	0	0	0	0	0	0	47	9	0	1	18	0	0	83	865
5:40 PM	3	0	1	0	0	0	0	0	0	30	5	0	1	17	0	0	57	831
5:45 PM	3	0	0	0	0	0	0	0	0	30	6	0	0	13	0	0	52	794
5:50 PM	6	0	0	0	0	0	0	0	0	34	2	0	0	10	0	0	52	788
5:55 PM	1	0	3	0	0	0	0	0	0	28	5	0	2	15	0	0	54	774

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	76	0	20	0	0	0	0	0	0	480	128	0	8	292	0	0	1004
Heavy Trucks	0	0	0		0	0	0		0	36	0		0	32	0		68
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

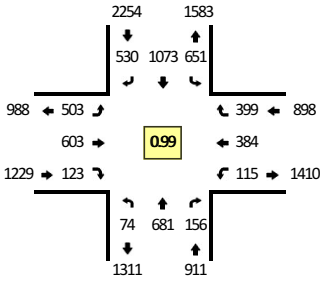
Type of peak hour being reported: User-Defined

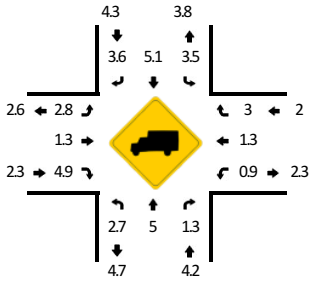
Method for determining peak hour: Total Entering

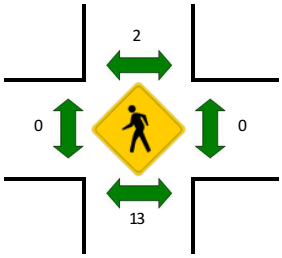
LOCATION: Cascade Hwy -- S Beavercreek Rd
CITY/STATE: Oregon City, OR

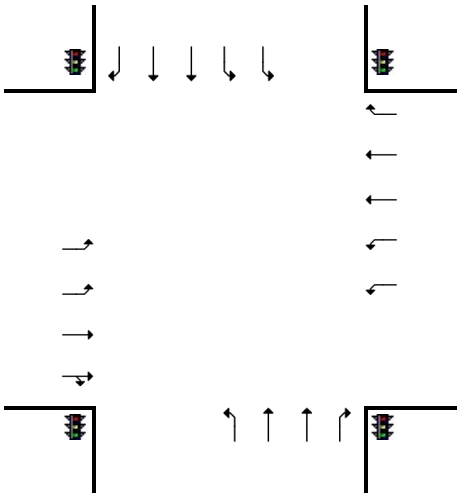
QC JOB #: 15328635
DATE: Wed, Dec 2 2020

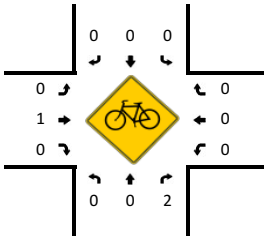
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:10 PM -- 4:25 PM

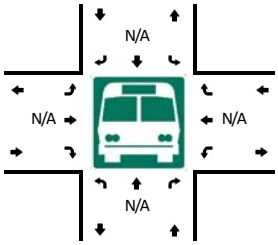


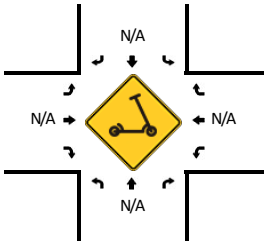












5-Min Count Period Beginning At	Cascade Hwy (Northbound)				Cascade Hwy (Southbound)				S Beavercreek Rd (Eastbound)				S Beavercreek Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	7	50	11	0	57	81	47	0	38	49	12	0	11	34	34	0	431	
4:05 PM	5	64	14	0	46	88	40	0	41	51	17	0	6	24	33	0	429	
4:10 PM	6	66	14	0	51	110	59	0	41	41	8	0	9	29	29	0	463	
4:15 PM	11	73	10	0	42	89	49	0	43	47	7	0	5	31	36	0	443	
4:20 PM	2	56	12	0	71	79	45	0	29	45	11	0	13	41	33	0	437	
4:25 PM	8	47	11	0	56	82	50	0	51	65	10	0	11	22	30	0	443	
4:30 PM	6	51	12	0	82	115	35	0	22	53	6	0	10	23	34	0	449	
4:35 PM	6	62	11	0	36	87	35	0	38	50	10	0	13	48	33	0	429	
4:40 PM	4	40	15	0	60	70	55	0	50	62	14	0	8	26	48	0	452	
4:45 PM	9	53	8	0	39	76	38	0	45	48	8	0	6	39	26	0	395	
4:50 PM	7	56	23	0	50	85	43	0	52	41	9	0	11	35	34	0	446	
4:55 PM	3	63	15	0	61	111	34	0	53	51	11	0	12	32	29	0	475	5292
5:00 PM	17	43	11	0	69	80	39	0	43	52	9	0	13	38	37	0	451	5312
5:05 PM	6	31	13	0	63	87	30	0	55	37	9	0	6	36	30	0	403	5286
5:10 PM	9	64	12	0	42	115	30	0	52	42	10	0	5	32	28	0	441	5264
5:15 PM	8	53	13	0	56	84	25	0	30	49	8	0	12	35	17	0	390	5211
5:20 PM	3	46	13	0	46	69	42	0	42	73	21	0	10	28	25	0	418	5192
5:25 PM	10	58	15	0	42	86	42	0	43	48	10	0	11	24	29	0	418	5167
5:30 PM	6	46	8	0	81	92	30	0	30	41	11	0	13	23	30	0	411	5129
5:35 PM	6	68	18	0	47	110	42	0	32	49	14	0	5	21	28	0	440	5140
5:40 PM	6	36	14	0	39	61	36	0	34	55	16	0	11	28	29	0	365	5053
5:45 PM	7	45	20	0	59	86	40	0	21	26	5	0	10	28	24	0	371	5029
5:50 PM	6	28	14	0	44	66	47	0	41	51	10	0	7	28	25	0	367	4950
5:55 PM	3	47	3	0	50	64	23	0	21	35	9	1	7	23	29	0	315	4790

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	76	780	144	0	656	1112	612	0	452	532	104	0	108	404	392	0	5372
Heavy Trucks	4	20	0		28	68	16		16	12	8		0	8	16		196
Buses																	
Pedestrians		28				0				0				0			28
Bicycles	0	0	0		0	0	0		0	4	0		0	0	0		4
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

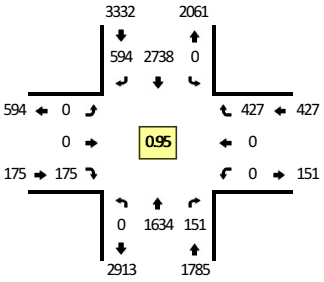
Type of peak hour being reported: User-Defined

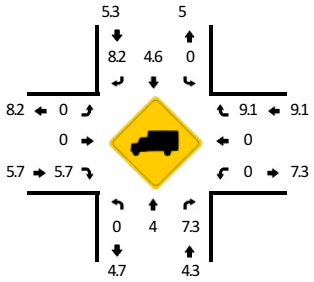
Method for determining peak hour: Total Entering

LOCATION: Cascade Hwy -- Clackamas River Dr
CITY/STATE: Oregon City, OR

QC JOB #: 15328638
DATE: Wed, Dec 2 2020

Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:10 PM -- 4:25 PM





5-Min Count Period Beginning At	Cascade Hwy (Northbound)				Cascade Hwy (Southbound)				Clackamas River Dr (Eastbound)				Clackamas River Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	125	9	0	0	223	58	0	0	0	10	0	0	0	33	0	458	
4:05 PM	0	106	10	0	0	234	45	0	0	0	12	0	0	0	48	0	455	
4:10 PM	0	181	14	0	0	247	53	0	0	0	21	0	0	0	30	0	546	
4:15 PM	0	138	6	0	0	209	54	0	0	0	17	0	0	0	38	0	462	
4:20 PM	0	128	11	0	0	262	51	0	0	0	6	0	0	0	44	0	502	
4:25 PM	0	134	19	0	0	232	51	0	0	0	17	0	0	0	37	0	490	
4:30 PM	0	146	15	0	0	194	42	0	0	0	12	0	0	0	19	0	428	
4:35 PM	0	128	17	0	0	244	50	0	0	0	14	0	0	0	59	0	512	
4:40 PM	0	144	11	0	0	217	47	0	0	0	16	0	0	0	36	0	471	
4:45 PM	0	147	15	0	0	201	47	0	0	0	22	0	0	0	29	0	461	
4:50 PM	0	127	7	0	0	251	47	0	0	0	16	0	0	0	34	0	482	
4:55 PM	0	130	17	0	0	224	49	0	0	0	12	0	0	0	20	0	452	5719
5:00 PM	0	160	15	0	0	188	34	0	0	0	13	0	0	0	23	0	433	5694
5:05 PM	0	126	9	0	0	208	40	0	0	0	20	0	0	0	39	0	442	5681
5:10 PM	0	140	9	0	0	228	47	0	0	0	12	0	0	0	44	0	480	5615
5:15 PM	0	148	17	0	0	210	32	0	0	0	15	0	0	0	27	0	449	5602
5:20 PM	0	130	12	0	0	198	42	0	0	0	13	0	0	0	21	0	416	5516
5:25 PM	0	115	10	0	0	243	40	0	0	0	8	0	0	0	31	0	447	5473
5:30 PM	0	177	6	0	0	239	36	0	0	0	7	0	0	0	24	0	489	5534
5:35 PM	0	109	9	0	0	211	25	0	0	0	15	0	0	0	26	0	395	5417
5:40 PM	0	107	11	0	0	202	24	0	0	0	15	0	0	0	26	0	385	5331
5:45 PM	0	137	6	0	0	176	27	0	0	0	16	0	0	0	19	0	381	5251
5:50 PM	0	103	9	0	0	164	38	0	0	0	8	0	0	0	23	0	345	5114
5:55 PM	0	87	6	0	0	165	31	0	0	0	3	0	0	0	22	0	314	4976

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1788	124	0	0	2872	632	0	0	0	176	0	0	0	448	0	6040
Heavy Trucks	0	80	4		0	152	60		0	0	12		0	0	32		340
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

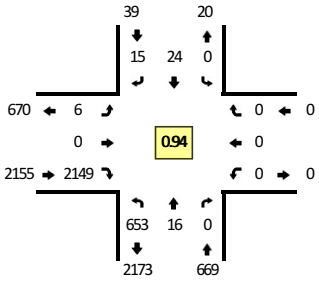
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering

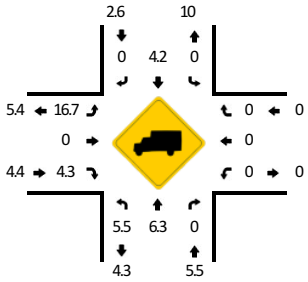
LOCATION: Cascade Hwy -- I-205 SB Ramps
CITY/STATE: Oregon City, OR

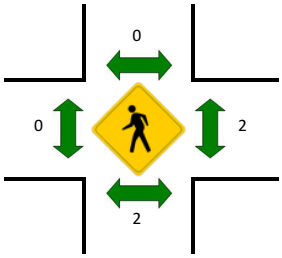
QC JOB #: 15328641
DATE: Wed, Dec 2 2020

Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:15 PM -- 4:30 PM

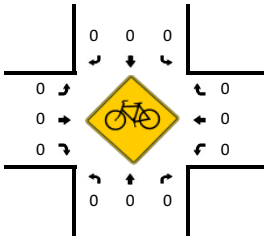


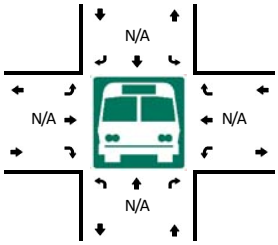


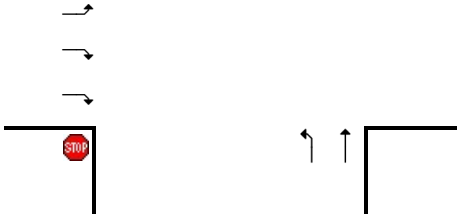


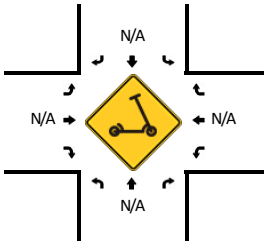












5-Min Count Period Beginning At	Cascade Hwy (Northbound)				Cascade Hwy (Southbound)				I-205 SB Ramps (Eastbound)				I-205 SB Ramps (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	49	2	0	0	0	4	0	0	0	0	172	0	0	0	0	0	227	
4:05 PM	62	1	0	0	0	2	0	0	1	0	185	0	0	0	0	0	251	
4:10 PM	61	0	0	0	0	1	0	0	0	0	191	0	0	0	0	0	253	
4:15 PM	63	2	0	0	0	1	0	0	0	0	184	1	0	0	0	0	251	
4:20 PM	47	3	0	0	0	1	3	0	0	0	191	0	0	0	0	0	245	
4:25 PM	59	3	0	0	0	3	3	0	1	0	196	1	0	0	0	0	266	
4:30 PM	47	0	0	0	0	7	1	0	1	0	156	0	0	0	0	0	212	
4:35 PM	56	1	0	0	0	0	2	0	0	0	190	0	0	0	0	0	249	
4:40 PM	60	0	0	0	0	0	2	0	0	0	171	0	0	0	0	0	233	
4:45 PM	48	2	0	0	0	3	2	0	0	0	175	0	0	0	0	0	230	
4:50 PM	58	1	0	0	0	1	0	0	0	0	179	0	0	0	0	0	239	
4:55 PM	43	1	0	0	0	1	2	0	1	0	159	0	0	0	0	0	207	2863
5:00 PM	60	0	0	0	0	4	2	0	0	0	153	0	0	0	0	0	219	2855
5:05 PM	48	1	0	0	0	9	5	0	0	0	132	0	0	0	0	0	195	2799
5:10 PM	55	1	0	0	0	7	6	0	0	0	169	0	0	0	0	0	238	2784
5:15 PM	50	2	0	0	0	1	2	0	0	0	194	0	0	0	0	0	249	2782
5:20 PM	49	0	0	0	0	4	3	0	0	0	173	0	0	0	0	0	229	2766
5:25 PM	45	0	0	0	0	4	4	0	1	0	164	0	0	0	0	0	218	2718
5:30 PM	53	1	0	0	0	2	1	0	0	0	172	0	0	0	0	0	229	2735
5:35 PM	35	0	0	0	0	2	2	0	0	0	156	0	0	0	0	0	195	2681
5:40 PM	40	0	0	0	0	0	0	0	0	0	142	0	0	0	0	0	182	2630
5:45 PM	47	2	0	0	0	1	0	0	0	0	124	0	0	0	0	0	174	2574
5:50 PM	41	0	0	0	0	0	3	0	0	0	124	0	0	0	0	0	168	2503
5:55 PM	28	1	0	0	0	0	2	0	1	0	133	0	0	0	0	0	165	2461

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	676	32	0	0	0	20	24	0	4	0	2284	8	0	0	0	0	3048
Heavy Trucks	52	4	0		0	0	0		4	0	120		0	0	0		180
Buses																	
Pedestrians		8				0				0				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

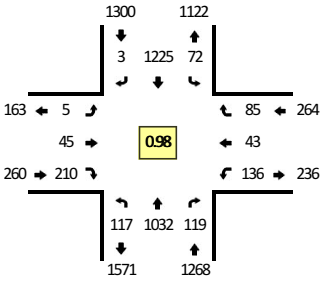
Type of peak hour being reported: User-Defined

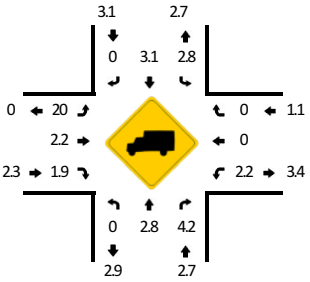
Method for determining peak hour: Total Entering

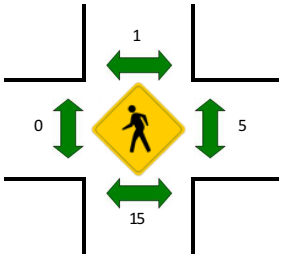
LOCATION: McLoughlin Blvd -- River Rd
CITY/STATE: Gladstone, OR

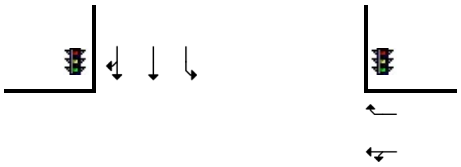
QC JOB #: 15328644
DATE: Wed, Dec 2 2020

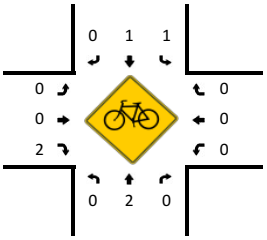
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:40 PM -- 4:55 PM

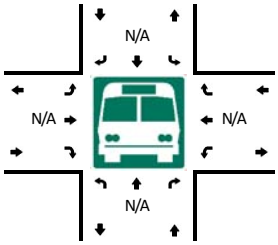


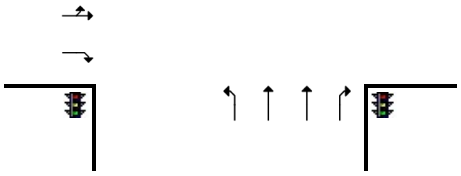


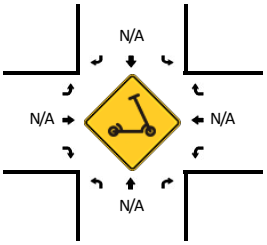












5-Min Count Period Beginning At	McLoughlin Blvd (Northbound)				McLoughlin Blvd (Southbound)				River Rd (Eastbound)				River Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	13	95	10	0	6	92	0	0	0	4	20	0	9	5	6	0	260	
4:05 PM	10	78	11	0	8	119	0	0	0	2	19	0	12	4	7	0	270	
4:10 PM	4	85	11	0	7	86	1	0	0	3	24	0	11	7	7	0	246	
4:15 PM	11	82	8	0	6	91	1	0	1	1	17	0	14	5	13	0	250	
4:20 PM	10	87	13	0	4	87	0	0	0	10	20	0	11	4	4	0	250	
4:25 PM	9	80	8	0	6	108	0	0	1	4	19	0	12	2	6	0	255	
4:30 PM	18	93	8	0	5	89	1	0	2	3	18	0	19	4	10	0	270	
4:35 PM	2	78	11	0	6	103	0	0	1	4	17	0	12	3	9	0	246	
4:40 PM	13	90	15	0	3	103	0	0	0	5	15	0	13	1	5	0	263	
4:45 PM	10	92	13	0	7	120	0	0	0	4	12	0	6	1	8	0	273	
4:50 PM	11	82	7	0	6	118	0	0	0	2	12	0	8	4	3	0	253	
4:55 PM	6	90	4	0	8	109	0	0	0	3	17	0	9	3	7	0	256	3092
5:00 PM	15	90	6	0	4	117	1	0	0	4	18	0	15	4	10	0	284	3116
5:05 PM	5	89	9	0	6	126	0	0	1	2	16	0	15	2	11	0	282	3128
5:10 PM	8	79	7	0	3	118	0	0	2	1	14	0	15	2	8	0	257	3139
5:15 PM	12	88	8	0	5	115	0	0	1	0	6	0	5	2	2	0	244	3133
5:20 PM	8	92	12	0	4	92	0	0	0	5	18	0	9	4	5	0	249	3132
5:25 PM	13	92	7	0	3	115	0	0	0	4	10	0	14	9	13	0	280	3157
5:30 PM	3	86	8	0	3	82	2	0	0	0	10	0	8	2	8	0	212	3099
5:35 PM	9	69	3	0	5	106	0	0	0	5	13	0	5	4	5	0	224	3077
5:40 PM	5	68	5	0	4	75	0	0	0	0	15	0	5	4	5	0	186	3000
5:45 PM	1	70	4	0	9	91	0	0	1	2	12	0	6	2	7	0	205	2932
5:50 PM	10	65	9	0	2	85	1	0	0	1	9	0	8	2	7	0	199	2878
5:55 PM	7	55	5	0	7	94	0	0	0	1	11	0	8	0	5	0	193	2815

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	136	1056	140	0	64	1364	0	0	0	44	156	0	108	24	64	0	3156
Heavy Trucks	0	40	12		0	48	0		0	0	0		0	0	0		100
Buses																	
Pedestrians		24				4				0				4			32
Bicycles	0	4	0		0	4	0		0	0	0		0	0	0		8
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

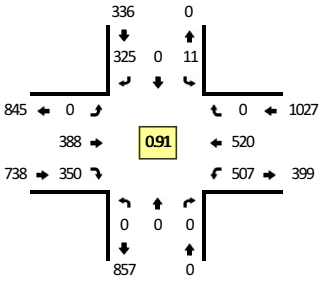
Type of peak hour being reported: User-Defined

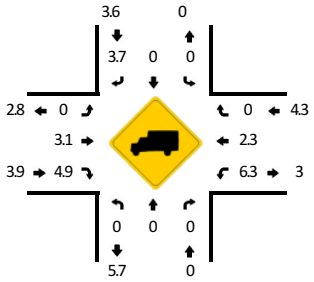
Method for determining peak hour: Total Entering

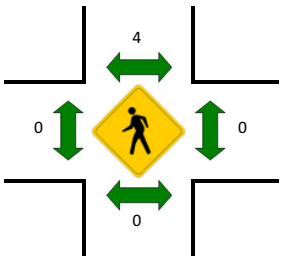
LOCATION: I-205 SB Ramps -- 82nd Dr
CITY/STATE: Gladstone, OR

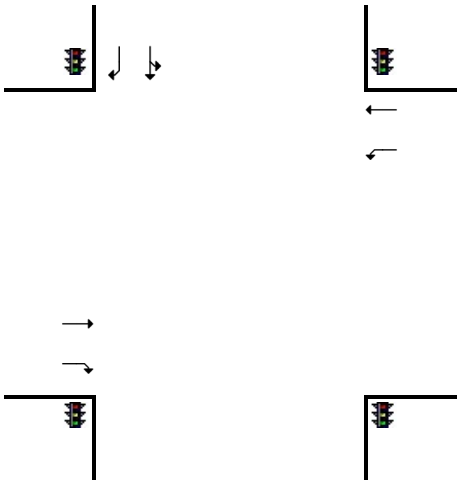
QC JOB #: 15328654
DATE: Wed, Dec 2 2020

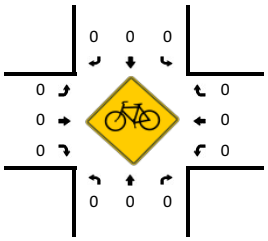
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:20 PM -- 4:35 PM

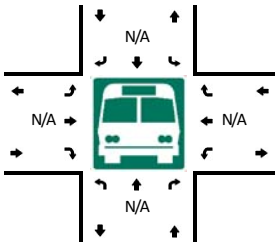


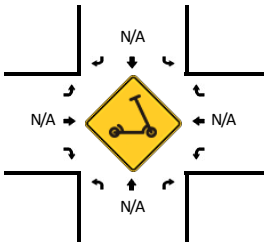












5-Min Count Period Beginning At	I-205 SB Ramps (Northbound)				I-205 SB Ramps (Southbound)				82nd Dr (Eastbound)				82nd Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	0	0	35	0	0	18	26	0	48	43	0	0	170	
4:05 PM	0	0	0	0	2	0	27	0	0	38	26	0	46	40	0	0	179	
4:10 PM	0	0	0	0	0	0	32	0	0	34	27	0	46	44	0	0	183	
4:15 PM	0	0	0	0	0	0	30	0	0	13	27	0	42	35	0	0	147	
4:20 PM	0	0	0	0	0	0	31	0	0	44	29	0	38	55	0	0	197	
4:25 PM	0	0	0	0	3	0	29	0	0	36	33	0	39	59	0	0	199	
4:30 PM	0	0	0	0	0	0	28	0	0	32	29	0	46	46	0	0	181	
4:35 PM	0	0	0	0	0	0	22	0	0	38	26	0	45	47	0	0	178	
4:40 PM	0	0	0	0	3	0	18	0	0	40	37	0	49	37	0	0	184	
4:45 PM	0	0	0	0	0	0	20	0	0	43	32	0	43	49	0	0	187	
4:50 PM	0	0	0	0	2	0	24	0	0	29	25	0	28	39	0	0	147	
4:55 PM	0	0	0	0	1	0	29	0	0	23	33	0	37	26	0	0	149	2101
5:00 PM	0	0	0	0	0	1	21	0	0	30	28	0	31	32	0	0	143	2074
5:05 PM	0	0	0	0	0	0	24	0	0	32	32	0	36	53	0	0	177	2072
5:10 PM	0	0	0	0	1	0	26	0	0	42	39	0	42	39	0	0	189	2078
5:15 PM	0	0	0	0	1	1	31	0	0	29	24	0	35	33	0	0	154	2085
5:20 PM	0	0	0	0	1	1	35	0	0	24	28	0	41	46	0	0	176	2064
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5:30 PM	0	0	0	0	1	0	30	0	0	26	48	0	32	30	0	0	167	1993
5:35 PM	0	0	0	0	0	0	32	0	0	21	19	0	34	46	0	0	152	1967
5:40 PM	0	0	0	0	1	0	24	0	0	34	26	0	28	31	0	0	144	1927
5:45 PM	0	0	0	0	0	0	30	0	0	28	17	0	20	31	0	0	126	1866
5:50 PM	0	0	0	0	1	0	18	0	0	20	18	0	22	36	0	0	115	1834
5:55 PM	0	0	0	0	3	0	24	0	0	21	13	0	26	37	0	0	124	1809

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	12	0	352	0	0	448	364	0	492	640	0	0	2308
Heavy Trucks	0	0	0		0	0	20		0	12	24		52	20	0		128
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

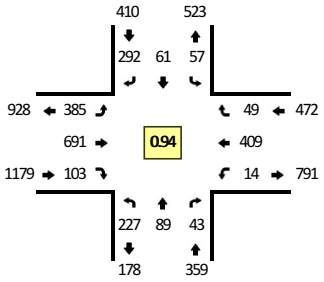
Type of peak hour being reported: User-Defined

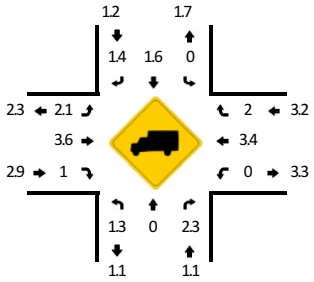
Method for determining peak hour: Total Entering

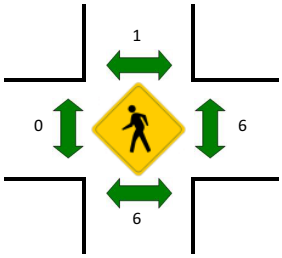
LOCATION: S Maple Lane Rd -- S Beavercreek Rd
CITY/STATE: Oregon City, OR

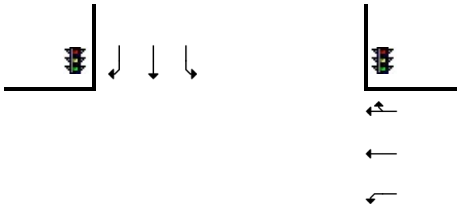
QC JOB #: 15328657
DATE: Wed, Dec 2 2020

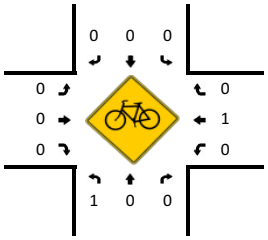
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:30 PM -- 4:45 PM

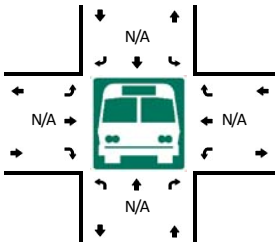


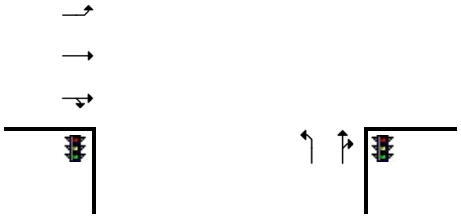


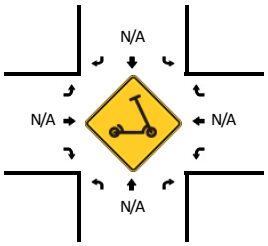












5-Min Count Period Beginning At	S Maple Lane Rd (Northbound)				S Maple Lane Rd (Southbound)				S Beavercreek Rd (Eastbound)				S Beavercreek Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	20	7	4	0	2	3	22	0	21	53	8	0	1	35	0	0	176	
4:05 PM	19	8	4	0	5	9	18	0	43	58	6	0	0	33	7	0	210	
4:10 PM	23	13	3	0	7	6	24	0	33	41	8	0	1	32	4	0	195	
4:15 PM	11	6	2	0	4	6	32	0	37	69	6	0	2	40	6	0	221	
4:20 PM	19	8	6	0	6	6	20	0	39	59	7	0	1	32	3	0	206	
4:25 PM	22	9	5	0	3	4	19	0	28	46	14	0	1	36	3	0	190	
4:30 PM	22	2	4	0	9	3	25	0	40	88	11	0	2	34	1	0	241	
4:35 PM	15	7	5	0	4	5	27	0	28	50	4	0	1	28	5	0	179	
4:40 PM	19	7	3	0	5	4	31	0	34	63	9	0	1	37	8	0	221	
4:45 PM	15	3	3	0	1	5	28	0	22	54	11	0	2	22	3	0	169	
4:50 PM	18	9	3	0	4	8	21	0	32	53	8	0	2	49	3	0	210	
4:55 PM	24	10	1	0	7	2	25	0	28	57	11	0	0	31	6	0	202	2420
5:00 PM	27	8	7	0	2	4	31	0	34	66	9	0	2	37	4	0	231	2475
5:05 PM	11	10	4	0	6	6	20	0	38	60	10	0	0	33	2	0	200	2465
5:10 PM	13	6	3	0	5	7	19	0	36	51	9	0	4	42	2	0	197	2467
5:15 PM	8	4	1	0	4	6	16	0	28	72	10	0	3	30	2	0	184	2430
5:20 PM	16	17	4	0	7	8	14	0	36	54	9	0	2	31	6	0	204	2428
5:25 PM	21	5	3	0	3	4	21	0	32	55	9	0	3	21	8	0	185	2423
5:30 PM	18	8	3	0	5	1	21	0	39	56	7	0	3	32	4	0	197	2379
5:35 PM	20	5	1	0	1	3	15	0	34	78	10	0	1	27	2	0	197	2397
5:40 PM	13	2	6	0	3	3	14	0	20	55	7	0	2	34	6	0	165	2341
5:45 PM	18	2	5	0	4	1	24	0	29	58	9	0	0	26	5	0	181	2353
5:50 PM	10	5	3	0	1	6	13	0	24	43	12	0	4	30	4	0	155	2298
5:55 PM	27	6	4	0	3	1	11	0	23	51	9	0	0	25	1	0	161	2257

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	224	64	48	0	72	48	332	0	408	804	96	0	16	396	56	0	2564
Heavy Trucks	0	0	0		0	0	8		12	32	4		0	8	0		64
Buses																	
Pedestrians		12				0				0				4			16
Bicycles	4	0	0		0	0	0		0	0	0		0	0	0		4
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

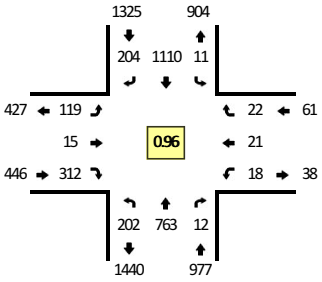
Type of peak hour being reported: User-Defined

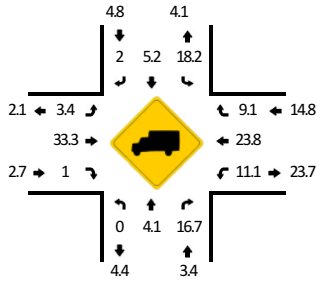
Method for determining peak hour: Total Entering

LOCATION: Cascade Hwy -- S Molalla Ave
CITY/STATE: Oregon City, OR

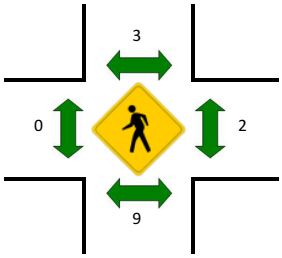
QC JOB #: 15328660
DATE: Wed, Dec 2 2020

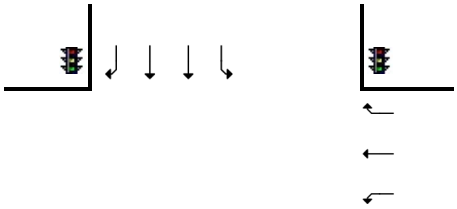
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:05 PM -- 4:20 PM

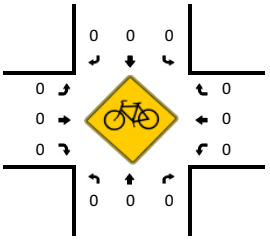


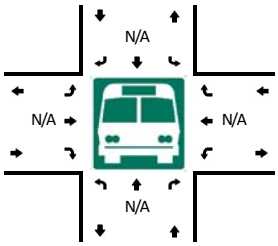


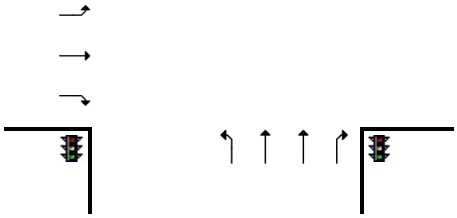
Quality Counts
DATA THAT DRIVES COMMUNITIES

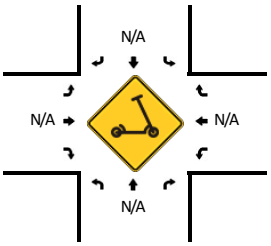












5-Min Count Period Beginning At	Cascade Hwy (Northbound)				Cascade Hwy (Southbound)				S Molalla Ave (Eastbound)				S Molalla Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	14	50	1	0	0	88	22	0	13	1	21	0	0	4	1	0	215	
4:05 PM	19	82	2	0	2	120	19	0	6	2	26	0	3	2	4	0	287	
4:10 PM	14	64	0	0	2	84	19	0	6	3	29	0	2	2	3	0	228	
4:15 PM	11	73	1	0	0	83	10	0	9	1	21	0	1	0	6	0	216	
4:20 PM	13	58	4	0	3	99	18	0	10	1	20	0	0	3	0	0	229	
4:25 PM	19	62	0	0	0	95	28	0	7	0	34	0	0	0	2	0	247	
4:30 PM	16	56	1	0	1	78	23	0	19	0	26	0	1	2	0	0	223	
4:35 PM	16	56	1	0	2	109	12	0	8	4	28	0	2	2	1	0	241	
4:40 PM	20	68	1	0	1	88	11	0	7	1	32	0	2	2	1	0	234	
4:45 PM	22	57	1	0	0	51	15	0	7	1	28	0	2	1	1	0	186	
4:50 PM	18	74	0	0	0	98	11	0	15	1	25	0	2	1	1	0	246	
4:55 PM	20	63	0	0	0	117	16	0	12	0	22	0	3	2	2	0	257	2809
5:00 PM	28	51	1	0	2	88	19	0	9	3	42	0	3	3	1	0	250	2844
5:05 PM	15	57	0	0	2	81	15	0	20	1	27	0	1	2	1	0	222	2779
5:10 PM	14	54	1	0	3	90	5	0	8	1	31	0	1	0	0	0	208	2759
5:15 PM	21	61	0	0	1	94	19	0	6	5	24	0	3	2	4	0	240	2783
5:20 PM	12	59	6	0	3	98	18	0	7	1	15	0	1	2	1	0	223	2777
5:25 PM	11	78	0	0	0	100	18	0	13	1	17	0	2	0	1	0	241	2771
5:30 PM	13	59	1	0	0	74	10	0	9	2	17	0	5	1	1	0	192	2740
5:35 PM	14	48	0	0	0	108	15	0	15	2	32	0	0	1	2	0	237	2736
5:40 PM	10	53	2	0	0	93	23	0	5	2	35	0	0	2	1	0	226	2728
5:45 PM	15	55	3	0	0	57	12	0	5	1	25	0	1	1	2	0	177	2719
5:50 PM	7	36	3	0	0	78	14	0	5	1	13	0	4	1	1	0	163	2636
5:55 PM	13	45	1	0	0	88	13	0	8	3	25	0	0	2	1	0	199	2578

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	176	876	12	0	16	1148	192	0	84	24	304	0	24	16	52	0	2924
Heavy Trucks	0	24	0		4	76	0		0	8	0		0	4	4		120
Buses																	
Pedestrians		16				0				0				0			16
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

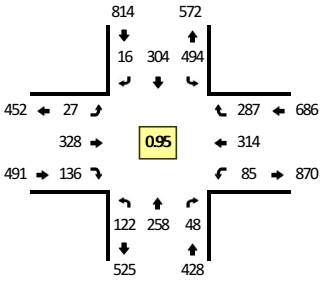
Type of peak hour being reported: User-Defined

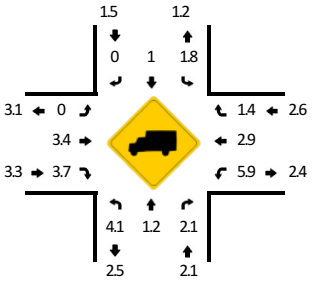
Method for determining peak hour: Total Entering

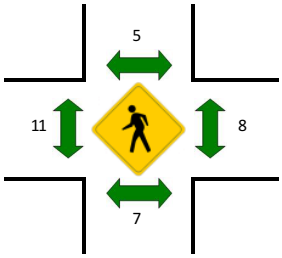
LOCATION: Molalla Ave -- Beavercreek Rd
CITY/STATE: Oregon City, OR

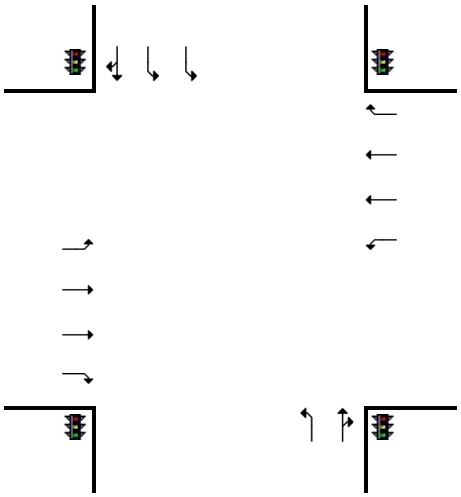
QC JOB #: 15328663
DATE: Wed, Dec 2 2020

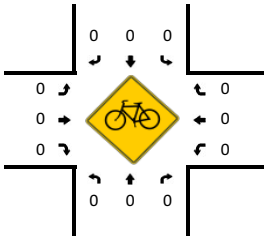
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:40 PM -- 4:55 PM

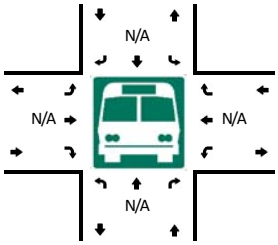


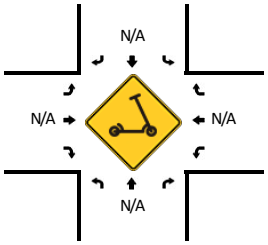












5-Min Count Period Beginning At	Molalla Ave (Northbound)				Molalla Ave (Southbound)				Beavercreek Rd (Eastbound)				Beavercreek Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	10	17	6	0	32	19	1	0	8	36	8	0	6	31	18	0	192	
4:05 PM	11	25	2	0	63	34	0	0	3	29	7	0	8	22	21	0	225	
4:10 PM	9	31	6	0	39	27	2	0	1	20	12	0	10	33	22	0	212	
4:15 PM	5	12	2	0	39	29	0	0	4	35	11	0	8	28	25	0	198	
4:20 PM	14	23	2	0	32	24	1	0	2	19	13	0	5	30	29	0	194	
4:25 PM	13	25	2	0	50	22	3	0	1	15	14	0	4	20	26	0	195	
4:30 PM	13	20	7	0	40	23	2	0	0	27	14	0	4	24	21	0	195	
4:35 PM	8	16	3	0	35	20	0	0	1	32	17	0	12	25	29	0	198	
4:40 PM	12	24	7	0	46	36	1	0	1	21	10	0	4	21	22	0	205	
4:45 PM	10	7	3	0	51	31	4	0	3	39	11	0	8	32	27	0	226	
4:50 PM	9	40	4	0	34	26	2	0	1	26	14	0	5	25	22	0	208	
4:55 PM	8	18	4	0	33	13	0	0	2	29	5	0	11	23	25	0	171	2419
5:00 PM	18	18	2	0	45	31	0	0	3	18	17	0	4	14	21	0	191	2418
5:05 PM	8	17	3	0	36	22	1	0	5	61	12	0	11	27	24	0	227	2420
5:10 PM	12	24	3	0	48	32	1	0	6	26	9	0	7	18	27	0	213	2421
5:15 PM	10	15	5	0	53	22	0	0	3	20	9	0	3	17	18	0	175	2398
5:20 PM	14	16	5	0	40	26	0	0	4	27	8	0	5	26	33	0	204	2408
5:25 PM	12	21	4	0	36	16	1	0	2	26	11	0	9	31	20	0	189	2402
5:30 PM	11	30	4	0	51	29	0	0	3	13	13	0	10	11	17	0	192	2399
5:35 PM	4	10	4	0	41	29	0	0	2	29	8	0	7	22	23	0	179	2380
5:40 PM	10	24	4	0	25	24	1	0	2	11	8	0	5	13	21	0	148	2323
5:45 PM	11	20	2	0	27	15	0	0	0	12	7	0	8	16	17	0	135	2232
5:50 PM	12	16	8	0	36	20	0	0	3	12	8	0	6	23	18	0	162	2186
5:55 PM	5	18	4	0	27	17	0	0	1	23	5	0	7	9	20	0	136	2151

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	124	284	56	0	524	372	28	0	20	344	140	0	68	312	284	0	2556
Heavy Trucks	4	4	0		4	0	0		0	4	4		8	0	16		44
Buses																	
Pedestrians		12				0				4				0			16
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

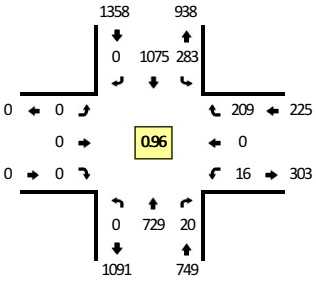
Type of peak hour being reported: User-Defined

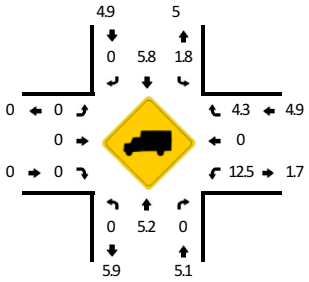
Method for determining peak hour: Total Entering

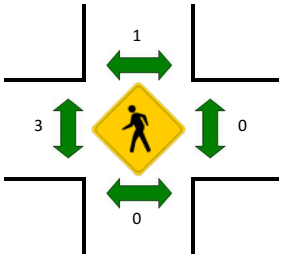
LOCATION: McLoughlin Blvd -- 10th St
CITY/STATE: Oregon City, OR

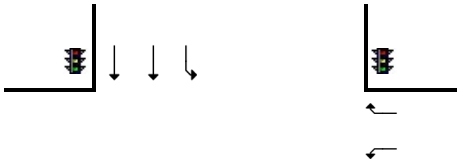
QC JOB #: 15328666
DATE: Wed, Dec 2 2020

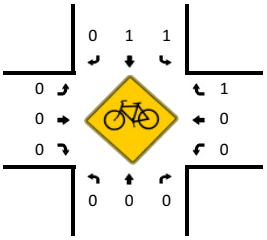
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:45 PM -- 5:00 PM

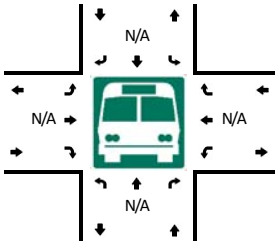




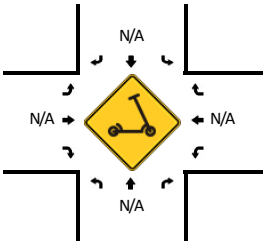












5-Min Count Period Beginning At	McLoughlin Blvd (Northbound)				McLoughlin Blvd (Southbound)				10th St (Eastbound)				10th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	48	0	0	35	81	0	0	0	0	0	0	1	0	21	0	186	
4:05 PM	0	71	2	0	26	89	0	0	0	0	0	0	1	0	15	0	204	
4:10 PM	0	63	0	0	19	112	0	0	0	0	0	0	2	0	14	0	210	
4:15 PM	0	71	0	0	8	91	0	0	0	0	0	0	0	0	3	0	173	
4:20 PM	0	62	2	0	23	92	0	0	0	0	0	0	1	0	30	0	210	
4:25 PM	0	65	3	0	30	91	0	0	0	0	0	0	4	0	27	0	220	
4:30 PM	0	48	2	0	15	84	0	0	0	0	0	0	1	0	15	0	165	
4:35 PM	0	63	2	0	23	74	0	0	0	0	0	0	1	0	15	0	178	
4:40 PM	0	47	1	0	28	81	0	0	0	0	0	0	3	0	18	0	178	
4:45 PM	0	76	3	0	32	83	0	0	0	0	0	0	1	0	18	0	213	
4:50 PM	0	56	3	0	18	119	0	0	0	0	0	0	0	0	11	0	207	
4:55 PM	0	59	2	0	26	78	0	0	0	0	0	0	1	0	22	0	188	2332
5:00 PM	0	74	2	0	25	70	0	0	0	0	0	0	2	0	24	0	197	2343
5:05 PM	0	69	2	0	29	111	0	0	0	0	0	0	1	0	14	0	226	2365
5:10 PM	0	73	1	0	20	105	0	0	0	0	0	0	0	0	21	0	220	2375
5:15 PM	0	58	1	0	31	93	0	0	0	0	0	0	2	0	19	0	204	2406
5:20 PM	0	56	2	0	26	80	0	0	0	0	0	0	2	0	11	0	177	2373
5:25 PM	0	63	2	0	33	89	0	0	0	0	0	0	2	0	21	0	210	2363
5:30 PM	0	61	2	0	25	96	0	0	0	0	0	0	2	0	12	0	198	2396
5:35 PM	0	41	1	0	31	66	0	0	0	0	0	0	1	0	25	0	165	2383
5:40 PM	0	46	1	0	22	75	0	0	0	0	0	0	1	0	15	0	160	2365
5:45 PM	0	50	5	0	30	58	0	0	0	0	0	0	1	0	10	0	154	2306
5:50 PM	0	47	1	0	17	52	0	0	0	0	0	0	1	0	13	0	131	2230
5:55 PM	0	25	2	0	25	57	0	0	0	0	0	0	3	0	14	0	126	2168

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	764	32	0	304	1120	0	0	0	0	0	0	8	0	204	0	2432
Heavy Trucks	0	32	0		8	60	0		0	0	0		4	0	8		112
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	4	0		0	0	0		0	0	0		4
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

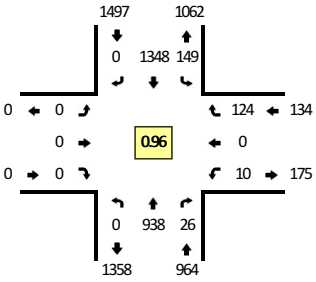
Type of peak hour being reported: User-Defined

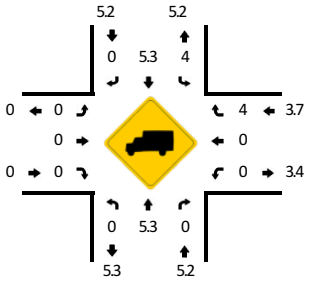
Method for determining peak hour: Total Entering

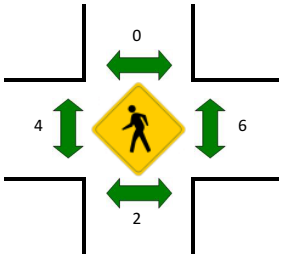
LOCATION: McLoughlin Blvd -- 12th St
CITY/STATE: Oregon City, OR

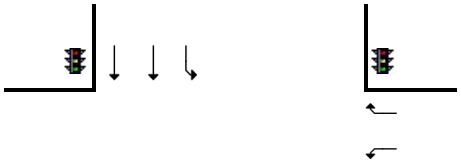
QC JOB #: 15328669
DATE: Wed, Dec 2 2020

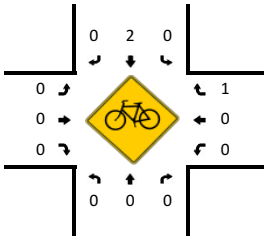
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:15 PM -- 4:30 PM

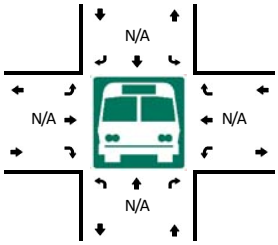




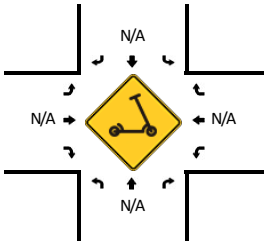












5-Min Count Period Beginning At	McLoughlin Blvd (Northbound)				McLoughlin Blvd (Southbound)				12th St (Eastbound)				12th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	70	3	0	14	107	0	0	0	0	0	0	2	0	11	0	207	
4:05 PM	0	78	4	0	7	109	0	0	0	0	0	0	1	0	6	0	205	
4:10 PM	0	86	1	0	10	134	0	0	0	0	0	0	1	0	9	0	241	
4:15 PM	0	67	4	0	12	110	0	0	0	0	0	0	0	0	13	0	206	
4:20 PM	0	90	2	0	15	109	0	0	0	0	0	0	3	0	12	0	231	
4:25 PM	0	98	1	0	13	123	0	0	0	0	0	0	0	0	7	0	242	
4:30 PM	0	64	2	0	9	97	0	0	0	0	0	0	0	0	10	0	182	
4:35 PM	0	75	3	0	18	101	0	0	0	0	0	0	1	0	10	0	208	
4:40 PM	0	68	2	0	9	110	0	0	0	0	0	0	1	0	12	0	202	
4:45 PM	0	89	1	0	16	107	0	0	0	0	0	0	1	0	11	0	225	
4:50 PM	0	73	2	0	13	137	0	0	0	0	0	0	0	0	10	0	235	
4:55 PM	0	80	1	0	13	104	0	0	0	0	0	0	0	0	13	0	211	2595
5:00 PM	0	90	0	0	7	109	0	0	0	0	0	0	0	0	17	0	223	2611
5:05 PM	0	88	2	0	17	126	0	0	0	0	0	0	1	0	12	0	246	2652
5:10 PM	0	95	2	0	5	129	0	0	0	0	0	0	1	0	8	0	240	2651
5:15 PM	0	78	0	0	19	124	0	0	0	0	0	0	0	0	10	0	231	2676
5:20 PM	0	65	0	0	12	116	0	0	0	0	0	0	1	0	10	0	204	2649
5:25 PM	0	84	3	0	16	107	0	0	0	0	0	0	1	0	4	0	215	2622
5:30 PM	0	75	3	0	10	127	0	0	0	0	0	0	1	0	3	0	219	2659
5:35 PM	0	62	1	0	13	91	0	0	0	0	0	0	3	0	10	0	180	2631
5:40 PM	0	65	0	0	13	104	0	0	0	0	0	0	1	0	11	0	194	2623
5:45 PM	0	57	1	0	21	85	0	0	0	0	0	0	0	0	8	0	172	2570
5:50 PM	0	55	0	0	10	72	0	0	0	0	0	0	0	0	4	0	141	2476
5:55 PM	0	42	0	0	13	82	0	0	0	0	0	0	1	0	8	0	146	2411

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1020	28	0	160	1368	0	0	0	0	0	0	12	0	128	0	2716
Heavy Trucks	0	52	0		4	84	0		0	0	0		0	0	0		140
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

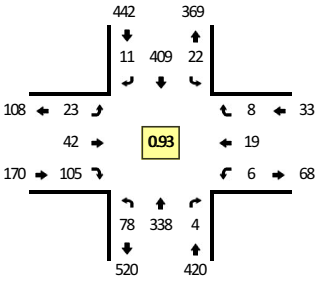
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering

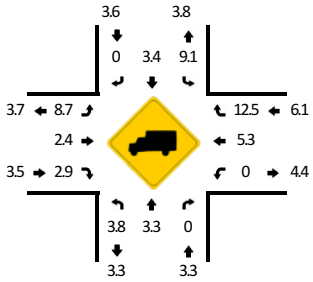
LOCATION: Washington St -- 12th St
CITY/STATE: Oregon City, OR

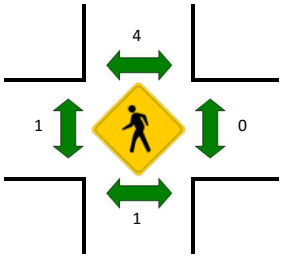
QC JOB #: 15328672
DATE: Wed, Dec 2 2020

Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:10 PM -- 4:25 PM

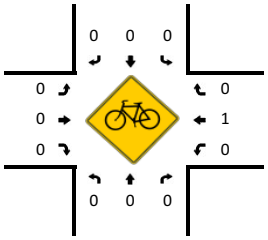


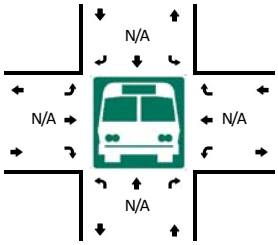




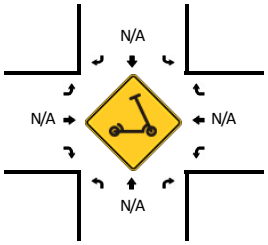












5-Min Count Period Beginning At	Washington St (Northbound)				Washington St (Southbound)				12th St (Eastbound)				12th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	7	24	0	0	2	28	1	0	2	3	14	0	1	1	1	0	84	
4:05 PM	4	29	0	0	2	38	2	0	1	3	5	0	0	3	0	0	87	
4:10 PM	6	34	0	0	1	34	2	0	0	3	7	0	0	1	1	0	89	
4:15 PM	9	26	0	0	0	37	1	0	4	4	16	0	1	2	0	0	100	
4:20 PM	8	27	2	0	2	31	1	0	3	3	16	0	0	4	1	0	98	
4:25 PM	7	30	0	0	2	23	0	0	0	9	4	0	2	1	2	0	80	
4:30 PM	6	27	0	0	2	33	1	0	2	0	7	0	0	0	1	0	79	
4:35 PM	7	36	0	0	2	40	1	0	2	3	6	0	0	2	1	0	100	
4:40 PM	6	29	1	0	2	48	1	0	1	3	3	0	1	1	0	0	96	
4:45 PM	7	22	0	0	3	33	0	0	3	6	10	0	1	3	1	0	89	
4:50 PM	5	32	0	0	4	28	1	0	2	4	8	0	0	1	0	0	85	
4:55 PM	6	22	1	0	0	36	0	0	3	1	9	0	0	0	0	0	78	1065
5:00 PM	5	24	1	0	1	31	1	0	0	0	7	0	0	2	1	0	73	1054
5:05 PM	6	34	0	0	0	36	0	0	4	3	9	0	0	2	0	0	94	1061
5:10 PM	5	28	0	0	2	35	1	0	0	1	6	0	1	3	0	0	82	1054
5:15 PM	4	32	0	0	0	35	2	0	0	2	11	0	0	3	0	0	89	1043
5:20 PM	3	26	0	0	2	35	0	0	1	1	15	0	0	6	2	0	91	1036
5:25 PM	1	27	0	0	1	33	1	0	2	4	9	0	0	1	0	0	79	1035
5:30 PM	6	27	0	0	1	26	2	0	6	3	5	0	0	1	0	0	77	1033
5:35 PM	7	26	0	0	0	25	1	0	0	4	7	0	0	0	1	0	71	1004
5:40 PM	6	30	0	0	2	29	2	0	2	1	9	0	0	1	0	0	82	990
5:45 PM	3	24	0	0	2	30	1	0	0	4	10	0	0	1	1	0	76	977
5:50 PM	3	27	1	0	3	28	0	0	0	7	9	0	0	1	1	0	80	972
5:55 PM	4	21	0	0	0	23	0	0	1	1	6	0	0	0	1	0	57	951

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	92	348	8	0	12	408	16	0	28	40	156	0	4	28	8	0	1148
Heavy Trucks	0	4	0		0	20	0		0	0	4		0	0	4		32
Buses																	
Pedestrians		0				12				4				0			16
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

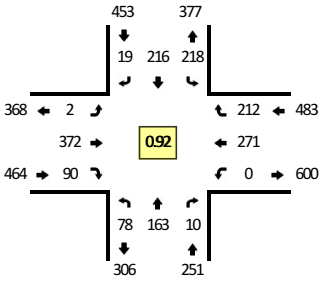
Type of peak hour being reported: User-Defined

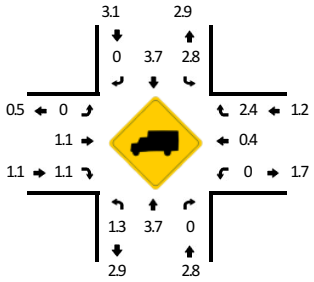
Method for determining peak hour: Total Entering

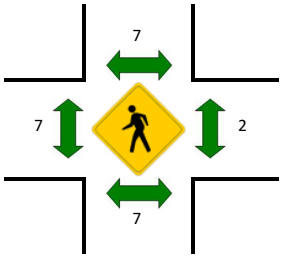
LOCATION: Washington St -- 7th St
CITY/STATE: Oregon City, OR

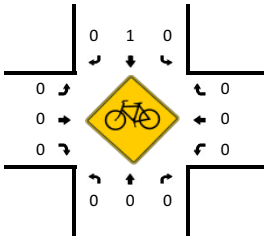
QC JOB #: 15328675
DATE: Wed, Dec 2 2020

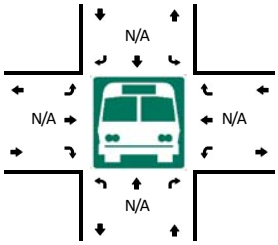
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:35 PM -- 4:50 PM

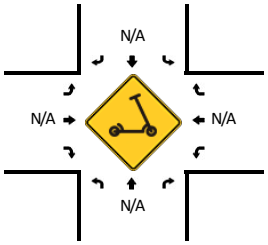












5-Min Count Period Beginning At	Washington St (Northbound)				Washington St (Southbound)				7th St (Eastbound)				7th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	3	16	0	0	19	22	0	0	1	34	12	0	0	23	13	0	143	
4:05 PM	6	11	1	0	17	14	1	0	0	41	6	0	0	25	14	0	136	
4:10 PM	4	10	0	0	21	14	2	0	0	25	8	0	0	27	30	0	141	
4:15 PM	6	18	0	0	23	16	3	0	0	3	0	0	0	22	24	0	115	
4:20 PM	6	13	1	0	21	20	2	0	0	43	10	0	0	28	10	0	154	
4:25 PM	6	9	2	0	14	13	2	0	0	35	5	0	0	23	18	0	127	
4:30 PM	11	16	1	0	18	16	0	0	0	27	7	0	0	16	19	0	131	
4:35 PM	5	13	2	0	16	23	2	0	0	26	8	0	0	16	22	0	133	
4:40 PM	8	18	0	0	17	25	3	0	0	37	9	0	0	23	17	0	157	
4:45 PM	5	9	2	0	16	21	3	0	0	50	10	0	0	31	10	0	157	
4:50 PM	9	14	1	0	21	15	1	0	1	15	3	0	0	16	16	0	112	
4:55 PM	9	16	0	0	15	17	0	0	0	36	12	0	0	21	19	0	145	1651
5:00 PM	5	6	0	0	21	23	2	0	0	33	10	0	0	23	18	0	141	1649
5:05 PM	2	12	1	0	13	26	0	0	0	34	8	0	0	26	17	0	139	1652
5:10 PM	11	23	2	0	18	17	1	0	0	35	6	0	0	24	13	0	150	1661
5:15 PM	3	12	1	0	13	18	2	0	0	29	9	0	0	24	22	0	133	1679
5:20 PM	1	13	1	0	32	22	1	0	0	33	8	0	0	23	11	0	145	1670
5:25 PM	5	15	1	0	15	17	0	0	1	30	14	0	0	39	16	0	153	1696
5:30 PM	0	9	0	0	14	22	1	0	0	35	9	0	0	27	19	0	136	1701
5:35 PM	11	19	0	0	13	6	3	0	0	20	8	0	0	18	13	0	111	1679
5:40 PM	2	8	1	0	16	11	1	0	0	47	9	0	0	30	18	0	143	1665
5:45 PM	4	14	1	0	17	13	2	0	0	33	9	0	0	24	19	0	136	1644
5:50 PM	2	12	0	0	19	18	2	0	0	28	6	0	0	22	14	0	123	1655
5:55 PM	5	11	0	0	10	12	1	0	0	26	9	0	0	14	14	0	102	1612

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	72	160	16	0	196	276	32	0	0	452	108	0	0	280	196	0	1788
Heavy Trucks	4	16	0		0	8	0		0	4	0		0	0	4		36
Buses																	
Pedestrians		8				8				12				0			28
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

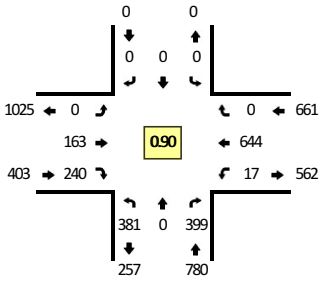
Type of peak hour being reported: User-Defined

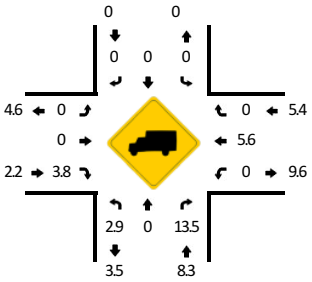
Method for determining peak hour: Total Entering

LOCATION: I-205 NB Ramps -- 82nd Dr
CITY/STATE: Gladstone, OR

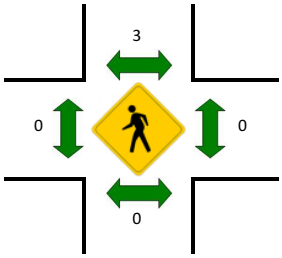
QC JOB #: 15328678
DATE: Wed, Dec 2 2020

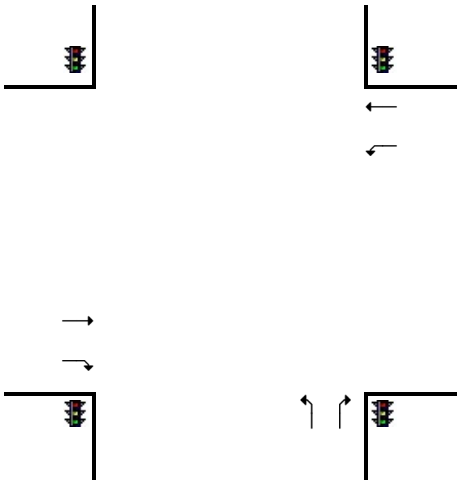
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:20 PM -- 4:35 PM

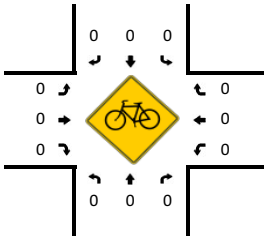


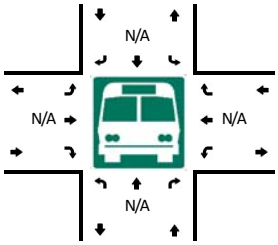


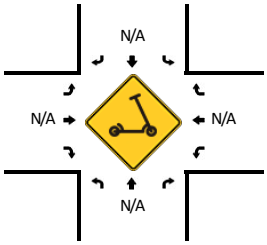
Quality Counts
DATA THAT DRIVES COMMUNITIES











5-Min Count Period Beginning At	I-205 NB Ramps (Northbound)				I-205 NB Ramps (Southbound)				82nd Dr (Eastbound)				82nd Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	39	0	35	0	0	0	0	0	0	11	7	0	3	47	0	0	142	
4:05 PM	28	0	30	0	0	0	0	0	0	18	24	0	3	65	0	0	168	
4:10 PM	38	0	45	0	0	0	0	0	0	11	23	0	1	53	0	0	171	
4:15 PM	30	0	34	0	0	0	0	0	0	6	7	0	5	40	0	0	122	
4:20 PM	32	0	34	0	0	0	0	0	0	17	22	0	0	61	0	0	166	
4:25 PM	36	0	45	0	0	0	0	0	0	21	22	0	0	71	0	0	195	
4:30 PM	33	0	33	0	0	0	0	0	0	10	24	0	1	52	0	0	153	
4:35 PM	34	0	32	0	0	0	0	0	0	17	23	0	2	54	0	0	162	
4:40 PM	24	0	27	0	0	0	0	0	0	10	31	0	1	67	0	0	160	
4:45 PM	39	0	28	0	0	0	0	0	0	18	21	0	1	51	0	0	158	
4:50 PM	29	0	25	0	0	0	0	0	0	14	19	0	0	39	0	0	126	
4:55 PM	19	0	31	0	0	0	0	0	0	10	17	0	0	44	0	0	121	1844
5:00 PM	27	0	31	0	0	0	0	0	0	11	20	0	1	42	0	0	132	1834
5:05 PM	38	0	35	0	0	0	0	0	0	6	26	0	3	51	0	0	159	1825
5:10 PM	31	0	19	0	0	0	0	0	0	10	27	0	0	44	0	0	131	1785
5:15 PM	25	0	21	0	0	0	0	0	0	10	27	0	1	48	0	0	132	1795
5:20 PM	35	0	29	0	0	0	0	0	0	7	18	0	1	49	0	0	139	1768
5:25 PM	41	0	28	0	0	0	0	0	0	8	11	0	0	39	0	0	127	1700
5:30 PM	22	0	27	0	0	0	0	0	0	6	16	0	1	37	0	0	109	1656
5:35 PM	35	0	31	0	0	0	0	0	0	4	21	0	0	43	0	0	134	1628
5:40 PM	21	0	26	0	0	0	0	0	0	12	21	0	2	38	0	0	120	1588
5:45 PM	27	0	27	0	0	0	0	0	0	8	22	0	1	25	0	0	110	1540
5:50 PM	30	0	25	0	0	0	0	0	0	6	14	0	0	28	0	0	103	1517
5:55 PM	30	0	31	0	0	0	0	0	0	10	15	0	1	34	0	0	121	1517

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	404	0	448	0	0	0	0	0	0	192	272	0	4	736	0	0	2056
Heavy Trucks	8	0	36		0	0	0		0	0	12		0	64	0		120
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

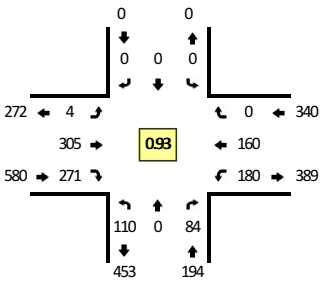
Type of peak hour being reported: User-Defined

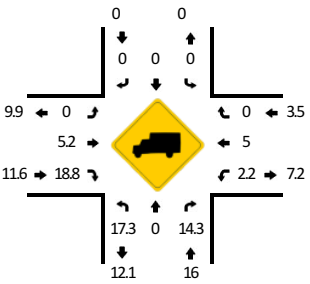
Method for determining peak hour: Total Entering

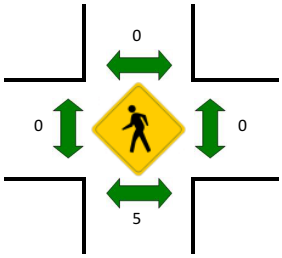
LOCATION: Clackamas River Dr -- Washington St
CITY/STATE: Oregon City, OR

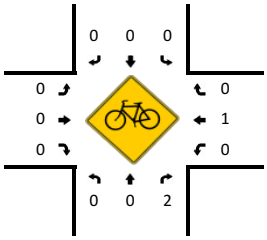
QC JOB #: 15328681
DATE: Wed, Dec 2 2020

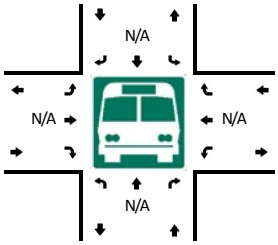
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:00 PM -- 4:15 PM

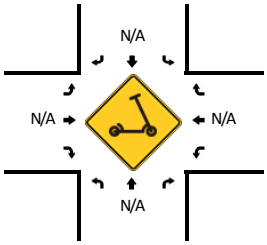












5-Min Count Period Beginning At	Clackamas River Dr (Northbound)				Clackamas River Dr (Southbound)				Washington St (Eastbound)				Washington St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	9	0	4	0	0	0	0	0	0	26	32	1	10	16	0	0	98	
4:05 PM	10	0	8	0	0	0	0	0	0	20	25	1	23	17	0	0	104	
4:10 PM	7	0	6	1	0	0	0	0	0	25	32	0	15	12	0	0	98	
4:15 PM	8	0	5	0	0	0	0	0	0	35	22	0	15	7	0	0	92	
4:20 PM	12	0	8	0	0	0	0	0	0	25	21	0	19	10	0	0	95	
4:25 PM	13	0	9	0	0	0	0	0	0	28	25	0	13	13	0	0	101	
4:30 PM	2	0	7	0	0	0	0	0	0	27	20	0	20	11	0	0	87	
4:35 PM	3	0	10	0	0	0	0	0	0	31	15	1	18	13	0	0	91	
4:40 PM	11	0	6	1	0	0	0	0	0	24	21	0	9	15	0	0	87	
4:45 PM	12	0	7	0	0	0	0	0	0	16	20	0	17	14	0	0	86	
4:50 PM	8	0	4	0	0	0	0	0	0	23	21	1	14	15	0	0	86	
4:55 PM	13	0	10	0	0	0	0	0	0	25	17	0	7	17	0	0	89	1114
5:00 PM	12	0	8	1	0	0	0	0	0	21	26	1	14	12	0	0	95	1111
5:05 PM	10	0	5	0	0	0	0	0	0	26	20	0	16	14	0	0	91	1098
5:10 PM	4	0	6	0	0	0	0	0	0	27	20	0	16	11	0	0	84	1084
5:15 PM	9	0	10	0	0	0	0	0	0	17	22	1	8	5	0	0	72	1064
5:20 PM	3	0	10	0	0	0	0	0	0	22	15	0	9	3	0	0	62	1031
5:25 PM	3	0	8	0	0	0	0	0	0	18	15	0	13	8	0	0	65	995
5:30 PM	5	0	3	0	0	0	0	0	0	24	17	0	13	7	0	0	69	977
5:35 PM	4	0	4	0	0	0	0	0	0	16	17	1	10	8	0	0	60	946
5:40 PM	6	0	8	0	0	0	0	0	0	12	13	0	8	9	0	0	56	915
5:45 PM	4	0	3	0	0	0	0	0	0	25	17	2	8	12	0	0	71	900
5:50 PM	7	0	2	1	0	0	0	0	0	16	15	1	4	4	0	0	50	864
5:55 PM	2	0	8	0	0	0	0	0	0	16	12	0	5	3	0	0	46	821

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	104	0	72	4	0	0	0	0	0	284	356	8	192	180	0	0	1200
Heavy Trucks	16	0	16		0	0	0		0	12	72		8	8	0		132
Buses																	
Pedestrians		12				0				0				0			12
Bicycles	0	0	0		0	0	0		0	0	0		0	4	0		4
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

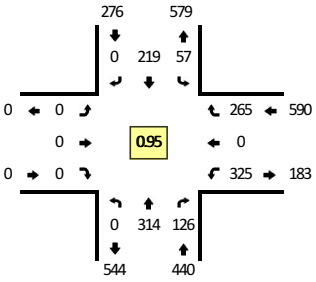
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering

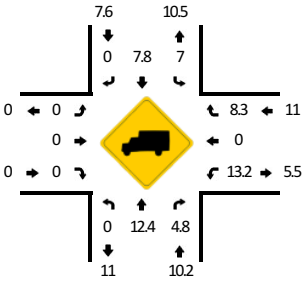
LOCATION: Washington St -- Prairie Schooner Way
CITY/STATE: Oregon City, OR

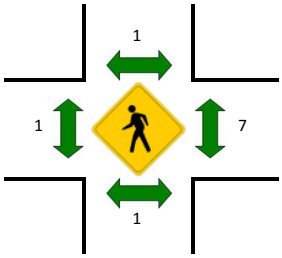
QC JOB #: 15328684
DATE: Wed, Dec 2 2020

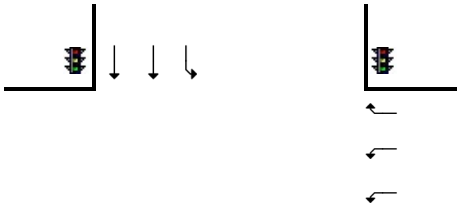
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:05 PM -- 4:20 PM

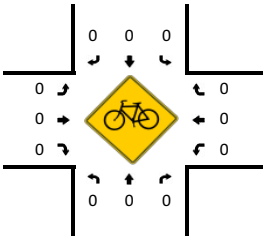


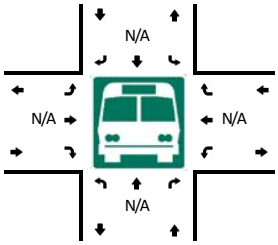




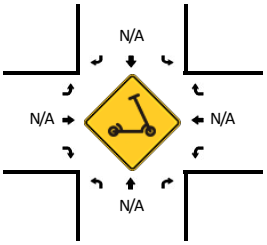












5-Min Count Period Beginning At	Washington St (Northbound)				Washington St (Southbound)				Prairie Schooner Way (Eastbound)				Prairie Schooner Way (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	28	4	0	5	19	0	0	0	0	0	0	27	0	28	0	111	
4:05 PM	0	24	11	0	6	29	0	0	0	0	0	0	23	0	23	0	116	
4:10 PM	0	34	15	0	3	16	0	0	0	0	0	0	21	0	24	0	113	
4:15 PM	0	31	9	0	6	11	0	0	0	0	0	0	32	0	26	0	115	
4:20 PM	0	22	6	0	3	15	0	0	0	0	0	0	32	0	24	0	102	
4:25 PM	0	26	13	0	6	20	0	0	0	0	0	0	22	0	24	0	111	
4:30 PM	0	27	7	0	2	14	0	0	0	0	0	0	28	0	21	0	99	
4:35 PM	0	28	11	0	4	11	0	0	0	0	0	0	26	0	23	0	103	
4:40 PM	0	22	16	0	5	19	0	0	0	0	0	0	25	0	19	0	106	
4:45 PM	0	24	13	0	6	19	0	0	0	0	0	0	38	0	12	0	112	
4:50 PM	0	26	10	0	6	20	0	0	0	0	0	0	22	0	23	0	107	
4:55 PM	0	22	11	0	5	26	0	0	0	0	0	0	29	0	18	0	111	1306
5:00 PM	0	29	8	0	7	18	0	0	0	0	0	0	18	0	18	0	98	1293
5:05 PM	0	28	6	0	6	21	0	0	0	0	0	0	19	0	22	0	102	1279
5:10 PM	0	18	14	0	2	11	0	0	0	0	0	0	23	0	27	0	95	1261
5:15 PM	0	26	9	0	3	15	0	0	0	0	0	0	15	0	13	0	81	1227
5:20 PM	0	17	11	0	0	5	0	0	0	0	0	0	26	0	20	0	79	1204
5:25 PM	0	18	10	0	1	9	0	0	0	0	0	0	21	0	16	0	75	1168
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5:35 PM	0	20	13	0	0	12	0	0	0	0	0	0	14	0	12	0	71	1113
5:40 PM	0	16	14	0	6	11	0	0	0	0	0	0	11	0	13	0	71	1078
5:45 PM	0	26	9	0	2	12	0	0	0	0	0	0	11	0	16	0	76	1042
5:50 PM	0	14	3	0	2	10	0	0	0	0	0	0	22	0	17	0	68	1003
5:55 PM	0	14	5	0	0	7	0	0	0	0	0	0	16	0	16	0	58	950

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	356	140	0	60	224	0	0	0	0	0	0	304	0	292	0	1376
Heavy Trucks	0	24	4		8	12	0		0	0	0		40	0	40		128
Buses																	
Pedestrians		0				4				4				8			16
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

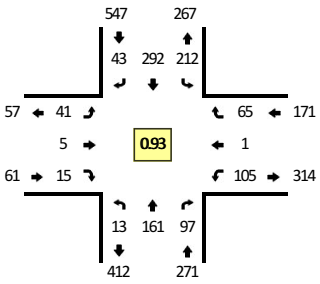
Type of peak hour being reported: User-Defined

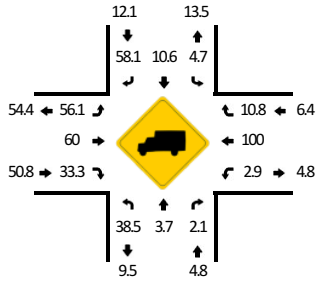
Method for determining peak hour: Total Entering

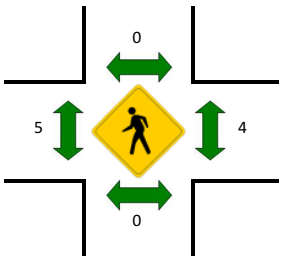
LOCATION: Washington St -- Home Depot West Dwy
CITY/STATE: Oregon City, OR

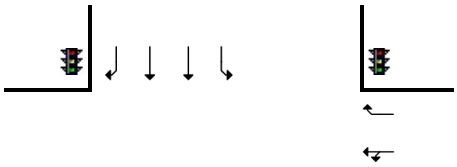
QC JOB #: 15328687
DATE: Wed, Dec 2 2020

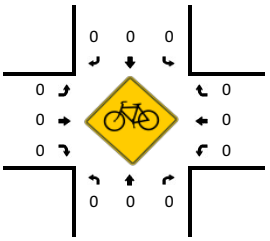
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:45 PM -- 5:00 PM

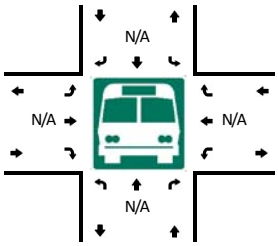


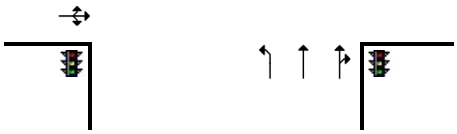


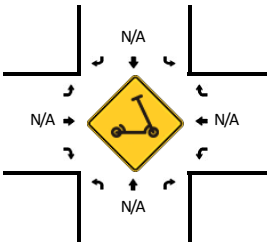












5-Min Count Period Beginning At	Washington St (Northbound)				Washington St (Southbound)				Home Depot West Dwy (Eastbound)				Home Depot West Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	13	8	0	22	20	3	0	4	1	1	0	14	0	6	0	93	
4:05 PM	2	10	12	0	15	34	6	0	1	1	2	0	8	0	4	0	95	
4:10 PM	3	16	3	0	16	21	0	0	1	2	1	0	10	0	6	0	79	
4:15 PM	1	18	8	0	14	22	7	0	2	0	1	0	5	0	7	0	85	
4:20 PM	1	8	9	0	24	22	1	0	3	0	2	0	11	0	4	0	85	
4:25 PM	1	14	7	0	17	21	3	0	7	0	0	0	7	0	4	0	81	
4:30 PM	1	12	9	0	19	22	5	0	4	0	0	0	6	0	5	0	83	
4:35 PM	0	18	9	0	11	21	4	0	4	1	3	0	8	0	6	0	85	
4:40 PM	0	12	5	0	11	25	5	0	5	0	1	0	11	0	6	0	81	
4:45 PM	0	15	4	0	20	35	4	0	2	0	2	0	10	1	6	0	99	
4:50 PM	2	10	10	0	18	23	1	0	3	0	0	0	7	0	7	0	81	
4:55 PM	1	15	13	0	25	26	4	0	5	0	2	0	8	0	4	0	103	1050
5:00 PM	1	12	8	0	13	18	0	0	4	0	0	0	7	0	3	0	66	1023
5:05 PM	0	13	5	0	20	23	0	0	3	1	0	0	4	0	2	0	71	999
5:10 PM	1	10	6	0	16	14	2	0	1	0	0	0	6	0	6	0	62	982
5:15 PM	0	10	10	0	15	14	2	0	2	1	0	0	6	0	9	0	69	966
5:20 PM	1	9	14	0	13	14	2	0	2	0	0	0	7	0	7	0	69	950
5:25 PM	0	6	8	0	9	19	0	0	1	0	0	0	7	0	5	0	55	924
5:30 PM	0	11	5	0	11	20	1	0	3	0	0	0	10	0	4	0	65	906
5:35 PM	0	8	7	0	9	16	1	0	0	0	0	0	7	0	11	0	59	880
5:40 PM	0	14	2	0	8	11	4	0	2	1	0	0	6	0	7	0	55	854
5:45 PM	0	10	3	0	10	11	1	0	0	0	0	0	6	0	3	0	44	799
5:50 PM	0	8	5	0	11	17	0	0	1	0	0	0	8	0	2	0	52	770
5:55 PM	1	3	5	0	10	8	2	0	2	0	1	0	3	0	4	0	39	706

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	12	160	108	0	252	336	36	0	40	0	16	0	100	4	68	0	1132
Heavy Trucks	4	4	4		8	36	16		24	0	4		4	4	8		116
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:49 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

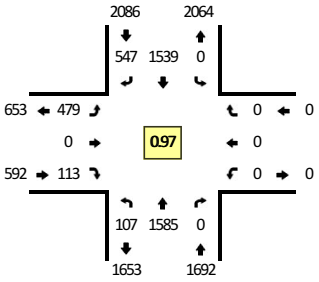
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering

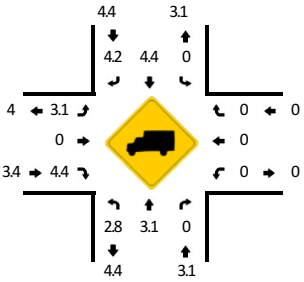
LOCATION: Cascade Hwy -- Redland Rd
CITY/STATE: Oregon City, OR

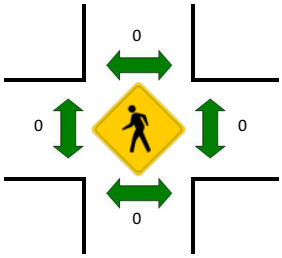
QC JOB #: 15328603
DATE: Sat, Dec 5 2020

Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:35 PM -- 12:50 PM

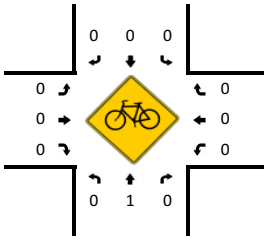


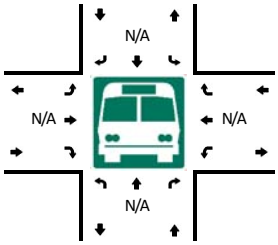


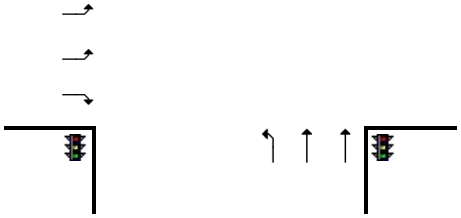


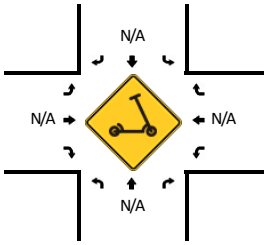












5-Min Count Period Beginning At	Cascade Hwy (Northbound)				Cascade Hwy (Southbound)				Redland Rd (Eastbound)				Redland Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	14	121	0	0	0	107	41	0	30	0	13	0	0	0	0	0	326	
11:20 AM	7	122	0	0	0	116	48	0	34	0	10	0	0	0	0	0	337	
11:25 AM	7	125	0	0	0	101	35	0	44	0	8	0	0	0	0	0	320	
11:30 AM	5	121	0	0	0	126	34	0	37	0	16	0	0	0	0	0	339	
11:35 AM	4	102	0	0	0	127	35	0	32	0	7	0	0	0	0	0	307	
11:40 AM	9	138	0	0	0	136	51	0	25	0	9	0	0	0	0	0	368	
11:45 AM	9	126	0	0	0	123	38	0	47	0	14	0	0	0	0	0	357	
11:50 AM	8	129	0	0	0	139	34	0	37	0	12	0	0	0	0	0	359	
11:55 AM	10	135	0	0	0	125	34	1	40	0	7	0	0	0	0	0	352	
12:00 PM	12	124	0	0	0	129	38	0	40	0	6	0	0	0	0	0	349	
12:05 PM	9	157	0	0	0	138	41	0	34	0	9	0	0	0	0	0	388	
12:10 PM	5	108	0	0	0	119	36	0	44	0	10	0	0	0	0	0	322	4124
12:15 PM	13	127	0	0	0	126	47	0	42	0	10	0	0	0	0	0	365	4163
12:20 PM	10	129	0	0	0	123	49	0	29	0	9	0	0	0	0	0	349	4175
12:25 PM	6	135	0	0	0	128	47	0	40	0	10	0	0	0	0	0	366	4221
12:30 PM	10	124	0	0	0	135	38	0	34	0	10	0	0	0	0	0	351	4233
12:35 PM	10	139	0	0	0	134	46	0	44	0	12	0	0	0	0	0	385	4311
12:40 PM	9	108	0	0	0	121	56	0	47	0	12	0	0	0	0	0	353	4296
12:45 PM	9	150	0	0	0	140	34	0	42	0	10	0	0	0	0	0	385	4324
12:50 PM	3	135	0	0	0	122	48	0	34	0	5	0	0	0	0	0	347	4312
12:55 PM	6	143	0	0	0	121	42	0	34	0	14	0	0	0	0	0	360	4320
1:00 PM	7	118	0	1	0	137	40	0	48	0	5	0	0	0	0	0	356	4327
1:05 PM	13	143	0	0	0	116	65	0	35	0	8	0	0	0	0	0	380	4319
1:10 PM	10	134	0	0	0	136	35	0	50	0	8	0	0	0	0	0	373	4370

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	112	1588	0	0	0	1580	544	0	532	0	136	0	0	0	0	0	4492
Heavy Trucks	4	52	0		0	76	12		20	0	4		0	0	0		168
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:51 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

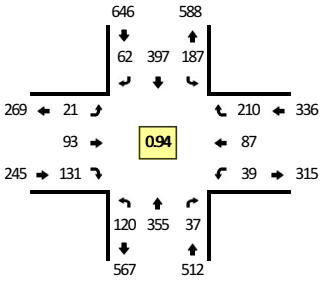
Type of peak hour being reported: User-Defined

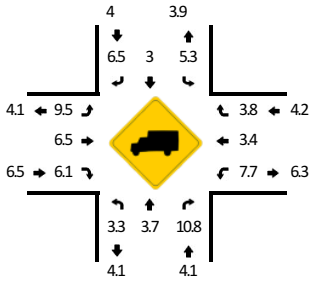
Method for determining peak hour: Total Entering

LOCATION: Redland Rd -- Abernethy Rd/Holcomb Blvd
CITY/STATE: Oregon City, OR

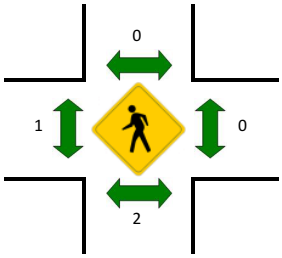
QC JOB #: 15328606
DATE: Sat, Dec 5 2020

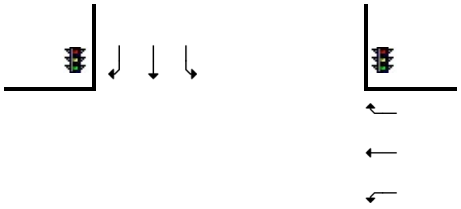
Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:30 PM -- 12:45 PM

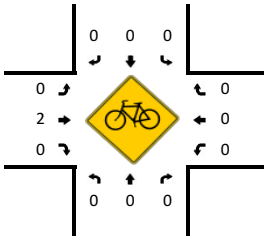


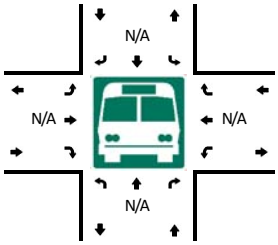


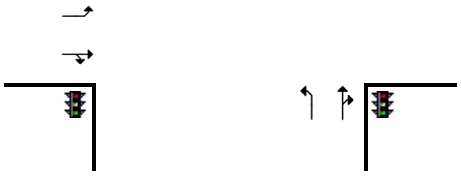
Quality Counts
DATA THAT DRIVES COMMUNITIES

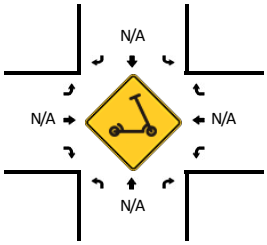












5-Min Count Period Beginning At	Redland Rd (Northbound)				Redland Rd (Southbound)				Abernethy Rd/Holcomb Blvd (Eastbound)				Abernethy Rd/Holcomb Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	10	24	3	0	15	26	7	0	4	4	11	0	3	10	20	0	137	
11:20 AM	5	27	1	0	14	32	4	0	1	6	13	0	2	4	15	0	124	
11:25 AM	9	36	3	0	13	38	3	0	1	6	8	0	4	4	17	0	142	
11:30 AM	12	24	4	0	8	24	8	0	3	9	12	0	1	8	23	0	136	
11:35 AM	13	25	1	0	11	24	2	0	4	6	14	0	1	5	13	0	119	
11:40 AM	13	31	4	0	12	38	6	0	1	13	5	0	2	7	12	0	144	
11:45 AM	13	27	4	0	12	28	6	0	3	8	8	0	2	7	25	0	143	
11:50 AM	12	27	5	0	13	27	2	0	3	7	12	0	2	4	13	0	127	
11:55 AM	9	35	5	0	15	27	4	0	1	5	8	0	1	6	19	0	135	
12:00 PM	6	28	2	0	13	28	9	0	1	3	10	0	2	6	14	0	122	
12:05 PM	24	30	0	0	17	38	2	0	2	11	7	0	4	8	11	0	154	
12:10 PM	11	39	4	0	8	23	8	0	4	6	11	0	4	9	15	0	142	1625
12:15 PM	7	32	5	0	13	38	3	0	1	9	5	0	3	5	17	0	138	1626
12:20 PM	11	22	1	0	16	40	3	0	4	10	17	0	5	11	14	0	154	1656
12:25 PM	16	33	5	0	13	39	3	0	0	4	10	0	4	3	12	0	142	1656
12:30 PM	11	34	2	0	11	28	5	1	3	9	17	0	2	13	12	0	148	1668
12:35 PM	11	29	2	0	19	34	5	0	2	6	11	0	1	4	24	0	148	1697
12:40 PM	8	39	5	0	18	38	9	0	1	8	11	0	0	6	23	0	166	1719
12:45 PM	5	26	2	0	17	20	7	0	1	9	12	0	4	7	17	0	127	1703
12:50 PM	9	24	2	0	13	30	4	0	2	8	15	0	5	6	15	0	133	1709
12:55 PM	10	32	6	0	16	29	6	0	2	4	7	0	3	4	22	0	141	1715
1:00 PM	11	26	4	0	13	30	5	0	2	15	11	0	3	9	16	0	145	1738
1:05 PM	10	21	2	0	20	38	8	0	2	5	12	0	5	7	22	0	152	1736
1:10 PM	11	37	1	0	16	33	4	1	1	6	3	0	4	12	16	0	145	1739

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	120	408	36	0	192	400	76	4	24	92	156	0	12	92	236	0	1848
Heavy Trucks	8	12	12		16	0	0		0	4	12		0	0	12		76
Buses																	
Pedestrians		4				0				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:51 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

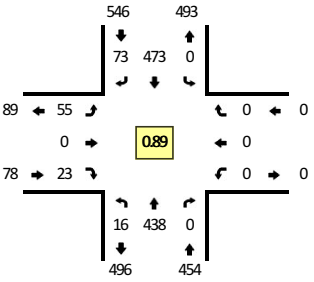
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering

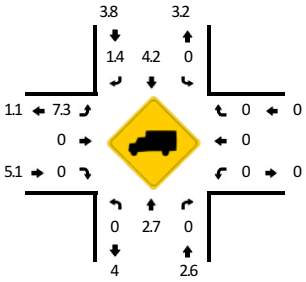
LOCATION: S Redland Rd -- S Anchor Way
CITY/STATE: Oregon City, OR

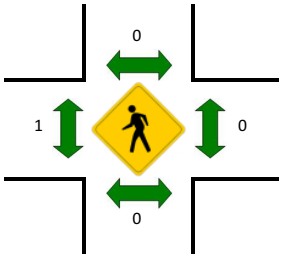
QC JOB #: 15328609
DATE: Sat, Dec 5 2020

Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:20 PM -- 12:35 PM

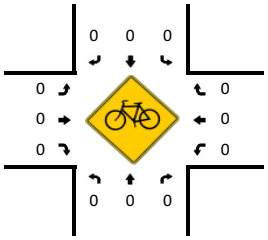


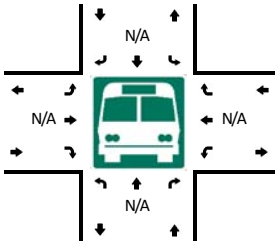




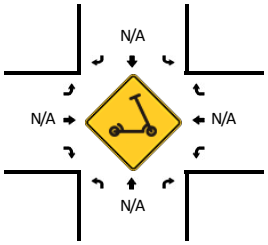












5-Min Count Period Beginning At	S Redland Rd (Northbound)				S Redland Rd (Southbound)				S Anchor Way (Eastbound)				S Anchor Way (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	4	32	0	0	0	33	9	0	2	0	3	0	0	0	0	0	83	
11:20 AM	2	26	0	0	0	42	2	0	4	0	1	0	0	0	0	0	77	
11:25 AM	0	35	0	0	0	37	7	0	8	0	1	0	0	0	0	0	88	
11:30 AM	6	34	0	0	0	38	3	0	4	0	2	0	0	0	0	0	87	
11:35 AM	2	33	0	0	0	34	4	0	4	0	3	0	0	0	0	0	80	
11:40 AM	0	40	0	0	0	36	9	0	9	0	5	0	0	0	0	0	99	
11:45 AM	2	44	0	0	0	32	6	0	5	0	2	0	0	0	0	0	91	
11:50 AM	5	36	0	0	0	32	6	0	5	0	5	0	0	0	0	0	89	
11:55 AM	2	39	0	0	0	32	3	0	6	0	3	0	0	0	0	0	85	
12:00 PM	1	39	0	0	0	32	6	0	4	0	5	0	0	0	0	0	87	
12:05 PM	3	40	0	0	0	39	7	0	5	0	4	0	0	0	0	0	98	
12:10 PM	1	41	0	0	0	34	4	0	7	0	3	0	0	0	0	0	90	1054
12:15 PM	3	37	0	0	0	43	2	0	5	0	4	0	0	0	0	0	94	1065
12:20 PM	0	34	0	0	0	55	6	0	6	0	3	0	0	0	0	0	104	1092
12:25 PM	0	41	0	0	0	46	8	0	3	0	0	0	0	0	0	0	98	1102
12:30 PM	4	48	0	0	0	35	5	0	4	0	4	0	0	0	0	0	100	1115
12:35 PM	2	25	0	0	0	34	9	0	4	0	1	0	0	0	0	0	75	1110
12:40 PM	1	41	0	0	0	40	6	0	8	0	2	0	0	0	0	0	98	1109
12:45 PM	1	33	0	0	0	30	8	0	2	0	2	0	0	0	0	0	76	1094
12:50 PM	2	27	0	0	0	44	6	0	9	0	1	0	0	0	0	0	89	1094
12:55 PM	0	39	0	0	0	30	6	0	4	0	1	0	0	0	0	0	80	1089
1:00 PM	0	38	0	0	0	33	8	0	6	0	2	0	0	0	0	0	87	1089
1:05 PM	2	31	0	0	0	54	3	0	0	0	2	0	0	0	0	0	92	1083
1:10 PM	1	44	0	0	0	29	6	0	4	0	1	0	0	0	0	0	85	1078

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	16	492	0	0	0	544	76	0	52	0	28	0	0	0	0	0	1208
Heavy Trucks	0	12	0		0	32	0		4	0	0		0	0	0		48
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:51 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

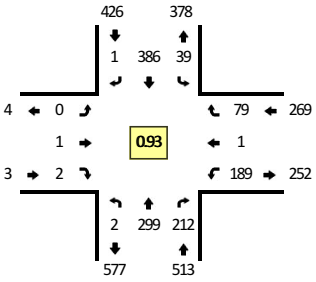
Type of peak hour being reported: User-Defined

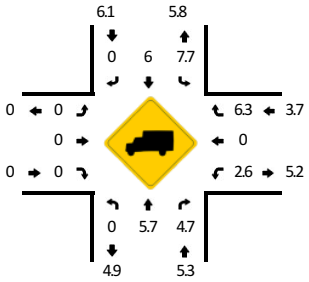
Method for determining peak hour: Total Entering

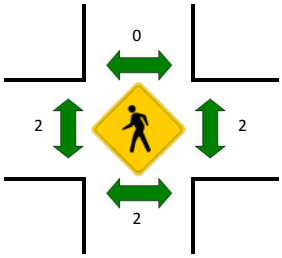
LOCATION: Washington St -- 17th St/Abernethy Rd
CITY/STATE: Oregon City, OR

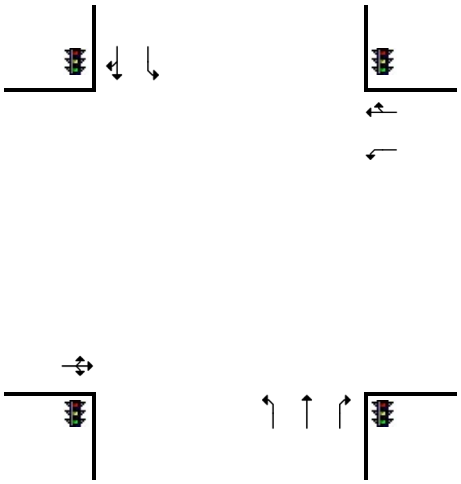
QC JOB #: 15328612
DATE: Sat, Dec 5 2020

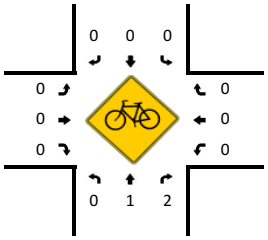
Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 1:00 PM -- 1:15 PM

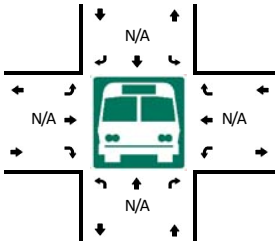


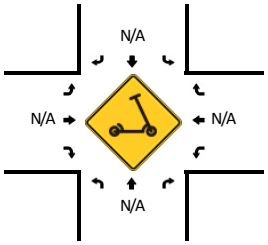












5-Min Count Period Beginning At	Washington St (Northbound)				Washington St (Southbound)				17th St/Abernethy Rd (Eastbound)				17th St/Abernethy Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	1	23	12	0	0	34	0	0	0	0	1	0	18	0	6	0	95	
11:20 AM	0	21	16	0	5	25	0	0	0	0	0	0	14	0	0	0	81	
11:25 AM	0	31	15	0	3	22	0	0	0	0	0	0	16	0	4	0	91	
11:30 AM	0	19	17	0	1	30	0	0	0	0	0	0	13	0	10	0	90	
11:35 AM	0	21	21	0	6	31	0	0	0	0	0	0	17	0	5	0	101	
11:40 AM	0	26	14	0	2	37	0	0	0	0	0	0	16	0	7	0	102	
11:45 AM	0	30	15	0	4	27	0	0	0	0	0	0	21	0	8	0	105	
11:50 AM	0	28	19	0	2	31	0	0	0	0	0	0	13	0	3	0	96	
11:55 AM	0	24	10	0	6	30	0	0	0	0	0	0	14	0	4	0	88	
12:00 PM	1	16	13	0	2	25	0	0	0	0	0	0	22	0	5	0	84	
12:05 PM	0	22	19	0	3	28	0	0	1	0	1	0	20	0	4	0	98	
12:10 PM	0	19	15	0	3	30	0	0	0	0	0	0	24	0	6	0	97	1128
12:15 PM	0	22	14	0	3	32	0	0	0	0	0	0	11	0	10	0	92	1125
12:20 PM	0	29	25	0	4	24	0	0	0	0	0	0	19	0	6	0	107	1151
12:25 PM	0	25	14	0	3	28	0	0	0	0	0	0	14	0	9	0	93	1153
12:30 PM	1	23	19	0	6	30	0	0	0	0	0	0	14	0	5	0	98	1161
12:35 PM	0	24	20	0	5	29	1	0	0	0	1	0	16	0	12	0	108	1168
12:40 PM	0	21	16	0	2	37	0	0	0	0	1	0	15	0	7	0	99	1165
12:45 PM	0	25	23	0	2	27	0	0	0	1	0	0	16	1	4	0	99	1159
12:50 PM	0	25	15	0	6	42	0	0	0	0	0	0	14	0	4	0	106	1169
12:55 PM	0	18	11	0	2	29	0	0	0	0	0	0	17	0	5	0	82	1163
1:00 PM	0	28	25	0	4	40	0	0	0	0	0	0	18	0	5	0	120	1199
1:05 PM	1	27	15	0	1	35	0	0	0	0	0	0	14	0	7	0	100	1201
1:10 PM	0	32	15	0	1	33	0	0	0	0	0	0	21	0	5	0	107	1211

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	348	220	0	24	432	0	0	0	0	0	0	212	0	68	0	1308
Heavy Trucks	0	28	4		0	32	0		0	0	0		8	0	4		76
Buses																	
Pedestrians		0				0				4				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

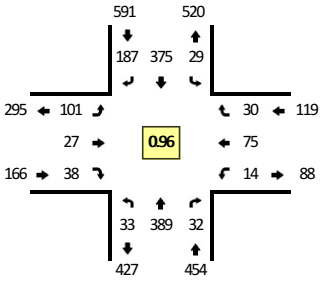
Report generated on 3/12/2021 8:51 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

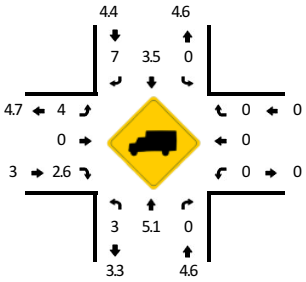
LOCATION: Washington St -- 15th St
CITY/STATE: Oregon City, OR

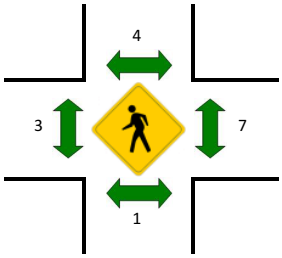
QC JOB #: 15328615
DATE: Sat, Dec 5 2020

Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:50 PM -- 1:05 PM

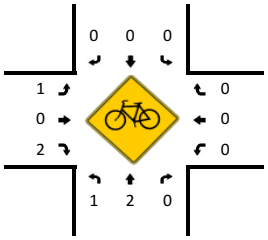


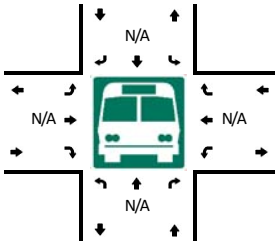




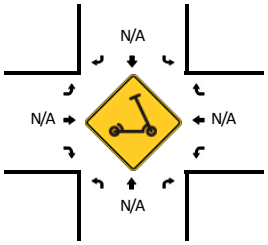












5-Min Count Period Beginning At	Washington St (Northbound)				Washington St (Southbound)				15th St (Eastbound)				15th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	2	30	3	0	1	29	16	0	3	2	1	0	0	4	3	0	94	
11:20 AM	2	27	1	0	2	30	13	0	7	0	2	0	1	7	2	0	94	
11:25 AM	4	38	3	0	4	25	8	0	10	2	2	0	3	7	2	0	108	
11:30 AM	2	25	1	0	1	29	12	0	10	4	4	0	3	6	3	0	100	
11:35 AM	2	34	1	0	3	26	25	0	8	1	3	0	2	7	2	0	114	
11:40 AM	1	28	4	0	2	34	17	0	6	2	2	0	0	10	1	0	107	
11:45 AM	3	40	3	0	2	34	21	0	5	3	2	0	2	5	2	0	122	
11:50 AM	7	37	4	0	4	24	12	0	9	2	6	0	1	7	2	0	115	
11:55 AM	4	19	2	0	5	24	12	0	8	4	4	0	1	11	3	0	97	
12:00 PM	2	26	2	0	5	39	12	0	5	5	1	0	0	4	3	0	104	
12:05 PM	2	32	5	0	0	26	18	0	7	3	4	0	2	5	1	0	105	
12:10 PM	3	20	1	0	5	26	24	0	10	2	2	0	0	8	2	0	103	1263
12:15 PM	4	32	2	0	3	31	15	0	5	1	4	0	0	3	1	0	101	1270
12:20 PM	2	39	4	0	1	23	18	0	16	2	5	0	1	8	3	0	122	1298
12:25 PM	3	27	5	0	1	33	8	0	8	0	1	0	2	5	3	0	96	1286
12:30 PM	3	34	3	0	0	28	16	0	8	2	3	0	1	9	5	0	112	1298
12:35 PM	2	31	1	0	0	32	21	0	8	8	2	0	1	8	1	0	115	1299
12:40 PM	3	34	4	0	4	38	12	0	4	1	2	0	1	3	2	0	108	1300
12:45 PM	4	37	1	0	2	29	9	0	9	0	7	0	3	9	2	0	112	1290
12:50 PM	2	34	1	0	4	37	16	0	5	4	2	0	0	6	0	0	111	1286
12:55 PM	4	26	3	0	6	30	17	0	9	1	4	0	1	6	7	0	114	1303
1:00 PM	0	37	3	0	5	33	21	0	8	1	2	0	1	8	1	0	120	1319
1:05 PM	4	23	1	0	1	31	17	0	12	2	2	0	1	7	3	0	104	1318
1:10 PM	2	35	4	0	2	30	17	0	9	5	4	0	2	3	2	0	115	1330

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	24	388	28	0	60	400	216	0	88	24	32	0	8	80	32	0	1380
Heavy Trucks	0	24	0		0	20	24		4	0	0		0	0	0		72
Buses																	
Pedestrians		0				0				0				4			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

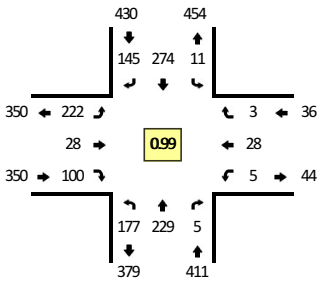
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering

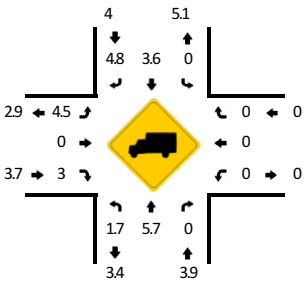
LOCATION: Washington St -- 14th St
CITY/STATE: Oregon City, OR

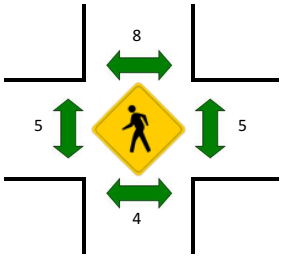
QC JOB #: 15328618
DATE: Sat, Dec 5 2020

Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:20 PM -- 12:35 PM

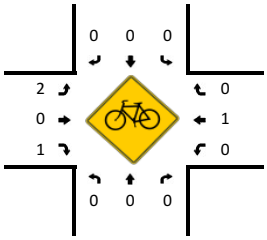


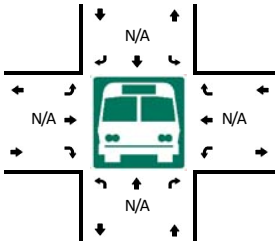


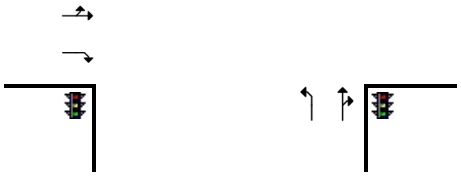


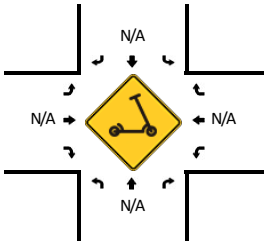












5-Min Count Period Beginning At	Washington St (Northbound)				Washington St (Southbound)				14th St (Eastbound)				14th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	14	22	0	0	0	16	14	0	12	3	10	0	0	0	1	0	92	
11:20 AM	13	15	1	0	1	22	8	0	19	4	8	0	0	0	1	0	92	
11:25 AM	17	25	0	0	1	17	12	0	14	2	3	0	0	1	0	0	92	
11:30 AM	11	14	1	0	1	17	15	0	15	0	6	0	0	3	0	0	83	
11:35 AM	16	24	4	0	1	23	5	0	14	2	7	0	0	1	0	0	97	
11:40 AM	15	23	1	0	0	28	11	0	14	1	5	0	0	2	1	0	101	
11:45 AM	14	21	0	0	3	22	12	0	23	3	6	0	0	2	0	0	106	
11:50 AM	13	25	0	0	1	10	17	0	19	1	9	0	0	2	1	0	98	
11:55 AM	16	21	1	0	1	22	8	0	7	1	7	0	0	0	0	0	84	
12:00 PM	12	7	1	0	1	24	16	0	21	5	5	0	0	2	1	0	95	
12:05 PM	14	17	0	0	0	22	12	0	21	3	9	0	0	2	0	0	100	
12:10 PM	12	11	0	0	2	15	8	0	14	1	7	0	0	0	0	0	70	1110
12:15 PM	15	20	0	0	1	24	14	0	15	3	5	0	0	1	0	0	98	1116
12:20 PM	15	21	0	0	2	19	5	0	32	4	8	0	0	3	0	0	109	1133
12:25 PM	15	15	0	0	3	25	12	0	15	0	8	0	0	3	0	0	96	1137
12:30 PM	21	19	0	0	1	18	11	0	17	3	9	0	1	3	2	0	105	1159
12:35 PM	20	20	0	0	0	25	12	0	17	1	6	0	0	1	0	0	102	1164
12:40 PM	9	20	0	0	0	27	15	0	17	5	5	0	0	0	0	0	98	1161
12:45 PM	8	23	0	0	0	22	18	0	24	2	7	0	0	2	0	0	106	1161
12:50 PM	16	21	0	0	0	27	12	0	12	1	10	0	0	2	0	0	101	1164
12:55 PM	13	19	3	0	3	21	12	0	13	3	10	0	0	6	0	0	103	1183
1:00 PM	14	13	0	0	0	21	11	0	28	2	9	0	0	3	1	0	102	1190
1:05 PM	17	15	1	0	1	22	12	0	16	1	11	0	3	1	0	0	100	1190
1:10 PM	14	23	1	0	0	23	11	0	16	3	12	0	1	3	0	0	107	1227

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	204	220	0	0	24	248	112	0	256	28	100	0	4	36	8	0	1240
Heavy Trucks	4	0	0		0	4	0		12	0	0		0	0	0		20
Buses																	
Pedestrians		0				0				0				4			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:51 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

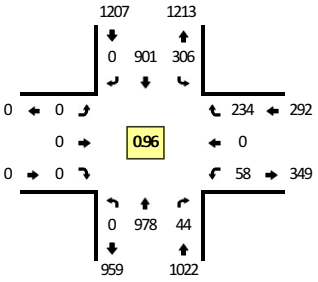
Type of peak hour being reported: User-Defined

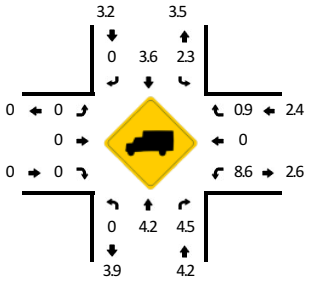
Method for determining peak hour: Total Entering

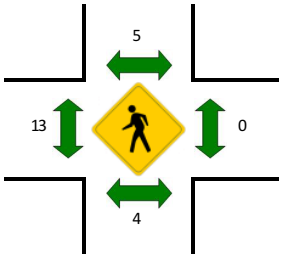
LOCATION: McLoughlin Blvd -- 14th St
CITY/STATE: Oregon City, OR

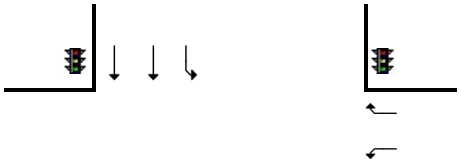
QC JOB #: 15328621
DATE: Sat, Dec 5 2020

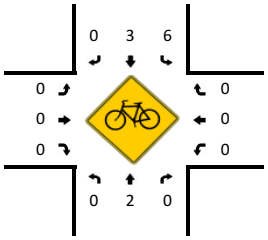
Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:15 PM -- 12:30 PM

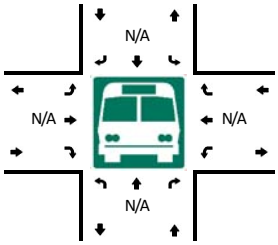




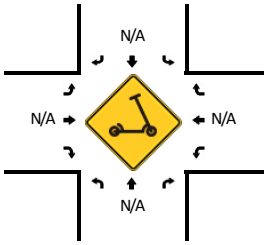












5-Min Count Period Beginning At	McLoughlin Blvd (Northbound)				McLoughlin Blvd (Southbound)				14th St (Eastbound)				14th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	0	74	4	0	28	89	0	0	0	0	0	0	6	0	18	0	219	
11:20 AM	0	78	7	0	17	67	0	0	0	0	0	0	5	0	19	0	193	
11:25 AM	0	74	4	0	18	68	0	0	0	0	0	0	5	0	13	0	182	
11:30 AM	0	82	4	0	17	84	0	0	0	0	0	0	10	0	19	0	216	
11:35 AM	0	65	0	0	21	66	0	0	0	0	0	0	5	0	20	0	177	
11:40 AM	0	89	4	0	22	85	0	0	0	0	0	0	4	0	18	0	222	
11:45 AM	0	85	4	0	26	82	0	0	0	0	0	0	4	0	19	0	220	
11:50 AM	0	76	5	0	28	67	0	0	0	0	0	0	6	0	22	0	204	
11:55 AM	0	97	3	0	20	84	0	0	0	0	0	0	7	0	17	0	228	
12:00 PM	0	78	4	0	20	77	0	1	0	0	0	0	7	0	24	0	211	
12:05 PM	0	81	5	0	21	65	0	0	0	0	0	0	1	0	17	0	190	
12:10 PM	0	78	1	0	19	60	0	1	0	0	0	0	4	0	15	0	178	2440
12:15 PM	0	77	6	0	26	75	0	0	0	0	0	0	8	0	13	0	205	2426
12:20 PM	0	106	3	0	26	65	0	0	0	0	0	0	3	0	23	0	226	2459
12:25 PM	0	104	3	0	27	76	0	0	0	0	0	0	1	0	13	0	224	2501
12:30 PM	0	61	3	0	23	78	0	0	0	0	0	0	5	0	28	0	198	2483
12:35 PM	0	69	3	0	21	68	0	0	0	0	0	0	6	0	25	0	192	2498
12:40 PM	0	80	4	0	22	83	0	0	0	0	0	0	6	0	15	0	210	2486
12:45 PM	0	95	4	0	28	79	0	0	0	0	0	0	5	0	13	0	224	2490
12:50 PM	0	79	1	0	27	54	0	0	0	0	0	0	5	0	19	0	185	2471
12:55 PM	0	89	8	0	25	83	0	0	0	0	0	0	4	0	24	0	233	2476
1:00 PM	0	87	4	0	28	78	0	0	0	0	0	0	5	0	18	0	220	2485
1:05 PM	0	63	3	0	26	79	0	0	0	0	0	0	5	0	22	0	198	2493
1:10 PM	0	68	2	0	26	83	0	1	0	0	0	0	5	0	21	0	206	2521

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1148	48	0	316	864	0	0	0	0	0	0	48	0	196	0	2620
Heavy Trucks	0	72	0		12	28	0		0	0	0		4	0	0		116
Buses																	
Pedestrians		0				16				8				0			24
Bicycles	0	0	0		8	8	0		0	0	0		0	0	0		16
Scooters																	

Comments:

Report generated on 3/12/2021 8:51 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

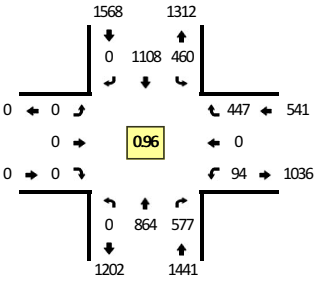
Type of peak hour being reported: User-Defined

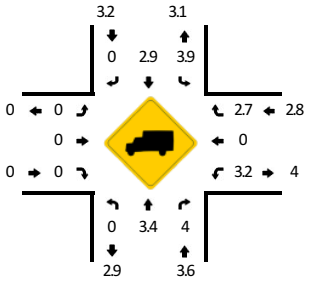
Method for determining peak hour: Total Entering

LOCATION: McLoughlin Blvd -- I-205 NB Off-Ramp
CITY/STATE: Oregon City, OR

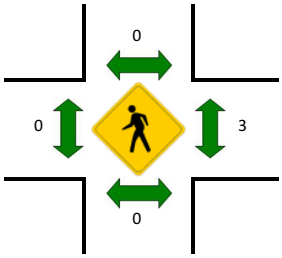
QC JOB #: 15328624
DATE: Sat, Dec 5 2020

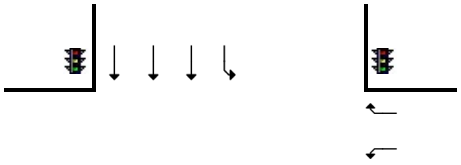
Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:55 PM -- 1:10 PM

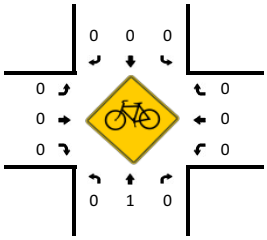


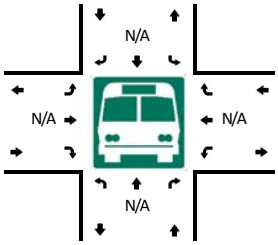


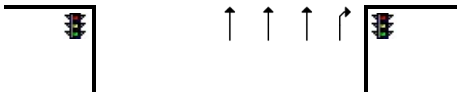
Quality Counts
DATA THAT DRIVES COMMUNITIES

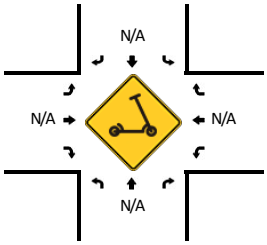












5-Min Count Period Beginning At	McLoughlin Blvd (Northbound)				McLoughlin Blvd (Southbound)				I-205 NB Off-Ramp (Eastbound)				I-205 NB Off-Ramp (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	0	64	36	0	29	103	0	0	0	0	0	0	8	0	24	0	264	
11:20 AM	0	76	48	0	31	78	0	0	0	0	0	0	9	0	26	0	268	
11:25 AM	0	68	32	0	42	75	0	0	0	0	0	0	5	0	32	0	254	
11:30 AM	0	41	54	0	34	94	0	0	0	0	0	0	9	0	33	0	265	
11:35 AM	0	63	43	0	37	82	0	0	0	0	0	0	8	0	34	0	267	
11:40 AM	0	71	51	0	37	94	0	0	0	0	0	0	11	0	39	0	303	
11:45 AM	0	69	52	0	35	100	0	0	0	0	0	0	10	0	39	0	305	
11:50 AM	0	76	44	0	37	85	0	0	0	0	0	0	8	0	29	0	279	
11:55 AM	0	74	52	0	40	94	0	0	0	0	0	0	11	0	34	0	305	
12:00 PM	0	88	46	0	46	90	0	0	0	0	0	0	9	0	41	0	320	
12:05 PM	0	70	47	0	40	83	0	0	0	0	0	0	6	0	33	0	279	
12:10 PM	0	68	48	0	32	70	0	0	0	0	0	0	9	0	23	0	250	3359
12:15 PM	0	74	51	0	32	93	0	0	0	0	0	0	6	0	33	0	289	3384
12:20 PM	0	72	60	0	39	83	0	0	0	0	0	0	11	0	36	0	301	3417
12:25 PM	0	96	44	0	34	95	0	0	0	0	0	0	12	0	30	0	311	3474
12:30 PM	0	72	50	0	47	87	0	0	0	0	0	0	7	0	33	0	296	3505
12:35 PM	0	64	39	0	40	81	0	0	0	0	0	0	11	0	46	0	281	3519
12:40 PM	0	66	51	0	41	93	0	0	0	0	0	0	2	0	28	0	281	3497
12:45 PM	0	54	52	0	37	100	0	0	0	0	0	0	9	0	43	0	295	3487
12:50 PM	0	72	49	0	39	74	0	0	0	0	0	0	6	0	51	0	291	3499
12:55 PM	0	78	56	0	33	102	0	0	0	0	0	0	11	0	36	0	316	3510
1:00 PM	0	87	37	0	40	103	0	0	0	0	0	0	8	0	36	0	311	3501
1:05 PM	0	75	41	0	45	100	0	0	0	0	0	0	2	0	33	0	296	3518
1:10 PM	0	54	47	0	32	97	0	1	0	0	0	0	9	0	42	0	282	3550

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	960	536	0	472	1220	0	0	0	0	0	0	84	0	420	0	3692
Heavy Trucks	0	32	16		20	36	0		0	0	0		0	0	16		120
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:51 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

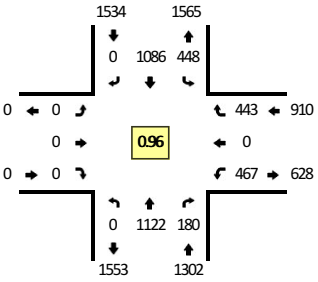
Type of peak hour being reported: User-Defined

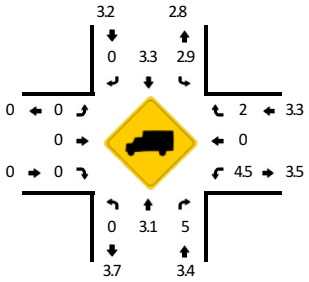
Method for determining peak hour: Total Entering

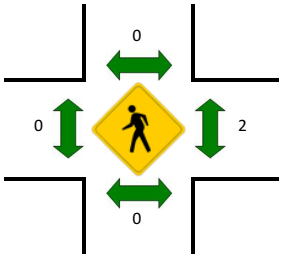
LOCATION: McLoughlin Blvd -- I-205 SB Ramps
CITY/STATE: Oregon City, OR

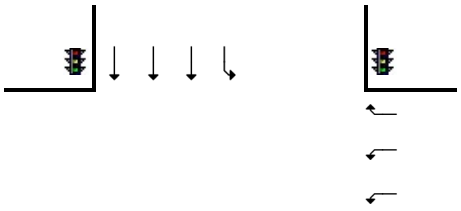
QC JOB #: 15328627
DATE: Sat, Dec 5 2020

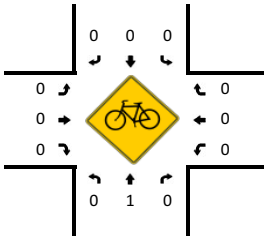
Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:55 PM -- 1:10 PM

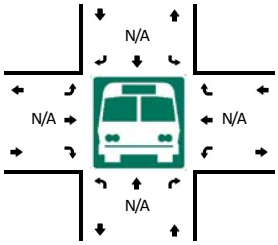


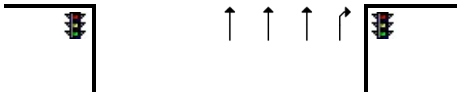


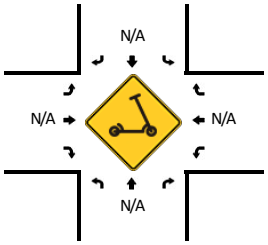












5-Min Count Period Beginning At	McLoughlin Blvd (Northbound)				McLoughlin Blvd (Southbound)				I-205 SB Ramps (Eastbound)				I-205 SB Ramps (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	0	77	12	0	39	76	0	0	0	0	0	0	53	0	47	0	304	
11:20 AM	0	97	6	0	43	71	0	0	0	0	0	0	36	0	27	0	280	
11:25 AM	0	87	13	0	29	79	0	0	0	0	0	0	43	0	30	0	281	
11:30 AM	0	82	11	0	37	84	0	0	0	0	0	0	39	0	29	0	282	
11:35 AM	0	85	16	0	32	89	0	0	0	0	0	0	31	0	32	0	285	
11:40 AM	0	86	12	0	34	88	0	0	0	0	0	0	46	0	35	0	301	
11:45 AM	0	94	20	0	45	90	0	0	0	0	0	0	40	0	44	0	333	
11:50 AM	0	91	15	0	42	79	0	0	0	0	0	0	43	0	37	0	307	
11:55 AM	0	95	13	0	32	107	0	0	0	0	0	0	32	0	39	0	318	
12:00 PM	0	117	17	0	31	89	0	0	0	0	0	0	47	0	41	0	342	
12:05 PM	0	83	14	0	42	86	0	0	0	0	0	0	27	0	38	0	290	
12:10 PM	0	81	18	1	42	71	0	0	0	0	0	0	30	0	50	0	293	3616
12:15 PM	0	89	11	0	42	89	0	0	0	0	0	0	35	0	42	0	308	3620
12:20 PM	0	91	20	0	35	94	0	0	0	0	0	0	32	0	37	0	309	3649
12:25 PM	0	96	20	0	34	103	0	0	0	0	0	0	36	0	30	0	319	3687
12:30 PM	0	87	15	0	47	81	0	0	0	0	0	0	39	0	45	0	314	3719
12:35 PM	0	106	7	0	51	80	0	0	0	0	0	0	42	0	29	0	315	3749
12:40 PM	0	77	16	0	40	92	0	0	0	0	0	0	45	0	36	0	306	3754
12:45 PM	0	83	14	0	37	94	0	0	0	0	0	0	39	0	35	0	302	3723
12:50 PM	0	104	13	0	29	76	0	0	0	0	0	0	36	0	40	0	298	3714
12:55 PM	0	107	15	0	33	96	0	0	0	0	0	0	41	0	37	0	329	3725
1:00 PM	0	99	18	0	33	95	0	0	0	0	0	0	40	0	33	0	318	3701
1:05 PM	0	92	23	0	28	106	0	0	0	0	0	0	40	0	39	0	328	3739
1:10 PM	0	91	8	0	39	80	0	0	0	0	0	0	42	0	40	0	300	3746

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1192	224	0	376	1188	0	0	0	0	0	0	484	0	436	0	3900
Heavy Trucks	0	48	8		20	40	0		0	0	0		24	0	16		156
Buses																	
Pedestrians		0				0				0				8			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:51 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

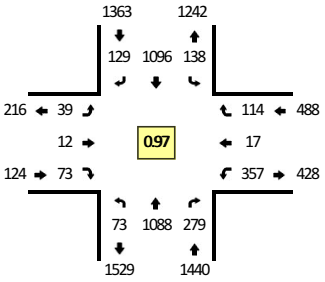
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering

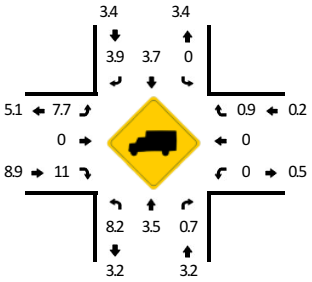
LOCATION: McLoughlin Blvd -- Dunes Dr
CITY/STATE: Oregon City, OR

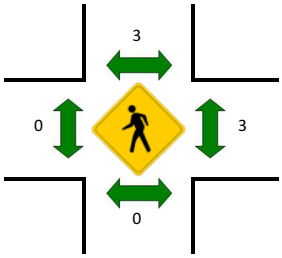
QC JOB #: 15328630
DATE: Sat, Dec 5 2020

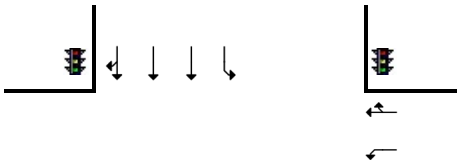
Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:20 PM -- 12:35 PM

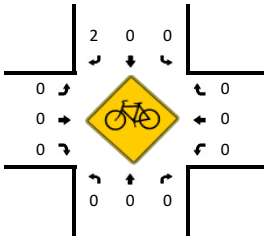


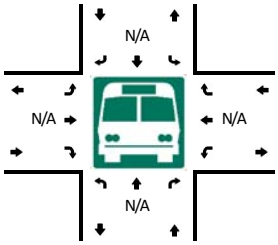


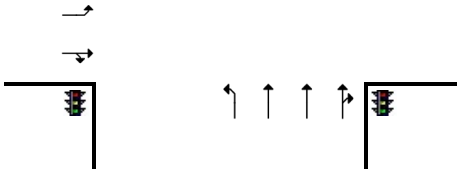


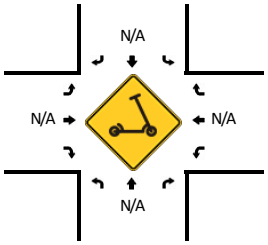












5-Min Count Period Beginning At	McLoughlin Blvd (Northbound)				McLoughlin Blvd (Southbound)				Dunes Dr (Eastbound)				Dunes Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	7	77	26	0	8	77	5	0	7	1	9	0	30	0	8	0	255	
11:20 AM	10	84	25	0	13	79	12	0	3	1	7	0	27	1	10	0	272	
11:25 AM	6	76	23	1	13	74	13	0	4	1	5	0	22	1	12	0	251	
11:30 AM	7	69	14	1	15	83	9	0	1	0	11	0	33	2	6	0	251	
11:35 AM	3	85	21	0	10	82	6	1	6	3	8	0	32	3	5	0	265	
11:40 AM	6	77	19	0	11	88	6	1	0	0	2	0	25	1	9	0	245	
11:45 AM	7	98	23	0	22	100	8	0	3	0	10	0	32	0	4	0	307	
11:50 AM	7	86	22	0	13	81	8	0	3	0	4	0	33	2	6	0	265	
11:55 AM	9	89	20	0	13	94	7	1	3	1	15	0	30	0	5	0	287	
12:00 PM	5	110	24	1	8	86	10	0	1	0	6	0	24	1	9	0	285	
12:05 PM	4	84	24	0	11	100	11	0	2	2	6	0	27	0	10	0	281	
12:10 PM	8	87	22	0	11	90	8	0	0	2	5	0	17	0	6	0	256	3220
12:15 PM	6	87	27	0	9	96	11	0	2	1	7	0	24	1	7	0	278	3243
12:20 PM	8	88	24	1	17	92	12	1	3	1	8	0	33	0	8	0	296	3267
12:25 PM	5	93	22	0	18	95	6	0	3	0	3	0	38	1	10	0	294	3310
12:30 PM	3	94	22	1	8	90	13	0	4	1	5	0	35	0	15	0	291	3350
12:35 PM	3	102	27	0	14	85	5	0	0	1	6	0	29	1	11	0	284	3369
12:40 PM	5	78	20	1	8	108	11	0	1	2	5	0	24	0	13	0	276	3400
12:45 PM	8	77	23	0	11	97	11	0	2	0	2	0	27	0	9	0	267	3360
12:50 PM	7	99	23	0	11	78	8	0	4	1	4	0	28	4	9	0	276	3371
12:55 PM	8	99	19	0	6	84	16	0	4	0	8	0	30	4	13	0	291	3375
1:00 PM	4	97	19	0	3	83	11	0	3	1	7	0	37	0	6	0	271	3361
1:05 PM	10	88	26	0	15	105	10	0	3	2	8	0	26	3	7	0	303	3383
1:10 PM	3	86	27	0	17	83	15	0	10	2	10	0	26	3	6	0	288	3415

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	64	1100	272	8	172	1108	124	4	40	8	64	0	424	4	132	0	3524
Heavy Trucks	12	40	0		0	40	12		0	0	0		0	0	0		104
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:51 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

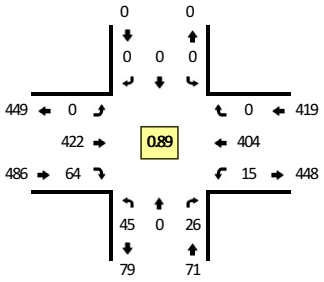
Type of peak hour being reported: User-Defined

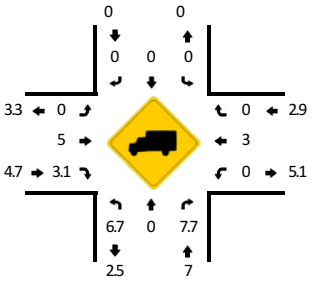
Method for determining peak hour: Total Entering

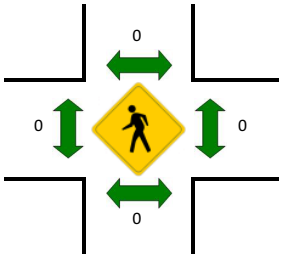
LOCATION: S Holly Ln -- S Redland Rd
CITY/STATE: Oregon City, OR

QC JOB #: 15328633
DATE: Sat, Dec 5 2020

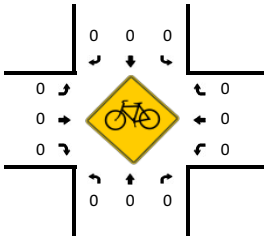
Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:20 PM -- 12:35 PM

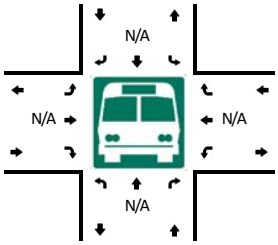




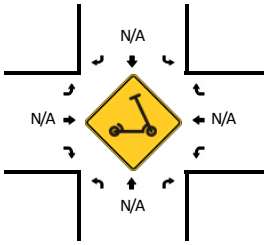












5-Min Count Period Beginning At	S Holly Ln (Northbound)				S Holly Ln (Southbound)				S Redland Rd (Eastbound)				S Redland Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	3	0	3	0	0	0	0	0	0	33	6	0	1	32	0	0	78	
11:20 AM	1	0	2	0	0	0	0	0	0	40	7	0	2	29	0	0	81	
11:25 AM	3	0	2	0	0	0	0	0	0	35	2	0	1	40	0	0	83	
11:30 AM	6	0	0	0	0	0	0	0	0	36	8	0	1	18	0	0	69	
11:35 AM	5	0	2	0	0	0	0	0	0	28	4	0	2	29	0	0	70	
11:40 AM	4	0	1	0	0	0	0	0	0	37	6	0	1	41	0	0	90	
11:45 AM	4	0	0	0	0	0	0	0	0	27	2	0	2	33	0	0	68	
11:50 AM	1	0	0	0	0	0	0	0	0	30	3	0	1	39	0	0	74	
11:55 AM	4	0	1	0	0	0	0	0	0	33	3	0	2	32	0	0	75	
12:00 PM	4	0	4	0	0	0	0	0	0	31	7	0	2	35	0	0	83	
12:05 PM	3	0	3	0	0	0	0	0	0	34	10	0	2	35	0	0	87	
12:10 PM	4	0	1	0	0	0	0	0	0	27	1	0	3	48	0	0	84	942
12:15 PM	5	0	3	0	0	0	0	0	0	33	5	0	1	33	0	0	80	944
12:20 PM	7	0	0	0	0	0	0	0	0	50	5	0	0	39	0	0	101	964
12:25 PM	6	0	1	0	0	0	0	0	0	55	3	0	1	25	0	0	91	972
12:30 PM	5	0	3	0	0	0	0	0	0	30	6	0	0	38	0	0	82	985
12:35 PM	3	0	3	0	0	0	0	0	0	34	4	0	0	31	0	0	75	990
12:40 PM	2	0	2	0	0	0	0	0	0	32	11	0	3	38	0	0	88	988
12:45 PM	4	0	1	0	0	0	0	0	0	24	4	0	1	30	0	0	64	984
12:50 PM	2	0	2	0	0	0	0	0	0	40	2	0	3	34	0	0	83	993
12:55 PM	2	0	3	0	0	0	0	0	0	29	3	0	2	33	0	0	72	990
1:00 PM	3	0	4	0	0	0	0	0	0	33	2	0	0	35	0	0	77	984
1:05 PM	6	0	2	0	0	0	0	0	0	38	12	0	2	35	0	0	95	992
1:10 PM	0	0	2	0	0	0	0	0	0	24	7	0	2	33	0	0	68	976

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	72	0	16	0	0	0	0	0	0	540	56	0	4	408	0	0	1096
Heavy Trucks	12	0	4		0	0	0		0	40	4		0	4	0		64
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:51 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

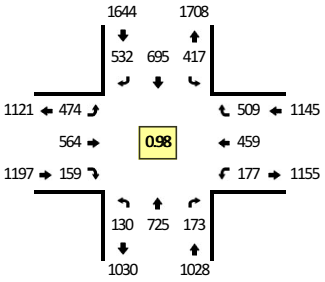
Type of peak hour being reported: User-Defined

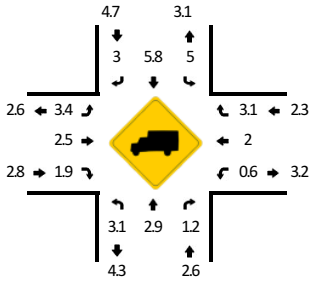
Method for determining peak hour: Total Entering

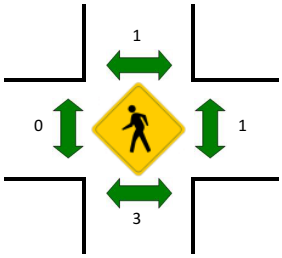
LOCATION: Cascade Hwy -- S Beavercreek Rd
CITY/STATE: Oregon City, OR

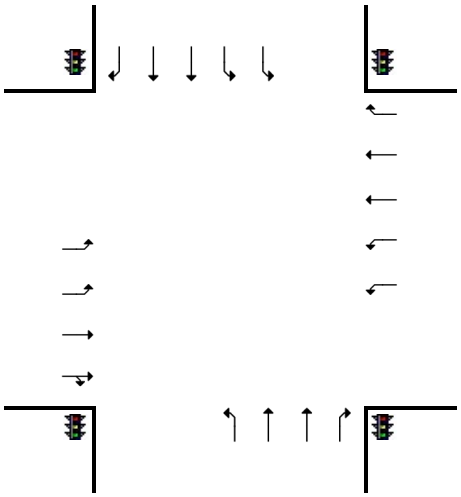
QC JOB #: 15328636
DATE: Sat, Dec 5 2020

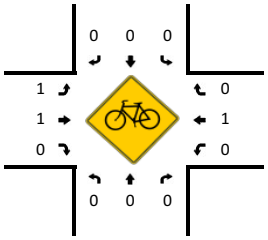
Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:45 PM -- 1:00 PM

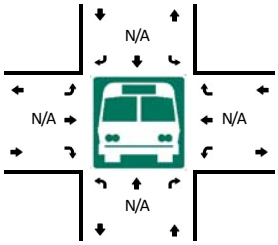


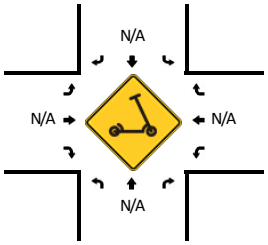












5-Min Count Period Beginning At	Cascade Hwy (Northbound)				Cascade Hwy (Southbound)				S Beavercreek Rd (Eastbound)				S Beavercreek Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	8	57	18	0	31	59	42	0	35	41	15	0	9	35	40	0	390	
11:20 AM	6	38	13	0	34	45	37	0	44	46	11	0	11	47	41	0	373	
11:25 AM	12	44	11	0	31	41	44	0	35	44	13	0	15	41	45	0	376	
11:30 AM	6	77	20	0	19	63	38	0	36	38	10	0	14	49	23	0	393	
11:35 AM	18	39	15	0	52	47	44	0	34	57	13	0	13	30	30	0	392	
11:40 AM	8	85	18	0	25	81	39	0	30	31	9	0	15	48	41	0	430	
11:45 AM	9	55	17	0	29	42	53	0	49	47	15	0	12	48	33	0	409	
11:50 AM	12	60	14	0	53	70	42	0	34	26	9	0	11	39	48	0	418	
11:55 AM	5	63	17	0	23	64	44	0	42	52	14	0	10	46	36	0	416	
12:00 PM	18	66	18	0	46	50	41	0	48	45	9	0	9	35	41	0	426	
12:05 PM	5	72	8	0	26	75	44	0	27	38	10	0	18	47	32	0	402	
12:10 PM	13	43	11	0	50	45	47	0	38	48	11	0	9	44	41	0	400	4825
12:15 PM	6	72	14	0	18	56	42	0	41	40	11	0	19	48	46	1	414	4849
12:20 PM	18	51	11	0	34	50	44	0	42	48	18	0	10	30	38	0	394	4870
12:25 PM	10	68	13	0	33	87	42	0	29	42	18	0	14	32	39	0	427	4921
12:30 PM	10	40	22	0	28	53	32	0	55	52	23	0	21	52	46	0	434	4962
12:35 PM	9	70	11	0	47	52	49	0	27	43	13	0	22	30	41	0	414	4984
12:40 PM	10	46	15	0	45	60	41	0	42	50	15	0	14	38	47	0	423	4977
12:45 PM	10	71	10	0	28	75	54	0	38	37	11	0	17	45	39	0	435	5003
12:50 PM	13	55	19	0	33	44	41	0	43	63	11	0	15	37	42	0	416	5001
12:55 PM	18	65	24	0	29	64	50	0	30	33	13	0	18	44	44	0	432	5017
1:00 PM	11	52	8	0	38	45	45	0	56	68	12	0	12	27	42	0	416	5007
1:05 PM	6	74	12	0	48	68	51	0	32	34	6	0	4	31	40	0	406	5011
1:10 PM	9	61	14	0	36	41	41	0	39	54	8	0	10	45	45	0	403	5014

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	164	764	212	0	360	732	580	0	444	532	140	0	200	504	500	0	5132
Heavy Trucks	4	28	4		24	44	16		16	12	4		0	16	16		184
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:51 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

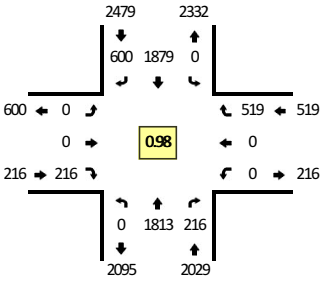
Type of peak hour being reported: User-Defined

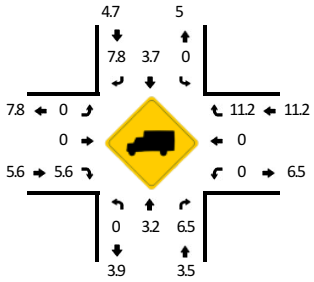
Method for determining peak hour: Total Entering

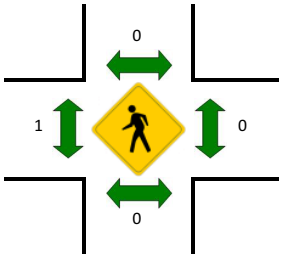
LOCATION: Cascade Hwy -- Clackamas River Dr
CITY/STATE: Oregon City, OR

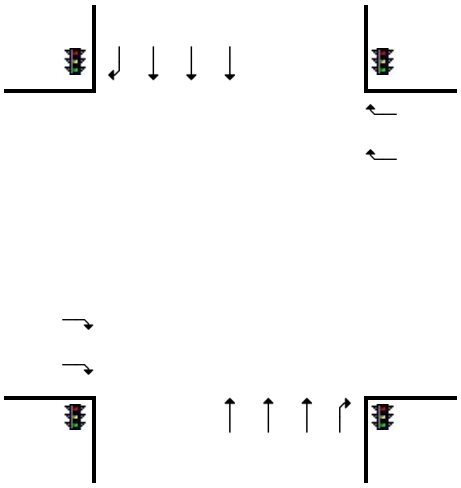
QC JOB #: 15328639
DATE: Sat, Dec 5 2020

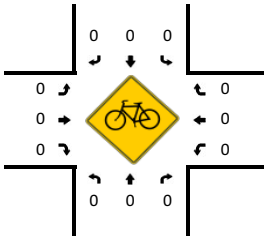
Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:40 PM -- 12:55 PM

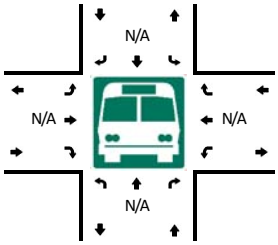


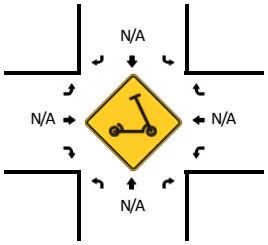












5-Min Count Period Beginning At	Cascade Hwy (Northbound)				Cascade Hwy (Southbound)				Clackamas River Dr (Eastbound)				Clackamas River Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	0	137	13	0	0	132	39	0	0	0	22	0	0	0	40	0	383	
11:20 AM	0	137	12	0	0	145	52	0	0	0	22	0	0	0	30	0	398	
11:25 AM	0	139	21	0	0	122	46	0	0	0	14	0	0	0	37	0	379	
11:30 AM	0	139	16	0	0	139	47	0	0	0	25	0	0	0	35	0	401	
11:35 AM	0	131	16	0	0	144	50	0	0	0	17	0	0	0	29	0	387	
11:40 AM	0	125	22	0	0	166	45	0	0	0	22	0	0	0	35	0	415	
11:45 AM	0	156	15	0	0	158	60	0	0	0	14	0	0	0	30	0	433	
11:50 AM	0	152	18	0	0	148	57	0	0	0	20	0	0	0	42	0	437	
11:55 AM	0	152	20	0	0	134	47	0	0	0	26	0	0	0	39	0	418	
12:00 PM	0	150	13	0	0	149	41	0	0	0	21	0	0	0	40	0	414	
12:05 PM	0	152	19	0	0	138	42	0	0	0	29	0	0	0	46	0	426	
12:10 PM	0	138	16	0	0	146	51	0	0	0	15	0	0	0	33	0	399	4890
12:15 PM	0	155	14	0	0	167	41	0	0	0	17	0	0	0	41	0	435	4942
12:20 PM	0	140	20	0	0	157	57	0	0	0	17	0	0	0	43	0	434	4978
12:25 PM	0	147	19	0	0	161	59	0	0	0	12	0	0	0	37	0	435	5034
12:30 PM	0	137	15	0	0	155	49	0	0	0	17	0	0	0	39	0	412	5045
12:35 PM	0	160	17	0	0	147	43	0	0	0	16	0	0	0	36	0	419	5077
12:40 PM	0	141	18	0	0	172	57	0	0	0	16	0	0	0	52	0	456	5118
12:45 PM	0	166	16	0	0	137	49	0	0	0	27	0	0	0	46	0	441	5126
12:50 PM	0	150	21	0	0	154	53	0	0	0	15	0	0	0	47	0	440	5129
12:55 PM	0	155	18	0	0	159	49	0	0	0	18	0	0	0	52	0	451	5162
1:00 PM	0	147	18	0	0	154	50	0	0	0	19	0	0	0	44	0	432	5180
1:05 PM	0	159	21	0	0	163	43	0	0	0	21	0	0	0	35	0	442	5196
1:10 PM	0	156	19	0	0	153	50	0	0	0	21	0	0	0	47	0	446	5243

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1828	220	0	0	1852	636	0	0	0	232	0	0	0	580	0	5348
Heavy Trucks	0	48	16		0	68	56		0	0	8		0	0	72		268
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:51 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

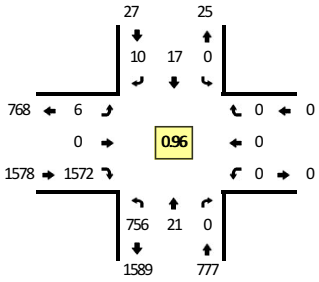
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering

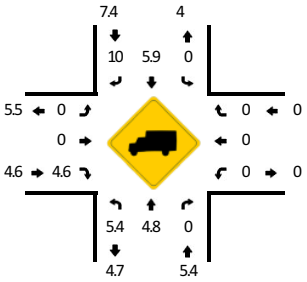
LOCATION: Cascade Hwy -- I-205 SB Ramps
CITY/STATE: Oregon City, OR

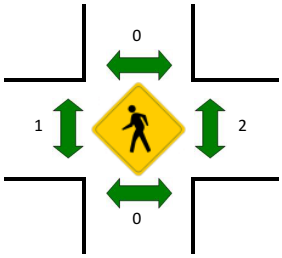
QC JOB #: 15328642
DATE: Sat, Dec 5 2020

Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:35 PM -- 12:50 PM

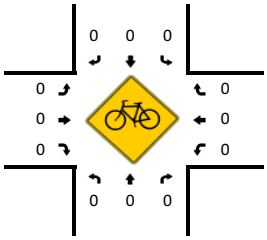


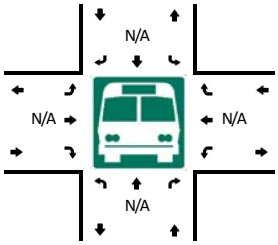


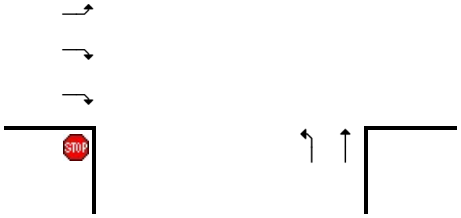


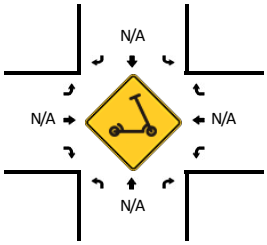












5-Min Count Period Beginning At	Cascade Hwy (Northbound)				Cascade Hwy (Southbound)				I-205 SB Ramps (Eastbound)				I-205 SB Ramps (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	61	3	0	0	0	3	1	0	0	0	118	0	0	0	0	0	186	
11:20 AM	55	0	0	0	0	1	2	0	0	0	127	0	0	0	0	0	185	
11:25 AM	52	1	0	0	0	0	0	0	1	0	113	0	0	0	0	0	167	
11:30 AM	61	2	0	0	0	2	0	0	0	0	125	0	0	0	0	0	190	
11:35 AM	37	0	0	0	0	1	0	0	0	0	121	0	0	0	0	0	159	
11:40 AM	50	0	0	0	0	0	1	0	1	0	135	1	0	0	0	0	188	
11:45 AM	62	1	0	0	0	0	1	0	1	0	121	0	0	0	0	0	186	
11:50 AM	57	3	0	0	0	0	1	0	2	0	126	0	0	0	0	0	189	
11:55 AM	62	2	0	0	0	1	0	0	0	0	121	0	0	0	0	0	186	
12:00 PM	52	6	0	0	0	4	0	0	2	0	113	0	0	0	0	0	177	
12:05 PM	61	3	0	0	0	3	2	0	0	0	119	0	0	0	0	0	188	
12:10 PM	68	1	0	0	0	0	0	0	0	0	133	0	0	0	0	0	202	2203
12:15 PM	60	1	0	0	0	0	0	0	2	0	118	0	0	0	0	0	181	2198
12:20 PM	61	2	0	0	0	1	2	0	0	0	130	0	0	0	0	0	196	2209
12:25 PM	45	1	0	0	0	2	2	0	1	0	134	0	0	0	0	0	185	2227
12:30 PM	50	3	0	0	0	2	1	0	0	0	133	0	0	0	0	0	189	2226
12:35 PM	66	3	0	0	0	1	1	0	0	0	131	0	0	0	0	0	202	2269
12:40 PM	61	1	0	0	0	1	0	0	0	0	135	0	0	0	0	0	198	2279
12:45 PM	83	1	0	0	0	4	1	0	0	0	132	0	0	0	0	0	221	2314
12:50 PM	62	1	0	0	0	0	1	0	1	0	136	0	0	0	0	0	201	2326
12:55 PM	61	1	0	0	0	0	1	0	0	0	130	1	0	0	0	0	194	2334
1:00 PM	67	5	0	0	0	3	1	0	0	0	141	1	0	0	0	0	218	2375
1:05 PM	66	1	0	0	0	1	0	0	0	0	124	0	0	0	0	0	192	2379
1:10 PM	74	1	0	0	0	2	0	0	0	0	128	0	0	0	0	0	205	2382

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	840	20	0	0	0	24	8	0	0	0	1592	0	0	0	0	0	2484
Heavy Trucks	52	0	0		0	4	4		0	0	68		0	0	0		128
Buses																	
Pedestrians		0				0				0				8			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:51 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

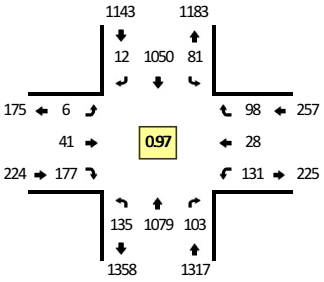
Type of peak hour being reported: User-Defined

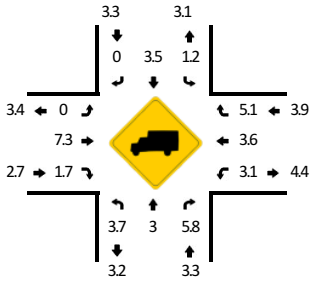
Method for determining peak hour: Total Entering

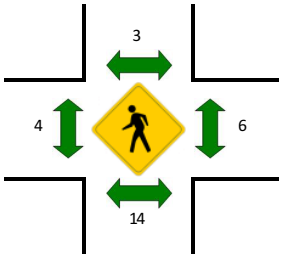
LOCATION: McLoughlin Blvd -- River Rd
CITY/STATE: Gladstone, OR

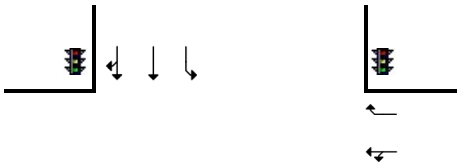
QC JOB #: 15328645
DATE: Sat, Dec 5 2020

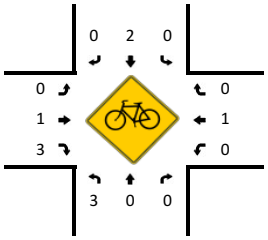
Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:30 PM -- 12:45 PM

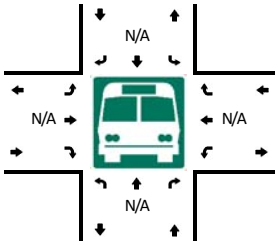


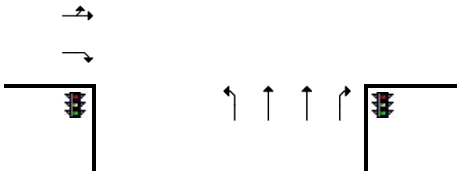


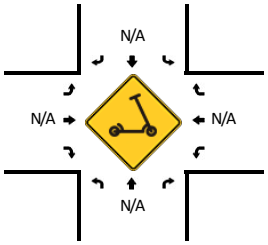












5-Min Count Period Beginning At	McLoughlin Blvd (Northbound)				McLoughlin Blvd (Southbound)				River Rd (Eastbound)				River Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	11	75	11	0	7	80	1	0	0	4	13	0	12	1	3	0	218	
11:20 AM	7	92	10	0	6	88	1	0	0	4	8	0	11	3	8	0	238	
11:25 AM	7	76	6	0	2	78	0	0	1	4	16	0	0	3	9	0	202	
11:30 AM	18	68	8	0	6	75	1	0	3	5	12	0	17	3	8	0	224	
11:35 AM	8	74	6	0	9	91	2	0	0	3	10	0	8	3	12	0	226	
11:40 AM	8	80	12	0	4	83	1	0	0	4	16	0	17	5	9	0	239	
11:45 AM	7	97	6	0	5	77	0	0	0	5	15	0	22	4	8	0	246	
11:50 AM	8	79	15	0	10	92	1	0	1	4	4	0	16	3	4	0	237	
11:55 AM	12	68	8	0	3	88	0	0	1	1	21	0	8	3	12	0	225	
12:00 PM	18	113	7	0	6	79	2	0	0	0	16	0	10	4	10	0	265	
12:05 PM	5	76	9	0	3	91	2	0	1	3	12	0	11	5	10	0	228	
12:10 PM	10	80	7	0	7	82	2	0	0	4	19	0	12	6	5	0	234	2782
12:15 PM	5	94	11	0	4	97	2	0	0	3	15	0	12	0	10	0	253	2817
12:20 PM	6	81	11	0	8	88	3	0	0	0	15	0	9	2	5	0	228	2807
12:25 PM	12	84	8	0	7	83	1	0	0	5	18	0	20	2	5	0	245	2850
12:30 PM	11	111	7	0	6	106	1	0	1	2	17	0	8	3	4	0	277	2903
12:35 PM	12	94	5	0	6	72	1	0	0	7	18	0	13	1	8	0	237	2914
12:40 PM	7	89	11	0	8	100	0	0	0	1	11	0	9	1	10	0	247	2922
12:45 PM	10	58	8	0	13	86	1	0	1	4	18	0	6	5	5	0	215	2891
12:50 PM	18	109	8	0	5	75	1	0	1	4	11	0	7	4	7	0	250	2904
12:55 PM	12	94	8	0	5	84	0	0	0	3	17	0	16	1	9	0	249	2928
1:00 PM	13	75	13	0	7	92	0	0	0	5	16	0	8	5	12	0	246	2909
1:05 PM	15	85	7	0	9	92	0	0	1	5	13	0	10	2	10	0	249	2930
1:10 PM	14	105	6	0	3	75	2	0	2	2	8	0	13	2	13	0	245	2941

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	120	1176	92	0	80	1112	8	0	4	40	184	0	120	20	88	0	3044
Heavy Trucks	8	16	8		0	36	0		0	8	0		0	0	4		80
Buses																	
Pedestrians		4				0				0				8			12
Bicycles	0	0	0		0	8	0		0	4	4		0	0	0		16
Scooters																	

Comments:

Report generated on 3/12/2021 8:51 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

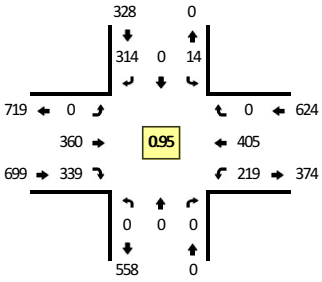
Type of peak hour being reported: User-Defined

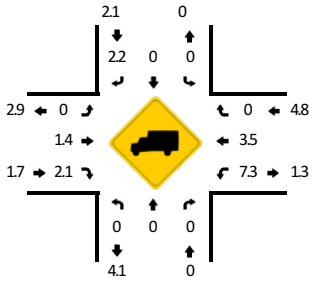
Method for determining peak hour: Total Entering

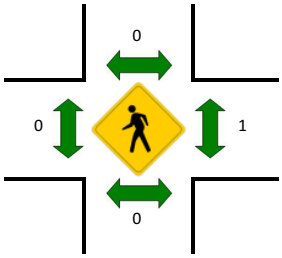
LOCATION: I-205 SB Ramps -- 82nd Dr
CITY/STATE: Gladstone, OR

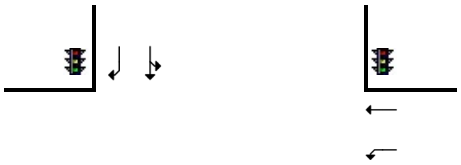
QC JOB #: 15328655
DATE: Sat, Dec 12 2020

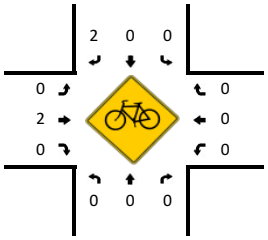
Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:50 PM -- 1:05 PM

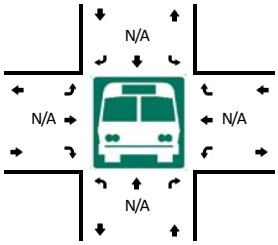




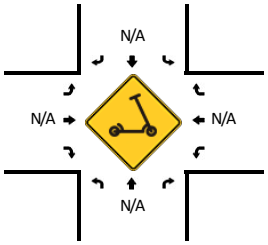












5-Min Count Period Beginning At	I-205 SB Ramps (Northbound)				I-205 SB Ramps (Southbound)				82nd Dr (Eastbound)				82nd Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	0	0	0	0	1	0	19	0	0	18	15	0	14	22	0	0	89	
11:20 AM	0	0	0	0	1	0	17	0	0	33	25	0	25	24	0	0	125	
11:25 AM	0	0	0	0	0	0	23	0	0	25	27	0	15	32	0	0	122	
11:30 AM	0	0	0	0	2	0	32	0	0	28	27	0	14	27	0	0	130	
11:35 AM	0	0	0	0	2	0	36	0	0	33	32	0	17	39	0	0	159	
11:40 AM	0	0	0	0	1	0	20	0	0	28	36	0	18	28	0	0	131	
11:45 AM	0	0	0	0	0	0	28	0	0	30	28	0	14	26	0	0	126	
11:50 AM	0	0	0	0	2	0	35	0	0	35	41	0	24	30	0	0	167	
11:55 AM	0	0	0	0	5	0	25	0	0	36	30	0	13	34	0	0	143	
12:00 PM	0	0	0	0	0	0	21	0	0	39	16	0	11	31	0	0	118	
12:05 PM	0	0	0	0	4	1	33	0	0	24	31	0	23	32	0	0	148	
12:10 PM	0	0	0	0	1	0	17	0	0	32	27	0	18	34	0	0	129	1587
12:15 PM	0	0	0	0	0	0	30	0	0	33	29	0	22	26	0	0	140	1638
12:20 PM	0	0	0	0	1	0	35	0	0	28	29	0	10	35	0	0	138	1651
12:25 PM	0	0	0	0	0	0	21	0	0	25	37	0	16	24	0	0	123	1652
12:30 PM	0	0	0	0	1	0	22	0	0	40	29	0	26	29	0	0	147	1669
12:35 PM	0	0	0	0	0	0	21	0	0	28	20	0	21	37	0	0	127	1637
12:40 PM	0	0	0	0	2	0	22	0	0	28	29	0	13	23	0	0	117	1623
12:45 PM	0	0	0	0	1	0	32	0	0	36	18	0	20	45	0	0	152	1649
12:50 PM	0	0	0	0	0	0	24	0	0	31	28	0	14	44	0	0	141	1623
12:55 PM	0	0	0	0	2	0	25	0	0	27	27	0	18	42	0	0	141	1621
1:00 PM	0	0	0	0	3	0	27	0	0	30	35	0	27	31	0	0	153	1656
1:05 PM	0	0	0	0	4	0	28	0	0	33	20	0	13	31	0	0	129	1637
1:10 PM	0	0	0	0	0	0	27	0	0	21	38	0	19	38	0	0	143	1651

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	20	0	304	0	0	352	360	0	236	468	0	0	1740
Heavy Trucks	0	0	0		0	0	8		0	0	4		12	12	0		36
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	8		0	0	0		0	0	0		8
Scooters																	

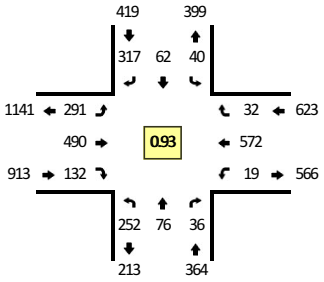
Comments:

Report generated on 3/12/2021 8:51 AM

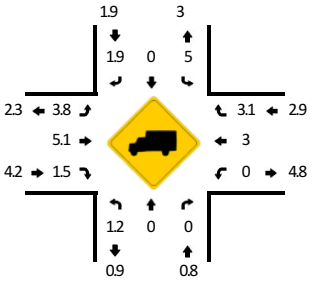
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

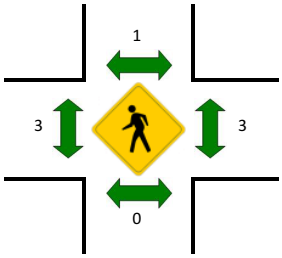
LOCATION: S Maple Lane Rd -- S Beavercreek Rd
CITY/STATE: Oregon City, OR
QC JOB #: 15328658
DATE: Sat, Dec 5 2020

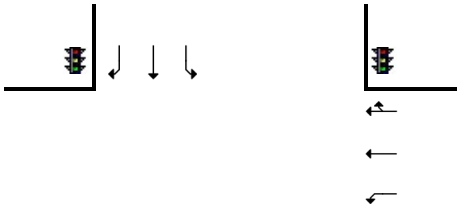
Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:40 PM -- 12:55 PM

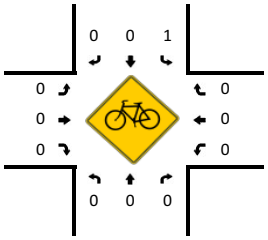


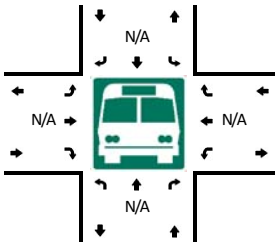


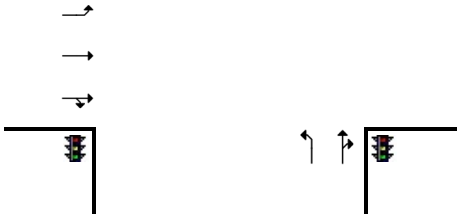


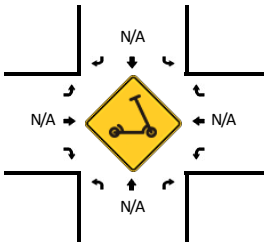












5-Min Count Period Beginning At	S Maple Lane Rd (Northbound)				S Maple Lane Rd (Southbound)				S Beavercreek Rd (Eastbound)				S Beavercreek Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	23	3	3	0	4	9	21	0	17	31	8	0	1	44	6	0	170	
11:20 AM	17	5	3	0	5	5	30	0	25	40	7	0	0	54	6	0	197	
11:25 AM	22	7	4	0	4	3	32	0	23	32	9	0	4	44	0	0	184	
11:30 AM	13	3	1	0	4	5	19	0	24	37	12	1	2	40	5	0	166	
11:35 AM	27	9	3	0	1	3	21	0	24	40	15	0	2	38	4	0	187	
11:40 AM	26	6	1	0	2	6	39	0	26	36	12	0	1	42	2	0	199	
11:45 AM	20	7	2	0	0	1	21	0	17	48	8	0	2	61	3	0	190	
11:50 AM	25	12	3	0	0	5	29	0	23	25	5	0	3	43	4	0	177	
11:55 AM	15	7	2	0	2	4	21	0	28	57	7	0	1	49	6	0	199	
12:00 PM	21	8	0	0	6	6	35	0	25	43	10	0	1	32	7	0	194	
12:05 PM	18	6	6	0	0	4	20	0	20	32	6	0	1	51	3	0	167	
12:10 PM	20	8	3	0	6	4	32	0	27	39	9	0	1	37	1	0	187	2217
12:15 PM	21	3	1	0	2	8	30	0	17	33	9	0	1	58	4	0	187	2234
12:20 PM	16	9	4	0	2	4	18	0	24	40	10	0	4	58	3	0	192	2229
12:25 PM	35	9	1	0	5	3	28	0	21	38	11	0	1	36	2	0	190	2235
12:30 PM	21	2	1	0	5	4	28	0	27	43	12	0	4	53	2	0	202	2271
12:35 PM	26	9	3	0	3	7	24	0	15	47	12	0	2	42	2	0	192	2276
12:40 PM	29	11	7	0	2	3	25	0	30	40	8	0	1	46	2	0	204	2281
12:45 PM	14	6	5	0	8	9	26	0	37	42	10	0	2	44	1	0	204	2295
12:50 PM	18	7	2	0	1	1	35	0	30	42	11	0	0	66	1	0	214	2332
12:55 PM	24	8	4	0	4	8	26	0	24	34	9	0	1	35	2	0	179	2312
1:00 PM	12	5	0	0	2	5	26	0	24	46	13	0	1	55	4	0	193	2311
1:05 PM	18	5	2	0	2	8	26	0	20	42	17	0	2	39	5	0	186	2330
1:10 PM	18	2	6	0	4	2	25	0	22	43	10	0	0	40	4	0	176	2319

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	244	96	56	0	44	52	344	0	388	496	116	0	12	624	16	0	2488
Heavy Trucks	0	0	0		0	0	4		8	20	0		0	28	0		60
Buses																	
Pedestrians		0				0				8				4			12
Bicycles	0	0	0		4	0	0		0	0	0		0	0	0		4
Scooters																	

Comments:

Report generated on 3/12/2021 8:51 AM
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

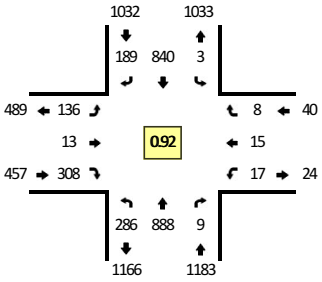
Type of peak hour being reported: User-Defined

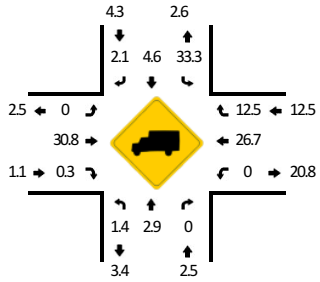
Method for determining peak hour: Total Entering

LOCATION: Cascade Hwy -- S Molalla Ave
CITY/STATE: Oregon City, OR

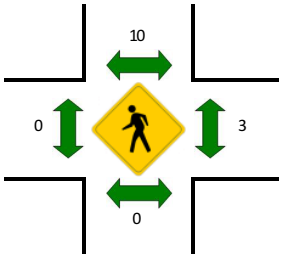
QC JOB #: 15328661
DATE: Sat, Dec 5 2020

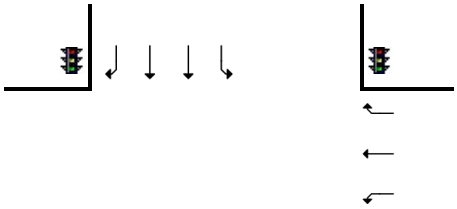
Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:25 PM -- 12:40 PM

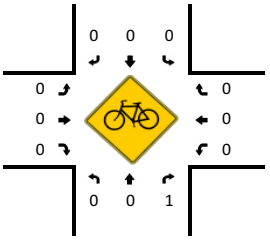


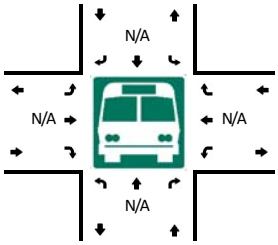


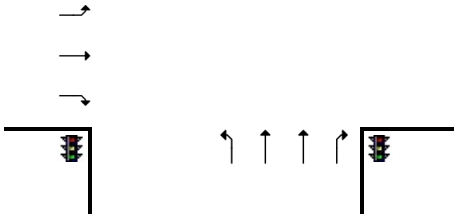
Quality Counts
DATA THAT DRIVES COMMUNITIES

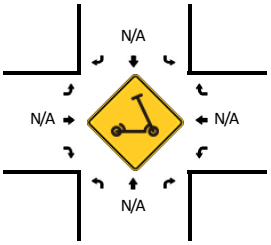












5-Min Count Period Beginning At	Cascade Hwy (Northbound)				Cascade Hwy (Southbound)				S Molalla Ave (Eastbound)				S Molalla Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	20	61	0	0	0	68	7	0	13	0	15	0	1	4	0	0	189	
11:20 AM	25	55	2	0	1	50	12	0	11	0	28	0	2	2	0	0	188	
11:25 AM	22	64	2	0	2	78	12	0	11	2	19	0	0	2	3	0	217	
11:30 AM	19	72	2	0	0	56	11	1	12	1	28	0	0	1	2	0	205	
11:35 AM	25	87	0	0	4	76	11	0	4	1	17	0	2	3	3	0	233	
11:40 AM	18	80	2	0	0	76	20	0	9	1	23	0	2	3	3	0	237	
11:45 AM	26	80	0	0	1	59	11	0	12	1	28	0	0	1	1	0	220	
11:50 AM	25	82	2	0	2	72	20	0	4	1	18	0	5	1	1	0	233	
11:55 AM	22	71	1	0	0	80	11	0	9	1	18	0	2	2	5	0	222	
12:00 PM	20	78	1	0	0	58	14	0	16	0	28	0	0	4	4	0	223	
12:05 PM	15	63	5	0	1	65	18	0	5	1	23	0	0	0	1	0	197	
12:10 PM	25	61	0	0	0	71	11	0	13	1	31	0	1	0	1	0	215	2579
12:15 PM	25	87	1	0	0	72	14	0	10	1	19	0	1	1	1	0	232	2622
12:20 PM	16	70	2	0	0	59	16	0	7	0	24	0	1	0	0	0	195	2629
12:25 PM	21	65	1	0	1	89	18	0	9	1	28	0	0	1	0	0	234	2646
12:30 PM	28	84	0	1	0	83	13	0	17	2	29	0	3	1	1	0	262	2703
12:35 PM	27	56	0	0	1	84	18	0	12	0	36	0	4	0	2	0	240	2710
12:40 PM	19	73	0	0	0	74	16	0	11	2	19	0	3	0	0	0	217	2690
12:45 PM	32	75	0	0	0	60	17	0	9	3	28	0	1	4	1	0	230	2700
12:50 PM	16	83	0	0	0	83	21	0	11	0	24	0	0	2	0	0	240	2707
12:55 PM	21	76	0	0	0	66	9	1	10	3	35	0	1	0	0	0	222	2707
1:00 PM	34	75	0	0	0	67	19	0	10	0	24	0	1	3	1	0	234	2718
1:05 PM	24	71	1	0	0	59	15	0	14	0	17	0	0	1	2	0	204	2725
1:10 PM	22	73	4	0	0	44	13	0	16	1	25	0	2	2	0	0	202	2712

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	304	820	4	4	8	1024	196	0	152	12	372	0	28	8	12	0	2944
Heavy Trucks	4	36	0		4	44	8		0	4	0		0	4	0		104
Buses																	
Pedestrians		0				24				0				8			32
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:51 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

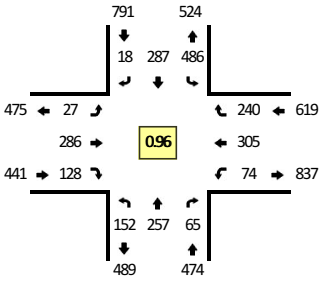
Type of peak hour being reported: User-Defined

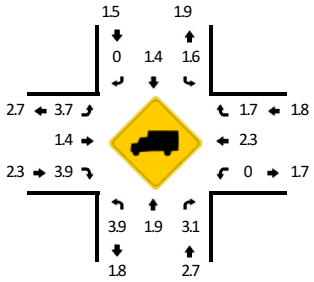
Method for determining peak hour: Total Entering

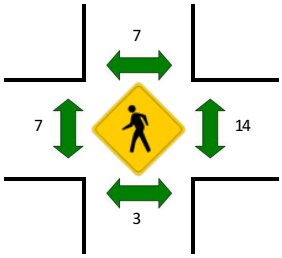
LOCATION: Molalla Ave -- Beavercreek Rd
CITY/STATE: Oregon City, OR

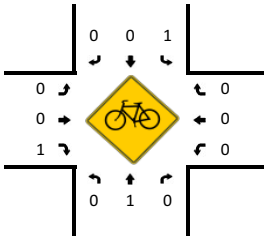
QC JOB #: 15328664
DATE: Sat, Dec 5 2020

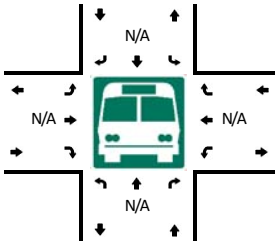
Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:30 PM -- 12:45 PM

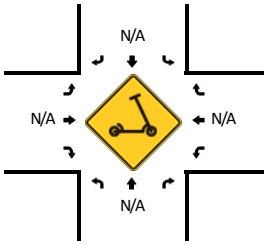


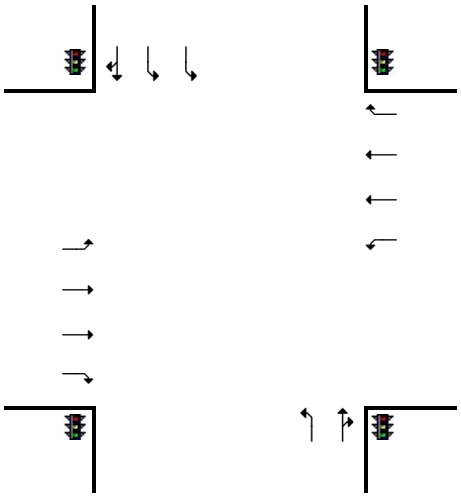












5-Min Count Period Beginning At	Molalla Ave (Northbound)				Molalla Ave (Southbound)				Beavercreek Rd (Eastbound)				Beavercreek Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	13	26	5	0	28	20	0	0	0	23	13	0	5	26	24	0	183	
11:20 AM	12	23	5	0	38	28	3	0	3	27	16	0	9	13	16	0	193	
11:25 AM	15	21	7	0	40	18	1	0	3	29	14	0	8	31	28	0	215	
11:30 AM	8	32	4	0	32	27	0	0	1	21	16	0	4	19	20	0	184	
11:35 AM	12	20	6	0	34	18	4	0	1	20	14	0	6	18	26	0	179	
11:40 AM	11	22	6	0	30	14	1	0	3	24	7	0	8	22	23	0	171	
11:45 AM	14	23	7	0	37	20	1	0	0	24	13	0	7	19	26	0	191	
11:50 AM	6	23	1	0	39	23	4	0	4	29	13	0	7	29	26	0	204	
11:55 AM	13	36	5	0	34	26	2	0	0	24	12	0	5	20	27	0	204	
12:00 PM	4	18	6	0	36	21	0	0	1	26	17	0	4	33	15	0	181	
12:05 PM	18	25	10	0	37	24	2	0	2	27	11	0	5	28	24	0	213	
12:10 PM	12	25	3	0	53	30	4	0	3	10	13	0	7	24	27	0	211	2329
12:15 PM	11	26	12	0	38	23	4	0	5	20	9	0	5	15	20	0	188	2334
12:20 PM	14	15	3	0	37	20	3	0	1	24	8	0	8	30	19	0	182	2323
12:25 PM	16	24	4	0	43	23	3	0	2	17	10	0	5	29	12	0	188	2296
12:30 PM	16	22	5	0	47	27	2	0	3	26	11	0	1	17	15	0	192	2304
12:35 PM	10	18	1	0	45	27	0	0	1	17	10	0	7	33	21	0	190	2315
12:40 PM	10	22	3	0	54	29	3	0	2	30	17	0	6	22	27	0	225	2369
12:45 PM	14	21	3	0	30	16	0	0	6	15	15	0	9	28	17	0	174	2352
12:50 PM	7	20	8	0	49	25	1	0	0	25	10	0	5	22	25	0	197	2345
12:55 PM	13	17	10	0	21	22	0	0	4	33	8	0	10	32	24	0	194	2335
1:00 PM	12	26	6	0	42	33	1	0	0	21	10	0	9	26	18	0	204	2358
1:05 PM	9	24	5	0	35	22	0	0	3	24	6	0	5	26	25	0	184	2329
1:10 PM	20	22	5	0	45	20	1	0	0	34	14	0	4	25	17	0	207	2325

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	144	248	36	0	584	332	20	0	24	292	152	0	56	288	252	0	2428
Heavy Trucks	4	0	0		4	4	0		0	4	4		0	0	4		24
Buses																	
Pedestrians		4				0				8				0			12
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:51 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

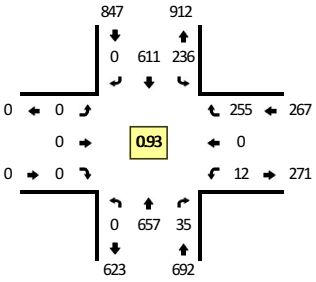
Type of peak hour being reported: User-Defined

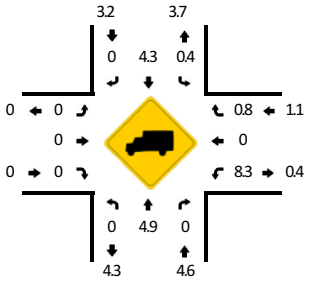
Method for determining peak hour: Total Entering

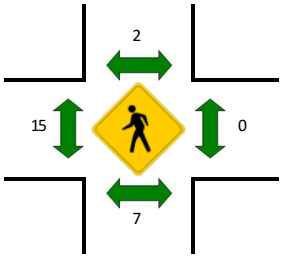
LOCATION: McLoughlin Blvd -- 10th St
CITY/STATE: Oregon City, OR

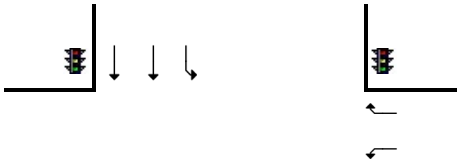
QC JOB #: 15328667
DATE: Sat, Dec 5 2020

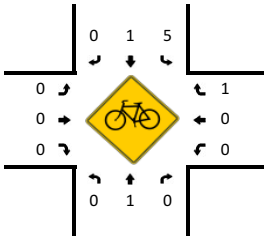
Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:15 PM -- 12:30 PM

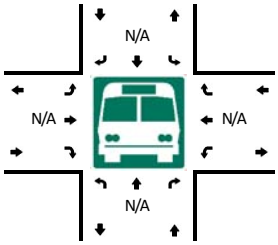




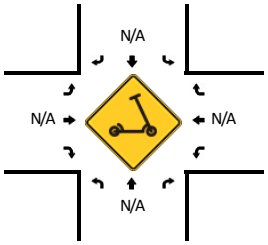












5-Min Count Period Beginning At	McLoughlin Blvd (Northbound)				McLoughlin Blvd (Southbound)				10th St (Eastbound)				10th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	0	50	1	0	24	48	0	0	0	0	0	0	0	0	17	0	140	
11:20 AM	0	62	1	0	19	64	0	0	0	0	0	0	0	0	17	0	163	
11:25 AM	0	53	1	0	15	45	0	0	0	0	0	0	2	0	21	0	137	
11:30 AM	0	43	2	0	21	67	0	0	0	0	0	0	3	0	19	0	155	
11:35 AM	0	44	2	0	20	46	0	0	0	0	0	0	0	0	15	0	127	
11:40 AM	0	66	3	0	25	57	0	0	0	0	0	0	0	0	11	0	162	
11:45 AM	0	55	3	0	20	53	0	0	0	0	0	0	2	0	23	0	156	
11:50 AM	0	46	0	0	22	44	0	0	0	0	0	0	2	0	21	0	135	
11:55 AM	0	64	5	0	16	54	0	0	0	0	0	0	0	0	32	0	171	
12:00 PM	0	63	2	0	20	53	0	0	0	0	0	0	3	0	14	0	155	
12:05 PM	0	47	0	0	21	40	0	0	0	0	0	0	2	0	20	0	130	
12:10 PM	0	50	3	0	18	41	0	0	0	0	0	0	0	0	19	0	131	1762
12:15 PM	0	63	4	0	12	59	0	0	0	0	0	0	2	0	26	0	166	1788
12:20 PM	0	69	3	0	21	40	0	0	0	0	0	0	1	0	24	0	158	1783
12:25 PM	0	68	1	0	19	49	0	0	0	0	0	0	1	0	24	0	162	1808
12:30 PM	0	38	1	0	29	46	0	0	0	0	0	0	0	0	14	0	128	1781
12:35 PM	0	57	5	0	17	42	0	0	0	0	0	0	1	0	14	0	136	1790
12:40 PM	0	62	7	0	18	51	0	0	0	0	0	0	1	0	22	0	161	1789
12:45 PM	0	61	2	0	26	57	0	0	0	0	0	0	1	0	21	0	168	1801
12:50 PM	0	44	3	0	16	49	0	0	0	0	0	0	1	0	20	0	133	1799
12:55 PM	0	61	2	0	16	53	0	0	0	0	0	0	1	0	29	0	162	1790
1:00 PM	0	48	3	0	22	62	0	0	0	0	0	0	1	0	19	0	155	1790
1:05 PM	0	41	2	0	17	44	0	0	0	0	0	0	0	0	23	0	127	1787
1:10 PM	0	45	2	0	23	59	0	0	0	0	0	0	2	0	19	0	150	1806

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	800	32	0	208	592	0	0	0	0	0	0	16	0	296	0	1944
Heavy Trucks	0	64	0		0	24	0		0	0	0		4	0	0		92
Buses																	
Pedestrians		24				0				12				0			36
Bicycles	0	0	0		8	0	0		0	0	0		0	0	4		12
Scooters																	

Comments:

Report generated on 3/12/2021 8:51 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

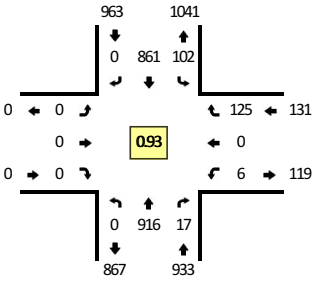
Type of peak hour being reported: User-Defined

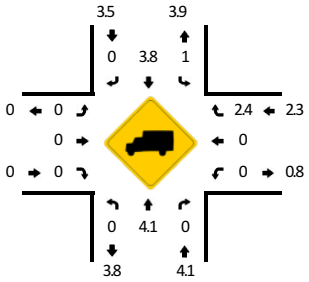
Method for determining peak hour: Total Entering

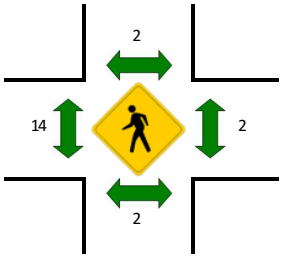
LOCATION: McLoughlin Blvd -- 12th St
CITY/STATE: Oregon City, OR

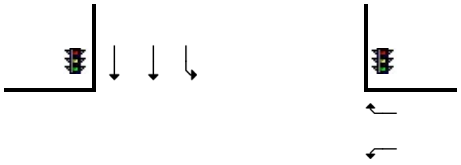
QC JOB #: 15328670
DATE: Sat, Dec 5 2020

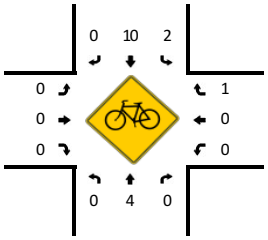
Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:15 PM -- 12:30 PM

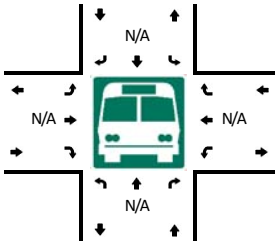




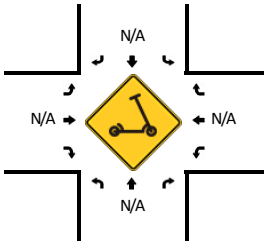












5-Min Count Period Beginning At	McLoughlin Blvd (Northbound)				McLoughlin Blvd (Southbound)				12th St (Eastbound)				12th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	0	68	3	0	6	91	0	0	0	0	0	0	2	0	12	0	182	
11:20 AM	0	74	2	0	5	66	0	0	0	0	0	0	0	0	9	0	156	
11:25 AM	0	74	0	0	9	63	0	0	0	0	0	0	0	0	10	0	156	
11:30 AM	0	67	1	0	12	84	0	0	0	0	0	0	0	0	8	0	172	
11:35 AM	0	57	1	0	12	63	0	0	0	0	0	0	4	0	12	0	149	
11:40 AM	0	75	5	0	9	78	0	0	0	0	0	0	0	0	16	0	183	
11:45 AM	0	76	2	0	8	79	0	0	0	0	0	0	1	0	13	0	179	
11:50 AM	0	73	0	0	9	64	0	0	0	0	0	0	0	0	12	0	158	
11:55 AM	0	92	0	0	13	80	0	0	0	0	0	0	0	0	16	0	201	
12:00 PM	0	78	1	0	12	69	0	0	0	0	0	0	1	0	5	0	166	
12:05 PM	0	67	2	0	7	62	0	0	0	0	0	0	1	0	7	0	146	
12:10 PM	0	69	2	0	12	53	0	0	0	0	0	0	2	0	11	0	149	1997
12:15 PM	0	87	3	0	4	80	0	0	0	0	0	0	1	0	11	0	186	2001
12:20 PM	0	92	3	0	14	57	0	0	0	0	0	0	1	0	11	0	178	2023
12:25 PM	0	89	1	0	5	71	0	0	0	0	0	0	0	0	15	0	181	2048
12:30 PM	0	54	0	0	11	72	0	0	0	0	0	0	0	0	10	0	147	2023
12:35 PM	0	72	2	0	13	61	0	0	0	0	0	0	0	0	7	0	155	2029
12:40 PM	0	86	0	0	5	84	0	0	0	0	0	0	0	0	8	0	183	2029
12:45 PM	0	87	1	0	8	76	0	0	0	0	0	0	2	0	9	0	183	2033
12:50 PM	0	65	0	0	3	58	0	0	0	0	0	0	0	0	14	0	140	2015
12:55 PM	0	90	1	0	8	78	0	0	0	0	0	0	1	0	9	0	187	2001
1:00 PM	0	67	1	0	8	74	0	0	0	0	0	0	0	0	13	0	163	1998
1:05 PM	0	62	3	0	9	76	0	0	0	0	0	0	1	0	8	0	159	2011
1:10 PM	0	65	2	0	14	74	0	0	0	0	0	0	0	0	10	0	165	2027

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1072	28	0	92	832	0	0	0	0	0	0	8	0	148	0	2180
Heavy Trucks	0	68	0		0	28	0		0	0	0		0	0	4		100
Buses																	
Pedestrians		0				0				8				0			8
Bicycles	0	4	0		4	20	0		0	0	0		0	0	0		28
Scooters																	

Comments:

Report generated on 3/12/2021 8:51 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

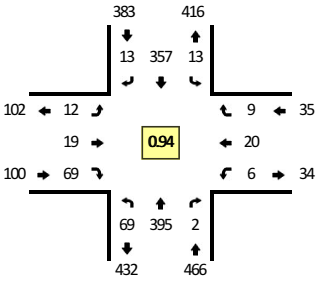
Type of peak hour being reported: User-Defined

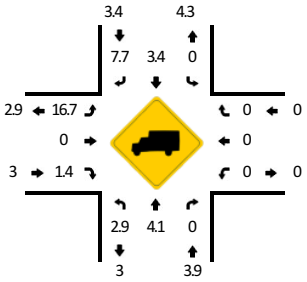
Method for determining peak hour: Total Entering

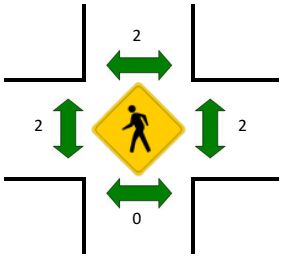
LOCATION: Washington St -- 12th St
CITY/STATE: Oregon City, OR

QC JOB #: 15328673
DATE: Sat, Dec 5 2020

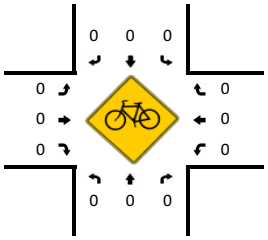
Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 1:00 PM -- 1:15 PM

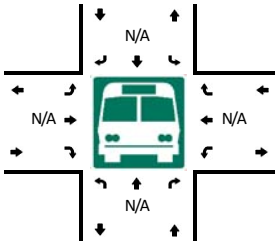




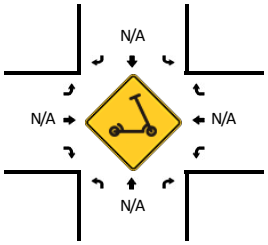












5-Min Count Period Beginning At	Washington St (Northbound)				Washington St (Southbound)				12th St (Eastbound)				12th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	10	36	0	0	2	26	1	0	0	1	4	0	0	2	1	0	83	
11:20 AM	4	31	0	0	1	30	0	0	1	1	4	0	1	1	0	0	74	
11:25 AM	3	35	0	0	2	16	1	0	2	2	6	0	1	2	1	0	71	
11:30 AM	6	23	0	0	0	25	0	0	1	4	8	0	0	0	3	0	70	
11:35 AM	5	43	0	0	1	19	4	0	1	3	6	0	0	1	2	0	85	
11:40 AM	9	40	0	0	2	33	4	0	1	1	7	0	0	3	0	0	100	
11:45 AM	7	31	0	0	1	19	4	0	0	1	5	0	1	2	0	0	71	
11:50 AM	11	40	0	0	0	19	2	0	1	1	5	0	1	1	0	0	81	
11:55 AM	4	28	0	0	0	30	0	0	2	2	5	0	0	3	2	0	76	
12:00 PM	4	25	0	0	3	24	1	0	1	4	12	0	0	0	0	0	74	
12:05 PM	2	26	0	0	0	29	3	0	0	2	7	0	0	2	0	0	71	
12:10 PM	5	23	1	0	0	21	0	0	2	2	3	0	0	3	0	0	60	916
12:15 PM	5	34	0	0	0	26	1	0	0	0	6	0	0	5	0	0	77	910
12:20 PM	5	33	0	0	0	23	3	0	1	4	6	0	0	4	1	0	80	916
12:25 PM	6	32	0	0	2	31	0	0	0	4	7	0	0	3	1	0	86	931
12:30 PM	8	41	0	0	2	24	1	0	0	2	9	0	0	0	0	0	87	948
12:35 PM	4	37	0	0	0	32	1	0	0	1	4	0	2	1	3	0	85	948
12:40 PM	2	24	0	0	1	27	2	0	3	1	5	0	0	1	0	0	66	914
12:45 PM	5	29	0	0	1	31	1	0	2	1	3	0	1	0	0	0	74	917
12:50 PM	9	36	0	0	2	35	0	0	0	1	3	0	0	0	1	0	87	923
12:55 PM	6	34	0	0	1	27	0	0	1	2	4	0	1	2	1	0	79	926
1:00 PM	8	32	0	0	2	33	2	0	2	2	5	0	0	2	0	0	88	940
1:05 PM	7	28	1	0	0	37	2	0	2	1	7	0	1	1	0	0	87	956
1:10 PM	4	35	1	0	2	31	0	0	1	0	10	0	1	1	2	0	88	984

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	76	380	8	0	16	404	16	0	20	12	88	0	8	16	8	0	1052
Heavy Trucks	8	12	0		0	24	4		4	0	0		0	0	0		52
Buses																	
Pedestrians		0				0				4				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:51 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

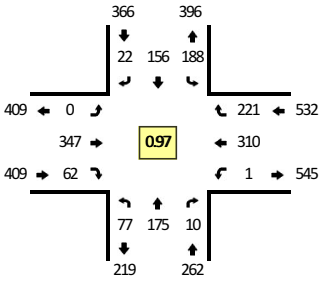
Type of peak hour being reported: User-Defined

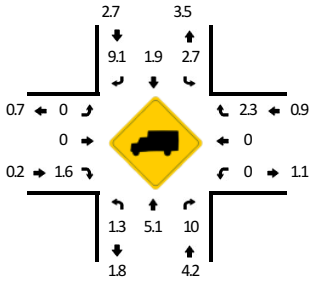
Method for determining peak hour: Total Entering

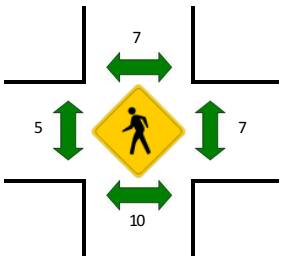
LOCATION: Washington St -- 7th St
CITY/STATE: Oregon City, OR

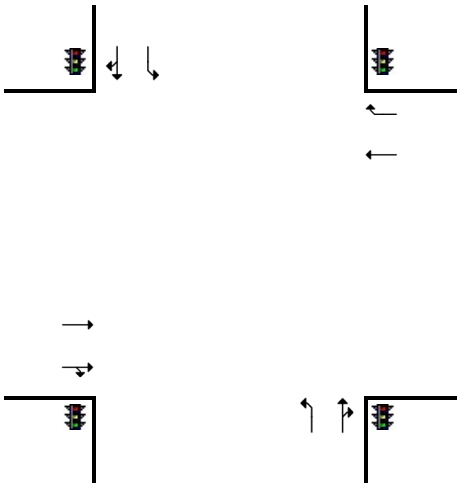
QC JOB #: 15328676
DATE: Sat, Dec 5 2020

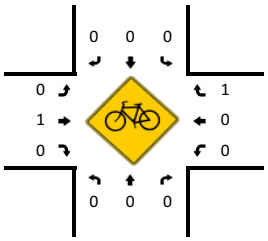
Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:15 PM -- 12:30 PM

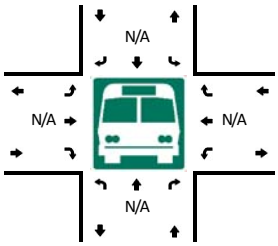


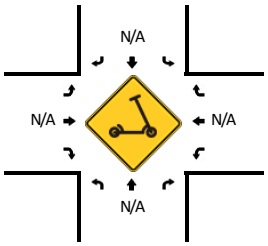












5-Min Count Period Beginning At	Washington St (Northbound)				Washington St (Southbound)				7th St (Eastbound)				7th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	11	20	0	0	9	16	2	0	0	24	7	0	0	25	17	0	131	
11:20 AM	6	21	1	0	12	16	1	0	0	22	5	0	0	22	11	0	117	
11:25 AM	4	14	1	0	19	8	1	0	0	15	4	0	0	24	19	0	109	
11:30 AM	8	7	0	0	14	14	1	0	0	27	2	0	0	24	15	0	112	
11:35 AM	8	22	1	0	12	13	2	0	0	26	7	0	0	19	21	0	131	
11:40 AM	6	16	0	0	14	9	3	0	0	32	5	0	0	30	24	0	139	
11:45 AM	13	22	1	0	16	15	1	0	0	27	5	0	0	25	19	0	144	
11:50 AM	8	13	0	0	9	8	1	0	0	36	4	0	0	32	19	0	130	
11:55 AM	9	8	1	0	14	10	4	0	0	33	4	0	0	25	21	0	129	
12:00 PM	7	16	0	0	19	12	1	0	0	23	4	0	0	23	13	0	118	
12:05 PM	5	9	0	0	14	10	2	0	1	25	4	0	0	19	12	0	101	
12:10 PM	13	14	2	0	10	10	0	0	1	25	1	0	0	25	13	0	114	1475
12:15 PM	12	15	2	0	15	16	0	0	0	27	3	0	0	35	19	0	144	1488
12:20 PM	7	19	2	0	11	13	3	0	0	30	6	0	0	25	16	0	132	1503
12:25 PM	4	10	0	0	12	8	4	0	0	29	5	0	0	26	29	0	127	1521
12:30 PM	3	13	1	0	18	15	2	0	0	29	3	0	0	12	24	0	120	1529
12:35 PM	7	17	0	0	18	13	2	0	0	30	4	0	0	21	20	0	132	1530
12:40 PM	6	9	0	0	9	8	0	0	0	37	8	0	0	29	16	0	122	1513
12:45 PM	6	11	0	0	18	12	4	0	0	29	7	0	0	32	15	0	134	1503
12:50 PM	9	17	2	0	17	9	2	0	0	30	7	0	0	24	14	0	131	1504
12:55 PM	10	18	2	0	13	17	0	0	0	20	4	0	1	29	17	0	131	1506
1:00 PM	4	15	1	0	13	13	1	0	0	26	8	0	0	22	17	0	120	1508
1:05 PM	4	13	0	0	27	18	2	0	0	26	2	0	0	28	20	0	140	1547
1:10 PM	5	18	0	0	17	14	2	0	0	34	5	0	0	27	14	0	136	1569

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	92	176	16	0	152	148	28	0	0	344	56	0	0	344	256	0	1612
Heavy Trucks	0	4	4		0	4	4		0	0	0		0	0	4		20
Buses																	
Pedestrians		16				4				0				4			24
Bicycles	0	0	0		0	0	0		0	0	0		0	0	4		4
Scooters																	

Comments:

Report generated on 3/12/2021 8:51 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

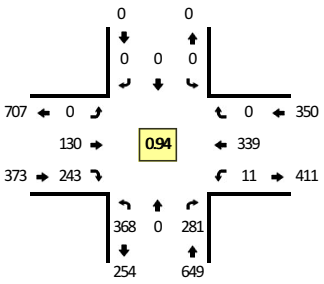
Type of peak hour being reported: User-Defined

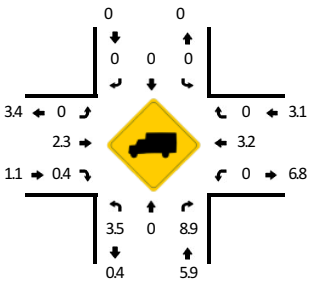
Method for determining peak hour: Total Entering

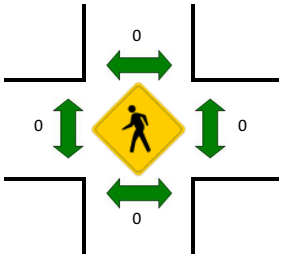
LOCATION: I-205 NB Ramps -- 82nd Dr
CITY/STATE: Gladstone, OR

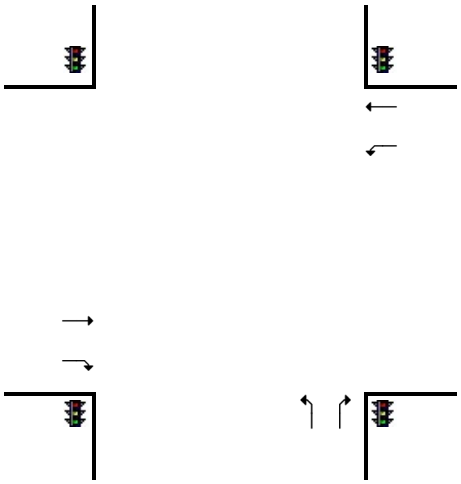
QC JOB #: 15328679
DATE: Sat, Dec 5 2020

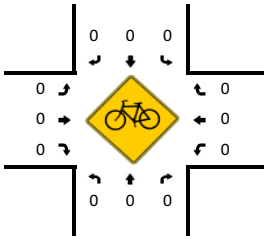
Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:20 PM -- 12:35 PM

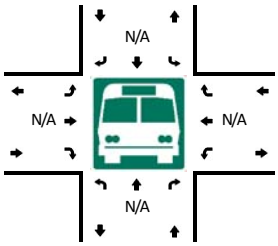


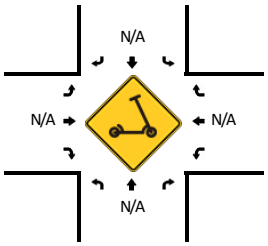












5-Min Count Period Beginning At	I-205 NB Ramps (Northbound)				I-205 NB Ramps (Southbound)				82nd Dr (Eastbound)				82nd Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	27	0	16	0	0	0	0	0	0	15	16	0	1	24	0	0	99	
11:20 AM	33	0	22	0	0	0	0	0	0	13	15	0	0	19	0	0	102	
11:25 AM	20	0	21	0	0	0	0	0	0	9	21	0	1	31	0	0	103	
11:30 AM	31	0	20	0	0	0	0	0	0	9	20	0	1	25	0	0	106	
11:35 AM	24	0	33	0	0	0	0	0	0	9	15	0	2	23	0	0	106	
11:40 AM	19	0	20	0	0	0	0	0	0	8	14	0	0	25	0	0	86	
11:45 AM	24	0	30	0	0	0	0	0	0	13	17	0	3	26	0	0	113	
11:50 AM	27	0	22	0	0	0	0	0	0	14	27	0	2	23	0	0	115	
11:55 AM	32	0	18	0	0	0	0	0	0	11	18	0	3	39	0	0	121	
12:00 PM	19	0	24	0	0	0	0	0	0	3	32	0	1	19	0	0	98	
12:05 PM	22	0	18	0	0	0	0	0	0	4	17	0	3	30	0	0	94	
12:10 PM	21	0	22	0	0	0	0	0	0	13	21	0	0	33	0	0	110	1253
12:15 PM	31	0	23	0	0	0	0	0	0	13	15	0	0	23	0	0	105	1259
12:20 PM	22	0	29	0	0	0	0	0	0	15	22	0	0	30	0	0	118	1275
12:25 PM	33	0	32	0	0	0	0	0	0	11	19	0	1	32	0	0	128	1300
12:30 PM	28	0	29	0	0	0	0	0	0	14	22	0	0	27	0	0	120	1314
12:35 PM	38	0	23	0	0	0	0	0	0	8	26	0	1	22	0	0	118	1326
12:40 PM	33	0	16	0	0	0	0	0	0	12	25	0	1	28	0	0	115	1355
12:45 PM	34	0	26	0	0	0	0	0	0	11	21	0	0	23	0	0	115	1357
12:50 PM	31	0	30	0	0	0	0	0	0	12	28	0	1	31	0	0	133	1375
12:55 PM	26	0	17	0	0	0	0	0	0	10	24	0	1	33	0	0	111	1365
1:00 PM	36	0	18	0	0	0	0	0	0	11	13	0	4	37	0	0	119	1386
1:05 PM	29	0	20	0	0	0	0	0	0	7	17	0	0	26	0	0	99	1391
1:10 PM	27	0	18	0	0	0	0	0	0	6	11	0	2	27	0	0	91	1372

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	332	0	360	0	0	0	0	0	0	160	252	0	4	356	0	0	1464
Heavy Trucks	20	0	40		0	0	0		0	8	4		0	24	0		96
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:51 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

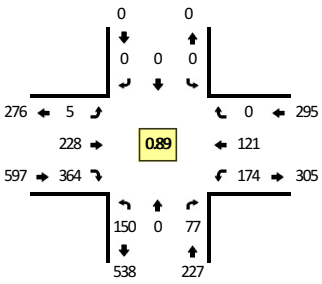
Type of peak hour being reported: User-Defined

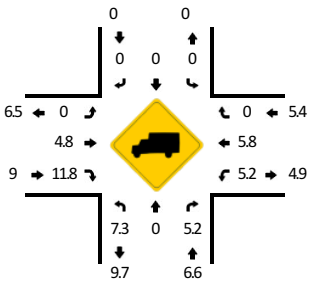
Method for determining peak hour: Total Entering

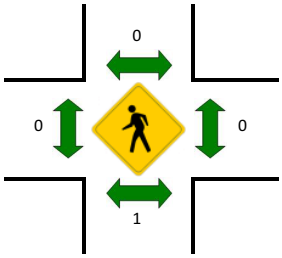
LOCATION: Clackamas River Dr -- Washington St
CITY/STATE: Oregon City, OR

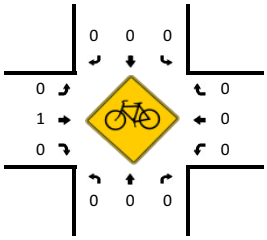
QC JOB #: 15328682
DATE: Sat, Dec 5 2020

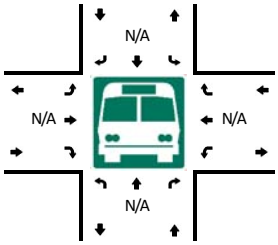
Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:40 PM -- 12:55 PM

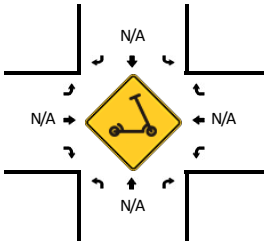












5-Min Count Period Beginning At	Clackamas River Dr (Northbound)				Clackamas River Dr (Southbound)				Washington St (Eastbound)				Washington St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	10	0	4	0	0	0	0	0	0	15	25	1	5	12	0	0	72	
11:20 AM	7	0	5	0	0	0	0	0	0	16	35	0	6	11	0	1	81	
11:25 AM	17	0	5	0	0	0	0	0	0	20	27	1	11	11	0	0	92	
11:30 AM	11	0	3	0	0	0	0	0	0	13	30	0	6	10	0	0	73	
11:35 AM	16	0	6	0	0	0	0	0	0	18	23	0	7	12	0	0	82	
11:40 AM	18	0	6	0	0	0	0	0	0	17	31	1	15	10	0	0	98	
11:45 AM	15	0	4	0	0	0	0	0	0	24	22	1	7	8	0	0	81	
11:50 AM	13	0	7	0	0	0	0	0	0	16	28	0	8	15	0	0	87	
11:55 AM	7	0	9	0	0	0	0	0	0	17	31	1	13	4	0	0	82	
12:00 PM	9	0	3	0	0	0	0	0	0	22	27	0	9	13	0	0	83	
12:05 PM	13	0	8	0	0	0	0	0	0	21	29	0	10	13	0	0	94	
12:10 PM	11	0	4	0	0	0	0	0	0	9	24	0	13	7	0	0	68	993
12:15 PM	8	0	10	0	0	0	0	0	0	26	20	0	15	6	0	0	85	1006
12:20 PM	15	0	2	0	0	0	0	0	0	17	29	0	16	13	0	0	92	1017
12:25 PM	13	0	8	0	0	0	0	0	0	24	21	1	18	10	0	0	95	1020
12:30 PM	9	0	6	0	0	0	0	0	0	22	36	1	11	8	0	0	93	1040
12:35 PM	14	0	6	0	0	0	0	0	0	9	30	1	11	5	0	0	76	1034
12:40 PM	13	0	6	0	0	0	0	0	0	19	37	0	23	14	0	0	112	1048
12:45 PM	10	0	14	0	0	0	0	0	0	24	32	0	11	10	0	0	101	1068
12:50 PM	14	0	7	0	0	0	0	0	0	19	31	1	18	11	0	0	101	1082
12:55 PM	14	0	4	0	0	0	0	0	0	18	35	0	12	11	0	0	94	1094
1:00 PM	13	0	4	0	0	0	0	0	0	18	33	0	9	14	0	0	91	1102
1:05 PM	13	0	10	0	0	0	0	0	0	14	25	1	15	11	0	0	89	1097
1:10 PM	14	0	0	0	0	0	0	0	0	18	35	0	15	8	0	0	90	1119

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	148	0	108	0	0	0	0	0	0	248	400	4	208	140	0	0	1256
Heavy Trucks	8	0	8		0	0	0		0	16	44		12	0	0		88
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:51 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

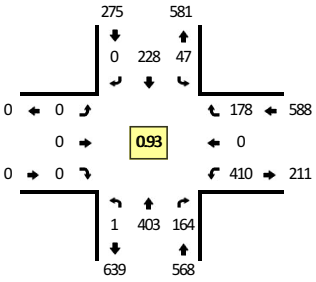
Type of peak hour being reported: User-Defined

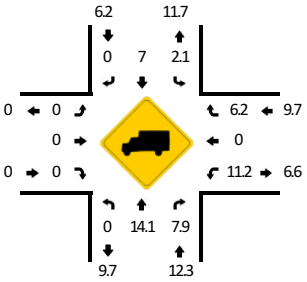
Method for determining peak hour: Total Entering

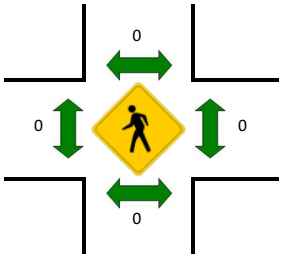
LOCATION: Washington St -- Prairie Schooner Way
CITY/STATE: Oregon City, OR

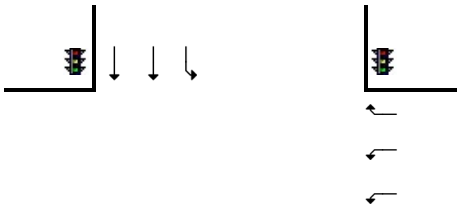
QC JOB #: 15328685
DATE: Sat, Dec 5 2020

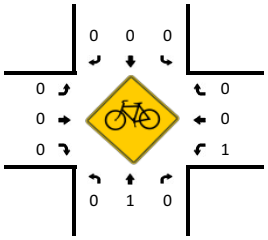
Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:50 PM -- 1:05 PM

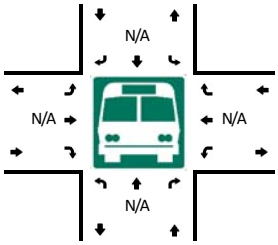




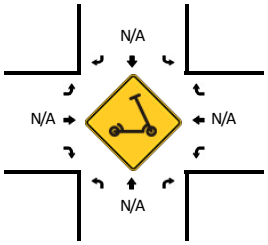












5-Min Count Period Beginning At	Washington St (Northbound)				Washington St (Southbound)				Prairie Schooner Way (Eastbound)				Prairie Schooner Way (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	0	29	15	0	3	20	0	0	0	0	0	0	25	0	16	0	108	
11:20 AM	0	36	15	0	4	9	0	0	0	0	0	0	37	0	14	0	115	
11:25 AM	0	32	12	0	11	16	0	0	0	0	0	0	33	0	11	0	115	
11:30 AM	0	29	17	0	0	23	0	0	0	0	0	0	33	0	13	0	115	
11:35 AM	0	22	22	0	4	28	0	0	0	0	0	0	22	0	17	0	115	
11:40 AM	0	31	14	0	2	24	0	0	0	0	0	0	37	0	19	0	127	
11:45 AM	0	33	19	0	3	20	0	0	0	0	0	0	35	0	16	0	126	
11:50 AM	0	32	14	0	1	24	0	0	0	0	0	0	46	0	12	0	129	
11:55 AM	0	30	22	0	2	14	0	0	0	0	0	0	35	0	16	0	119	
12:00 PM	0	36	20	0	5	12	0	0	0	0	0	0	25	0	16	0	114	
12:05 PM	0	29	20	0	9	19	0	0	0	0	0	0	24	0	15	0	116	
12:10 PM	0	25	8	0	2	14	0	0	0	0	0	0	41	0	9	0	99	1398
12:15 PM	0	27	17	0	2	13	0	0	0	0	0	0	27	0	12	0	98	1388
12:20 PM	0	28	11	0	3	19	0	0	0	0	0	0	41	0	17	0	119	1392
12:25 PM	0	34	12	0	3	26	0	0	0	0	0	0	37	0	15	0	127	1404
12:30 PM	0	41	13	0	2	15	0	0	0	0	0	0	37	0	12	0	120	1409
12:35 PM	0	30	13	0	4	17	0	0	0	0	0	0	27	0	11	0	102	1396
12:40 PM	0	39	17	0	6	21	0	0	0	0	0	0	44	0	15	0	142	1411
12:45 PM	0	28	11	1	6	11	0	0	0	0	0	0	34	0	22	0	113	1398
12:50 PM	0	34	15	0	3	24	0	0	0	0	0	0	33	0	17	0	126	1395
12:55 PM	0	34	14	0	2	25	0	0	0	0	0	0	30	0	16	0	121	1397
1:00 PM	0	36	19	0	2	26	0	0	0	0	0	0	37	0	16	0	136	1419
1:05 PM	0	30	13	0	11	11	0	0	0	0	0	0	33	0	9	0	107	1410
1:10 PM	0	42	9	0	3	20	0	0	0	0	0	0	30	0	16	0	120	1431

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	416	192	0	28	300	0	0	0	0	0	0	400	0	196	0	1532
Heavy Trucks	0	52	16		0	24	0		0	0	0		24	0	12		128
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:51 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

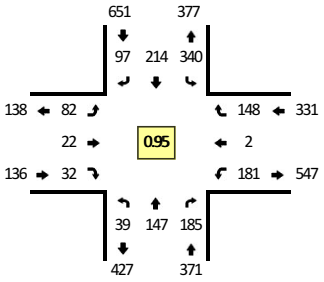
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering

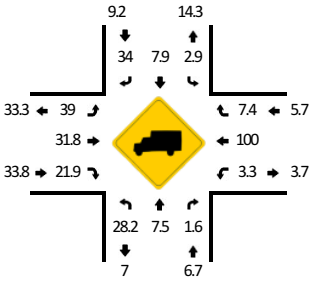
LOCATION: Washington St -- Home Depot West Dwy
CITY/STATE: Oregon City, OR

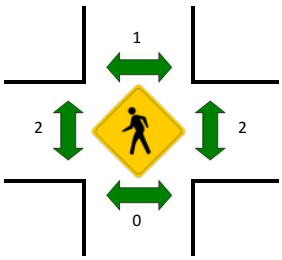
QC JOB #: 15328688
DATE: Sat, Dec 5 2020

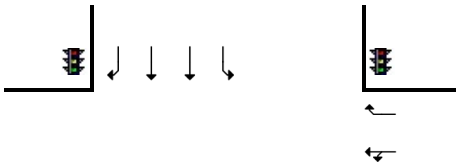
Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:40 PM -- 12:55 PM

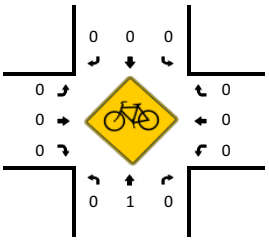


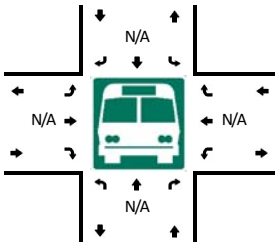


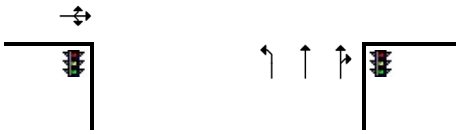


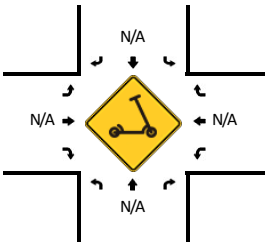












5-Min Count Period Beginning At	Washington St (Northbound)				Washington St (Southbound)				Home Depot West Dwy (Eastbound)				Home Depot West Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:15 AM	2	11	11	0	23	10	9	0	2	2	2	0	17	0	17	0	106	
11:20 AM	3	10	11	0	28	15	5	0	6	1	1	0	16	0	15	0	111	
11:25 AM	4	13	15	0	18	14	9	1	9	0	3	0	14	0	9	0	109	
11:30 AM	1	12	19	0	38	14	14	0	3	2	2	0	11	0	11	0	127	
11:35 AM	0	7	15	0	17	22	8	0	7	1	6	0	15	2	14	0	114	
11:40 AM	1	10	16	0	33	17	7	0	4	2	1	0	16	1	13	0	121	
11:45 AM	1	17	23	0	31	18	12	0	5	3	3	0	11	1	15	0	140	
11:50 AM	4	13	14	0	39	16	14	0	4	1	3	0	11	1	7	0	127	
11:55 AM	5	13	15	0	22	17	11	0	8	4	3	0	17	1	22	0	138	
12:00 PM	4	10	6	0	27	8	6	0	7	4	1	0	15	1	9	0	98	
12:05 PM	1	8	13	0	24	14	3	0	7	0	1	0	22	0	13	0	106	
12:10 PM	5	5	17	0	30	10	12	0	4	1	2	0	15	0	8	0	109	1406
12:15 PM	3	12	12	0	23	16	7	0	9	1	4	0	15	0	7	0	109	1409
12:20 PM	5	16	19	0	28	15	11	0	7	2	2	0	10	0	9	0	124	1422
12:25 PM	0	12	17	0	39	15	9	0	3	2	3	0	14	0	10	0	124	1437
12:30 PM	2	13	16	0	33	18	8	0	9	2	2	0	16	0	15	0	134	1444
12:35 PM	5	11	17	0	24	15	8	0	6	2	2	0	13	0	13	0	116	1446
12:40 PM	1	15	11	0	26	25	6	0	10	0	2	0	18	0	20	0	134	1459
12:45 PM	1	13	15	0	29	17	8	0	7	2	2	0	18	1	15	0	128	1447
12:50 PM	5	10	13	0	31	24	4	0	7	2	1	0	18	1	12	0	128	1448
12:55 PM	2	15	16	0	28	20	5	0	3	4	5	0	17	0	12	0	127	1437
1:00 PM	4	10	14	0	37	19	8	0	7	2	2	0	16	0	13	0	132	1471
1:05 PM	4	7	19	0	22	12	11	0	6	2	4	0	15	0	10	0	112	1477
1:10 PM	7	13	16	0	20	18	12	0	8	1	3	0	11	0	12	0	121	1489

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	28	152	156	0	344	264	72	0	96	16	20	0	216	8	188	0	1560
Heavy Trucks	8	20	8		12	8	32		36	4	8		8	8	8		160
Buses																	
Pedestrians		0				0				4				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/12/2021 8:51 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Appendix C
Existing Traffic Conditions
Analysis Worksheets

Intersection Level Of Service Report
Intersection 1: OR 99E/ River Rd/ W Arlington St

Control Type:	Signalized	Delay (sec / veh):	7.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.637

Intersection Setup

Name	OR 99E			OR 99E			River Rd			W Arlington St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	185.00	100.00	275.00	250.00	100.00	100.00	550.00	100.00	100.00	100.00	100.00	160.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 99E			OR 99E			River Rd			W Arlington St		
Base Volume Input [veh/h]	59	847	60	32	629	3	0	25	126	81	13	47
Base Volume Adjustment Factor	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
Heavy Vehicles Percentage [%]	8.00	6.00	8.00	6.00	7.00	0.00	0.00	8.00	6.00	11.00	8.00	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	45	0	0	0	0	0	95	0	0	36
Total Hourly Volume [veh/h]	89	1271	45	48	944	5	0	38	94	122	20	35
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	383	14	14	284	2	0	11	28	37	6	11
Total Analysis Volume [veh/h]	107	1531	54	58	1137	6	0	46	113	147	24	42
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			3			0			3		
v_di, Inbound Pedestrian Volume crossing m	0			3			0			3		
v_co, Outbound Pedestrian Volume crossing	0			1			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	42.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	20	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	18	52	0	18	52	0	0	30	0	0	30	0
Vehicle Extension [s]	2.3	4.7	0.0	2.3	4.7	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	9	0	0	8	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	20	0	0	15	0	0	26	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	C	R	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.80	4.80	4.80	4.40	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.80	2.80	0.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	69	69	69	69	68	68	15	15	15	15
g / C, Green / Cycle	0.69	0.69	0.69	0.69	0.68	0.68	0.15	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.19	0.44	0.04	0.11	0.32	0.32	0.03	0.07	0.12	0.03
s, saturation flow rate [veh/h]	572	3446	1481	532	1795	1791	1780	1538	1444	1545
c, Capacity [veh/h]	472	2373	1020	364	1225	1223	304	232	285	233
d1, Uniform Delay [s]	1.64	1.64	1.28	3.90	1.65	1.65	37.01	38.91	40.46	37.05
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.12	1.37	0.10	0.93	1.28	1.28	0.17	1.17	1.51	0.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.23	0.65	0.05	0.16	0.47	0.47	0.15	0.49	0.60	0.18
d, Delay for Lane Group [s/veh]	2.76	3.00	1.38	4.83	2.92	2.93	37.18	40.08	41.97	37.32
Lane Group LOS	A	A	A	A	A	A	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.31	1.75	0.11	0.17	1.40	1.40	0.99	2.60	4.12	0.91
50th-Percentile Queue Length [ft/ln]	7.72	43.66	2.74	4.30	34.94	34.90	24.81	65.05	102.93	22.79
95th-Percentile Queue Length [veh/ln]	0.56	3.14	0.20	0.31	2.52	2.51	1.79	4.68	7.41	1.64
95th-Percentile Queue Length [ft/ln]	13.90	78.58	4.93	7.74	62.89	62.83	44.66	117.08	185.27	41.02

Movement, Approach, & Intersection Results

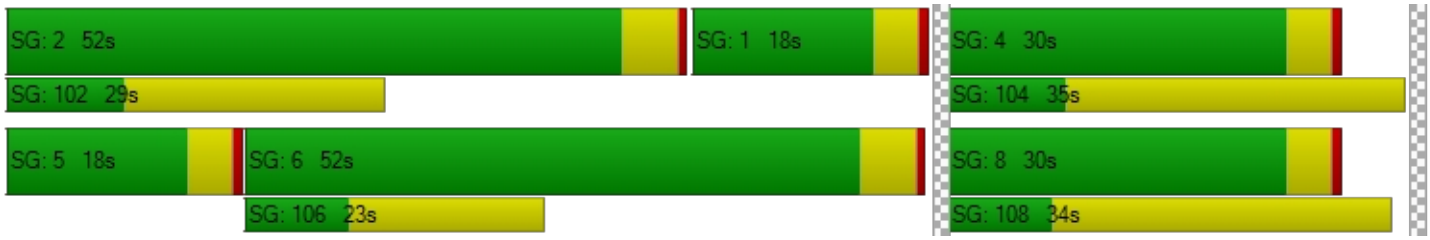
d_M, Delay for Movement [s/veh]	2.76	3.00	1.38	4.83	2.93	2.93	37.18	37.18	40.08	41.97	41.97	37.32
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	2.94			3.02			39.24			41.05		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	7.22											
Intersection LOS	A											
Intersection V/C	0.637											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	1587.22	3471.75	7517.26
d_p, Pedestrian Delay [s]	37.85	38.72	38.72	37.85
l_p,int, Pedestrian LOS Score for Intersection	3.254	3.034	2.334	2.213
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	944	944	520	520
d_b, Bicycle Delay [s]	13.95	13.95	27.38	27.38
l_b,int, Bicycle LOS Score for Intersection	2.993	2.550	1.979	1.970
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: OR 99E / Dunes Dr

Control Type:	Signalized	Delay (sec / veh):	14.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.739

Intersection Setup

Name	OR 99E			OR 99E			Dunes Dr			Dunes Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	220.00	100.00	100.00	370.00	100.00	155.00	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 99E			OR 99E			Dunes Dr			Dunes Dr		
Base Volume Input [veh/h]	46	911	71	37	733	53	16	3	35	107	3	35
Base Volume Adjustment Factor	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
Heavy Vehicles Percentage [%]	9.00	7.00	7.00	5.00	8.00	9.00	0.00	0.00	0.00	7.00	0.00	6.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	1367	107	56	1100	80	24	5	53	161	5	53
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	397	31	16	320	23	7	1	15	47	1	15
Total Analysis Volume [veh/h]	80	1590	124	65	1279	93	28	6	62	187	6	62
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			3			0			2		
v_di, Inbound Pedestrian Volume crossing m	0			2			0			3		
v_co, Outbound Pedestrian Volume crossing	0			0			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	2	0	5	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	20	40	0	20	40	0	0	20	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	16	58	0	20	54	0	0	16	0	0	16	0
Vehicle Extension [s]	2.3	4.8	0.0	2.3	4.8	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	18	0	0	38	0	0	37	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.00	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.80	2.80	2.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	53	53	10	46	46	21	21	21	21
g / C, Green / Cycle	0.04	0.59	0.59	0.11	0.52	0.52	0.23	0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.06	0.33	0.34	0.23	0.27	0.27	0.02	0.04	0.15	0.04
s, saturation flow rate [veh/h]	1361	3418	1720	278	3389	1718	1347	1637	1279	1627
c, Capacity [veh/h]	95	2020	1017	80	1745	885	312	374	301	371
d1, Uniform Delay [s]	41.68	5.11	5.12	43.28	8.69	8.69	31.48	27.97	36.09	27.97
k, delay calibration	0.50	0.50	0.50	0.46	0.11	0.50	0.08	0.08	0.15	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	56.48	1.14	2.29	54.77	0.24	2.20	0.09	0.17	2.91	0.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.56	0.57	0.81	0.52	0.52	0.09	0.18	0.62	0.18
d, Delay for Lane Group [s/veh]	98.16	6.25	7.41	98.06	8.93	10.88	31.57	28.14	39.00	28.15
Lane Group LOS	F	A	A	F	A	B	C	C	D	C
Critical Lane Group	No	No	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.20	2.77	3.14	2.60	3.17	3.69	0.52	1.20	4.19	1.20
50th-Percentile Queue Length [ft/ln]	80.10	69.28	78.41	64.91	79.18	92.31	13.09	29.95	104.79	29.96
95th-Percentile Queue Length [veh/ln]	5.77	4.99	5.65	4.67	5.70	6.65	0.94	2.16	7.55	2.16
95th-Percentile Queue Length [ft/ln]	144.18	124.71	141.14	116.84	142.52	166.16	23.56	53.92	188.63	53.94

Movement, Approach, & Intersection Results

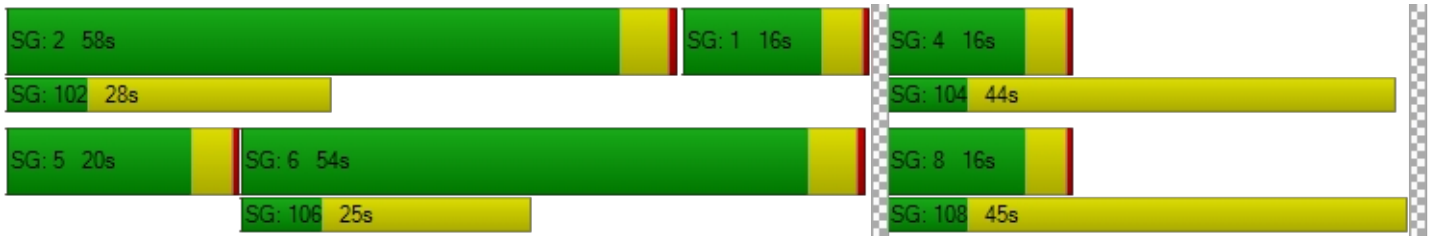
d_M, Delay for Movement [s/veh]	98.16	6.58	7.41	98.06	9.49	10.88	31.57	28.14	28.14	39.00	28.15	28.15
Movement LOS	F	A	A	F	A	B	C	C	C	D	C	C
d_A, Approach Delay [s/veh]	10.72			13.59			29.14			36.11		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	14.17											
Intersection LOS	B											
Intersection V/C	0.739											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	1961.24	5367.91	4909.71
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	3.476	3.212	2.123	2.154
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1182	1093	267	267
d_b, Bicycle Delay [s]	7.53	9.25	33.80	33.80
l_b,int, Bicycle LOS Score for Intersection	2.546	2.350	1.718	1.980
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: OR 99E/I-205 SB Loop Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	36.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.936

Intersection Setup

Name	OR 99E		OR 99E		I-205 WB Loop Off-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	1
Entry Pocket Length [ft]	100.00	200.00	240.00	100.00	575.00	275.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	No		No		Yes	

Volumes

Name	OR 99E		OR 99E		I-205 WB Loop Off-Ramp	
Base Volume Input [veh/h]	827	207	342	542	374	263
Base Volume Adjustment Factor	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
Heavy Vehicles Percentage [%]	7.00	18.00	7.00	8.00	13.00	7.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	311	0	0	0	198
Total Hourly Volume [veh/h]	1241	0	513	813	561	197
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	353	0	146	231	159	56
Total Analysis Volume [veh/h]	1410	0	583	924	638	224
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	35.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	6	6
Maximum Green [s]	40	0	20	40	20	20
Amber [s]	4.3	0.0	3.5	4.3	4.0	4.0
All red [s]	0.5	0.0	0.5	0.5	1.5	1.5
Split [s]	34	0	36	70	20	20
Vehicle Extension [s]	4.8	0.0	2.3	4.8	2.3	2.3
Walk [s]	8	0	0	0	0	0
Pedestrian Clearance [s]	29	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.8	0.0	2.0	2.8	3.5	3.5
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.80	4.80	4.00	4.80	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.80	2.80	2.00	2.80	3.50	0.00
g_i, Effective Green Time [s]	26	26	32	62	18	54
g / C, Green / Cycle	0.29	0.29	0.36	0.69	0.19	0.60
(v / s)_i Volume / Saturation Flow Rate	0.29	0.00	0.34	0.19	0.20	0.15
s, saturation flow rate [veh/h]	4889	1385	1709	4849	3153	1526
c, Capacity [veh/h]	1416	401	610	3351	613	909
d1, Uniform Delay [s]	27.58	0.00	22.89	1.16	36.26	8.61
k, delay calibration	0.50	0.50	0.35	0.50	0.07	0.12
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	22.97	0.00	21.44	0.20	25.24	0.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.00	0.00	0.96	0.28	1.04	0.25
d, Delay for Lane Group [s/veh]	50.56	0.00	44.33	1.37	61.50	8.77
Lane Group LOS	D	A	D	A	F	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	11.33	0.00	12.88	0.42	8.72	1.93
50th-Percentile Queue Length [ft/ln]	283.35	0.00	322.11	10.61	218.03	48.36
95th-Percentile Queue Length [veh/ln]	16.86	0.00	18.77	0.76	13.83	3.48
95th-Percentile Queue Length [ft/ln]	421.38	0.00	469.28	19.10	345.73	87.05

Movement, Approach, & Intersection Results

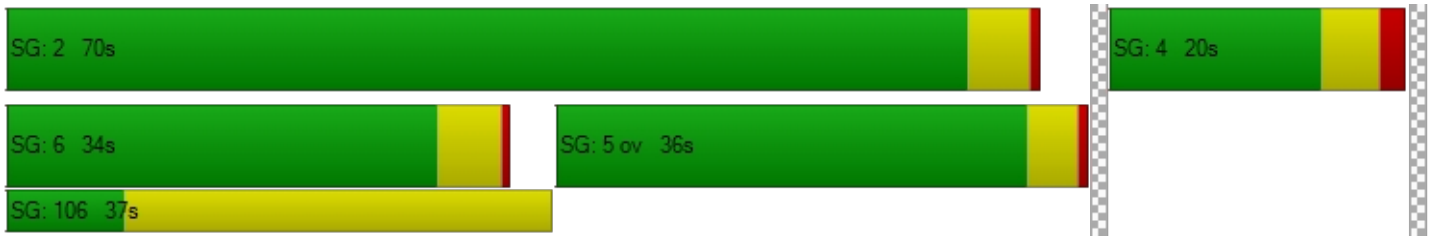
d_M, Delay for Movement [s/veh]	50.56	0.00	44.33	1.37	61.50	8.77
Movement LOS	D	A	D	A	F	A
d_A, Approach Delay [s/veh]	50.56		17.99		47.80	
Approach LOS	D		B		D	
d_I, Intersection Delay [s/veh]	36.94					
Intersection LOS	D					
Intersection V/C	0.936					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	5446.76
d_p, Pedestrian Delay [s]	0.00	0.00	33.80
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.888
Crosswalk LOS	F	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	649	1449	322
d_b, Bicycle Delay [s]	20.55	3.42	31.67
l_b,int, Bicycle LOS Score for Intersection	2.506	2.388	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: OR 99E/I-205 EB Loop Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	12.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.532

Intersection Setup

Name	OR 99E		OR 99E		I-205 EB Loop Off-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	185.00	500.00	100.00	100.00	130.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		Yes		Yes	
Crosswalk	No		No		Yes	

Volumes

Name	OR 99E		OR 99E		I-205 EB Loop Off-Ramp	
Base Volume Input [veh/h]	723	728	186	721	125	304
Base Volume Adjustment Factor	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
Heavy Vehicles Percentage [%]	9.00	10.00	6.00	10.00	17.00	7.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	546	0	0	0	456
Total Hourly Volume [veh/h]	1085	546	279	1082	188	0
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	312	157	80	311	54	0
Total Analysis Volume [veh/h]	1247	628	321	1244	216	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	14.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	6	6	5	2	4	0
Auxiliary Signal Groups		4,6				
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	10	4	10	6	0
Maximum Green [s]	40	40	20	40	20	0
Amber [s]	4.3	4.3	3.5	4.3	4.0	0.0
All red [s]	0.5	0.5	0.5	0.5	1.5	0.0
Split [s]	44	44	22	66	24	0
Vehicle Extension [s]	4.8	4.8	3.0	4.8	2.3	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	16	16	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.8	2.8	2.0	2.8	3.5	0.0
Minimum Recall	Yes	Yes	No	Yes	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.80	4.80	4.00	4.80	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.80	0.00	2.00	2.80	3.50	3.50
g_i, Effective Green Time [s]	43	63	18	65	15	15
g / C, Green / Cycle	0.48	0.70	0.20	0.72	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.26	0.43	0.19	0.26	0.14	0.00
s, saturation flow rate [veh/h]	4808	1464	1724	4767	1567	1526
c, Capacity [veh/h]	2284	1029	345	3431	260	253
d1, Uniform Delay [s]	11.05	1.03	32.40	0.54	36.33	0.00
k, delay calibration	0.50	0.50	0.31	0.50	0.09	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.94	2.70	24.57	0.30	5.74	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	0.61	0.93	0.36	0.83	0.00
d, Delay for Lane Group [s/veh]	12.00	3.73	56.97	0.84	42.07	0.00
Lane Group LOS	B	A	E	A	D	A
Critical Lane Group	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	3.66	1.38	8.28	0.32	4.92	0.00
50th-Percentile Queue Length [ft/ln]	91.61	34.46	207.08	8.04	122.95	0.00
95th-Percentile Queue Length [veh/ln]	6.60	2.48	13.00	0.58	8.56	0.00
95th-Percentile Queue Length [ft/ln]	164.90	62.03	325.08	14.47	213.88	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.00	3.73	56.97	0.84	42.07	0.00
Movement LOS	B	A	E	A	D	A
d_A, Approach Delay [s/veh]	9.23		12.35		42.07	
Approach LOS	A		B		D	
d_I, Intersection Delay [s/veh]	12.50					
Intersection LOS	B					
Intersection V/C	0.532					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	34.67
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	3.293
Crosswalk LOS	F	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	871	1360	411
d_b, Bicycle Delay [s]	14.34	4.61	28.40
l_b,int, Bicycle LOS Score for Intersection	2.891	2.420	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: OR 99E / 14th St

Control Type:	Signalized	Delay (sec / veh):	16.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.790

Intersection Setup

Name	OR 99E		OR 99E		14th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		14th St	
Base Volume Input [veh/h]	1015	29	180	671	41	254
Base Volume Adjustment Factor	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
Heavy Vehicles Percentage [%]	11.00	24.00	9.00	12.00	22.00	7.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	191
Total Hourly Volume [veh/h]	1523	44	270	1007	62	190
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	438	13	78	289	18	55
Total Analysis Volume [veh/h]	1751	51	310	1157	71	218
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	88.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	43	0	23	70	12	12
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	47	0	27	74	16	16
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	7	0	0	0	7	7
Pedestrian Clearance [s]	11	0	0	0	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	52	52	70	70	12	30
g / C, Green / Cycle	0.58	0.58	0.78	0.78	0.13	0.34
(v / s)_i Volume / Saturation Flow Rate	0.52	0.53	0.53	0.35	0.05	0.14
s, saturation flow rate [veh/h]	1735	1716	582	3275	1495	1526
c, Capacity [veh/h]	997	987	465	2553	197	513
d1, Uniform Delay [s]	8.60	8.75	28.65	0.00	35.64	23.14
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.43
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.98	14.09	7.41	0.58	0.68	2.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.91	0.67	0.45	0.36	0.43
d, Delay for Lane Group [s/veh]	21.58	22.85	36.06	0.58	36.32	25.35
Lane Group LOS	C	C	D	A	D	C
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	9.39	9.80	0.96	0.21	1.44	3.80
50th-Percentile Queue Length [ft/ln]	234.64	244.96	23.90	5.17	35.99	95.12
95th-Percentile Queue Length [veh/ln]	14.41	14.93	1.72	0.37	2.59	6.85
95th-Percentile Queue Length [ft/ln]	360.24	373.30	43.01	9.30	64.78	171.21

Movement, Approach, & Intersection Results

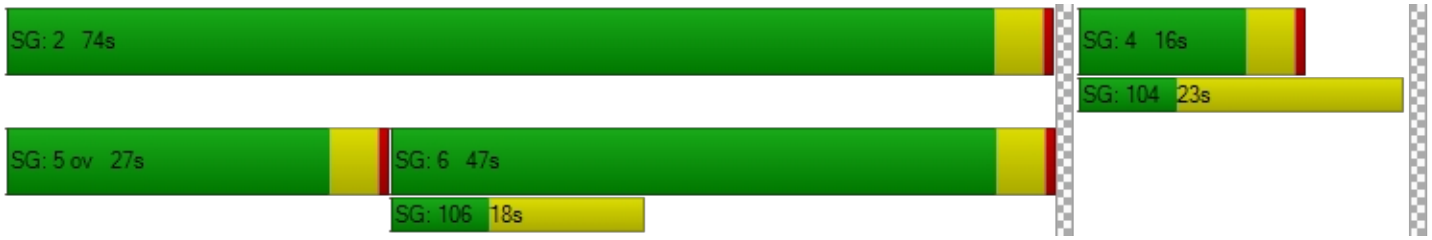
d_M, Delay for Movement [s/veh]	22.20	22.85	36.06	0.58	36.32	25.35
Movement LOS	C	C	D	A	D	C
d_A, Approach Delay [s/veh]	22.22		8.08		28.04	
Approach LOS	C		A		C	
d_I, Intersection Delay [s/veh]	16.86					
Intersection LOS	B					
Intersection V/C	0.790					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	847.22
d_p, Pedestrian Delay [s]	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.869	3.007	2.946
Crosswalk LOS	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	956	1556	267
d_b, Bicycle Delay [s]	12.28	2.22	33.80
l_b,int, Bicycle LOS Score for Intersection	3.046	2.770	1.560
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: OR 99E / 12th St

Control Type:	Signalized	Delay (sec / veh):	3.1
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.606

Intersection Setup

Name	OR 99E		OR 99E		12th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	175.00	100.00	100.00	120.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		12th St	
Base Volume Input [veh/h]	911	12	77	623	5	135
Base Volume Adjustment Factor	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
Heavy Vehicles Percentage [%]	13.00	8.00	9.00	13.00	0.00	7.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	102
Total Hourly Volume [veh/h]	1367	18	116	935	8	101
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	384	5	33	263	2	28
Total Analysis Volume [veh/h]	1536	20	130	1051	9	113
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		1		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	2		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	60.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	50	0	16	70	12	12
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	54	0	20	74	16	16
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	9	0	0	0	8	8
Pedestrian Clearance [s]	11	0	0	0	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	66	66	74	74	8	16
g / C, Green / Cycle	0.74	0.74	0.83	0.83	0.08	0.17
(v / s)_i Volume / Saturation Flow Rate	0.46	0.46	0.26	0.32	0.00	0.07
s, saturation flow rate [veh/h]	1705	1696	497	3246	1803	1526
c, Capacity [veh/h]	1257	1250	429	2683	153	265
d1, Uniform Delay [s]	0.22	0.22	0.67	0.00	37.90	33.17
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.30	2.34	1.81	0.43	0.10	0.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.62	0.62	0.30	0.39	0.06	0.43
d, Delay for Lane Group [s/veh]	2.51	2.56	2.48	0.43	37.99	33.83
Lane Group LOS	A	A	A	A	D	C
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.98	0.99	0.22	0.16	0.19	2.22
50th-Percentile Queue Length [ft/ln]	24.44	24.71	5.40	4.02	4.63	55.51
95th-Percentile Queue Length [veh/ln]	1.76	1.78	0.39	0.29	0.33	4.00
95th-Percentile Queue Length [ft/ln]	43.98	44.47	9.72	7.23	8.33	99.91

Movement, Approach, & Intersection Results

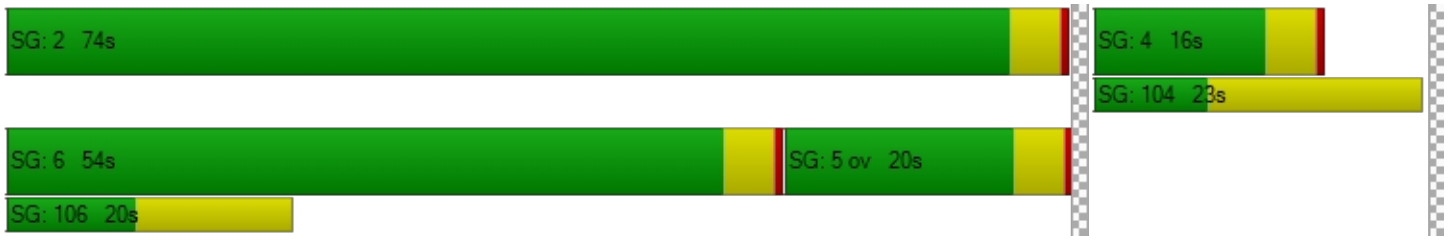
d_M, Delay for Movement [s/veh]	2.53	2.56	2.48	0.43	37.99	33.83
Movement LOS	A	A	A	A	D	C
d_A, Approach Delay [s/veh]	2.53		0.66		34.14	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	3.11					
Intersection LOS	A					
Intersection V/C	0.606					

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	10893.53	0.00	2650.78
d_p, Pedestrian Delay [s]	33.80	33.80	32.94
l_p,int, Pedestrian LOS Score for Intersection	2.767	2.870	2.365
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1111	1556	267
d_b, Bicycle Delay [s]	8.90	2.22	33.80
l_b,int, Bicycle LOS Score for Intersection	2.843	2.534	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: OR 99E / 10th St

Control Type:	Signalized	Delay (sec / veh):	5.1
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.547

Intersection Setup

Name	OR 99E		OR 99E		7th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	250.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		7th St	
Base Volume Input [veh/h]	696	12	169	444	16	211
Base Volume Adjustment Factor	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
Heavy Vehicles Percentage [%]	14.00	0.00	5.00	14.00	12.00	8.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	159
Total Hourly Volume [veh/h]	1044	18	254	666	24	158
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	293	5	71	187	7	44
Total Analysis Volume [veh/h]	1173	20	285	748	27	178
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		2	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	53.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	51	0	16	70	12	12
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	54	0	20	74	16	16
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	7	0	0	0	7	7
Pedestrian Clearance [s]	11	0	0	0	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	62	62	72	72	10	20
g / C, Green / Cycle	0.69	0.69	0.80	0.80	0.11	0.22
(v / s)_i Volume / Saturation Flow Rate	0.35	0.36	0.43	0.23	0.02	0.12
s, saturation flow rate [veh/h]	1690	1680	667	3217	1638	1500
c, Capacity [veh/h]	1170	1163	533	2577	181	328
d1, Uniform Delay [s]	1.24	1.24	2.19	0.00	36.23	31.14
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.29
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.59	1.62	3.82	0.29	0.23	3.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.51	0.54	0.29	0.15	0.54
d, Delay for Lane Group [s/veh]	2.83	2.86	6.01	0.29	36.46	34.89
Lane Group LOS	A	A	A	A	D	C
Critical Lane Group	No	Yes	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	1.29	1.30	0.57	0.10	0.54	3.70
50th-Percentile Queue Length [ft/ln]	32.21	32.38	14.13	2.55	13.59	92.62
95th-Percentile Queue Length [veh/ln]	2.32	2.33	1.02	0.18	0.98	6.67
95th-Percentile Queue Length [ft/ln]	57.98	58.28	25.43	4.60	24.46	166.71

Movement, Approach, & Intersection Results

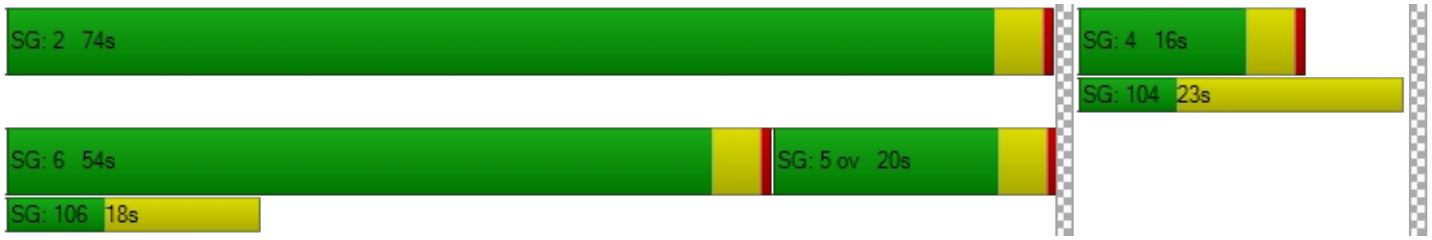
d_M, Delay for Movement [s/veh]	2.84	2.86	6.01	0.29	36.46	34.89
Movement LOS	A	A	A	A	D	C
d_A, Approach Delay [s/veh]	2.84		1.86		35.09	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	5.15					
Intersection LOS	A					
Intersection V/C	0.547					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.610	2.795	2.723
Crosswalk LOS	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1111	1556	267
d_b, Bicycle Delay [s]	8.89	2.22	33.83
l_b,int, Bicycle LOS Score for Intersection	2.544	2.412	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Washington St / Clackamas River Dr

Control Type:	Roundabout	Delay (sec / veh):	5.5
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Washington St		Washington St		Clackamas River Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Washington St		Washington St		Clackamas River Dr	
Base Volume Input [veh/h]	140	215	196	119	80	42
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	10.00	29.00	8.00	7.00	20.00	14.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	197	303	276	168	113	59
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	55	84	77	47	31	16
Total Analysis Volume [veh/h]	219	337	307	187	126	66
Pedestrian Volume [ped/h]	0		0		2	

Intersection Settings

Number of Conflicting Circulating Lanes	1		1		1	
Circulating Flow Rate [veh/h]	332		151		241	
Exiting Flow Rate [veh/h]	351		316		332	
Demand Flow Rate [veh/h]	197	303	276	168	113	59
Adjusted Demand Flow Rate [veh/h]	219	337	307	187	126	66

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	0.00	1380.00	1380.00
B (coefficient)	0.00102	0.00000	0.00102	0.00102
HV Adjustment Factor	0.83	0.78	0.93	0.85
Entry Flow Rate [veh/h]	265	0	532	227
Capacity of Entry and Bypass Lanes [veh/h]	985	129001	1183	1080
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	815	100000	1100	916
X, volume / capacity	0.27	0.00	0.45	0.21

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	1.09	0.00	2.37	0.79
95th-Percentile Queue Length [ft]	27.18	0.00	59.37	19.73
Approach Delay [s/veh]	2.91		8.17	6.02
Approach LOS	A		A	A
Intersection Delay [s/veh]	5.48			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 9: Washington St/ Prairie Schooner Way

Control Type:	Signalized	Delay (sec / veh):	8.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.528

Intersection Setup

Name	Washington St		Washington St		Prairie Schooner Way	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	0	1	0
Entry Pocket Length [ft]	100.00	100.00	150.00	100.00	165.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	No		Yes		Yes	

Volumes

Name	Washington St		Washington St		Prairie Schooner Way	
Base Volume Input [veh/h]	217	53	37	161	222	135
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	27.00	8.00	11.00	11.00	24.00	19.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	95
Total Hourly Volume [veh/h]	306	75	52	227	313	95
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	86	21	15	64	88	27
Total Analysis Volume [veh/h]	344	84	58	255	352	107
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	93
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	2	0	1	6	8	8
Auxiliary Signal Groups						1,8
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	8	0	4	8	4	4
Maximum Green [s]	30	0	20	30	30	30
Amber [s]	4.0	0.0	3.5	4.0	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	35	0	24	35	34	34
Vehicle Extension [s]	4.2	0.0	2.3	5.2	2.5	2.5
Walk [s]	8	0	0	0	7	7
Pedestrian Clearance [s]	24	0	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	0.0	2.0	2.5	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	28	28	28	28	28	28
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	0.00	2.50	2.00	0.00
g_i, Effective Green Time [s]	8	8	13	13	6	11
g / C, Green / Cycle	0.28	0.28	0.48	0.48	0.21	0.41
(v / s)_i Volume / Saturation Flow Rate	0.14	0.15	0.05	0.08	0.12	0.08
s, saturation flow rate [veh/h]	1495	1389	1090	3303	2848	1373
c, Capacity [veh/h]	423	393	786	1588	615	567
d1, Uniform Delay [s]	8.40	8.50	4.16	4.09	9.82	5.23
k, delay calibration	0.17	0.17	0.07	0.26	0.08	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.43	1.79	0.02	0.11	0.63	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.54	0.07	0.16	0.57	0.19
d, Delay for Lane Group [s/veh]	9.83	10.29	4.18	4.20	10.45	5.32
Lane Group LOS	A	B	A	A	B	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.83	0.87	0.07	0.18	0.69	0.21
50th-Percentile Queue Length [ft/ln]	20.79	21.69	1.83	4.52	17.34	5.21
95th-Percentile Queue Length [veh/ln]	1.50	1.56	0.13	0.33	1.25	0.37
95th-Percentile Queue Length [ft/ln]	37.42	39.04	3.30	8.14	31.22	9.37

Movement, Approach, & Intersection Results

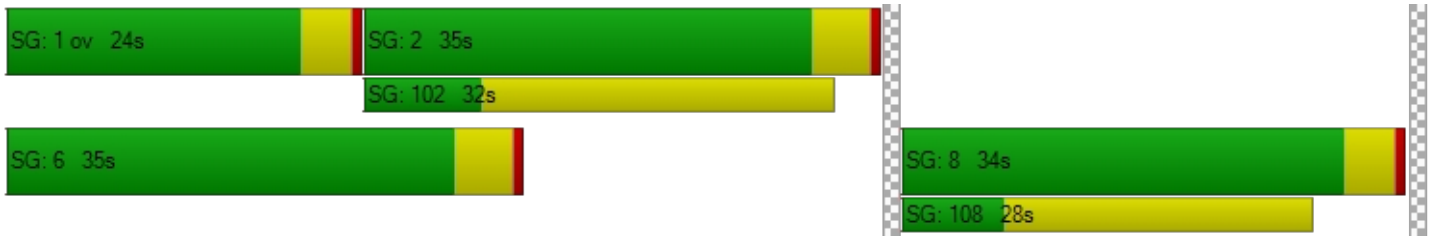
d_M, Delay for Movement [s/veh]	10.00	10.29	4.18	4.20	10.45	5.32
Movement LOS	B	B	A	A	B	A
d_A, Approach Delay [s/veh]	10.06		4.20		9.26	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	8.22					
Intersection LOS	A					
Intersection V/C	0.528					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	9312.71
d_p, Pedestrian Delay [s]	0.00	36.15	35.27
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.469	2.600
Crosswalk LOS	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	656	656	645
d_b, Bicycle Delay [s]	21.01	21.00	21.34
l_b,int, Bicycle LOS Score for Intersection	1.913	1.818	1.560
Bicycle LOS	A	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 10: Washington St / Home Depot-Site Access A

Control Type:	Signalized	Delay (sec / veh):	9.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.335

Intersection Setup

Name	Washington St			Washington St			Home Depot Dwy			Home Depot Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	335.00	100.00	330.00	250.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	470.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	370.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			Home Depot Dwy			Home Depot Dwy		
Base Volume Input [veh/h]	13	112	61	157	180	31	25	5	10	31	2	34
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	62.00	12.00	10.00	13.00	10.00	77.00	68.00	60.00	80.00	13.00	13.00	21.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	43	0	0	22	0	0	0	0	0	24
Total Hourly Volume [veh/h]	18	158	43	221	254	22	35	7	14	44	3	24
Peak Hour Factor	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	49	13	68	78	7	11	2	4	14	1	7
Total Analysis Volume [veh/h]	22	195	53	273	314	27	43	9	17	54	4	30
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			0			1		
v_di, Inbound Pedestrian Volume crossing m	1			0			0			1		
v_co, Outbound Pedestrian Volume crossing	1			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	134
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	10	0	4	10	0	0	8	0	0	6	0
Maximum Green [s]	30	60	0	30	60	0	0	30	0	0	20	0
Amber [s]	3.5	4.5	0.0	3.5	4.5	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	34	65	0	34	65	0	0	35	0	0	25	0
Vehicle Extension [s]	2.5	4.2	0.0	2.5	4.2	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	9	0	0	7	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	R
C, Cycle Length [s]	38	38	38	38	38	38	38	38	38
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	2.50	2.50	2.50
g_i, Effective Green Time [s]	19	10	10	19	14	14	9	9	9
g / C, Green / Cycle	0.51	0.25	0.25	0.51	0.37	0.37	0.24	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.04	0.07	0.08	0.21	0.09	0.04	0.10	0.04	0.02
s, saturation flow rate [veh/h]	615	1720	1578	1274	3332	633	658	1320	1347
c, Capacity [veh/h]	516	428	392	860	1239	235	279	501	326
d1, Uniform Delay [s]	4.79	11.69	11.73	5.63	8.36	7.91	12.70	11.49	11.26
k, delay calibration	0.17	0.17	0.17	0.08	0.17	0.17	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	0.58	0.68	0.16	0.16	0.33	0.34	0.08	0.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.04	0.30	0.31	0.32	0.25	0.11	0.25	0.12	0.09
d, Delay for Lane Group [s/veh]	4.84	12.27	12.41	5.79	8.52	8.23	13.04	11.56	11.35
Lane Group LOS	A	B	B	A	A	A	B	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.06	0.76	0.74	0.80	0.68	0.13	0.45	0.32	0.17
50th-Percentile Queue Length [ft/ln]	1.49	19.03	18.61	19.91	17.08	3.20	11.28	8.07	4.16
95th-Percentile Queue Length [veh/ln]	0.11	1.37	1.34	1.43	1.23	0.23	0.81	0.58	0.30
95th-Percentile Queue Length [ft/ln]	2.68	34.25	33.50	35.83	30.74	5.76	20.30	14.53	7.49

Movement, Approach, & Intersection Results

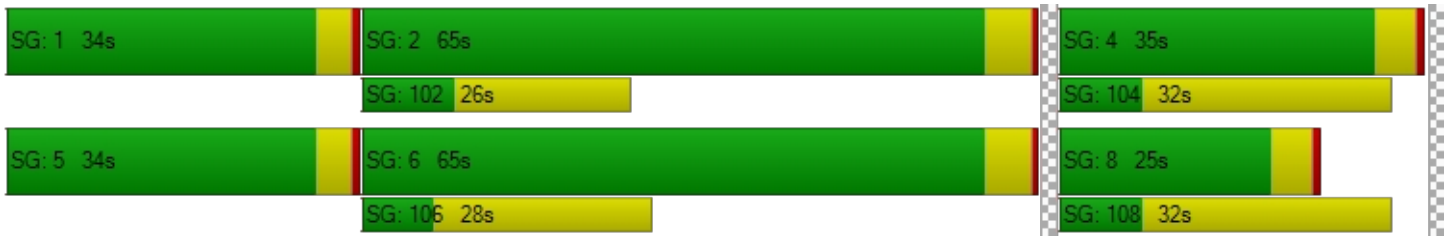
d_M, Delay for Movement [s/veh]	4.84	12.32	12.41	5.79	8.52	8.23	13.04	13.04	13.04	11.56	11.56	11.35
Movement LOS	A	B	B	A	A	A	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	11.73			7.29			13.04			11.49		
Approach LOS	B			A			B			B		
d_I, Intersection Delay [s/veh]	9.18											
Intersection LOS	A											
Intersection V/C	0.335											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	6487.14	0.00	0.00	2122.80
d_p, Pedestrian Delay [s]	55.54	55.54	56.45	54.63
l_p,int, Pedestrian LOS Score for Intersection	2.592	2.715	2.019	2.268
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	896	896	455	306
d_b, Bicycle Delay [s]	20.44	20.43	39.97	48.07
l_b,int, Bicycle LOS Score for Intersection	1.818	2.084	1.673	1.744
Bicycle LOS	A	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Washington St / Abernethy Rd

Control Type:	Signalized	Delay (sec / veh):	10.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.319

Intersection Setup

Name	Washington St			Washington St			17th St			17th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	115.00	100.00	225.00	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			30.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			17th St			17th St		
Base Volume Input [veh/h]	1	144	76	15	200	0	0	0	0	165	1	44
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	0.00	11.00	5.00	47.00	14.00	0.00	0.00	0.00	0.00	8.00	0.00	23.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	44	8	0	0	0	0	0	84	0	22
Right Turn on Red Volume [veh/h]	0	0	76	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	203	75	29	282	0	0	0	0	317	1	84
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	61	23	9	85	0	0	0	0	95	0	25
Total Analysis Volume [veh/h]	1	245	90	35	340	0	0	0	0	382	1	101
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			1			0			3		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	0	0	8	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	15	0	0	30	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	35	0	0	20	0	0	35	0
Vehicle Extension [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	16	0	0	8	0	0	13	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C
C, Cycle Length [s]	36	36	36	36	36	36	36	36
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	10	10	10	10	10	15	15	15
g / C, Green / Cycle	0.29	0.29	0.29	0.29	0.29	0.43	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.00	0.14	0.06	0.05	0.20	0.00	0.28	0.06
s, saturation flow rate [veh/h]	1057	1735	1518	725	1690	1900	1349	1581
c, Capacity [veh/h]	255	503	440	283	490	919	708	681
d1, Uniform Delay [s]	16.13	10.50	9.57	14.79	11.29	0.00	8.16	6.20
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.10	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.27	0.08	0.07	0.67	0.00	0.58	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.49	0.20	0.12	0.69	0.00	0.54	0.15
d, Delay for Lane Group [s/veh]	16.13	10.77	9.66	14.86	11.95	0.00	8.74	6.24
Lane Group LOS	B	B	A	B	B	A	A	A
Critical Lane Group	No	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.01	1.16	0.39	0.22	1.87	0.00	1.50	0.29
50th-Percentile Queue Length [ft/ln]	0.16	29.07	9.68	5.59	46.63	0.00	37.42	7.18
95th-Percentile Queue Length [veh/ln]	0.01	2.09	0.70	0.40	3.36	0.00	2.69	0.52
95th-Percentile Queue Length [ft/ln]	0.29	52.33	17.42	10.06	83.93	0.00	67.35	12.92

Movement, Approach, & Intersection Results

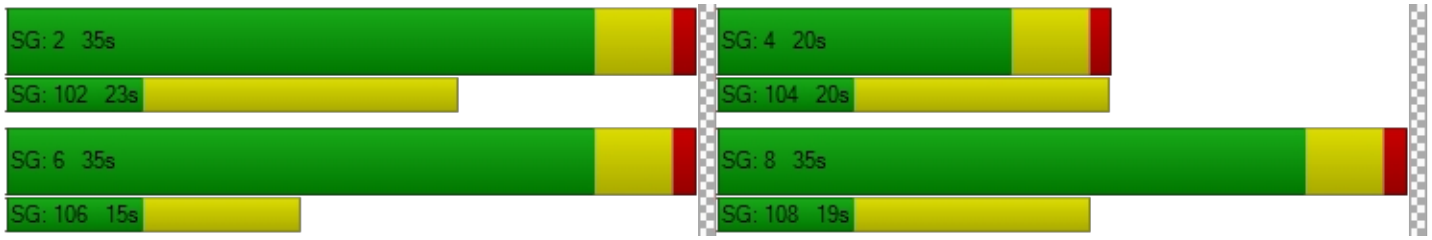
d_M, Delay for Movement [s/veh]	16.13	10.77	9.66	14.86	11.95	11.95	0.00	0.00	0.00	8.74	6.24	6.24
Movement LOS	B	B	A	B	B	B	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	10.49			12.22			0.00			8.21		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	10.11											
Intersection LOS	B											
Intersection V/C	0.319											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	24.86	24.86	24.86	24.86
l_p,int, Pedestrian LOS Score for Intersection	3.091	2.161	1.703	2.236
Crosswalk LOS	C	B	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	857	857	429	857
d_b, Bicycle Delay [s]	11.43	11.43	21.61	11.45
l_b,int, Bicycle LOS Score for Intersection	2.239	2.178	1.560	2.358
Bicycle LOS	B	B	A	B

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: Washington St / 15th St

Control Type:	Signalized	Delay (sec / veh):	9.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.714

Intersection Setup

Name	Washington St			Washington St			15th St			15th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	260.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			15th St			15th St		
Base Volume Input [veh/h]	19	171	64	22	220	123	36	22	17	9	84	14
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	11.00	11.00	3.00	9.00	12.00	2.00	3.00	0.00	24.00	11.00	5.00	7.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	27	241	90	31	310	173	51	31	24	13	118	20
Peak Hour Factor	0.8400	0.8400	0.8400	0.8400	0.8400	1.0000	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	72	27	9	92	43	15	9	7	4	35	6
Total Analysis Volume [veh/h]	32	287	107	37	369	173	61	37	29	15	140	24
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			3			1			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	35	0	0	35	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	19	54	0	19	54	0	0	39	0	0	39	0
Vehicle Extension [s]	2.3	4.1	0.0	2.3	4.1	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	9	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	32	32	32	32	32	32
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	14	19	14	5	5
g / C, Green / Cycle	0.60	0.44	0.60	0.44	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.03	0.24	0.04	0.34	0.07	0.10
s, saturation flow rate [veh/h]	935	1644	1057	1615	1786	1789
c, Capacity [veh/h]	666	721	802	715	436	392
d1, Uniform Delay [s]	3.91	6.63	3.12	7.48	12.42	12.83
k, delay calibration	0.07	0.16	0.16	0.16	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	0.95	0.03	2.46	0.27	0.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.55	0.05	0.76	0.29	0.46
d, Delay for Lane Group [s/veh]	3.93	7.59	3.16	9.93	12.69	13.45
Lane Group LOS	A	A	A	A	B	B
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.03	1.28	0.03	2.17	0.67	0.99
50th-Percentile Queue Length [ft/ln]	0.63	31.95	0.83	54.22	16.70	24.79
95th-Percentile Queue Length [veh/ln]	0.05	2.30	0.06	3.90	1.20	1.79
95th-Percentile Queue Length [ft/ln]	1.14	57.50	1.49	97.60	30.05	44.63

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3.93	7.59	7.59	3.16	9.93	9.93	12.69	12.69	12.69	13.45	13.45	13.45
Movement LOS	A	A	A	A	A	A	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	7.31			9.50			12.69			13.45		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	9.64											
Intersection LOS	A											
Intersection V/C	0.714											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	45.54	43.75	45.54	45.54
l_p,int, Pedestrian LOS Score for Intersection	2.245	2.345	1.978	1.927
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	893	893	625	625
d_b, Bicycle Delay [s]	17.19	17.19	26.48	26.47
l_b,int, Bicycle LOS Score for Intersection	2.263	2.515	1.769	1.855
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Washington St / 14th St

Control Type:	Signalized	Delay (sec / veh):	12.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.797

Intersection Setup

Name	Washington St			Washington St			14th St			14th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			14th St			14th St		
Base Volume Input [veh/h]	223	128	0	1	151	91	124	16	55	1	13	2
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	7.00	5.00	0.00	0.00	10.00	15.00	14.00	19.00	2.00	0.00	15.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	39	0	0	0
Total Hourly Volume [veh/h]	314	180	0	1	213	128	175	23	39	1	18	3
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	95	54	0	0	64	39	53	7	12	0	5	1
Total Analysis Volume [veh/h]	378	217	0	1	257	154	211	28	47	1	22	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			1			2			1		
v_di, Inbound Pedestrian Volume crossing m	1			2			1			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			2			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	35	0	0	35	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	19	54	0	19	54	0	0	39	0	0	39	0
Vehicle Extension [s]	2.3	4.1	0.0	2.3	4.1	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C
C, Cycle Length [s]	43	43	43	43	43	43	43
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	21	25	14	9	9	9
g / C, Green / Cycle	0.59	0.50	0.59	0.33	0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.31	0.12	0.00	0.25	0.18	0.03	0.02
s, saturation flow rate [veh/h]	1222	1825	1233	1630	1314	1589	1641
c, Capacity [veh/h]	757	905	904	530	451	354	453
d1, Uniform Delay [s]	6.46	6.17	3.68	13.02	15.56	13.32	13.15
k, delay calibration	0.31	0.16	0.16	0.16	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.45	0.20	0.00	3.60	0.72	0.12	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.50	0.24	0.00	0.77	0.53	0.13	0.06
d, Delay for Lane Group [s/veh]	7.92	6.37	3.68	16.62	16.27	13.45	13.19
Lane Group LOS	A	A	A	B	B	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.26	0.81	0.00	3.46	1.98	0.33	0.19
50th-Percentile Queue Length [ft/ln]	31.54	20.31	0.06	86.58	49.57	8.25	4.63
95th-Percentile Queue Length [veh/ln]	2.27	1.46	0.00	6.23	3.57	0.59	0.33
95th-Percentile Queue Length [ft/ln]	56.77	36.55	0.11	155.85	89.23	14.85	8.33

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	7.92	6.37	6.37	3.68	16.62	16.62	16.27	16.27	13.45	13.19	13.19	13.19
Movement LOS	A	A	A	A	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	7.36			16.59			15.81			13.19		
Approach LOS	A			B			B			B		
d_I, Intersection Delay [s/veh]	12.19											
Intersection LOS	B											
Intersection V/C	0.797											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	186.43	6727.68
d_p, Pedestrian Delay [s]	45.54	45.54	45.54	45.54
l_p,int, Pedestrian LOS Score for Intersection	2.257	2.479	2.576	1.749
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	893	893	625	625
d_b, Bicycle Delay [s]	17.17	17.18	26.47	26.47
l_b,int, Bicycle LOS Score for Intersection	2.541	2.239	2.096	1.604
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Washington St / 12th St

Control Type:	Signalized	Delay (sec / veh):	8.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.599

Intersection Setup

Name	Washington St			Washington St			12th St			12th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			12th St			12th St		
Base Volume Input [veh/h]	104	335	2	8	180	16	9	15	43	0	17	4
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	10.00	7.00	0.00	25.00	7.00	6.00	0.00	7.00	5.00	0.00	6.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	147	472	3	11	254	23	13	21	61	0	24	6
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	144	1	3	77	7	4	6	19	0	7	2
Total Analysis Volume [veh/h]	179	576	4	13	310	28	16	26	74	0	29	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			1			1			1		
v_di, Inbound Pedestrian Volume crossing m	1			1			1			0		
v_co, Outbound Pedestrian Volume crossing	2			2			1			2		
v_ci, Inbound Pedestrian Volume crossing mi	1			2			2			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			1			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	98
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	15	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	19	55	0	19	55	0	0	19	0	0	24	0
Vehicle Extension [s]	2.3	5.2	0.0	2.3	5.2	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	12	0	0	12	0	0	12	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	33	33	33	33	33	33
L, Total Lost Time per Cycle [s]	4.80	4.80	4.80	4.80	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.80	0.00	2.80	2.00	2.00
g_i, Effective Green Time [s]	20	15	20	13	4	4
g / C, Green / Cycle	0.61	0.47	0.61	0.39	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.15	0.32	0.02	0.19	0.07	0.04
s, saturation flow rate [veh/h]	1157	1792	775	1765	1625	958
c, Capacity [veh/h]	885	845	607	682	331	176
d1, Uniform Delay [s]	3.26	6.84	3.62	7.70	13.55	12.85
k, delay calibration	0.07	0.26	0.26	0.26	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.07	2.34	0.03	1.31	0.47	0.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.20	0.69	0.02	0.50	0.35	0.20
d, Delay for Lane Group [s/veh]	3.33	9.18	3.66	9.01	14.02	13.27
Lane Group LOS	A	A	A	A	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.21	2.43	0.02	1.49	0.71	0.22
50th-Percentile Queue Length [ft/ln]	5.17	60.63	0.45	37.18	17.72	5.41
95th-Percentile Queue Length [veh/ln]	0.37	4.37	0.03	2.68	1.28	0.39
95th-Percentile Queue Length [ft/ln]	9.31	109.13	0.81	66.92	31.89	9.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3.33	9.18	9.18	3.66	9.01	9.01	14.02	14.02	14.02	13.27	13.27	13.27
Movement LOS	A	A	A	A	A	A	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	7.80			8.81			14.02			13.27		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	8.81											
Intersection LOS	A											
Intersection V/C	0.599											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	2289.36	2018.99	2139.00	7362.55
d_p, Pedestrian Delay [s]	38.62	38.62	38.62	38.62
l_p,int, Pedestrian LOS Score for Intersection	2.254	2.224	1.975	1.761
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1024	1024	306	408
d_b, Bicycle Delay [s]	11.66	11.66	35.15	31.06
l_b,int, Bicycle LOS Score for Intersection	2.812	2.139	1.751	1.619
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: Washington St/7th St

Control Type:	Signalized	Delay (sec / veh):	17.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.751

Intersection Setup

Name	Washington St			Washington St			7th St			Molalla Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	270.00	45.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			7th St			Molalla Ave		
Base Volume Input [veh/h]	108	196	11	86	101	14	0	220	31	0	285	202
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.0000	1.4100	1.4100	1.0000	1.4100	1.4100
Heavy Vehicles Percentage [%]	6.00	8.00	9.00	9.00	4.00	7.00	2.00	2.00	10.00	2.00	4.00	8.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	22	0	0	143
Total Hourly Volume [veh/h]	152	276	16	121	142	20	0	310	22	0	402	142
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	1.0000	0.8300	0.8300	1.0000	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	46	83	5	36	43	6	0	93	7	0	121	43
Total Analysis Volume [veh/h]	183	333	19	146	171	24	0	373	27	0	484	171
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			2			2			0		
v_di, Inbound Pedestrian Volume crossing m	0			2			2			0		
v_co, Outbound Pedestrian Volume crossing	4			3			3			3		
v_ci, Inbound Pedestrian Volume crossing mi	3			3			4			3		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			1			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	142
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap
Signal Group	0	8	0	0	4	0	0	2	0	0	6	6
Auxiliary Signal Groups												4,6
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	10	0	0	10	10
Maximum Green [s]	0	40	0	0	40	0	0	50	0	0	50	50
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	3.5
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.5
Split [s]	0	44	0	0	44	0	0	54	0	0	54	54
Vehicle Extension [s]	0.0	2.5	0.0	0.0	2.5	0.0	0.0	4.7	0.0	0.0	4.7	4.7
Walk [s]	0	7	0	0	7	0	0	7	0	0	9	9
Pedestrian Clearance [s]	0	11	0	0	10	0	0	10	0	0	11	11
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
Minimum Recall		No			No			Yes			Yes	Yes
Maximum Recall		No			No			No			No	No
Pedestrian Recall		No			No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	50	50	50	50	50	50	50	50
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	12	12	8	8	17	17	17	30
g / C, Green / Cycle	0.25	0.25	0.17	0.17	0.35	0.35	0.35	0.59
(v / s)_i Volume / Saturation Flow Rate	0.11	0.20	0.09	0.11	0.20	0.02	0.26	0.11
s, saturation flow rate [veh/h]	1724	1763	1681	1796	1870	1460	1840	1487
c, Capacity [veh/h]	426	436	282	301	649	506	638	882
d1, Uniform Delay [s]	15.98	17.85	19.13	19.60	13.44	10.96	14.60	4.69
k, delay calibration	0.08	0.08	0.08	0.08	0.20	0.20	0.20	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.51	2.68	1.09	1.74	1.50	0.08	3.46	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.81	0.52	0.65	0.57	0.05	0.76	0.19
d, Delay for Lane Group [s/veh]	16.49	20.53	20.22	21.34	14.94	11.04	18.05	4.77
Lane Group LOS	B	C	C	C	B	B	B	A
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.67	3.78	1.48	2.05	3.28	0.19	4.70	0.56
50th-Percentile Queue Length [ft/ln]	41.66	94.40	37.03	51.37	81.98	4.72	117.62	13.89
95th-Percentile Queue Length [veh/ln]	3.00	6.80	2.67	3.70	5.90	0.34	8.26	1.00
95th-Percentile Queue Length [ft/ln]	75.00	169.92	66.65	92.47	147.56	8.50	206.56	25.01

Movement, Approach, & Intersection Results

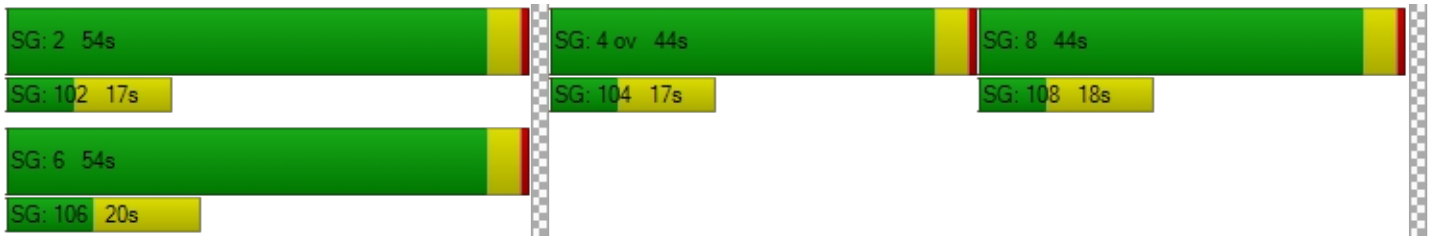
d_M, Delay for Movement [s/veh]	16.49	20.53	20.53	20.22	21.34	21.34	0.00	14.94	11.04	0.00	18.05	4.77
Movement LOS	B	C	C	C	C	C		B	B		B	A
d_A, Approach Delay [s/veh]	19.15			20.86			14.67			14.58		
Approach LOS	B			C			B			B		
d_I, Intersection Delay [s/veh]	16.97											
Intersection LOS	B											
Intersection V/C	0.751											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	757.30	495.73	1344.57	0.00
d_p, Pedestrian Delay [s]	60.43	58.60	60.43	60.43
l_p,int, Pedestrian LOS Score for Intersection	2.306	2.282	2.410	2.682
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	563	563	704	704
d_b, Bicycle Delay [s]	36.63	36.65	29.82	29.83
l_b,int, Bicycle LOS Score for Intersection	2.442	2.122	2.256	2.876
Bicycle LOS	B	B	B	C

Sequence

Ring 1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: S Redland Rd/Abernethy Rd

Control Type:	Signalized	Delay (sec / veh):	25.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.729

Intersection Setup

Name	S Redland Rd			S Redland Rd			17th St			Holocomb Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	125.00	100.00	100.00	330.00	100.00	250.00	120.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
Speed [mph]	30.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Redland Rd			S Redland Rd			17th St			Holocomb Blvd		
Base Volume Input [veh/h]	98	378	22	97	271	26	20	40	45	25	89	191
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	11.00	8.00	9.00	4.00	11.00	2.00	45.00	10.00	24.00	0.00	7.00	5.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	49	0	0	0	0	13	10	20	22	0	44	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	25	0	0	0	0	0	135
Total Hourly Volume [veh/h]	187	533	31	137	382	25	38	76	85	35	169	134
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	1.0000	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	146	9	38	105	6	10	21	23	10	46	37
Total Analysis Volume [veh/h]	205	586	34	151	420	25	42	84	93	38	186	147
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	13.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	0
Maximum Green [s]	30	45	0	30	45	0	30	35	0	20	30	0
Amber [s]	3.5	4.7	0.0	3.5	4.7	0.0	3.5	4.0	0.0	3.5	4.7	0.0
All red [s]	0.5	0.7	0.0	0.5	0.7	0.0	0.5	0.5	0.0	0.5	0.7	0.0
Split [s]	34	51	0	34	51	0	34	40	0	24	36	0
Vehicle Extension [s]	2.3	4.5	0.0	2.3	4.5	0.0	2.3	2.3	0.0	2.3	2.3	0.0
Walk [s]	0	7	0	5	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	10	24	0	0	22	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.4	0.0	2.0	3.4	0.0	2.0	2.5	0.0	2.0	3.4	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C	R
C, Cycle Length [s]	62	62	62	62	62	62	62	62	62	62
L, Total Lost Time per Cycle [s]	4.00	5.40	4.00	5.40	5.40	4.00	4.50	4.00	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.40	2.00	3.40	3.40	2.00	2.50	2.00	3.40	3.40
g_i, Effective Green Time [s]	10	26	7	23	23	2	10	2	9	9
g / C, Green / Cycle	0.15	0.41	0.11	0.37	0.37	0.04	0.16	0.03	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.12	0.35	0.09	0.24	0.02	0.04	0.11	0.02	0.10	0.10
s, saturation flow rate [veh/h]	1652	1763	1752	1735	1589	1166	1601	1810	1795	1530
c, Capacity [veh/h]	253	729	195	644	590	42	254	56	250	213
d1, Uniform Delay [s]	25.66	16.63	27.09	16.34	12.58	30.20	24.93	30.05	25.89	25.64
k, delay calibration	0.07	0.19	0.07	0.19	0.19	0.07	0.07	0.07	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.84	4.87	4.05	1.91	0.05	49.73	2.11	8.24	2.68	2.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.85	0.78	0.65	0.04	1.00	0.70	0.67	0.74	0.69
d, Delay for Lane Group [s/veh]	29.51	21.50	31.15	18.25	12.63	79.94	27.04	38.28	28.57	28.06
Lane Group LOS	C	C	C	B	B	E	C	D	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.04	7.97	2.22	4.54	0.20	1.19	2.48	0.67	2.69	2.10
50th-Percentile Queue Length [ft/ln]	75.91	199.24	55.44	113.54	5.02	29.63	62.04	16.75	67.20	52.53
95th-Percentile Queue Length [veh/ln]	5.47	12.60	3.99	8.04	0.36	2.13	4.47	1.21	4.84	3.78
95th-Percentile Queue Length [ft/ln]	136.64	314.98	99.79	200.91	9.03	53.33	111.66	30.14	120.96	94.56

Movement, Approach, & Intersection Results

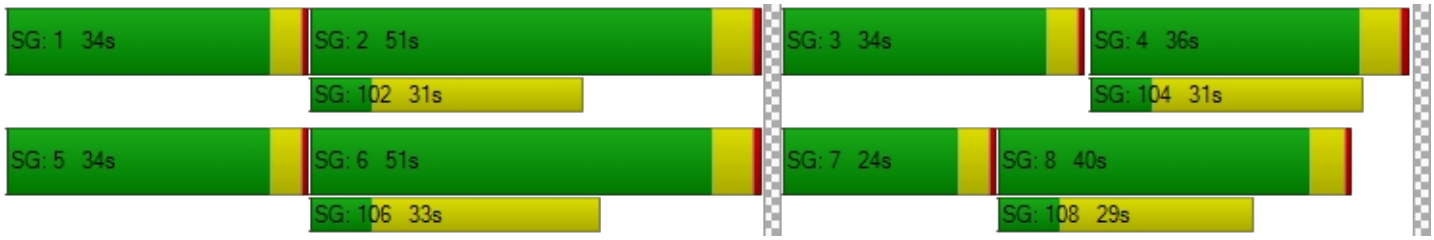
d_M, Delay for Movement [s/veh]	29.51	21.50	21.50	31.15	18.25	12.63	79.94	27.04	27.04	38.28	28.57	28.06
Movement LOS	C	C	C	C	B	B	E	C	C	D	C	C
d_A, Approach Delay [s/veh]	23.49			21.28			37.19			29.37		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	25.41											
Intersection LOS	C											
Intersection V/C	0.729											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	66.89	66.89	66.89	66.89
l_p,int, Pedestrian LOS Score for Intersection	2.413	2.759	2.318	2.538
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	588	588	458	395
d_b, Bicycle Delay [s]	38.61	38.61	46.07	49.95
l_b,int, Bicycle LOS Score for Intersection	2.921	2.584	1.921	2.395
Bicycle LOS	C	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: S Anchor Way / S Redland Rd

Control Type:	Two-way stop	Delay (sec / veh):	40.7
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.471

Intersection Setup

Name	S Redland Rd		S Redland Rd		S Anchor Way	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	S Redland Rd		S Redland Rd		S Anchor Way	
Base Volume Input [veh/h]	31	429	195	139	50	11
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	3.00	11.00	21.00	2.00	4.00	9.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	605	275	196	71	16
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	176	80	57	21	5
Total Analysis Volume [veh/h]	51	703	320	228	83	19
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			Yes
Storage Area [veh]	0	0	1
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.01	0.00	0.00	0.47	0.03
d_M, Delay for Movement [s/veh]	8.73	0.00	0.00	0.00	40.71	26.19
Movement LOS	A	A	A	A	E	D
95th-Percentile Queue Length [veh/ln]	0.16	0.16	0.00	0.00	2.41	2.41
95th-Percentile Queue Length [ft/ln]	3.96	3.96	0.00	0.00	60.27	60.27
d_A, Approach Delay [s/veh]	0.59		0.00		38.01	
Approach LOS	A		A		E	
d_I, Intersection Delay [s/veh]	3.08					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 18: Holly Ln / S Redland Rd

Control Type:	Two-way stop	Delay (sec / veh):	31.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.550

Intersection Setup

Name	S Holly Ln		S Redland Rd		S Redland Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	S Holly Ln		S Redland Rd		S Redland Rd	
Base Volume Input [veh/h]	96	8	170	31	7	352
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	9.00	0.00	18.00	23.00	14.00	9.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	135	11	240	44	10	496
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	3	71	13	3	146
Total Analysis Volume [veh/h]	159	13	282	52	12	584
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	Yes		
Storage Area [veh]	1	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.55	0.02	0.00	0.00	0.01	0.01
d_M, Delay for Movement [s/veh]	31.25	23.69	0.00	0.00	8.13	0.00
Movement LOS	D	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	3.19	3.19	0.00	0.00	0.03	0.03
95th-Percentile Queue Length [ft/ln]	79.81	79.81	0.00	0.00	0.78	0.78
d_A, Approach Delay [s/veh]	30.68		0.00		0.16	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	4.88					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 19: I 205 SB-Ramp / OR 213

Control Type:	Two-way stop	Delay (sec / veh):	948.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.503

Intersection Setup

Name	OR 213		Washington St		Washington Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	OR 213		Washington St		Washington Dr	
Base Volume Input [veh/h]	744	37	22	7	15	0
Base Volume Adjustment Factor	1.3900	1.0000	1.0000	1.0000	1.0000	1.2500
Heavy Vehicles Percentage [%]	10.00	5.00	32.00	14.00	7.00	10.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1034	37	22	7	15	0
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	281	10	6	2	4	0
Total Analysis Volume [veh/h]	1124	40	24	8	16	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.73	0.00	0.00	0.00	1.50	0.00
d_M, Delay for Movement [s/veh]	13.55	0.00	0.00	0.00	948.06	0.00
Movement LOS	B	A	A	A	F	
95th-Percentile Queue Length [veh/ln]	7.27	0.00	0.00	0.00	2.81	0.00
95th-Percentile Queue Length [ft/ln]	181.66	0.00	0.00	0.00	70.18	0.00
d_A, Approach Delay [s/veh]	13.08		0.00		948.06	
Approach LOS	B		A		F	
d_I, Intersection Delay [s/veh]	25.08					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 20: OR 213 / Clackamas River Dr

Control Type:	Signalized	Delay (sec / veh):	19.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.937

Intersection Setup

Name	OR 213			OR 213			Prairie Schooner Way			Clackamas River Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	450.00	100.00	100.00	415.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			Yes			Yes			Yes		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	OR 213			OR 213			Prairie Schooner Way			Clackamas River Dr		
Base Volume Input [veh/h]	0	1937	128	0	1244	357	0	0	85	0	0	412
Base Volume Adjustment Factor	1.0000	1.3900	1.3900	1.0000	1.3900	1.3900	1.0000	1.0000	1.3900	1.0000	1.0000	1.3900
Heavy Vehicles Percentage [%]	2.00	8.00	18.00	2.00	8.00	18.00	2.00	2.00	7.00	2.00	2.00	21.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	178	0	0	496	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	2692	0	0	1729	0	0	0	118	0	0	573
Peak Hour Factor	1.0000	0.8900	0.8900	1.0000	0.8900	0.8900	1.0000	1.0000	0.8900	1.0000	1.0000	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	756	0	0	486	0	0	0	33	0	0	161
Total Analysis Volume [veh/h]	0	3025	0	0	1943	0	0	0	133	0	0	644
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	0	1	0	0	5
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	0	4	0	0	4
Maximum Green [s]	0	96	0	0	96	0	0	0	26	0	0	31
Amber [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	0.0	3.5	0.0	0.0	3.5
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.5	0.0	0.0	0.5
Split [s]	0	44	0	0	44	0	0	0	30	0	0	79
Vehicle Extension [s]	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	2.3	0.0	0.0	2.3
Walk [s]	0	0	0	0	0	0	0	0	7	0	0	7
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	15	0	0	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0
Minimum Recall		Yes			Yes				No			No
Maximum Recall		No			No				No			No
Pedestrian Recall		No			No				No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	R	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	83	83	112	112	8	37
g / C, Green / Cycle	0.63	0.63	0.86	0.86	0.06	0.29
(v / s)_i Volume / Saturation Flow Rate	0.62	0.00	0.40	0.00	0.05	0.27
s, saturation flow rate [veh/h]	4849	1385	4849	1385	2700	2384
c, Capacity [veh/h]	3080	880	4162	1189	175	686
d1, Uniform Delay [s]	9.26	0.00	2.18	0.00	59.81	45.18
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.52	0.00	0.38	0.00	4.17	4.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.98	0.00	0.47	0.00	0.76	0.94
d, Delay for Lane Group [s/veh]	21.79	0.00	2.55	0.00	63.98	49.73
Lane Group LOS	C	A	A	A	E	D
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.83	0.00	1.32	0.00	2.26	10.50
50th-Percentile Queue Length [ft/ln]	220.77	0.00	33.10	0.00	56.55	262.57
95th-Percentile Queue Length [veh/ln]	13.70	0.00	2.38	0.00	4.07	15.82
95th-Percentile Queue Length [ft/ln]	342.61	0.00	59.57	0.00	101.80	395.44

Movement, Approach, & Intersection Results

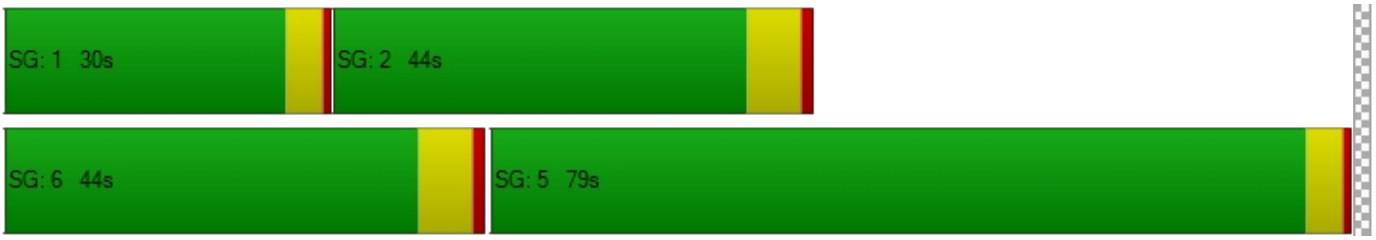
d_M, Delay for Movement [s/veh]	0.00	21.79	0.00	0.00	2.55	0.00	0.00	0.00	63.98	0.00	0.00	49.73
Movement LOS		C	A		A	A			E			D
d_A, Approach Delay [s/veh]	21.79			2.55			63.98			49.73		
Approach LOS	C			A			E			D		
d_I, Intersection Delay [s/veh]	19.39											
Intersection LOS	B											
Intersection V/C	0.937											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	38.0	38.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	32.55	32.55
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.281	2.204
Crosswalk LOS	F	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	585	585	400	1154
d_b, Bicycle Delay [s]	32.55	32.55	41.60	11.63
l_b,int, Bicycle LOS Score for Intersection	3.321	2.901	1.560	1.560
Bicycle LOS	C	C	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: OR 213 / S Redland Rd

Control Type:	Signalized	Delay (sec / veh):	40.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.013

Intersection Setup

Name	OR 213		OR 213		S Redland Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	350.00	100.00	100.00	100.00	335.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		40.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		Yes		Yes	
Crosswalk	Yes		No		Yes	

Volumes

Name	OR 213		OR 213		S Redland Rd	
Base Volume Input [veh/h]	63	1590	993	333	492	77
Base Volume Adjustment Factor	1.3900	1.3900	1.3900	1.3900	1.3900	1.3900
Heavy Vehicles Percentage [%]	19.00	8.00	9.00	8.00	8.00	10.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	232	0	54
Total Hourly Volume [veh/h]	88	2210	1380	231	684	53
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	621	388	65	192	15
Total Analysis Volume [veh/h]	99	2483	1551	260	769	60
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	22.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Overlap	Permissive	Overlap
Signal Group	1	6	2	2	8	8
Auxiliary Signal Groups				2,8		1,8
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	6	6
Maximum Green [s]	16	94	74	74	28	28
Amber [s]	3.5	5.0	5.0	5.0	3.0	3.0
All red [s]	0.5	1.0	1.0	1.0	0.7	0.7
Split [s]	20	98	78	78	32	32
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	5	5	5
Pedestrian Clearance [s]	0	10	10	10	10	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	4.0	1.7	1.7
Minimum Recall	No	Yes	Yes	Yes	No	No
Maximum Recall	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	3.70	3.70	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	0.00	1.70	0.00
g_i, Effective Green Time [s]	10	92	78	112	28	42
g / C, Green / Cycle	0.08	0.71	0.60	0.86	0.22	0.32
(v / s)_i Volume / Saturation Flow Rate	0.06	0.73	0.46	0.17	0.23	0.04
s, saturation flow rate [veh/h]	1538	3389	3360	1513	3292	1487
c, Capacity [veh/h]	121	2399	2010	1304	716	483
d1, Uniform Delay [s]	58.97	19.00	8.48	0.00	50.88	30.89
k, delay calibration	0.11	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.37	28.17	2.94	0.34	40.08	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.33	1.16	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	1.04	0.77	0.20	1.07	0.12
d, Delay for Lane Group [s/veh]	71.34	47.16	11.42	0.34	90.96	31.00
Lane Group LOS	E	F	B	A	F	C
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.51	36.21	6.14	0.12	15.39	1.33
50th-Percentile Queue Length [ft/ln]	87.85	905.31	153.43	3.11	384.76	33.31
95th-Percentile Queue Length [veh/ln]	6.32	47.56	10.20	0.22	22.69	2.40
95th-Percentile Queue Length [ft/ln]	158.12	1188.95	255.00	5.60	567.18	59.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.34	47.16	11.42	0.34	90.96	31.00
Movement LOS	E	F	B	A	F	C
d_A, Approach Delay [s/veh]	48.09		9.83		86.62	
Approach LOS	D		A		F	
d_I, Intersection Delay [s/veh]	40.94					
Intersection LOS	D					
Intersection V/C	1.013					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	0.00	56.31
l_p,int, Pedestrian LOS Score for Intersection	3.837	0.000	2.706
Crosswalk LOS	D	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1415	1108	435
d_b, Bicycle Delay [s]	5.55	12.94	39.78
l_b,int, Bicycle LOS Score for Intersection	3.690	3.245	1.560
Bicycle LOS	D	C	A

Sequence

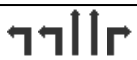
Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: OR 213 / Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	54.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.829

Intersection Setup

Name	OR 213			OR 213			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	2	0	1	2	0	0	2	0	1
Entry Pocket Length [ft]	530.00	100.00	580.00	600.00	100.00	525.00	500.00	100.00	100.00	160.00	100.00	465.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 213			OR 213			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	88	751	64	214	477	400	255	136	36	59	257	533
Base Volume Adjustment Factor	1.3700	1.3700	1.3700	1.3700	1.3700	1.3700	1.3700	1.3700	1.3700	1.3700	1.3700	1.3700
Heavy Vehicles Percentage [%]	10.00	8.00	3.00	5.00	12.00	7.00	13.00	10.00	22.00	2.00	2.00	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	44	0	0	274	0	0	0	0	0	365
Total Hourly Volume [veh/h]	121	1029	44	293	653	274	349	186	49	81	352	365
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	265	11	76	168	71	90	48	13	21	91	94
Total Analysis Volume [veh/h]	125	1061	45	302	673	282	360	192	51	84	363	376
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			1			0		
v_di, Inbound Pedestrian Volume crossing m	1			0			1			0		
v_co, Outbound Pedestrian Volume crossing	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	142
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	0
Maximum Green [s]	15	40	0	32	40	0	38	30	0	15	20	0
Amber [s]	4.0	5.0	0.0	4.0	5.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.5	2.0	0.0	1.5	2.0	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	21	47	0	38	47	0	44	36	0	21	26	0
Vehicle Extension [s]	2.3	4.7	0.0	2.3	4.7	0.0	2.3	2.3	0.0	2.3	2.3	0.0
Walk [s]	0	8	0	0	9	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	31	0	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.5	5.0	0.0	3.5	5.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	108	108	108	108	108	108	108	108	108	108	108	108
L, Total Lost Time per Cycle [s]	5.50	7.00	7.00	5.50	7.00	7.00	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	5.00	5.00	3.50	5.00	5.00	3.50	3.50	3.50	3.50	3.50	3.50
g_i, Effective Green Time [s]	10	38	38	12	40	40	15	30	30	4	20	20
g / C, Green / Cycle	0.09	0.35	0.35	0.11	0.37	0.37	0.14	0.28	0.28	0.04	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.08	0.31	0.03	0.09	0.21	0.19	0.11	0.07	0.07	0.02	0.10	0.24
s, saturation flow rate [veh/h]	1667	3389	1577	3375	3275	1506	3153	1750	1624	3459	3560	1543
c, Capacity [veh/h]	152	1189	553	376	1214	559	431	492	457	138	657	285
d1, Uniform Delay [s]	48.39	33.26	23.52	47.02	27.01	26.32	45.61	30.17	30.20	51.20	40.14	44.07
k, delay calibration	0.07	0.20	0.20	0.07	0.20	0.20	0.07	0.07	0.07	0.07	0.07	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.65	4.62	0.12	2.52	0.74	1.32	2.71	0.16	0.18	2.63	0.45	166.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.89	0.08	0.80	0.55	0.50	0.84	0.25	0.26	0.61	0.55	1.32
d, Delay for Lane Group [s/veh]	55.04	37.88	23.63	49.53	27.75	27.64	48.32	30.34	30.38	53.83	40.59	210.87
Lane Group LOS	E	D	C	D	C	C	D	C	C	D	D	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.58	13.61	0.79	4.09	6.92	5.75	4.81	2.52	2.37	1.16	4.37	20.64
50th-Percentile Queue Length [ft/ln]	89.61	340.30	19.71	102.14	172.92	143.79	120.16	63.01	59.23	28.98	109.15	516.03
95th-Percentile Queue Length [veh/ln]	6.45	19.66	1.42	7.35	11.23	9.68	8.40	4.54	4.26	2.09	7.79	31.87
95th-Percentile Queue Length [ft/ln]	161.30	491.57	35.48	183.85	280.75	242.12	210.05	113.42	106.62	52.16	194.82	796.82

Movement, Approach, & Intersection Results

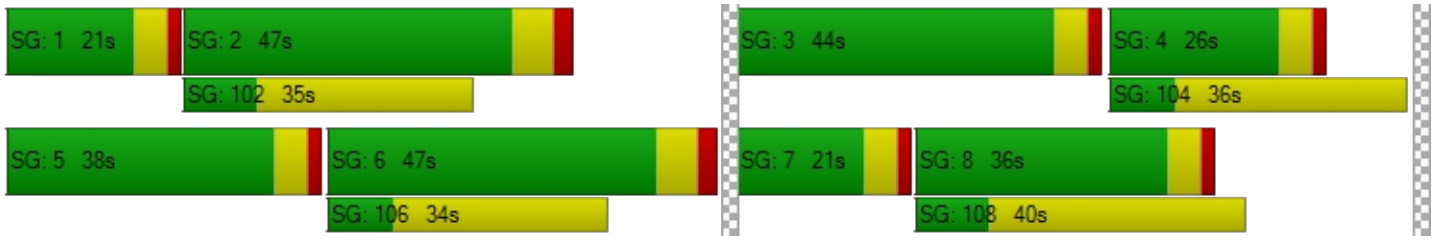
d_M, Delay for Movement [s/veh]	55.04	37.88	23.63	49.53	27.75	27.64	48.32	30.35	30.38	53.83	40.59	210.87
Movement LOS	E	D	C	D	C	C	D	C	C	D	D	F
d_A, Approach Delay [s/veh]	39.10			32.96			41.08			119.74		
Approach LOS	D			C			D			F		
d_I, Intersection Delay [s/veh]	54.39											
Intersection LOS	D											
Intersection V/C	0.829											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	13.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	4560.25	0.00	5235.07	0.00
d_p, Pedestrian Delay [s]	58.60	59.51	58.60	59.51
l_p,int, Pedestrian LOS Score for Intersection	2.874	3.519	2.786	3.422
Crosswalk LOS	C	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	563	563	430	289
d_b, Bicycle Delay [s]	36.63	36.65	43.78	52.01
l_b,int, Bicycle LOS Score for Intersection	2.611	2.823	2.057	2.540
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 23: OR 213 / Molalla Ave

Control Type:	Signalized	Delay (sec / veh):	24.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.550

Intersection Setup

Name	OR 213			OR 213			Molalla Ave			S Douglas Loop		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	650.00	100.00	100.00	525.00	100.00	355.00	100.00	100.00	100.00	275.00	100.00	275.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 213			OR 213			Molalla Ave			S Douglas Loop		
Base Volume Input [veh/h]	183	817	17	21	436	109	70	18	61	10	21	10
Base Volume Adjustment Factor	1.4800	1.4800	1.4800	1.4800	1.4800	1.4800	1.4800	1.4800	1.4800	1.4800	1.4800	1.4800
Heavy Vehicles Percentage [%]	2.00	7.00	6.00	33.00	12.00	4.00	10.00	33.00	3.00	20.00	24.00	50.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	13	0	0	81	0	0	45	0	0	8
Total Hourly Volume [veh/h]	271	1209	12	31	645	80	104	27	45	15	31	7
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	70	312	3	8	166	21	27	7	12	4	8	2
Total Analysis Volume [veh/h]	279	1246	12	32	665	82	107	28	46	15	32	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			1			0			1		
v_di, Inbound Pedestrian Volume crossing m	0			1			0			1		
v_co, Outbound Pedestrian Volume crossing	0			1			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	70.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	13.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	6
Maximum Green [s]	20	200	0	20	50	0	20	20	0	20	40	40
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	3.5	4.7	0.0	3.5	4.7	4.7
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.5	0.7	0.0	0.5	0.7	0.7
Split [s]	38	48	0	30	40	0	16	26	0	16	26	26
Vehicle Extension [s]	2.3	4.5	0.0	2.3	4.5	0.0	2.3	2.3	0.0	2.3	2.3	2.3
Walk [s]	0	9	0	0	10	0	0	14	0	0	11	11
Pedestrian Clearance [s]	0	23	0	0	27	0	0	28	0	0	30	30
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	4.0	0.0	2.0	4.0	0.0	2.0	3.4	0.0	2.0	3.4	3.4
Minimum Recall	No	Yes		No	Yes		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	5.40	5.40	4.00	5.40	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	3.40	3.40	2.00	3.40	0.00
g_i, Effective Green Time [s]	21	78	78	3	61	61	13	5	5	13	6	32
g / C, Green / Cycle	0.17	0.65	0.65	0.03	0.51	0.51	0.11	0.05	0.05	0.11	0.05	0.26
(v / s)_i Volume / Saturation Flow Rate	0.16	0.36	0.01	0.02	0.20	0.05	0.08	0.02	0.03	0.01	0.02	0.01
s, saturation flow rate [veh/h]	1781	3418	1538	1338	3275	1561	1326	1405	1577	1524	1540	975
c, Capacity [veh/h]	308	2235	1006	36	1663	793	184	64	72	170	72	256
d1, Uniform Delay [s]	48.67	11.31	7.24	58.23	18.24	15.34	53.66	55.75	56.28	47.82	55.70	32.86
k, delay calibration	0.09	0.50	0.50	0.07	0.50	0.50	0.07	0.07	0.07	0.07	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.06	1.01	0.02	32.71	0.72	0.26	1.79	2.82	5.58	0.13	2.63	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.56	0.01	0.89	0.40	0.10	0.58	0.44	0.64	0.09	0.45	0.03
d, Delay for Lane Group [s/veh]	56.73	12.31	7.26	90.94	18.96	15.60	55.45	58.57	61.87	47.95	58.33	32.89
Lane Group LOS	E	B	A	F	B	B	E	E	E	D	E	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.48	7.69	0.10	1.26	5.34	1.13	3.30	0.88	1.49	0.41	1.00	0.16
50th-Percentile Queue Length [ft/ln]	212.03	192.35	2.43	31.44	133.47	28.26	82.45	22.08	37.33	10.36	25.10	3.91
95th-Percentile Queue Length [veh/ln]	13.26	12.24	0.17	2.26	9.13	2.03	5.94	1.59	2.69	0.75	1.81	0.28
95th-Percentile Queue Length [ft/ln]	331.43	306.07	4.37	56.60	228.21	50.87	148.40	39.74	67.20	18.65	45.19	7.03

Movement, Approach, & Intersection Results

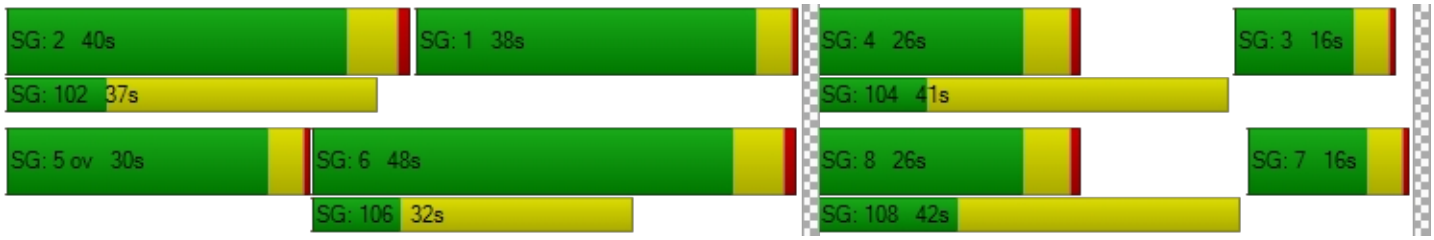
d_M, Delay for Movement [s/veh]	56.73	12.31	7.26	90.94	18.96	15.60	55.45	58.57	61.87	47.95	58.33	32.89
Movement LOS	E	B	A	F	B	B	E	E	E	D	E	C
d_A, Approach Delay [s/veh]	20.34			21.56			57.56			52.15		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	24.03											
Intersection LOS	C											
Intersection V/C	0.550											

Other Modes

g_Walk,mi, Effective Walk Time [s]	18.0	15.0	14.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	4683.06	3990.02	0.00
d_p, Pedestrian Delay [s]	43.35	45.94	46.82	47.70
l_p,int, Pedestrian LOS Score for Intersection	3.171	3.395	2.349	2.185
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	567	343	343
d_b, Bicycle Delay [s]	25.35	30.82	41.17	41.17
l_b,int, Bicycle LOS Score for Intersection	2.838	2.269	1.933	1.662
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Molalla Ave / Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	26.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.283

Intersection Setup

Name	Molalla Ave			Molalla Ave			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	170.00	100.00	150.00	350.00	100.00	100.00	175.00	100.00	190.00	210.00	100.00	245.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			35.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Molalla Ave			Molalla Ave			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	61	184	37	165	122	25	22	133	55	25	257	210
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	7.00	4.00	0.00	4.00	2.00	8.00	5.00	9.00	7.00	20.00	4.00	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	39	0	0	148
Total Hourly Volume [veh/h]	86	259	52	233	172	35	31	188	39	35	362	148
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	72	14	65	48	10	9	52	11	10	101	41
Total Analysis Volume [veh/h]	96	288	58	259	191	39	34	209	43	39	402	164
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			1			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			1			1		
v_co, Outbound Pedestrian Volume crossing	1			2			2			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			2			2			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	10	0	6	10	0	4	6	0	6	6	0
Maximum Green [s]	30	40	0	30	40	0	20	25	0	20	25	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	3.5	4.0	0.0	3.5	4.0	0.0
All red [s]	2.0	2.0	0.0	2.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	16	40	0	16	40	0	12	22	0	12	22	0
Vehicle Extension [s]	2.3	4.6	0.0	2.3	4.2	0.0	2.3	2.5	0.0	2.3	2.5	0.0
Walk [s]	0	9	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	26	0	0	22	0	0	23	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	4.0	0.0	4.0	4.0	0.0	2.5	4.0	0.0	2.5	4.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	46	46	46	47	47	47	20	12	12	20	13	13
g / C, Green / Cycle	0.51	0.51	0.51	0.52	0.52	0.52	0.22	0.13	0.13	0.22	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.08	0.10	0.10	0.21	0.06	0.06	0.03	0.06	0.03	0.03	0.11	0.11
s, saturation flow rate [veh/h]	1230	1840	1734	1240	1870	1761	1150	3360	1522	1167	3503	1561
c, Capacity [veh/h]	705	942	888	600	968	911	266	434	197	316	507	226
d1, Uniform Delay [s]	11.45	11.88	11.90	19.22	11.19	11.20	28.49	36.47	35.19	28.23	37.27	36.85
k, delay calibration	0.07	0.50	0.50	0.50	0.50	0.50	0.07	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	0.44	0.48	2.26	0.26	0.28	0.13	0.62	0.41	0.13	2.13	3.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.14	0.19	0.19	0.43	0.12	0.12	0.13	0.48	0.22	0.12	0.79	0.73
d, Delay for Lane Group [s/veh]	11.51	12.32	12.38	21.48	11.45	11.48	28.62	37.09	35.60	28.36	39.40	40.16
Lane Group LOS	B	B	B	C	B	B	C	D	D	C	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.96	1.93	1.86	3.09	1.19	1.14	0.58	2.12	0.85	0.68	4.36	3.60
50th-Percentile Queue Length [ft/ln]	23.92	48.32	46.62	77.29	29.75	28.57	14.46	53.02	21.24	16.92	108.93	90.05
95th-Percentile Queue Length [veh/ln]	1.72	3.48	3.36	5.56	2.14	2.06	1.04	3.82	1.53	1.22	7.78	6.48
95th-Percentile Queue Length [ft/ln]	43.06	86.98	83.92	139.11	53.55	51.43	26.03	95.43	38.24	30.46	194.52	162.09

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.51	12.34	12.38	21.48	11.46	11.48	28.62	37.09	35.60	28.36	39.40	40.16
Movement LOS	B	B	B	C	B	B	C	D	D	C	D	D
d_A, Approach Delay [s/veh]	12.17			16.77			35.86			38.89		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	26.00											
Intersection LOS	C											
Intersection V/C	0.283											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	13192.41	10818.12	3304.43	3696.83
d_p, Pedestrian Delay [s]	33.80	33.80	33.80	32.94
l_p,int, Pedestrian LOS Score for Intersection	2.454	2.562	2.726	3.180
Crosswalk LOS	B	B	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	756	756	356	356
d_b, Bicycle Delay [s]	17.42	17.42	30.42	30.42
l_b,int, Bicycle LOS Score for Intersection	1.924	1.963	1.828	2.181
Bicycle LOS	A	A	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: Maple Lane Rd / Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	17.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.655

Intersection Setup

Name	Maple Lane Rd			Maple Lane Rd			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	150.00	430.00	100.00	100.00	360.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Maple Lane Rd			Maple Lane Rd			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	54	12	7	26	13	266	129	209	43	5	516	34
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	6.00	0.00	0.00	12.00	0.00	3.00	8.00	5.00	7.00	0.00	4.00	6.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	188	0	0	0	0	0	0
Total Hourly Volume [veh/h]	76	17	10	37	18	187	182	295	61	7	728	48
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	5	3	10	5	50	49	79	16	2	196	13
Total Analysis Volume [veh/h]	82	18	11	40	19	201	196	317	66	8	783	52
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	0	3	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	4	10	0	4	10	0
Maximum Green [s]	0	20	0	0	20	20	35	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	4.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.5	0.5	0.5	0.0	0.5	0.5	0.0
Split [s]	0	25	0	0	25	25	40	55	0	25	55	0
Vehicle Extension [s]	0.0	2.5	0.0	0.0	2.5	2.5	2.5	5.2	0.0	2.3	5.2	0.0
Walk [s]	0	8	0	0	8	8	0	7	0	0	8	0
Pedestrian Clearance [s]	0	19	0	0	19	19	0	12	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	0.0	0.0	2.5	2.5	2.5	2.5	0.0	2.5	2.5	0.0
Minimum Recall		No			No	No	No	Yes		No	Yes	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	58	58	58	58	58	58	58	58	58	58	58
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	0.00	2.50	2.50	2.50	0.00	2.50	2.50
g_i, Effective Green Time [s]	5	5	6	6	19	9	29	29	34	20	20
g / C, Green / Cycle	0.09	0.09	0.10	0.10	0.33	0.15	0.49	0.49	0.58	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.05	0.02	0.02	0.01	0.13	0.12	0.11	0.11	0.01	0.23	0.23
s, saturation flow rate [veh/h]	1724	1781	1638	1900	1577	1695	1825	1718	877	1840	1794
c, Capacity [veh/h]	149	154	167	193	521	257	901	848	732	646	630
d1, Uniform Delay [s]	25.49	24.68	24.05	23.70	14.93	23.67	8.34	8.35	5.37	15.90	15.92
k, delay calibration	0.08	0.08	0.08	0.08	0.08	0.08	0.26	0.26	0.07	0.26	0.26
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.35	0.44	0.55	0.16	0.35	3.50	0.28	0.31	0.00	2.64	2.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	0.19	0.24	0.10	0.39	0.76	0.22	0.22	0.01	0.65	0.66
d, Delay for Lane Group [s/veh]	27.84	25.11	24.60	23.86	15.28	27.16	8.63	8.66	5.37	18.54	18.65
Lane Group LOS	C	C	C	C	B	C	A	A	A	B	B
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.14	0.37	0.48	0.22	1.77	2.59	1.18	1.13	0.03	4.51	4.43
50th-Percentile Queue Length [ft/ln]	28.42	9.37	12.06	5.57	44.21	64.85	29.61	28.28	0.76	112.64	110.71
95th-Percentile Queue Length [veh/ln]	2.05	0.67	0.87	0.40	3.18	4.67	2.13	2.04	0.05	7.99	7.88
95th-Percentile Queue Length [ft/ln]	51.16	16.86	21.71	10.02	79.58	116.72	53.30	50.91	1.36	199.68	196.99

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.84	25.11	25.11	24.60	23.86	15.28	27.16	8.64	8.66	5.37	18.59	18.65
Movement LOS	C	C	C	C	C	B	C	A	A	A	B	B
d_A, Approach Delay [s/veh]	27.12			17.34			14.91			18.47		
Approach LOS	C			B			B			B		
d_I, Intersection Delay [s/veh]	17.69											
Intersection LOS	B											
Intersection V/C	0.655											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.47	53.55	53.55	53.55
l_p,int, Pedestrian LOS Score for Intersection	2.019	2.647	2.734	2.592
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	315	315	777	777
d_b, Bicycle Delay [s]	46.12	46.12	24.31	24.32
l_b,int, Bicycle LOS Score for Intersection	1.743	2.299	2.037	2.255
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 199: I 205 SB-Ramp / OR 213

Control Type:	Two-way stop	Delay (sec / veh):	56.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.329

Intersection Setup

Name	OR 213		OR 213			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	OR 213		OR 213			
Base Volume Input [veh/h]	0	781	22	0	0	1067
Base Volume Adjustment Factor	1.0000	1.3900	1.3900	1.0000	1.0000	1.3900
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1086	31	0	0	1483
Peak Hour Factor	1.0000	0.9200	0.9200	1.0000	1.0000	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	295	8	0	0	403
Total Analysis Volume [veh/h]	0	1180	34	0	0	1612
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Stop	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.33	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	56.09	0.00	0.00	0.00
Movement LOS		A	F			A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	1.28	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	32.06	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		56.09		0.00	
Approach LOS	A		F		A	
d_I, Intersection Delay [s/veh]	0.67					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 1: OR 99E/ River Rd/ W Arlington St

Control Type:	Signalized	Delay (sec / veh):	13.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.719

Intersection Setup

Name	OR 99E			OR 99E			River Rd			W Arlington St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	185.00	100.00	275.00	250.00	100.00	100.00	550.00	100.00	100.00	100.00	100.00	160.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 99E			OR 99E			River Rd			W Arlington St		
Base Volume Input [veh/h]	114	1038	113	68	1257	4	6	45	205	145	40	93
Base Volume Adjustment Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
Heavy Vehicles Percentage [%]	0.00	3.00	4.00	3.00	3.00	0.00	17.00	2.00	2.00	3.00	0.00	1.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	66	0	0	0	0	0	119	0	0	54
Total Hourly Volume [veh/h]	132	1204	65	79	1458	5	7	52	119	168	46	54
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	317	17	21	384	1	2	14	31	44	12	14
Total Analysis Volume [veh/h]	139	1267	68	83	1535	5	7	55	125	177	48	57
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	7			2			7			1		
v_di, Inbound Pedestrian Volume crossing m	7			1			7			2		
v_co, Outbound Pedestrian Volume crossing	2			0			0			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			0			0			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			3			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	51.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	20	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	18	72	0	18	72	0	0	30	0	0	30	0
Vehicle Extension [s]	2.3	4.7	0.0	2.3	4.7	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	9	0	0	8	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	20	0	0	15	0	0	26	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.40	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.80	2.80	0.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	82	82	75	75	75	22	22	22	22
g / C, Green / Cycle	0.09	0.68	0.68	0.63	0.62	0.62	0.18	0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.08	0.36	0.04	0.13	0.42	0.42	0.03	0.08	0.16	0.04
s, saturation flow rate [veh/h]	1810	3532	1526	621	1855	1853	1825	1553	1402	1594
c, Capacity [veh/h]	165	2405	1039	385	1153	1151	363	281	307	288
d1, Uniform Delay [s]	51.83	2.11	1.79	6.89	5.54	5.54	41.62	43.67	48.14	41.72
k, delay calibration	0.10	0.50	0.50	0.50	0.50	0.50	0.08	0.08	0.24	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.45	0.83	0.12	1.28	3.08	3.09	0.16	0.82	7.21	0.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.53	0.07	0.22	0.67	0.67	0.17	0.45	0.73	0.20
d, Delay for Lane Group [s/veh]	62.29	2.94	1.91	8.17	8.62	8.63	41.78	44.49	55.34	41.97
Lane Group LOS	E	A	A	A	A	A	D	D	E	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.45	1.86	0.19	0.47	4.98	4.98	1.58	3.38	7.16	1.46
50th-Percentile Queue Length [ft/ln]	111.37	46.44	4.72	11.83	124.57	124.57	39.54	84.39	179.12	36.56
95th-Percentile Queue Length [veh/ln]	7.92	3.34	0.34	0.85	8.64	8.64	2.85	6.08	11.55	2.63
95th-Percentile Queue Length [ft/ln]	197.91	83.59	8.50	21.29	216.09	216.09	71.17	151.90	288.86	65.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.29	2.94	1.91	8.17	8.62	8.63	41.78	41.78	44.49	55.34	55.34	41.97
Movement LOS	E	A	A	A	A	A	D	D	D	E	E	D
d_A, Approach Delay [s/veh]	8.49			8.60			43.59			52.64		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	13.87											
Intersection LOS	B											
Intersection V/C	0.719											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	383.71	2494.22	0.00	1242.80
d_p, Pedestrian Delay [s]	47.70	48.60	48.60	47.70
l_p,int, Pedestrian LOS Score for Intersection	3.379	3.105	2.284	2.331
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1120	1120	433	433
d_b, Bicycle Delay [s]	11.63	11.63	36.82	36.82
l_b,int, Bicycle LOS Score for Intersection	2.830	2.899	2.065	2.114
Bicycle LOS	C	C	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: OR 99E / Dunes Dr

Control Type:	Signalized	Delay (sec / veh):	34.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.835

Intersection Setup

Name	OR 99E			OR 99E			Dunes Dr			Dunes Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	220.00	100.00	100.00	370.00	100.00	155.00	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 99E			OR 99E			Dunes Dr			Dunes Dr		
Base Volume Input [veh/h]	43	1146	146	107	1354	116	26	5	78	265	17	47
Base Volume Adjustment Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
Heavy Vehicles Percentage [%]	5.00	3.00	2.00	1.00	3.00	1.00	0.00	0.00	5.00	2.00	6.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	50	1329	169	124	1571	135	30	6	90	307	20	55
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	350	44	33	413	36	8	2	24	81	5	14
Total Analysis Volume [veh/h]	53	1399	178	131	1654	142	32	6	95	323	21	58
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			1			0			1		
v_di, Inbound Pedestrian Volume crossing m	0			1			1			1		
v_co, Outbound Pedestrian Volume crossing	2			0			0			3		
v_ci, Inbound Pedestrian Volume crossing mi	3			0			0			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	12.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	2	0	5	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	12	62	0	23	51	0	0	34	0	0	34	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	16	66	0	27	55	0	0	38	0	0	38	0
Vehicle Extension [s]	2.3	4.8	0.0	2.3	4.8	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	18	0	0	38	0	0	37	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.00	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.80	2.80	0.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	62	62	4	69	69	34	34	34	34
g / C, Green / Cycle	0.09	0.52	0.52	0.03	0.58	0.58	0.28	0.28	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.21	0.30	0.30	0.10	0.34	0.34	0.02	0.06	0.25	0.05
s, saturation flow rate [veh/h]	256	3532	1733	1261	3532	1781	1338	1628	1292	1600
c, Capacity [veh/h]	60	1837	901	72	2037	1027	367	461	343	453
d1, Uniform Delay [s]	58.20	11.63	11.68	56.63	7.83	7.84	36.50	32.86	48.46	32.42
k, delay calibration	0.50	0.25	0.50	0.50	0.50	0.50	0.08	0.08	0.36	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	86.07	0.67	2.72	418.12	1.24	2.46	0.08	0.18	28.79	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.57	0.58	1.82	0.59	0.59	0.09	0.22	0.94	0.17
d, Delay for Lane Group [s/veh]	144.27	12.30	14.40	474.75	9.07	10.31	36.57	33.03	77.25	32.55
Lane Group LOS	F	B	B	F	A	B	D	C	E	C
Critical Lane Group	Yes	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.99	5.42	5.90	10.50	4.64	5.05	0.76	2.31	12.65	1.78
50th-Percentile Queue Length [ft/ln]	74.77	135.41	147.41	262.48	116.01	126.30	19.06	57.72	316.35	44.53
95th-Percentile Queue Length [veh/ln]	5.38	9.23	9.88	17.67	8.17	8.74	1.37	4.16	18.49	3.21
95th-Percentile Queue Length [ft/ln]	134.59	230.83	246.97	441.74	204.33	218.45	34.32	103.89	462.20	80.16

Movement, Approach, & Intersection Results

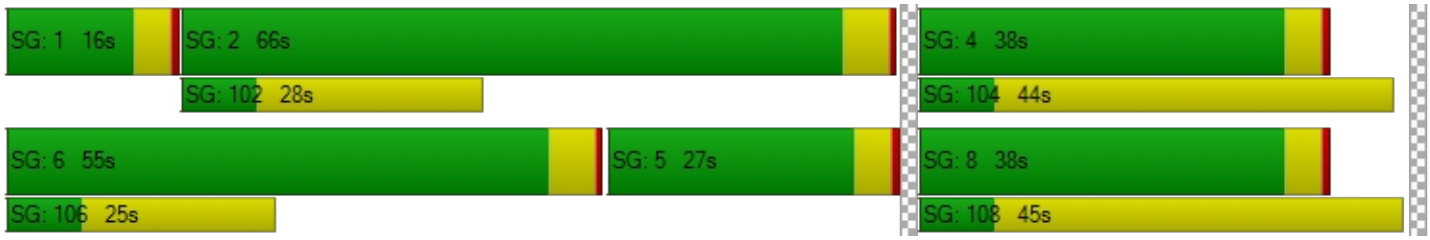
d_M, Delay for Movement [s/veh]	144.27	12.81	14.40	474.75	9.41	10.31	36.57	33.03	33.03	77.25	32.55	32.55
Movement LOS	F	B	B	F	A	B	D	C	C	E	C	C
d_A, Approach Delay [s/veh]	17.26			41.11			33.88			68.47		
Approach LOS	B			D			C			E		
d_I, Intersection Delay [s/veh]	34.06											
Intersection LOS	C											
Intersection V/C	0.835											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	3234.32	3545.99	0.00	279.56
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	3.755	3.288	2.124	2.234
Crosswalk LOS	D	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1020	837	567	567
d_b, Bicycle Delay [s]	14.41	20.30	30.82	30.82
l_b,int, Bicycle LOS Score for Intersection	2.456	2.619	1.779	2.223
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: OR 99E/I-205 SB Loop Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	33.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.907

Intersection Setup

Name	OR 99E		OR 99E		I-205 WB Loop Off-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	1
Entry Pocket Length [ft]	100.00	200.00	240.00	100.00	575.00	275.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	No		No		Yes	

Volumes

Name	OR 99E		OR 99E		I-205 WB Loop Off-Ramp	
Base Volume Input [veh/h]	1109	200	445	1267	792	353
Base Volume Adjustment Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
Heavy Vehicles Percentage [%]	3.00	10.00	5.00	3.00	5.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	232	0	0	0	205
Total Hourly Volume [veh/h]	1286	0	516	1470	919	204
Peak Hour Factor	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	325	0	130	371	232	52
Total Analysis Volume [veh/h]	1299	0	521	1485	928	206
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	2		0		3	
v_ci, Inbound Pedestrian Volume crossing mi	3		0		2	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	106.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	6	6
Maximum Green [s]	40	0	36	40	20	20
Amber [s]	4.3	0.0	3.5	4.3	4.0	4.0
All red [s]	0.5	0.0	0.5	0.5	1.5	1.5
Split [s]	33	0	43	76	44	44
Vehicle Extension [s]	4.8	0.0	2.3	4.8	2.3	2.3
Walk [s]	8	0	0	0	0	0
Pedestrian Clearance [s]	29	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.8	0.0	2.0	2.8	3.5	3.5
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.80	4.80	4.00	4.80	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.80	2.80	2.00	2.80	3.50	0.00
g_i, Effective Green Time [s]	32	32	38	74	36	77
g / C, Green / Cycle	0.27	0.27	0.31	0.62	0.30	0.64
(v / s)_i Volume / Saturation Flow Rate	0.26	0.00	0.30	0.29	0.27	0.13
s, saturation flow rate [veh/h]	5053	1487	1738	5053	3375	1577
c, Capacity [veh/h]	1363	401	545	3115	1004	1016
d1, Uniform Delay [s]	37.67	0.00	34.11	5.01	40.82	8.73
k, delay calibration	0.50	0.50	0.33	0.50	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.47	0.00	22.14	0.53	2.67	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	0.00	0.96	0.48	0.92	0.20
d, Delay for Lane Group [s/veh]	53.14	0.00	56.25	5.53	43.48	8.78
Lane Group LOS	D	A	E	A	D	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	13.09	0.00	16.32	2.67	13.50	2.14
50th-Percentile Queue Length [ft/ln]	327.18	0.00	408.01	66.66	337.59	53.49
95th-Percentile Queue Length [veh/ln]	19.02	0.00	22.95	4.80	19.53	3.85
95th-Percentile Queue Length [ft/ln]	475.51	0.00	573.65	119.98	488.26	96.29

Movement, Approach, & Intersection Results

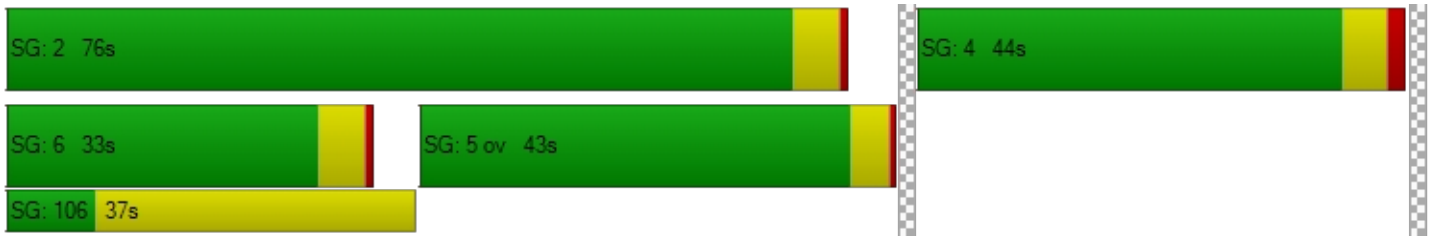
d_M, Delay for Movement [s/veh]	53.14	0.00	56.25	5.53	43.48	8.78
Movement LOS	D	A	E	A	D	A
d_A, Approach Delay [s/veh]	53.14		18.71		37.18	
Approach LOS	D		B		D	
d_I, Intersection Delay [s/veh]	33.50					
Intersection LOS	C					
Intersection V/C	0.907					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	1632.56
d_p, Pedestrian Delay [s]	0.00	0.00	48.60
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.946
Crosswalk LOS	F	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	470	1187	642
d_b, Bicycle Delay [s]	35.13	9.93	27.68
l_b,int, Bicycle LOS Score for Intersection	2.402	2.663	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: OR 99E/I-205 EB Loop Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	19.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.672

Intersection Setup

Name	OR 99E		OR 99E		I-205 EB Loop Off-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	185.00	500.00	100.00	100.00	130.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		Yes		Yes	
Crosswalk	No		No		Yes	

Volumes

Name	OR 99E		OR 99E		I-205 EB Loop Off-Ramp	
Base Volume Input [veh/h]	837	623	451	1620	125	477
Base Volume Adjustment Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
Heavy Vehicles Percentage [%]	4.00	5.00	4.00	5.00	10.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	362	0	0	0	553
Total Hourly Volume [veh/h]	971	361	523	1879	145	0
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	258	96	139	500	39	0
Total Analysis Volume [veh/h]	1033	384	556	1999	154	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		2		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	72.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	6	6	5	2	4	0
Auxiliary Signal Groups		4,6				
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	6	0
Maximum Green [s]	40	40	20	40	20	0
Amber [s]	4.3	4.3	3.5	4.3	4.0	0.0
All red [s]	0.5	0.5	0.5	0.5	1.5	0.0
Split [s]	60	60	40	100	20	0
Vehicle Extension [s]	4.8	4.8	3.0	4.8	2.3	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	16	16	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.8	2.8	2.0	2.8	3.5	0.0
Minimum Recall	Yes	Yes	No	Yes	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.80	5.50	4.00	4.80	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.80	0.00	2.00	2.80	3.50	3.50
g_i, Effective Green Time [s]	57	75	36	97	13	13
g / C, Green / Cycle	0.47	0.62	0.30	0.81	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.21	0.25	0.32	0.40	0.09	0.00
s, saturation flow rate [veh/h]	5012	1551	1752	4971	1667	1577
c, Capacity [veh/h]	2368	964	524	4002	182	172
d1, Uniform Delay [s]	14.04	4.53	36.06	0.44	52.46	0.00
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.59	1.23	56.31	0.45	6.60	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.20	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.44	0.40	1.06	0.50	0.85	0.00
d, Delay for Lane Group [s/veh]	14.63	5.76	92.36	0.89	59.06	0.00
Lane Group LOS	B	A	F	A	E	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.16	2.15	21.78	0.56	4.88	0.00
50th-Percentile Queue Length [ft/ln]	103.93	53.76	544.44	13.89	122.05	0.00
95th-Percentile Queue Length [veh/ln]	7.48	3.87	30.56	1.00	8.51	0.00
95th-Percentile Queue Length [ft/ln]	187.08	96.76	763.92	25.00	212.64	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.63	5.76	92.36	0.89	59.06	0.00
Movement LOS	B	A	F	A	E	A
d_A, Approach Delay [s/veh]	12.23		20.80		59.06	
Approach LOS	B		C		E	
d_I, Intersection Delay [s/veh]	19.28					
Intersection LOS	B					
Intersection V/C	0.672					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	49.50
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	3.136
Crosswalk LOS	F	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	920	1587	242
d_b, Bicycle Delay [s]	17.50	2.57	46.38
l_b,int, Bicycle LOS Score for Intersection	2.538	2.965	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: OR 99E / 14th St

Control Type:	Signalized	Delay (sec / veh):	5.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.638

Intersection Setup

Name	OR 99E		OR 99E		14th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		14th St	
Base Volume Input [veh/h]	1042	45	316	1445	70	217
Base Volume Adjustment Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
Heavy Vehicles Percentage [%]	4.00	13.00	3.00	5.00	9.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	126
Total Hourly Volume [veh/h]	1209	52	367	1676	81	126
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	315	14	96	436	21	33
Total Analysis Volume [veh/h]	1259	54	382	1746	84	131
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1		0		0	
v_di, Inbound Pedestrian Volume crossing m	1		0		0	
v_co, Outbound Pedestrian Volume crossing	2		1		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		1		2	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		6		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	41.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	61	0	33	98	14	14
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	65	0	37	102	18	18
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	7	0	0	0	7	7
Pedestrian Clearance [s]	11	0	0	0	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	84	84	102	102	10	28
g / C, Green / Cycle	0.70	0.70	0.85	0.85	0.09	0.24
(v / s)_i Volume / Saturation Flow Rate	0.36	0.36	0.61	0.50	0.05	0.08
s, saturation flow rate [veh/h]	1840	1813	629	3475	1669	1577
c, Capacity [veh/h]	1281	1262	596	2943	144	374
d1, Uniform Delay [s]	1.52	1.53	8.50	0.00	52.75	38.07
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.17
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.47	1.53	5.21	0.89	2.28	0.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.22	1.22	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.52	0.64	0.59	0.58	0.35
d, Delay for Lane Group [s/veh]	2.99	3.06	13.71	0.89	55.03	38.96
Lane Group LOS	A	A	B	A	E	D
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.74	1.76	0.86	0.36	2.53	3.31
50th-Percentile Queue Length [ft/ln]	43.59	44.02	21.59	9.07	63.24	82.87
95th-Percentile Queue Length [veh/ln]	3.14	3.17	1.55	0.65	4.55	5.97
95th-Percentile Queue Length [ft/ln]	78.46	79.24	38.86	16.33	113.83	149.16

Movement, Approach, & Intersection Results

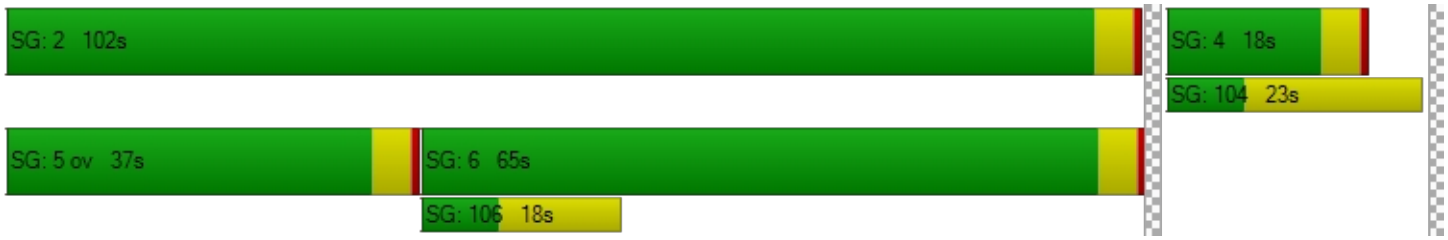
d_M, Delay for Movement [s/veh]	3.03	3.06	13.71	0.89	55.03	38.96
Movement LOS	A	A	B	A	E	D
d_A, Approach Delay [s/veh]	3.03		3.19		45.24	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	5.60					
Intersection LOS	A					
Intersection V/C	0.638					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	3870.65	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	2.911	3.024	2.971
Crosswalk LOS	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1017	1633	233
d_b, Bicycle Delay [s]	14.50	2.02	46.82
l_b,int, Bicycle LOS Score for Intersection	2.643	3.315	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: OR 99E / 12th St

Control Type:	Signalized	Delay (sec / veh):	2.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.523

Intersection Setup

Name	OR 99E		OR 99E		12th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	175.00	100.00	100.00	120.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		12th St	
Base Volume Input [veh/h]	968	21	152	1367	8	136
Base Volume Adjustment Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
Heavy Vehicles Percentage [%]	5.00	0.00	4.00	5.00	0.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	79
Total Hourly Volume [veh/h]	1123	24	176	1586	9	79
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	286	6	45	405	2	20
Total Analysis Volume [veh/h]	1146	24	180	1618	9	81
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1		0		0	
v_di, Inbound Pedestrian Volume crossing m	1		0		0	
v_co, Outbound Pedestrian Volume crossing	3		1		3	
v_ci, Inbound Pedestrian Volume crossing mi	3		1		3	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		3		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	25.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	80	0	16	100	12	12
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	84	0	20	104	16	16
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	9	0	0	0	8	8
Pedestrian Clearance [s]	11	0	0	0	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	97	97	105	105	7	15
g / C, Green / Cycle	0.81	0.81	0.87	0.87	0.06	0.13
(v / s)_i Volume / Saturation Flow Rate	0.32	0.32	0.30	0.47	0.01	0.05
s, saturation flow rate [veh/h]	1825	1812	595	3475	1792	1564
c, Capacity [veh/h]	1469	1458	539	3031	109	201
d1, Uniform Delay [s]	0.00	0.00	0.06	0.00	53.17	48.05
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.81	0.82	1.66	0.68	0.19	0.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.21	1.21	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.40	0.33	0.53	0.08	0.40
d, Delay for Lane Group [s/veh]	0.81	0.82	1.72	0.68	53.36	48.85
Lane Group LOS	A	A	A	A	D	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.33	0.33	0.25	0.29	0.26	2.28
50th-Percentile Queue Length [ft/ln]	8.25	8.35	6.23	7.13	6.57	57.00
95th-Percentile Queue Length [veh/ln]	0.59	0.60	0.45	0.51	0.47	4.10
95th-Percentile Queue Length [ft/ln]	14.85	15.03	11.21	12.84	11.83	102.60

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.82	0.82	1.72	0.68	53.36	48.85
Movement LOS	A	A	A	A	D	D
d_A, Approach Delay [s/veh]	0.82		0.78		49.30	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	2.22					
Intersection LOS	A					
Intersection V/C	0.523					

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	4084.53	0.00	648.45
d_p, Pedestrian Delay [s]	48.60	48.60	47.70
l_p,int, Pedestrian LOS Score for Intersection	2.826	2.918	2.418
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1333	1667	200
d_b, Bicycle Delay [s]	6.67	1.67	48.62
l_b,int, Bicycle LOS Score for Intersection	2.525	3.043	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: OR 99E / 10th St

Control Type:	Signalized	Delay (sec / veh):	3.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.433

Intersection Setup

Name	OR 99E		OR 99E		7th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	250.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		7th St	
Base Volume Input [veh/h]	753	22	276	1086	17	211
Base Volume Adjustment Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
Heavy Vehicles Percentage [%]	5.00	0.00	1.00	6.00	12.00	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	123
Total Hourly Volume [veh/h]	873	26	320	1260	20	122
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	225	7	82	325	5	31
Total Analysis Volume [veh/h]	900	27	330	1299	21	126
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		2		1	
v_di, Inbound Pedestrian Volume crossing m	0		1		2	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		2		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	78	0	18	100	12	12
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	82	0	22	104	16	16
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	7	0	0	0	7	7
Pedestrian Clearance [s]	11	0	0	0	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	93	93	98	98	10	20
g / C, Green / Cycle	0.77	0.77	0.82	0.82	0.08	0.16
(v / s)_i Volume / Saturation Flow Rate	0.25	0.26	0.44	0.38	0.01	0.08
s, saturation flow rate [veh/h]	1825	1806	750	3446	1638	1559
c, Capacity [veh/h]	1405	1391	628	2815	135	255
d1, Uniform Delay [s]	0.00	0.00	0.12	0.00	51.25	45.74
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.63	0.65	3.12	0.55	0.33	3.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.25	1.25	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.33	0.33	0.53	0.46	0.16	0.49
d, Delay for Lane Group [s/veh]	0.63	0.65	3.24	0.55	51.57	48.94
Lane Group LOS	A	A	A	A	D	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.25	0.25	0.54	0.21	0.60	3.66
50th-Percentile Queue Length [ft/ln]	6.14	6.23	13.62	5.34	15.06	91.45
95th-Percentile Queue Length [veh/ln]	0.44	0.45	0.98	0.38	1.08	6.58
95th-Percentile Queue Length [ft/ln]	11.05	11.22	24.52	9.62	27.11	164.61

Movement, Approach, & Intersection Results

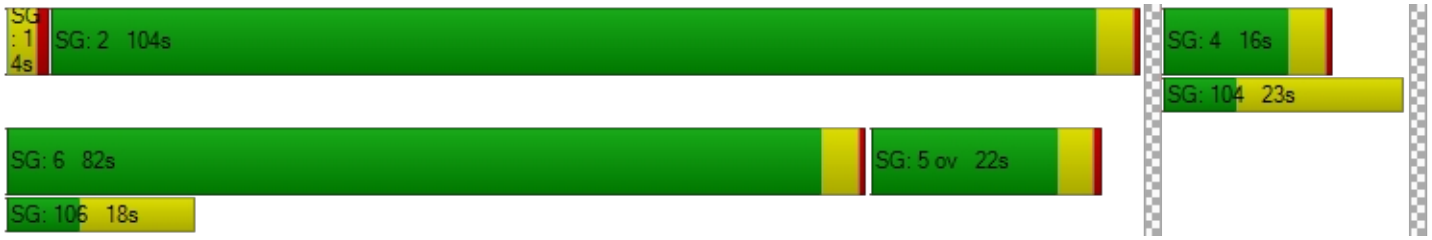
d_M, Delay for Movement [s/veh]	0.64	0.65	3.24	0.55	51.57	48.94
Movement LOS	A	A	A	A	D	D
d_A, Approach Delay [s/veh]	0.64		1.09		49.31	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	3.56					
Intersection LOS	A					
Intersection V/C	0.433					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	1933.54	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	2.693	2.855	2.746
Crosswalk LOS	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1300	1667	200
d_b, Bicycle Delay [s]	7.35	1.67	48.60
l_b,int, Bicycle LOS Score for Intersection	2.324	2.904	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Washington St / Clackamas River Dr

Control Type:	Roundabout	Delay (sec / veh):	5.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Washington St		Washington St		Clackamas River Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Washington St		Washington St		Clackamas River Dr	
Base Volume Input [veh/h]	306	260	177	153	114	85
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	5.00	17.00	2.00	5.00	15.00	12.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	343	291	198	171	128	95
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	77	52	45	34	25
Total Analysis Volume [veh/h]	361	306	208	180	135	100
Pedestrian Volume [ped/h]	0		0		2	

Intersection Settings

Number of Conflicting Circulating Lanes	1		1		1	
Circulating Flow Rate [veh/h]	212		155		379	
Exiting Flow Rate [veh/h]	344		491		212	
Demand Flow Rate [veh/h]	343	291	198	171	128	95
Adjusted Demand Flow Rate [veh/h]	361	306	208	180	135	100

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	0.00	1380.00	1380.00
B (coefficient)	0.00102	0.00000	0.00102	0.00102
HV Adjustment Factor	0.91	0.85	0.97	0.88
Entry Flow Rate [veh/h]	398	0	402	268
Capacity of Entry and Bypass Lanes [veh/h]	1112	117000	1178	938
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1009	100000	1140	825
X, volume / capacity	0.36	0.00	0.34	0.29

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	1.64	0.00	1.52	1.18
95th-Percentile Queue Length [ft]	40.97	0.00	38.10	29.44
Approach Delay [s/veh]	3.97		6.48	7.53
Approach LOS	A		A	A
Intersection Delay [s/veh]	5.37			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 9: Washington St/ Prairie Schooner Way

Control Type:	Signalized	Delay (sec / veh):	8.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.519

Intersection Setup

Name	Washington St		Washington St		Prairie Schooner Way	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	0	1	0
Entry Pocket Length [ft]	100.00	100.00	150.00	100.00	165.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	No		Yes		Yes	

Volumes

Name	Washington St		Washington St		Prairie Schooner Way	
Base Volume Input [veh/h]	319	125	59	210	312	254
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	12.00	4.00	5.00	7.00	12.00	7.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	142
Total Hourly Volume [veh/h]	357	140	66	235	349	142
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	92	36	17	61	90	37
Total Analysis Volume [veh/h]	368	144	68	242	360	146
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		1		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		1	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	93
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	2	0	1	6	8	8
Auxiliary Signal Groups						1,8
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	8	0	4	8	4	4
Maximum Green [s]	30	0	20	30	30	30
Amber [s]	4.0	0.0	3.5	4.0	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	35	0	24	35	34	34
Vehicle Extension [s]	4.2	0.0	2.3	5.2	2.5	2.5
Walk [s]	8	0	0	0	7	7
Pedestrian Clearance [s]	24	0	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	0.0	2.0	2.5	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	29	29	29	29	29	29
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	0.00	2.50	2.00	0.00
g_i, Effective Green Time [s]	9	9	14	14	6	12
g / C, Green / Cycle	0.30	0.30	0.50	0.50	0.20	0.40
(v / s)_i Volume / Saturation Flow Rate	0.15	0.16	0.06	0.07	0.11	0.10
s, saturation flow rate [veh/h]	1720	1562	1094	3418	3181	1525
c, Capacity [veh/h]	516	469	801	1710	651	617
d1, Uniform Delay [s]	8.29	8.44	4.03	3.87	10.28	5.64
k, delay calibration	0.17	0.17	0.07	0.26	0.08	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.13	1.52	0.03	0.09	0.55	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.50	0.55	0.08	0.14	0.55	0.24
d, Delay for Lane Group [s/veh]	9.42	9.96	4.06	3.96	10.82	5.76
Lane Group LOS	A	A	A	A	B	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.97	1.02	0.08	0.17	0.75	0.32
50th-Percentile Queue Length [ft/ln]	24.36	25.61	2.11	4.13	18.80	8.04
95th-Percentile Queue Length [veh/ln]	1.75	1.84	0.15	0.30	1.35	0.58
95th-Percentile Queue Length [ft/ln]	43.84	46.10	3.80	7.43	33.84	14.47

Movement, Approach, & Intersection Results

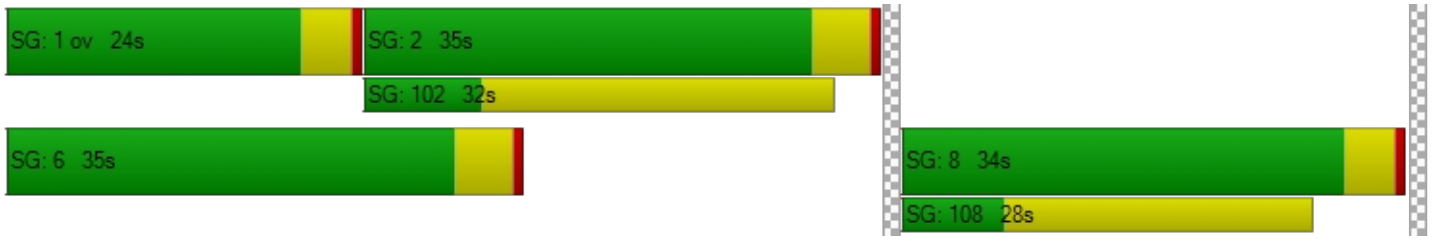
d_M, Delay for Movement [s/veh]	9.58	9.96	4.06	3.96	10.82	5.76
Movement LOS	A	A	A	A	B	A
d_A, Approach Delay [s/veh]	9.69		3.98		9.36	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	8.23					
Intersection LOS	A					
Intersection V/C	0.519					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	7748.15	2765.42
d_p, Pedestrian Delay [s]	0.00	36.15	35.27
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.489	2.705
Crosswalk LOS	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	656	656	645
d_b, Bicycle Delay [s]	21.00	21.00	21.34
l_b,int, Bicycle LOS Score for Intersection	1.982	1.815	1.560
Bicycle LOS	A	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 10: Washington St / Home Depot-Site Access A

Control Type:	Signalized	Delay (sec / veh):	10.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.394

Intersection Setup

Name	Washington St			Washington St			Home Depot Dwy			Home Depot Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	335.00	100.00	330.00	250.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	470.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	370.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			Home Depot Dwy			Home Depot Dwy		
Base Volume Input [veh/h]	11	163	90	208	279	34	43	4	12	94	1	60
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	36.00	5.00	2.00	6.00	10.00	56.00	56.00	50.00	33.00	2.00	2.00	10.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	19	0	0	0	0	0	34
Total Hourly Volume [veh/h]	12	183	101	233	312	19	48	4	13	105	1	33
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	52	29	66	89	5	14	1	4	30	0	9
Total Analysis Volume [veh/h]	14	208	115	265	355	22	55	5	15	119	1	38
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			2			2			2		
v_di, Inbound Pedestrian Volume crossing m	2			2			2			1		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	134
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	10	0	4	10	0	0	8	0	0	6	0
Maximum Green [s]	30	60	0	30	60	0	0	30	0	0	20	0
Amber [s]	3.5	4.5	0.0	3.5	4.5	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	34	65	0	34	65	0	0	35	0	0	25	0
Vehicle Extension [s]	2.5	4.2	0.0	2.5	4.2	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	9	0	0	7	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	R
C, Cycle Length [s]	42	42	42	42	42	42	42	42	42
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	2.50	2.50	2.50
g_i, Effective Green Time [s]	20	10	10	20	15	15	12	12	12
g / C, Green / Cycle	0.48	0.24	0.24	0.48	0.37	0.37	0.29	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.02	0.09	0.10	0.20	0.11	0.02	0.12	0.08	0.03
s, saturation flow rate [veh/h]	826	1825	1607	1306	3332	898	636	1425	1487
c, Capacity [veh/h]	577	438	386	801	1217	328	276	586	434
d1, Uniform Delay [s]	5.80	13.37	13.45	6.84	9.49	8.69	13.55	11.52	10.84
k, delay calibration	0.17	0.17	0.17	0.08	0.17	0.17	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.03	0.83	1.04	0.18	0.20	0.13	0.39	0.13	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.02	0.38	0.40	0.33	0.29	0.07	0.27	0.20	0.09
d, Delay for Lane Group [s/veh]	5.83	14.20	14.48	7.01	9.69	8.82	13.94	11.64	10.90
Lane Group LOS	A	B	B	A	A	A	B	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.05	1.20	1.14	1.02	0.93	0.11	0.55	0.72	0.22
50th-Percentile Queue Length [ft/ln]	1.21	29.95	28.43	25.53	23.22	2.84	13.80	18.10	5.43
95th-Percentile Queue Length [veh/ln]	0.09	2.16	2.05	1.84	1.67	0.20	0.99	1.30	0.39
95th-Percentile Queue Length [ft/ln]	2.18	53.91	51.18	45.96	41.79	5.10	24.84	32.57	9.77

Movement, Approach, & Intersection Results

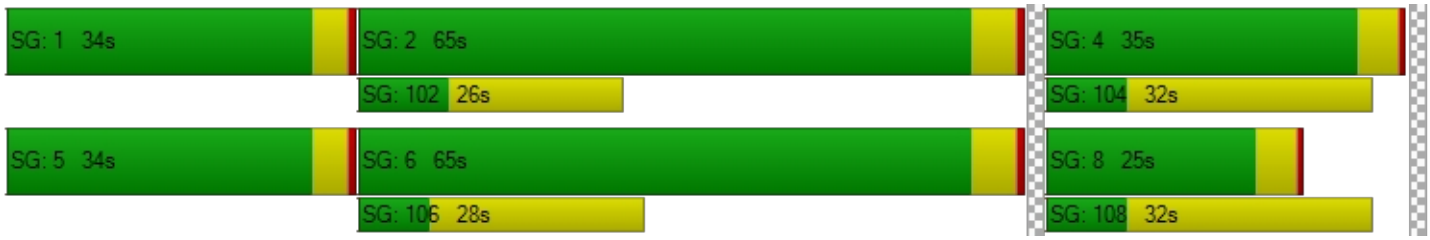
d_M, Delay for Movement [s/veh]	5.83	14.26	14.48	7.01	9.69	8.82	13.94	13.94	13.94	11.64	11.64	10.90
Movement LOS	A	B	B	A	A	A	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	13.98			8.55			13.94			11.46		
Approach LOS	B			A			B			B		
d_I, Intersection Delay [s/veh]	10.78											
Intersection LOS	B											
Intersection V/C	0.394											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	1187.28	970.94
d_p, Pedestrian Delay [s]	55.54	55.54	56.45	54.63
l_p,int, Pedestrian LOS Score for Intersection	2.649	2.738	2.010	2.303
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	896	896	455	306
d_b, Bicycle Delay [s]	20.43	20.43	39.97	48.07
l_b,int, Bicycle LOS Score for Intersection	1.838	2.105	1.683	1.876
Bicycle LOS	A	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Washington St / Abernethy Rd

Control Type:	Signalized	Delay (sec / veh):	8.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.356

Intersection Setup

Name	Washington St			Washington St			17th St			17th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	115.00	100.00	225.00	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			30.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			17th St			17th St		
Base Volume Input [veh/h]	3	207	259	66	328	0	1	3	5	150	0	47
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	0.00	4.00	4.00	20.00	7.00	0.00	100.00	0.00	0.00	3.00	0.00	6.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	145	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	232	145	74	367	0	1	3	6	168	0	53
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	68	43	22	108	0	0	1	2	49	0	16
Total Analysis Volume [veh/h]	4	273	171	87	432	0	1	4	7	198	0	62
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			1			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	0	0	8	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	15	0	0	30	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	35	0	0	20	0	0	35	0
Vehicle Extension [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	16	0	0	8	0	0	13	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C
C, Cycle Length [s]	28	28	28	28	28	28	28	28
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	10	10	10	10	10	8	8	8
g / C, Green / Cycle	0.36	0.36	0.36	0.36	0.36	0.28	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.00	0.15	0.11	0.09	0.24	0.01	0.14	0.04
s, saturation flow rate [veh/h]	970	1840	1562	946	1795	1683	1392	1615
c, Capacity [veh/h]	334	651	553	421	635	619	270	458
d1, Uniform Delay [s]	11.86	6.76	6.47	10.50	7.58	7.13	9.95	7.36
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	0.16	0.12	0.09	0.48	0.00	1.46	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.42	0.31	0.21	0.68	0.02	0.73	0.14
d, Delay for Lane Group [s/veh]	11.86	6.92	6.58	10.59	8.07	7.14	11.41	7.41
Lane Group LOS	B	A	A	B	A	A	B	A
Critical Lane Group	No	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.02	0.62	0.37	0.34	1.26	0.04	0.78	0.16
50th-Percentile Queue Length [ft/ln]	0.41	15.43	9.26	8.60	31.45	0.88	19.50	4.04
95th-Percentile Queue Length [veh/ln]	0.03	1.11	0.67	0.62	2.26	0.06	1.40	0.29
95th-Percentile Queue Length [ft/ln]	0.74	27.77	16.66	15.48	56.60	1.59	35.10	7.27

Movement, Approach, & Intersection Results

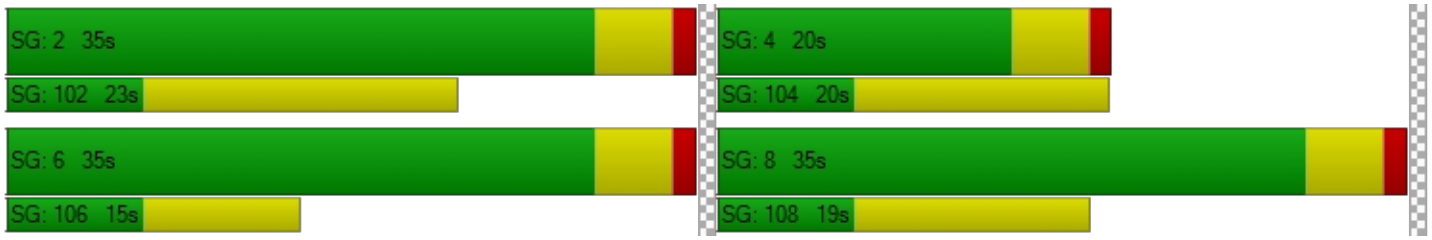
d_M, Delay for Movement [s/veh]	11.86	6.92	6.58	10.59	8.07	8.07	7.14	7.14	7.14	11.41	7.41	7.41
Movement LOS	B	A	A	B	A	A	A	A	A	B	A	A
d_A, Approach Delay [s/veh]	6.84			8.49			7.14			10.46		
Approach LOS	A			A			A			B		
d_I, Intersection Delay [s/veh]	8.29											
Intersection LOS	A											
Intersection V/C	0.356											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	5334.02	5957.37
d_p, Pedestrian Delay [s]	24.86	24.86	24.86	24.86
l_p,int, Pedestrian LOS Score for Intersection	2.955	2.206	1.713	2.303
Crosswalk LOS	C	B	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	857	857	429	857
d_b, Bicycle Delay [s]	11.43	11.43	21.61	11.43
l_b,int, Bicycle LOS Score for Intersection	2.538	2.416	1.579	1.989
Bicycle LOS	B	B	A	A

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: Washington St / 15th St

Control Type:	Signalized	Delay (sec / veh):	16.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.601

Intersection Setup

Name	Washington St			Washington St			15th St			15th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	260.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			15th St			15th St		
Base Volume Input [veh/h]	37	341	22	26	349	121	108	37	43	13	104	22
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	3.00	4.00	0.00	4.00	5.00	2.00	5.00	0.00	5.00	0.00	0.00	9.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	41	382	25	29	391	136	121	41	48	15	116	25
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	1.0000	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	107	7	8	110	34	34	12	13	4	33	7
Total Analysis Volume [veh/h]	46	429	28	33	439	136	136	46	54	17	130	28
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			1			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	35	0	0	35	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	14	45	0	14	45	0	0	31	0	0	31	0
Vehicle Extension [s]	2.3	4.1	0.0	2.3	4.1	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	9	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	64	57	64	57	19	19
g / C, Green / Cycle	0.71	0.64	0.71	0.63	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.05	0.25	0.03	0.33	0.18	0.10
s, saturation flow rate [veh/h]	902	1820	976	1752	1285	1826
c, Capacity [veh/h]	606	1158	696	1105	327	418
d1, Uniform Delay [s]	5.54	7.97	4.65	9.15	35.22	31.44
k, delay calibration	0.07	0.50	0.50	0.50	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.03	1.01	0.13	1.75	2.26	0.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.08	0.39	0.05	0.52	0.72	0.42
d, Delay for Lane Group [s/veh]	5.57	8.98	4.78	10.90	37.48	31.93
Lane Group LOS	A	A	A	B	D	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.22	4.13	0.18	5.99	5.15	3.34
50th-Percentile Queue Length [ft/ln]	5.43	103.19	4.40	149.69	128.69	83.49
95th-Percentile Queue Length [veh/ln]	0.39	7.43	0.32	10.00	8.87	6.01
95th-Percentile Queue Length [ft/ln]	9.78	185.73	7.91	250.01	221.71	150.28

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	5.57	8.98	8.98	4.78	10.90	10.90	37.48	37.48	37.48	31.93	31.93	31.93
Movement LOS	A	A	A	A	B	B	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	8.66			10.57			37.48			31.93		
Approach LOS	A			B			D			C		
d_I, Intersection Delay [s/veh]	16.57											
Intersection LOS	B											
Intersection V/C	0.601											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	7708.48	0.00	0.00	6814.43
d_p, Pedestrian Delay [s]	34.67	32.94	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.293	2.521	2.024	1.883
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	911	911	600	600
d_b, Bicycle Delay [s]	13.34	13.34	22.05	22.05
l_b,int, Bicycle LOS Score for Intersection	2.390	2.563	1.949	1.848
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Washington St / 14th St

Control Type:	Signalized	Delay (sec / veh):	17.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.582

Intersection Setup

Name	Washington St			Washington St			14th St			14th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			14th St			14th St		
Base Volume Input [veh/h]	173	189	7	6	284	113	202	33	153	1	29	5
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	3.00	3.00	14.00	17.00	4.00	7.00	5.00	3.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	86	0	0	0
Total Hourly Volume [veh/h]	194	212	8	7	318	127	226	37	85	1	32	6
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	56	2	2	85	34	60	10	23	0	9	2
Total Analysis Volume [veh/h]	206	226	9	7	338	135	240	39	90	1	34	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			1		
v_di, Inbound Pedestrian Volume crossing m	1			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			1			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	75.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	35	0	0	35	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	14	38	0	14	38	0	0	38	0	0	38	0
Vehicle Extension [s]	2.3	4.1	0.0	2.3	4.1	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	63	58	63	53	19	19	19
g / C, Green / Cycle	0.70	0.65	0.70	0.59	0.21	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.20	0.13	0.01	0.27	0.19	0.06	0.02
s, saturation flow rate [veh/h]	1018	1842	1031	1752	1472	1589	1858
c, Capacity [veh/h]	688	1192	780	1035	387	337	435
d1, Uniform Delay [s]	6.04	6.42	4.23	10.32	34.10	29.63	28.58
k, delay calibration	0.50	0.50	0.50	0.50	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.11	0.37	0.02	1.45	1.91	0.31	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.30	0.20	0.01	0.46	0.72	0.27	0.09
d, Delay for Lane Group [s/veh]	7.15	6.79	4.25	11.77	36.01	29.94	28.65
Lane Group LOS	A	A	A	B	D	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.29	1.72	0.04	5.31	6.06	1.66	0.72
50th-Percentile Queue Length [ft/ln]	32.29	42.92	0.97	132.65	151.42	41.42	18.09
95th-Percentile Queue Length [veh/ln]	2.32	3.09	0.07	9.08	10.09	2.98	1.30
95th-Percentile Queue Length [ft/ln]	58.12	77.26	1.74	227.10	252.32	74.56	32.57

Movement, Approach, & Intersection Results

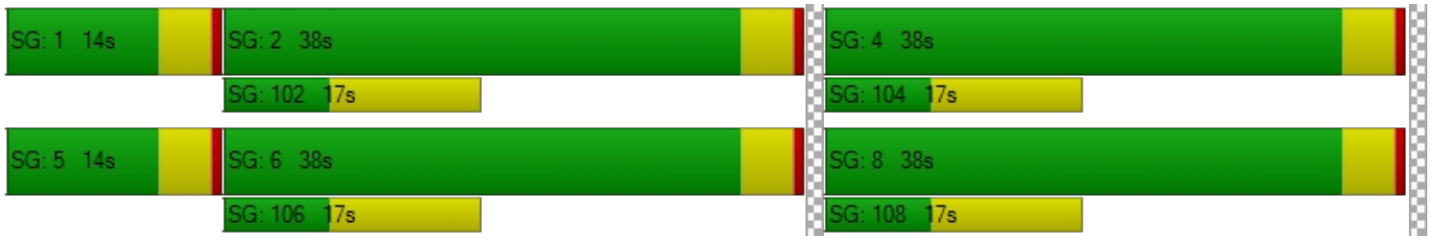
d_M, Delay for Movement [s/veh]	7.15	6.79	6.79	4.25	11.77	11.77	36.01	36.01	29.94	28.65	28.65	28.65
Movement LOS	A	A	A	A	B	B	D	D	C	C	C	C
d_A, Approach Delay [s/veh]	6.96			11.66			34.53			28.65		
Approach LOS	A			B			C			C		
d_I, Intersection Delay [s/veh]	16.97											
Intersection LOS	B											
Intersection V/C	0.582											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	3557.76	0.00	7959.68
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.252	2.539	2.602	1.760
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	756	756	756	756
d_b, Bicycle Delay [s]	17.42	17.42	17.42	17.42
l_b,int, Bicycle LOS Score for Intersection	2.287	2.352	2.310	1.627
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Washington St / 12th St

Control Type:	Signalized	Delay (sec / veh):	9.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.618

Intersection Setup

Name	Washington St			Washington St			12th St			12th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			12th St			12th St		
Base Volume Input [veh/h]	78	343	5	19	410	9	24	39	102	5	19	8
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	5.00	3.00	0.00	11.00	3.00	0.00	8.00	0.00	1.00	0.00	5.00	12.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	87	384	6	21	459	10	27	44	114	6	21	9
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	104	2	6	125	3	7	12	31	2	6	2
Total Analysis Volume [veh/h]	95	417	7	23	499	11	29	48	124	7	23	10
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			1			0		
v_di, Inbound Pedestrian Volume crossing m	0			1			0			0		
v_co, Outbound Pedestrian Volume crossing	1			2			0			2		
v_ci, Inbound Pedestrian Volume crossing mi	0			2			1			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	98
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	15	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	19	55	0	19	55	0	0	19	0	0	24	0
Vehicle Extension [s]	2.3	5.2	0.0	2.3	5.2	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	12	0	0	12	0	0	12	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	35	35	35	35	35	35
L, Total Lost Time per Cycle [s]	4.80	4.80	4.80	4.80	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.80	0.00	2.80	2.00	2.00
g_i, Effective Green Time [s]	21	16	21	14	5	5
g / C, Green / Cycle	0.59	0.46	0.59	0.41	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.09	0.23	0.02	0.28	0.12	0.02
s, saturation flow rate [veh/h]	1054	1850	996	1848	1698	1776
c, Capacity [veh/h]	736	845	749	759	381	396
d1, Uniform Delay [s]	4.04	6.72	3.39	8.42	14.16	12.82
k, delay calibration	0.07	0.26	0.26	0.26	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	1.09	0.04	2.44	0.84	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.13	0.50	0.03	0.67	0.53	0.10
d, Delay for Lane Group [s/veh]	4.09	7.81	3.42	10.86	15.01	12.90
Lane Group LOS	A	A	A	B	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.14	1.70	0.04	2.68	1.35	0.24
50th-Percentile Queue Length [ft/ln]	3.47	42.42	0.95	66.92	33.73	5.91
95th-Percentile Queue Length [veh/ln]	0.25	3.05	0.07	4.82	2.43	0.43
95th-Percentile Queue Length [ft/ln]	6.24	76.35	1.71	120.45	60.71	10.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	4.09	7.81	7.81	3.42	10.86	10.86	15.01	15.01	15.01	12.90	12.90	12.90
Movement LOS	A	A	A	A	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	7.13			10.54			15.01			12.90		
Approach LOS	A			B			B			B		
d_I, Intersection Delay [s/veh]	9.94											
Intersection LOS	A											
Intersection V/C	0.618											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	5518.40	1924.17	5947.58	0.00
d_p, Pedestrian Delay [s]	38.62	38.62	38.62	38.62
l_p,int, Pedestrian LOS Score for Intersection	2.265	2.253	1.916	1.783
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1024	1024	306	408
d_b, Bicycle Delay [s]	11.66	11.66	35.15	31.04
l_b,int, Bicycle LOS Score for Intersection	2.416	2.439	1.891	1.626
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: Washington St/7th St

Control Type:	Signalized	Delay (sec / veh):	14.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.704

Intersection Setup

Name	Washington St			Washington St			7th St			Molalla Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	270.00	45.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			7th St			Molalla Ave		
Base Volume Input [veh/h]	76	154	10	216	229	20	0	364	90	0	272	220
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.0000	1.1200	1.1200	1.0000	1.1200	1.1200
Heavy Vehicles Percentage [%]	1.00	3.00	0.00	2.00	4.00	0.00	2.00	1.00	0.00	2.00	0.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	51	0	0	123
Total Hourly Volume [veh/h]	85	172	11	242	256	22	0	408	50	0	305	123
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	1.0000	0.9200	0.9200	1.0000	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	47	3	66	70	6	0	111	14	0	83	33
Total Analysis Volume [veh/h]	92	187	12	263	278	24	0	443	54	0	332	134
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			3			4			1		
v_di, Inbound Pedestrian Volume crossing m	1			4			3			1		
v_co, Outbound Pedestrian Volume crossing	4			4			3			3		
v_ci, Inbound Pedestrian Volume crossing mi	3			3			4			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	142
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap
Signal Group	0	8	0	0	4	0	0	2	0	0	6	6
Auxiliary Signal Groups												4,6
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	10	0	0	10	10
Maximum Green [s]	0	40	0	0	40	0	0	50	0	0	50	50
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	3.5
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.5
Split [s]	0	44	0	0	44	0	0	54	0	0	54	54
Vehicle Extension [s]	0.0	2.5	0.0	0.0	2.5	0.0	0.0	4.7	0.0	0.0	4.7	4.7
Walk [s]	0	7	0	0	7	0	0	7	0	0	9	9
Pedestrian Clearance [s]	0	11	0	0	10	0	0	10	0	0	11	11
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
Minimum Recall		No			No			Yes			Yes	Yes
Maximum Recall		No			No			No			No	No
Pedestrian Recall		No			No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	44	44	44	44	44	44	44	44
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	7	7	10	10	14	14	14	29
g / C, Green / Cycle	0.16	0.16	0.23	0.23	0.33	0.33	0.33	0.66
(v / s)_i Volume / Saturation Flow Rate	0.05	0.11	0.15	0.17	0.24	0.03	0.17	0.09
s, saturation flow rate [veh/h]	1795	1835	1781	1811	1885	1605	1900	1572
c, Capacity [veh/h]	286	292	419	426	624	531	629	1034
d1, Uniform Delay [s]	16.30	17.35	15.01	15.35	12.79	10.12	11.86	2.80
k, delay calibration	0.08	0.08	0.08	0.08	0.20	0.20	0.20	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.48	2.08	1.15	1.63	2.78	0.15	1.28	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.68	0.63	0.71	0.71	0.10	0.53	0.13
d, Delay for Lane Group [s/veh]	16.78	19.43	16.16	16.98	15.57	10.28	13.14	2.84
Lane Group LOS	B	B	B	B	B	B	B	A
Critical Lane Group	No	Yes	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.77	1.85	2.10	2.50	3.63	0.33	2.32	0.20
50th-Percentile Queue Length [ft/ln]	19.17	46.16	52.47	62.51	90.74	8.16	57.98	4.90
95th-Percentile Queue Length [veh/ln]	1.38	3.32	3.78	4.50	6.53	0.59	4.17	0.35
95th-Percentile Queue Length [ft/ln]	34.50	83.09	94.45	112.52	163.33	14.69	104.37	8.82

Movement, Approach, & Intersection Results

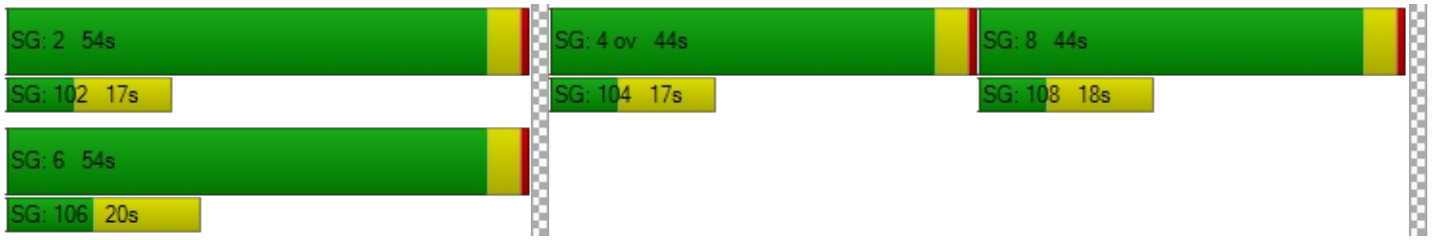
d_M, Delay for Movement [s/veh]	16.78	19.43	19.43	16.16	16.98	16.98	0.00	15.57	10.28	0.00	13.14	2.84
Movement LOS	B	B	B	B	B	B		B	B		B	A
d_A, Approach Delay [s/veh]	18.59			16.59			15.00			10.18		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	14.83											
Intersection LOS	B											
Intersection V/C	0.704											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	666.02	549.84	767.45	2833.36
d_p, Pedestrian Delay [s]	60.43	58.60	60.43	60.43
l_p,int, Pedestrian LOS Score for Intersection	2.290	2.289	2.428	2.646
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	563	563	704	704
d_b, Bicycle Delay [s]	36.63	36.65	29.80	29.80
l_b,int, Bicycle LOS Score for Intersection	2.040	2.492	2.464	2.531
Bicycle LOS	B	B	B	B

Sequence

Ring 1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: S Redland Rd/Abernaty Rd

Control Type:	Signalized	Delay (sec / veh):	26.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.764

Intersection Setup

Name	S Redland Rd			S Redland Rd			17th St			Holocomb Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	125.00	100.00	100.00	330.00	100.00	250.00	120.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
Speed [mph]	30.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Redland Rd			S Redland Rd			17th St			Holocomb Blvd		
Base Volume Input [veh/h]	79	293	52	268	508	42	35	118	149	42	84	188
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	8.00	5.00	4.00	3.00	4.00	2.00	6.00	3.00	3.00	5.00	4.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	24	0	0	0	0	0	106
Total Hourly Volume [veh/h]	88	328	58	300	569	23	39	132	167	47	94	105
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	85	15	78	148	6	10	34	43	12	24	27
Total Analysis Volume [veh/h]	92	342	60	313	593	23	41	138	174	49	98	109
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	13.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	0
Maximum Green [s]	30	45	0	30	45	0	30	35	0	20	30	0
Amber [s]	3.5	4.7	0.0	3.5	4.7	0.0	3.5	4.0	0.0	3.5	4.7	0.0
All red [s]	0.5	0.7	0.0	0.5	0.7	0.0	0.5	0.5	0.0	0.5	0.7	0.0
Split [s]	34	51	0	34	51	0	34	40	0	24	36	0
Vehicle Extension [s]	2.3	4.5	0.0	2.3	4.5	0.0	2.3	2.3	0.0	2.3	2.3	0.0
Walk [s]	0	7	0	5	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	10	24	0	0	22	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.4	0.0	2.0	3.4	0.0	2.0	2.5	0.0	2.0	3.4	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C	R
C, Cycle Length [s]	67	67	67	67	67	67	67	67	67	67
L, Total Lost Time per Cycle [s]	4.00	5.40	4.00	5.40	5.40	4.00	4.50	4.00	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.40	2.00	3.40	3.40	2.00	2.50	2.00	3.40	3.40
g_i, Effective Green Time [s]	5	19	14	28	28	2	14	2	14	14
g / C, Green / Cycle	0.07	0.28	0.21	0.41	0.41	0.03	0.21	0.04	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.05	0.23	0.18	0.32	0.01	0.02	0.18	0.03	0.05	0.07
s, saturation flow rate [veh/h]	1695	1778	1767	1840	1589	1724	1689	1738	1840	1577
c, Capacity [veh/h]	119	492	366	761	657	55	363	62	378	324
d1, Uniform Delay [s]	30.82	22.80	25.76	17.11	11.77	32.35	25.47	32.24	22.47	22.85
k, delay calibration	0.07	0.19	0.07	0.19	0.19	0.07	0.07	0.07	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.44	5.69	3.65	3.01	0.04	11.33	3.76	12.40	0.22	0.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.82	0.86	0.78	0.04	0.74	0.86	0.79	0.26	0.34
d, Delay for Lane Group [s/veh]	37.26	28.49	29.41	20.13	11.81	43.68	29.23	44.64	22.69	23.22
Lane Group LOS	D	C	C	C	B	D	C	D	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.62	6.30	4.74	7.31	0.18	0.81	4.89	0.98	1.26	1.43
50th-Percentile Queue Length [ft/ln]	40.54	157.49	118.41	182.67	4.62	20.30	122.17	24.43	31.52	35.84
95th-Percentile Queue Length [veh/ln]	2.92	10.42	8.31	11.74	0.33	1.46	8.51	1.76	2.27	2.58
95th-Percentile Queue Length [ft/ln]	72.98	260.40	207.65	293.50	8.31	36.53	212.80	43.98	56.73	64.50

Movement, Approach, & Intersection Results

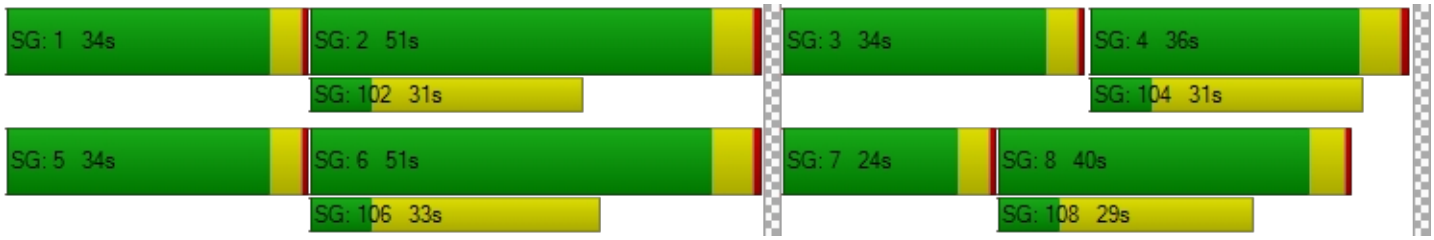
d_M, Delay for Movement [s/veh]	37.26	28.49	28.49	29.41	20.13	11.81	43.68	29.23	29.23	44.64	22.69	23.22
Movement LOS	D	C	C	C	C	B	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	30.12			23.05			30.91			27.12		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	26.65											
Intersection LOS	C											
Intersection V/C	0.764											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	66.89	66.89	66.89	66.89
l_p,int, Pedestrian LOS Score for Intersection	2.392	2.763	2.301	2.521
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	588	588	458	395
d_b, Bicycle Delay [s]	38.61	38.61	46.07	49.92
l_b,int, Bicycle LOS Score for Intersection	2.375	3.132	2.142	2.157
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: S Anchor Way / S Redland Rd

Control Type:	Two-way stop	Delay (sec / veh):	54.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.664

Intersection Setup

Name	S Redland Rd		S Redland Rd		S Anchor Way	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	S Redland Rd		S Redland Rd		S Anchor Way	
Base Volume Input [veh/h]	28	287	553	127	112	43
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	0.00	8.00	5.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	321	619	142	125	48
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	87	168	39	34	13
Total Analysis Volume [veh/h]	34	349	673	154	136	52
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			Yes
Storage Area [veh]	0	0	1
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.00	0.01	0.00	0.66	0.13
d_M, Delay for Movement [s/veh]	9.62	0.00	0.00	0.00	54.70	45.81
Movement LOS	A	A	A	A	F	E
95th-Percentile Queue Length [veh/ln]	0.13	0.13	0.00	0.00	5.26	5.26
95th-Percentile Queue Length [ft/ln]	3.27	3.27	0.00	0.00	131.49	131.49
d_A, Approach Delay [s/veh]	0.85		0.00		52.24	
Approach LOS	A		A		F	
d_I, Intersection Delay [s/veh]	7.26					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 18: S Holly Ln / S Redland Rd

Control Type:	Two-way stop	Delay (sec / veh):	22.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.266

Intersection Setup

Name	S Holly Ln		S Redland Rd		S Redland Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	S Holly Ln		S Redland Rd		S Redland Rd	
Base Volume Input [veh/h]	56	15	453	111	15	247
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	2.00	0.00	6.00	5.00	0.00	9.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	63	17	507	124	17	277
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	5	142	35	5	78
Total Analysis Volume [veh/h]	71	19	570	139	19	311
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	Yes		
Storage Area [veh]	1	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.27	0.04	0.01	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	22.31	16.33	0.00	0.00	9.09	0.00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.05	1.05	0.00	0.00	0.06	0.06
95th-Percentile Queue Length [ft/ln]	26.30	26.30	0.00	0.00	1.62	1.62
d_A, Approach Delay [s/veh]	21.05		0.00		0.52	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.83					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 19: I 205 SB-Ramp / OR 213

Control Type:	Two-way stop	Delay (sec / veh):	104.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.122

Intersection Setup

Name	OR 213		Washington St		Washington Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	OR 213		Washington St		Washington Dr	
Base Volume Input [veh/h]	650	14	31	22	5	2077
Base Volume Adjustment Factor	1.1700	1.0000	1.0000	1.0000	1.0000	1.1000
Heavy Vehicles Percentage [%]	5.00	7.00	0.00	0.00	20.00	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	761	14	31	22	5	2285
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	207	4	8	6	1	621
Total Analysis Volume [veh/h]	827	15	34	24	5	2484
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.54	0.00	0.00	0.00	0.12	0.00
d_M, Delay for Movement [s/veh]	10.11	0.00	0.00	0.00	104.67	0.00
Movement LOS	B	A	A	A	F	
95th-Percentile Queue Length [veh/ln]	3.41	0.00	0.00	0.00	0.38	0.00
95th-Percentile Queue Length [ft/ln]	85.27	0.00	0.00	0.00	9.60	0.00
d_A, Approach Delay [s/veh]	9.93		0.00		104.67	
Approach LOS	A		A		F	
d_I, Intersection Delay [s/veh]	9.81					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 20: OR 213 / Clackamas River Dr

Control Type:	Signalized	Delay (sec / veh):	11.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.785

Intersection Setup

Name	OR 213			OR 213			Prairie Schooner Way			Clackamas River Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	450.00	100.00	100.00	415.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			Yes			Yes			Yes		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	OR 213			OR 213			Prairie Schooner Way			Clackamas River Dr		
Base Volume Input [veh/h]	0	1689	156	0	2677	565	0	0	186	0	0	408
Base Volume Adjustment Factor	1.0000	1.1700	1.1700	1.0000	1.1700	1.1700	1.0000	1.0000	1.1700	1.0000	1.0000	1.1700
Heavy Vehicles Percentage [%]	2.00	4.00	6.00	2.00	4.00	7.00	2.00	2.00	4.00	2.00	2.00	8.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	183	0	0	661	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1976	0	0	3132	0	0	0	218	0	0	477
Peak Hour Factor	1.0000	0.9400	0.9400	1.0000	0.9400	0.9400	1.0000	1.0000	0.9400	1.0000	1.0000	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	526	0	0	833	0	0	0	58	0	0	127
Total Analysis Volume [veh/h]	0	2102	0	0	3332	0	0	0	232	0	0	507
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	0	1	0	0	5
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	0	4	0	0	4
Maximum Green [s]	0	86	0	0	96	0	0	0	26	0	0	86
Amber [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	0.0	3.5	0.0	0.0	3.5
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.5	0.0	0.0	0.5
Split [s]	0	44	0	0	44	0	0	0	30	0	0	84
Vehicle Extension [s]	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	2.3	0.0	0.0	2.3
Walk [s]	0	0	0	0	0	0	0	0	7	0	0	7
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	15	0	0	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0
Minimum Recall		Yes			Yes				No			No
Maximum Recall		No			No				No			No
Pedestrian Recall		No			No				No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	R	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	93	93	107	107	13	27
g / C, Green / Cycle	0.72	0.72	0.82	0.82	0.10	0.21
(v / s)_i Volume / Saturation Flow Rate	0.42	0.00	0.66	0.00	0.08	0.19
s, saturation flow rate [veh/h]	5012	1538	5012	1526	2768	2678
c, Capacity [veh/h]	3583	1100	4123	1255	279	558
d1, Uniform Delay [s]	1.01	0.00	6.12	0.00	57.47	50.33
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.71	0.00	1.80	0.00	4.03	3.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.00	0.81	0.00	0.83	0.91
d, Delay for Lane Group [s/veh]	1.72	0.00	7.92	0.00	61.50	54.20
Lane Group LOS	A	A	A	A	E	D
Critical Lane Group	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.00	0.00	8.58	0.00	3.91	8.35
50th-Percentile Queue Length [ft/ln]	24.99	0.00	214.46	0.00	97.68	208.78
95th-Percentile Queue Length [veh/ln]	1.80	0.00	13.38	0.00	7.03	13.09
95th-Percentile Queue Length [ft/ln]	44.98	0.00	334.55	0.00	175.83	327.26

Movement, Approach, & Intersection Results

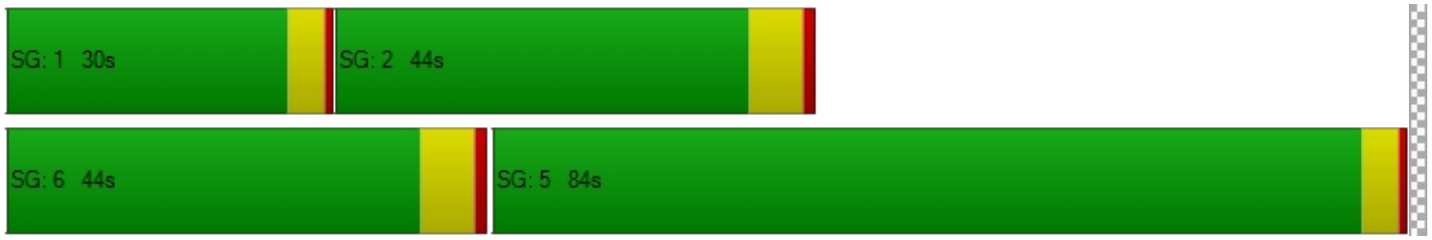
d_M, Delay for Movement [s/veh]	0.00	1.72	0.00	0.00	7.92	0.00	0.00	0.00	61.50	0.00	0.00	54.20
Movement LOS		A	A		A	A			E			D
d_A, Approach Delay [s/veh]		1.72			7.92			61.50			54.20	
Approach LOS		A			A			E			D	
d_I, Intersection Delay [s/veh]						11.62						
Intersection LOS						B						
Intersection V/C						0.785						

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	38.0	38.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	32.55	32.55
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.346	2.161
Crosswalk LOS	F	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	585	585	400	1231
d_b, Bicycle Delay [s]	32.55	32.55	41.60	9.62
l_b,int, Bicycle LOS Score for Intersection	2.816	3.756	1.560	1.560
Bicycle LOS	C	D	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: OR 213 / S Redland Rd

Control Type:	Signalized	Delay (sec / veh):	46.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.998

Intersection Setup

Name	OR 213		OR 213		S Redland Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	350.00	100.00	100.00	100.00	335.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		40.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		Yes		Yes	
Crosswalk	Yes		No		Yes	

Volumes

Name	OR 213		OR 213		S Redland Rd	
Base Volume Input [veh/h]	117	1445	2130	704	385	92
Base Volume Adjustment Factor	1.1700	1.1700	1.1700	1.1700	1.1700	1.1700
Heavy Vehicles Percentage [%]	5.00	3.00	4.00	3.00	5.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	412	0	54
Total Hourly Volume [veh/h]	137	1691	2492	412	450	54
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	436	642	106	116	14
Total Analysis Volume [veh/h]	141	1743	2569	425	464	56
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	0		1		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	22.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Overlap	Permissive	Overlap
Signal Group	1	6	2	2	8	8
Auxiliary Signal Groups				2,8		1,8
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	6	6
Maximum Green [s]	12	101	85	85	21	21
Amber [s]	3.5	5.0	5.0	5.0	3.0	3.0
All red [s]	0.5	1.0	1.0	1.0	0.7	0.7
Split [s]	16	105	89	89	25	25
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	5	5	5
Pedestrian Clearance [s]	0	10	10	10	10	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	4.0	1.7	1.7
Minimum Recall	No	Yes	Yes	Yes	No	No
Maximum Recall	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	3.70	3.70	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	0.00	1.70	0.00
g_i, Effective Green Time [s]	12	100	84	110	20	36
g / C, Green / Cycle	0.09	0.77	0.65	0.85	0.16	0.28
(v / s)_i Volume / Saturation Flow Rate	0.08	0.49	0.73	0.27	0.14	0.04
s, saturation flow rate [veh/h]	1738	3532	3503	1576	3375	1589
c, Capacity [veh/h]	160	2718	2266	1338	526	439
d1, Uniform Delay [s]	58.40	6.82	8.96	0.56	53.79	35.34
k, delay calibration	0.31	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	31.92	1.17	66.28	0.63	5.06	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.33	1.12	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.64	1.13	0.32	0.88	0.13
d, Delay for Lane Group [s/veh]	90.32	7.99	75.24	1.19	58.86	35.47
Lane Group LOS	F	A	F	A	E	D
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.84	7.83	26.01	0.46	7.68	1.34
50th-Percentile Queue Length [ft/ln]	145.94	195.83	650.28	11.49	192.02	33.51
95th-Percentile Queue Length [veh/ln]	9.80	12.42	37.95	0.83	12.23	2.41
95th-Percentile Queue Length [ft/ln]	245.00	310.59	948.67	20.69	305.65	60.32

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	90.32	7.99	75.24	1.19	58.86	35.47
Movement LOS	F	A	F	A	E	D
d_A, Approach Delay [s/veh]	14.15		64.73		56.34	
Approach LOS	B		E		E	
d_I, Intersection Delay [s/veh]	46.27					
Intersection LOS	D					
Intersection V/C	0.998					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	0.00	56.31
I_p,int, Pedestrian LOS Score for Intersection	3.950	0.000	2.731
Crosswalk LOS	D	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1523	1277	328
d_b, Bicycle Delay [s]	3.70	8.50	45.44
I_b,int, Bicycle LOS Score for Intersection	3.114	4.370	1.560
Bicycle LOS	C	E	A

Sequence

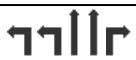
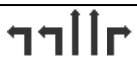
Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: OR 213/Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	55.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.833

Intersection Setup

Name	OR 213			OR 213			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	2	0	1	2	0	0	2	0	1
Entry Pocket Length [ft]	530.00	100.00	580.00	600.00	100.00	525.00	500.00	100.00	100.00	160.00	100.00	465.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 213			OR 213			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	85	641	155	680	1071	512	522	592	112	117	400	399
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	2.00	4.00	1.00	4.00	5.00	3.00	3.00	1.00	4.00	0.00	2.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	88	0	0	290	0	0	0	0	0	226
Total Hourly Volume [veh/h]	96	724	87	768	1210	289	590	669	127	132	452	225
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	189	23	200	315	75	154	174	33	34	118	59
Total Analysis Volume [veh/h]	100	754	91	800	1260	301	615	697	132	138	471	234
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	7			0			7			0		
v_di, Inbound Pedestrian Volume crossing m	7			0			7			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			1			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	142
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	0
Maximum Green [s]	15	40	0	32	40	0	38	30	0	15	20	0
Amber [s]	4.0	5.0	0.0	4.0	5.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.5	2.0	0.0	1.5	2.0	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	21	47	0	38	47	0	44	36	0	21	26	0
Vehicle Extension [s]	2.3	4.7	0.0	2.3	4.7	0.0	2.3	2.3	0.0	2.3	2.3	0.0
Walk [s]	0	8	0	0	9	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	31	0	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.5	5.0	0.0	3.5	5.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	137	137	137	137	137	137	137	137	137	137	137	137
L, Total Lost Time per Cycle [s]	5.50	7.00	7.00	5.50	7.00	7.00	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	5.00	5.00	3.50	5.00	5.00	3.50	3.50	3.50	3.50	3.50	3.50
g_i, Effective Green Time [s]	9	34	34	32	57	57	27	40	40	7	20	20
g / C, Green / Cycle	0.07	0.25	0.25	0.23	0.41	0.41	0.20	0.29	0.29	0.05	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.06	0.22	0.06	0.24	0.36	0.19	0.18	0.22	0.23	0.04	0.13	0.15
s, saturation flow rate [veh/h]	1781	3503	1602	3403	3475	1577	3431	1885	1765	3514	3560	1577
c, Capacity [veh/h]	123	875	400	796	1440	654	680	547	512	191	521	231
d1, Uniform Delay [s]	62.78	49.04	40.80	52.40	36.78	28.97	53.58	44.46	44.76	63.67	57.46	58.40
k, delay calibration	0.07	0.20	0.20	0.07	0.23	0.25	0.07	0.43	0.45	0.07	0.07	0.38
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.57	4.78	0.53	12.79	3.80	1.17	3.09	8.90	10.74	3.17	3.97	55.70
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.86	0.23	1.00	0.87	0.46	0.90	0.77	0.79	0.72	0.90	1.02
d, Delay for Lane Group [s/veh]	70.35	53.82	41.33	65.18	40.58	30.14	56.67	53.35	55.50	66.84	61.43	114.10
Lane Group LOS	E	D	D	F	D	C	E	D	E	E	E	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.70	12.88	2.53	15.02	19.87	7.40	10.53	14.37	14.08	2.44	8.24	11.48
50th-Percentile Queue Length [ft/ln]	92.44	321.96	63.22	375.48	496.68	185.09	263.35	359.22	352.00	60.98	205.93	286.89
95th-Percentile Queue Length [veh/ln]	6.66	18.76	4.55	21.44	27.18	11.87	15.86	20.59	20.23	4.39	12.94	17.15
95th-Percentile Queue Length [ft/ln]	166.40	469.10	113.80	535.92	679.43	296.65	396.42	514.63	505.85	109.77	323.60	428.84

Movement, Approach, & Intersection Results

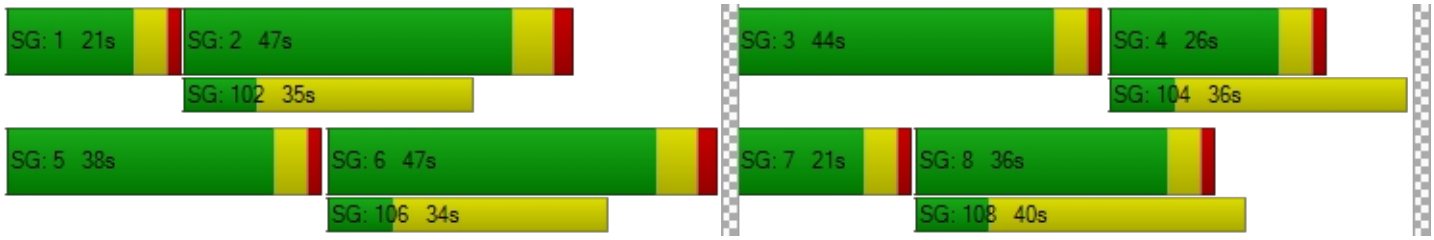
d_M, Delay for Movement [s/veh]	70.35	53.82	41.33	65.18	40.58	30.14	56.67	54.20	55.50	66.84	61.43	114.10
Movement LOS	E	D	D	F	D	C	E	D	E	E	E	F
d_A, Approach Delay [s/veh]	54.36			47.58			55.37			76.94		
Approach LOS	D			D			E			E		
d_I, Intersection Delay [s/veh]	55.16											
Intersection LOS	E											
Intersection V/C	0.833											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	13.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	552.80	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	58.60	59.51	58.60	59.51
l_p,int, Pedestrian LOS Score for Intersection	3.015	3.652	2.967	3.383
Crosswalk LOS	C	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	563	563	430	289
d_b, Bicycle Delay [s]	36.63	36.63	43.80	51.98
l_b,int, Bicycle LOS Score for Intersection	2.412	3.747	2.751	2.442
Bicycle LOS	B	D	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 23: OR 213 / Molalla Ave

Control Type:	Signalized	Delay (sec / veh):	32.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.767

Intersection Setup

Name	OR 213			OR 213			Molalla Ave			S Douglas Loop		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	650.00	100.00	100.00	525.00	100.00	355.00	100.00	100.00	100.00	275.00	100.00	275.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 213			OR 213			Molalla Ave			S Douglas Loop		
Base Volume Input [veh/h]	212	739	10	13	1071	197	129	16	334	19	20	19
Base Volume Adjustment Factor	1.1700	1.1700	1.1700	1.1700	1.1700	1.1700	1.1700	1.1700	1.1700	1.1700	1.1700	1.1700
Heavy Vehicles Percentage [%]	0.00	4.00	20.00	15.00	5.00	2.00	2.00	19.00	1.00	11.00	30.00	11.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	6	0	0	115	0	0	196	0	0	11
Total Hourly Volume [veh/h]	248	865	6	15	1253	115	151	19	195	22	23	11
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	67	235	2	4	340	31	41	5	53	6	6	3
Total Analysis Volume [veh/h]	270	940	7	16	1362	125	164	21	212	24	25	12
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	4			2			4			1		
v_di, Inbound Pedestrian Volume crossing m	4			1			4			2		
v_co, Outbound Pedestrian Volume crossing	0			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	13.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	6
Maximum Green [s]	31	55	0	21	45	0	16	22	0	16	22	22
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	3.5	4.7	0.0	3.5	4.7	4.7
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.5	0.7	0.0	0.5	0.7	0.7
Split [s]	35	59	0	25	49	0	20	26	0	20	26	26
Vehicle Extension [s]	2.3	4.5	0.0	2.3	4.5	0.0	2.3	2.3	0.0	2.3	2.3	2.3
Walk [s]	0	9	0	0	10	0	0	14	0	0	11	11
Pedestrian Clearance [s]	0	23	0	0	27	0	0	28	0	0	30	30
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	4.0	0.0	2.0	4.0	0.0	2.0	3.4	0.0	2.0	3.4	3.4
Minimum Recall	No	Yes		No	Yes		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	5.40	5.40	4.00	5.40	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	3.40	3.40	2.00	3.40	0.00
g_i, Effective Green Time [s]	21	84	84	2	64	64	19	21	21	5	6	36
g / C, Green / Cycle	0.16	0.64	0.64	0.01	0.49	0.49	0.15	0.16	0.16	0.04	0.05	0.28
(v / s)_i Volume / Saturation Flow Rate	0.15	0.27	0.01	0.01	0.39	0.08	0.12	0.01	0.13	0.01	0.02	0.01
s, saturation flow rate [veh/h]	1810	3503	1359	1595	3475	1589	1417	1615	1578	1652	1450	1470
c, Capacity [veh/h]	297	2249	872	22	1709	782	241	256	250	60	72	413
d1, Uniform Delay [s]	53.40	11.38	8.37	63.86	27.61	18.22	55.51	46.64	53.05	61.24	59.77	33.88
k, delay calibration	0.14	0.50	0.50	0.07	0.50	0.50	0.07	0.07	0.23	0.07	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.13	0.57	0.02	24.03	3.96	0.44	2.07	0.08	15.04	2.59	1.77	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.42	0.01	0.73	0.80	0.16	0.68	0.08	0.85	0.40	0.35	0.03
d, Delay for Lane Group [s/veh]	66.53	11.96	8.39	87.89	31.57	18.66	57.57	46.72	68.10	63.83	61.54	33.90
Lane Group LOS	E	B	A	F	C	B	E	D	E	E	E	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	9.39	5.88	0.07	0.66	16.97	2.04	5.47	0.60	7.82	0.83	0.84	0.28
50th-Percentile Queue Length [ft/ln]	234.70	147.10	1.66	16.44	424.21	50.91	136.69	14.90	195.51	20.66	21.02	7.11
95th-Percentile Queue Length [veh/ln]	14.41	9.86	0.12	1.18	23.72	3.67	9.30	1.07	12.41	1.49	1.51	0.51
95th-Percentile Queue Length [ft/ln]	360.32	246.56	2.99	29.59	593.09	91.64	232.56	26.82	310.17	37.19	37.84	12.79

Movement, Approach, & Intersection Results

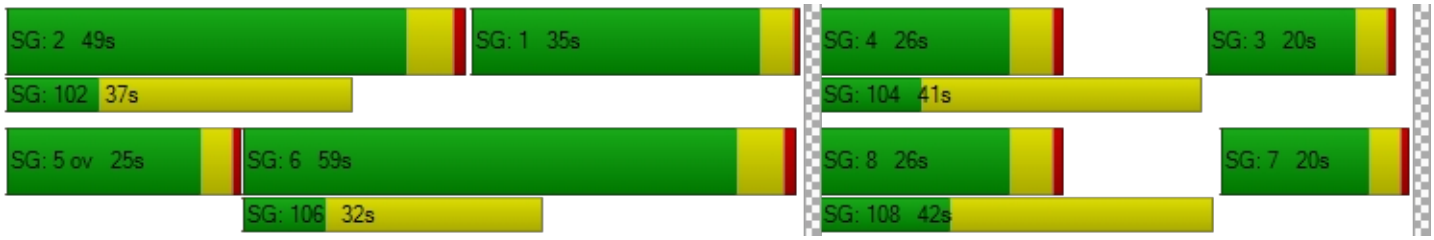
d_M, Delay for Movement [s/veh]	66.53	11.96	8.39	87.89	31.57	18.66	57.57	46.72	68.10	63.83	61.54	33.90
Movement LOS	E	B	A	F	C	B	E	D	E	E	E	C
d_A, Approach Delay [s/veh]	24.04			31.09			62.62			57.00		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	32.83											
Intersection LOS	C											
Intersection V/C	0.767											

Other Modes

g_Walk,mi, Effective Walk Time [s]	18.0	15.0	14.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	1518.72	3204.67	0.00	10045.46
d_p, Pedestrian Delay [s]	48.25	50.87	51.75	52.65
l_p,int, Pedestrian LOS Score for Intersection	3.373	3.682	2.655	2.188
Crosswalk LOS	C	D	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	815	662	317	317
d_b, Bicycle Delay [s]	22.80	29.11	46.03	46.03
l_b,int, Bicycle LOS Score for Intersection	2.569	2.894	2.538	1.678
Bicycle LOS	B	C	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Molalla Ave / Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	33.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.506

Intersection Setup

Name	Molalla Ave			Molalla Ave			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	170.00	100.00	150.00	350.00	100.00	100.00	175.00	100.00	190.00	210.00	100.00	245.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			35.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Molalla Ave			Molalla Ave			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	127	251	45	480	304	16	24	342	150	86	302	293
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	4.00	1.00	2.00	2.00	1.00	0.00	0.00	2.00	3.00	6.00	3.00	1.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	84	0	0	164
Total Hourly Volume [veh/h]	142	281	50	538	340	18	27	383	84	96	338	164
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	74	13	142	89	5	7	101	22	25	89	43
Total Analysis Volume [veh/h]	149	296	53	566	358	19	28	403	88	101	356	173
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3			3			3			2		
v_di, Inbound Pedestrian Volume crossing m	3			2			3			3		
v_co, Outbound Pedestrian Volume crossing	7			2			3			7		
v_ci, Inbound Pedestrian Volume crossing mi	7			3			2			7		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	10	0	6	10	0	4	6	0	6	6	0
Maximum Green [s]	30	40	0	30	40	0	20	25	0	20	25	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	3.5	4.0	0.0	3.5	4.0	0.0
All red [s]	2.0	2.0	0.0	2.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	20	38	0	24	42	0	12	26	0	12	26	0
Vehicle Extension [s]	2.3	4.6	0.0	2.3	4.2	0.0	2.3	2.5	0.0	2.3	2.5	0.0
Walk [s]	0	9	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	26	0	0	22	0	0	23	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	4.0	0.0	4.0	4.0	0.0	2.5	4.0	0.0	2.5	4.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	38	38	38	49	49	49	26	15	15	26	19	19
g / C, Green / Cycle	0.38	0.38	0.38	0.49	0.49	0.49	0.26	0.15	0.15	0.26	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.12	0.09	0.10	0.39	0.10	0.10	0.02	0.11	0.06	0.08	0.10	0.11
s, saturation flow rate [veh/h]	1225	1885	1780	1433	1885	1851	1183	3560	1558	1213	3532	1590
c, Capacity [veh/h]	517	723	683	641	915	898	314	533	233	315	669	301
d1, Uniform Delay [s]	21.02	21.02	21.06	28.75	14.75	14.76	28.55	40.84	38.35	30.04	36.60	36.89
k, delay calibration	0.07	0.50	0.50	0.50	0.50	0.50	0.07	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.19	0.81	0.88	16.14	0.52	0.53	0.07	1.66	0.75	0.43	0.49	1.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.29	0.25	0.25	0.88	0.21	0.21	0.09	0.76	0.38	0.32	0.53	0.57
d, Delay for Lane Group [s/veh]	21.21	21.84	21.94	44.89	15.27	15.28	28.63	42.50	39.10	30.47	37.09	38.18
Lane Group LOS	C	C	C	D	B	B	C	D	D	C	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.35	2.97	2.86	12.15	2.50	2.45	0.51	4.79	1.96	1.95	3.93	3.92
50th-Percentile Queue Length [ft/ln]	58.69	74.14	71.54	303.78	62.39	61.35	12.64	119.74	49.07	48.64	98.37	97.95
95th-Percentile Queue Length [veh/ln]	4.23	5.34	5.15	17.87	4.49	4.42	0.91	8.38	3.53	3.50	7.08	7.05
95th-Percentile Queue Length [ft/ln]	105.64	133.45	128.77	446.70	112.30	110.43	22.76	209.47	88.33	87.56	177.06	176.31

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	21.21	21.88	21.94	44.89	15.28	15.28	28.63	42.50	39.10	30.47	37.09	38.18
Movement LOS	C	C	C	D	B	B	C	D	D	C	D	D
d_A, Approach Delay [s/veh]	21.68			33.05			41.17			36.33		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	33.29											
Intersection LOS	C											
Intersection V/C	0.506											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	1777.47	1843.36	2417.91	690.56
d_p, Pedestrian Delay [s]	38.72	38.72	38.72	37.85
l_p,int, Pedestrian LOS Score for Intersection	2.548	2.677	2.846	3.288
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	640	720	400	400
d_b, Bicycle Delay [s]	23.12	20.48	32.00	32.00
l_b,int, Bicycle LOS Score for Intersection	1.970	2.338	2.057	2.215
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: Maple Lane Rd / Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	20.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.712

Intersection Setup

Name	Maple Lane Rd			Maple Lane Rd			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	150.00	430.00	100.00	100.00	360.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Maple Lane Rd			Maple Lane Rd			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	226	92	46	58	59	303	393	706	108	15	411	48
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	1.00	0.00	2.00	2.00	2.00	1.00	2.00	4.00	2.00	0.00	3.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	170	0	0	0	0	0	0
Total Hourly Volume [veh/h]	253	103	52	65	66	169	440	791	121	17	460	54
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	66	27	14	17	17	44	115	206	32	4	120	14
Total Analysis Volume [veh/h]	264	107	54	68	69	176	458	824	126	18	479	56
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3			0			3			0		
v_di, Inbound Pedestrian Volume crossing m	3			0			3			0		
v_co, Outbound Pedestrian Volume crossing	4			0			0			4		
v_ci, Inbound Pedestrian Volume crossing mi	4			0			0			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	0	3	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	4	10	0	4	10	0
Maximum Green [s]	0	20	0	0	20	20	35	50	0	20	35	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	4.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.5	0.5	0.5	0.0	0.5	0.5	0.0
Split [s]	0	25	0	0	25	25	40	55	0	25	40	0
Vehicle Extension [s]	0.0	2.5	0.0	0.0	2.5	2.5	2.5	5.2	0.0	2.3	5.2	0.0
Walk [s]	0	8	0	0	8	8	0	7	0	0	8	0
Pedestrian Clearance [s]	0	19	0	0	19	19	0	12	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	0.0	0.0	2.5	2.5	2.5	2.5	0.0	2.5	2.5	0.0
Minimum Recall		No			No	No	No	Yes		No	Yes	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	0.00	0.00	2.50	2.50	0.00	2.50	2.50
g_i, Effective Green Time [s]	13	13	6	6	27	37	31	31	37	15	15
g / C, Green / Cycle	0.19	0.19	0.09	0.09	0.40	0.53	0.45	0.45	0.53	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.15	0.09	0.04	0.04	0.11	0.34	0.26	0.27	0.02	0.15	0.15
s, saturation flow rate [veh/h]	1795	1777	1781	1870	1602	1354	1840	1753	721	1855	1778
c, Capacity [veh/h]	346	342	153	161	633	751	821	782	416	406	389
d1, Uniform Delay [s]	26.64	24.99	30.28	30.24	14.33	11.76	14.50	14.56	9.28	24.92	24.97
k, delay calibration	0.08	0.08	0.08	0.08	0.08	0.26	0.26	0.26	0.07	0.26	0.26
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.63	0.75	1.50	1.35	0.18	1.89	1.59	1.72	0.03	4.44	4.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.47	0.44	0.43	0.28	0.61	0.59	0.60	0.04	0.67	0.68
d, Delay for Lane Group [s/veh]	29.27	25.73	31.78	31.58	14.51	13.66	16.09	16.28	9.30	29.36	29.76
Lane Group LOS	C	C	C	C	B	B	B	B	A	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.26	2.36	1.08	1.09	1.68	4.11	5.35	5.20	0.11	4.32	4.23
50th-Percentile Queue Length [ft/ln]	106.55	59.11	26.92	27.16	42.07	102.65	133.80	129.95	2.81	107.88	105.68
95th-Percentile Queue Length [veh/ln]	7.65	4.26	1.94	1.96	3.03	7.39	9.15	8.94	0.20	7.72	7.60
95th-Percentile Queue Length [ft/ln]	191.20	106.40	48.45	48.90	75.73	184.78	228.65	223.42	5.06	193.06	189.98

Movement, Approach, & Intersection Results

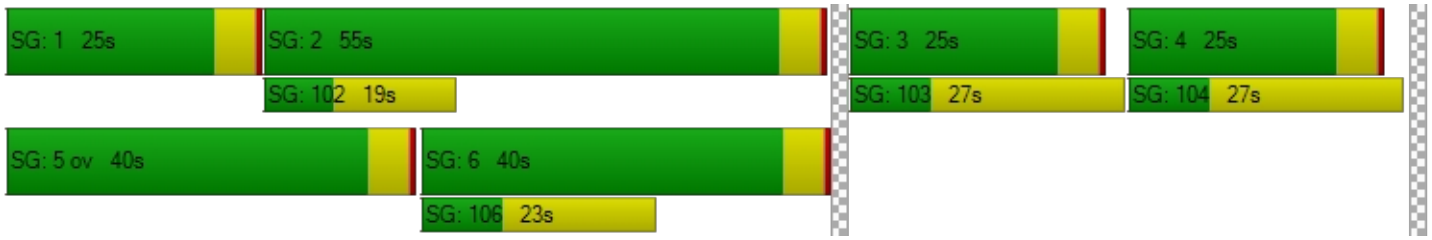
d_M, Delay for Movement [s/veh]	29.27	25.73	25.73	31.78	31.58	14.51	13.66	16.17	16.28	9.30	29.53	29.76
Movement LOS	C	C	C	C	C	B	B	B	B	A	C	C
d_A, Approach Delay [s/veh]	27.93			22.03			15.36			28.90		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	20.89											
Intersection LOS	C											
Intersection V/C	0.712											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	688.79	0.00	0.00	1090.53
d_p, Pedestrian Delay [s]	54.47	53.55	53.55	53.55
l_p,int, Pedestrian LOS Score for Intersection	2.143	2.910	2.885	2.658
Crosswalk LOS	B	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	315	315	777	546
d_b, Bicycle Delay [s]	46.14	46.12	24.31	34.36
l_b,int, Bicycle LOS Score for Intersection	2.261	2.357	2.721	2.016
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 199: I 205 SB-Ramp / OR 213

Control Type:	Two-way stop	Delay (sec / veh):	698.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.697

Intersection Setup

Name	OR 213		OR 213			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	OR 213		OR 213			
Base Volume Input [veh/h]	0	664	31	0	0	2077
Base Volume Adjustment Factor	1.0000	1.1700	1.1700	1.0000	1.0000	1.1700
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	777	36	0	0	2430
Peak Hour Factor	1.0000	0.9200	0.9200	1.0000	1.0000	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	211	10	0	0	660
Total Analysis Volume [veh/h]	0	845	39	0	0	2641
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Stop	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	1.70	0.00	0.00	0.03
d_M, Delay for Movement [s/veh]	0.00	0.00	698.02	0.00	0.00	0.00
Movement LOS		A	F			A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	4.95	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	123.85	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		698.02		0.00	
Approach LOS	A		F		A	
d_I, Intersection Delay [s/veh]	7.72					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 1: OR 99E/ River Rd/ W Arlington St

Control Type:	Signalized	Delay (sec / veh):	12.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.575

Intersection Setup

Name				OR 99E			River Rd			W Arlington St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	185.00	100.00	275.00	250.00	100.00	100.00	550.00	100.00	100.00	100.00	100.00	160.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				OR 99E			River Rd			W Arlington St		
Base Volume Input [veh/h]	135	1079	103	81	1050	12	6	41	177	131	28	98
Base Volume Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
Heavy Vehicles Percentage [%]	4.00	3.00	6.00	1.00	4.00	0.00	0.00	7.00	2.00	3.00	4.00	5.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	51
Total Hourly Volume [veh/h]	139	1111	106	83	1082	12	6	42	182	135	29	50
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	286	27	21	279	3	2	11	47	35	7	13
Total Analysis Volume [veh/h]	143	1145	109	86	1115	12	6	43	188	139	30	52
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		7			2			7			1	
v_di, Inbound Pedestrian Volume crossing m		7			1			7			2	
v_co, Outbound Pedestrian Volume crossing		3			2			2			3	
v_ci, Inbound Pedestrian Volume crossing mi		3			2			2			3	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		3			2			4			1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	42.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	20	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	18	52	0	18	52	0	0	30	0	0	30	0
Vehicle Extension [s]	2.3	4.7	0.0	2.3	4.7	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	9	0	0	8	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	20	0	0	15	0	0	26	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	C	R	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.40	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.80	2.80	0.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	66	66	61	60	60	17	17	17	17
g / C, Green / Cycle	0.10	0.66	0.66	0.61	0.60	0.60	0.17	0.17	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.08	0.32	0.07	0.12	0.31	0.31	0.03	0.12	0.12	0.03
s, saturation flow rate [veh/h]	1752	3532	1498	720	1840	1832	1771	1525	1463	1523
c, Capacity [veh/h]	172	2335	991	424	1104	1099	348	265	320	264
d1, Uniform Delay [s]	42.61	2.41	2.06	7.44	5.04	5.04	35.10	38.72	38.17	35.32
k, delay calibration	0.07	0.46	0.50	0.50	0.50	0.50	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.18	0.68	0.22	1.07	1.69	1.70	0.14	2.62	1.01	0.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.49	0.11	0.20	0.51	0.51	0.14	0.71	0.53	0.20
d, Delay for Lane Group [s/veh]	48.79	3.09	2.29	8.52	6.73	6.75	35.23	41.34	39.18	35.59
Lane Group LOS	D	A	A	A	A	A	D	D	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.61	1.68	0.32	0.45	3.11	3.10	1.02	4.47	3.90	1.10
50th-Percentile Queue Length [ft/ln]	90.26	42.12	7.88	11.19	77.75	77.55	25.60	111.79	97.51	27.49
95th-Percentile Queue Length [veh/ln]	6.50	3.03	0.57	0.81	5.60	5.58	1.84	7.94	7.02	1.98
95th-Percentile Queue Length [ft/ln]	162.47	75.81	14.19	20.14	139.94	139.59	46.09	198.49	175.52	49.47

Movement, Approach, & Intersection Results

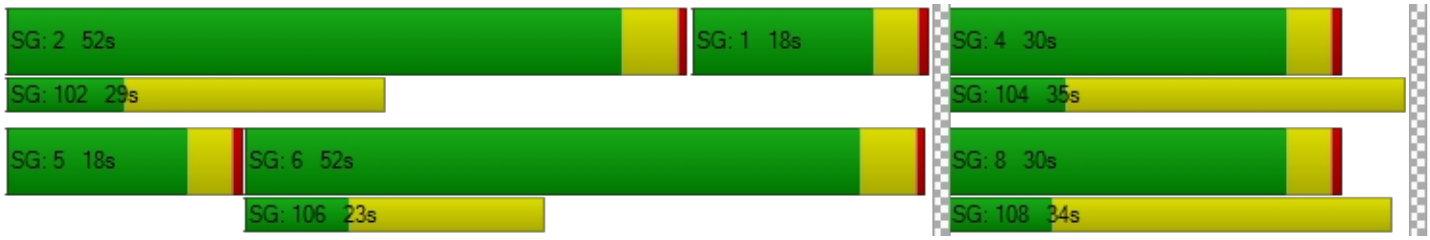
d_M, Delay for Movement [s/veh]	48.79	3.09	2.29	8.52	6.74	6.75	35.23	35.23	41.34	39.18	39.18	35.59
Movement LOS	D	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	7.70			6.87			40.07			38.34		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	12.08											
Intersection LOS	B											
Intersection V/C	0.575											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	3091.96	2233.07	940.73
d_p, Pedestrian Delay [s]	37.85	38.72	38.72	37.85
l_p,int, Pedestrian LOS Score for Intersection	3.115	2.954	2.081	2.287
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	944	944	520	520
d_b, Bicycle Delay [s]	13.96	13.95	27.43	27.39
l_b,int, Bicycle LOS Score for Intersection	2.712	2.560	1.951	2.008
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: OR 99E/Dunes Dr

Control Type:	Signalized	Delay (sec / veh):	46.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.042

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	220.00	100.00	100.00	370.00	100.00	155.00	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	73	1088	279	138	1096	129	39	12	73	357	17	114
Base Volume Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
Heavy Vehicles Percentage [%]	8.00	3.00	1.00	0.00	4.00	4.00	8.00	0.00	11.00	0.00	0.00	1.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	75	1121	287	142	1129	133	40	12	75	368	18	117
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	289	74	37	291	34	10	3	19	95	5	30
Total Analysis Volume [veh/h]	77	1156	296	146	1164	137	41	12	77	379	19	121
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			2			0			1		
v_di, Inbound Pedestrian Volume crossing m	0			1			0			2		
v_co, Outbound Pedestrian Volume crossing	1			0			0			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			2			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	17.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	2	0	5	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	20	40	0	20	40	0	0	20	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	16	50	0	21	45	0	0	34	0	0	34	0
Vehicle Extension [s]	2.3	4.8	0.0	2.3	4.8	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	18	0	0	38	0	0	37	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.00	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.80	2.80	2.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	47	47	17	33	33	37	37	37	37
g / C, Green / Cycle	0.04	0.47	0.47	0.17	0.33	0.33	0.37	0.37	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.06	0.28	0.28	0.39	0.25	0.25	0.03	0.05	0.29	0.09
s, saturation flow rate [veh/h]	1344	3532	1664	372	3503	1729	1186	1648	1329	1645
c, Capacity [veh/h]	86	1644	775	73	1159	572	406	612	477	611
d1, Uniform Delay [s]	46.66	13.35	13.36	47.16	24.50	24.57	26.70	20.89	33.77	21.60
k, delay calibration	0.50	0.50	0.50	0.50	0.12	0.50	0.08	0.08	0.25	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	72.49	1.63	3.44	498.76	1.12	9.01	0.08	0.08	6.82	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.60	0.60	2.01	0.75	0.76	0.10	0.15	0.79	0.23
d, Delay for Lane Group [s/veh]	119.15	14.97	16.80	545.92	25.62	33.58	26.78	20.97	40.59	21.74
Lane Group LOS	F	B	B	F	C	C	C	C	D	C
Critical Lane Group	No	No	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.63	5.60	5.69	11.81	7.74	8.98	0.74	1.41	9.74	2.29
50th-Percentile Queue Length [ft/ln]	90.68	140.06	142.23	295.25	193.50	224.54	18.61	35.23	243.57	57.34
95th-Percentile Queue Length [veh/ln]	6.53	9.48	9.60	21.26	12.30	13.90	1.34	2.54	14.86	4.13
95th-Percentile Queue Length [ft/ln]	163.22	237.11	240.02	531.44	307.57	347.42	33.49	63.41	371.55	103.21

Movement, Approach, & Intersection Results

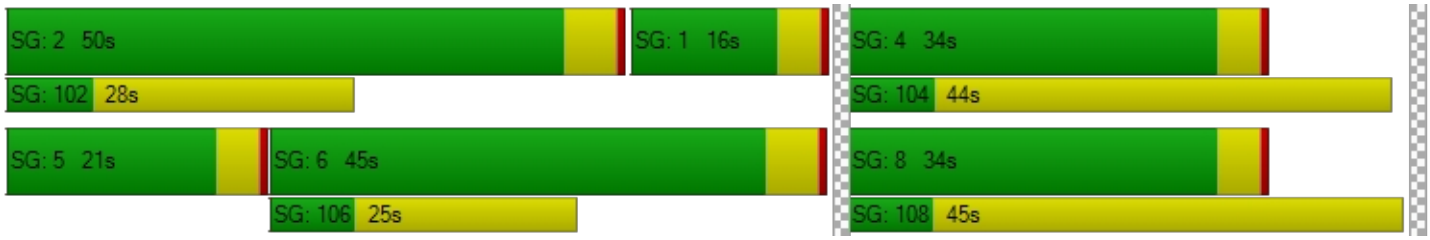
d_M, Delay for Movement [s/veh]	119.15	15.24	16.80	545.92	27.64	33.58	26.78	20.97	20.97	40.59	21.74	21.74
Movement LOS	F	B	B	F	C	C	C	C	C	D	C	C
d_A, Approach Delay [s/veh]	20.78			80.49			22.81			35.51		
Approach LOS	C			F			C			D		
d_I, Intersection Delay [s/veh]	46.79											
Intersection LOS	D											
Intersection V/C	1.042											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	2624.81	0.00	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	39.61	39.61
l_p,int, Pedestrian LOS Score for Intersection	3.576	3.042	2.146	2.416
Crosswalk LOS	D	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	904	804	600	600
d_b, Bicycle Delay [s]	15.02	17.90	24.50	24.50
l_b,int, Bicycle LOS Score for Intersection	2.401	2.355	1.774	2.416
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: OR 99E/I-205 SB Loop Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	19.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.730

Intersection Setup

Name	OR 99E					
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	1
Entry Pocket Length [ft]	100.00	200.00	240.00	100.00	575.00	275.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	No		No		Yes	

Volumes

Name	OR 99E					
Base Volume Input [veh/h]	1122	180	448	1086	467	443
Base Volume Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
Heavy Vehicles Percentage [%]	3.00	5.00	3.00	3.00	4.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	185	0	0	0	228
Total Hourly Volume [veh/h]	1156	0	461	1119	481	228
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	301	0	120	291	125	59
Total Analysis Volume [veh/h]	1204	0	480	1166	501	238
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	11.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	6	6
Maximum Green [s]	40	0	36	40	20	20
Amber [s]	4.3	0.0	3.5	4.3	4.0	4.0
All red [s]	0.5	0.0	0.5	0.5	1.5	1.5
Split [s]	34	0	38	72	28	28
Vehicle Extension [s]	4.8	0.0	2.3	4.8	2.3	2.3
Walk [s]	8	0	0	0	0	0
Pedestrian Clearance [s]	29	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.8	0.0	2.0	2.8	3.5	3.5
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.80	4.80	4.00	4.80	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.80	2.80	2.00	2.80	3.50	0.00
g_i, Effective Green Time [s]	39	39	29	72	17	50
g / C, Green / Cycle	0.39	0.39	0.29	0.72	0.17	0.50
(v / s)_i Volume / Saturation Flow Rate	0.24	0.00	0.27	0.23	0.15	0.15
s, saturation flow rate [veh/h]	5053	1551	1767	5053	3403	1589
c, Capacity [veh/h]	1985	609	513	3654	592	801
d1, Uniform Delay [s]	18.42	0.00	29.76	0.52	40.03	14.46
k, delay calibration	0.50	0.50	0.24	0.50	0.07	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.39	0.00	15.72	0.23	2.15	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.61	0.00	0.94	0.32	0.85	0.30
d, Delay for Lane Group [s/veh]	19.81	0.00	45.49	0.75	42.18	14.61
Lane Group LOS	B	A	D	A	D	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.49	0.00	11.71	0.30	6.07	3.08
50th-Percentile Queue Length [ft/ln]	137.24	0.00	292.75	7.57	151.81	77.10
95th-Percentile Queue Length [veh/ln]	9.33	0.00	17.32	0.54	10.11	5.55
95th-Percentile Queue Length [ft/ln]	233.30	0.00	433.05	13.62	252.84	138.78

Movement, Approach, & Intersection Results

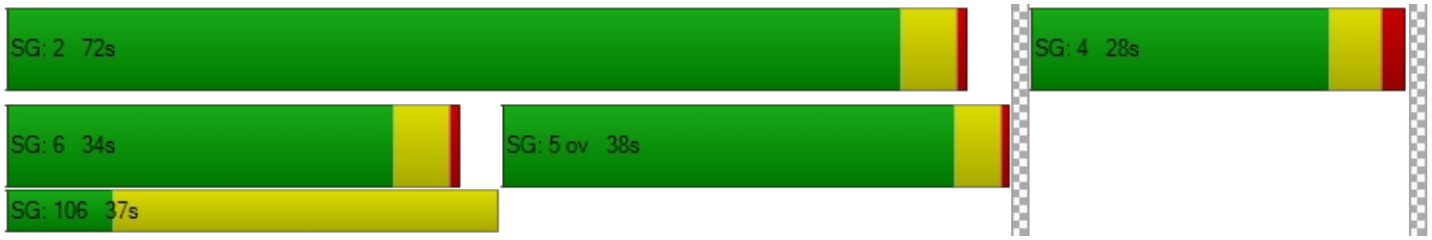
d_M, Delay for Movement [s/veh]	19.81	0.00	45.49	0.75	42.18	14.61
Movement LOS	B	A	D	A	D	B
d_A, Approach Delay [s/veh]	19.81		13.79		33.30	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	19.83					
Intersection LOS	B					
Intersection V/C	0.730					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	4901.87
d_p, Pedestrian Delay [s]	0.00	0.00	38.72
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.857
Crosswalk LOS	F	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	584	1344	450
d_b, Bicycle Delay [s]	25.08	5.38	30.03
l_b,int, Bicycle LOS Score for Intersection	2.324	2.465	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: OR 99E/I-205 EB Loop Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	13.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.591

Intersection Setup

Name	OR 99E		OR 99E		I-205 EB Loop Off-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	185.00	500.00	100.00	100.00	130.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		Yes		Yes	
Crosswalk	No		No		Yes	

Volumes

Name	OR 99E		OR 99E		I-205 EB Loop Off-Ramp	
Base Volume Input [veh/h]	864	577	460	1108	94	447
Base Volume Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
Heavy Vehicles Percentage [%]	3.00	4.00	4.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	297	0	0	0	460
Total Hourly Volume [veh/h]	890	297	474	1141	97	0
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	232	77	123	297	25	0
Total Analysis Volume [veh/h]	927	309	494	1189	101	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	99.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	6	6	5	2	4	0
Auxiliary Signal Groups		4,6				
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	10	4	10	6	0
Maximum Green [s]	36	36	34	70	22	0
Amber [s]	4.3	4.3	3.5	4.3	4.0	0.0
All red [s]	0.5	0.5	0.5	0.5	1.5	0.0
Split [s]	36	36	38	74	26	0
Vehicle Extension [s]	4.8	4.8	3.0	4.8	2.3	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	16	16	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.8	2.8	2.0	2.8	3.5	0.0
Minimum Recall	Yes	Yes	No	Yes	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.80	4.80	4.00	4.80	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.80	0.00	2.00	2.80	3.50	3.50
g_i, Effective Green Time [s]	48	61	30	82	8	8
g / C, Green / Cycle	0.48	0.61	0.30	0.81	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.18	0.20	0.28	0.24	0.06	0.00
s, saturation flow rate [veh/h]	5053	1535	1752	5053	1767	1577
c, Capacity [veh/h]	2400	942	524	4112	147	131
d1, Uniform Delay [s]	11.27	3.98	29.29	0.00	44.60	0.00
k, delay calibration	0.50	0.32	0.33	0.50	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.47	0.59	20.82	0.18	3.43	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.39	0.33	0.94	0.29	0.69	0.00
d, Delay for Lane Group [s/veh]	11.75	4.57	50.11	0.18	48.03	0.00
Lane Group LOS	B	A	D	A	D	A
Critical Lane Group	Yes	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	2.88	1.34	12.74	0.07	2.56	0.00
50th-Percentile Queue Length [ft/ln]	71.94	33.59	318.62	1.69	64.08	0.00
95th-Percentile Queue Length [veh/ln]	5.18	2.42	18.60	0.12	4.61	0.00
95th-Percentile Queue Length [ft/ln]	129.49	60.46	464.99	3.05	115.35	0.00

Movement, Approach, & Intersection Results

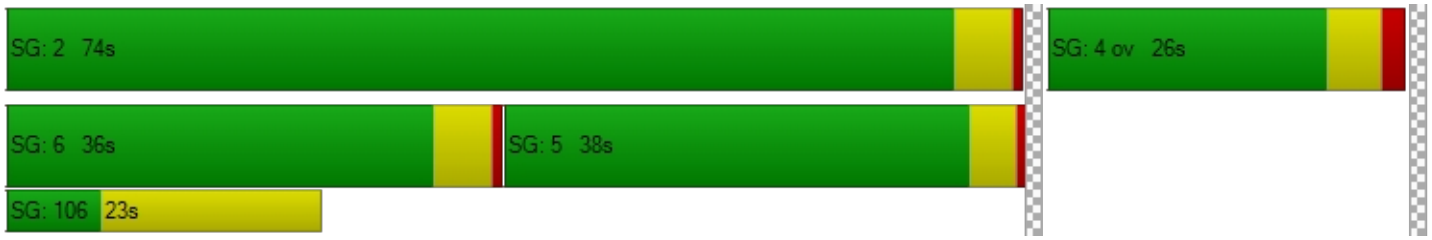
d_M, Delay for Movement [s/veh]	11.75	4.57	50.11	0.18	48.03	0.00
Movement LOS	B	A	D	A	D	A
d_A, Approach Delay [s/veh]	9.95		14.83		48.03	
Approach LOS	A		B		D	
d_I, Intersection Delay [s/veh]	13.95					
Intersection LOS	B					
Intersection V/C	0.591					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	374.61
d_p, Pedestrian Delay [s]	0.00	0.00	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	3.139
Crosswalk LOS	F	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	624	1384	410
d_b, Bicycle Delay [s]	23.68	4.74	31.60
I_b,int, Bicycle LOS Score for Intersection	2.403	2.485	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: OR 99E / 14th St

Control Type:	Signalized	Delay (sec / veh):	4.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.455

Intersection Setup

Name	OR 99E		OR 99E		14th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		14th St	
Base Volume Input [veh/h]	978	44	306	901	58	234
Base Volume Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
Heavy Vehicles Percentage [%]	4.00	5.00	2.00	4.00	9.00	1.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	121
Total Hourly Volume [veh/h]	1007	45	315	928	60	120
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	262	12	82	242	16	31
Total Analysis Volume [veh/h]	1049	47	328	967	63	125
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2		3		2	
v_di, Inbound Pedestrian Volume crossing m	2		2		3	
v_co, Outbound Pedestrian Volume crossing	0		2		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		2		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	2		9		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	75.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	52	0	24	80	12	12
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	56	0	28	84	16	16
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	7	0	0	0	7	7
Pedestrian Clearance [s]	11	0	0	0	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	68	68	84	84	8	24
g / C, Green / Cycle	0.68	0.68	0.84	0.84	0.08	0.24
(v / s)_i Volume / Saturation Flow Rate	0.30	0.30	0.46	0.28	0.04	0.08
s, saturation flow rate [veh/h]	1840	1810	716	3503	1657	1598
c, Capacity [veh/h]	1256	1236	674	2926	140	379
d1, Uniform Delay [s]	1.63	1.63	0.95	0.00	43.54	31.54
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.12
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.10	1.16	2.51	0.30	1.37	0.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.44	0.44	0.49	0.33	0.45	0.33
d, Delay for Lane Group [s/veh]	2.73	2.79	3.46	0.30	44.90	32.08
Lane Group LOS	A	A	A	A	D	C
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.38	1.39	0.47	0.12	1.53	2.54
50th-Percentile Queue Length [ft/ln]	34.55	34.87	11.73	3.08	38.23	63.51
95th-Percentile Queue Length [veh/ln]	2.49	2.51	0.84	0.22	2.75	4.57
95th-Percentile Queue Length [ft/ln]	62.19	62.77	21.12	5.55	68.81	114.31

Movement, Approach, & Intersection Results

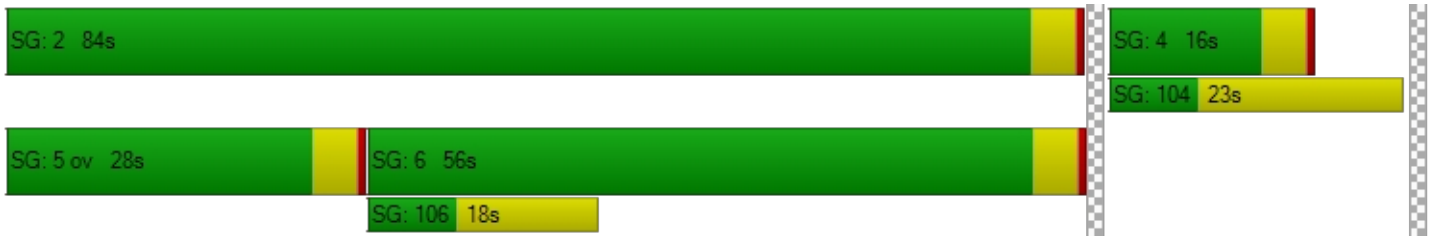
d_M, Delay for Movement [s/veh]	2.76	2.79	3.46	0.30	44.90	32.08
Movement LOS	A	A	A	A	D	C
d_A, Approach Delay [s/veh]	2.76		1.10		36.38	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	4.38					
Intersection LOS	A					
Intersection V/C	0.455					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	2321.78	1474.25	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	39.61
l_p,int, Pedestrian LOS Score for Intersection	2.654	2.810	2.868
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1040	1600	240
d_b, Bicycle Delay [s]	11.53	2.01	38.72
l_b,int, Bicycle LOS Score for Intersection	2.464	2.628	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: OR 99E / 12th St

Control Type:	Signalized	Delay (sec / veh):	1.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.371

Intersection Setup

Name	OR 99E		OR 99E		12th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	175.00	100.00	100.00	120.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		12th St	
Base Volume Input [veh/h]	916	17	102	861	6	125
Base Volume Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
Heavy Vehicles Percentage [%]	4.00	0.00	1.00	4.00	0.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	65
Total Hourly Volume [veh/h]	943	18	105	887	6	64
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	253	5	28	238	2	17
Total Analysis Volume [veh/h]	1014	19	113	954	6	69
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1		1		1	
v_di, Inbound Pedestrian Volume crossing m	1		1		1	
v_co, Outbound Pedestrian Volume crossing	1		1		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		1		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	4		12		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	51.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	80	0	16	80	12	12
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	64	0	20	84	16	16
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	9	0	0	0	8	8
Pedestrian Clearance [s]	11	0	0	0	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	79	79	87	87	5	13
g / C, Green / Cycle	0.79	0.79	0.87	0.87	0.05	0.13
(v / s)_i Volume / Saturation Flow Rate	0.28	0.28	0.16	0.27	0.00	0.04
s, saturation flow rate [veh/h]	1840	1826	694	3503	1789	1574
c, Capacity [veh/h]	1448	1437	622	3037	96	211
d1, Uniform Delay [s]	0.00	0.00	0.06	0.00	45.09	39.37
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.69	0.70	0.64	0.27	0.17	0.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.36	0.18	0.31	0.06	0.33
d, Delay for Lane Group [s/veh]	0.69	0.70	0.70	0.27	45.25	39.92
Lane Group LOS	A	A	A	A	D	D
Critical Lane Group	No	Yes	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.28	0.28	0.11	0.11	0.15	1.57
50th-Percentile Queue Length [ft/ln]	6.92	7.00	2.77	2.86	3.64	39.14
95th-Percentile Queue Length [veh/ln]	0.50	0.50	0.20	0.21	0.26	2.82
95th-Percentile Queue Length [ft/ln]	12.45	12.60	4.99	5.15	6.56	70.46

Movement, Approach, & Intersection Results

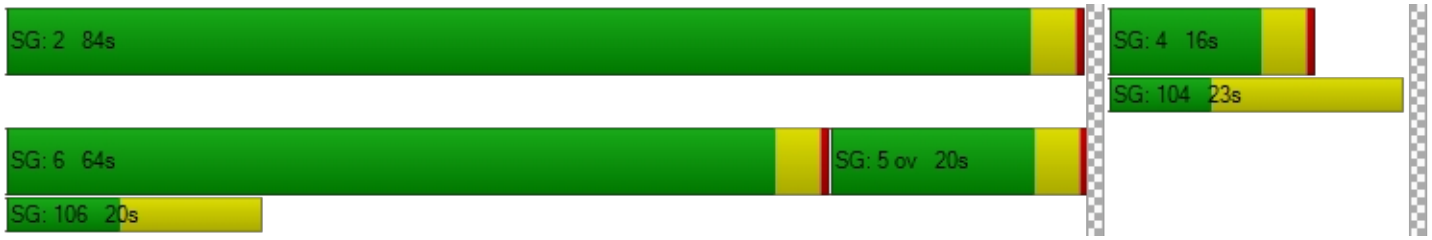
d_M, Delay for Movement [s/veh]	0.69	0.70	0.70	0.27	45.25	39.92
Movement LOS	A	A	A	A	D	D
d_A, Approach Delay [s/veh]	0.69		0.32		40.35	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	1.88					
Intersection LOS	A					
Intersection V/C	0.371					

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	4901.87	4552.46	3582.69
d_p, Pedestrian Delay [s]	38.72	38.72	37.85
l_p,int, Pedestrian LOS Score for Intersection	2.621	2.736	2.266
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1200	1600	240
d_b, Bicycle Delay [s]	8.02	2.01	38.74
l_b,int, Bicycle LOS Score for Intersection	2.412	2.440	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: OR 99E / 10th St

Control Type:	Signalized	Delay (sec / veh):	3.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.333

Intersection Setup

Name	OR 99E		OR 99E		7th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	250.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		7th St	
Base Volume Input [veh/h]	657	35	236	611	12	255
Base Volume Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
Heavy Vehicles Percentage [%]	5.00	0.00	0.00	4.00	8.00	1.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	132
Total Hourly Volume [veh/h]	677	36	243	629	12	131
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	182	10	65	169	3	35
Total Analysis Volume [veh/h]	728	39	261	676	13	141
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	4		1		1	
v_di, Inbound Pedestrian Volume crossing m	3		1		1	
v_co, Outbound Pedestrian Volume crossing	0		3		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		4		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		6		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	53.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	64	0	16	80	12	12
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	64	0	20	84	16	16
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	7	0	0	0	7	7
Pedestrian Clearance [s]	11	0	0	0	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	74	74	83	83	9	18
g / C, Green / Cycle	0.74	0.74	0.83	0.83	0.09	0.18
(v / s)_i Volume / Saturation Flow Rate	0.21	0.21	0.30	0.19	0.01	0.09
s, saturation flow rate [veh/h]	1825	1788	856	3503	1656	1586
c, Capacity [veh/h]	1351	1324	722	2906	150	285
d1, Uniform Delay [s]	0.17	0.17	0.13	0.00	41.72	36.92
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.18
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.53	0.55	1.41	0.19	0.15	2.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.29	0.36	0.23	0.09	0.49
d, Delay for Lane Group [s/veh]	0.70	0.72	1.54	0.19	41.87	39.16
Lane Group LOS	A	A	A	A	D	D
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.27	0.28	0.28	0.08	0.30	3.26
50th-Percentile Queue Length [ft/ln]	6.83	6.98	7.05	1.89	7.50	81.48
95th-Percentile Queue Length [veh/ln]	0.49	0.50	0.51	0.14	0.54	5.87
95th-Percentile Queue Length [ft/ln]	12.30	12.56	12.69	3.41	13.50	146.67

Movement, Approach, & Intersection Results

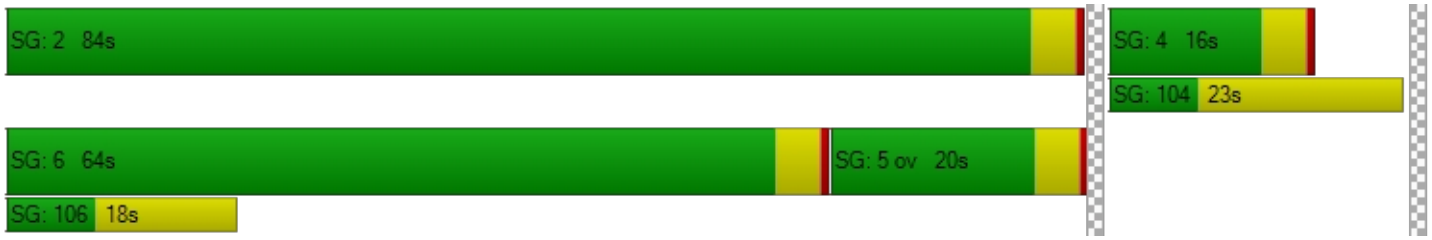
d_M, Delay for Movement [s/veh]	0.71	0.72	1.54	0.19	41.87	39.16
Movement LOS	A	A	A	A	D	D
d_A, Approach Delay [s/veh]	0.71		0.56		39.39	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	3.84					
Intersection LOS	A					
Intersection V/C	0.333					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	1282.52	3561.75	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	39.61
l_p,int, Pedestrian LOS Score for Intersection	2.491	2.683	2.646
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1200	1600	240
d_b, Bicycle Delay [s]	8.00	2.01	38.74
l_b,int, Bicycle LOS Score for Intersection	2.192	2.333	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Washington St / Clackamas River Dr

Control Type:	Roundabout	Delay (sec / veh):	4.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Washington St		Washington St		Clackamas River Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Washington St		Washington St		Clackamas River Dr	
Base Volume Input [veh/h]	228	364	174	121	150	77
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	5.00	12.00	5.00	6.00	7.00	5.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	230	368	176	122	152	78
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	103	49	34	43	22
Total Analysis Volume [veh/h]	258	413	198	137	171	88
Pedestrian Volume [ped/h]	0		0		1	

Intersection Settings

Number of Conflicting Circulating Lanes	1		1		1	
Circulating Flow Rate [veh/h]	208		183		271	
Exiting Flow Rate [veh/h]	328		363		208	
Demand Flow Rate [veh/h]	230	368	176	122	152	78
Adjusted Demand Flow Rate [veh/h]	258	413	198	137	171	88

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	0.00	1380.00	1380.00
B (coefficient)	0.00102	0.00000	0.00102	0.00102
HV Adjustment Factor	0.92	0.89	0.95	0.94
Entry Flow Rate [veh/h]	282	0	354	276
Capacity of Entry and Bypass Lanes [veh/h]	1117	112001	1146	1047
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1023	100000	1087	985
X, volume / capacity	0.25	0.00	0.31	0.26

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	1.00	0.00	1.32	1.06
95th-Percentile Queue Length [ft]	25.06	0.00	32.98	26.46
Approach Delay [s/veh]	2.29		6.33	6.27
Approach LOS	A		A	A
Intersection Delay [s/veh]	4.18			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 9: Washington St/ Prairie Schooner Way

Control Type:	Signalized	Delay (sec / veh):	9.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.580

Intersection Setup

Name	Washington St		Washington St		Prairie Schooner Way	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	0	1	0
Entry Pocket Length [ft]	100.00	100.00	150.00	100.00	165.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	No		Yes		Yes	

Volumes

Name	Washington St		Washington St		Prairie Schooner Way	
Base Volume Input [veh/h]	403	164	47	228	410	178
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	14.00	8.00	2.00	7.00	11.00	6.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	90
Total Hourly Volume [veh/h]	407	166	47	230	414	90
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	109	45	13	62	111	24
Total Analysis Volume [veh/h]	438	178	51	247	445	97
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	93
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	2	0	1	6	8	8
Auxiliary Signal Groups						1,8
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	8	0	4	8	4	4
Maximum Green [s]	30	0	20	30	30	30
Amber [s]	4.0	0.0	3.5	4.0	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	35	0	24	35	34	34
Vehicle Extension [s]	4.2	0.0	2.3	5.2	2.5	2.5
Walk [s]	8	0	0	0	7	7
Pedestrian Clearance [s]	24	0	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	0.0	2.0	2.5	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	31	31	31	31	31	31
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	0.00	2.50	2.00	0.00
g_i, Effective Green Time [s]	10	10	16	16	7	13
g / C, Green / Cycle	0.33	0.33	0.51	0.51	0.22	0.40
(v / s)_i Volume / Saturation Flow Rate	0.18	0.20	0.05	0.07	0.14	0.06
s, saturation flow rate [veh/h]	1690	1521	1019	3418	3209	1524
c, Capacity [veh/h]	561	505	721	1728	723	607
d1, Uniform Delay [s]	8.62	8.84	4.44	4.16	11.01	6.09
k, delay calibration	0.17	0.17	0.07	0.26	0.08	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.28	1.82	0.03	0.09	0.64	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	0.61	0.07	0.14	0.62	0.16
d, Delay for Lane Group [s/veh]	9.91	10.66	4.47	4.25	11.65	6.17
Lane Group LOS	A	B	A	A	B	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.31	1.40	0.08	0.21	1.07	0.26
50th-Percentile Queue Length [ft/ln]	32.84	34.94	2.01	5.32	26.71	6.45
95th-Percentile Queue Length [veh/ln]	2.36	2.52	0.14	0.38	1.92	0.46
95th-Percentile Queue Length [ft/ln]	59.11	62.89	3.62	9.57	48.08	11.60

Movement, Approach, & Intersection Results

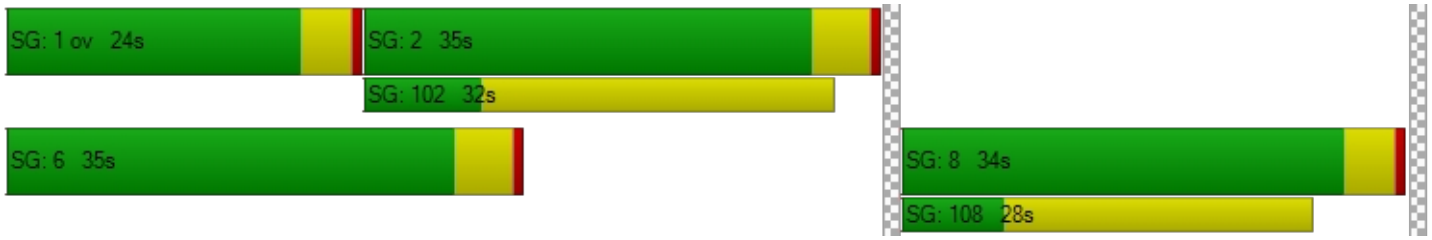
d_M, Delay for Movement [s/veh]	10.13	10.66	4.47	4.25	11.65	6.17
Movement LOS	B	B	A	A	B	A
d_A, Approach Delay [s/veh]	10.29		4.29		10.67	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	9.20					
Intersection LOS	A					
Intersection V/C	0.580					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	36.15	35.27
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.481	2.625
Crosswalk LOS	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	656	656	645
d_b, Bicycle Delay [s]	21.01	21.00	21.35
l_b,int, Bicycle LOS Score for Intersection	2.068	1.805	1.560
Bicycle LOS	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 10: Washington St / Home Depot-Site Access A

Control Type:	Signalized	Delay (sec / veh):	14.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.575

Intersection Setup

Name	Washington St			Washington St			Home Depot Dwy			Home Depot Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	335.00	100.00	330.00	250.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	470.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	370.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			Home Depot Dwy			Home Depot Dwy		
Base Volume Input [veh/h]	39	147	185	340	214	97	82	22	32	181	2	148
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	28.00	7.00	2.00	3.00	8.00	34.00	39.00	32.00	22.00	3.00	3.00	7.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	49	0	0	0	0	0	75
Total Hourly Volume [veh/h]	39	148	187	343	216	49	83	22	32	183	2	74
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	39	49	90	57	13	22	6	8	48	1	19
Total Analysis Volume [veh/h]	41	156	197	361	227	52	87	23	34	193	2	78
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			1			1			1		
v_di, Inbound Pedestrian Volume crossing m	1			1			1			1		
v_co, Outbound Pedestrian Volume crossing	0			1			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	134
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	10	0	4	10	0	0	8	0	0	6	0
Maximum Green [s]	30	60	0	30	60	0	0	30	0	0	20	0
Amber [s]	3.5	4.5	0.0	3.5	4.5	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	34	65	0	34	65	0	0	35	0	0	25	0
Vehicle Extension [s]	2.5	4.2	0.0	2.5	4.2	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	9	0	0	7	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	R
C, Cycle Length [s]	52	52	52	52	52	52	52	52	52
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	2.50	2.50	2.50
g_i, Effective Green Time [s]	24	11	11	24	18	18	18	18	18
g / C, Green / Cycle	0.47	0.20	0.20	0.47	0.34	0.34	0.35	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.04	0.09	0.13	0.26	0.07	0.04	0.21	0.17	0.05
s, saturation flow rate [veh/h]	1009	1795	1485	1379	3389	1179	684	1175	1524
c, Capacity [veh/h]	623	366	303	728	1147	399	250	550	536
d1, Uniform Delay [s]	7.71	18.17	19.13	9.91	12.28	11.99	16.93	13.27	11.61
k, delay calibration	0.17	0.17	0.17	0.08	0.17	0.17	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.07	1.20	3.56	0.39	0.13	0.22	1.55	0.29	0.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.07	0.43	0.65	0.50	0.20	0.13	0.58	0.35	0.15
d, Delay for Lane Group [s/veh]	7.77	19.37	22.69	10.30	12.41	12.21	18.48	13.56	11.71
Lane Group LOS	A	B	C	B	B	B	B	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.22	1.60	2.27	2.28	0.84	0.39	1.52	1.58	0.55
50th-Percentile Queue Length [ft/ln]	5.41	40.07	56.71	56.99	20.94	9.75	38.04	39.41	13.75
95th-Percentile Queue Length [veh/ln]	0.39	2.88	4.08	4.10	1.51	0.70	2.74	2.84	0.99
95th-Percentile Queue Length [ft/ln]	9.74	72.12	102.08	102.59	37.70	17.56	68.48	70.94	24.75

Movement, Approach, & Intersection Results

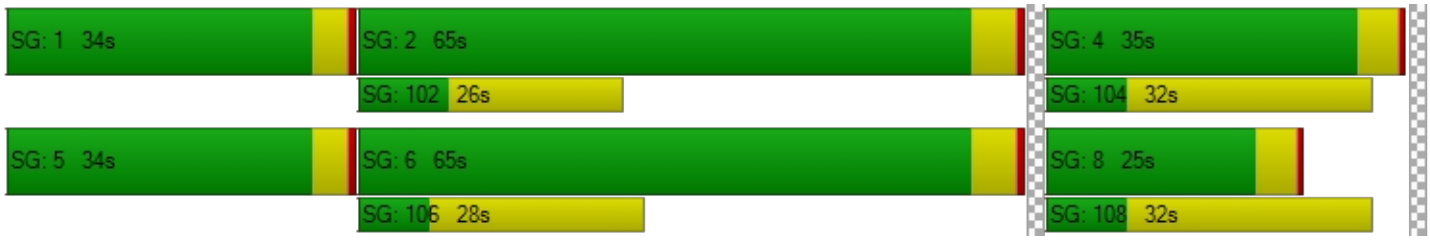
d_M, Delay for Movement [s/veh]	7.77	19.37	22.69	10.30	12.41	12.21	18.48	18.48	18.48	13.56	13.56	11.71
Movement LOS	A	B	C	B	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	19.82			11.21			18.48			13.03		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	14.61											
Intersection LOS	B											
Intersection V/C	0.575											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	5588.41	1746.59	355.65
d_p, Pedestrian Delay [s]	55.54	55.54	56.45	54.63
l_p,int, Pedestrian LOS Score for Intersection	2.758	2.841	2.075	2.491
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	896	896	455	306
d_b, Bicycle Delay [s]	20.44	20.43	39.97	48.07
l_b,int, Bicycle LOS Score for Intersection	1.885	2.128	1.797	2.134
Bicycle LOS	A	B	A	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Washington St / Abernethy Rd

Control Type:	Signalized	Delay (sec / veh):	7.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.363

Intersection Setup

Name	Washington St			Washington St			17th St			17th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	115.00	100.00	225.00	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			30.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			17th St			17th St		
Base Volume Input [veh/h]	2	299	212	39	386	1	0	1	2	189	1	79
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	0.00	6.00	5.00	8.00	6.00	0.00	0.00	0.00	0.00	3.00	0.00	6.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	107	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	302	107	39	390	1	0	1	2	191	1	80
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	81	29	10	105	0	0	0	1	51	0	22
Total Analysis Volume [veh/h]	2	325	115	42	419	1	0	1	2	205	1	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			1			0		
v_di, Inbound Pedestrian Volume crossing m	1			0			1			0		
v_co, Outbound Pedestrian Volume crossing	1			1			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	0	0	8	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	15	0	0	30	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	35	0	0	20	0	0	35	0
Vehicle Extension [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	16	0	0	8	0	0	13	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C
C, Cycle Length [s]	28	28	28	28	28	28	28	28
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	10	10	10	10	10	8	8	8
g / C, Green / Cycle	0.35	0.35	0.35	0.35	0.35	0.30	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.00	0.18	0.08	0.04	0.23	0.00	0.15	0.05
s, saturation flow rate [veh/h]	981	1810	1511	1003	1809	1696	1398	1618
c, Capacity [veh/h]	331	630	526	388	629	630	572	479
d1, Uniform Delay [s]	12.01	7.28	6.45	11.06	7.77	6.97	8.22	7.36
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.24	0.08	0.05	0.46	0.00	0.14	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.52	0.22	0.11	0.67	0.00	0.36	0.18
d, Delay for Lane Group [s/veh]	12.01	7.52	6.52	11.11	8.23	6.97	8.36	7.42
Lane Group LOS	B	A	A	B	A	A	A	A
Critical Lane Group	No	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.01	0.82	0.26	0.18	1.28	0.01	0.60	0.23
50th-Percentile Queue Length [ft/ln]	0.21	20.62	6.41	4.39	32.10	0.22	15.10	5.74
95th-Percentile Queue Length [veh/ln]	0.02	1.48	0.46	0.32	2.31	0.02	1.09	0.41
95th-Percentile Queue Length [ft/ln]	0.38	37.11	11.54	7.90	57.77	0.39	27.17	10.32

Movement, Approach, & Intersection Results

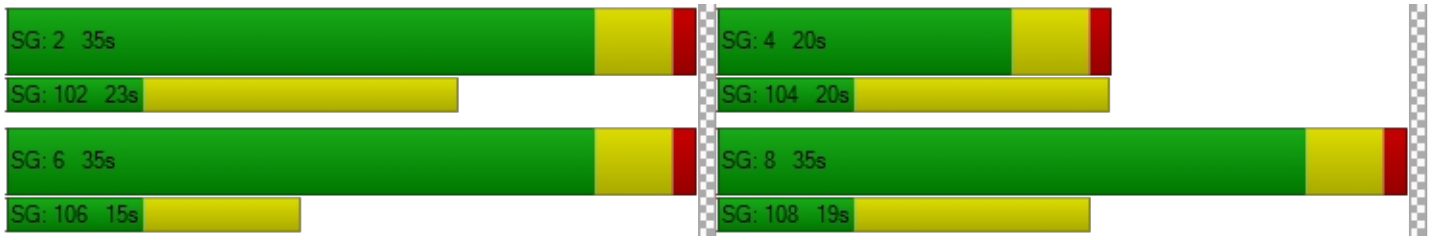
d_M, Delay for Movement [s/veh]	12.01	7.52	6.52	11.11	8.23	8.23	6.97	6.97	6.97	8.36	7.42	7.42
Movement LOS	B	A	A	B	A	A	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	7.28			8.49			6.97			8.08		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	7.94											
Intersection LOS	A											
Intersection V/C	0.363											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	4462.35	0.00	5349.92	4176.60
d_p, Pedestrian Delay [s]	24.86	24.86	24.86	24.86
l_p,int, Pedestrian LOS Score for Intersection	2.895	2.210	1.707	2.197
Crosswalk LOS	C	B	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	857	857	429	857
d_b, Bicycle Delay [s]	11.45	11.43	21.61	11.43
l_b,int, Bicycle LOS Score for Intersection	2.465	2.322	1.565	2.041
Bicycle LOS	B	B	A	B

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: Washington St / 15th St

Control Type:	Signalized	Delay (sec / veh):	9.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.705

Intersection Setup

Name	Washington St			Washington St			15th St			15th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	260.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			15th St			15th St		
Base Volume Input [veh/h]	33	389	32	29	375	187	101	27	38	14	75	30
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	3.00	5.00	0.00	0.00	3.00	2.00	4.00	0.00	3.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	33	393	32	29	379	189	102	27	38	14	76	30
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	102	8	8	99	47	27	7	10	4	20	8
Total Analysis Volume [veh/h]	34	409	33	30	395	189	106	28	40	15	79	31
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			2			0			2		
v_di, Inbound Pedestrian Volume crossing m	0			2			1			2		
v_co, Outbound Pedestrian Volume crossing	3			1			2			4		
v_ci, Inbound Pedestrian Volume crossing mi	4			2			1			3		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			0			3			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	35	0	0	35	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	19	54	0	19	54	0	0	39	0	0	39	0
Vehicle Extension [s]	2.3	4.1	0.0	2.3	4.1	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	9	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	32	32	32	32	32	32
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	14	19	14	5	5
g / C, Green / Cycle	0.60	0.45	0.60	0.44	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.03	0.25	0.03	0.33	0.10	0.07
s, saturation flow rate [veh/h]	973	1796	1091	1753	1746	1859
c, Capacity [veh/h]	692	807	824	781	441	404
d1, Uniform Delay [s]	3.87	6.51	3.11	7.45	12.92	12.55
k, delay calibration	0.07	0.16	0.16	0.16	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	0.86	0.03	2.13	0.43	0.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.55	0.04	0.75	0.39	0.31
d, Delay for Lane Group [s/veh]	3.89	7.37	3.13	9.59	13.35	12.87
Lane Group LOS	A	A	A	A	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.03	1.40	0.03	2.29	0.96	0.67
50th-Percentile Queue Length [ft/ln]	0.67	34.93	0.67	57.25	24.06	16.77
95th-Percentile Queue Length [veh/ln]	0.05	2.52	0.05	4.12	1.73	1.21
95th-Percentile Queue Length [ft/ln]	1.21	62.88	1.20	103.05	43.30	30.19

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3.89	7.37	7.37	3.13	9.59	9.59	13.35	13.35	13.35	12.87	12.87	12.87
Movement LOS	A	A	A	A	A	A	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	7.12			9.27			13.35			12.87		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	9.37											
Intersection LOS	A											
Intersection V/C	0.705											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	6242.26	1416.66	62.54	742.69
d_p, Pedestrian Delay [s]	45.54	43.75	45.54	45.54
l_p,int, Pedestrian LOS Score for Intersection	2.273	2.477	1.982	1.852
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	893	893	625	625
d_b, Bicycle Delay [s]	17.19	17.16	26.51	26.47
l_b,int, Bicycle LOS Score for Intersection	2.345	2.573	1.847	1.766
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Washington St / 14th St

Control Type:	Signalized	Delay (sec / veh):	10.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.726

Intersection Setup

Name	Washington St			Washington St			14th St			14th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			14th St			14th St		
Base Volume Input [veh/h]	177	229	5	11	274	145	222	28	100	5	28	3
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	2.00	6.00	0.00	0.00	4.00	5.00	5.00	0.00	3.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	51	0	0	0
Total Hourly Volume [veh/h]	179	231	5	11	277	146	224	28	50	5	28	3
Peak Hour Factor	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	58	1	3	70	37	57	7	13	1	7	1
Total Analysis Volume [veh/h]	181	233	5	11	280	147	226	28	51	5	28	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			2			3			3		
v_di, Inbound Pedestrian Volume crossing m	3			3			2			2		
v_co, Outbound Pedestrian Volume crossing	2			4			2			4		
v_ci, Inbound Pedestrian Volume crossing mi	2			4			2			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			3			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	35	0	0	35	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	19	54	0	19	54	0	0	39	0	0	39	0
Vehicle Extension [s]	2.3	4.1	0.0	2.3	4.1	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C
C, Cycle Length [s]	34	34	34	34	34	34	34
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	15	19	12	7	7	7
g / C, Green / Cycle	0.55	0.42	0.55	0.34	0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.15	0.13	0.01	0.25	0.16	0.03	0.02
s, saturation flow rate [veh/h]	1189	1803	1242	1732	1542	1523	1868
c, Capacity [veh/h]	762	766	902	589	530	329	522
d1, Uniform Delay [s]	4.84	6.59	3.61	9.98	12.48	10.97	10.82
k, delay calibration	0.07	0.16	0.16	0.16	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.10	0.34	0.01	2.51	0.50	0.16	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.24	0.31	0.01	0.72	0.48	0.15	0.07
d, Delay for Lane Group [s/veh]	4.94	6.92	3.61	12.49	12.98	11.13	10.86
Lane Group LOS	A	A	A	B	B	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.30	0.79	0.02	2.48	1.52	0.27	0.18
50th-Percentile Queue Length [ft/ln]	7.53	19.73	0.50	61.98	37.92	6.75	4.59
95th-Percentile Queue Length [veh/ln]	0.54	1.42	0.04	4.46	2.73	0.49	0.33
95th-Percentile Queue Length [ft/ln]	13.56	35.52	0.89	111.56	68.26	12.15	8.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	4.94	6.92	6.92	3.61	12.49	12.49	12.98	12.98	11.13	10.86	10.86	10.86
Movement LOS	A	A	A	A	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	6.07			12.26			12.67			10.86		
Approach LOS	A			B			B			B		
d_I, Intersection Delay [s/veh]	10.16											
Intersection LOS	B											
Intersection V/C	0.726											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	1553.76	264.03	469.92	1281.90
d_p, Pedestrian Delay [s]	45.54	45.54	45.54	45.54
l_p,int, Pedestrian LOS Score for Intersection	2.220	2.516	2.461	1.765
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	893	893	625	625
d_b, Bicycle Delay [s]	17.16	17.16	26.51	26.48
l_b,int, Bicycle LOS Score for Intersection	2.251	2.282	2.147	1.619
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Washington St / 12th St

Control Type:	Signalized	Delay (sec / veh):	8.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.496

Intersection Setup

Name	Washington St			Washington St			12th St			12th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			12th St			12th St		
Base Volume Input [veh/h]	69	395	2	13	357	13	12	19	69	6	20	9
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	3.00	4.00	0.00	0.00	3.00	8.00	17.00	0.00	1.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	399	2	13	361	13	12	19	70	6	20	9
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	106	1	3	96	3	3	5	19	2	5	2
Total Analysis Volume [veh/h]	74	424	2	14	384	14	13	20	74	6	21	10
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			1			1			1		
v_di, Inbound Pedestrian Volume crossing m	1			1			1			1		
v_co, Outbound Pedestrian Volume crossing	0			1			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	98
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	15	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	19	55	0	19	55	0	0	19	0	0	24	0
Vehicle Extension [s]	2.3	5.2	0.0	2.3	5.2	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	12	0	0	12	0	0	12	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	28	28	28	28	28	28
L, Total Lost Time per Cycle [s]	4.80	4.80	4.80	4.80	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.80	0.00	2.80	2.00	2.00
g_i, Effective Green Time [s]	16	11	16	10	3	3
g / C, Green / Cycle	0.56	0.40	0.56	0.36	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.06	0.23	0.01	0.22	0.06	0.02
s, saturation flow rate [veh/h]	1168	1838	1105	1843	1762	1860
c, Capacity [veh/h]	872	745	839	657	362	379
d1, Uniform Delay [s]	3.24	6.47	3.12	7.42	11.49	11.01
k, delay calibration	0.07	0.26	0.26	0.26	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.03	1.63	0.02	2.12	0.33	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.08	0.57	0.02	0.61	0.30	0.10
d, Delay for Lane Group [s/veh]	3.27	8.10	3.14	9.54	11.83	11.09
Lane Group LOS	A	A	A	A	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.06	1.43	0.01	1.58	0.51	0.17
50th-Percentile Queue Length [ft/ln]	1.58	35.75	0.37	39.45	12.68	4.14
95th-Percentile Queue Length [veh/ln]	0.11	2.57	0.03	2.84	0.91	0.30
95th-Percentile Queue Length [ft/ln]	2.85	64.35	0.66	71.01	22.82	7.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3.27	8.10	8.10	3.14	9.54	9.54	11.83	11.83	11.83	11.09	11.09	11.09
Movement LOS	A	A	A	A	A	A	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	7.39			9.32			11.83			11.09		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	8.72											
Intersection LOS	A											
Intersection V/C	0.496											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	4039.93	3129.76	3717.03
d_p, Pedestrian Delay [s]	38.62	38.62	38.62	38.62
l_p,int, Pedestrian LOS Score for Intersection	2.214	2.195	1.851	1.758
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1024	1024	306	408
d_b, Bicycle Delay [s]	11.66	11.66	35.15	31.04
l_b,int, Bicycle LOS Score for Intersection	2.385	2.239	1.736	1.621
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: Washington St/7th St

Control Type:	Signalized	Delay (sec / veh):	12.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.617

Intersection Setup

Name	Washington St			Washington St			7th St			Molalla Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	270.00	45.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			7th St			Molalla Ave		
Base Volume Input [veh/h]	77	175	10	188	156	22	0	347	62	0	310	221
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0000	1.0100	1.0100	1.0000	1.0100	1.0100
Heavy Vehicles Percentage [%]	1.00	5.00	10.00	3.00	2.00	9.00	2.00	0.00	2.00	2.00	0.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	32	0	0	112
Total Hourly Volume [veh/h]	78	177	10	190	158	22	0	350	31	0	313	111
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	1.0000	0.9700	0.9700	1.0000	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	46	3	49	41	6	0	90	8	0	81	29
Total Analysis Volume [veh/h]	80	182	10	196	163	23	0	361	32	0	323	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3			2			3			4		
v_di, Inbound Pedestrian Volume crossing m	4			3			2			3		
v_co, Outbound Pedestrian Volume crossing	5			4			5			3		
v_ci, Inbound Pedestrian Volume crossing mi	5			3			5			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	142
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap
Signal Group	0	8	0	0	4	0	0	2	0	0	6	6
Auxiliary Signal Groups												4,6
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	10	0	0	10	10
Maximum Green [s]	0	40	0	0	40	0	0	50	0	0	50	50
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	3.5
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.5
Split [s]	0	44	0	0	44	0	0	54	0	0	54	54
Vehicle Extension [s]	0.0	2.5	0.0	0.0	2.5	0.0	0.0	4.7	0.0	0.0	4.7	4.7
Walk [s]	0	7	0	0	7	0	0	7	0	0	9	9
Pedestrian Clearance [s]	0	11	0	0	10	0	0	10	0	0	11	11
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
Minimum Recall		No			No			Yes			Yes	Yes
Maximum Recall		No			No			No			No	No
Pedestrian Recall		No			No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	35	35	35	35	35	35	35	35
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	6	6	7	7	11	11	11	21
g / C, Green / Cycle	0.17	0.17	0.19	0.19	0.30	0.30	0.30	0.60
(v / s)_i Volume / Saturation Flow Rate	0.04	0.11	0.11	0.10	0.19	0.02	0.17	0.07
s, saturation flow rate [veh/h]	1795	1807	1767	1828	1900	1554	1900	1565
c, Capacity [veh/h]	308	310	340	351	567	463	567	941
d1, Uniform Delay [s]	12.75	13.63	13.04	12.90	10.80	8.93	10.54	3.01
k, delay calibration	0.08	0.08	0.08	0.08	0.20	0.20	0.20	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.33	1.50	1.15	0.92	2.22	0.12	1.68	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.26	0.62	0.58	0.53	0.64	0.07	0.57	0.12
d, Delay for Lane Group [s/veh]	13.08	15.13	14.19	13.82	13.02	9.04	12.22	3.06
Lane Group LOS	B	B	B	B	B	A	B	A
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.49	1.31	1.22	1.14	2.24	0.15	1.83	0.14
50th-Percentile Queue Length [ft/ln]	12.16	32.63	30.56	28.40	55.97	3.84	45.68	3.41
95th-Percentile Queue Length [veh/ln]	0.88	2.35	2.20	2.04	4.03	0.28	3.29	0.25
95th-Percentile Queue Length [ft/ln]	21.90	58.74	55.01	51.11	100.75	6.90	82.22	6.14

Movement, Approach, & Intersection Results

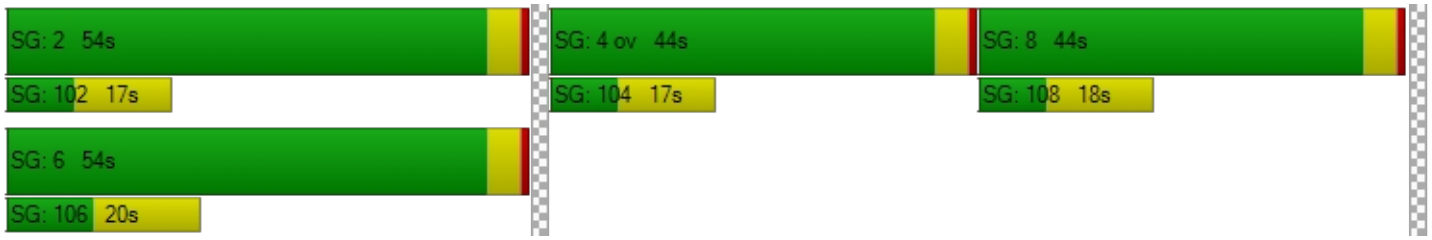
d_M, Delay for Movement [s/veh]	13.08	15.13	15.13	14.19	13.82	13.82	0.00	13.02	9.04	0.00	12.22	3.06
Movement LOS	B	B	B	B	B	B		B	A		B	A
d_A, Approach Delay [s/veh]	14.53			14.01			12.69			9.83		
Approach LOS	B			B			B			A		
d_I, Intersection Delay [s/veh]	12.53											
Intersection LOS	B											
Intersection V/C	0.617											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	517.74	617.47	1079.92	814.78
d_p, Pedestrian Delay [s]	60.43	58.60	60.43	60.43
l_p,int, Pedestrian LOS Score for Intersection	2.254	2.217	2.371	2.584
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	563	563	704	704
d_b, Bicycle Delay [s]	36.63	36.63	29.82	29.82
l_b,int, Bicycle LOS Score for Intersection	2.008	2.190	2.261	2.465
Bicycle LOS	B	B	B	B

Sequence

Ring 1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: S Redland Rd/Abernaty Rd

Control Type:	Signalized	Delay (sec / veh):	21.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.688

Intersection Setup

Name	S Redland Rd			S Redland Rd			17th St			Holocomb Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	125.00	100.00	100.00	330.00	100.00	250.00	120.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
Speed [mph]	30.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Redland Rd			S Redland Rd			17th St			Holocomb Blvd		
Base Volume Input [veh/h]	120	355	37	187	397	62	21	93	131	39	87	210
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	3.00	4.00	11.00	5.00	3.00	2.00	10.00	6.00	6.00	8.00	3.00	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	32	0	0	0	0	0	106
Total Hourly Volume [veh/h]	121	359	37	189	401	31	21	94	132	39	88	106
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	95	10	50	107	8	6	25	35	10	23	28
Total Analysis Volume [veh/h]	129	382	39	201	427	33	22	100	140	41	94	113
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			1			0		
v_di, Inbound Pedestrian Volume crossing m	1			0			1			0		
v_co, Outbound Pedestrian Volume crossing	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			2			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	13.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	0
Maximum Green [s]	30	45	0	30	45	0	30	35	0	20	30	0
Amber [s]	3.5	4.7	0.0	3.5	4.7	0.0	3.5	4.0	0.0	3.5	4.7	0.0
All red [s]	0.5	0.7	0.0	0.5	0.7	0.0	0.5	0.5	0.0	0.5	0.7	0.0
Split [s]	34	51	0	34	51	0	34	40	0	24	36	0
Vehicle Extension [s]	2.3	4.5	0.0	2.3	4.5	0.0	2.3	2.3	0.0	2.3	2.3	0.0
Walk [s]	0	7	0	5	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	10	24	0	0	22	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.4	0.0	2.0	3.4	0.0	2.0	2.5	0.0	2.0	3.4	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C	R
C, Cycle Length [s]	54	54	54	54	54	54	54	54	54	54
L, Total Lost Time per Cycle [s]	4.00	5.40	4.00	5.40	5.40	4.00	4.50	4.00	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.40	2.00	3.40	3.40	2.00	2.50	2.00	3.40	3.40
g_i, Effective Green Time [s]	5	16	8	19	19	1	10	2	10	10
g / C, Green / Cycle	0.10	0.30	0.15	0.35	0.35	0.02	0.19	0.03	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.07	0.23	0.12	0.23	0.02	0.01	0.15	0.02	0.05	0.07
s, saturation flow rate [veh/h]	1767	1810	1738	1855	1588	1667	1611	1695	1855	1564
c, Capacity [veh/h]	170	538	256	646	553	35	303	58	343	289
d1, Uniform Delay [s]	23.68	17.29	22.09	14.83	11.66	26.09	20.81	25.67	18.81	19.25
k, delay calibration	0.07	0.19	0.07	0.19	0.19	0.07	0.07	0.07	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.24	4.28	3.29	1.99	0.08	10.64	2.89	9.02	0.26	0.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.78	0.79	0.66	0.06	0.63	0.79	0.70	0.27	0.39
d, Delay for Lane Group [s/veh]	27.92	21.57	25.39	16.82	11.73	36.73	23.70	34.69	19.07	19.78
Lane Group LOS	C	C	C	B	B	D	C	C	B	B
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.67	4.80	2.36	3.89	0.23	0.36	2.84	0.63	0.94	1.17
50th-Percentile Queue Length [ft/ln]	41.77	119.91	59.00	97.20	5.66	9.11	70.95	15.71	23.52	29.23
95th-Percentile Queue Length [veh/ln]	3.01	8.39	4.25	7.00	0.41	0.66	5.11	1.13	1.69	2.10
95th-Percentile Queue Length [ft/ln]	75.18	209.70	106.21	174.96	10.18	16.39	127.71	28.29	42.34	52.61

Movement, Approach, & Intersection Results

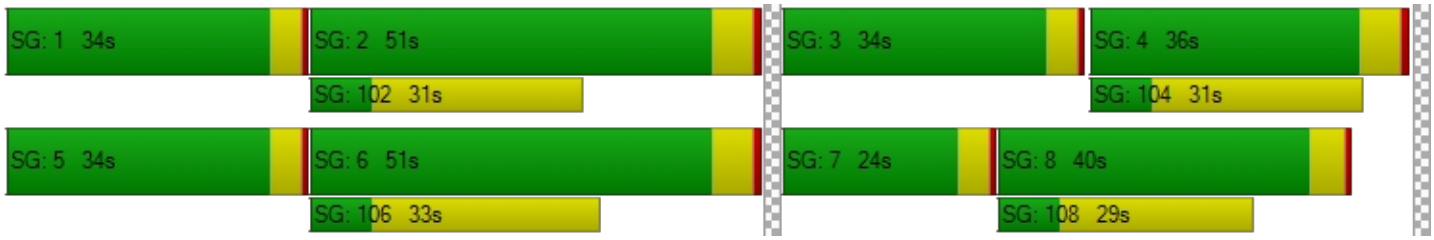
d_M, Delay for Movement [s/veh]	27.92	21.57	21.57	25.39	16.82	11.73	36.73	23.70	23.70	34.69	19.07	19.78
Movement LOS	C	C	C	C	B	B	D	C	C	C	B	B
d_A, Approach Delay [s/veh]	23.06			19.17			24.79			21.97		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	21.67											
Intersection LOS	C											
Intersection V/C	0.688											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	66.89	66.89	66.89	66.89
l_p,int, Pedestrian LOS Score for Intersection	2.342	2.713	2.291	2.477
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	588	588	458	395
d_b, Bicycle Delay [s]	38.61	38.61	46.11	49.92
l_b,int, Bicycle LOS Score for Intersection	2.467	2.703	1.992	2.144
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: S Anchor Way / S Redland Rd

Control Type:	Two-way stop	Delay (sec / veh):	25.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.286

Intersection Setup

Name	S Redland Rd		S Redland Rd		S Anchor Way	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	S Redland Rd		S Redland Rd		S Anchor Way	
Base Volume Input [veh/h]	16	438	473	73	55	23
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	0.00	3.00	4.00	1.00	7.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	442	478	74	56	23
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	124	134	21	16	6
Total Analysis Volume [veh/h]	18	497	537	83	63	26
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			Yes
Storage Area [veh]	0	0	1
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.01	0.00	0.29	0.05
d_M, Delay for Movement [s/veh]	8.78	0.00	0.00	0.00	25.92	16.51
Movement LOS	A	A	A	A	D	C
95th-Percentile Queue Length [veh/ln]	0.06	0.06	0.00	0.00	1.15	1.15
95th-Percentile Queue Length [ft/ln]	1.42	1.42	0.00	0.00	28.85	28.85
d_A, Approach Delay [s/veh]	0.31		0.00		23.17	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	1.81					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 18: S Holly Ln / S Redland Rd

Control Type:	Two-way stop	Delay (sec / veh):	21.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.200

Intersection Setup

Name	S Holly Ln		S Redland Rd		S Redland Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	S Holly Ln		S Redland Rd		S Redland Rd	
Base Volume Input [veh/h]	45	26	422	64	15	404
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	7.00	8.00	5.00	3.00	0.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	45	26	426	65	15	408
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	7	120	18	4	115
Total Analysis Volume [veh/h]	51	29	479	73	17	458
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	Yes		
Storage Area [veh]	1	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.20	0.05	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	21.33	13.80	0.00	0.00	8.56	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.74	0.74	0.00	0.00	0.05	0.05
95th-Percentile Queue Length [ft/ln]	18.38	18.38	0.00	0.00	1.26	1.26
d_A, Approach Delay [s/veh]	18.60		0.00		0.31	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.48					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 19: I 205 SB-Ramp / OR 213

Control Type:	Two-way stop	Delay (sec / veh):	86.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.120

Intersection Setup

Name	OR 213		Washington St		Washington Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	OR 213		Washington St		Washington Dr	
Base Volume Input [veh/h]	756	21	17	10	6	1572
Base Volume Adjustment Factor	1.0400	1.0000	1.0000	1.0000	1.0000	1.0400
Heavy Vehicles Percentage [%]	5.00	5.00	6.00	10.00	0.00	5.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	786	21	17	10	6	1635
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	205	5	4	3	2	426
Total Analysis Volume [veh/h]	819	22	18	10	6	1703
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.52	0.00	0.00	0.00	0.12	0.00
d_M, Delay for Movement [s/veh]	9.79	0.00	0.00	0.00	86.51	0.00
Movement LOS	A	A	A	A	F	
95th-Percentile Queue Length [veh/ln]	3.18	0.00	0.00	0.00	0.38	0.00
95th-Percentile Queue Length [ft/ln]	79.50	0.00	0.00	0.00	9.55	0.00
d_A, Approach Delay [s/veh]	9.53		0.00		86.51	
Approach LOS	A		A		F	
d_I, Intersection Delay [s/veh]	9.76					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 20: OR 213 / Clackamas River Dr

Control Type:	Signalized	Delay (sec / veh):	10.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.630

Intersection Setup

Name	OR 213			OR 213			Prairie Schooner Way			Clackamas River Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	450.00	100.00	100.00	415.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			Yes			Yes			Yes		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	OR 213			OR 213			Prairie Schooner Way			Clackamas River Dr		
Base Volume Input [veh/h]	0	1813	216	0	1879	600	0	0	216	0	0	519
Base Volume Adjustment Factor	1.0000	1.0400	1.0400	1.0000	1.0400	1.0400	1.0000	1.0000	1.0400	1.0000	1.0000	1.0400
Heavy Vehicles Percentage [%]	2.00	3.00	6.00	2.00	4.00	8.00	2.00	2.00	6.00	2.00	2.00	11.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	225	0	0	624	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1886	0	0	1954	0	0	0	225	0	0	540
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800	1.0000	1.0000	0.9800	1.0000	1.0000	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	481	0	0	498	0	0	0	57	0	0	138
Total Analysis Volume [veh/h]	0	1924	0	0	1994	0	0	0	230	0	0	551
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	0	1	0	0	5
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	0	4	0	0	4
Maximum Green [s]	0	76	0	0	76	0	0	0	26	0	0	26
Amber [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	0.0	3.5	0.0	0.0	3.5
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.5	0.0	0.0	0.5
Split [s]	0	44	0	0	44	0	0	0	30	0	0	74
Vehicle Extension [s]	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	2.3	0.0	0.0	2.3
Walk [s]	0	0	0	0	0	0	0	0	7	0	0	7
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	15	0	0	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0
Minimum Recall		Yes			Yes				No			No
Maximum Recall		No			No				No			No
Pedestrian Recall		No			No				No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	R	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	67	67	79	79	11	23
g / C, Green / Cycle	0.67	0.67	0.79	0.79	0.11	0.23
(v / s)_i Volume / Saturation Flow Rate	0.38	0.00	0.40	0.00	0.08	0.21
s, saturation flow rate [veh/h]	5053	1538	5012	1513	2723	2610
c, Capacity [veh/h]	3361	1023	3978	1201	290	613
d1, Uniform Delay [s]	2.39	0.00	3.54	0.00	43.66	37.13
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.71	0.00	0.45	0.00	3.07	3.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.57	0.00	0.50	0.00	0.79	0.90
d, Delay for Lane Group [s/veh]	3.10	0.00	3.99	0.00	46.72	40.34
Lane Group LOS	A	A	A	A	D	D
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.53	0.00	2.04	0.00	2.88	6.69
50th-Percentile Queue Length [ft/ln]	38.33	0.00	51.04	0.00	72.06	167.32
95th-Percentile Queue Length [veh/ln]	2.76	0.00	3.67	0.00	5.19	10.94
95th-Percentile Queue Length [ft/ln]	69.00	0.00	91.87	0.00	129.71	273.39

Movement, Approach, & Intersection Results

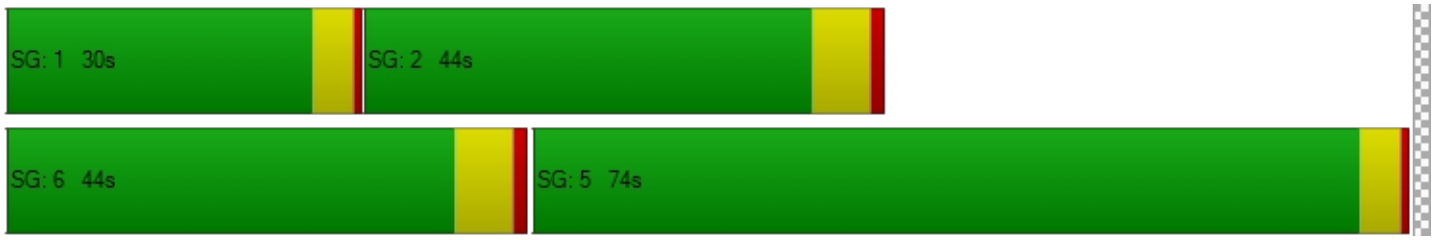
d_M, Delay for Movement [s/veh]	0.00	3.10	0.00	0.00	3.99	0.00	0.00	0.00	46.72	0.00	0.00	40.34
Movement LOS		A	A		A	A			D			D
d_A, Approach Delay [s/veh]	3.10			3.99			46.72			40.34		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	9.98											
Intersection LOS	A											
Intersection V/C	0.630											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	38.0	38.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	29204.85	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	19.22	19.22
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.315	2.168
Crosswalk LOS	F	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	760	760	520	1400
d_b, Bicycle Delay [s]	19.22	19.22	27.38	4.50
l_b,int, Bicycle LOS Score for Intersection	2.742	3.000	1.560	1.560
Bicycle LOS	B	C	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: OR 213 / S Redland Rd

Control Type:	Signalized	Delay (sec / veh):	14.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.729

Intersection Setup

Name	OR 213		OR 213		S Redland Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	350.00	100.00	100.00	100.00	335.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		40.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		Yes		Yes	
Crosswalk	Yes		No		Yes	

Volumes

Name	OR 213		OR 213		S Redland Rd	
Base Volume Input [veh/h]	107	1585	1539	547	479	113
Base Volume Adjustment Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
Heavy Vehicles Percentage [%]	3.00	3.00	4.00	4.00	3.00	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	285	0	59
Total Hourly Volume [veh/h]	111	1648	1601	284	498	59
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	425	413	73	128	15
Total Analysis Volume [veh/h]	114	1699	1651	293	513	61
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	22.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Overlap	Permissive	Overlap
Signal Group	1	6	2	2	8	8
Auxiliary Signal Groups				2,8		1,8
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	6	6
Maximum Green [s]	16	88	68	68	24	24
Amber [s]	3.5	5.0	5.0	5.0	3.0	3.0
All red [s]	0.5	1.0	1.0	1.0	0.7	0.7
Split [s]	20	72	52	52	28	28
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	5	5	5
Pedestrian Clearance [s]	0	10	10	10	10	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	4.0	1.7	1.7
Minimum Recall	No	Yes	Yes	Yes	No	No
Maximum Recall	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	3.70	3.70	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	0.00	1.70	0.00
g_i, Effective Green Time [s]	8	72	60	84	18	30
g / C, Green / Cycle	0.08	0.72	0.60	0.84	0.18	0.30
(v / s)_i Volume / Saturation Flow Rate	0.06	0.48	0.47	0.19	0.15	0.04
s, saturation flow rate [veh/h]	1767	3532	3503	1564	3431	1564
c, Capacity [veh/h]	146	2544	2094	1314	627	473
d1, Uniform Delay [s]	45.04	7.54	6.71	0.00	39.33	25.36
k, delay calibration	0.11	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.65	1.41	3.10	0.39	2.70	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.33	1.25	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.67	0.79	0.22	0.82	0.13
d, Delay for Lane Group [s/veh]	53.69	8.95	9.81	0.39	42.04	25.48
Lane Group LOS	D	A	A	A	D	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.97	6.62	4.79	0.14	6.08	1.04
50th-Percentile Queue Length [ft/ln]	74.26	165.59	119.81	3.58	152.12	25.91
95th-Percentile Queue Length [veh/ln]	5.35	10.84	8.38	0.26	10.13	1.87
95th-Percentile Queue Length [ft/ln]	133.66	271.11	209.57	6.45	253.26	46.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.69	8.95	9.81	0.39	42.04	25.48
Movement LOS	D	A	A	A	D	C
d_A, Approach Delay [s/veh]	11.76		8.39		40.28	
Approach LOS	B		A		D	
d_I, Intersection Delay [s/veh]	14.03					
Intersection LOS	B					
Intersection V/C	0.729					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	0.00	41.41
l_p,int, Pedestrian LOS Score for Intersection	3.588	0.000	2.652
Crosswalk LOS	D	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1320	920	486
d_b, Bicycle Delay [s]	5.78	14.58	28.65
l_b,int, Bicycle LOS Score for Intersection	3.055	3.399	1.560
Bicycle LOS	C	C	A

Sequence

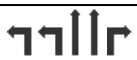
Ring 1	2	1	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: OR 213/Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	42.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.729

Intersection Setup

Name	OR 213			OR 213			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	2	0	1	2	0	0	2	0	1
Entry Pocket Length [ft]	530.00	100.00	580.00	600.00	100.00	525.00	500.00	100.00	100.00	160.00	100.00	465.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 213			OR 213			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	130	725	173	417	695	532	474	564	159	177	459	509
Base Volume Adjustment Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
Heavy Vehicles Percentage [%]	3.00	3.00	1.00	5.00	6.00	3.00	3.00	2.00	2.00	1.00	2.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	90	0	0	277	0	0	0	0	0	265
Total Hourly Volume [veh/h]	135	754	90	434	723	276	493	587	165	184	477	264
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	192	23	111	184	70	126	150	42	47	122	67
Total Analysis Volume [veh/h]	138	769	92	443	738	282	503	599	168	188	487	269
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			1			1			0		
v_di, Inbound Pedestrian Volume crossing m	1			0			2			1		
v_co, Outbound Pedestrian Volume crossing	0			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			2			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	142
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	0
Maximum Green [s]	15	40	0	32	40	0	38	30	0	15	20	0
Amber [s]	4.0	5.0	0.0	4.0	5.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.5	2.0	0.0	1.5	2.0	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	21	47	0	38	47	0	44	36	0	21	26	0
Vehicle Extension [s]	2.3	4.7	0.0	2.3	4.7	0.0	2.3	2.3	0.0	2.3	2.3	0.0
Walk [s]	0	8	0	0	9	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	31	0	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.5	5.0	0.0	3.5	5.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	108	108	108	108	108	108	108	108	108	108	108	108
L, Total Lost Time per Cycle [s]	5.50	7.00	7.00	5.50	7.00	7.00	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	5.00	5.00	3.50	5.00	5.00	3.50	3.50	3.50	3.50	3.50	3.50
g_i, Effective Green Time [s]	10	29	29	17	36	36	18	30	30	8	20	20
g / C, Green / Cycle	0.09	0.27	0.27	0.15	0.33	0.33	0.17	0.28	0.28	0.07	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.08	0.22	0.06	0.13	0.21	0.18	0.15	0.21	0.22	0.05	0.14	0.17
s, saturation flow rate [veh/h]	1767	3532	1602	3375	3446	1577	3431	1870	1717	3486	3560	1556
c, Capacity [veh/h]	168	961	436	520	1142	522	584	528	485	255	661	289
d1, Uniform Delay [s]	47.90	36.52	30.31	44.39	30.67	29.35	43.48	35.22	35.36	48.94	41.42	43.11
k, delay calibration	0.07	0.20	0.20	0.07	0.20	0.20	0.07	0.22	0.23	0.07	0.07	0.32
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.12	2.93	0.44	2.52	1.15	1.62	2.43	4.45	5.32	2.55	1.00	28.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.80	0.21	0.85	0.65	0.54	0.86	0.75	0.76	0.74	0.74	0.93
d, Delay for Lane Group [s/veh]	54.02	39.45	30.75	46.90	31.82	30.97	45.91	39.66	40.68	51.49	42.42	71.50
Lane Group LOS	D	D	C	D	C	C	D	D	D	D	D	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.91	9.68	1.90	5.90	8.22	6.11	6.59	9.89	9.37	2.54	6.08	9.16
50th-Percentile Queue Length [ft/ln]	97.63	241.89	47.44	147.40	205.51	152.83	164.84	247.30	234.15	63.38	152.05	229.09
95th-Percentile Queue Length [veh/ln]	7.03	14.78	3.42	9.88	12.92	10.17	10.80	15.05	14.38	4.56	10.13	14.13
95th-Percentile Queue Length [ft/ln]	175.73	369.42	85.39	246.96	323.06	254.20	270.12	376.25	359.62	114.08	253.16	353.20

Movement, Approach, & Intersection Results

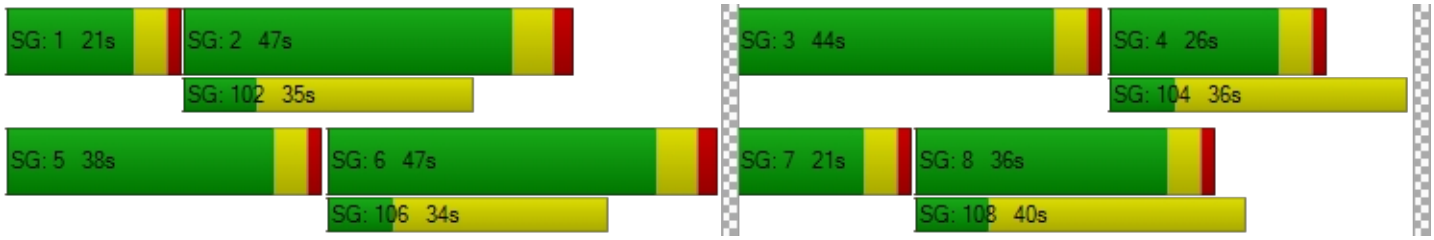
d_M, Delay for Movement [s/veh]	54.02	39.45	30.75	46.90	31.82	30.97	45.91	40.00	40.68	51.49	42.42	71.50
Movement LOS	D	D	C	D	C	C	D	D	D	D	D	E
d_A, Approach Delay [s/veh]	40.66			36.22			42.43			52.52		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.15											
Intersection LOS	D											
Intersection V/C	0.729											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	13.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	2383.54	5437.36	0.00	8331.28
d_p, Pedestrian Delay [s]	58.60	59.51	58.60	59.51
l_p,int, Pedestrian LOS Score for Intersection	2.956	3.503	2.939	3.387
Crosswalk LOS	C	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	563	563	430	289
d_b, Bicycle Delay [s]	36.63	36.63	43.82	52.01
l_b,int, Bicycle LOS Score for Intersection	2.458	2.995	2.607	2.557
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 23: OR 213 / Molalla Ave

Control Type:	Signalized	Delay (sec / veh):	24.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.669

Intersection Setup

Name	OR 213			OR 213			Molalla Ave			S Douglas Loop		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	650.00	100.00	100.00	525.00	100.00	355.00	100.00	100.00	100.00	275.00	100.00	275.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 213			OR 213			Molalla Ave			S Douglas Loop		
Base Volume Input [veh/h]	286	888	9	3	840	189	136	13	308	17	15	8
Base Volume Adjustment Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
Heavy Vehicles Percentage [%]	1.00	3.00	0.00	33.00	5.00	2.00	0.00	31.00	0.00	0.00	27.00	12.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	5	0	0	99	0	0	160	0	0	4
Total Hourly Volume [veh/h]	297	924	4	3	874	98	141	14	160	18	16	4
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	81	251	1	1	238	27	38	4	43	5	4	1
Total Analysis Volume [veh/h]	323	1004	4	3	950	107	153	15	174	20	17	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			5			0			5		
v_di, Inbound Pedestrian Volume crossing m	0			5			0			5		
v_co, Outbound Pedestrian Volume crossing	1			0			0			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	35.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	13.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	6
Maximum Green [s]	26	31	0	11	16	0	16	16	0	16	16	16
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	3.5	4.7	0.0	3.5	4.7	4.7
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.5	0.7	0.0	0.5	0.7	0.7
Split [s]	30	35	0	15	20	0	20	20	0	20	20	20
Vehicle Extension [s]	2.3	4.5	0.0	2.3	4.5	0.0	2.3	2.3	0.0	2.3	2.3	2.3
Walk [s]	0	9	0	0	10	0	0	14	0	0	5	5
Pedestrian Clearance [s]	0	23	0	0	27	0	0	28	0	0	10	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	4.0	0.0	2.0	4.0	0.0	2.0	3.4	0.0	2.0	3.4	3.4
Minimum Recall	No	Yes		No	Yes		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	5.40	5.40	4.00	5.40	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	3.40	3.40	2.00	3.40	0.00
g_i, Effective Green Time [s]	18	53	53	0	35	35	13	12	12	6	4	27
g / C, Green / Cycle	0.20	0.59	0.59	0.00	0.39	0.39	0.15	0.13	0.13	0.06	0.04	0.30
(v / s)_i Volume / Saturation Flow Rate	0.18	0.28	0.00	0.00	0.27	0.07	0.11	0.01	0.11	0.01	0.01	0.00
s, saturation flow rate [veh/h]	1795	3532	1578	1338	3475	1589	1440	1435	1615	1810	1495	1448
c, Capacity [veh/h]	361	2082	930	4	1362	623	259	186	209	113	66	433
d1, Uniform Delay [s]	35.05	10.59	7.60	44.80	22.89	17.84	38.63	34.48	38.24	40.01	41.60	22.15
k, delay calibration	0.13	0.50	0.50	0.07	0.50	0.50	0.07	0.07	0.07	0.07	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.57	0.80	0.01	73.35	2.98	0.60	1.32	0.11	5.31	0.45	1.25	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.48	0.00	0.67	0.70	0.17	0.59	0.08	0.83	0.18	0.26	0.01
d, Delay for Lane Group [s/veh]	44.61	11.40	7.61	118.15	25.87	18.43	39.95	34.59	43.54	40.46	42.84	22.16
Lane Group LOS	D	B	A	F	C	B	D	C	D	D	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.24	4.62	0.03	0.15	7.88	1.39	3.39	0.30	4.03	0.43	0.39	0.06
50th-Percentile Queue Length [ft/ln]	181.10	115.38	0.68	3.84	196.94	34.67	84.66	7.39	100.87	10.86	9.70	1.50
95th-Percentile Queue Length [veh/ln]	11.66	8.14	0.05	0.28	12.48	2.50	6.10	0.53	7.26	0.78	0.70	0.11
95th-Percentile Queue Length [ft/ln]	291.45	203.47	1.22	6.91	312.02	62.41	152.39	13.30	181.56	19.55	17.47	2.71

Movement, Approach, & Intersection Results

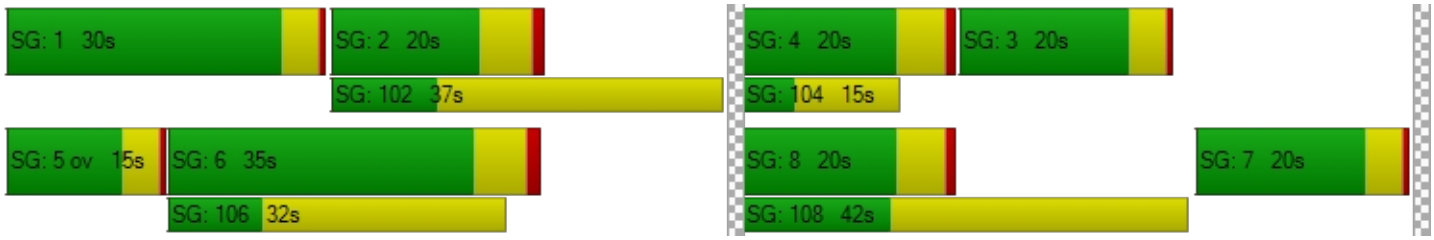
d_M, Delay for Movement [s/veh]	44.61	11.40	7.61	118.15	25.87	18.43	39.95	34.59	43.54	40.46	42.84	22.16
Movement LOS	D	B	A	F	C	B	D	C	D	D	D	C
d_A, Approach Delay [s/veh]	19.45			25.38			41.54			39.66		
Approach LOS	B			C			D			D		
d_I, Intersection Delay [s/veh]	24.74											
Intersection LOS	C											
Intersection V/C	0.669											

Other Modes

g_Walk,mi, Effective Walk Time [s]	18.0	9.0	14.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	825.15	0.00	4884.61
d_p, Pedestrian Delay [s]	28.80	36.45	32.09	32.94
l_p,int, Pedestrian LOS Score for Intersection	3.239	3.505	2.568	2.149
Crosswalk LOS	C	D	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	644	311	324	324
d_b, Bicycle Delay [s]	20.68	32.09	31.58	31.58
l_b,int, Bicycle LOS Score for Intersection	2.662	2.516	2.388	1.634
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Molalla Ave / Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	29.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.296

Intersection Setup

Name	Molalla Ave			Molalla Ave			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	170.00	100.00	150.00	350.00	100.00	100.00	175.00	100.00	190.00	210.00	100.00	245.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			35.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Molalla Ave			Molalla Ave			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	152	257	65	486	287	18	27	286	128	74	305	240
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	4.00	2.00	3.00	2.00	1.00	0.00	4.00	1.00	4.00	0.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	65	0	0	121
Total Hourly Volume [veh/h]	154	260	66	491	290	18	27	289	64	75	308	121
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	68	17	128	76	5	7	75	17	20	80	32
Total Analysis Volume [veh/h]	160	271	69	511	302	19	28	301	67	78	321	126
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			4			1			3		
v_di, Inbound Pedestrian Volume crossing m	1			3			2			4		
v_co, Outbound Pedestrian Volume crossing	7			3			4			7		
v_ci, Inbound Pedestrian Volume crossing mi	7			4			3			7		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			1			1			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	10	0	4	10	0	4	5	0	4	5	0
Maximum Green [s]	30	40	0	30	40	0	20	25	0	20	25	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	3.5	4.0	0.0	3.5	4.0	0.0
All red [s]	2.0	2.0	0.0	2.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	20	42	0	20	42	0	14	24	0	14	24	0
Vehicle Extension [s]	2.3	4.6	0.0	2.3	4.2	0.0	2.3	2.5	0.0	2.3	2.5	0.0
Walk [s]	0	9	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	26	0	0	22	0	0	23	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	4.0	0.0	4.0	4.0	0.0	2.5	4.0	0.0	2.5	4.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	55	55	55	54	54	54	21	11	11	21	14	14
g / C, Green / Cycle	0.55	0.55	0.55	0.54	0.54	0.54	0.21	0.11	0.11	0.21	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.14	0.09	0.10	0.42	0.09	0.09	0.02	0.08	0.04	0.06	0.09	0.08
s, saturation flow rate [veh/h]	1177	1870	1726	1227	1885	1842	1200	3589	1530	1350	3560	1566
c, Capacity [veh/h]	712	1034	954	633	1027	1003	270	412	176	302	509	224
d1, Uniform Delay [s]	11.12	11.03	11.06	25.57	11.34	11.34	32.11	42.76	40.93	32.99	40.36	39.88
k, delay calibration	0.07	0.50	0.50	0.50	0.50	0.50	0.07	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.10	0.35	0.40	10.60	0.33	0.34	0.10	1.87	1.01	0.33	0.96	1.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.22	0.17	0.17	0.81	0.16	0.16	0.10	0.73	0.38	0.26	0.63	0.56
d, Delay for Lane Group [s/veh]	11.22	11.39	11.46	36.17	11.66	11.68	32.21	44.63	41.94	33.33	41.32	41.53
Lane Group LOS	B	B	B	D	B	B	C	D	D	C	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.69	1.93	1.84	8.69	1.78	1.75	0.54	3.64	1.55	1.58	3.76	2.97
50th-Percentile Queue Length [ft/ln]	42.36	48.36	46.12	217.33	44.61	43.77	13.60	90.88	38.81	39.56	93.96	74.13
95th-Percentile Queue Length [veh/ln]	3.05	3.48	3.32	13.53	3.21	3.15	0.98	6.54	2.79	2.85	6.77	5.34
95th-Percentile Queue Length [ft/ln]	76.25	87.05	83.01	338.22	80.30	78.79	24.47	163.58	69.87	71.20	169.13	133.43

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.22	11.41	11.46	36.17	11.67	11.68	32.21	44.63	41.94	33.33	41.32	41.53
Movement LOS	B	B	B	D	B	B	C	D	D	C	D	D
d_A, Approach Delay [s/veh]	11.36			26.72			43.30			40.18		
Approach LOS	B			C			D			D		
d_I, Intersection Delay [s/veh]	29.36											
Intersection LOS	C											
Intersection V/C	0.296											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	3737.10	1451.79	1649.53	419.48
d_p, Pedestrian Delay [s]	38.72	38.72	38.72	37.85
l_p,int, Pedestrian LOS Score for Intersection	2.516	2.624	2.833	3.479
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	720	720	360	360
d_b, Bicycle Delay [s]	20.49	20.49	33.64	33.62
l_b,int, Bicycle LOS Score for Intersection	1.972	2.246	1.940	2.093
Bicycle LOS	A	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: Maple Lane Rd / Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	20.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.689

Intersection Setup

Name	Maple Lane Rd			Maple Lane Rd			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	150.00	430.00	100.00	100.00	360.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Maple Lane Rd			Maple Lane Rd			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	252	76	36	40	62	317	291	490	132	19	572	32
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	1.00	0.00	0.00	5.00	0.00	2.00	4.00	5.00	2.00	0.00	3.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	160	0	0	0	0	0	0
Total Hourly Volume [veh/h]	255	77	36	40	63	160	294	495	133	19	578	32
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	69	21	10	11	17	43	79	133	36	5	155	9
Total Analysis Volume [veh/h]	274	83	39	43	68	172	316	532	143	20	622	34
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			1			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			1		
v_co, Outbound Pedestrian Volume crossing	1			1			2			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			2			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	165
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	0	3	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	4	10	0	4	10	0
Maximum Green [s]	0	30	0	0	30	30	35	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	4.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.5	0.5	0.5	0.0	0.5	0.5	0.0
Split [s]	0	35	0	0	35	35	40	55	0	25	55	0
Vehicle Extension [s]	0.0	2.5	0.0	0.0	2.5	2.5	2.5	5.2	0.0	2.3	5.2	0.0
Walk [s]	0	8	0	0	8	8	0	7	0	0	8	0
Pedestrian Clearance [s]	0	19	0	0	19	19	0	12	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	0.0	0.0	2.5	2.5	2.5	2.5	0.0	2.5	2.5	0.0
Minimum Recall		No			No	No	No	Yes		No	Yes	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	67	67	67	67	67	67	67	67	67	67	67
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	0.00	0.00	2.50	2.50	0.00	2.50	2.50
g_i, Effective Green Time [s]	13	13	7	7	23	34	28	28	34	18	18
g / C, Green / Cycle	0.19	0.19	0.10	0.10	0.34	0.51	0.42	0.42	0.51	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.15	0.07	0.02	0.04	0.11	0.27	0.19	0.19	0.04	0.18	0.18
s, saturation flow rate [veh/h]	1795	1796	1738	1900	1580	1176	1825	1693	474	1855	1821
c, Capacity [veh/h]	344	344	170	186	536	637	774	718	439	496	487
d1, Uniform Delay [s]	25.90	23.55	28.05	28.38	16.43	11.31	13.81	13.81	9.46	21.94	21.95
k, delay calibration	0.08	0.08	0.08	0.08	0.08	0.26	0.26	0.26	0.07	0.26	0.26
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.15	0.46	0.57	0.89	0.25	1.41	0.98	1.05	0.03	3.61	3.70
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.35	0.25	0.37	0.32	0.50	0.45	0.45	0.05	0.67	0.67
d, Delay for Lane Group [s/veh]	29.06	24.01	28.63	29.27	16.68	12.72	14.78	14.86	9.48	25.55	25.65
Lane Group LOS	C	C	C	C	B	B	B	B	A	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.31	1.67	0.62	1.00	1.77	2.58	3.52	3.28	0.13	4.74	4.67
50th-Percentile Queue Length [ft/ln]	107.82	41.69	15.53	24.90	44.16	64.38	87.89	81.94	3.13	118.51	116.87
95th-Percentile Queue Length [veh/ln]	7.72	3.00	1.12	1.79	3.18	4.64	6.33	5.90	0.23	8.31	8.22
95th-Percentile Queue Length [ft/ln]	192.97	75.05	27.95	44.83	79.48	115.88	158.21	147.49	5.63	207.77	205.52

Movement, Approach, & Intersection Results

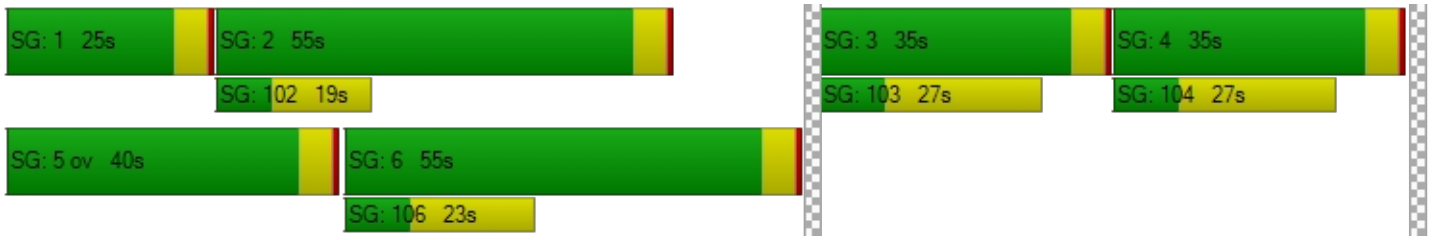
d_M, Delay for Movement [s/veh]	29.06	24.01	24.01	28.63	29.27	16.68	12.72	14.81	14.86	9.48	25.60	25.65
Movement LOS	C	C	C	C	C	B	B	B	B	A	C	C
d_A, Approach Delay [s/veh]	27.50			21.52			14.15			25.13		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	20.46											
Intersection LOS	C											
Intersection V/C	0.689											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	4402.55	1445.36	2316.26
d_p, Pedestrian Delay [s]	71.87	70.94	70.94	70.94
l_p,int, Pedestrian LOS Score for Intersection	2.152	2.805	2.833	2.622
Crosswalk LOS	B	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	370	370	612	612
d_b, Bicycle Delay [s]	54.82	54.85	39.73	39.73
l_b,int, Bicycle LOS Score for Intersection	2.213	2.291	2.377	2.117
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 199: I 205 SB-Ramp / OR 213

Control Type:	Two-way stop	Delay (sec / veh):	54.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.209

Intersection Setup

Name	OR 213		OR 213			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	OR 213		OR 213			
Base Volume Input [veh/h]	0	777	17	0	0	1572
Base Volume Adjustment Factor	1.0000	1.0400	1.0400	1.0000	1.0000	1.0400
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	808	18	0	0	1635
Peak Hour Factor	1.0000	0.9600	0.9600	1.0000	1.0000	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	210	5	0	0	426
Total Analysis Volume [veh/h]	0	842	19	0	0	1703
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Stop	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.21	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	54.88	0.00	0.00	0.00
Movement LOS		A	F			A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.73	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	18.36	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		54.88		0.00	
Approach LOS	A		F		A	
d_I, Intersection Delay [s/veh]	0.41					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 2: OR 99E / Dunes Dr

Control Type:	Signalized	Delay (sec / veh):	11.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.603

Intersection Setup

Name	OR 99E			OR 99E			Dunes Dr			Dunes Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	220.00	100.00	100.00	370.00	100.00	155.00	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 99E			OR 99E			Dunes Dr			Dunes Dr		
Base Volume Input [veh/h]	46	911	71	37	733	53	16	3	35	107	3	35
Base Volume Adjustment Factor	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
Heavy Vehicles Percentage [%]	9.00	7.00	7.00	5.00	8.00	9.00	0.00	0.00	0.00	7.00	0.00	6.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	1367	107	56	1100	80	24	5	53	161	5	53
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	397	31	16	320	23	7	1	15	47	1	15
Total Analysis Volume [veh/h]	80	1590	124	65	1279	93	28	6	62	187	6	62
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			3			0			2		
v_di, Inbound Pedestrian Volume crossing m	0			2			0			3		
v_co, Outbound Pedestrian Volume crossing	0			0			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	2	0	5	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	20	40	0	20	40	0	0	20	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	16	58	0	20	54	0	0	16	0	0	16	0
Vehicle Extension [s]	2.3	4.8	0.0	2.3	4.8	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	18	0	0	38	0	0	37	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.00	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.80	2.80	2.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	60	60	4	61	61	12	12	12	12
g / C, Green / Cycle	0.06	0.66	0.66	0.05	0.68	0.68	0.13	0.13	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.05	0.33	0.34	0.04	0.27	0.27	0.02	0.04	0.15	0.04
s, saturation flow rate [veh/h]	1681	3418	1720	1738	3389	1719	1343	1637	1279	1620
c, Capacity [veh/h]	103	2265	1140	85	2287	1160	181	219	177	217
d1, Uniform Delay [s]	40.76	2.13	2.13	41.56	1.66	1.66	39.29	35.22	43.14	35.24
k, delay calibration	0.07	0.50	0.50	0.07	0.50	0.50	0.08	0.08	0.16	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.64	0.80	1.60	8.38	0.52	1.02	0.29	0.59	54.21	0.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.50	0.51	0.76	0.40	0.40	0.15	0.31	1.06	0.31
d, Delay for Lane Group [s/veh]	48.40	2.93	3.74	49.94	2.17	2.68	39.58	35.81	97.34	35.84
Lane Group LOS	D	A	A	D	A	A	D	D	F	D
Critical Lane Group	Yes	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.87	1.37	1.64	1.56	0.89	1.06	0.60	1.38	6.62	1.39
50th-Percentile Queue Length [ft/ln]	46.81	34.13	40.96	38.88	22.16	26.54	15.00	34.60	165.57	34.63
95th-Percentile Queue Length [veh/ln]	3.37	2.46	2.95	2.80	1.60	1.91	1.08	2.49	11.09	2.49
95th-Percentile Queue Length [ft/ln]	84.26	61.43	73.73	69.98	39.90	47.76	26.99	62.29	277.19	62.34

Movement, Approach, & Intersection Results

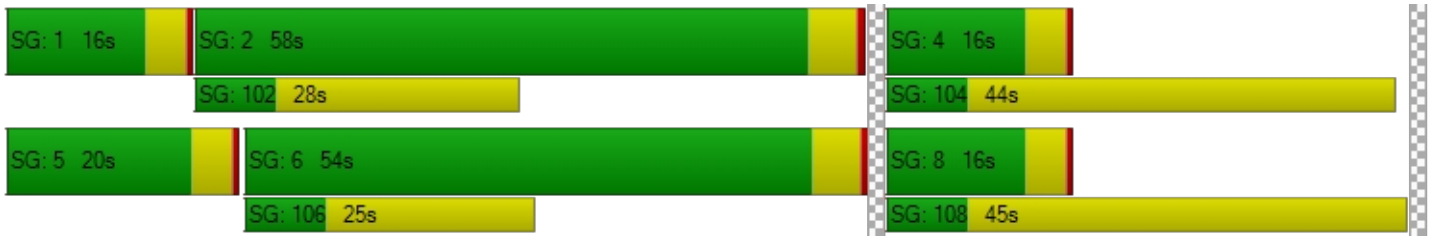
d_M, Delay for Movement [s/veh]	48.40	3.16	3.74	49.94	2.32	2.68	39.58	35.81	35.81	97.34	35.84	35.84
Movement LOS	D	A	A	D	A	A	D	D	D	F	D	D
d_A, Approach Delay [s/veh]	5.21			4.50			36.91			80.94		
Approach LOS	A			A			D			F		
d_I, Intersection Delay [s/veh]	11.17											
Intersection LOS	B											
Intersection V/C	0.603											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	1961.24	7186.67	6451.40
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	3.476	3.212	2.014	2.062
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1182	1093	267	267
d_b, Bicycle Delay [s]	7.53	9.25	33.80	33.80
l_b,int, Bicycle LOS Score for Intersection	2.546	2.350	1.718	1.980
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: OR 99E / Dunes Dr

Control Type:	Signalized	Delay (sec / veh):	19.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.727

Intersection Setup

Name	OR 99E			OR 99E			Dunes Dr			Dunes Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	220.00	100.00	100.00	370.00	100.00	155.00	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 99E			OR 99E			Dunes Dr			Dunes Dr		
Base Volume Input [veh/h]	43	1146	146	107	1354	116	26	5	78	265	17	47
Base Volume Adjustment Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
Heavy Vehicles Percentage [%]	5.00	3.00	2.00	1.00	3.00	1.00	0.00	0.00	5.00	2.00	6.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	50	1329	169	124	1571	135	30	6	90	307	20	55
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	350	44	33	413	36	8	2	24	81	5	14
Total Analysis Volume [veh/h]	53	1399	178	131	1654	142	32	6	95	323	21	58
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			1			0			1		
v_di, Inbound Pedestrian Volume crossing m	0			1			1			1		
v_co, Outbound Pedestrian Volume crossing	2			0			0			3		
v_ci, Inbound Pedestrian Volume crossing mi	3			0			0			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	12.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	2	0	5	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	12	62	0	23	51	0	0	34	0	0	34	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	16	66	0	27	55	0	0	38	0	0	38	0
Vehicle Extension [s]	2.3	4.8	0.0	2.3	4.8	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	18	0	0	38	0	0	37	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.00	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.80	2.80	0.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	69	69	9	64	64	34	34	34	34
g / C, Green / Cycle	0.04	0.57	0.57	0.07	0.54	0.54	0.28	0.28	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.03	0.30	0.30	0.10	0.34	0.34	0.02	0.06	0.25	0.05
s, saturation flow rate [veh/h]	1738	3532	1733	1350	3532	1781	1338	1628	1292	1600
c, Capacity [veh/h]	68	2016	989	190	1892	954	367	461	343	453
d1, Uniform Delay [s]	56.36	7.85	7.88	54.27	10.96	10.98	36.50	32.86	48.46	32.42
k, delay calibration	0.07	0.50	0.50	0.07	0.50	0.50	0.08	0.08	0.36	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.10	0.97	2.02	2.72	1.60	3.19	0.08	0.18	28.80	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.52	0.53	0.69	0.63	0.63	0.09	0.22	0.94	0.17
d, Delay for Lane Group [s/veh]	67.46	8.82	9.89	56.99	12.56	14.17	36.58	33.03	77.26	32.55
Lane Group LOS	E	A	A	E	B	B	D	C	E	C
Critical Lane Group	No	No	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.76	4.13	4.39	3.93	6.01	6.51	0.76	2.31	12.66	1.78
50th-Percentile Queue Length [ft/ln]	43.91	103.21	109.65	98.15	150.28	162.78	19.06	57.72	316.38	44.53
95th-Percentile Queue Length [veh/ln]	3.16	7.43	7.82	7.07	10.03	10.70	1.37	4.16	18.49	3.21
95th-Percentile Queue Length [ft/ln]	79.04	185.77	195.52	176.68	250.81	267.41	34.32	103.89	462.23	80.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.46	9.08	9.89	56.99	13.01	14.17	36.58	33.03	33.03	77.26	32.55	32.55
Movement LOS	E	A	A	E	B	B	D	C	C	E	C	C
d_A, Approach Delay [s/veh]	11.07			16.08			33.88			68.48		
Approach LOS	B			B			C			E		
d_I, Intersection Delay [s/veh]	19.81											
Intersection LOS	B											
Intersection V/C	0.727											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	3234.32	3545.99	0.00	549.24
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	3.755	3.288	2.049	2.153
Crosswalk LOS	D	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1020	837	567	567
d_b, Bicycle Delay [s]	14.41	20.30	30.82	30.82
l_b,int, Bicycle LOS Score for Intersection	2.456	2.619	1.779	2.223
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: OR 99E/Dunes Dr

Control Type:	Signalized	Delay (sec / veh):	22.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.690

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	220.00	100.00	100.00	370.00	100.00	155.00	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	73	1088	279	138	1096	129	39	12	73	357	17	114
Base Volume Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
Heavy Vehicles Percentage [%]	8.00	3.00	1.00	0.00	4.00	4.00	8.00	0.00	11.00	0.00	0.00	1.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	75	1121	287	142	1129	133	40	12	75	368	18	117
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	289	74	37	291	34	10	3	19	95	5	30
Total Analysis Volume [veh/h]	77	1156	296	146	1164	137	41	12	77	379	19	121
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			2			0			1		
v_di, Inbound Pedestrian Volume crossing m	0			1			0			2		
v_co, Outbound Pedestrian Volume crossing	1			0			0			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			2			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	17.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	2	0	5	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	20	40	0	20	40	0	0	20	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	16	50	0	21	45	0	0	34	0	0	34	0
Vehicle Extension [s]	2.3	4.8	0.0	2.3	4.8	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	18	0	0	38	0	0	37	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.00	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.80	2.80	0.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	51	51	10	47	47	30	30	30	30
g / C, Green / Cycle	0.06	0.51	0.51	0.10	0.47	0.47	0.30	0.30	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.05	0.28	0.28	0.10	0.25	0.25	0.03	0.05	0.29	0.09
s, saturation flow rate [veh/h]	1695	3532	1665	1434	3503	1729	1186	1648	1329	1644
c, Capacity [veh/h]	98	1819	857	249	1663	821	322	493	385	491
d1, Uniform Delay [s]	45.49	9.77	9.78	42.59	12.13	12.16	32.27	25.97	40.23	26.85
k, delay calibration	0.07	0.50	0.50	0.07	0.50	0.50	0.08	0.08	0.41	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.08	1.16	2.47	1.34	1.18	2.41	0.13	0.13	37.59	0.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.54	0.54	0.59	0.52	0.53	0.13	0.18	0.98	0.28
d, Delay for Lane Group [s/veh]	53.57	10.94	12.25	43.93	13.31	14.58	32.40	26.10	77.82	27.08
Lane Group LOS	D	B	B	D	B	B	C	C	E	C
Critical Lane Group	No	No	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.06	4.41	4.48	3.48	4.57	4.83	0.83	1.60	13.54	2.60
50th-Percentile Queue Length [ft/ln]	51.47	110.25	111.94	86.89	114.23	120.79	20.73	39.95	338.50	65.06
95th-Percentile Queue Length [veh/ln]	3.71	7.85	7.95	6.26	8.07	8.44	1.49	2.88	19.57	4.68
95th-Percentile Queue Length [ft/ln]	92.64	196.35	198.70	156.40	201.87	210.91	37.32	71.90	489.37	117.10

Movement, Approach, & Intersection Results

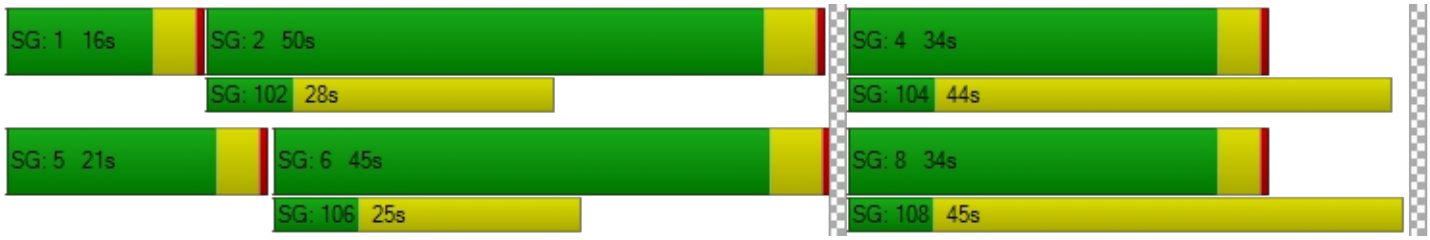
d_M, Delay for Movement [s/veh]	53.57	11.13	12.25	43.93	13.63	14.58	32.40	26.10	26.10	77.82	27.08	27.08
Movement LOS	D	B	B	D	B	B	C	C	C	E	C	C
d_A, Approach Delay [s/veh]	13.48			16.78			28.08			64.13		
Approach LOS	B			B			C			E		
d_I, Intersection Delay [s/veh]	22.57											
Intersection LOS	C											
Intersection V/C	0.690											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	2624.81	0.00	446.29
d_p, Pedestrian Delay [s]	39.61	39.61	39.61	39.61
l_p,int, Pedestrian LOS Score for Intersection	3.576	3.042	2.043	2.214
Crosswalk LOS	D	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	904	804	600	600
d_b, Bicycle Delay [s]	15.02	17.90	24.50	24.50
l_b,int, Bicycle LOS Score for Intersection	2.401	2.355	1.774	2.416
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Appendix D
ODOT Crash Data

KITTELSON & ASSOCIATES
851 SW 6th AVENUE, SUITE 600
PORTLAND, OR 97204
P 503.228.5230 F 503.273.8169

TECHNICAL MEMORANDUM

Safety Analysis for The North End Master Plan (PA 20-11)

Date: March 19, 2021 Project # 24824.0:

To: John Replinger, Replinger & Associates, LLC
Oregon City Planning Dept.
695 Warner Parrott Road
Oregon City, OR 97045

From: Brian J. Dunn, PE, Phill Worth, and Ali Razmpa, PE

cc:

This technical memorandum was prepared to provide a more robust analysis of the reported crash histories for the 11 study intersections identified as having high crash rates, per the latest five years of data provided by ODOT (January 1, 2014, through December 31, 2018). For each intersection, a closer inspection was made of reported crash totals, reported injuries, crashes that involved pedestrians or bicyclists, repeating crash patterns, and the causes of crashes. Finally, potential safety countermeasures are identified each of the 11 intersections for consideration by the governing agency (i.e., ODOT, City of Oregon City, or Clackamas County).

In addition to this technical memorandum, attached are the raw crash data reports from ODOT for all 25 study intersections followed by detailed crash diagrams where serious injuries occurred at the 11 high crash locations.

INTERSECTION #1: OR 99E/RIVER RD-ARLINGTON ST

A detailed evaluation of the crashes at the OR 99E/River Rd.-Arlington St. intersection was performed due to the observed crash rates exceeding the critical crash rate for the intersection. Of 56 reported crashes, 38 crashes resulted in injuries and 18 crashes resulted in property damage only. Pedestrians or bicyclists were involved in four crashes, all of which resulted in the pedestrian or bicyclist being injured. A majority of crashes were a “turn”-type collision (29 of 56), with an additional 19 crashes having a collision type of “rear end”.

Of the two crashes involving pedestrians, drivers were turning right and are recorded as failing to yield right of way to the pedestrian. Both of the crashes resulted in the pedestrian being injured. One crash involved a driver making a westbound right turn while the pedestrian was travelling northbound and the other crash involved a driver making a southbound right turn. Similarly, a crash occurred between a

bicyclist going north to south and a vehicle making a southbound right, in which the driver is recorded as proceeding after stopping, indicating the driver may have turned right on red before hitting the bicyclist. ***Further analysis of potential countermeasures by ODOT should consider "No Right Turn on Red" signage or "Yield to Pedestrian" signage, both of which could be dynamic and activated by the pedestrian signal phase.***

A total of 14 of the 29 turn crashes occurred between vehicles making a northbound left turn from OR 99E onto River Rd and vehicles travelling southbound on OR 99E. In all of these cases, the driver making the northbound left is recorded as not having right-of-way. ***Further analysis of potential countermeasures by ODOT should consider limiting the use of the permitted left turn phasing (Flashing Yellow Arrow) at this intersection to mitigate this crash type.***

A total of 6 of the 29 turn crashes occurred between vehicles making a southbound left turn from OR 99E onto River Rd and vehicles travelling northbound on OR 99E. In all of these cases, the driver making the southbound left is recorded as not having right-of-way. ***Further analysis of potential countermeasures by ODOT should consider limiting the use of the permitted left turn phasing (Flashing Yellow Arrow) at this intersection to mitigate this crash type.***

Rear end crashes occurred on all approaches to the intersection, with 4 crashes occurring on the north leg, 6 on the south leg, 2 on the west leg, and 7 on the east leg. ***Further analysis of potential countermeasures by ODOT could consider installing retroreflective backplates on all signal heads.***

INTERSECTION #2: OR 99E/DUNES DR

A detailed evaluation of the crashes at the OR 99E/Dunes Dr intersection was performed due to observed crash rates exceeding the critical crash rate for the intersection. Of 48 reported crashes, 33 crashes resulted in injuries and 15 crashes resulted in property damage only. Pedestrians or bicyclists were involved in four crashes, all of which resulted in the pedestrian or bicyclist being injured. A majority of crashes were "rear end" collisions (20 of 48), with an additional 13 crashes involving a "turn" type collision.

All crashes involving a pedestrian or bicyclist occurred between a vehicle making an eastbound left (3 of 4) or a westbound left (1 of 4), while the pedestrian or bicyclist was crossing OR 99E. In each case the driver was recorded as failing to yield right-of-way to the pedestrian or bicyclist. ***Further analysis of potential countermeasures by ODOT should consider protected left turn phasing on the minor approaches, omitting a left turn permitted phase while the pedestrian phase is called, or operating the signal in split phase to protect the pedestrian phase.***

A majority of the "rear end" crashes occurred on the north (10 of 20) and south legs (7 of 10) of OR 99E, which is a typical pattern due to the stop-and-go effect created by the traffic signal cycles at this highway intersection.

A total of four of 13 "turn" type crashes occurred between vehicles turning southbound left from OR 99E to the Oregon City Shopping Center entrance and vehicles travelling through on OR 99E. Three of these cases involved the turning vehicle not yielding to oncoming traffic. Also, an additional three of the "turn" type crashes occurred between vehicles turning westbound left onto OR 99E and vehicles travelling through on OR 99E. Each of these cases involved the vehicle travelling through failing to follow the traffic signal. ***Further analysis of potential countermeasures by ODOT should consider opportunities to draw attention to the traffic signal including, reorganizing distracting signage, providing advanced warning signage, and/or installing retroreflective signal backplates.***

INTERSECTION #3: OR 99E/I-205 SB RAMP

A detailed evaluation of the crashes at the OR 99E/I-205 SB Ramp intersection was performed given the observed crash rates exceed both the 90th percentile crash rates and the critical crash rate for the intersection. Of 46 reported crashes, 29 included crashes resulting in injuries and 17 crashes resulting in property damage only. A bicyclist was involved in one crash, which resulted in the bicyclist being injured. Crashes are primarily split between "turn" type collisions (22 of 46) and "rear end" collisions (21 of 46).

A total of seven of the 22 "turn" crashes occurred between vehicles making a westbound left turn from I-205 SB Off Ramp to OR 99E and vehicles travelling southbound on OR 99E. Four of the 22 "turn" crashes occurred between vehicles making a westbound left turn from I-205 SB Off Ramp to OR 99E and vehicles travelling northbound on OR 99E. In all of these cases, the driver making the through movement on OR 99E is recorded as disregarding the traffic signal. ***Further analysis of potential countermeasures by ODOT should consider opportunities to draw attention to the traffic signal including, reorganizing distracting signage, providing advancing warning signage, or installing retroreflective signal backplates.***

A total of nine of the 22 "turn" crashes occurred between vehicles making a southbound left turn from OR 99E to the I-205 SB On Ramp and vehicles travelling northbound on OR 99E. About half of these crashes resulted from the left turn failing to yield right-of-way and the other half are related to the through movement disregarding the signal. ***Further analysis of potential countermeasures by ODOT should consider extending the red clearance time for the protected left turns of this movement.***

Rear end crashes are concentrated on the north and east legs of the intersection, with 14 crashes occurring on the north leg (one of which occurred in the left turn lane) and 7 on the east leg. ***Further analysis of potential countermeasures by ODOT could consider installing retroreflective backplates on signal heads, especially for the southbound approach, and additional advanced warning signage on the I-205 SB off-ramp.***

INTERSECTION #4: OR 99E/I-205 NB RAMP

A detailed evaluation of the crashes at the OR 99E/I-205 NB Ramp intersection was performed given the observed crash rates exceed the critical crash rate for the intersection. Of the 35 reported crashes, 20 crashes resulted in injuries and 15 crashes resulted in property damage only. A majority of crashes were

"rear end" collisions (22 of 35) and an additional 12 crashes were "turn" type collisions. A pedestrian was involved in one crash, which resulted in the pedestrian being injured.

A total of 14 of the 22 "rear end" crashes occurred on the east leg, which is the I-205 NB Off Ramp. ***Further analysis of potential countermeasures by ODOT could consider modifying this off ramp to include additional queue storage for the separate left- and right-turn lanes, which could be integrated into the design plans now being prepared for the I-205 freeway widening project.***

A total of seven of the 12 "turn" crashes occurred between vehicles making a southbound left turn from OR 99E to I-205 NB On Ramp and vehicles travelling northbound on OR 99E. In four of these cases, the left turning vehicle failed to follow the traffic signal or did not have right-of-way. In one case, the northbound through vehicle failed to follow the traffic signal, and the cause is unknown. ***Further analysis of potential countermeasures by ODOT could consider extending the red clearance time for the protected left turns of this movement and opportunities to draw attention to the traffic signal including installing retroreflective signal backplates.***

A total of four of the 12 "turn" crashes occurred between vehicles making a westbound left turn from I-205 NB Off Ramp to OR 99E and vehicles travelling northbound on OR 99E. In each case, northbound vehicles did not obey the traffic signal. ***Further analysis of potential countermeasures by ODOT could consider opportunities to draw attention to the traffic signal including installing retroreflective signal backplates.***

INTERSECTION #14: WASHINGTON ST/12TH ST

A detailed evaluation of the crashes at the Washington St./12th St. intersection was performed given the observed crash rates exceed both the 90th percentile crash rates and the critical crash rate for the intersection. Reported crashes include one crash resulting in a death, 26 crashes resulting in injuries, and 25 crashes resulting in property damage only. Pedestrians or bicyclists were involved in two crashes, one of which resulted in the death of the pedestrian.

A majority of the crashes (39 of 52) report a collision type of "angle". Typically, angle crashes at this intersection occurred between vehicles crossing Washington St. on 12th St. and vehicles travelling through 12th St. on Washington St.

A traffic signal was installed by the City at this location in 2019, which may have reduced the potential for the "angle" type crash pattern at this intersection. Therefore, no further potential safety countermeasures are proposed.

INTERSECTION #18: REDLAND RD/HOLLY LN

A detailed evaluation of the crashes at the Redland Rd./Holly Ln. intersection was performed given the observed crash rates exceed both the 90th percentile crash rates and the critical crash rate for the

intersection. Reported crashes include five crashes resulting in injuries, and two crashes resulting in property damage only. The seven reported total crashes are roughly split between "rear end" and "turn" collision types.

All four of the "rear end" crashes occurred on the east leg (Redland Road) of the intersection, resulting from a driver making an error of failing to avoid a stopped vehicle ahead. The east leg of the intersection is an uncontrolled leg of a 3-legged two-way stop intersection. Redland Road has a posted speed of 45 MPH and has some horizontal curvature leading up to the east leg of the intersection, which may affect sight distance for approaching vehicles. ***Further analysis of potential countermeasures by the City or Clackamas County could consider installing advanced warning signage or installing a left turn pocket for vehicles waiting to turn onto Holly Lane.***

All three of the "turn" type collisions occurred between vehicles making a northbound left turn from Holly Lane onto Redland Road and vehicles travelling eastbound on Redland Road. Vehicles making the northbound left turn are identified as not having right-of-way. ***Further analysis of potential countermeasures by the City or Clackamas County could consider installing advanced warning signage for the eastbound movement or examining the opportunity to increase sight distance for the northbound left movement. Also, the City's TSP project (D48) to extend Holly Ln. north to Holcomb Blvd. may warrant the installation of a traffic signal at this location in the future.***

INTERSECTION #19: OR 213/I-205 SB OFF RAMP

A detailed evaluation of the crashes at the OR 213/I-205 SB Off Ramp intersection was performed given the observed crash rates exceed both the 90th percentile crash rates and the critical crash rate for the intersection. Of the 22 reported crashes, eight included injuries and 14 resulted in property damage only. Crashes were primarily split between "turn" type collisions (8 of 22), "sideswipe" collisions (6 of 22) and "rear end" collisions (5 of 22).

About 12 crashes involving "sideswipe" and "turn" type crashes appear to occur around the merge point between the I-205 SB Loop Off Ramp and the OR 213 southbound movement. The crash report summary leaves some ambiguity in determining exactly where the crashes occurred. Crashes involving sideswipes may also be occurring between vehicles travelling adjacent to one another on the looping off ramp. Further analysis of potential countermeasures by ODOT would benefit from more detailed information about these crash types at this location.

INTERSECTION #21: OR 213/REDLAND RD

A detailed evaluation of the crashes at the OR 213/Redland Rd. intersection was performed given the observed crash rates exceed both the 90th percentile crash rates and the critical crash rate for the intersection. Of the 53 reported crashes, 33 resulted in injuries and 20 crashes resulting in property damage only. A majority of crashes were "rear end" related (42 of 53), with an additional 10 crashes involving "turn" type collisions.

Eighteen of the 42 "rear end" crashes occurred on the south leg (OR 213), with 17 crashes on the north leg (OR 213). ***Further analysis of potential countermeasures by ODOT could consider advance warning signs and/or advisory speed signs during congested periods.***

Four of the 10 "turn" type collisions occurred between vehicles making a northbound left turn from OR 213 to Redland Road and vehicles travelling southbound on OR 213, who disregarded the traffic signal. All four crashes resulted in an injury to at least one person. ***Further analysis of potential countermeasures by ODOT could consider installing retroreflective backplates on signal heads for all approaches.***

INTERSECTION #22: OR 213/BEAVERCREEK RD

A detailed evaluation of the crashes at the OR 213/Beavercreek Rd. intersection was performed given the observed crash rates exceed both the 90th percentile crash rates and the critical crash rate for the intersection. Reported crashes include one crash resulting in a death, 65 crashes resulting in injuries, and 69 crashes resulting in property damage only. Pedestrians or bicyclists were involved in three crashes, one of which resulted in a pedestrian being killed and the other two resulting in bicyclists being injured. A majority of crashes have a collision type of "rear end" (119 of 135).

All three pedestrian and bicyclist involved crashes involved the pedestrian or bicyclist crossing OR 213. In two cases, the bicyclist or pedestrian did not follow the traffic signal and in the other case the driver did not yield right-of-way to the bicyclist.

The "rear end" crashes are distributed across all intersection legs, however the largest portion of crashes occurs on the east leg of the intersection, along Beavercreek Road, where approximately one third (45 of 119) of rear end crashes occur. As described in the Planned Transportation Improvements section of this report, the City has amended the TSP to include a project that will construct a westbound right-turn merging lane onto OR 213 with additional pedestrian crossing safety improvements. These enhancements, which are being funded by proportionate share cost contributions by developments that send traffic through this intersection, may help remedy the pattern of "rear end" and pedestrian-related crashes.

INTERSECTION #24: BEAVERCREEK RD/MOLALLA AVE

A detailed evaluation of the crashes at the Beavercreek Rd./Molalla Ave. intersection was performed given the observed crash rates exceed both the 90th percentile crash rates and the critical crash rate for the intersection. Reported crashes include 34 crashes resulting in injuries, and 22 crashes resulting in property damage only. A pedestrian was involved in one crash, which resulted in the pedestrian being injured. Crashes are primarily split between collision types of "turn" (30 of 56) and "rear end" (17 of 56).

The pedestrian crash occurred when a driver turning right, northbound failed to yield to a pedestrian. ***Further analysis by the City of potential countermeasures could consider installing yield to pedestrian signage.***

About half of all "turn" type crashes occurred between vehicles making a permitted left turn and vehicles travelling through the intersection in the opposite direction. Ten of these crashes occurred between vehicles making a southbound left and vehicles travelling northbound through, while six crashes occurred between vehicles making a northbound left and vehicles travelling southbound through. Most of these 16 crashes identify the left turning vehicle as not having the right-of-way. ***Further analysis of potential countermeasures by the City should consider either limiting the use of the permitted left turn phasing (Flashing Yellow Arrow) at this intersection or extending the red clearance time at the end of the left-turn phase.***

Rear end crashes occur on all legs of the intersection, without an apparent pattern of occurring on a particular leg.

INTERSECTION #25: BEAVERCREEK RD/MAPLELANE RD

A detailed evaluation of the crashes at the Beavercreek Rd./Maplelane Rd. intersection was performed given the observed crash rates exceed both the 90th percentile crash rates and the critical crash rate for the intersection. Reported crashes include 31 crashes resulting in injuries, and 19 crashes resulting in property damage only. Crashes are primarily split between collision types of "turn" (34 of 50) and "rear end" (12 of 50).

More than half of all "turn" type crashes (21 of 34) occur between vehicles making an eastbound left turn from Beavercreek Road onto Maplelane Road and vehicles travelling westbound through on Beavercreek Road. An additional six crashes occur between vehicles making a westbound left turn and vehicles travelling eastbound through on Beavercreek Road. Nearly all of these crashes are recorded as occurring due to the turning vehicle not having the right-of-way. ***Further analysis of potential countermeasures by the City should consider either establishing protected/permitted left turn phasing (Flashing Yellow Arrow) for the eastbound left-turn or extending the red clearance time at the end of the left-turn phase.***

Rear end crashes occur on all legs of the intersection, without an apparent pattern of occurring on a particular leg.

Intersectional Crashes at Washington St & 7th St
January 1, 2014 through December 31, 2018

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2017														
REAR-END	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2017 TOTAL	0	1	0	1	0	1	0	1	0	1	0	1	0	0
YEAR: 2016														
ANGLE	0	0	1	1	0	0	0	0	0	1	0	1	0	0
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	0	0	1	1	0	1	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2016 TOTAL	0	1	2	3	0	1	0	1	1	3	0	3	0	0
YEAR: 2015														
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2015 TOTAL	0	0	1	1	0	0	0	1	0	1	0	1	0	0
YEAR: 2014														
ANGLE	0	1	2	3	0	1	0	2	1	3	0	3	0	0
REAR-END	0	1	0	1	0	1	0	1	0	0	1	1	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	0	1	0	1	1	0	0
2014 TOTAL	0	2	3	5	0	2	0	3	2	3	2	5	0	0
FINAL TOTAL	0	4	6	10	0	4	0	6	3	8	2	10	0	0

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A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Washington St & 7th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
01983	N	N	N			05/23/2014	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										013	29
CITY			N			Fri 9P	0	7TH ST	SE		TRF SIGNAL	N	DRY	REAR		UNKN	SE NW									000		00
No	*45 21 22.89*					*-122 36 18.23*	1		06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		026	000		29
															02	NONE 0	STOP									011	013	
																PRVTE	SE NW											00
																PSNGR CAR		01	DRVR	NONE	19	F	OR-Y OR<25		000	000		00
															03	NONE 0	STOP									022		00
																PRVTE	SE NW											
																PSNGR CAR		01	DRVR	INJC	38	F	OR-Y OR<25		000	000		00
05516	N	N	N			11/27/2016	16	WASHINGTON ST	INTER	CROSS	N	N	CLD	S-1STOP	01	NONE 9	TURN-R											08
CITY			N			Sun 11A	0	7TH ST	SW		TRF SIGNAL	N	WET	SS-O		N/A	SW SE									000		00
No	*45 21 22.89*					*-122 36 18.23*	1		06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9	STOP									011		00
																N/A	SW NE											
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
04357	Y	N	N	N	N	10/20/2017	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											27,30,32
CITY			N			Fri 1P	0	7TH ST	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE									000		00
No	*45 21 22.89*					*-122 36 18.23*	1		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	25	M	SUSP OR>25		050,052,026	038		27,30,32
															02	NONE 0	STOP									011		00
																PRVTE	SW NE											
																PSNGR CAR		01	DRVR	INJC	26	F	OR-Y OR<25		000	000		00
03089	N	N	N			08/09/2014	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											04
NONE			N			Sat 12P	0	7TH ST	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	SE NW									000		00
No	*45 21 22.89*					*-122 36 18.23*	1		02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	52	F	OR-Y OR<25		000	000		00
															02	NONE 0	STRGHT									000		00
																PRVTE	SW NE											
																PSNGR CAR		01	DRVR	NONE	39	F	OTH-Y N-RES		020	000		04
05148	N	N	N			12/19/2014	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											04
NONE			N			Fri 3P	0	7TH ST	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	SW NE									000		00
No	*45 21 22.89*					*-122 36 18.23*	1		02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	35	M	OR-Y OR<25		020	000		04

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SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	SWORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
															02	NONE 0 PRVTE	STRGHT SE NW									000	00
																PSNGR CAR		01	DRVR	NONE	81	F	OR-Y OR<25		000	000	00
05327 NONE	N	N	N N			11/16/2016 Wed 9A	16 0	WASHINGTON ST 7TH ST	INTER CN	CROSS	N TRF SIGNAL	N N	UNK UNK	ANGL-OTH ANGL	01	NONE 9 N/A	STRGHT SE NW									000	04 00
No	*45 21 22.89*					*-122 36 18.23*	1		02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
															02	NONE 9 N/A	STRGHT SW NE									000	00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
02086 NO RPT	N	N	N N			06/01/2015 Mon 8A	16 0	WASHINGTON ST 7TH ST	INTER CN	CROSS	N TRF SIGNAL	N N	CLR DRY	ANGL-OTH TURN	01	NONE 0 PRVTE	STRGHT NE SW									000	04 00
No	*45 21 22.89*					*-122 36 18.23*	1		03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	76	F	OR-Y OR<25		020	000	04
															02	NONE 0 PRVTE	TURN-L NW NE									000	00
																PSNGR CAR		01	DRVR	NONE	25	F	OR-Y OR<25		000	000	00
02353 NO RPT	N	N	N N			05/25/2016 Wed 11A	16 0	WASHINGTON ST 7TH ST	INTER CN	CROSS	N TRF SIGNAL	N N	CLR DRY	ANGL-OTH TURN	01	NONE 0 PRVTE	TURN-R NW SW									016	02 00
No	*45 21 22.89*					*-122 36 18.23*	1		03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	36	M	OTH-Y N-RES		028	000	02
															02	NONE 0 PRVTE	STRGHT NE SW									000	00
																PSNGR CAR		01	DRVR	INJC	26	F	OR-Y OR<25		000	000	00
00676 NONE	N	N	N N			01/29/2014 Wed 11A	16 0	WASHINGTON ST 7TH ST	INTER CN	CROSS	N TRF SIGNAL	N N	SNOW SNO	ANGL-OTH ANGL	01	NONE 0 PRVTE	STRGHT NW SE									000	04 00
No	*45 21 22.89*					*-122 36 18.23*	1		04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	50	M	OR-Y OR<25		000	000	00
															02	NONE 0 UNKN	STRGHT SW NE									000	00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		020	000	04
00681 CITY	N	N	N N	N	N	02/15/2014 Sat 11P	16 0	WASHINGTON ST 7TH ST	INTER CN	CROSS	N TRF SIGNAL	N N	RAIN WET	ANGL-OTH TURN	01	NONE 0 PRVTE	STRGHT NW SE									000	04 00
No	*45 21 22.89*					*-122 36 18.23*	1		04	0		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	27	F	OR-Y OR<25		020	000	04

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Intersectional Crashes at Washington St & 7th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS / RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
															02	NONE 0 PRVTE	TURN-L NE SE										000		00
																PSNGR CAR		01	DRVR	NONE	50	M	OR-Y OR<25		000	000		00

Intersectional Crashes at Washington St & Clackamas River Dr
January 1, 2014 through December 31, 2018

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2016														
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2016 TOTAL	0	0	1	1	0	0	0	1	0	1	0	1	0	0
YEAR: 2015														
REAR-END	0	0	1	1	0	0	0	0	1	0	1	1	0	0
2015 TOTAL	0	0	1	1	0	0	0	0	1	0	1	1	0	0
YEAR: 2014														
TURNING MOVEMENTS	0	0	1	1	0	0	0	0	1	0	1	1	0	0
2014 TOTAL	0	0	1	1	0	0	0	0	1	0	1	1	0	0
FINAL TOTAL	0	0	3	3	0	0	0	1	2	1	2	3	0	0

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A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

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Intersectional Crashes at Washington St & Clackamas River Dr
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
05157	N	N	N			12/04/2015	16	CLACKAMAS RIVER DR	INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT										004	29
NONE			N			Fri 7A	0	WASHINGTON ST	NE		YIELD	Y	WET	REAR		PRVTE	NE SW									000		00
No	*45 22 25.38*					*-122 35 6.17*	1		06	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	34	M	OR-Y OR<25		026	000		29
															02	NONE 0	STOP									011	004	00
																PRVTE	NE SW											
																PSNGR CAR		01	DRVR	NONE	32	F	OR-Y OR<25		000	000		00
00415	N	N	N			01/25/2016	16	CLACKAMAS RIVER DR	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
NONE			N			Mon 2P	0	WASHINGTON ST	SE		YIELD	Y	DRY	REAR		N/A	SE NW									000		00
No	*45 22 25.38*					*-122 35 6.17*	1		06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9	STOP									011		00
																N/A	SE NW											
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
00131	N	N	N			01/10/2014	16	CLACKAMAS RIVER DR	INTER	3-LEG	N	N	RAIN	ANGL-OTH	01	NONE 0	TURN-R											02
NONE			N			Fri 6A	0	WASHINGTON ST	CN		YIELD	Y	WET	TURN		PRVTE	SE NE									000		00
No	*45 22 25.38*					*-122 35 6.17*	1		04	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	70	M	OR-Y OR<25		028	000		02
															02	NONE 0	STRGHT									000		00
																PRVTE	SW NE											
																PSNGR CAR		01	DRVR	NONE	24	M	OR-Y OR<25		000	000		00

Intersectional Crashes at Washington St & Prairie Schooner Wy (Clackamas River Dr)
January 1, 2014 through December 31, 2018

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2016														
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2016 TOTAL	0	1	1	2	0	1	0	2	0	2	0	2	0	0
YEAR: 2015														
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	0	1	1	0	0
2015 TOTAL	0	0	1	1	0	0	0	1	0	0	1	1	0	0
YEAR: 2014														
TURNING MOVEMENTS	0	0	1	1	0	0	0	0	1	1	0	1	0	0
2014 TOTAL	0	0	1	1	0	0	0	0	1	1	0	1	0	0
FINAL TOTAL	0	1	3	4	0	1	0	3	1	3	1	4	0	0

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Washington St & Prairie Schooner Wy (Clackamas River Dr)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
04422	N	N	N			09/25/2016	16	PRAIRIE SCHOONER WY	INTER	3-LEG	N	N	CLR	S-STRGHT	01	NONE 9	STRGHT										13
NO RPT			N			Sun 6P	0	WASHINGTON ST	SE		L-GRN-SIG	N	DRY	SS-O		N/A	SE NW									000	00
No	*45 22 14.91*		*-122 35 14.19*					1	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
															02	NONE 9	STRGHT									000	00
																N/A	SE NW										
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
03741	N	N	N			09/23/2014	16	PRAIRIE SCHOONER WY	INTER	3-LEG	N	N	RAIN	O-1 L-TURN	01	NONE 0	STRGHT										08,02
NONE			N			Tue 6P	0	WASHINGTON ST	CN		TRF SIGNAL	N	WET	TURN		PRVTE	SW NE									000	00
No	*45 22 14.79*		*-122 35 14.10*					1	04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	UNK UNK		000	000	00
															02	NONE 0	TURN-L									000	00
																PRVTE	NE SE										
																PSNGR CAR		01	DRVR	NONE	36	M	OR-Y OR<25		028,004	000	02
05332	N	N	N			12/12/2015	16	PRAIRIE SCHOONER WY	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										02
NONE			N			Sat 10P	0	WASHINGTON ST	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	SW NE									000	00
No	*45 22 14.91*		*-122 35 14.19*					1	04	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	25	M	OTH-Y OR<25		000	000	00
															02	NONE 0	TURN-L									000	00
																PRVTE	NE SE										
																PSNGR CAR		01	DRVR	NONE	63	M	OR-Y N-RES		028,004	000	02
01238	N	N	N			03/16/2016	16	PRAIRIE SCHOONER WY	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										02
NO RPT			N			Wed 2P	0	WASHINGTON ST	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	SW NE									000	00
No	*45 22 14.91*		*-122 35 14.19*					1	04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	48	F	OR-Y OR<25		000	000	00
															02	NONE 0	TURN-L									000	00
																PRVTE	NE SE										
																PSNGR CAR		01	DRVR	NONE	24	M	OR-Y OR<25		028,004	000	02

Intersectional Crashes at Washington St & 15th St
January 1, 2014 through December 31, 2018

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2018														
ANGLE	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2018 TOTAL	0	0	1	1	0	0	0	1	0	1	0	1	0	0
YEAR: 2017														
ANGLE	1	1	0	2	1	1	0	2	0	2	0	2	0	0
FIXED / OTHER OBJECT	0	1	0	1	0	1	0	1	0	1	0	1	0	1
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2017 TOTAL	1	2	1	4	1	2	0	4	0	4	0	4	0	1
YEAR: 2016														
ANGLE	0	0	3	3	0	0	0	3	0	3	0	3	0	0
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	1	1	2	0	1	0	2	0	1	1	2	0	0
2016 TOTAL	0	1	5	6	0	1	0	6	0	5	1	6	0	0
YEAR: 2015														
ANGLE	0	1	0	1	0	1	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	1	1	2	0	1	0	1	1	1	1	2	0	0
2015 TOTAL	0	2	1	3	0	2	0	2	1	2	1	3	0	0
YEAR: 2014														
ANGLE	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	1	2	3	0	1	0	2	1	2	1	3	0	0
2014 TOTAL	0	1	3	4	0	1	0	3	1	3	1	4	0	0
FINAL TOTAL	1	6	11	18	1	6	0	16	2	15	3	18	0	1

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CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Washington St & 15th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
01506	N	N	N			04/21/2017	16	WASHINGTON ST	INTER	CROSS	N	Y	CLR	FIX OBJ	01	NONE 0	STRGHT										055	17
CITY			N			Fri 8A	0	15TH ST	UN		TRF SIGNAL	N	DRY	FIX		PRVTE	UN UN									000	055	00
No						*45 21 43.81 -122 35 57.17*	1		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	60	M	OR-Y		081	028		17
																								OR<25					
04129	N	N	N			07/20/2016	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
NONE			N			Wed 7A	75	15TH ST	NE		TRF SIGNAL	N	DRY	REAR		N/A	NE SW									000		00
No						*45 21 43.81 -122 35 57.17*	1		08	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																								UNK					
															02	NONE 9	STOP											
																N/A	NE SW									011		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																								UNK					
00548	Y	N	N			02/07/2014	16	WASHINGTON ST	INTER	CROSS	N	N	SNOW	ANGL-STP	01	NONE 0	TURN-R										124	01,08
NONE			N			Fri 3P	0	15TH ST	NW		TRF SIGNAL	N	SNO	TURN		PRVTE	NE NW									000	124	00
No						*45 21 43.81 -122 35 57.17*	1		06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	UNK		047,001	000		01,08
																								UNK					
															02	NONE 0	STOP											
																PRVTE	NW SE									011		00
																PSNGR CAR		01	DRVR	NONE	57	M	OR-Y		000	000		00
																								OR<25					
02043	N	N	N			05/28/2014	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											04
NONE			N			Wed 2P	0	15TH ST	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	NE SW									000		00
No						*45 21 43.81 -122 35 57.17*	1		01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	25	F	OR-Y		020	000		04
																								OR<25					
															02	NONE 0	STRGHT											
																PRVTE	SE NW									000		00
																PSNGR CAR		01	DRVR	NONE	62	M	OR-Y		000	000		00
																								OR<25					
04626	N	N	N			11/06/2015	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											04
NONE			N			Fri 9A	0	15TH ST	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	NE SW									000		00
No						*45 21 43.81 -122 35 57.17*	1		01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	38	M	OTH-Y		000	000		00
																								N-RES					
															02	NONE 0	STRGHT											
																PRVTE	SE NW									000		00
																PSNGR CAR		01	DRVR	NONE	20	F	OR-Y		020	000		04
																								OR<25					
03218	N	N	N			06/25/2016	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 9	STRGHT											04
NO RPT			N			Sat 6P	0	15TH ST	CN		TRF SIGNAL	N	DRY	ANGL		N/A	NE SW									000		00
No						*45 21 43.81 -122 35 57.17*	1		01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																								UNK					

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Washington St & 15th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	SWORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
															02	NONE 9 N/A	STRGHT SE NW									000	00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
01340 NONE	N	N	N	N	N	04/07/2014 Mon 9P	16 0	WASHINGTON ST 15TH ST	INTER CN	CROSS	N TRF SIGNAL	N	CLR DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT SE NW										000	02 00
No	*45 21 43.81*		*-122 35 57.17*				1		02	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	39	M	OR-Y OR<25		000	000	00
															02	NONE 0 PRVTE	TURN-L NW NE									000	00
																PSNGR CAR		01	DRVR	INJC	22	F	OR-Y OR>25		028,004	000	02
02753 NO RPT	N	N	N			07/17/2014 Thu 4P	16 0	WASHINGTON ST 15TH ST	INTER CN	CROSS	N TRF SIGNAL	N	CLR DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT SE NW										000	02 00
No	*45 21 43.81*		*-122 35 57.17*				1		02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	59	F	OR-Y OR<25		000	000	00
															02	NONE 1 PRVTE	TURN-L NW NE									000	00
																PSNGR CAR		01	DRVR	NONE	40	M	OR-Y OR<25		028,004	000	02
00711 NO RPT	N	N	N			02/23/2015 Mon 8P	16 0	WASHINGTON ST 15TH ST	INTER CN	CROSS	N TRF SIGNAL	N	CLR DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT SE NW										000	02 00
No	*45 21 43.81*		*-122 35 57.17*				1		02	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	39	F	OR-Y OR<25		000	000	00
															02	NONE 0 PRVTE	TURN-L NW NE									000	00
																PSNGR CAR		01	DRVR	NONE	16	M	OR-Y OR<25		028,004	000	02
03528 NONE	N	N	N			08/29/2015 Sat 9A	16 0	WASHINGTON ST 15TH ST	INTER CN	CROSS	N TRF SIGNAL	N	RAIN WET	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT SE NW										000	02 00
No	*45 21 43.81*		*-122 35 57.17*				1		02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	54	M	OR-Y OR<25		000	000	00
															02	NONE 0 PRVTE	TURN-L NW NE									000	00
																PSNGR CAR		01	DRVR	NONE	37	M	OR-Y OR<25		028,004	000	02
00877 NO RPT	N	N	N			02/23/2016 Tue 11A	16 0	WASHINGTON ST 15TH ST	INTER CN	CROSS	N TRF SIGNAL	N	CLR DRY	ANGL-OTH ANGL	01	NONE 9 N/A	TURN-R SE NE										016	02 00
No	*45 21 43.81*		*-122 35 57.17*				1		02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Washington St & 15th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
															02	NONE 9 N/A	STRGHT SW NE									000	00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
01949	N	N	N			04/30/2016	16	WASHINGTON ST	INTER	CROSS	N		N	CLR	O-1 L-TURN	01	NONE 0 PRVTE	STRGHT SE NW										02
NO RPT			N			Sat 7P	0	15TH ST	CN		TRF SIGNAL		N	DRY	TURN											000	00
No	*45 21 43.81*		*-122 35 57.17*				1		02	0			N	DUSK	INJ		PSNGR CAR		01	DRVR	INJB	21	F	OR-Y OR<25		000	000	00
															02	NONE 0 PRVTE	TURN-L NW NE									000	00
																PSNGR CAR		01	DRVR	NONE	16	M	OR-Y OR<25		028,004	000	02
02359	N	N	N			05/25/2016	16	WASHINGTON ST	INTER	CROSS	N		N	CLR	O-1 L-TURN	01	NONE 9 N/A	STRGHT SE NW									000	02,08
NO RPT			N			Wed 3P	0	15TH ST	CN		TRF SIGNAL		N	DRY	TURN											000	00
No	*45 21 43.81*		*-122 35 57.17*				1		02	0			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
															02	NONE 9 N/A	TURN-L NW NE									000	00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
00648	N	N	N			02/18/2017	16	WASHINGTON ST	INTER	CROSS	N		N	CLR	ANGL-OTH	01	NONE 0 PRVTE	STRGHT SE NW										04
NONE			N			Sat 3P	0	15TH ST	CN		TRF SIGNAL		N	DRY	ANGL											000	00
No	*45 21 43.81*		*-122 35 57.17*				1		02	0			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	28	F	OR-Y OR<25		020	000	04
															02	NONE 0 PRVTE	STRGHT SW NE									000	00
																PSNGR CAR		01	DRVR	INJC	34	M	OR-Y OR<25		000	000	00
04474	N	N	N	N	N	10/26/2017	16	WASHINGTON ST	INTER	CROSS	N		N	CLR	BIKE	01	NONE 0 PRVTE	STRGHT SE NW										04
CITY			N			Thu 4P	0	15TH ST	CN		TRF SIGNAL		N	DRY	ANGL											000	00
No	*45 21 43.81*		*-122 35 57.17*				1		02	0			N	DAY	FAT		PSNGR CAR		01	DRVR	NONE	29	M	OR-Y OR<25		000	000	00
																	STRGHT SW NE	01	BIKE	KILL	67	M		13	020	035	04
04070	N	N	N			11/07/2018	16	WASHINGTON ST	INTER	CROSS	N		N	CLR	ANGL-OTH	01	NONE 9 N/A	STRGHT SW NE										04,32
CITY			N			Wed 12P	0	15TH ST	CN		TRF SIGNAL		N	DRY	ANGL											000	00
No	*45 21 43.81*		*-122 35 57.17*				1		02	0			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
															02	NONE 9 N/A	STRGHT SE NW									000	00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Washington St & 15th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
04706	N	N	N	N	N	10/12/2016	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 9	STRGHT											04
CITY			N			Wed 2P	0	15TH ST	CN		TRF SIGNAL	N	DRY	ANGL		N/A	NW SE										000		00
No						*45 21 43.81 -122 35 57.17*	1		03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9	STRGHT											
																N/A	NE SW										000		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
03435	N	N	N			08/21/2017	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	S-OTHER	01	NONE 9	TURN-R											08
NONE			N			Mon 4P	0	15TH ST	CN		TRF SIGNAL	N	DRY	TURN		N/A	NW SW										000		00
No						*45 21 43.81 -122 35 57.17*	1		03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9	TURN-R											
																N/A	NW SW										000		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00

Intersectional Crashes at Washington St & 14th St
January 1, 2014 through December 31, 2018

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2018														
REAR-END	0	1	0	1	0	3	0	1	0	1	0	1	0	0
2018 TOTAL	0	1	0	1	0	3	0	1	0	1	0	1	0	0
YEAR: 2017														
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2017 TOTAL	0	0	1	1	0	0	0	1	0	1	0	1	0	0
YEAR: 2016														
ANGLE	0	2	0	2	0	4	0	2	0	1	1	2	0	0
TURNING MOVEMENTS	0	1	0	1	0	2	0	1	0	1	0	1	0	0
2016 TOTAL	0	3	0	3	0	6	0	3	0	2	1	3	0	0
YEAR: 2015														
REAR-END	0	2	0	2	0	2	0	2	0	2	0	2	0	0
2015 TOTAL	0	2	0	2	0	2	0	2	0	2	0	2	0	0
YEAR: 2014														
FIXED / OTHER OBJECT	0	0	1	1	0	0	1	1	0	0	1	1	0	1
REAR-END	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2014 TOTAL	0	1	1	2	0	1	1	2	0	1	1	2	0	1
FINAL TOTAL	0	7	2	9	0	12	1	9	0	7	2	9	0	1

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Washington St & 14th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
02018	N	N	N			05/28/2014	16	WASHINGTON ST	INTER	CROSS	N	N	CLD	S-STRGHT	01	NONE 0	STRGHT											07
CITY			N			Wed 8A	0	14TH ST	NE		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW									000		00
No						*45 21 41.11 -122 35 59.91*		1	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	40	F	OR-Y OR<25		043,026	000		07
															02	NONE 0	STRGHT											
																PRVTE	NE SW									006		00
																PSNGR CAR		01	DRVR	INJC	47	M	OR-Y OR<25		000	000		00
01080	N	N	N	N	N	03/29/2018	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											013	27,29,32
CITY			N			Thu 5P	0	14TH ST	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE									000		00
No						*45 21 41.11 -122 35 59.91*		1	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	16	M	OR-Y OR<25		026,052	000		27,29,32
															02	NONE 0	STOP											
																PRVTE	SW NE									011	013	00
																PSNGR CAR		01	DRVR	NONE	57	F	OR-Y OR<25		000	000		00
															03	NONE 0	STOP											
																PRVTE	SW NE									022	013	00
																PSNGR CAR		01	DRVR	INJA	57	M	OR-Y OR<25		000	000		00
															04	NONE 0	STOP											
																PRVTE	SW NE									022		00
																PSNGR CAR		01	DRVR	INJC	43	M	OR-Y OR<25		000	000		00
																		02	PSNG	INJC	41	F			000	000		00
00650	N	N	N	N	N	02/13/2014	16	WASHINGTON ST	INTER	CROSS	N	Y	CLD	FIX OBJ	01	NONE 1	TURN-R										055	08
CITY			N			Thu 6P	0	14TH ST	W		TRF SIGNAL	N	DRY	FIX		PRVTE	NW SW									000	055	00
No						*45 21 41.11 -122 35 59.91*		1	06	0		N	DARK	PDO		SEMI TOW		01	DRVR	NONE	22	M	OR-Y OR<25		002	000		08
02972	N	N	N			07/23/2015	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT												29
NONE			N			Thu 4P	0	14TH ST	NW		TRF SIGNAL	N	DRY	REAR		PRVTE	NW SE									000		00
No						*45 21 41.11 -122 35 59.91*		1	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	39	F	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	NW SE									011		00
																PSNGR CAR		01	DRVR	INJC	57	F	OR-Y OR<25		000	000		00
04634	N	N	N			11/06/2015	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT												29
NONE			N			Fri 3P	0	14TH ST	NW		TRF SIGNAL	N	DRY	REAR		UNKN	NW SE									000		00
No						*45 21 41.11 -122 35 59.91*		1	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	M	UNK UNK		026	000		

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Washington St & 14th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
															02	NONE 0 PRVTE	STOP NW SE									011	00
																PSNGR CAR		01	DRVR	INJC	58	F	OR-Y OR<25		000	000	00
02101 CITY	N	N	N	N	N	05/10/2016 Tue 1P	16 0	WASHINGTON ST 14TH ST	INTER NW	CROSS	N TRF SIGNAL	N N	CLR DRY	ANGL-STP TURN	01	NONE 0 PRVTE	TURN-R NE NW										000	08 00
No	*45 21 41.11*					*-122 35 59.91*	1		06	0		N	DAY	INJ		MTRCYCLE		01	DRVR	INJA	55	M	OR-Y OR<25		001	000	08
															02	NONE 0 PRVTE	STOP NW SE									011	00
																PSNGR CAR		01	DRVR	INJC	65	F	OR-Y OR<25		000	000	00
00845 NO RPT	N	N	N			02/22/2016 Mon 4P	16 0	WASHINGTON ST 14TH ST	INTER CN	CROSS	N TRF SIGNAL	N N	CLR DRY	ANGL-OTH ANGL	01	NONE 0 PRVTE	STRGHT SE NW										000	04 00
No	*45 21 41.11*					*-122 35 59.91*	1		01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	46	F	OR-Y OR<25		020	000	04
															02	NONE 0 PRVTE	STRGHT NE SW									000	00
																PSNGR CAR		01	DRVR	INJB	60	M	OR-Y OR<25		000	000	00
01086 NONE	N	N	N			03/21/2017 Tue 2P	16 0	WASHINGTON ST 14TH ST	INTER CN	CROSS	N TRF SIGNAL	N N	CLR DRY	ANGL-OTH TURN	01	NONE 9 N/A	TURN-R NE NW										015	02 00
No	*45 21 41.11*					*-122 35 59.91*	1		01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
															02	NONE 9 N/A	STRGHT SE NW									000	00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
04347 NO RPT	N	N	N			09/21/2016 Wed 7P	16 0	WASHINGTON ST 14TH ST	INTER CN	CROSS	N TRF SIGNAL	N N	CLR DRY	ANGL-OTH ANGL	01	NONE 0 PRVTE	STRGHT NW SE										000	04 00
No	*45 21 41.11*					*-122 35 59.91*	1		04	0		N	DUSK	INJ		PSNGR CAR		01	DRVR	NONE	42	F	OR-Y OR<25		020	000	04
															02	NONE 0 PRVTE	STRGHT SW NE									000	00
																PSNGR CAR		01	DRVR	INJC	25	M	OR-Y OR<25		000	000	00
																		02	PSNG	INJC	22	F			000	000	00

Intersectional Crashes at Washington St & 12th St
January 1, 2014 through December 31, 2018

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2018														
ANGLE	0	6	0	6	0	9	0	3	3	4	2	6	0	0
REAR-END	0	0	1	1	0	0	0	0	1	1	0	1	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2018 TOTAL	0	6	2	8	0	9	0	4	4	6	2	8	0	0
YEAR: 2017														
ANGLE	0	5	4	9	0	7	0	7	2	5	4	9	0	0
2017 TOTAL	0	5	4	9	0	7	0	7	2	5	4	9	0	0
YEAR: 2016														
ANGLE	0	6	3	9	0	8	0	7	2	6	3	9	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2016 TOTAL	0	6	4	10	0	8	0	8	2	7	3	10	0	0
YEAR: 2015														
ANGLE	0	3	6	9	0	5	0	4	4	7	2	9	0	0
REAR-END	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2015 TOTAL	0	4	6	10	0	6	0	5	4	8	2	10	0	0
YEAR: 2014														
ANGLE	0	5	6	11	0	6	0	10	1	8	3	11	0	0
PEDESTRIAN	1	0	0	1	1	0	0	1	0	0	1	1	0	0
REAR-END	0	0	2	2	0	0	0	1	1	2	0	2	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2014 TOTAL	1	5	9	15	1	6	0	13	2	11	4	15	0	0
FINAL TOTAL	1	26	25	52	1	36	0	37	14	37	15	52	0	0

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CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Washington St & 12th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
01146	N	N	N			03/22/2014	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										004	07
NONE			N			Sat 4P	0	12TH ST	UN		FLASHBCN-R	N	DRY	REAR		PRVTE	UN UN								000		00
No	*45 21 35.73*					*-122 36 5.31*		1	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	18	M	OR-Y OR<25		026	000		07
															02	NONE 0	STOP											
																PRVTE	UN UN									011	004	00
																PSNGR CAR		01	DRVR	NONE	17	M	OR-Y OR<25		000	000		00
00001	N	Y	N	N	N	01/03/2014	16	WASHINGTON ST	INTER	CROSS	N	N	CLD	PED	01	NONE 0	STRGHT												02,19
CITY			N			Fri 6P	0	12TH ST	NE		FLASHBCN-A	N	DRY	PED		PRVTE	SW NE								000		00
No	*45 21 35.73*					*-122 36 5.31*		1	05	0		N	DLIT	FAT		PSNGR CAR		01	DRVR	NONE	22	M	OR-Y OR<25		029	000		02
																	STRGHT NW SE	01	PED	KILL	54	M		01	000	034		19
00210	Y	N	N	N	N	01/18/2018	16	WASHINGTON ST	INTER	CROSS	N	N	CLD	BIKE	01	NONE 0	STRGHT												19,01
CITY			N			Thu 5P	0	12TH ST	NE		STOP SIGN	N	WET	ANGL		PRVTE	NW SE								015		00
No	*45 21 35.73*					*-122 36 5.31*		1	06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	16	M	OR-Y OR<25		000	000		00
																	STRGHT SW NE	01	BIKE	INJB	37	M		13	047	034		19,01
01787	Y	N	N	N	N	05/09/2014	16	WASHINGTON ST	INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT										004	01,07
CITY			N			Fri 3P	0	12TH ST	SW		SP PED SIG	N	WET	REAR		PRVTE	SW NE								000		00
No	*45 21 35.73*					*-122 36 5.31*		1	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	19	M	OR-Y OR<25		047,043,026	000		01,07
															02	NONE 0	STOP											
																PRVTE	SW NE									011		00
																PSNGR CAR		01	DRVR	NONE	56	M	OR-Y OR<25		000	000		00
02600	N	N	N			06/28/2015	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										004	29
NONE			N			Sun 1P	0	12TH ST	SW		UNKNOWN	N	DRY	REAR		PRVTE	SW NE								000		00
No	*45 21 35.73*					*-122 36 5.31*		1	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	24	F	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	SW NE									011	004	00
																PSNGR CAR		01	DRVR	INJC	58	F	OR-Y OR<25		000	000		00
01569	N	N	N			04/13/2018	16	WASHINGTON ST	INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 9	STRGHT												29
CITY			N			Fri 9A	0	12TH ST	SW		UNKNOWN	N	WET	REAR		N/A	SW NE								000		00
No	*45 21 35.74*					*-122 36 5.32*		1	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Washington St & 12th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
															02	NONE 9 N/A	STOP SW NE									011	00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
01414	N	N	N	N	N	04/12/2014	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
CITY		N				Sat 3P	0	12TH ST	CN		FLASHBCN-R	N	DRY	ANGL		PRVTE	SE NW									015	00
No						*45 21 35.73 -122 36 5.31*		1	01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	65	M	OR-Y OR<25		028	000	02
															02	NONE 0	STRGHT											
																PRVTE	NE SW									000	00
																PSNGR CAR		01	DRVR	INJC	45	F	OR-Y OR<25		000	000	00
01721	N	N	N	N	N	05/05/2014	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
CITY		N				Mon 5P	0	12TH ST	CN		STOP SIGN	N	DRY	ANGL		PRVTE	NE SW									000	00
No						*45 21 35.73 -122 36 5.31*		1	01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	68	M	OR-Y OR<25		000	000	00
															02	NONE 0	STRGHT											
																PRVTE	SE NW									000	00
																PSNGR CAR		01	DRVR	NONE	53	M	SUSP OR<25		028	000	02
04024	N	N	N			10/11/2014	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
NO RPT		N				Sat 8P	0	12TH ST	CN		FLASHBCN-R	N	DRY	ANGL		PRVTE	NE SW									015	00
No						*45 21 35.73 -122 36 5.31*		1	01	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	37	M	OR-Y OR<25		028	000	02
															02	NONE 0	STRGHT											
																PRVTE	NW SE									015	00
																PSNGR CAR		01	DRVR	NONE	70	M	OR-Y OR<25		000	000	00
01114	N	N	N			03/30/2015	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											03
NONE		N				Mon 6P	0	12TH ST	CN		STOP SIGN	N	DRY	ANGL		PRVTE	NE SW									000	00
No						*45 21 35.73 -122 36 5.31*		1	01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	62	F	OR-Y OR<25		000	000	00
															02	NONE 0	STRGHT											
																PRVTE	SE NW									000	00
																PSNGR CAR		01	DRVR	NONE	29	M	OR-Y OR<25		021	000	03
01281	N	N	N			04/09/2015	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											03
NO RPT		N				Thu 12P	0	12TH ST	CN		STOP SIGN	N	DRY	ANGL		PRVTE	NE SW									000	00
No						*45 21 35.73 -122 36 5.31*		1	01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	18	F	OR-Y OR<25		000	000	00

Item #2.

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Washington St & 12th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
															02	NONE 0 PRVTE	STRGHT SE NW									000		00
																PSNGR CAR		01	DRVR	NONE	33	F	OR-Y OR<25		021	000		03
03739 NONE	N	N	N N			09/12/2015 Sat 11A	16 0	WASHINGTON ST 12TH ST	INTER CN	CROSS	N FLASHBCN-R	N N	CLR DRY	ANGL-OTH ANGL	01	NONE 0 PRVTE	STRGHT SE NW									000		03 00
No						*45 21 35.73 -122 36 5.31*		1	01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	80	F	OR-Y OR<25		021	026		03
															02	NONE 0 PRVTE	STRGHT NE SW									000		00
																PSNGR CAR		01	DRVR	NONE	00	M	UNK UNK		000	000		00
04524 NONE	N	N	N N			10/31/2015 Sat 11A	16 0	WASHINGTON ST 12TH ST	INTER CN	CROSS	N FLASHBCN-R	N N	UNK WET	ANGL-OTH ANGL	01	NONE 0 PRVTE	STRGHT NE SW									000		02 00
No						*45 21 35.73 -122 36 5.31*		1	01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	F	OR-Y OR<25		000	000		00
															02	NONE 0 PRVTE	STRGHT SE NW									015		00
																PSNGR CAR		01	DRVR	NONE	60	F	OR-Y OR<25		028	000		02
01231 NO RPT	N	N	N N			03/16/2016 Wed 5P	16 0	WASHINGTON ST 12TH ST	INTER CN	CROSS	N FLASHBCN-R	N N	CLR DRY	ANGL-OTH ANGL	01	NONE 0 PRVTE	STRGHT SE NW									015	129,131	02 00
No						*45 21 35.73 -122 36 5.31*		1	01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	52	F	OR-Y OR<25		028	000	131	02
															02	NONE 0 PRVTE	STRGHT NE SW									000		00
																PSNGR CAR		01	DRVR	NONE	36	F	OR-Y OR<25		000	000		00
																		02	PSNG	INJC	10	F			000	000		00
01730 NONE	N	N	N N			04/16/2016 Sat 7P	16 0	WASHINGTON ST 12TH ST	INTER CN	CROSS	N STOP SIGN	N N	CLR DRY	ANGL-OTH ANGL	01	NONE 0 PRVTE	STRGHT SE NW									015		02 00
No						*45 21 35.73 -122 36 5.31*		1	01	0		N	DUSK	INJ		PSNGR CAR		01	DRVR	NONE	17	F	OR-Y OR<25		028	000		02
															02	NONE 0 PRVTE	STRGHT NE SW									000		00
																PSNGR CAR		01	DRVR	INJB	58	F	OR-Y OR<25		000	000		00
01897 NO RPT	N	N	N N			04/26/2016 Tue 11A	16 0	WASHINGTON ST 12TH ST	INTER CN	CROSS	N STOP SIGN	N N	CLR DRY	ANGL-OTH ANGL	01	NONE 0 PRVTE	STRGHT SE NW									015		02,32 00
No						*45 21 35.73 -122 36 5.31*		1	01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	57	F	OR-Y OR<25		028,052	000		

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Washington St & 12th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
															02	NONE 0 PRVTE	STRGHT NE SW									000		00
																PSNGR CAR		01	DRVR	INJC	35	M	OR-Y OR<25		000	000		00
01233	N	N	N			04/01/2017	16	WASHINGTON ST	INTER	CROSS	N		N	CLR	ANGL-OTH	01	NONE 0	STRGHT												02
CITY			N			Sat 1P	0	12TH ST	CN		FLASHBCN-R		N	DRY	ANGL		PRVTE	NE SW								000		00
No	*45*	*21*	*35.73*	*-122*	*36*	*5.31*		1	01	0			N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	79	M	OR-Y OR<25		000	000		00
															02	NONE 0 PRVTE	STRGHT SE NW									015		00
																PSNGR CAR		01	DRVR	INJC	27	M	OR-Y OR<25		028	000		02
01475	N	N	N	N	N	04/19/2017	16	WASHINGTON ST	INTER	CROSS	N		N	RAIN	ANGL-OTH	01	NONE 0	STRGHT										013	02
CITY			N			Wed 7P	0	12TH ST	CN		FLASHBCN-R		N	WET	ANGL		PRVTE	SE NW								015		00
No	*45*	*21*	*35.73*	*-122*	*36*	*5.31*		1	01	0			N	DUSK	INJ		PSNGR CAR		01	DRVR	NONE	70	F	OR-Y OR<25		028	000		02
															02	NONE 0 PRVTE	STRGHT NE SW									000	013	00
																PSNGR CAR		01	DRVR	INJB	25	M	OR-Y OR<25		000	000		00
															03	NONE 0 PRVTE	STOP NW SE									022		00
																PSNGR CAR		01	DRVR	NONE	20	M	OR-Y OR<25		000	000		00
02963	N	N	N			07/21/2017	16	WASHINGTON ST	INTER	CROSS	N		N	CLR	ANGL-OTH	01	NONE 9	STRGHT												02
NONE			N			Fri 12P	0	12TH ST	CN		STOP SIGN		N	DRY	ANGL		N/A	SE NW								015		00
No	*45*	*21*	*35.73*	*-122*	*36*	*5.31*		1	01	0			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9 N/A	STRGHT NE SW									000		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
03487	N	N	N			08/25/2017	16	WASHINGTON ST	INTER	CROSS	N		N	CLR	ANGL-OTH	01	NONE 0	STRGHT												03
NONE			N			Fri 8P	0	12TH ST	CN		STOP SIGN		N	DRY	ANGL		PRVTE	SE NW								000		00
No	*45*	*21*	*35.73*	*-122*	*36*	*5.31*		1	01	0			N	DUSK	INJ		PSNGR CAR		01	DRVR	NONE	40	F	OR-Y OR<25		021	000		03
															02	NONE 0 PRVTE	STRGHT NE SW									000		00
																PSNGR CAR		01	DRVR	NONE	65	M	OR-Y OR<25		000	000		00
																		02	PSNG	INJC	62	F			000	000		

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Washington St & 12th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00877	N	N	N			03/10/2018	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
NO RPT			N			Sat 4P	0	12TH ST	CN		STOP SIGN	N	DRY	ANGL		PRVTE	NE SW									000		00
No	*45 21 35.74*					*-122 36 5.31*		1	01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	55	F	OR-Y OR<25		000	000		00
																		02	PSNG	INJC	61	M			000	000		00
															02	NONE 0	STRGHT											
																PRVTE	SE NW									015		00
																PSNGR CAR		01	DRVR	NONE	16	F	OR-Y OR<25		028	000		02
																		02	PSNG	INJB	16	M			000	000		00
01782	N	N	N			05/25/2018	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
CITY			N			Fri 3P	0	12TH ST	CN		STOP SIGN	N	DRY	ANGL		PRVTE	NE SW									015		00
No	*45 21 35.73*					*-122 36 5.31*		1	01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	75	M	OR-Y OR>25		028	000		02
															02	NONE 0	STRGHT											
																PRVTE	SE NW									000		00
																PSNGR CAR		01	DRVR	INJC	35	F	OR-Y OR<25		000	000		00
01051	N	N	N			03/16/2014	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											07
NONE			N			Sun 12P	0	12TH ST	CN		STOP SIGN	N	DRY	ANGL		PRVTE	SE NW									015		00
No	*45 21 35.73*					*-122 36 5.31*		1	02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	F	OR-Y UNK		028	000		02
															02	NONE 0	STRGHT											
																PRVTE	SW NE									000		00
																PSNGR CAR		01	DRVR	NONE	56	M	OR-Y OR<25		000	000		00
02528	N	N	N			07/01/2014	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
NONE			N			Tue 3P	0	12TH ST	CN		FLASHBCN-R	N	DRY	TURN		PRVTE	SW NE									000		00
No	*45 21 35.73*					*-122 36 5.31*		1	02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	48	M	OR-Y OR<25		000	000		00
															02	NONE 0	TURN-L											
																PRVTE	SE SW									015		00
																PSNGR CAR		01	DRVR	NONE	45	M	OR-Y OR<25		028	000		02
03922	N	N	N			10/04/2014	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
NO RPT			N			Sat 1P	0	12TH ST	CN		STOP SIGN	N	DRY	ANGL		PRVTE	SW NE									000		00
No	*45 21 35.73*					*-122 36 5.31*		1	02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	70	M	OR-Y OR<25		000	000		00
															02	NONE 0	STRGHT											
																PRVTE	SE NW									015		00
																PSNGR CAR		01	DRVR	INJC	39	M	OR-Y OR<25		028	000		

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Washington St & 12th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																		02	PSNG	INJC	08	M			000	000	00
01595	N	N	N			04/08/2016	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										02
NO RPT			N			Fri 9P	0	12TH ST	CN		STOP SIGN	N	DRY	ANGL		PRVTE	NE SW									000	00
No						*45 21 35.73 -122 36 5.31*		1	02	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	45	M	OR-Y OR<25		000	000	00
															02	NONE 0	STRGHT										
																PRVTE	SE NW									015	00
																OTH BUS		01	DRVR	INJB	55	F	OR-Y OR>25		028	000	02
																		02	PSNG	INJC	15	M			000	000	00
03947	N	N	N			08/28/2016	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 9	STRGHT										02
NO RPT			N			Sun 6P	0	12TH ST	CN		STOP SIGN	N	DRY	ANGL		N/A	SE NW									015	00
No						*45 21 35.73 -122 36 5.31*		1	02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
															02	NONE 9	STRGHT										
																N/A	SW NE									000	00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
05227	N	N	N			11/10/2016	16	WASHINGTON ST	INTER	CROSS	N	N	FOG	ANGL-OTH	01	NONE 0	STRGHT										02
NO RPT			N			Thu 8A	0	12TH ST	CN		STOP SIGN	N	DRY	ANGL		PRVTE	SW NE									000	00
No						*45 21 35.73 -122 36 5.31*		1	02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	38	F	OR-Y OR<25		000	000	00
															02	NONE 0	STRGHT										
																PRVTE	SE NW									015	00
																PSNGR CAR		01	DRVR	NONE	34	F	OR-Y OR<25		028	000	02
03623	N	N	N			08/29/2017	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 9	STRGHT										02
NONE			N			Tue 2P	0	12TH ST	CN		FLASHBCN-A	N	DRY	ANGL		N/A	SE NW									015	00
No						*45 21 35.73 -122 36 5.31*		1	02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
															02	NONE 9	STRGHT										
																N/A	NE SW									000	00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
04457	N	N	N			10/25/2017	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 9	STRGHT										03
NONE			N			Wed 5A	0	12TH ST	CN		FLASHBCN-R	N	DRY	ANGL		N/A	SW NE									000	00
No						*45 21 30.95 -122 36 10.12*		1	02	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
															02	NONE 9	STRGHT										
																N/A	SE NW									000	00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00

Item #2.

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Washington St & 12th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
04851	N	N	N			11/17/2017	16	WASHINGTON ST	INTER	CROSS	N	N	CLD	ANGL-OTH	01	NONE 0	STRGHT											02
CITY			N			Fri 9A	0	12TH ST	CN		FLASHBCN-R	N	WET	ANGL		PRVTE	SE NW									000		00
No	*45 21 35.73*					*-122 36 5.31*	1		02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	27	F	OTH-Y OR<25		028	000		02
															02	NONE 0	STRGHT											
																PRVTE	SW NE									000		00
																PSNGR CAR		01	DRVR	INJB	67	F	OR-Y OR<25		000	000		00
04865	N	N	N	N	N	11/18/2017	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 9	STRGHT											02
CITY			N			Sat 5P	0	12TH ST	CN		STOP SIGN	N	DRY	ANGL		N/A	SE NW									015		00
No	*45 21 35.73*					*-122 36 5.31*	1		02	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9	STRGHT											
																N/A	SW NE									000		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
00961	N	N	N			03/17/2018	16	WASHINGTON ST	INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT											03
NONE			N			Sat 9A	0	12TH ST	CN		STOP SIGN	N	WET	ANGL		PRVTE	SW NE									000		00
No	*45 21 35.73*					*-122 36 5.31*	1		02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	33	F	OTH-Y N-RES		000	000		00
															02	NONE 0	STRGHT											
																PRVTE	SE NW									000		00
																PSNGR CAR		01	DRVR	INJC	24	M	OTH-Y N-RES		021	000		03
01460	N	N	N			04/20/2018	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											03
NONE			N			Fri 10P	0	12TH ST	CN		STOP SIGN	N	DRY	ANGL		PRVTE	SE NW									000		00
No	*45 21 35.73*					*-122 36 5.31*	1		02	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	17	F	OR-Y OR<25		021	000		03
															02	NONE 0	STRGHT											
																PRVTE	NE SW									000		00
																PSNGR CAR		01	DRVR	INJC	42	F	OR-Y OR<25		000	000		00
																		02	PSNG	INJC	15	F			000	000		00
01921	N	N	N	N	N	05/19/2014	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											03
CITY			N			Mon 6P	0	12TH ST	CN		FLASHBCN-R	N	DRY	ANGL		PRVTE	SE NW									000		00
No	*45 21 35.73*					*-122 36 5.31*	1		03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	17	M	OR-Y OR<25		021	000		03
															02	NONE 0	STRGHT											
																PRVTE	NE SW									000		00
																PSNGR CAR		01	DRVR	INJC	23	F	OR-Y OR<25		000	000		
																		02	PSNG	NO<5	03	M			000	000		

CITY OF OREGON CITY, CLACKAMAS COUNTY

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02986	N	N	N			07/26/2014	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										02
NONE			N			Sat 3P	0	12TH ST	CN		FLASHBCN-R	N	DRY	ANGL		PRVTE	NE SW									000	00
No	*45 21 35.73*					*-122 36 5.31*		1	03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	17	F	OR-Y OR<25		000	000	00
															02	NONE 0	STRGHT										
																PRVTE	NW SE									015	00
																PSNGR CAR		01	DRVR	NONE	22	F	OR-Y OR<25		028	000	02
																		02	PSNG	NO<5	01	F			000	000	00
03083	N	N	N			07/30/2015	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										02
NO RPT			N			Thu 12P	0	12TH ST	CN		FLASHBCN-R	N	DRY	ANGL		PRVTE	SW NE									000	00
No	*45 21 35.73*					*-122 36 5.31*		1	03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	71	M	OR-Y OR<25		000	000	00
															02	NONE 0	STRGHT										
																PRVTE	NW SE									015	00
																PSNGR CAR		01	DRVR	NONE	00	F	NONE OR<25		028	000	02
04663	N	N	N			11/07/2015	16	WASHINGTON ST	INTER	CROSS	N	N	UNK	ANGL-OTH	01	NONE 0	STRGHT										03
NO RPT			N			Sat 9P	0	12TH ST	CN		FLASHBCN-R	N	UNK	ANGL		PRVTE	NW SE									000	00
No	*45 21 35.73*					*-122 36 5.31*		1	03	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	35	F	OTH-Y N-RES		021	000	03
															02	NONE 0	STRGHT										
																PRVTE	SW NE									000	00
																PSNGR CAR		01	DRVR	NONE	45	F	OR-Y OR<25		000	000	00
05551	N	N	N			12/21/2015	16	WASHINGTON ST	INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT										02
NO RPT			N			Mon 7P	0	12TH ST	CN		STOP SIGN	N	WET	ANGL		PRVTE	NE SW									000	00
No	*45 21 35.73*					*-122 36 5.31*		1	03	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	43	M	OR-Y OR<25		000	000	00
															02	NONE 0	STRGHT										
																PRVTE	NW SE									015	00
																PSNGR CAR		01	DRVR	NONE	47	M	OR-Y OR>25		028	000	02
01784	N	N	N			04/19/2016	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 9	STRGHT										02
NO RPT			N			Tue 4P	0	12TH ST	CN		STOP SIGN	N	DRY	ANGL		N/A	NE SW									000	00
No	*45 21 35.73*					*-122 36 5.31*		1	03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
															02	NONE 9	STRGHT										
																N/A	NW SE									015	00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	

Item #2.

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Washington St & 12th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
04764	N	N	N			10/15/2016	16	WASHINGTON ST	INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE 9	STRGHT										02
NO RPT			N			Sat 6A	0	12TH ST	CN		FLASHBCN-R	N	WET	ANGL		N/A	W E									015	00
No	*45 21 35.73*					*-122 36 5.31*	1		03	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
															02	NONE 9	STRGHT										
																N/A	N S									000	00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
04543	N	N	N	N	N	10/30/2017	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										03
CITY			N			Mon 4P	0	12TH ST	CN		STOP SIGN	N	DRY	ANGL		PRVTE	NE SW									000	00
No	*45 21 35.73*					*-122 36 5.31*	1		03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	54	M	OR-Y OR<25		000	000	00
															02	NONE 0	STRGHT										
																PRVTE	NW SE									000	00
																PSNGR CAR		01	DRVR	INJC	73	F	OR-Y OR<25		021	000	03
02368	N	N	N	N	N	07/08/2018	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 9	TURN-R										02
CITY			N			Sun 11A	0	12TH ST	CN		STOP SIGN	N	DRY	TURN		N/A	NW SW									015	00
No	*45 21 35.73*					*-122 36 5.31*	1		03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
															02	NONE 9	STRGHT										
																N/A	NE SW									000	00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
02548	N	N	N			07/22/2018	16	WASHINGTON ST	INTER	CROSS	N	N	UNK	ANGL-OTH	01	NONE 0	STRGHT										02
CITY			N			Sun 3P	0	12TH ST	CN		STOP SIGN	N	WET	ANGL		PRVTE	NW SE									015	00
No	*45 21 35.74*					*-122 36 5.32*	1		03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	18	F	OR-Y OR<25		028	000	02
															02	NONE 0	STRGHT										
																PRVTE	NE SW									000	00
																PSNGR CAR		01	DRVR	INJC	32	M	OR-Y OR<25		000	000	00
																		02	PSNG	NONE	01	F			000	000	00
																		03	PSNG	NONE	02	M			000	000	00
00342	N	N	N	N	N	01/26/2014	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										02
CITY			N			Sun 1P	0	12TH ST	CN		FLASHBCN-R	N	DRY	ANGL		PRVTE	SW NE									000	00
No	*45 21 35.73*					*-122 36 5.31*	1		04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	18	F	OR-Y OR<25		000	000	00
															02	NONE 0	STRGHT										
																PRVTE	SE NW									015	00
																PSNGR CAR		01	DRVR	NONE	44	M	OR-Y OR<25		028	000	

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Washington St & 12th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
02097	N	N	N			06/01/2014	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
NONE			N			Sun 9A	0	12TH ST	CN		STOP SIGN	N	DRY	ANGL		PRVTE	NW SE									015		00
No	*45 21 35.73*					*-122 36 5.31*	1		04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	33	M	OR-Y OR<25		028	000		02
															02	NONE 0	STRGHT											
																PRVTE	SW NE									000		00
																PSNGR CAR		01	DRVR	NONE	45	M	OR-Y OR<25		000	000		00
04065	N	N	N			10/13/2014	16	WASHINGTON ST	INTER	CROSS	N	N	FOG	ANGL-OTH	01	NONE 0	STRGHT											02
NO RPT			N			Mon 6A	0	12TH ST	CN		FLASHBCN-R	N	DRY	ANGL		PRVTE	NW SE									015		00
No	*45 21 35.73*					*-122 36 5.31*	1		04	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	61	F	OR-Y OR<25		028	000		02
															02	NONE 0	STRGHT											
																PRVTE	SW NE									000		00
																PSNGR CAR		01	DRVR	NONE	31	M	OR-Y OR<25		000	000		00
04934	N	N	N			12/05/2014	16	WASHINGTON ST	INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT											02
NONE			N			Fri 4P	0	12TH ST	CN		STOP SIGN	N	WET	ANGL		PRVTE	NW SE									015		00
No	*45 21 35.73*					*-122 36 5.31*	1		04	0		N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	00	F	OR-Y OR<25		028	000	082	02
															02	NONE 0	STRGHT											
																PRVTE	SW NE									000		00
																PSNGR CAR		01	DRVR	NONE	33	F	OR-Y OR<25		000	000		00
00885	N	N	N			03/11/2015	16	WASHINGTON ST	INTER	CROSS	N	N	UNK	ANGL-OTH	01	NONE 0	STRGHT											02
NONE			N			Wed 7A	0	12TH ST	CN		FLASHBCN-A	N	WET	ANGL		PRVTE	NW SE									015		00
No	*45 21 35.73*					*-122 36 5.31*	1		04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	33	M	OR-Y OR<25		028	000		02
															02	NONE 0	STRGHT											
																PRVTE	SW NE									000		00
																PSNGR CAR		01	DRVR	NONE	49	F	OR-Y OR<25		000	000		00
04492	N	N	N			10/30/2015	16	WASHINGTON ST	INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT											02
NO RPT			N			Fri 1P	0	12TH ST	CN		STOP SIGN	N	WET	ANGL		PRVTE	SW NE									000		00
No	*45 21 35.73*					*-122 36 5.31*	1		04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	47	F	OR-Y OR<25		000	000		00
																		02	PSNG	INJC	23	F			000	000		00
															02	NONE 0	STRGHT											
																PRVTE	NW SE									015		00
																PSNGR CAR		01	DRVR	NONE	21	F	OTH-Y N-RES		028	000		
																		02	PSNG	INJC	22	F			000	000		

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Washington St & 12th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WOR K	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
05046	N	N	N			11/01/2016	16	WASHINGTON ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 9	TURN-L											02
NONE			N			Tue 7A	0	12TH ST	CN		STOP SIGN	N	DRY	TURN		N/A	NW NE									015		00
No						*45 21 35.73 -122 36 5.31*	1		04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9	STRGHT											
																N/A	SW NE									000		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
05122	N	N	N			11/05/2016	16	WASHINGTON ST	INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT											02
NONE			N			Sat 1P	0	12TH ST	CN		FLASHBCN-A	N	WET	ANGL		PRVTE	SW NE									000		00
No						*45 21 35.73 -122 36 5.31*	1		04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	23	F	OR-Y OR<25		000	000		00
																		02	PSNG	INJC	28	F			000	000		00
															02	NONE 0	STRGHT											
																PRVTE	NW SE									000		00
																PSNGR CAR		01	DRVR	NONE	35	M	OR-Y OR<25		028	000		02

Intersectional Crashes at Holly Ln & Redland Rd
January 1, 2014 through December 31, 2018

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2018														
REAR-END	0	1	0	1	0	1	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	0	1	1	0	0
2018 TOTAL	0	2	0	2	0	2	0	2	0	1	1	2	0	0
YEAR: 2017														
TURNING MOVEMENTS	0	1	0	1	0	1	0	0	1	1	0	1	0	0
2017 TOTAL	0	1	0	1	0	1	0	0	1	1	0	1	0	0
YEAR: 2016														
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2016 TOTAL	0	0	1	1	0	0	0	1	0	1	0	1	0	0
YEAR: 2014														
REAR-END	0	2	1	3	0	2	0	2	1	3	0	3	0	0
2014 TOTAL	0	2	1	3	0	2	0	2	1	3	0	3	0	0
FINAL TOTAL	0	5	2	7	0	5	0	5	2	6	1	7	0	0

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
COUNTY ROAD CRASH LISTING

CLACKAMAS COUNTY

Intersectional Crashes at Holly Ln & Redland Rd
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	MILEPNT / DIST FROM / INTERSECT	COUNTY ROADS / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
05064	N	N	N			11/2/2016	0.00	S HOLLY LN	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 9	TURN-L											02
NO RPT			N			Wed 7A			UN		STOP SIGN	N	DRY	TURN		N/A	S W									000		00
No	*45 21 36.69 -122 34 14.58*								04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																								UNK				
															02	NONE 9	STRGHT											
																N/A	W E									000		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																								UNK				
03572	N	N	N			9/12/2014	11.23	S REDLAND RD /33018	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE			N			Fri 2P			E		STOP SIGN	N	DRY	REAR		PRVTE	E W									000		00
No	*45 21 36.69 -122 34 14.58*								06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	24	F	OR-Y		026	000		29
																								OR<25				
															02	NONE 0	STOP											
																PRVTE	E W									012		00
																PSNGR CAR		01	DRVR	INJC	46	F	OR-Y		000	000		00
																								OR<25				
03699	N	N	N			9/21/2014	11.23	S REDLAND RD /33018	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE			N			Sun UNK			E		STOP SIGN	N	DRY	REAR		UNKN	E W									000		00
No	*45 21 36.69 -122 34 14.58*								06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	M	UNK		026	000		29
																								UNK				
															02	NONE 0	STOP											
																PRVTE	E W									012		00
																PSNGR CAR		01	DRVR	INJC	16	F	OR-Y		000	000		00
																								OR<25				
05087	N	N	N			12/16/2014	11.23	S REDLAND RD /33018	INTER	3-LEG	N	N	UNK	S-1STOP	01	NONE 0	STRGHT											29
NONE			N			Tue 8A			E		STOP SIGN	N	WET	REAR		PRVTE	E W									000		00
No	*45 21 36.69 -122 34 14.58*								06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	22	F	OR-Y		026	000		29
																								UNK				
															02	NONE 0	STOP											
																UNKN	E W									012		00
																PSNGR CAR		01	DRVR	NONE	00	F	UNK		000	000		00
																								UNK				
03035	N	N	N			8/29/2018	11.23	S REDLAND RD /33018	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE			N			Wed 3P			E		STOP SIGN	N	DRY	REAR		PRVTE	E W									000		00
No	*45 21 36.69 -122 34 14.58*								06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	34	M	OR-Y		026	000		29
																								OR<25				
															02	NONE 0	STOP											
																PRVTE	E W									012		
																PSNGR CAR		01	DRVR	NONE	22	F	OR-Y		000	000		00
																								OR<25				

CLACKAMAS COUNTY

Intersectional Crashes at Holly Ln & Redland Rd
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG / MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	MILEPNT / DIST FROM / INTERSECT	COUNTY ROADS FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																		02	PSNG	INJC	22	F			000	000		00
04263	N	N	N			10/10/2017	11.23	S REDLAND RD /33018	INTER	3-LEG	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT											02
NONE			N			Tue 3P			CN		STOP SIGN	N	WET	TURN		PRVTE	W E									000		00
No						*45 21 36.69 -122 34 14.58*			04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	33	F	OR-Y OR<25		000	000		00
															02	NONE 0	TURN-L											
																PRVTE	S W									015		00
																PSNGR CAR		01	DRVR	NONE	24	M	OR-Y OR<25		028	000		02
03337	N	N	N	N	N	9/20/2018	11.23	S REDLAND RD /33018	INTER	3-LEG	N	N	CLD	ANGL-OTH	01	NONE 0	STRGHT											02
COUNTY			N			Thu 5A			CN		STOP SIGN	N	DRY	TURN		PRVTE	W E									000		00
No						*45 21 36.69 -122 34 14.57*			04	0		N	DAWN	INJ		PSNGR CAR		01	DRVR	INJC	29	F	OR-Y OR<25		000	000		00
															02	NONE 0	TURN-L											
																PRVTE	S W									015		00
																PSNGR CAR		01	DRVR	NONE	21	M	OR-Y OR<25		028	000		02

Intersectional Crashes at Redland Rd & Anchor Wy
January 1, 2014 through December 31, 2018

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2018														
TURNING MOVEMENTS	0	1	0	1	0	3	0	1	0	1	0	1	0	0
2018 TOTAL	0	1	0	1	0	3	0	1	0	1	0	1	0	0
YEAR: 2017														
TURNING MOVEMENTS	0	1	0	1	0	1	0	0	1	1	0	1	0	0
2017 TOTAL	0	1	0	1	0	1	0	0	1	1	0	1	0	0
YEAR: 2015														
REAR-END	0	1	0	1	0	1	0	0	1	1	0	1	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2015 TOTAL	0	2	0	2	0	2	0	1	1	2	0	2	0	0
FINAL TOTAL	0	4	0	4	0	6	0	2	2	4	0	4	0	0

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

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OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Redland Rd & Anchor Wy
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
04565	N	N	N			11/02/2015	16	ANCHOR WAY	INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											29
NONE			N			Mon 2P	0	REDLAND RD	SE		STOP SIGN	N	WET	REAR		PRVTE	SE NW									000		00
No	*45 21 44.02*					*-122 35 6.86*		1	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	54	F	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	SE NW									012		00
																PSNGR CAR		01	DRVR	NONE	63	F	OR-Y OR<25		000	000		00
01031	N	N	N			03/24/2015	16	ANCHOR WAY	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	TURN-L											013	02
NO RPT			N			Tue 5P	0	REDLAND RD	CN		STOP SIGN	N	DRY	TURN		PRVTE	SW NW									015	013	00
No	*45 21 44.02*					*-122 35 6.86*		1	02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	16	F	OR-Y OR<25		028	000		02
															02	NONE 0	STRGHT											
																PRVTE	SE NW									000		00
																PSNGR CAR		01	DRVR	NONE	38	M	OR-Y OR<25		000	000		00
															03	NONE 0	STRGHT											
																PRVTE	NW SE									022		00
																PSNGR CAR		01	DRVR	INJB	21	F	OR-Y OR<25		000	000		00
04726	N	N	N			11/10/2017	16	ANCHOR WAY	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT												02
NONE			N			Fri 3P	0	REDLAND RD	CN		STOP SIGN	N	WET	TURN		PRVTE	NW SE									000		00
No	*45 21 44.02*					*-122 35 6.86*		1	04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	43	M	OR-Y OR<25		000	000		00
															02	NONE 0	TURN-L											
																PRVTE	SW NW									000		00
																PSNGR CAR		01	DRVR	INJA	26	M	OR-Y OR<25		028	000		02
04119	N	N	N	N	N	11/10/2018	16	ANCHOR WAY	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT												02
CITY			N			Sat 4P	0	REDLAND RD	CN		STOP SIGN	N	DRY	TURN		PRVTE	NW SE									000		00
No	*45 21 44.02*					*-122 35 6.86*		1	04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	58	F	OR-Y OR<25		000	000		00
															02	NONE 0	TURN-L											
																PRVTE	SW NW									015		00
																PSNGR CAR		01	DRVR	INJB	23	M	OR-Y OR<25		028	000		02
																		02	PSNG	INJB	38	M			000	000		00
																		03	PSNG	INJB	46	M			000	000		00

Intersectional Crashes at OR-213, Cascade Hwy (#160) & Redland Rd
January 1, 2014 through December 31, 2018

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2018														
REAR-END	0	8	5	13	0	12	2	8	5	9	4	13	0	0
TURNING MOVEMENTS	0	1	1	2	0	2	0	1	1	2	0	2	0	0
2018 TOTAL	0	9	6	15	0	14	2	9	6	11	4	15	0	0
YEAR: 2017														
REAR-END	0	3	2	5	0	3	0	2	2	5	0	5	0	0
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	2	0	2	0	4	0	1	1	1	1	2	0	0
2017 TOTAL	0	5	3	8	0	7	0	4	3	7	1	8	0	0
YEAR: 2016														
REAR-END	0	7	4	11	0	9	0	8	3	9	2	11	0	0
TURNING MOVEMENTS	0	1	2	3	0	2	0	2	1	3	0	3	0	0
2016 TOTAL	0	8	6	14	0	11	0	10	4	12	2	14	0	0
YEAR: 2015														
REAR-END	0	6	2	8	0	11	0	6	2	4	4	8	0	0
TURNING MOVEMENTS	0	2	0	2	0	3	1	2	0	2	0	2	0	0
2015 TOTAL	0	8	2	10	0	14	1	8	2	6	4	10	0	0
YEAR: 2014														
REAR-END	0	3	2	5	0	4	0	3	2	5	0	5	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2014 TOTAL	0	3	3	6	0	4	0	4	2	6	0	6	0	0
FINAL TOTAL	0	33	20	53	0	50	3	35	17	42	11	53	0	0

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

160 CASCADE HWY SOUTH

Intersectional Crashes at OR-213, Cascade Hwy (#160) & Redland Rd
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPE	DED	ALC	MJL	SHL	WRK	DAY/TIME / CITY / URBAN AREA / *LAT/LONG*	COUNTY	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
00316	N	N	N	N	N		01/27/2018	CLACKAMAS	1 14		INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT										29
CITY		N					Sat 8P	OREGON CITY	MN 0	CASCADE HY SOUTH	UN		TRF SIGNAL	N	WET	REAR		PRVTE	UN UN									000	00
								PORTLAND UA	0.48	REDLAND RD	06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	46	M	OR-Y		026	000	29
No	*45*	*21*	*58.26*	*-122*	*35*	*6.31*			016000100	S00 1																OR<25				
																	02	NONE 0	STOP										
																		PRVTE	UN UN									011	00
																		PSNGR CAR		01	DRVR	INJC	22	F	OTH-Y		000	000	00
																									N-RES				
																				02	PSNG	INJC	22	F			000	000	00
02184	N	N	N				05/14/2016	CLACKAMAS	1 14		INTER	3-LEG	N	N	RAIN	S-OTHER	01	NONE 9	TURN-L										08
NONE		N					Sat 3P	OREGON CITY	MN 0	CASCADE HY SOUTH	N		L-GRN-SIG	N	WET	TURN		N/A	W N									000	00
								PORTLAND UA	0.48	REDLAND RD	05	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45*	*21*	*58.24*	*-122*	*35*	*6.30*			016000100	S00 1																UNK				
																	02	NONE 9	TURN-L										
																		N/A	W N									000	00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																									UNK				
04654	N	N	N				11/17/2014	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE		N					Mon 12P	OREGON CITY	MN 0	CASCADE HY SOUTH	N		TRF SIGNAL	N	DRY	REAR		PRVTE	N S									000	00
								PORTLAND UA	0.48	REDLAND RD	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	60	M	OTH-Y		026	000	29
No	*45*	*21*	*58.24*	*-122*	*35*	*6.30*			016000100	S00 1																N-RES				
																	02	NONE 0	STOP										
																		PRVTE	N S									011	00
																		PSNGR CAR		01	DRVR	NONE	66	F	OR-Y		000	000	00
																									OR>25				
																				02	PSNG	INJC	61	F			000	000	00
01056	N	N	N				03/26/2015	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE		N					Thu 2P	OREGON CITY	MN 0	CASCADE HY SOUTH	N		TRF SIGNAL	N	DRY	REAR		PRVTE	N S									000	00
								PORTLAND UA	0.48	REDLAND RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	53	F	OR-Y		026	000	29
No	*45*	*21*	*58.24*	*-122*	*35*	*6.30*			016000100	S00 1																OR<25				
																	02	NONE 0	STOP										
																		PRVTE	N S									011	00
																		PSNGR CAR		01	DRVR	NONE	44	F	OR-Y		000	000	00
																									OR<25				
02925	N	N	N				07/20/2015	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE		N					Mon 3P	OREGON CITY	MN 0	CASCADE HY SOUTH	N		TRF SIGNAL	N	DRY	REAR		PRVTE	N S									000	00
								PORTLAND UA	0.48	REDLAND RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	35	F	OR-Y		026	000	
No	*45*	*21*	*58.24*	*-122*	*35*	*6.30*			016000100	S00 1																OR<25				

160 CASCADE HWY SOUTH

Intersectional Crashes at OR-213, Cascade Hwy (#160) & Redland Rd
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																02	NONE 0 PRVTE	STOP N S									011	00
																	PSNGR CAR		01	DRVR	NONE	19	M	OR-Y OR<25		000	000	00
01094	N	N	N			03/04/2016 Fri 11A	CLACKAMAS OREGON CITY	1 14 MN 0	CASCADE HY SOUTH	INTER N	3-LEG	N TRF SIGNAL	N N	CLR DRY	S-1STOP REAR	01	NONE 9 N/A	STRGHT N S										29 00
NONE		N																									000	
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
No	*45*	*21*	*58.24*	*-122*	*35*	*6.30*		016000100S00	1																			
																02	NONE 9 N/A	STOP N S									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
01103	N	N	N			03/04/2016 Fri 11A	CLACKAMAS OREGON CITY	1 14 MN 0	CASCADE HY SOUTH	INTER N	3-LEG	N TRF SIGNAL	N N	RAIN WET	S-1STOP REAR	01	NONE 9 N/A	STRGHT N S										29 00
NONE		N																									000	
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
No	*45*	*21*	*58.24*	*-122*	*35*	*6.30*		016000100S00	1																			
																02	NONE 9 N/A	STOP N S									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
02333	N	N	N	N	N	05/24/2016 Tue 10A	CLACKAMAS OREGON CITY	1 14 MN 0	CASCADE HY SOUTH	INTER N	3-LEG	N TRF SIGNAL	N N	CLD DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT N S										29 00
STATE		N																									000	
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	30	F	OR-Y OR<25		026	000	29
No	*45*	*21*	*58.24*	*-122*	*35*	*6.30*		016000100S00	1																			
																02	NONE 0 PRVTE	STOP N S									011	00
																	PSNGR CAR		01	DRVR	INJC	55	F	OR-Y OR<25		000	000	00
02506	N	N	N			06/03/2016 Fri 7A	CLACKAMAS OREGON CITY	1 14 MN 0	CASCADE HY SOUTH	INTER N	3-LEG	N TRF SIGNAL	N N	CLR DRY	S-1STOP REAR	01	NONE 9 N/A	STRGHT N S										29 00
NO RPT		N																									000	
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
No	*45*	*21*	*58.24*	*-122*	*35*	*6.30*		016000100S00	1																			
																02	NONE 9 N/A	STOP N S									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00

160 CASCADE HWY SOUTH

Intersectional Crashes at OR-213, Cascade Hwy (#160) & Redland Rd
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUGS	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
04088	N	N	N			09/06/2016	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										013	29,32
NO RPT			N			Tue 3P	OREGON CITY	MN 0		CASCADE HY SOUTH	N		TRF SIGNAL	N	DRY	REAR		PRVTE	N S									000		00
							PORTLAND UA	0.48		REDLAND RD	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	49	M	OR-Y		026,052	000		29,32
No						*45 21 58.24 -122 35 6.30*		016000100		S00 1															OR<25					
																	02	NONE 0	STOP										
																		PRVTE	N S									011	013	00
																		PSNGR CAR		01	DRVR	INJB	33	M	OR-Y		000	000		00
																									OR<25					
																				02	PSNG	INJB	32	F			000	000		00
																				03	PSNG	INJC	15	F			000	000		00
																	03	NONE 0	STOP										
																		PRVTE	N S									022		00
																		PSNGR CAR		01	DRVR	NONE	71	F	OR-Y		000	000		00
																									OR<25					
06126	Y	N	N	N	N	12/28/2016	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLD	S-1STOP	01	NONE 0	STRGHT										093	01,27,32
CITY			N			Wed 7P	OREGON CITY	MN 0		CASCADE HY SOUTH	N		TRF SIGNAL	N	DRY	REAR		PRVTE	N S									000		00
							PORTLAND UA	0.48		REDLAND RD	06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	26	M	OR-Y		047,026,052	000	093	01,27,32
No						*45 21 58.24 -122 35 6.30*		016000100		S00 1															OR<25					
																	02	NONE 0	STOP										
																		PRVTE	N S									011		00
																		PSNGR CAR		01	DRVR	INJC	26	F	OR-Y		000	000		00
																									OR<25					
00858	N	N	N			03/04/2017	CLACKAMAS	1	14		INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 9	STRGHT											29
NONE			N			Sat 12P	OREGON CITY	MN 0		CASCADE HY SOUTH	N		TRF SIGNAL	N	WET	REAR		N/A	N S									000		00
							PORTLAND UA	0.48		REDLAND RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No						*45 21 58.24 -122 35 6.30*		016000100		S00 1															UNK					
																	02	NONE 9	STOP										
																		N/A	N S									011		00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																									UNK					
02425	N	N	N	N	N	06/14/2017	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										013	29
STATE			N			Wed 1P	OREGON CITY	MN 0		CASCADE HY SOUTH	N		TRF SIGNAL	N	DRY	REAR		UNKN	N S									000		00
							PORTLAND UA	0.48		REDLAND RD	06	0		N	DAY	INJ		UNKNOWN		01	DRVR	NONE	00	U	UNK		026	000		29
No						*45 21 58.24 -122 35 6.30*		016000100		S00 1															UNK					
																	02	NONE 0	STOP										
																		PRVTE	N S									011	013	00
																		PSNGR CAR		01	DRVR	NONE	17	F	OR-Y		000	000		00
																									OR<25					
																				02	PSNG	INJC	19	F			000	000		

160 CASCADE HWY SOUTH

Intersectional Crashes at OR-213, Cascade Hwy (#160) & Redland Rd
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																03	NONE 0 PRVTE	STOP N S									022		00
																	PSNGR CAR		01	DRVR	NONE	36	F	OR-Y OR<25		000	000		00
00742	N	N	N			02/27/2018	CLACKAMAS	1 14		INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 9	STRGHT												29
NONE		N				Tue 6P	OREGON CITY	MN 0	CASCADE HY SOUTH	N		TRF SIGNAL	N	WET	REAR		N/A	N S									000		00
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45*	*21*	*58.24*	*-122*	*35*	*6.30*		016000100S00	1															UNK					
																02	NONE 9 N/A	STOP N S									011		00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
00856	N	N	N			03/08/2018	CLACKAMAS	1 14		INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT												29
CITY		N				Thu 6A	OREGON CITY	MN 0	CASCADE HY SOUTH	N		TRF SIGNAL	N	WET	REAR		PRVTE	N S									000		00
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DAWN	INJ		PSNGR CAR		01	DRVR	INJC	32	F	OR-Y OR<25		026	000		29
No	*45*	*21*	*58.26*	*-122*	*35*	*6.32*		016000100S00	1																				
																02	NONE 0 PRVTE	STOP N S									011		00
																	PSNGR CAR		01	DRVR	NONE	36	M	OR-Y OR<25		000	000		00
01246	N	N	N			04/13/2018	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLD	S-STRGHT	01	NONE 9	STRGHT												13,29
CITY		N				Fri 11A	OREGON CITY	MN 0	CASCADE HY SOUTH	N		TRF SIGNAL	N	WET	REAR		N/A	N S									000		00
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DAY	PDO		TRUCK		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45*	*21*	*58.24*	*-122*	*35*	*6.29*		016000100S00	1															UNK					
																02	NONE 9 N/A	STRGHT N S									000		00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
01963	N	N	N			06/08/2018	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										013		29
NO RPT		N				Fri 12P	OREGON CITY	MN 0	CASCADE HY SOUTH	N		TRF SIGNAL	N	DRY	REAR		PRVTE	N S									000		00
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DAY	INJ		TRUCK		01	DRVR	NONE	86	M	OR-Y OR<25		026	000		29
No	*45*	*21*	*58.25*	*-122*	*35*	*6.31*		016000100S00	1																				
																02	NONE 0 PRVTE	STOP N S									011	013	00
																	PSNGR CAR		01	DRVR	INJC	75	M	OR-Y OR<25		000	000		00
																			02	PSNG	INJC	74	F			000	000		00

Item #2.

160 CASCADE HWY SOUTH

Intersectional Crashes at OR-213, Cascade Hwy (#160) & Redland Rd
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	CONN #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																	03	NONE 0 PRVTE	STOP N S									022		00
																		PSNGR CAR		01	DRVR	NONE	22	F	OR-Y OR<25		000	000		00
03233	N	N	N			09/12/2018	CLACKAMAS	1	14		INTER	3-LEG	N		N	CLR	S-1STOP	01	NONE 0	STRGHT											013	29,32
CITY			N			Wed 11A	OREGON CITY	MN 0	CASCADE HY SOUTH		N		TRF SIGNAL		N	DRY	REAR		PRVTE	N S								000		00
							PORTLAND UA	0.48	REDLAND RD		06	0			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	21	M	OTH-Y OR<25		026,052	000		29,32
No	*45*	*21*	*58.24*	*-122*	*35*	*6.30*		016000100	S00	1															N-RES					
																	02	NONE 0 PRVTE	STOP N S									011	013	00
																		PSNGR CAR		01	DRVR	INJC	54	F	OR-Y OR<25		000	000		00
																	03	NONE 0 PRVTE	STOP N S									022		00
																		PSNGR CAR		01	DRVR	INJC	20	M	OR-Y OR<25		000	000		00
04235	N	N	N			11/19/2018	CLACKAMAS	1	14		INTER	3-LEG	N		N	CLR	S-1STOP	01	NONE 9	STRGHT												29
NONE			N			Mon 2P	OREGON CITY	MN 0	CASCADE HY SOUTH		N		TRF SIGNAL		N	DRY	REAR		N/A	N S								000		00
							PORTLAND UA	0.48	REDLAND RD		06	0			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
No	*45*	*21*	*58.26*	*-122*	*35*	*6.33*		016000100	S00	1																				
																	02	NONE 9 N/A	STOP N S									011		00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
03817	N	N	N			09/29/2014	CLACKAMAS	1	14		INTER	3-LEG	N		N	RAIN	S-1STOP	01	NONE 0	STRGHT												29
NO RPT			N			Mon 3P	OREGON CITY	MN 0	CASCADE HY SOUTH		S		TRF SIGNAL		N	WET	REAR		PRVTE	S N								000		00
							PORTLAND UA	0.48	REDLAND RD		06	0			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	35	M	OR-Y OR<25		026	000		29
No	*45*	*21*	*58.24*	*-122*	*35*	*6.30*		016000100	S00	1																				
																	02	NONE 0 PRVTE	STOP S N									011		00
																		PSNGR CAR		01	DRVR	NONE	19	F	OR-Y OR<25		000	000		00
04185	N	N	N			10/21/2014	CLACKAMAS	1	14		INTER	3-LEG	N		N	CLR	S-1STOP	01	NONE 0	STRGHT												29
NONE			N			Tue UNK	OREGON CITY	MN 0	CASCADE HY SOUTH		S		TRF SIGNAL		N	DRY	REAR		PRVTE	S N								000		00
							PORTLAND UA	0.48	REDLAND RD		06	0			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	28	M	OTH-Y OR<25		026	000		29
No	*45*	*21*	*58.24*	*-122*	*35*	*6.30*		016000100	S00	1																				

160 CASCADE HWY SOUTH

Intersectional Crashes at OR-213, Cascade Hwy (#160) & Redland Rd
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																02	NONE 0 PRVTE	STOP S N									011		00
																	PSNGR CAR		01	DRVR	INJC	44	M	OR-Y OR<25		000	000		00
01123 NONE	N N	N N	N			03/31/2015 Tue 6A	CLACKAMAS OREGON CITY	1 14 MN 0	CASCADE HY SOUTH	INTER S	3-LEG	N TRF SIGNAL	N	UNK WET	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT S N											29 00
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DAWN	INJ		PSNGR CAR		01	DRVR	NONE	44	F	OR-Y OR<25		026	000		29
No	*45 21*		*58.24 -122 35*			*6.30*		016000100S00	1																				
																02	NONE 0 PRVTE	STOP S N									011		00
																	PSNGR CAR		01	DRVR	INJC	35	M	OR-Y OR<25		000	000		00
																			02	PSNG	INJC	34	F			000	000		00
02150 NO RPT	N N	N N	N			06/04/2015 Thu 10A	CLACKAMAS OREGON CITY	1 14 MN 0	CASCADE HY SOUTH	INTER S	3-LEG	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT S N											29 00
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	55	M	OR-Y OR<25		026	000		29
No	*45 21*		*58.24 -122 35*			*6.30*		016000100S00	1																				
																02	NONE 0 PRVTE	STOP S N									011		00
																	PSNGR CAR		01	DRVR	INJC	62	F	OR-Y OR<25		000	000		00
04080 NONE	N N	N N	N			10/04/2015 Sun 1P	CLACKAMAS OREGON CITY	1 14 MN 0	CASCADE HY SOUTH	INTER S	3-LEG	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT S N										013	29 00
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	18	F	OR-Y OR<25		026	000		29
No	*45 21*		*58.24 -122 35*			*6.30*		016000100S00	1																				
																02	NONE 0 PRVTE	STOP S N									011	013	00
																	PSNGR CAR		01	DRVR	NONE	18	F	OR-Y OR<25		000	000		00
																03	NONE 0 PRVTE	STOP S N									022		00
																	PSNGR CAR		01	DRVR	INJC	77	F	OR-Y OR<25		000	000		00
04189 NONE	N N	N N	N			10/11/2015 Sun 7P	CLACKAMAS OREGON CITY	1 14 MN 0	CASCADE HY SOUTH	INTER S	3-LEG	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT S N											29 00
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	29	F	OR-Y OR<25		026	000		29
No	*45 21*		*58.24 -122 35*			*6.30*		016000100S00	1																				

Item #2.

160 CASCADE HWY SOUTH

Intersectional Crashes at OR-213, Cascade Hwy (#160) & Redland Rd
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPE	ALC	DRU/MJ	SWC	OHR	WLK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / CONN #	FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																		02	NONE 0 PRVTE	STOP S N									011	00
																			PSNGR CAR		01	DRVR	NONE	19	M	OR-Y OR<25		000	000	00
																					02	PSNG	INJC	26	F			000	000	00
																					03	PSNG	INJC	48	M			000	000	00
																					04	PSNG	INJC	45	F			000	000	00
04343	N	N	N				10/21/2015	CLACKAMAS	1	14		INTER	3-LEG	N	N	FOG	S-1STOP	01	NONE 0	STRGHT										29
NONE		N					Wed 7A	OREGON CITY	MN 0	CASCADE HY SOUTH		S		TRF SIGNAL	N	DRY	REAR		PRVTE	S N									001	00
								PORTLAND UA	0.48	REDLAND RD		06	0		N	DAWN	INJ		PSNGR CAR		01	DRVR	NONE	24	M	OR-Y OR<25		026	000	29
No			*45 21*	*58.24*	*-122 35*	*6.30*			016000100	S00	1																			
																		02	NONE 0 PRVTE	STOP S N									011	00
																			PSNGR CAR		01	DRVR	INJC	52	M	OR-Y OR<25		000	000	00
05452	N	N	N				12/18/2015	CLACKAMAS	1	14		INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT										29
NONE		N					Fri 6A	OREGON CITY	MN 0	CASCADE HY SOUTH		S		TRF SIGNAL	N	WET	REAR		PRVTE	S N									000	00
								PORTLAND UA	0.48	REDLAND RD		06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	42	F	OR-Y OR<25		026	000	29
No			*45 21*	*58.24*	*-122 35*	*6.30*			016000100	S00	1																			
																		02	NONE 0 PRVTE	STOP S N									011	00
																			PSNGR CAR		01	DRVR	INJC	51	M	OR-Y OR<25		000	000	00
01465	N	N	N				03/31/2016	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NO RPT		N					Thu 12P	OREGON CITY	MN 0	CASCADE HY SOUTH		S		TRF SIGNAL	N	DRY	REAR		PRVTE	S N									000	00
								PORTLAND UA	0.48	REDLAND RD		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	23	F	OR-Y OR<25		026	000	29
No			*45 21*	*58.24*	*-122 35*	*6.30*			016000100	S00	1																			
																		02	NONE 0 PRVTE	STOP S N									011	00
																			PSNGR CAR		01	DRVR	INJC	20	F	OR-Y OR<25		000	000	00
02809	N	N	N				06/22/2016	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLR	S-STRGHT	01	NONE 9	STRGHT										29
CITY		N					Wed 5P	OREGON CITY	MN 0	CASCADE HY SOUTH		S		TRF SIGNAL	N	DRY	REAR		N/A	S N									000	00
								PORTLAND UA	0.48	REDLAND RD		06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
No			*45 21*	*58.24*	*-122 35*	*6.30*			016000100	S00	1																			
																		02	NONE 9 N/A	STOP S N									011	00
																			PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	

160 CASCADE HWY SOUTH

Intersectional Crashes at OR-213, Cascade Hwy (#160) & Redland Rd
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG / MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
04758	N	N	N	N	N	10/14/2016	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
CITY		N				Fri 3P	OREGON CITY	MN 0	CASCADE HY SOUTH	S		TRF SIGNAL	N	DRY	REAR		UNKN	S N									000	00
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	U	UNK		026	000	29
No	*45 21*	*58.24*	*-122 35*	*6.30*				016000100S00	1															UNK				
																02	NONE 0	STOP										
																	PRVTE	S N									011	00
																	PSNGR CAR		01	DRVR	INJC	24	M	OR-Y		000	000	00
																								OR<25				
04958	N	N	N			10/26/2016	CLACKAMAS	1 14		INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT										29
NONE		N				Wed 2P	OREGON CITY	MN 0	CASCADE HY SOUTH	S		TRF SIGNAL	N	WET	REAR		PRVTE	S N									000	00
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	31	F	OR-Y		026	000	29
No	*45 21*	*58.24*	*-122 35*	*6.30*				016000100S00	1															OR<25				
																02	NONE 0	STOP										
																	PRVTE	S N									011	00
																	PSNGR CAR		01	DRVR	INJC	33	F	OR-Y		000	000	00
																								OR<25				
																			02	PSNG	NO<5	04	F			000	000	00
04986	Y	N	N			10/28/2016	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	ANGL-STP	01	NONE 9	TURN-R										01,08
CITY		N				Fri 3P	OREGON CITY	MN 0	CASCADE HY SOUTH	S		TRF SIGNAL	N	DRY	TURN		N/A	W S									000	00
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45 21*	*58.24*	*-122 35*	*6.30*				016000100S00	1															UNK				
																02	NONE 9	STOP										
																	N/A	S N									012	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																								UNK				
00823	N	N	N			03/02/2017	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 9	STRGHT										10
CITY		N				Thu 9A	OREGON CITY	MN 0	CASCADE HY SOUTH	S		TRF SIGNAL	N	DRY	SS-O		N/A	S N									000	00
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45 21*	*58.24*	*-122 35*	*6.30*				016000100S00	1															UNK				
																02	NONE 9	STOP										
																	N/A	S N									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																								UNK				
02250	N	N	N			06/08/2017	CLACKAMAS	1 14		INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 9	STRGHT										29
NONE		N				Thu 9A	OREGON CITY	MN 0	CASCADE HY SOUTH	S		TRF SIGNAL	N	WET	REAR		N/A	S N									000	00
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45 21*	*58.24*	*-122 35*	*6.30*				016000100S00	1															UNK				

160 CASCADE HWY SOUTH

Intersectional Crashes at OR-213, Cascade Hwy (#160) & Redland Rd
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# CMPT/MLG MILEPNT LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																02	NONE 9 N/A	STOP S N									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
02596	N	N	N			06/29/2017	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE		N				Thu 6P	OREGON CITY	MN 0	CASCADE HY SOUTH	S		TRF SIGNAL	N	DRY	REAR		PRVTE	S N									000	00
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		026	000	29
No	*45*	*21*	*58.24*	*-122*	*35*	*6.30*		016000100S00	1																			
																02	NONE 0 PRVTE	STOP S N									011	00
																	PSNGR CAR		01	DRVR	INJC	52	F	OR-Y OR<25		000	000	00
01206	N	N	N			04/10/2018	CLACKAMAS	1 14		INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 9	STRGHT										29
NONE		N				Tue 2P	OREGON CITY	MN 0	CASCADE HY SOUTH	S		TRF SIGNAL	N	WET	REAR		N/A	S N									000	00
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
No	*45*	*21*	*58.24*	*-122*	*35*	*6.32*		016000100S00	1																			
																02	NONE 9 N/A	STOP S N									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
01869	N	N	N			06/01/2018	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE		N				Fri 1P	OREGON CITY	MN 0	CASCADE HY SOUTH	S		TRF SIGNAL	N	DRY	REAR		PRVTE	S N									000	00
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	19	M	OR-Y OR<25		026	000	29
No	*45*	*21*	*58.24*	*-122*	*35*	*6.30*		016000100S00	1																			
																02	NONE 0 PRVTE	STOP S N									011	00
																	PSNGR CAR		01	DRVR	INJC	24	F	OR-Y OR<25		000	000	00
02888	N	N	N			08/18/2018	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NO RPT		N				Sat 5A	OREGON CITY	MN 0	CASCADE HY SOUTH	S		TRF SIGNAL	N	DRY	REAR		PRVTE	S N									000	00
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DAWN	INJ		PSNGR CAR		01	DRVR	NONE	53	M	OR-Y OR<25		026	000	29
No	*45*	*21*	*58.24*	*-122*	*35*	*6.30*		016000100S00	1																			
																02	NONE 0 PRVTE	STOP S N									011	00
																	PSNGR CAR		01	DRVR	INJC	22	M	OR-Y OR<25		000	000	00

160 CASCADE HWY SOUTH

Intersectional Crashes at OR-213, Cascade Hwy (#160) & Redland Rd
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
04772	N	N	N			12/24/2018	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE			N			Mon 11A	OREGON CITY	MN 0	CASCADE HY SOUTH	S		TRF SIGNAL	N	DRY	REAR		PRVTE	S N										000	00
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	66	F	OR-Y		026	000	29
No						*45 21 58.26 -122 35 6.31*		016000100S00	1															OR<25				
																02	NONE 0	STOP										
																	PRVTE	S N									011	00
																	PSNGR CAR		01	DRVR	NONE	43	F	OR-Y		000	000	00
																								OR<25				
																			02	PSNG	INJB	08	F			000	000	00
00828	N	N	N			02/25/2014	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	ANGL-STP	01	NONE 0	TURN-R										08
NONE			N			Tue 2P	OREGON CITY	MN 0	CASCADE HY SOUTH	W		TRF SIGNAL	N	DRY	TURN		PRVTE	N W									000	00
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	32	M	OR-Y		001	000	08
No						*45 21 58.24 -122 35 6.30*		016000100S00	1															OR<25				
																02	NONE 0	STOP										
																	PRVTE	W E									012	00
																	PSNGR CAR		01	DRVR	NONE	50	M	OR-Y		000	000	00
																								OR<25				
02177	N	N	N			06/06/2015	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	ANGL-STP	01	NONE 0	TURN-R										08
NO RPT			N			Sat 5P	OREGON CITY	MN 0	CASCADE HY SOUTH	W		TRF SIGNAL	N	DRY	TURN		PRVTE	N W									000	00
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	32	M	OR-Y		001	000	08
No						*45 21 58.24 -122 35 6.30*		016000100S00	1															OR<25				
																02	NONE 0	STOP										
																	PRVTE	W E									012	00
																	TRUCK		01	DRVR	NONE	35	M	OR-Y		000	000	00
																								OR<25				
																			02	PSNG	INJC	42	M			000	000	00
01202	N	N	N			03/13/2016	CLACKAMAS	1 14		INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT										29
NONE			N			Sun 8P	OREGON CITY	MN 0	CASCADE HY SOUTH	W		TRF SIGNAL	N	WET	REAR		UNKN	W E									000	00
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DUSK	INJ		PSNGR CAR		01	DRVR	NONE	44	F	UNK		026	000	29
No						*45 21 58.24 -122 35 6.30*		016000100S00	1															UNK				
																02	NONE 0	STOP										
																	PRVTE	W E									012	00
																	PSNGR CAR		01	DRVR	INJC	59	M	OR-Y		000	000	00
																								OR<25				
04205	N	N	N			10/11/2017	CLACKAMAS	1 14		INTER	3-LEG	N	N	UNK	S-1STOP	01	NONE 0	STRGHT										29,32
NO RPT			N			Wed 1P	OREGON CITY	MN 0	CASCADE HY SOUTH	W		TRF SIGNAL	N	UNK	REAR		PRVTE	W E									000	00
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	52	M	OR-Y		026,052	000	00,32
No						*45 21 58.24 -122 35 6.30*		016000100S00	1															OR<25				

160 CASCADE HWY SOUTH

Intersectional Crashes at OR-213, Cascade Hwy (#160) & Redland Rd
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																02	NONE 0 PRVTE	STOP W E									011	00
																	PSNGR CAR		01	DRVR	INJC	18	M	OR-Y OR<25		000	000	00
00982 NONE	N	N	N			03/19/2018 Mon 4P	CLACKAMAS OREGON CITY	1 14 MN 0	CASCADE HY SOUTH	INTER W	3-LEG	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 9 N/A	STRGHT W E									000	29 00
							PORTLAND UA	0.48	REDLAND RD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No						*45 21 58.26 -122 35 6.31*		016000100S00	1															UNK				
																02	NONE 9 N/A	STOP W E									012	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
05563 STATE	N	N	N			12/27/2017 Wed 9P	CLACKAMAS OREGON CITY	1 14 MN 0	CASCADE HY SOUTH	INTER CN	3-LEG	N TRF SIGNAL	N	FOG WET	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT N S									000	04 00
							PORTLAND UA	0.48	REDLAND RD	01	0		N	DARK	INJ		PSNGR CAR		01	DRVR	INJC	17	F	OTH-Y		097	000	00
No						*45 21 58.24 -122 35 6.30*		016000100S00	1															OR<25				
																02	NONE 0 PRVTE	TURN-L S W									000	00
																	PSNGR CAR		01	DRVR	INJA	65	F	OR-Y OR<25		097	000	00
05054 NO RPT	N	N	N			11/29/2015 Sun 10A	CLACKAMAS OREGON CITY	1 14 MN 0	CASCADE HY SOUTH	INTER CN	3-LEG	N TRF SIGNAL	N	CLR DRY	ANGL-OTH TURN	01	NONE 0 PRVTE	STRGHT N S									000	04 00
							PORTLAND UA	0.48	REDLAND RD	03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	80	F	OR-Y		020	038	04
No						*45 21 58.24 -122 35 6.30*		016000100S00	1															OR<25				
																02	NONE 0 PRVTE	TURN-L W N									000	00
																	PSNGR CAR		01	DRVR	NONE	64	F	OR-Y OR<25		000	000	00
03580 NO RPT	N	N	N			08/05/2016 Fri 8P	CLACKAMAS OREGON CITY	1 14 MN 0	CASCADE HY SOUTH	INTER CN	3-LEG	N TRF SIGNAL	N	CLR DRY	ANGL-OTH TURN	01	NONE 0 PRVTE	TURN-L W N									000	27,04 00
							PORTLAND UA	0.48	REDLAND RD	03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	42	F	OR-Y OR<25		000	000	00
No						*45 21 58.24 -122 35 6.30*		016000100S00	1										02	PSNG	INJC	00	M			000	000	00
																02	NONE 0 PRVTE	STRGHT N S									000	00
																	PSNGR CAR		01	DRVR	NONE	53	F	OR-Y OR<25		016,020	038	27,04

160 CASCADE HWY SOUTH

Intersectional Crashes at OR-213, Cascade Hwy (#160) & Redland Rd
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/JMK	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / PNT	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
02632	N	N	N			07/02/2017	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										04
CITY			N			Sun 9A	OREGON CITY	MN 0		CASCADE HY SOUTH	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N S									000	00
							PORTLAND UA	0.48		REDLAND RD	03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	62	M	OR-Y		020	000	04
No						*45 21 58.24 -122 35 6.30*		016000100		S00 1															OR<25				
																	02	NONE 0	TURN-L										
																		PRVTE	W N									000	00
																		PSNGR CAR		01	DRVR	INJB	52	F	OR-Y		000	000	00
																									OR<25				
																				02	PSNG	INJB	54	M			000	000	00
00314	N	N	N			01/27/2018	CLACKAMAS	1	14		INTER	3-LEG	N	N	UNK	S-OTHER	01	NONE 9	TURN-R										06,08
NONE			N			Sat 11A	OREGON CITY	MN 0		CASCADE HY SOUTH	CN		R-GRN-SIG	N	WET	TURN		N/A	W S									031	00
							PORTLAND UA	0.48		REDLAND RD	03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No						*45 21 58.25 -122 35 6.30*		016000100		S00 1															UNK				
																	02	NONE 9	TURN-R										
																		N/A	W S									000	00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																									UNK				
04377	N	N	N			11/29/2018	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLD	ANGL-OTH	01	NONE 0	STRGHT										04,32
CITY			N			Thu 10A	OREGON CITY	MN 0		CASCADE HY SOUTH	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N S									000	00
							PORTLAND UA	0.48		REDLAND RD	03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	74	F	OR-Y		020,052	000	04,32
No						*45 21 58.25 -122 35 6.31*		016000100		S00 1															OR<25				
																	02	NONE 0	TURN-L										
																		PRVTE	W N									000	00
																		PSNGR CAR		01	DRVR	INJC	19	F	OR-Y		000	000	00
																									OR<25				

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at OR-213, Cascade Hwy (#160) & Redland Rd
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / LAT/LONG	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00188	N	N	N			01/14/2014	16	CASCADE HY SOUTH	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE			N			Tue 4P	0	REDLAND RD	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W E									000		00
No	*45 21 58.24*					*-122 35 6.30*		1	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	OR-Y OR<25		026	000		07
															02	NONE 0	STOP											
																PRVTE	W E									011		00
																PSNGR CAR		01	DRVR	NONE	37	F	OR-Y OR<25		000	000		00
																		02	PSNG	NO<5	01	M			000	000		00
04409	N	N	N			11/02/2014	16	CASCADE HY SOUTH	INTER	3-LEG	N	N	UNK	S-1STOP	01	NONE 0	STRGHT											29
NONE			N			Sun 9A	0	REDLAND RD	W		TRF SIGNAL	N	WET	REAR		PRVTE	W E									000		00
No	*45 21 58.24*					*-122 35 6.30*		1	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	61	M	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	W E									011		00
																PSNGR CAR		01	DRVR	INJC	35	M	OR-Y OR<25		000	000		00
																		02	PSNG	INJC	12	F			000	000		00
03664	N	N	N			10/11/2018	16	CASCADE HY SOUTH	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE			N			Thu 6P	0	REDLAND RD	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W E									000		00
No	*45 21 58.24*					*-122 35 6.30*		1	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	61	F	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	W E									011		00
																PSNGR CAR		01	DRVR	INJC	27	M	OR-Y OR<25		000	000		00
																		02	PSNG	INJC	27	F			000	000		00

Intersectional Crashes at OR213, Cascade Hwy (#160) & Molalla Ave / Douglas Lp
January 1, 2014 through December 31, 2018

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2018														
REAR-END	0	2	1	3	0	2	0	3	0	2	1	3	0	0
2018 TOTAL	0	2	1	3	0	2	0	3	0	2	1	3	0	0
YEAR: 2017														
FIXED / OTHER OBJECT	0	0	1	1	0	0	0	0	1	0	1	1	0	1
REAR-END	0	2	2	4	0	2	1	3	1	3	1	4	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	0	1	1	0	1	0	0
2017 TOTAL	0	3	3	6	0	3	1	3	3	4	2	6	0	1
YEAR: 2016														
REAR-END	0	1	3	4	0	1	0	1	3	3	1	4	0	0
TURNING MOVEMENTS	0	0	2	2	0	0	0	1	1	1	1	2	0	0
2016 TOTAL	0	1	5	6	0	1	0	2	4	4	2	6	0	0
YEAR: 2015														
ANGLE	0	1	0	1	0	1	0	1	0	1	0	1	0	0
REAR-END	0	4	1	5	0	4	0	4	0	5	0	5	0	0
TURNING MOVEMENTS	0	2	1	3	0	5	0	2	1	1	2	3	0	0
2015 TOTAL	0	7	2	9	0	10	0	7	1	7	2	9	0	0
YEAR: 2014														
BACKING	0	1	0	1	0	1	1	1	0	1	0	1	0	0
REAR-END	0	2	2	4	0	2	0	3	0	4	0	4	0	0
2014 TOTAL	0	3	2	5	0	3	1	4	0	5	0	5	0	0
FINAL TOTAL	0	16	13	29	0	19	2	19	8	22	7	29	0	1

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

160 CASCADE HWY SOUTH

Intersectional Crashes at OR213, Cascade Hwy (#160) & Molalla Ave / Douglas Lp
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUGS	SCHL	WORK	DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# / MILEPNT / LRS	FC / MLG / CONN # / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
01076	N	N	N			03/17/2014	CLACKAMAS	1	14		INTER	CROSS	N		N CLR	S-1STOP	01	NONE 0	STRGHT										013	07
NO RPT		N				Mon 5P	OREGON CITY	MN 0	CASCADE HY SOUTH		N		TRF SIGNAL		N DRY	REAR		UNKN	N S									000		00
							PORTLAND UA	3.59	MOLALLA AVE		06		0		N DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	U	UNK		026	000		07
No						*45 19 25.01 -122 34 43.78*		016000100S00	1																UNK					
																	02	NONE 0	STOP										
																		PRVTE	N S									011	013	00
																		PSNGR CAR		01	DRVR	NONE	42	M	OR-Y		000	000		00
																									OR<25					
																	03	NONE 0	STOP										
																		PRVTE	N S									022		00
																		PSNGR CAR		01	DRVR	INJC	42	F	OR-Y		000	000		00
																									OR<25					
01942	N	N	N	N	N	05/21/2014	CLACKAMAS	1	14		INTER	CROSS	N		N CLD	O-1STOP	01	LOG 1	BACK											10
NONE		N				Wed 9A	OREGON CITY	MN 0	CASCADE HY SOUTH		N		TRF SIGNAL		N DRY	BACK		PRVTE	S N									000		00
							PORTLAND UA	3.59	MOLALLA AVE		06		0		N DAY	INJ		SEMI TOW		01	DRVR	NONE	51	M	OR-Y		011	000		10
No						*45 19 25.01 -122 34 43.78*		016000100S00	1																OR<25					
																	02	NONE 0	STOP										
																		PRVTE	N S									011		00
																		PSNGR CAR		01	DRVR	INJC	54	F	OR-Y		000	000		00
																									OR<25					
03506	N	N	N			08/28/2015	CLACKAMAS	1	14		INTER	CROSS	N		N CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE		N				Fri 4P	OREGON CITY	MN 0	CASCADE HY SOUTH		N		TRF SIGNAL		N DRY	REAR		UNKN	N S									000		00
							PORTLAND UA	3.59	MOLALLA AVE		06		0		N DAY	INJ		UNKNOWN		01	DRVR	NONE	00	M	UNK		026	000		29
No						*45 19 25.01 -122 34 43.78*		016000100S00	1																UNK					
																	02	NONE 0	STOP										
																		PRVTE	N S									011		00
																		PSNGR CAR		01	DRVR	INJC	45	M	OR-Y		000	000		00
																									OR<25					
02368	N	N	N			05/26/2016	CLACKAMAS	1	14		INTER	CROSS	N		N CLD	S-1STOP	01	NONE 9	STRGHT											29
NONE		N				Thu 7P	OREGON CITY	MN 0	CASCADE HY SOUTH		N		TRF SIGNAL		N DRY	REAR		N/A	N S									000		00
							PORTLAND UA	3.59	MOLALLA AVE		06		0		N DUSK	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No						*45 19 25.01 -122 34 43.78*		016000100S00	1																UNK					
																	02	NONE 9	STOP										
																		N/A	N S									012		00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																									UNK					

160 CASCADE HWY SOUTH

Intersectional Crashes at OR213, Cascade Hwy (#160) & Molalla Ave / Douglas Lp
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG / MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
02844	N	N	N			06/23/2016	CLACKAMAS	1	14		INTER	CROSS	N		N	RAIN	S-1STOP	01	NONE	9	STRGHT										29
NONE		N				Thu 5P	OREGON CITY	MN 0		CASCADE HY SOUTH	N		TRF SIGNAL		N	WET	REAR		N/A		N S								000		00
							PORTLAND UA	3.59		MOLALLA AVE	06	0			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No						*45 19 25.01 -122 34 43.78*		016000100S00		1																UNK					
																	02	NONE	9	STOP										
																		N/A		N S									011		00
																		PSNGR CAR			01	DRVR	NONE	00	U	UNK		000	000		00
																										UNK					
05295	N	N	N	N	N	11/14/2016	CLACKAMAS	1	14		INTER	CROSS	N		N	RAIN	S-1STOP	01	NONE	9	STRGHT										29
CITY		N				Mon 1P	OREGON CITY	MN 0		CASCADE HY SOUTH	N		TRF SIGNAL		N	WET	REAR		N/A		N S								000		00
							PORTLAND UA	3.59		MOLALLA AVE	06	0			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No						*45 19 25.01 -122 34 43.78*		016000100S00		1																UNK					
																	02	NONE	9	STOP										
																		N/A		N S									011		00
																		PSNGR CAR			01	DRVR	NONE	00	U	UNK		000	000		00
																										UNK					
00812	N	N	N			03/01/2017	CLACKAMAS	1	14		INTER	CROSS	N		N	CLR	S-1STOP	01	NONE	9	STRGHT										29
NONE		N				Wed 8A	OREGON CITY	MN 0		CASCADE HY SOUTH	N		TRF SIGNAL		N	DRY	REAR		N/A		N S								000		00
							PORTLAND UA	3.59		MOLALLA AVE	06	0			N	DAWN	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No						*45 19 25.01 -122 34 43.78*		016000100S00		1																UNK					
																	02	NONE	9	STOP										
																		N/A		N S									011		00
																		PSNGR CAR			01	DRVR	NONE	00	U	UNK		000	000		00
																										UNK					
05579	N	N	N			12/26/2017	CLACKAMAS	1	14		INTER	CROSS	N		Y	SNOW	FIX OBJ	01	NONE	9	STRGHT									124,040	10
NONE		N				Tue 12A	OREGON CITY	MN 0		CASCADE HY SOUTH	E		TRF SIGNAL		N	ICE	FIX		N/A		W E								001		00
							PORTLAND UA	3.59		MOLALLA AVE	04	0			N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No						*45 19 25.01 -122 34 43.78*		016000100S00		1																UNK					
01966	N	N	N			03/05/2015	CLACKAMAS	1	14		INTER	CROSS	N		N	CLR	S-1STOP	01	NONE	0	STRGHT										29
NONE		N				Thu 9A	OREGON CITY	MN 0		CASCADE HY SOUTH	SE		TRF SIGNAL		N	DRY	REAR		PRVTE		SE NW								000		00
							PORTLAND UA	3.59		MOLALLA AVE	06	0			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	19	F	OR-Y		026	000		29
No						*45 19 25.01 -122 34 43.78*		016000100S00		1																OR<25					
																	02	NONE	0	STOP										
																		PRVTE		SE NW									011		00
																		PSNGR CAR			01	DRVR	INJC	21	F	OR-Y		000	000		00
																										OR<25					

160 CASCADE HWY SOUTH

Intersectional Crashes at OR213, Cascade Hwy (#160) & Molalla Ave / Douglas Lp
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG / MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
00853	N	N	N	N	N	02/28/2014	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										27,07
CITY		N				Fri 9A	OREGON CITY	MN 0	CASCADE HY SOUTH	S		L-GRN-SIG	N	DRY	REAR		PRVTE	S N									000	00
							PORTLAND UA	3.59	MOLALLA AVE	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	32	F	SUSP		016,026	038	27,07
No	*45 19 25.01 -122 34 43.78*							016000100S00	1															OR<25				
																			02	PSNG	NO<5	01	M			000	000	00
																02	NONE 0	STOP										
																	PRVTE	S N									012	00
																	PSNGR CAR		01	DRVR	INJB	44	F	OR-Y		000	000	00
																								OR<25				
02826	N	N	N			07/13/2015	CLACKAMAS	1 14		INTER	CROSS	N	N	UNK	S-1STOP	01	NONE 0	STRGHT										29
NONE		N				Mon 6P	OREGON CITY	MN 0	CASCADE HY SOUTH	S		TRF SIGNAL	N	UNK	REAR		UNKN	S N									000	00
							PORTLAND UA	3.59	MOLALLA AVE	06	0		N	DAY	PDO		UNKNOWN		01	DRVR	NONE	00	F	OR-Y		026	000	29
No	*45 19 25.01 -122 34 43.78*							016000100S00	1															UNK				
																02	NONE 0	STOP										
																	PRVTE	S N									012	00
																	PSNGR CAR		01	DRVR	NONE	56	M	OR-Y		000	000	00
																								OR<25				
86482	Y	N	N	N	N	09/18/2016	CLACKAMAS	1 14		INTER	CROSS	N	N	CLD	ANGL-STP	01	NONE 9	TURN-R										01
STATE		N				Sun 1P	OREGON CITY	MN 0	CASCADE HY SOUTH	S		TRF SIGNAL	N	DRY	TURN		N/A	NW S									000	00
							PORTLAND UA	3.59	MOLALLA AVE	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45 19 25.01 -122 34 43.78*							016000100S00	1															UNK				
																02	NONE 9	STOP										
																	N/A	S N									012	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																								UNK				
02010	N	N	N			05/23/2017	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT										29
NONE		N				Tue 2P	OREGON CITY	MN 0	CASCADE HY SOUTH	S		TRF SIGNAL	N	DRY	REAR		N/A	S N									000	00
							PORTLAND UA	3.59	MOLALLA AVE	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45 19 25.01 -122 34 43.78*							016000100S00	1															UNK				
																02	NONE 9	STOP										
																	N/A	S N									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																								UNK				
04825	N	N	N	N	N	11/16/2017	CLACKAMAS	1 14		INTER	CROSS	N	N	CLD	S-1STOP	01	NONE 1	STRGHT										22,29
CITY		N				Thu 9A	OREGON CITY	MN 0	CASCADE HY SOUTH	S		TRF SIGNAL	N	WET	REAR		PRVTE	S N									000	22
							PORTLAND UA	3.59	N DOUGLAS LP	06	0		N	DAY	INJ		SEMI TOW		01	DRVR	NONE	28	F	OR-Y		017,026	000	29
No	*45 19 25.01 -122 34 43.78*							016000100S00	1															OR>25				

160 CASCADE HWY SOUTH

Intersectional Crashes at OR213, Cascade Hwy (#160) & Molalla Ave / Douglas Lp
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																	02	NONE 0 PRVTE	STOP S N									011		00
																		PSNGR CAR		01	DRVR	INJC	56	F	OR-Y OR<25		000	000		00
03519 NONE	N	N	N			10/02/2018 Tue 1P	CLACKAMAS OREGON CITY	1 MN 0	14	CASCADE HY SOUTH	INTER S	CROSS	N TRF SIGNAL	N N	CLR DRY	S-1STOP REAR	01	NONE 9 N/A	STRGHT S N									000		29 00
							PORTLAND UA	3.59		MOLALLA AVE	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45 19*		*24.99 -122*	*34*	*43.78*			016000100S00		1															UNK					
																	02	NONE 9 N/A	STOP S N									011		00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
03657 CITY	Y	Y	N	N	N	10/11/2018 Thu 5P	CLACKAMAS OREGON CITY	1 MN 0	14	CASCADE HY SOUTH	INTER S	CROSS	N TRF SIGNAL	N N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT S N									000		01,07,33 00
							PORTLAND UA	3.59		MOLALLA AVE	06	0		N	DUSK	INJ		PSNGR CAR		01	DRVR	NONE	20	M	OR-Y OR<25		047,043,051	000		01,07,33
No	*45 19*		*25.00 -122*	*34*	*43.79*			016000100S00		1																				
																	02	NONE 0 PRVTE	STOP S N									011		00
																		PSNGR CAR		01	DRVR	INJC	26	F	OR-Y OR<25		000	000		00
00108 NO RPT	N	N	N			01/07/2017 Sat 4P	CLACKAMAS OREGON CITY	1 MN 0	14	CASCADE HY SOUTH	INTER NW	CROSS	N TRF SIGNAL	N N	SNOW ICE	ANGL-STP TURN	01	NONE 0 PRVTE	TURN-R N NW									000	124	08 00
							PORTLAND UA	3.59		MOLALLA AVE	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	70	M	OR-Y OR<25		001	017		08
No	*45 19*		*25.01 -122*	*34*	*43.78*			016000100S00		1																				
																	02	NONE 0 PRVTE	STOP NW SE									011		00
																		PSNGR CAR		01	DRVR	INJC	68	M	OR-Y OR<25		000	000		00
00326 NONE	N	N	N			01/25/2015 Sun 8P	CLACKAMAS OREGON CITY	1 MN 0	14	CASCADE HY SOUTH	INTER CN	CROSS	N TRF SIGNAL	N N	FOG DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT N S									000		04 00
							PORTLAND UA	3.59		MOLALLA AVE	01	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	21	M	OR-Y OR<25		020	000		04
No	*45 19*		*25.01 -122*	*34*	*43.78*			016000100S00		1																				
																	02	NONE 0 PRVTE	TURN-L S SW									000		00
																		PSNGR CAR		01	DRVR	NONE	46	F	OR-Y OR<25		000	000		00

160 CASCADE HWY SOUTH

Intersectional Crashes at OR213, Cascade Hwy (#160) & Molalla Ave / Douglas Lp
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / LRS	FC / MILEPNT	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
04072	N	N	N			10/03/2015	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										02
NONE			N			Sat 11A	OREGON CITY	MN 0		CASCADE HY SOUTH	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N S									000	00
							PORTLAND UA	3.59		MOLALLA AVE	01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	53	F	OR-Y		000	000	00
No	*45 19*		*25.01*	*-122*	*34*	*43.78*		016000100S00		1															OR<25				
																	02	NONE 0	TURN-L										
																		PRVTE	S NW									000	00
																		PSNGR CAR		01	DRVR	INJB	52	M	OR-Y		028,004	000	02
																									OR<25				
																				02	PSNG	INJB	51	F			000	000	00
05340	N	N	N			12/12/2015	CLACKAMAS	1	14		INTER	CROSS	N	N	UNK	O-1 L-TURN	01	NONE 0	TURN-L										04
NO RPT			N			Sat 7P	OREGON CITY	MN 0		CASCADE HY SOUTH	CN		TRF SIGNAL	N	WET	TURN		PRVTE	S W									000	00
							PORTLAND UA	3.59		MOLALLA AVE	01	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	56	F	OR-Y		003	000	04
No	*45 19*		*25.01*	*-122*	*34*	*43.78*		016000100S00		1															OR<25				
																	02	NONE 0	STRGHT										
																		PRVTE	N S									000	00
																		PSNGR CAR		01	DRVR	INJB	53	M	OR-Y		000	000	00
																									OR<25				
																				02	PSNG	INJB	18	M			000	000	00
03566	N	N	N			09/01/2015	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										04
NONE			N			Tue 2P	OREGON CITY	MN 0		CASCADE HY SOUTH	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	NW SE									000	00
							PORTLAND UA	3.59		MOLALLA AVE	02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	43	M	OR-Y		000	000	00
No	*45 19*		*25.01*	*-122*	*34*	*43.78*		016000100S00		1															OR<25				
																	02	NONE 0	STRGHT										
																		PRVTE	S N									000	00
																		PSNGR CAR		01	DRVR	INJB	27	M	OR-Y		020	000	04
																									OR<25				
05532	N	N	N			11/28/2016	CLACKAMAS	1	14		INTER	CROSS	N	N	RAIN	S-1TURN	01	NONE 9	TURN-R										08
NONE			N			Mon 5A	OREGON CITY	MN 0		CASCADE HY SOUTH	CN		UNKNOWN	N	WET	TURN		N/A	S E									000	00
							PORTLAND UA	3.59		N DOUGLAS LP	04	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45 19*		*25.01*	*-122*	*34*	*43.78*		016000100S00		1															UNK				
																	02	NONE 9	STRGHT										
																		N/A	S N									000	00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																									UNK				

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at OR213, Cascade Hwy (#160) & Molalla Ave / Douglas Lp
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
02299	N	N	N			04/24/2014	16	CASCADE HY SOUTH	INTER	CROSS	N	N	UNK	S-1STOP	01	NONE 0	STRGHT											29
NONE			N			Thu 8A	0	MOLALLA AVE	W		R-GRN-SIG	N	UNK	REAR		UNKN	NW SE									000		00
No	*45 19 25.01*		*-122 34 43.78*				1		06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	F	OR-Y UNK		026	000		29
															02	NONE 0	STOP											
																PRVTE	NW SE									011		00
																PSNGR CAR		01	DRVR	NONE	32	M	OR-Y OR<25		000	000		00
03003	N	N	N			08/05/2014	16	CASCADE HY SOUTH	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE			N			Tue 6A	0	MOLALLA AVE	NW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE									000		00
No	*45 19 25.01*		*-122 34 43.78*				1		06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	25	M	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	SW NE									011		00
																PSNGR CAR		01	DRVR	NONE	25	F	OR-Y OR<25		000	000		00
00129	N	N	N	N	N	01/13/2015	16	CASCADE HY SOUTH	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
CITY			N			Tue 11A	0	MOLALLA AVE	NW		TRF SIGNAL	N	DRY	REAR		PRVTE	NW SE									000		00
No	*45 19 25.01*		*-122 34 43.78*				1		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	65	F	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	NW SE									011		00
																PSNGR CAR		01	DRVR	INJC	86	F	OR-Y OR<25		000	000		00
00034	N	N	N			01/03/2016	16	CASCADE HY SOUTH	INTER	CROSS	N	N	SNOW	S-1STOP	01	NONE 0	STRGHT										124		29
NONE			N			Sun 12P	0	MOLALLA AVE	NW		TRF SIGNAL	N	ICE	REAR		PRVTE	NW SE									000		00
No	*45 19 25.01*		*-122 34 43.78*				1		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	19	M	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	NW SE									011		00
																PSNGR CAR		01	DRVR	INJC	28	M	OR-Y OR<25		000	000		00
00452	N	N	N			02/03/2017	14	CASCADE HY SOUTH	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE			N			Fri 1P	0	MOLALLA AVE	NW		TRF SIGNAL	N	DRY	REAR		PRVTE	NW SE									000		00
No	*45 19 25.01*		*-122 34 43.78*				1		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	22	F	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	NW SE									011		00
																PSNGR CAR		01	DRVR	INJC	29	F	OR-Y OR<25		000	000		00

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at OR213, Cascade Hwy (#160) & Molalla Ave / Douglas Lp
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00819	N	N	N	N	N	03/06/2018	16	CASCADE HY SOUTH	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29,33
CITY			N			Tue 3P	0	MOLALLA AVE	NW		TRF SIGNAL	N	DRY	REAR		PRVTE	NW SE									000		00
No	*45 19 25.02*		*-122 34 43.81*				1		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	18	M	OR-Y OR<25		026,051	000		29,33
															02	NONE 0	STOP											
																PRVTE	NW SE									011		00
																PSNGR CAR		01	DRVR	INJC	28	F	SUSP OR<25		000	000		00
02361	N	N	N			06/15/2015	19	CASCADE HY SOUTH	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											013	29
NONE			N			Mon 5P	0	N DOUGLAS LP	SE		STOP SIGN	N	DRY	REAR		PRVTE	SE NW									000		00
No	*45 19 25.01*		*-122 34 43.78*				1		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	60	F	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	SE NW									011	013	00
																PSNGR CAR		01	DRVR	INJC	58	M	OR-Y OR<25		000	000		00
															03	NONE 0	STOP											
																PRVTE	SE NW									022		00
																PSNGR CAR		01	DRVR	NONE	52	F	OR-Y OR<25		000	000		00

Intersectional Crashes at OR-213 & Clackamas River Dr / Prairie Schooner Wy
January 1, 2014 through December 31, 2018

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2018														
REAR-END	0	0	2	2	0	0	0	2	0	2	0	2	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2018 TOTAL	0	1	2	3	0	1	0	3	0	3	0	3	0	0
YEAR: 2017														
FIXED / OTHER OBJECT	0	0	1	1	0	0	0	0	1	0	1	1	0	0
REAR-END	0	1	1	2	0	3	0	1	1	2	0	2	0	0
TURNING MOVEMENTS	0	1	0	1	0	2	0	1	0	1	0	1	0	0
2017 TOTAL	0	2	2	4	0	5	0	2	2	3	1	4	0	0
YEAR: 2016														
FIXED / OTHER OBJECT	0	0	1	1	0	0	0	0	1	1	0	1	0	1
REAR-END	0	2	4	6	0	3	0	2	4	5	1	6	0	0
2016 TOTAL	0	2	5	7	0	3	0	2	5	6	1	7	0	1
YEAR: 2015														
FIXED / OTHER OBJECT	0	0	1	1	0	0	0	1	0	0	1	1	0	1
REAR-END	0	4	0	4	0	7	0	4	0	4	0	4	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	1	1	0	1	0	1	0	0
2015 TOTAL	0	4	2	6	0	7	1	6	0	5	1	6	0	1
YEAR: 2014														
ANGLE	0	0	1	1	0	0	0	0	0	1	0	1	0	0
MISCELLANEOUS	0	1	0	1	0	1	0	1	0	0	0	1	0	0
REAR-END	0	2	0	2	0	3	0	2	0	2	0	2	0	0
TURNING MOVEMENTS	0	1	0	1	0	2	0	1	0	1	0	1	0	0
2014 TOTAL	0	4	1	5	0	6	0	4	0	4	0	5	0	0
FINAL TOTAL	0	13	12	25	0	22	1	17	7	21	3	25	0	2

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

160 CASCADE HWY SOUTH

Intersectional Crashes at OR-213 & Clackamas River Dr / Prairie Schooner Wy
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	MJ	SCH	HWK	WRK ZONE	DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / CONN # / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
04829	N	N	N					10/18/2016	CLACKAMAS	1 14		INTER	CROSS	N		N RAIN	S-1STOP	01	NONE 9	STRGHT										29
NONE		N						Tue 5P	OREGON CITY	MN 0	CLACKAMAS RIVER DR	NE		TRF SIGNAL		N WET	REAR		N/A	NE SW									000	00
									PORTLAND UA	0.14	CASCADE HY SOUTH	06	0			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45*	*22*						*15.33 -122 35 8.39*		016000100S00	1															UNK				
																		02	NONE 9	STOP										
																			N/A	NE SW									011	00
																			PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																										UNK				
02119	N	N	N					06/02/2014	CLACKAMAS	1 14		INTER		N		N CLR	OVERTURN	01	NONE 0	STRGHT										10
NONE		N						Mon 6A	OREGON CITY	MN 0	CLACKAMAS RIVER DR	SE		TRF SIGNAL		N DRY	OTH		PRVTE	S N								007	00
									PORTLAND UA	0.14	CASCADE HY SOUTH	06	0			N UNK	INJ		PSNGR CAR		01	DRVR	INJB	48	M	OR-Y		083	000	10
No	*45*	*22*						*15.33 -122 35 8.39*		016000100S00	1															OR<25				
00563	N	N	N					02/13/2015	CLACKAMAS	1 14		INTER	CROSS	N		N CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE		N						Fri 8A	OREGON CITY	MN 0	CLACKAMAS RIVER DR	SE		TRF SIGNAL		N DRY	REAR		PRVTE	SE NW								000	00
									PORTLAND UA	0.14	CASCADE HY SOUTH	06	1			N DAY	INJ		PSNGR CAR		01	DRVR	NONE	18	F	OTH-Y		026	000	29
No	*45*	*22*						*15.33 -122 35 8.39*		016000100S00	1															N-RES				
																		02	NONE 0	STOP										
																			PRVTE	SE NW									011	00
																			PSNGR CAR		01	DRVR	INJC	33	F	OR-Y		000	000	00
																										OR<25				
00636	N	N	N					02/18/2015	CLACKAMAS	1 14		INTER	CROSS	N		N CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE		N						Wed 8A	OREGON CITY	MN 0	CLACKAMAS RIVER DR	SE		TRF SIGNAL		N DRY	REAR		UNKN	SE NW								000	00
									PORTLAND UA	0.14	CASCADE HY SOUTH	06	2			N DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	M	UNK		026	000	29
No	*45*	*22*						*15.33 -122 35 8.39*		016000100S00	1															UNK				
																		02	NONE 0	STOP										
																			PRVTE	SE NW									011	00
																			PSNGR CAR		01	DRVR	INJC	16	M	OR-Y		000	000	00
																										OR<25				
05141	N	N	N					12/04/2015	CLACKAMAS	1 14		INTER	CROSS	N		N CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE		N						Fri 3P	OREGON CITY	MN 0	CLACKAMAS RIVER DR	SE		TRF SIGNAL		N DRY	REAR		PRVTE	SE NW								000	00
									PORTLAND UA	0.14	CASCADE HY SOUTH	06	0			N DAY	INJ		PSNGR CAR		01	DRVR	NONE	28	F	OR-Y		026	000	29
No	*45*	*22*						*15.33 -122 35 8.39*		016000100S00	1															OR<25				
																		02	NONE 0	STOP										
																			PRVTE	SE NW									011	00
																			PSNGR CAR		01	DRVR	INJC	41	F	OR-Y		000	000	00
																										OR<25				
																					02	PSNG	INJC	33	F			000	000	

160 CASCADE HWY SOUTH

Intersectional Crashes at OR-213 & Clackamas River Dr / Prairie Schooner Wy
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	MC	SCHL	WORK	DATE / DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
04957	N	N	N				10/26/2016	CLACKAMAS	1 14		INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											29
NONE		N					Wed 8A	OREGON CITY	MN 0	CLACKAMAS RIVER DR	SE		TRF SIGNAL	N	WET	REAR		PRVTE	SE NW									000		00
								PORTLAND UA	0.14	CASCADE HY SOUTH	06	2		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	18	F	OTH-Y		026	000		29
No	*45 22*		*15.33 -122*	*35*		*8.39*			016000100S00	1															N-RES					
																	02	NONE 0	STOP											
																		PRVTE	SE NW									011		00
																		PSNGR CAR		01	DRVR	INJC	43	F	OR-Y		000	000		00
																									OR<25					
06053	N	N	N				12/23/2016	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE		N					Fri 1P	OREGON CITY	MN 0	CLACKAMAS RIVER DR	SE		TRF SIGNAL	N	WET	REAR		PRVTE	SE NW									000		00
								PORTLAND UA	0.14	CASCADE HY SOUTH	06	1		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	57	F	OR-Y		026	000		07
No	*45 22*		*15.33 -122*	*35*		*8.39*			016000100S00	1															OR<25					
																	02	NONE 0	STOP											
																		PRVTE	SE NW									011		00
																		PSNGR CAR		01	DRVR	INJC	17	F	OR-Y		000	000		00
																									OR<25					
																				02	PSNG	INJC	18	F			000	000		00
01455	N	N	N				03/30/2016	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
NONE		N					Wed 5P	OREGON CITY	MN 0	CLACKAMAS RIVER DR	S		TRF SIGNAL	N	DRY	REAR		N/A	S N									000		00
								PORTLAND UA	0.14	CASCADE HY SOUTH	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45 22*		*15.33 -122*	*35*		*8.39*			016000100S00	1															UNK					
																	02	NONE 9	STOP											
																		N/A	S N									011		00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																									UNK					
00624	N	N	N				02/15/2017	CLACKAMAS	1 14		INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 9	STRGHT											29
NO RPT		N					Wed 11A	OREGON CITY	MN 0	CLACKAMAS RIVER DR	S		TRF SIGNAL	N	WET	REAR		N/A	S N									000		00
								PORTLAND UA	0.14	CASCADE HY SOUTH	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45 22*		*15.33 -122*	*35*		*8.39*			016000100S00	1															UNK					
																	02	NONE 9	STOP											
																		N/A	S N									011		00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																									UNK					
04340	N	N	N	N	N		10/19/2017	CLACKAMAS	1 14		INTER	CROSS	N	N	CLD	OTH OBJ	01	NONE 9	STRGHT										040,050	17
CITY		N					Thu 10P	OREGON CITY	MN 0	PRAIRIE SCHOONER WY	W		UNKNOWN	N	WET	FIX		N/A	N S									000		00
								PORTLAND UA	0.14	CASCADE HY SOUTH	01	1		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45 22*		*15.33 -122*	*35*		*8.39*			016000100S00	1															UNK					

160 CASCADE HWY SOUTH

Intersectional Crashes at OR-213 & Clackamas River Dr / Prairie Schooner Wy
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# CMPT/MILEPNT LRS	FC / MLG	CONN # FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
02686	N	N	N			06/14/2016	CLACKAMAS	1	14		INTER	CROSS	N	Y	SLT	FIX OBJ	01	NONE 9	TURN-R										124,134,055	08
CITY			N			Tue 2P	OREGON CITY	MN 0		PRAIRIE SCHOONER WY	W		TRF SIGNAL	N	WET	FIX		N/A	N W									000		00
							PORTLAND UA	0.14		CASCADE HY SOUTH	05	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45 22*	*15.33*	*-122 35*	*8.39*				016000100S00		1															UNK					
02141	N	N	N			05/12/2016	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
NONE			N			Thu 12P	OREGON CITY	MN 0		PRAIRIE SCHOONER WY	W		TRF SIGNAL	N	DRY	REAR		N/A	W E									000		00
							PORTLAND UA	0.14		CASCADE HY SOUTH	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45 22*	*15.33*	*-122 35*	*8.39*				016000100S00		1															UNK					
																	02	NONE 9	STOP											
																		N/A	W E									011		00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																									UNK					
00475	N	N	N			02/06/2018	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
NONE			N			Tue 3P	OREGON CITY	MN 0		PRAIRIE SCHOONER WY	W		TRF SIGNAL	N	DRY	REAR		N/A	W E									000		00
							PORTLAND UA	0.14		CASCADE HY SOUTH	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45 22*	*15.33*	*-122 35*	*8.39*				016000100S00		1															UNK					
																	02	NONE 9	STOP											
																		N/A	W E									011		00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																									UNK					
03836	N	N	N			09/19/2015	CLACKAMAS	1	14		INTER	CROSS	N	Y	CLR	FIX OBJ	01	NONE 0	TURN-L										043	02,05,08
COUNTY			N			Sat 2A	OREGON CITY	MN 0		CLACKAMAS RIVER DR	NW		TRF SIGNAL	N	DRY	FIX		PRVTE	NW NE									000	043	00
							PORTLAND UA	0.14		CASCADE HY SOUTH	05	2		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	48	M	UNK		073,039,002	000		02,05,08
No	*45 22*	*15.33*	*-122 35*	*8.39*				016000100S00		1															N-RES					
02995	N	N	N			08/05/2014	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										013	29
NONE			N			Tue 7P	OREGON CITY	MN 0		CLACKAMAS RIVER DR	NW		TRF SIGNAL	N	DRY	REAR		UNKN	NW SE									000		00
							PORTLAND UA	0.14		CASCADE HY SOUTH	06	0		N	DAY	INJ		UNKNOWN		01	DRVR	NONE	00	F	OTH-Y		026	000		29
No	*45 22*	*15.33*	*-122 35*	*8.39*				016000100S00		1															UNK					
																	02	NONE 0	STOP											
																		PRVTE	NW SE									011	013	00
																		PSNGR CAR		01	DRVR	INJC	31	F	OR-Y		000	000		00
																									OR<25					
																				02	PSNG	INJC	42	M			000	000		00
																	03	NONE 0	STOP											
																		PRVTE	NW SE									022		00
																		PSNGR CAR		01	DRVR	NONE	31	F	OR-Y		000	000		00
																									UNK					

160 CASCADE HWY SOUTH

Intersectional Crashes at OR-213 & Clackamas River Dr / Prairie Schooner Wy
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / PNT	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
03780	N	N	N			09/25/2014	CLACKAMAS	1	14		INTER	CROSS	N		N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE			N			Thu 2P	OREGON CITY	MN 0		CLACKAMAS RIVER DR	NW		TRF SIGNAL		N	DRY	REAR		PRVTE	NW SE									000		00
							PORTLAND UA	0.14		CASCADE HY SOUTH	06	1			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	71	M	OR-Y		026	000		29
No	*45 22*	*15.33*	*-122*	*35*	*8.39*			016000100S00		1																OR>25					
																	02	NONE 0	STOP											
																		PRVTE	NW SE									011		00
																		PSNGR CAR		01	DRVR	INJC	19	F	OR-Y		000	000		00
																									OR<25					
00541	N	N	N			02/11/2015	CLACKAMAS	1	14		INTER	CROSS	N		N	CLR	S-1STOP	01	NONE 0	STRGHT										013	29
NO RPT			N			Wed 3P	OREGON CITY	MN 0		CLACKAMAS RIVER DR	NW		TRF SIGNAL		N	DRY	REAR		PRVTE	NW SE									000		00
							PORTLAND UA	0.14		CASCADE HY SOUTH	06	0			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	52	M	OR-Y		026	000		29
No	*45 22*	*15.33*	*-122*	*35*	*8.39*			016000100S00		1																OR<25					
																	02	NONE 0	STOP											
																		PRVTE	NW SE									011	013	00
																		PSNGR CAR		01	DRVR	INJB	20	M	OR-Y		000	000		00
																									OR<25					
																	03	NONE 0	STOP											
																		PRVTE	NW SE									022	013	00
																		PSNGR CAR		01	DRVR	NONE	64	M	OR-Y		000	000		00
																									OR<25					
																	04	NONE 1	STOP											
																		PRVTE	NW SE									022		00
																		PSNGR CAR		01	DRVR	INJC	29	M	OTH-Y		000	000		00
																									OR<25					
																				02	PSNG	INJC	56	M			000	000		00
05413	N	N	N	N	N	11/22/2016	CLACKAMAS	1	14		INTER	CROSS	N		N	RAIN	S-1STOP	01	NONE 9	STRGHT											07
CITY			N			Tue 4P	OREGON CITY	MN 0		CLACKAMAS RIVER DR	NW		TRF SIGNAL		N	WET	REAR		N/A	NW SE									000		00
							PORTLAND UA	0.14		CASCADE HY SOUTH	06	2			N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45 22*	*15.33*	*-122*	*35*	*8.39*			016000100S00		1																UNK					
																	02	NONE 9	STOP											
																		N/A	NW SE									011		00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																									UNK					
05164	N	N	N	N	N	12/05/2017	CLACKAMAS	1	14		INTER	CROSS	N		N	CLR	S-1STOP	01	NONE 0	STRGHT											29,32
CITY			N			Tue 9A	OREGON CITY	MN 0		CLACKAMAS RIVER DR	NW		TRF SIGNAL		N	DRY	REAR		PRVTE	NW SE									000		00
							PORTLAND UA	0.14		CASCADE HY SOUTH	06	1			N	DAY	INJ		PSNGR CAR		01	DRVR	INJA	33	M	OR-Y		026,052	000		29,32
No	*45 22*	*15.33*	*-122*	*35*	*8.39*			016000100S00		1																OR<25					

160 CASCADE HWY SOUTH

Intersectional Crashes at OR-213 & Clackamas River Dr / Prairie Schooner Wy
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG / MIL	SCH BUS	WORK ZONE	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																02	NONE 0 PRVTE	STOP NW SE									011	00
																	PSNGR CAR		01	DRVR	INJB	26	F	OR-Y OR<25		000	000	00
																			02	PSNG	INJB	04	M			000	000	00
02997 NONE	N	N	N N			08/05/2014 Tue 11A	CLACKAMAS OREGON CITY	1 14 MN 0	CLACKAMAS RIVER DR	INTER CN	CROSS	N TRF SIGNAL	N	CLR DRY	ANGL-OTH TURN	01	NONE 0 PRVTE	TURN-L NW NE									000	04 00
No						*45 22 15.33 -122 35 8.39*	PORTLAND UA	0.14 016000100S00	CASCADE HY SOUTH 1	01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	68	F	OTH-Y N-RES	003	000	04
																02	NONE 0 PRVTE	STRGHT NE SW									000	00
																	PSNGR CAR		01	DRVR	INJB	29	F	OR-Y OR<25		000	000	00
																			02	PSNG	INJB	05	M			000	000	00
03266 NO RPT	N	N	N N			08/22/2014 Fri 7A	CLACKAMAS OREGON CITY	1 14 MN 0	CLACKAMAS RIVER DR	INTER CN	CROSS	N TRF SIGNAL	N	UNK UNK	ANGL-OTH ANGL	01	NONE 0 PRVTE	STRGHT UN UN									000	16,04 00
No						*45 22 15.33 -122 35 8.39*	PORTLAND UA	0.14 016000100S00	CASCADE HY SOUTH 1	01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	44	F	OR-Y OR<25	000	000	00
																02	NONE 0 PRVTE	STRGHT NW SE									000	00
																	PSNGR CAR		01	DRVR	NONE	23	M	UNK OR>25	020	025	16,04
02654 NONE	N	N	N N			07/01/2015 Wed 10A	CLACKAMAS OREGON CITY	1 14 MN 0	CLACKAMAS RIVER DR	INTER CN	CROSS	N TRF SIGNAL	N	CLR DRY	S-1TURN TURN	01	NONE 0 PRVTE	TURN-R N W									000	08 00
No						*45 22 15.33 -122 35 8.39*	PORTLAND UA	0.14 016000100S00	CASCADE HY SOUTH 1	01	0		N	DAY	PDO		TRUCK		01	DRVR	NONE	00	M	OR-Y OR<25	006	000	08
																02	NONE 0 PRVTE	STRGHT N S									000	00
																	PSNGR CAR		01	DRVR	NONE	71	F	OR-Y OR<25		000	000	00
02088 CITY	N	N	N N	N	N	05/28/2017 Sun 7A	CLACKAMAS OREGON CITY	1 14 MN 0	PRAIRIE SCHOONER WY	INTER CN	CROSS	N TRF SIGNAL	N	CLR DRY	ANGL-OTH TURN	01	NONE 0 PRVTE	STRGHT N S									000	04 00
No						*45 22 15.33 -122 35 8.39*	PORTLAND UA	0.14 016000100S00	CASCADE HY SOUTH 1	01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	49	M	NONE OR<25	097	000	00
																			02	PSNG	INJC	42	M			000	000	00
																02	NONE 0 PRVTE	TURN-R W S									000	00
																	PSNGR CAR		01	DRVR	INJC	56	F	OR-Y OR<25		000	000	

160 CASCADE HWY SOUTH

Intersectional Crashes at OR-213 & Clackamas River Dr / Prairie Schooner Wy
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# CMPT/MLG MILEPNT LRS	FC	CONN # FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
00114	N	N	N			01/10/2018	CLACKAMAS	1	14		INTER	CROSS	N		N CLR	ANGL-OTH	01	NONE 0	TURN-R										04
NONE			N			Wed 11A	OREGON CITY	MN 0		CLACKAMAS RIVER DR	CN		TRF SIGNAL		N DRY	TURN		PRVTE	NE NW									000	00
							PORTLAND UA	0.14		CASCADE HY SOUTH	02	0			N DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	F	UNK		020	000	04
No						*45 22 15.33 -122 35 8.39*		016000100S00		1															N-RES				
																	02	NONE 0	STRGHT										
																		PRVTE	SE NW									000	00
																		PSNGR CAR		01	DRVR	INJC	19	F	OR-Y		000	000	00
																									OR<25				
04050	N	N	N	N	N	11/06/2018	CLACKAMAS	1	14		INTER	3-LEG	N		N CLR	S-1STOP	01	NONE 9	STRGHT										07,29
CITY			N			Tue 1P	OREGON CITY	MN 0		CLACKAMAS RIVER DR	CN		NONE		N DRY	REAR		N/A	S N									000	00
							PORTLAND UA	0.14		CASCADE HY SOUTH	04	0			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No						*45 22 15.33 -122 35 8.37*		016000100S00		1															UNK				
																	02	NONE 9	STOP										
																		N/A	S N									011	00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																									UNK				

Intersectional Crashes at OR99E, Pacific Hwy (#081) & River Rd / Arlington St
January 1, 2014 through December 31, 2018

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2018														
REAR-END	0	3	3	6	0	6	0	5	1	4	2	6	0	0
TURNING MOVEMENTS	0	4	2	6	0	7	0	4	2	4	2	6	0	0
2018 TOTAL	0	7	5	12	0	13	0	9	3	8	4	12	0	0
YEAR: 2017														
ANGLE	0	1	1	2	0	4	0	0	2	1	1	2	0	0
REAR-END	0	2	0	2	0	2	0	0	2	2	0	2	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	0	1	0	1	1	0	0
2017 TOTAL	0	3	2	5	0	6	0	0	5	3	2	5	0	0
YEAR: 2016														
PEDESTRIAN	0	2	0	2	0	2	0	2	0	1	1	2	0	0
REAR-END	0	2	2	4	0	2	0	3	1	4	0	4	0	0
TURNING MOVEMENTS	0	4	3	7	0	7	0	4	3	4	3	7	0	0
2016 TOTAL	0	8	5	13	0	11	0	9	4	9	4	13	0	0
YEAR: 2015														
REAR-END	0	1	0	1	0	1	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	9	4	13	0	10	0	9	4	8	5	13	0	0
2015 TOTAL	0	10	4	14	0	11	0	10	4	9	5	14	0	0
YEAR: 2014														
ANGLE	0	1	0	1	0	3	0	0	1	0	1	1	0	0
FIXED / OTHER OBJECT	0	1	0	1	0	1	0	1	0	1	0	1	0	1
REAR-END	0	4	2	6	0	5	0	5	1	4	2	6	0	0
TURNING MOVEMENTS	0	4	0	4	0	5	0	3	1	4	0	4	0	0
2014 TOTAL	0	10	2	12	0	14	0	9	3	9	3	12	0	1
FINAL TOTAL	0	38	18	56	0	55	0	37	19	38	18	56	0	1

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & River Rd / Arlington St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	MCH	SCH BUS	WORK ZONE	DAY/TIME / CITY / URBAN AREA	LAT/LONG	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS / RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
04695	N	N	N	N	N		10/11/2016		CLACKAMAS	1 14	INTER	CROSS	N		N CLR	S-1STOP	01	NONE 0	STRGHT											29
CITY		N					Tue 2P		GLADSTONE	MN 0 ARLINGTON ST	N		TRF SIGNAL		N DRY	REAR		PUBLC	N S									000		00
									PORTLAND UA	11.02 MCLOUGHLIN BLVD	06	0			N DAY	INJ		SCHL BUS		01	DRVR	NONE	68	M	OR-Y		026	000		29
No	*45*	*22*		*32.10*	*-122*	*36*	*6.28*		008100100S00	1															OR<25					
																	02	NONE 0	STOP											
																		PRVTE	N S									011		00
																		PSNGR CAR		01	DRVR	INJC	58	F	OR-Y		000	000		00
																									OR<25					
04739	N	N	N				10/13/2016		CLACKAMAS	1 14	INTER	CROSS	N		N RAIN	S-1STOP	01	NONE 9	STRGHT											29
NONE		N					Thu 3P		GLADSTONE	MN 0 ARLINGTON ST	N		TRF SIGNAL		N WET	REAR		N/A	N S									000		00
									PORTLAND UA	11.02 MCLOUGHLIN BLVD	06	0			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45*	*22*		*32.10*	*-122*	*36*	*6.28*		008100100S00	1															UNK					
																	02	NONE 9	STOP											
																		N/A	N S									011		00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																									UNK					
01142	N	N	N	N	N		03/22/2014		CLACKAMAS	1 14	INTER	CROSS	N		Y CLR	FIX OBJ	01	NONE 0	TURN-L										040	08
NONE		N					Sat 10A		GLADSTONE	MN 0 ARLINGTON ST	NE		TRF SIGNAL		N DRY	FIX		PRVTE	N NE									000	040	00
									PORTLAND UA	11.02 MCLOUGHLIN BLVD	05	0			N DAY	INJ		MTRCYCLE		01	DRVR	INJC	35	M	OR-Y		001	000		08
No	*45*	*22*		*32.10*	*-122*	*36*	*6.28*		008100100S00	1															OR<25					
04522	N	N	N	N	N		10/01/2016		CLACKAMAS	1 14	INTER	CROSS	N		N CLR	PED	01	NONE 0	TURN-R											02
CITY		N					Sat 9A		GLADSTONE	MN 0 ARLINGTON ST	NE		TRF SIGNAL		N DRY	PED		PRVTE	NE N									016		00
									PORTLAND UA	11.02 MCLOUGHLIN BLVD	06	0			N DAY	INJ		PSNGR CAR		01	DRVR	NONE	35	M	OR-Y		029	000		02
No	*45*	*22*		*32.10*	*-122*	*36*	*6.28*		008100100S00	1															OR<25					
																			STRGHT	01	PED	INJB	46	F		01	000	035		00
																			S N											
02670	N	N	N				06/13/2016		CLACKAMAS	1 14	INTER	CROSS	N		N CLR	O-OTHER	01	NONE 9	TURN-L											08
NONE		N					Mon 1P		GLADSTONE	MN 0 ARLINGTON ST	S		TRF SIGNAL		N DRY	TURN		N/A	E S									000		00
									PORTLAND UA	11.02 MCLOUGHLIN BLVD	05	0			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45*	*22*		*32.10*	*-122*	*36*	*6.28*		008100100S00	1															UNK					
																	02	NONE 9	TURN-R											
																		N/A	W S									000		00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																									UNK					
00903	N	N	N	N	N		03/03/2014		CLACKAMAS	1 14	INTER	CROSS	N		N RAIN	S-1STOP	01	NONE 0	STRGHT											07
CITY		N					Mon 4A		GLADSTONE	MN 0 ARLINGTON ST	S		TRF SIGNAL		N WET	REAR		PRVTE	S N									000		00
									PORTLAND UA	11.02 MCLOUGHLIN BLVD	06	0			N DLIT	INJ		PSNGR CAR		01	DRVR	INJB	29	F	OR-Y		026,043	000		
No	*45*	*22*		*32.10*	*-122*	*36*	*6.28*		008100100S00	1															OR<25					

081 PACIFIC HIGHWAY EAST
Intersectional Crashes at OR99E, Pacific Hwy (#081) & River Rd / Arlington St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG / MJ	SCHL BUS	WORK ZONE	HOUR	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# CMPT/MLG MILEPNT LRS	FC CONN # FIRST STREET SECOND STREET INTERSECTION SEQ#	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																	02	NONE 0 PRVTE	STOP S N									011	00
																		PSNGR CAR		01	DRVR	NONE	41	M	OR-Y OR<25		000	000	00
03092 CITY	Y	N	N N				08/09/2014 Sat 1P	CLACKAMAS GLADSTONE	1 14 MN 0	ARLINGTON ST	INTER S	CROSS	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT S N									000	27,01,29 00
								PORTLAND UA	11.02	MCLOUGHLIN BLVD	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	42	F	OR-Y OR<25		016,047,026	000	27,01,29
No	*45*	*22*	*32.10*	*-122*	*36*	*6.28*			008100100S00	1																			
																	02	NONE 0 PRVTE	STOP S N									011	00
																		PSNGR CAR		01	DRVR	NONE	67	M	OR-Y OR<25		000	000	00
03370 NONE	N	N	N N				07/25/2016 Mon 12P	CLACKAMAS GLADSTONE	1 14 MN 0	ARLINGTON ST	INTER S	CROSS	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 9 N/A	STRGHT S N									000	29 00
								PORTLAND UA	11.02	MCLOUGHLIN BLVD	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
No	*45*	*22*	*32.10*	*-122*	*36*	*6.28*			008100100S00	1																			
																	02	NONE 9 N/A	STOP S N									011	00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
05420 NONE	N	N	N N				12/19/2017 Tue 8A	CLACKAMAS GLADSTONE	1 14 MN 0	ARLINGTON ST	INTER S	CROSS	N TRF SIGNAL	N	RAIN WET	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT S N									000	29 00
								PORTLAND UA	11.02	MCLOUGHLIN BLVD	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	68	M	OR-Y OR<25		026	000	29
No	*45*	*22*	*32.10*	*-122*	*36*	*6.28*			008100100S00	1																			
																	02	NONE 0 PRVTE	STOP S N									011	00
																		PSNGR CAR		01	DRVR	INJC	44	F	OR-Y OR<25		000	000	00
01163 CITY	N	N	N N	N	N		04/06/2018 Fri 1P	CLACKAMAS GLADSTONE	1 14 MN 0	ARLINGTON ST	INTER S	CROSS	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT S N									000	29 00
								PORTLAND UA	11.02	MCLOUGHLIN BLVD	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	59	F	OR-Y OR<25		026	000	29
No	*45*	*22*	*32.12*	*-122*	*36*	*6.31*			008100100S00	1																			
																	02	NONE 0 PRVTE	STOP S N									011	00
																		PSNGR CAR		01	DRVR	INJC	27	F	OR-Y OR>25		000	000	00
																				02	PSNG	INJC	27	M			000	000	00

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & River Rd / Arlington St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG / MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / LRS	FC / MILEPNT	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
02570	N	N	N			07/24/2018	CLACKAMAS	1	14		INTER	CROSS	N		N CLR	S-1STOP	01	NONE 9	STRGHT											29
NONE			N			Tue 2P	GLADSTONE	MN 0		ARLINGTON ST	S		TRF SIGNAL		N DRY	REAR		N/A	S N									000		00
							PORTLAND UA	11.02		MCLOUGHLIN BLVD	06	0			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45*	*22*	*32.10*	*-122*	*36*	*6.28*		008100100	S00	1															UNK					
																	02	NONE 9	STOP									011		00
																		N/A	S N											
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																									UNK					
04477	N	N	N	N	N	09/29/2016	CLACKAMAS	1	14		INTER	CROSS	N		N CLR	PED	01	NONE 0	TURN-R											02,19
CITY			N			Thu 7P	GLADSTONE	MN 0		MCLOUGHLIN BLVD	W		TRF SIGNAL		N DRY	PED		PRVTE	N W								000		00
							PORTLAND UA	11.02		RIVER RD	05	0			N DUSK	INJ		PSNGR CAR		01	DRVR	NONE	55	F	OR-Y		029	000		02
No	*45*	*22*	*32.10*	*-122*	*36*	*6.28*		008100100	S00	1															OR<25					
																			STRGHT	01	PED	INJC	62	M		01	000	035		19
																			UN UN											
02992	N	N	N	N	N	07/25/2015	CLACKAMAS	1	14		INTER	CROSS	N		N CLD	BIKE													110	02
COUNTY			N			Sat 6P	GLADSTONE	MN 0		MCLOUGHLIN BLVD	NW		TRF SIGNAL		N WET	TURN													
							PORTLAND UA	11.02		RIVER RD	05	0			N DAY	INJ			STRGHT	01	BIKE	INJC	25	M		01	028	035	110	02
No	*45*	*22*	*32.10*	*-122*	*36*	*6.28*		008100100	S00	1									S N											
																	01	NONE 0	TURN-L											
																		PRVTE	S NW									000		00
																		PSNGR CAR		01	DRVR	NONE	67	M	OR-Y		000	000		00
																									OR<25					
03086	N	N	N			07/30/2015	CLACKAMAS	1	14		INTER	CROSS	N		N CLR	BIKE													110	02
NONE			N			Thu 10A	GLADSTONE	MN 0		MCLOUGHLIN BLVD	NW		TRF SIGNAL		N DRY	TURN													
							PORTLAND UA	11.02		RIVER RD	05	0			N DAY	INJ			STRGHT	01	BIKE	INJB	00	M		03	000	035		00
No	*45*	*22*	*32.10*	*-122*	*36*	*6.28*		008100100	S00	1									N S											
																	01	NONE 0	TURN-R											
																		PRVTE	N NW									015		00
																		PSNGR CAR		01	DRVR	NONE	36	M	OR-Y		000	000		00
																									OR<25					
02313	N	N	N	N	N	06/16/2014	CLACKAMAS	1	14		INTER	CROSS	N		N RAIN	O-1 L-TURN	01	NONE 0	TURN-L											02
STATE			N			Mon 4P	GLADSTONE	MN 0		ARLINGTON ST	CN		TRF SIGNAL		N WET	TURN		PRVTE	S W								000		00
							PORTLAND UA	11.02		MCLOUGHLIN BLVD	01	0			N DAY	INJ		PSNGR CAR		01	DRVR	NONE	35	F	OR-Y		028	000		02
No	*45*	*22*	*32.10*	*-122*	*36*	*6.28*		008100100	S00	1															OR<25					
																	02	NONE 0	STRGHT											
																		PRVTE	N S									000		00
																		PSNGR CAR		01	DRVR	INJC	37	F	OR-Y		000	000		00
																									OR<25					

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & River Rd / Arlington St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / LRS	FC	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
04033	N	N	N	N	N	10/10/2014	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										013	02,08
STATE		N				Fri 11A	GLADSTONE	MN 0		MCLOUGHLIN BLVD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N S									000		00
							PORTLAND UA	11.02		RIVER RD	01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	48	M	OR-Y		000	000		00
No						*45 22 32.10 -122 36 6.28*		008100100		S00 1															OR<25					
																	02	NONE 0	TURN-L									000	013	00
																		PRVTE	S W											
																		PSNGR CAR		01	DRVR	NONE	24	M	OR-Y		028,004	000		02,08
																									OR<25					
																	03	NONE 0	STOP									022		00
																		PRVTE	W E											
																		PSNGR CAR		01	DRVR	INJC	67	M	OR-Y		000	000		00
																									OR<25					
04705	N	N	N	N	N	11/20/2014	CLACKAMAS	1	14		INTER	CROSS	N	N	CLD	O-1 L-TURN	01	NONE 0	STRGHT											02,08
NONE		N				Thu 2P	GLADSTONE	MN 0		MCLOUGHLIN BLVD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N S									000		00
							PORTLAND UA	11.02		RIVER RD	01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	60	M	OR-Y		000	000		00
No						*45 22 32.10 -122 36 6.28*		008100100		S00 1															OR<25					
																	02	NONE 0	TURN-L									000		00
																		PRVTE	S NW											
																		PSNGR CAR		01	DRVR	INJB	77	F	OR-Y		028,004	000		02,08
																									OR<25					
																				02	PSNG	INJC	12	F			000	000		00
01265	N	N	N	N	N	04/09/2015	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										013	02
CITY		N				Thu 11A	GLADSTONE	MN 0		MCLOUGHLIN BLVD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N S									000		00
							PORTLAND UA	11.02		RIVER RD	01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	56	M	OR-Y		000	000		00
No						*45 22 32.10 -122 36 6.28*		008100100		S00 1															OR<25					
																	02	NONE 0	TURN-L									000	013	00
																		PRVTE	S NW											
																		PSNGR CAR		01	DRVR	INJB	91	F	OR-Y		028,004	000		02
																									OR<25					
																	03	NONE 0	STOP									022	013	00
																		PRVTE	S N											
																		PSNGR CAR		01	DRVR	NONE	16	M	OR-Y		000	000		00
																									OR<25					
																	04	NONE 0	STOP									022		00
																		PRVTE	S N											
																		PSNGR CAR		01	DRVR	NONE	17	M	OR-Y		000	000		00
																									OR<25					

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & River Rd / Arlington St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG / MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / LRS	FC / MILEPNT	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
01366	N	N	N	N	N	04/16/2015	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										02
NONE		N				Thu 12P	GLADSTONE	MN 0		MCLOUGHLIN BLVD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N S								000	00
							PORTLAND UA	11.02		RIVER RD	01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	61	F	OR-Y		000	000	00
No						*45 22 32.10 -122 36 6.28*		008100100		S00 1															OR<25				
																	02	NONE 0	TURN-L										
																		PRVTE	S W									000	00
																		PSNGR CAR		01	DRVR	NONE	63	F	OR-Y		028,004	000	02
																									OR>25				
01746	N	N	N	N	N	05/09/2015	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										02
STATE		N				Sat 11A	GLADSTONE	MN 0		ARLINGTON ST	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N S								000	00
							PORTLAND UA	11.02		MCLOUGHLIN BLVD	01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	26	M	OR-Y		000	000	00
No						*45 22 32.10 -122 36 6.28*		008100100		S00 1															OR<25				
																	02	NONE 0	TURN-L										
																		PRVTE	S W									000	00
																		PSNGR CAR		01	DRVR	NONE	18	F	OR-Y		028,004	000	02
																									OR<25				
04179	Y	N	N	N	N	08/25/2015	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	S-1TURN	01	NONE 0	STRGHT										01,08
CITY		N				Tue 11P	GLADSTONE	MN 0		MCLOUGHLIN BLVD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N S								000	00
							PORTLAND UA	11.02		RIVER RD	01	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	22	M	OTH-Y		047	000	01
No						*45 22 32.10 -122 36 6.28*		008100100		S00 1															OR<25				
																	02	NONE 1	TURN-R										
																		PRVTE	N W									000	00
																		PSNGR CAR		01	DRVR	NONE	59	M	OTH-Y		006	000	08
																									N-RES				
04665	N	N	N			11/07/2015	CLACKAMAS	1	14		INTER	CROSS	N	N	UNK	O-1 L-TURN	01	NONE 0	STRGHT										02
NO RPT		N				Sat 10P	GLADSTONE	MN 0		ARLINGTON ST	CN		TRF SIGNAL	N	WET	TURN		PRVTE	N S								000	00
							PORTLAND UA	11.02		MCLOUGHLIN BLVD	01	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJB	62	M	OR-Y		000	000	00
No						*45 22 32.10 -122 36 6.28*		008100100		S00 1															OR<25				
																	02	NONE 0	TURN-L										
																		PRVTE	S W									000	00
																		PSNGR CAR		01	DRVR	NONE	22	M	OR-Y		028,004	000	02
																									OR<25				
02378	N	N	N	N	N	05/27/2016	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										02,08
CITY		N				Fri 4P	GLADSTONE	MN 0		ARLINGTON ST	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N S								000	00
							PORTLAND UA	11.02		MCLOUGHLIN BLVD	01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	53	F	OR-Y		000	000	00
No						*45 22 32.10 -122 36 6.28*		008100100		S00 1															OR<25				

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & River Rd / Arlington St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	HOUR	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																	02	NONE 0 PRVTE	TURN-L S NW									000	00
																		PSNGR CAR		01	DRVR	NONE	50	M	OR-Y OR<25		028,004	000	02,08
03466 STATE	N	N	N	N	N		07/30/2016 Sat 1P	CLACKAMAS GLADSTONE	1 14 MN 0	ARLINGTON ST	INTER CN	CROSS	N TRF SIGNAL	N	CLR DRY	O-1 L-TURN TURN	01	NONE 9 N/A	STRGHT N S									000	02 00
								PORTLAND UA	11.02	MCLOUGHLIN BLVD	01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
No		*45 22*	*32.10*	*-122 36*	*6.28*				008100100	S00	1																	
																	02	NONE 9 N/A	TURN-L S NW									000	00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
03734 CITY	N	N	N				08/15/2016 Mon 2P	CLACKAMAS GLADSTONE	1 14 MN 0	MCLOUGHLIN BLVD	INTER CN	CROSS	N TRF SIGNAL	N	CLD DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT N S									000	02,08 00
								PORTLAND UA	11.02	RIVER RD	01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	77	F	OR-Y OR<25		000	000	00
No		*45 22*	*32.10*	*-122 36*	*6.28*				008100100	S00	1																	
																	02	NONE 0 PRVTE	TURN-L S NW									000	00
																		PSNGR CAR		01	DRVR	NONE	34	M	OR-Y OR<25		028,004	000	02,08
																				02	PSNG	INJC	31	F			000	000	00
04976 NONE	N	N	N				10/26/2016 Wed 6P	CLACKAMAS GLADSTONE	1 14 MN 0	MCLOUGHLIN BLVD	INTER CN	CROSS	N TRF SIGNAL	N	RAIN WET	O-1 L-TURN TURN	01	NONE 9 N/A	STRGHT N S									000	04 00
								PORTLAND UA	11.02	RIVER RD	01	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
No		*45 22*	*32.10*	*-122 36*	*6.28*				008100100	S00	1																	
																	02	NONE 9 N/A	TURN-L S NW									000	00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
03831 STATE	N	N	N	N	N		09/17/2017 Sun 10P	CLACKAMAS GLADSTONE	1 14 MN 0	MCLOUGHLIN BLVD	INTER CN	CROSS	N TRF SIGNAL	N	RAIN WET	ANGL-OTH ANGL	01	NONE 0 PRVTE	STRGHT W E									000	04 00
								PORTLAND UA	11.02	RIVER RD	01	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	34	M	OTH-Y OR<25		097	000	00
No		*45 22*	*32.10*	*-122 36*	*6.28*				008100100	S00	1																	
																	02	NONE 0 PRVTE	STRGHT N S									000	00
																		PSNGR CAR		01	DRVR	INJC	44	M	OR-Y OR<25		097	000	00
																				02	PSNG	INJC	18	F			000	000	
																				03	PSNG	INJC	20	M			000	000	

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & River Rd / Arlington St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCH	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
01091	N	N	N	N	N	03/30/2018	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											02,08
CITY		N				Fri 9P	GLADSTONE	MN 0	MCLOUGHLIN BLVD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N S									000		00
							PORTLAND UA	11.02	RIVER RD	01	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	46	M	OR-Y		000	000		00
No	*45 22*	*32.10*	*-122 36*	*6.28*				008100100S00	1															OR<25					
																02	NONE 0	TURN-L											
																	PRVTE	S NW									000		00
																	PSNGR CAR		01	DRVR	NONE	68	M	OR-Y		028,004	000		02,08
																								OR<25					
00357	N	N	N			01/26/2017	CLACKAMAS	1 14		INTER	CROSS	N	N	UNK	ANGL-OTH	01	NONE 9	STRGHT											02,32
CITY		N				Thu 11A	GLADSTONE	MN 0	ARLINGTON ST	CN		TRF SIGNAL	N	WET	ANGL		N/A	S N									000		00
							PORTLAND UA	11.02	MCLOUGHLIN BLVD	02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45 22*	*32.10*	*-122 36*	*6.28*				008100100S00	1															UNK					
																02	NONE 9	TURN-R											
																	N/A	SE N									016		00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																								UNK					
03323	N	N	N	N	Y	08/26/2014	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										013	07
STATE		N				Tue 1P	GLADSTONE	MN 0	ARLINGTON ST	CN		TRF SIGNAL	N	DRY	REAR		PRVTE	N S									000		00
							PORTLAND UA	11.02	MCLOUGHLIN BLVD	03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	22	M	OR-Y		043,026	000		07
No	*45 22*	*32.10*	*-122 36*	*6.28*				008100100S00	1															OR<25					
																02	NONE 0	STOP											
																	PRVTE	N S									011	013	00
																	PSNGR CAR		01	DRVR	NONE	21	F	OR-Y		000	000		00
																								OR<25					
																03	NONE 0	STOP											
																	PRVTE	N S									022		00
																	PSNGR CAR		01	DRVR	NONE	79	M	OR-Y		000	000		00
																								OR<25					
05221	N	N	N	N	N	12/23/2014	CLACKAMAS	1 14		INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT											04
STATE		N				Tue 6A	GLADSTONE	MN 0	MCLOUGHLIN BLVD	CN		TRF SIGNAL	N	WET	ANGL		PRVTE	N S									000		00
							PORTLAND UA	11.02	RIVER RD	03	0		N	DAWN	INJ		PSNGR CAR		01	DRVR	INJC	54	F	OR-Y		000	000		00
No	*45 22*	*32.10*	*-122 36*	*6.28*				008100100S00	1															OR<25					
																02	NONE 0	STRGHT											
																	PRVTE	W E									000		00
																	PSNGR CAR		01	DRVR	INJC	44	F	OR-Y		020	000		04
																								OR<25					
																			02	PSNG	INJC	19	M			000	000		

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & River Rd / Arlington St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG / MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# CMPT/MILEPNT LRS	FC / MLG / CONN # FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00448	N	N	N			02/04/2015	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	TURN-R											02
NONE		N				Wed 10A	GLADSTONE	MN 0	MCLOUGHLIN BLVD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	NW S										015		00
							PORTLAND UA	11.02	RIVER RD	03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	96	F	OR-Y		028	000		02
No						*45 22 32.10 -122 36 6.28*		008100100S00	1															OR<25					
																02	NONE 0	STRGHT											
																	PRVTE	N S									000		00
																	PSNGR CAR		01	DRVR	NONE	00	M	OR-Y		000	000		00
																								OR<25					
00496	N	N	N	N	N	02/07/2015	CLACKAMAS	1 14		INTER	CROSS	N	N	RAIN	O-1 L-TURN	01	NONE 0	TURN-L											02
CITY		N				Sat 6P	GLADSTONE	MN 0	MCLOUGHLIN BLVD	CN		TRF SIGNAL	N	WET	TURN		PRVTE	S NW									000		00
							PORTLAND UA	11.02	RIVER RD	03	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJB	71	F	OR-Y		028	000		02
No						*45 22 32.10 -122 36 6.28*		008100100S00	1															OR<25					
																02	NONE 0	STRGHT											
																	PRVTE	N S									000		00
																	PSNGR CAR		01	DRVR	NONE	27	M	OR-Y		000	000		00
																								OR<25					
																			02	PSNG	NO<5	03	F			000	000		00
03643	N	N	N			09/05/2015	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											02
NONE		N				Sat 6P	GLADSTONE	MN 0	MCLOUGHLIN BLVD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	W E									000		00
							PORTLAND UA	11.02	RIVER RD	03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	38	M	OR-Y		000	000		00
No						*45 22 32.10 -122 36 6.28*		008100100S00	1															OR<25					
																02	NONE 0	TURN-L											
																	PRVTE	E S									000		00
																	PSNGR CAR		01	DRVR	NONE	63	M	OR-Y		028,004	000		02
																								OR<25					
01116	N	N	N	N	N	03/04/2016	CLACKAMAS	1 14		INTER	CROSS	N	N	CLD	S-STRGHT	01	NONE 0	STRGHT											26,29
STATE		N				Fri 2P	GLADSTONE	MN 0	MCLOUGHLIN BLVD	CN		TRF SIGNAL	N	DRY	REAR		PUBLC	N S									007		00
							PORTLAND UA	11.02	RIVER RD	03	0		N	DAY	INJ		OTH BUS		01	DRVR	NONE	61	M	OR-Y		042	000		29
No						*45 22 32.10 -122 36 6.28*		008100100S00	1															OR<25					
																			02	PSNG	INJB	67	M			000	000		00
																02	NONE 0	STRGHT											
																	PRVTE	N S									007		00
																	PSNGR CAR		01	DRVR	NONE	37	F	OTH-Y		000	000		26
																								N-RES					
																			02	PSNG	NO<5	02	M			000	000		00
01698	N	N	N			04/14/2016	CLACKAMAS	1 14		INTER	CROSS	N	N	CLD	O-1 L-TURN	01	NONE 0	TURN-L										013	02
CITY		N				Thu 8P	GLADSTONE	MN 0	MCLOUGHLIN BLVD	CN		TRF SIGNAL	N	WET	TURN		PRVTE	S NW									000		00
							PORTLAND UA	11.02	RIVER RD	03	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	67	M	OR-Y		028	000		
No						*45 22 32.10 -122 36 6.28*		008100100S00	1															OR<25					

Item #2.

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & River Rd / Arlington St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLEPNT / LRS	FC / MLG / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																			02	PSNG	INJC	65	F			000	000		00
																02	NONE 0 PRVTE	STRGHT N S									000	013	00
																	PSNGR CAR		01	DRVR	INJC	24	M	OR-Y OR<25		000	000		00
																03	NONE 0 PRVTE	STOP NW SE									022		00
																	PSNGR CAR		01	DRVR	NONE	24	M	OR-Y OR<25		000	000		00
04496	N	N	N	N	N	10/21/2017	CLACKAMAS	1 14		INTER	CROSS	N	N	RAIN	O-1 L-TURN	01	NONE 9	TURN-L											02
COUNTY		N		Sat	6A	GLADSTONE	MN 0	ARLINGTON ST		CN		TRF SIGNAL	N	WET	TURN		N/A	E S								000		00
						PORTLAND UA	11.02	MCLOUGHLIN BLVD		03	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
No	*45*	*22*	*32.10*	*-122*	*36*	*6.28*	008100100S00		1																				
																02	NONE 9 N/A	STRGHT W E									000		00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
03970	N	N	N			10/31/2018	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 9	STRGHT											04
NONE		N		Wed	12P	GLADSTONE	MN 0	ARLINGTON ST		CN		TRF SIGNAL	N	DRY	TURN		N/A	N S								000		00
						PORTLAND UA	11.02	MCLOUGHLIN BLVD		03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
No	*45*	*22*	*32.10*	*-122*	*36*	*6.27*	008100100S00		1																				
																02	NONE 9 N/A	TURN-L W N									000		00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
04325	N	N	N	N	N	11/27/2018	CLACKAMAS	1 14		INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE 9	STRGHT											02
CITY		N		Tue	5P	GLADSTONE	MN 0	MCLOUGHLIN BLVD		CN		TRF SIGNAL	N	WET	TURN		N/A	N S								000		00
						PORTLAND UA	11.02	RIVER RD		03	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
No	*45*	*22*	*32.10*	*-122*	*36*	*6.28*	008100100S00		1																				
																02	NONE 9 N/A	TURN-R NW S									015		00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
02806	N	N	N	N	N	07/21/2014	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											04
CITY		N		Mon	12P	GLADSTONE	MN 0	ARLINGTON ST		CN		TRF SIGNAL	N	DRY	TURN		PRVTE	S N								000		00
						PORTLAND UA	11.02	MCLOUGHLIN BLVD		04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	33	F	OR-Y OR<25		000	000		00
No	*45*	*22*	*32.10*	*-122*	*36*	*6.28*	008100100S00		1																				

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & River Rd / Arlington St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																02	NONE 0 PRVTE	TURN-L E S									000		00
																	PSNGR CAR		01	DRVR	NONE	63	F	OR-Y OR<25		003	000		04
01647	N	N	N	N	N	05/03/2015	CLACKAMAS	1	14	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											02
CITY		N				Sun 5P	GLADSTONE	MN 0	ARLINGTON ST	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	S N									000		00
							PORTLAND UA	11.02	MCLOUGHLIN BLVD	04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	20	M	OR-Y OR<25		000	000		00
No	*45 22*		*32.10*	*-122 36*	*6.28*			008100100	S00	1																			
																02	NONE 1 PRVTE	TURN-L N NE									000		00
																	PSNGR CAR		01	DRVR	NONE	63	F	OTH-Y OR<25		028,004	000		02
04533	N	N	N	N	N	10/03/2016	CLACKAMAS	1	14	INTER	CROSS	N	N	RAIN	O-1 L-TURN	01	NONE 0	TURN-L											02
CITY		N				Mon 8P	GLADSTONE	MN 0	ARLINGTON ST	CN		TRF SIGNAL	N	WET	TURN		PRVTE	NW NE									000		00
							PORTLAND UA	11.02	MCLOUGHLIN BLVD	04	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	53	F	OR-Y OR<25		028,004	000		02
No	*45 22*		*32.10*	*-122 36*	*6.28*			008100100	S00	1																			
																02	NONE 0 PRVTE	STRGHT SE NW									000		00
																	PSNGR CAR		01	DRVR	INJB	57	M	OR-Y OR<25		000	000		00
01185	N	N	N	N	N	04/07/2018	CLACKAMAS	1	14	INTER	CROSS	N	N	RAIN	O-1 L-TURN	01	NONE 0	STRGHT											02,08
CITY		N				Sat 6P	GLADSTONE	MN 0	ARLINGTON ST	CN		TRF SIGNAL	N	WET	TURN		PRVTE	S N									000		00
							PORTLAND UA	11.02	MCLOUGHLIN BLVD	04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	58	M	OR-Y OR<25		000	000		00
No	*45 22*		*32.10*	*-122 36*	*6.28*			008100100	S00	1									02	PSNG	INJC	60	F			000	000		00
																			03	PSNG	INJC	12	F			000	000		00
																02	NONE 0 PRVTE	TURN-L N NE									000		00
																	PSNGR CAR		01	DRVR	NONE	16	F	OR-Y OR<25		028,004	000		02,08
																			02	PSNG	INJC	16	F			000	000		00
01871	N	N	N			06/01/2018	CLACKAMAS	1	14	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										013	02,08
CITY		N				Fri 2P	GLADSTONE	MN 0	ARLINGTON ST	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	S N									000		00
							PORTLAND UA	11.02	MCLOUGHLIN BLVD	04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	71	M	OR-Y OR<25		000	000		00
No	*45 22*		*32.10*	*-122 36*	*6.28*			008100100	S00	1																			
																02	NONE 0 PRVTE	TURN-L N E									000	013	00
																	PSNGR CAR		01	DRVR	INJC	58	M	OR-Y OR<25		028	000		

Item #2.

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & River Rd / Arlington St
January 1, 2014 through December 31, 2018

SER# INVEST UNLOC?	SPEED	ALC	DRUG/MJ	SCHL	WORK	DATE DAY/TIME *LAT/LONG*	COUNTY CITY URBAN AREA	RD# FC CMPT/MLG MILEPNT LRS	CONN # FIRST STREET SECOND STREET INTERSECTION SEQ#	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF- CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																03	NONE 0 PRVTE	PRKD-P UN UN									008	00
																	PSNGR CAR											
04245	N	N	N	N	N	11/20/2018	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										02,08
CITY		N		Tue	9A		GLADSTONE	MN 0	ARLINGTON ST	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	S N									000	00
							PORTLAND UA	11.02	MCLOUGHLIN BLVD	04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	48	M	SUSP		000	000	00
No	*45*	*22*	*32.11*	*-122*	*36*	*6.29*		008100100S00	1															OR<25				
																02	NONE 0	TURN-L										
																	PRVTE	N NE									000	00
																	PSNGR CAR		01	DRVR	NONE	57	F	OR-Y		028,004	000	02,08
																								OR<25				
																			02	PSNG	INJC	43	F			000	000	00
05165	N	N	N	N	N	12/04/2015	CLACKAMAS	1 14		INTER	CROSS	N	N	CLD	O-1 L-TURN	01	NONE 0	TURN-L										02
STATE		N		Fri	5P		GLADSTONE	MN 0	ARLINGTON ST	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N E									000	00
							PORTLAND UA	11.03	MCLOUGHLIN BLVD	04	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJB	26	F	OR-Y		028	000	02
No	*45*	*22*	*31.59*	*-122*	*36*	*6.24*		008100100S00	1															OR<25				
																02	NONE 0	STRGHT										
																	PRVTE	S N									000	00
																	PSNGR CAR		01	DRVR	INJB	30	M	OR-Y		000	000	00
																								OR<25				

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF GLADSTONE, CLACKAMAS COUNTY

Intersectional Crashes at OR99E, Pacific Hwy (#081) & River Rd / Arlington St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00262	N	N	N			01/20/2014	16	ARLINGTON ST	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
STATE			N			Mon 4P	0	MCLOUGHLIN BLVD	NE		TRF SIGNAL	N	DRY	REAR		UNKN	NE SW										000	00
No	*45 22 32.10*		*-122 36 6.28*				1		06	0		N	DAY	INJ		UNKNOWN		01	DRVR	NONE	00	U	UNK UNK		026	000		07
															02	NONE 0	STOP											
																PRVTE	NE SW										012	00
																PSNGR CAR		01	DRVR	INJC	58	M	OR-Y OR>25		000	000	00
																		02	PSNG	INJC	83	F			000	000		00
01593	N	N	N			04/26/2014	16	ARLINGTON ST	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE			N			Sat UNK	0	MCLOUGHLIN BLVD	NE		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW										000	00
No	*45 22 32.10*		*-122 36 6.28*				1		06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	32	F	OR-Y OR<25		026	000		07
															02	NONE 0	STOP											
																UNKN	NE SW										011	00
																PSNGR CAR		01	DRVR	NONE	00	F	UNK UNK		000	000		00
04655	N	N	N			11/17/2014	16	ARLINGTON ST	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE			N			Mon 6A	0	MCLOUGHLIN BLVD	NE		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW										000	00
No	*45 22 32.10*		*-122 36 6.28*				1		06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	19	F	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	NE SW										011	00
																PSNGR CAR		01	DRVR	INJC	46	M	OR-Y OR<25		000	000		00
04249	N	N	N	N	N	10/15/2015	16	ARLINGTON ST	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
CITY			N			Thu 6P	0	MCLOUGHLIN BLVD	NE		L-GRN-SIG	N	DRY	REAR		PRVTE	NE SW										000	00
No	*45 22 32.10*		*-122 36 6.28*				1		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	51	M	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	NE SW										012	00
																PSNGR CAR		01	DRVR	INJC	26	M	SUSP OR<25		000	000		00
04772	Y	N	N			11/13/2015	16	ARLINGTON ST	INTER	CROSS	N	N	RAIN	ANGL-STP	01	NONE 0	TURN-L											08,01
COUNTY			N			Fri 3A	0	MCLOUGHLIN BLVD	NE		TRF SIGNAL	N	WET	TURN		PRVTE	N NE										000	00
No	*45 22 32.10*		*-122 36 6.28*				1		06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	33	M	OR-Y OR<25		047,002	000		08,01
															02	NONE 0	STOP											
																PRVTE	E W										012	00
																OTH BUS		01	DRVR	NONE	34	M	OR-Y OR<25		000	000		
																		02	PSNG	INJC	22	F			000	000		

CITY OF GLADSTONE, CLACKAMAS COUNTY

Intersectional Crashes at OR99E, Pacific Hwy (#081) & River Rd / Arlington St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00676	N	N	N			02/22/2018	16	ARLINGTON ST	INTER	CROSS	N	N	UNK	S-1STOP	01	NONE 0	STRGHT											29
NONE			N			Thu 6P	0	MCLOUGHLIN BLVD	NE		TRF SIGNAL	N	WET	REAR		PRVTE	NE SW										000		00
No	*45 22 32.11*					*-122 36 6.28*		1	06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJB	31	F	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	NE SW									012		00
																PSNGR CAR		01	DRVR	NONE	56	M	OR-Y OR<25		000	000		00
01481	Y	N	N	N	N	05/02/2018	16	ARLINGTON ST	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29,32,30
CITY			N			Wed 1P	0	MCLOUGHLIN BLVD	NE		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW									000		00
No	*45 22 32.10*					*-122 36 6.28*		1	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	25	F	OR-Y OR<25		050,052,026	000		29,32,30
															02	NONE 0	STOP											
																PRVTE	NE SW									011		00
																PSNGR CAR		01	DRVR	INJC	56	F	OR-Y OR<25		000	000		00
02948	N	N	N			08/25/2018	16	ARLINGTON ST	INTER	CROSS	N	N	UNK	S-1STOP	01	NONE 9	STRGHT											29
NONE			N			Sat 9P	0	MCLOUGHLIN BLVD	NE		TRF SIGNAL	N	DRY	REAR		N/A	NE SW									000		00
No	*45 22 32.13*					*-122 36 6.26*		1	06	0		N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9	STOP											
																N/A	NE SW									011		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
00529	N	N	N			02/08/2017	14	MCLOUGHLIN BLVD	INTER	CROSS	N	N	UNK	S-1STOP	01	NONE 0	STRGHT											29
NONE			N			Wed 4P	0	RIVER RD	NW		TRF SIGNAL	N	WET	REAR		PRVTE	NW SE									000		00
No	*45 22 32.10*					*-122 36 6.28*		1	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	27	F	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	NW SE									011		00
																PSNGR CAR		01	DRVR	NONE	17	M	OR-Y OR<25		000	000		00
																		02	PSNG	INJC	00	F			000	000		00
00495	N	N	N			02/08/2018	16	MCLOUGHLIN BLVD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
NONE			N			Thu 9A	0	RIVER RD	NW		TRF SIGNAL	N	DRY	REAR		N/A	NW SE									000		00
No	*45 22 32.11*					*-122 36 6.28*		1	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9	STOP											
																N/A	NW SE									011		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00

Intersectional Crashes at OR99E, Pacific Hwy (#081) & I205 SB Off/On Ramp Terminal
January 1, 2014 through December 31, 2018

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2018														
REAR-END	0	2	0	2	0	2	0	2	0	1	1	2	0	0
TURNING MOVEMENTS	0	4	1	5	0	6	0	4	1	3	2	5	0	0
2018 TOTAL	0	6	1	7	0	8	0	6	1	4	3	7	0	0
YEAR: 2017														
FIXED / OTHER OBJECT	0	0	1	1	0	0	0	1	0	1	0	1	0	1
REAR-END	0	1	3	4	0	2	1	4	0	3	1	4	0	0
TURNING MOVEMENTS	0	3	2	5	0	3	0	4	1	2	3	5	0	0
2017 TOTAL	0	4	6	10	0	5	1	9	1	6	4	10	0	1
YEAR: 2016														
REAR-END	0	1	3	4	0	2	0	3	1	3	1	4	0	0
SIDESWIPE - MEETING	0	1	0	1	0	2	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	3	0	3	0	4	0	3	0	2	1	3	0	0
2016 TOTAL	0	5	3	8	0	8	0	7	1	6	2	8	0	0
YEAR: 2015														
REAR-END	0	6	2	8	0	10	0	6	1	7	1	8	0	0
TURNING MOVEMENTS	0	4	1	5	0	5	0	4	1	3	2	5	0	0
2015 TOTAL	0	10	3	13	0	15	0	10	2	10	3	13	0	0
YEAR: 2014														
REAR-END	0	3	0	3	0	5	0	2	1	1	2	3	0	0
TURNING MOVEMENTS	0	1	4	5	0	1	0	5	0	2	3	5	0	0
2014 TOTAL	0	4	4	8	0	6	0	7	1	3	5	8	0	0
FINAL TOTAL	0	29	17	46	0	42	1	39	6	29	17	46	0	1

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

064 EAST PORTLAND FREEWAY

Intersectional Crashes at OR99E, Pacific Hwy (#081) & I205 SB Off/On Ramp Terminal
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALCHL	DRUGS	MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
02401	N	N	N				06/10/2017	CLACKAMAS	1 11	2	INTER	CROSS	N	Y	CLR	FIX OBJ	01	NONE 9	TURN-R										040	08
NONE		N					Sat 11A	OREGON CITY	CN 0	PACIFIC HY 99E	NE		TRF SIGNAL	N	DRY	FIX		N/A	E N									000		00
								PORTLAND UA	9.81	WB EX PAC HY 99E	06	1		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45 22*		*0.37 -122 36*		*3.40*				0064AR100S00	1																UNK				
01980	N	N	N				05/22/2017	CLACKAMAS	1 11	2	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	TURN-R											02
NONE		N					Mon 7A	OREGON CITY	CN 0	PACIFIC HY 99E	NE		YIELD	N	DRY	TURN		PRVTE	SE N									000		00
								PORTLAND UA	9.81	WB EX PAC HY 99E	09	2		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	58	F	OR-Y		028	000		02
No	*45 22*		*0.37 -122 36*		*3.40*				0064AR100S00	1																OR<25				
																	02	NONE 0	STRGHT										
																		PRVTE	S N									000		00
																		PSNGR CAR		01	DRVR	NONE	26	M	OTH-Y		000	000		00
																									OR<25				
03151	N	N	N				08/15/2014	CLACKAMAS	1 11	2	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										013	29
NONE		N					Fri 3P	OREGON CITY	CN 0	PACIFIC HY 99E	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E W								000		00
								PORTLAND UA	9.81	WB EX PAC HY 99E	06	1		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	46	F	OTH-Y		026	000		29
No	*45 22*		*0.37 -122 36*		*3.40*				0064AR100S00	1																N-RES				
																	02	NONE 0	STOP										
																		PRVTE	E W									011	013	00
																		PSNGR CAR		01	DRVR	NONE	46	F	OR-Y		000	000		00
																									OR<25				
																				02	PSNG	INJC	24	F			000	000		00
																	03	NONE 0	STOP										
																		UNKN	E W									022		00
																		UNKNOWN		01	DRVR	NONE	00	U	UNK		000	000		00
																									UNK				
00830	N	N	N				03/06/2015	CLACKAMAS	1 11	2	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE		N					Fri 3P	OREGON CITY	CN 0	PACIFIC HY 99E	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E W								000		00
								PORTLAND UA	9.81	WB EX PAC HY 99E	06	2		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	49	F	OR-Y		026	000		29
No	*45 22*		*0.37 -122 36*		*3.40*				0064AR100S00	1																OR<25				
																	02	NONE 0	STOP										
																		PRVTE	E W									011		00
																		PSNGR CAR		01	DRVR	INJC	36	M	OR-Y		000	000		00
																									OR<25				
																				02	PSNG	INJC	32	F			000	000		00
02481	N	N	N				06/22/2015	CLACKAMAS	1 11	2	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE		N					Mon 3P	OREGON CITY	CN 0	PACIFIC HY 99E	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E W								000		00
								PORTLAND UA	9.81	WB EX PAC HY 99E	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	41	M	OR-Y		026	000		
No	*45 22*		*0.37 -122 36*		*3.40*				0064AR100S00	1																OR<25				

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064 EAST PORTLAND FREEWAY

Intersectional Crashes at OR99E, Pacific Hwy (#081) & I205 SB Off/On Ramp Terminal
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG / MJ	SCH	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																	02	NONE 0 PRVTE	STOP E W									011		00
																		PSNGR CAR		01	DRVR	INJC	68	M	OR-Y OR<25		000	000		00
05371 CITY	N	N	N	N	N	11/19/2016 Sat 3P	CLACKAMAS OREGON CITY	1 11 CN 0		2 PACIFIC HY 99E	INTER E	3-LEG	N UNKNOWN	N	CLD WET	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT E W										000	115	27,29 00
							PORTLAND UA	9.81		WB EX PAC HY 99E	06	1		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	28	M	OR-Y OR<25		016,026	038	115	27,29
No	*45 22*		*0.37*	*-122 36*	*3.40*			0064AR100S00		1																				
																	02	NONE 0 PRVTE	STOP E W									011		00
																		PSNGR CAR		01	DRVR	INJC	23	M	OR-Y OR<25		000	000		00
																				02	PSNG	INJC	32	F			000	000		00
00423 CITY	N	N	N	N	N	02/01/2017 Wed 7P	CLACKAMAS OREGON CITY	1 11 CN 0		2 PACIFIC HY 99E	INTER E	3-LEG	N TRF SIGNAL	N	CLR DRY	BIKE TURN	01	NONE 0 PRVTE	TURN-L E S										000		18,19 00
							PORTLAND UA	9.81		WB EX PAC HY 99E	06	1		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	38	F	OR-Y OR<25		000	000		00
No	*45 22*		*0.37*	*-122 36*	*3.40*			0064AR100S00		1																				
																			STRGHT N S	01	BIKE	INJB	30	M		01	020	035		18,19
02837 NONE	N	N	N			07/15/2017 Sat 4P	CLACKAMAS OREGON CITY	1 11 CN 0		2 PACIFIC HY 99E	INTER E	3-LEG	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT E W										000		29 00
							PORTLAND UA	9.81		NB EXTO I-205 WB	06	1		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	32	M	OR-Y OR<25		026	000		29
No	*45 22*		*0.37*	*-122 36*	*3.40*			0064AR100S00		1																				
																	02	NONE 0 PRVTE	STOP E W									011		00
																		PSNGR CAR		01	DRVR	INJC	81	F	OR-Y OR<25		000	000		00
																				02	PSNG	INJC	63	F			000	000		00
05131 STATE	N	N	N	N	N	12/04/2017 Mon 8A	CLACKAMAS OREGON CITY	1 11 CN 0		2 PACIFIC HY 99E	INTER E	3-LEG	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 9 N/A	STRGHT E W										000		07 00
							PORTLAND UA	9.81		WB EX PAC HY 99E	06	1		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
No	*45 22*		*0.37*	*-122 36*	*3.40*			0064AR100S00		1																				
																	02	NONE 9 N/A	STOP E W									012		00
																		SEMI TOW		01	DRVR	NONE	00	U	UNK UNK		000	000		00

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064 EAST PORTLAND FREEWAY

Intersectional Crashes at OR99E, Pacific Hwy (#081) & I205 SB Off/On Ramp Terminal
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG / MAJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
00099	N	N	N	N	N	01/07/2017	CLACKAMAS	1	11	2	INTER	3-LEG	N	N	SNOW	ANGL-OTH	01	NONE 0	STRGHT										04
CITY			N			Sat 2P	OREGON CITY	CN 0		PACIFIC HY 99E	CN		TRF SIGNAL	N	ICE	TURN		PRVTE	N S									000	00
							PORTLAND UA	9.81		WB EX PAC HY 99E	01	1		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	35	F	SUSP		020	000	04
No	*45*	*22*	*0.37*	*-122*	*36*	*3.40*		0064AR100S00		1															OR<25				
																	02	NONE 0	TURN-L										
																		PRVTE	E S									000	00
																		PSNGR CAR		01	DRVR	INJC	23	M	OTH-Y		000	000	00
																									OR>25				

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & I205 SB Off/On Ramp Terminal
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUGS	SWOR	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
05299	N	N	N		12/30/2014	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											013,099	27,29
NO RPT			N		Tue 6P	OREGON CITY	MN 0	PACIFIC HY 99E	N		TRF SIGNAL	N	DRY	REAR		PRVTE	N S									000		00
						PORTLAND UA	11.63	WB EX PAC HY 99E	06	2		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	22	F	OR-Y		016,026	038	099	27,29
No	*45 22*	*0.37*	*-122 36*	*3.40*			008100100S00	1															OR<25					
															02	NONE 0	STOP											
																PRVTE	N S									011	013	00
																PSNGR CAR		01	DRVR	INJC	26	M	OR-Y		000	000		00
																							OR<25					
															03	NONE 0	STOP											
																PRVTE	N S									022		00
																PSNGR CAR		01	DRVR	NONE	77	M	OR-Y		000	000		00
																							OR<25					
01064	N	N	N		03/27/2015	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											013	29
NO RPT			N		Fri 11A	OREGON CITY	MN 0	PACIFIC HY 99E	N		TRF SIGNAL	N	DRY	REAR		UNKN	E W									000		00
						PORTLAND UA	11.63	WB EX PAC HY 99E	06	1		N	DAY	INJ		UNKNOWN		01	DRVR	NONE	00	U	UNK		026	000		29
No	*45 22*	*0.37*	*-122 36*	*3.40*			008100100S00	1															UNK					
															02	NONE 0	STOP											
																PRVTE	E W									011	013	00
																PSNGR CAR		01	DRVR	NONE	34	M	OTH-Y		000	000		00
																							N-RES					
															03	NONE 0	STOP											
																PRVTE	E W									022	013	00
																PSNGR CAR		01	DRVR	INJC	58	F	OR-Y		000	000		00
																							OR<25					
															04	NONE 0	STOP											
																PRVTE	E W									022		00
																PSNGR CAR		01	DRVR	INJC	43	M	UNK		000	000		00
																							UNK					
																		02	PSNG	INJC	44	F			000	000		00
																		03	PSNG	INJC	15	M			000	000		00
02614	N	N	N		06/30/2015	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											013	29
NO RPT			N		Tue 11A	OREGON CITY	MN 0	PACIFIC HY 99E	N		TRF SIGNAL	N	DRY	REAR		PRVTE	N S									000		00
						PORTLAND UA	11.63	WB EX PAC HY 99E	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	54	M	OR-Y		026	000		29
No	*45 22*	*0.37*	*-122 36*	*3.40*			008100100S00	1															UNK					
															02	NONE 0	STOP											
																PRVTE	N S									011	013	00
																PSNGR CAR		01	DRVR	INJB	26	M	OTH-Y		000	000		00
																							N-RES					

Item #2.

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & I205 SB Off/On Ramp Terminal
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																03	NONE 0 UNKN	STOP N S									022		00
																	PSNGR CAR		01	DRVR	NONE	56	M	OR-Y OR<25		000	000		00
00947	N	N	N	N	N	02/27/2016	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLD	S-1STOP	01	NONE 9	STRGHT												07
STATE		N				Sat 10A	OREGON CITY	MN 0	PACIFIC HY 99E	N		TRF SIGNAL	N	DRY	REAR		N/A	N S									000		00
							PORTLAND UA	11.63	WB EX PAC HY 99E	06	2		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45 22*		*0.37 -122 36*		*3.40*			008100100S00	1															UNK					
																02	NONE 9 N/A	STOP N S									012		00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
02899	N	N	N	N	N	02/27/2016	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLD	S-1STOP	01	NONE 9	STRGHT												07
STATE		N				Sat 10A	OREGON CITY	MN 0	PACIFIC HY 99E	N		TRF SIGNAL	N	DRY	REAR		N/A	N S									000		00
							PORTLAND UA	11.63	WB EX PAC HY 99E	06	1		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45 22*		*0.37 -122 36*		*3.40*			008100100S00	1															UNK					
																02	NONE 9 N/A	STOP N S									011		00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
03698	N	N	N	N	N	08/13/2016	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	O-1STOP	01	NONE 0	STRGHT											093,013	27,05
CITY		N				Sat 11A	OREGON CITY	MN 0	PACIFIC HY 99E	N		TRF SIGNAL	N	DRY	SS-M		PRVTE	S N									000		00
							PORTLAND UA	11.63	WB EX PAC HY 99E	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	27	F	SUSP		016,080	038	093	27,05
No	*45 22*		*0.37 -122 36*		*3.40*			008100100S00	1															OR<25					
																02	NONE 0 PRVTE	STOP N S									011	013	00
																	PSNGR CAR		01	DRVR	INJB	82	M	OTH-Y N-RES		000	000		00
																			02	PSNG	INJB	52	M			000	000		00
																03	NONE 0 PRVTE	STOP N S									022		00
																	PSNGR CAR		01	DRVR	NONE	70	F	OR-Y OR<25		000	000		00
05349	N	N	N			11/17/2016	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 9	STRGHT												29
NONE		N				Thu 6P	OREGON CITY	MN 0	PACIFIC HY 99E	N		TRF SIGNAL	N	DRY	REAR		N/A	N S									000		00
							PORTLAND UA	11.63	WB EX PAC HY 99E	06	2		N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45 22*		*0.37 -122 36*		*3.40*			008100100S00	1															UNK					

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & I205 SB Off/On Ramp Terminal
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																02	NONE 9 N/A	STOP N S									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
01250	N	N	N			04/03/2017 Mon 7A	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E	INTER N	3-LEG	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 9 N/A	STRGHT N S									000	29 00
NONE		N					PORTLAND UA	11.63	NB EXTO I-205 WB	06	1		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
No	*45 22*		*0.37*	*-122 36*	*3.40*			008100100S00	1																			
																02	NONE 9 N/A	STOP N S									012	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
02811	N	N	N	N	N	08/12/2018 Sun 6A	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E	INTER N	3-LEG	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT N S									000	16,29 00
CITY		N					PORTLAND UA	11.63	WB EX PAC HY 99E	06	1		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	29	F	OR-Y OR<25		026	025	16,29
No	*45 22*		*0.37*	*-122 36*	*3.40*			008100100S00	1																			
																02	NONE 0 PRVTE	STOP N S									012	00
																	PSNGR CAR		01	DRVR	INJC	39	F	OR-Y OR<25		000	000	00
03957	N	N	N			10/30/2018 Tue 5P	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E	INTER N	3-LEG	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT N S									000	29 00
NONE		N					PORTLAND UA	11.63	WB EX PAC HY 99E	06	1		N	DUSK	INJ		PSNGR CAR		01	DRVR	NONE	34	M	OR-Y OR<25		026	000	29
No	*45 22*		*0.37*	*-122 36*	*3.40*			008100100S00	1																			
																02	NONE 0 PRVTE	STOP N S									012	00
																	PSNGR CAR		01	DRVR	INJC	66	F	OR-Y OR<25		000	000	00
01560	N	N	N	N	N	04/23/2014 Wed 11A	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E	INTER CN	3-LEG	N TRF SIGNAL	N	CLD DRY	ANGL-OTH TURN	01	NONE 0 PRVTE	TURN-L E S									000	04 00
NONE		N					PORTLAND UA	11.63	WB EX PAC HY 99E	01	2		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	21	F	OR-Y OR<25		000	000	00
No	*45 22*		*0.37*	*-122 36*	*3.40*			008100100S00	1																			
																02	NONE 0 PRVTE	STRGHT N S									000	00
																	PSNGR CAR		01	DRVR	NONE	52	F	OR-Y OR<25		020	000	04

Item #2.

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & I205 SB Off/On Ramp Terminal
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	S P E D	A L C	D R U G / M J	S W C O H R L K	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
															03	NONE 0 PRVTE	TURN-L E S									000	00
																PSNGR CAR		01	DRVR	NONE	30	F	OR-Y OR<25			000	00
00802 STATE	N N	N N	N N	N N N N	03/03/2015 Tue 12P	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E	INTER CN	3-LEG	N TRF SIGNAL	N	CLR DRY	ANGL-OTH TURN	01	NONE 0 PRVTE	STRGHT N S									000	04 00
						PORTLAND UA	11.63	WB EX PAC HY 99E	01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	25	F	OR-Y OR<25		020	000	04
No	*45 22*	*0.37*	*-122 36*	*3.40*			008100100S00	1																			
															02	NONE 0 PRVTE	TURN-L E S									000	00
																PSNGR CAR		01	DRVR	NONE	77	F	OR-Y OR<25		000	000	00
02893 NONE	N N	N N	N	N N N N	08/18/2018 Sat 1P	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E	INTER CN	3-LEG	N TRF SIGNAL	N	CLR DRY	ANGL-OTH TURN	01	NONE 0 PRVTE	TURN-L E S									000	04 00
						PORTLAND UA	11.63	WB EX PAC HY 99E	01	1		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	17	F	OR-Y OR<25		000	000	00
No	*45 22*	*0.38*	*-122 36*	*3.40*			008100100S00	1																			
															02	NONE 0 PRVTE	STRGHT N S									000	00
																PSNGR CAR		01	DRVR	NONE	43	F	OR-Y OR<25		020	000	04
																		02	PSNG	NONE	03	M			000	000	00
02482 STATE	N N	N N	N N	N N N N	06/22/2015 Mon 7A	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E	INTER CN	3-LEG	N TRF SIGNAL	N	CLR DRY	ANGL-OTH TURN	01	NONE 0 PRVTE	STRGHT S N									000	04 00
						PORTLAND UA	11.63	WB EX PAC HY 99E	02	1		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	45	F	OR-Y OR<25		020	000	04
No	*45 22*	*0.37*	*-122 36*	*3.40*			008100100S00	1																			
															02	NONE 0 PRVTE	TURN-L E S									000	00
																PSNGR CAR		01	DRVR	NONE	56	M	OR-Y OR<25		000	000	00
																		02	PSNG	INJC	42	F			000	000	00
04797 NO RPT	N N	N	N N	N N N N	11/14/2015 Sat 2P	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E	INTER CN	3-LEG	N TRF SIGNAL	N	RAIN WET	ANGL-OTH TURN	01	NONE 0 PRVTE	STRGHT S N									000	04 00
						PORTLAND UA	11.63	WB EX PAC HY 99E	02	1		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	58	M	OTH-Y N-RES		000,097	000	00
No	*45 22*	*0.37*	*-122 36*	*3.40*			008100100S00	1																			
															02	NONE 0 PRVTE	TURN-L E S									000	00
																PSNGR CAR		01	DRVR	NONE	82	M	OR-Y OR>25		000	000	00
																		02	PSNG	INJB	82	F			000,097	000	

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & I205 SB Off/On Ramp Terminal
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPE	ALC	DRU GMJ	SWC HRK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / MILEPNT / LRS	FC / MLG	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
03504	N	N	N	N N	08/02/2016	CLACKAMAS	1	11		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											27,04
CITY		N			Tue 3P	OREGON CITY	MN 0		PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	S N									000		00
						PORTLAND UA	11.63		WB EX PAC HY 99E	02	2		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	72	M	OR-Y		020	038		27,04
No	*45 22*		*0.37*	*-122 36*	*3.40*		008100100S00		1															OR<25					
																02	NONE 0	TURN-L											
																	PRVTE	E S									000		00
																	PSNGR CAR		01	DRVR	INJC	55	M	OR-Y		000	000		00
																								OR<25					
																			02	PSNG	INJC	65	F			000	000		00
03826	N	N	N	N N	10/22/2018	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											04
CITY		N			Mon 1P	OREGON CITY	MN 0		PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	S N									000		00
						PORTLAND UA	11.63		NB EXTO I-205 WB	02	1		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	30	F	OR-Y		020	000		04
No	*45 22*		*0.38*	*-122 36*	*3.40*		008100100S00		1															OR<25					
																			02	PSNG	INJB	05	M			000	000		00
																02	NONE 0	TURN-L											
																	PRVTE	E S									000		00
																	PSNGR CAR		01	DRVR	NONE	61	F	OR-Y		000	000		00
																								OR<25					
01191	N	N	N		03/27/2014	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											04
STATE		N			Thu 3P	OREGON CITY	MN 0		PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N S									000		00
						PORTLAND UA	11.63		WB EX PAC HY 99E	03	1		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	23	M	OTH-Y		020	000		04
No	*45 22*		*0.37*	*-122 36*	*3.40*		008100100S00		1															N-RES					
																02	NONE 0	TURN-L											
																	PRVTE	E S									000		00
																	PSNGR CAR		01	DRVR	NONE	66	F	OR-Y		000	000		00
																								OR<25					
04035	N	N	N		10/10/2014	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										013	04
NO RPT		N			Fri 9P	OREGON CITY	MN 0		PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N S									000		00
						PORTLAND UA	11.63		WB EX PAC HY 99E	03	1		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	19	M	OR-Y		020	000		04
No	*45 22*		*0.37*	*-122 36*	*3.40*		008100100S00		1															OR<25					
																02	NONE 0	TURN-L											
																	PRVTE	E S									000	031	00
																	PSNGR CAR		01	DRVR	INJC	16	F	OR-Y		000	000		00
																								OR<25					
																03	NONE 0	TURN-L											
																	PRVTE	E S									022		00
																	PSNGR CAR		01	DRVR	NONE	35	F	OR-Y		000	000		00
																								OR<25					

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & I205 SB Off/On Ramp Terminal
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG / MJ	SCH	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
02147	N	N	N	N	N	05/12/2016	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										02
CITY		N				Thu 9P	OREGON CITY	MN 0		PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	S N									000	00
							PORTLAND UA	11.63		NB EXTO I-205 WB	04	1		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	24	F	OR-Y		000	000	00
No						*45 22 0.37 -122 36 3.40*		008100100S00		1															OR<25				
																	02	NONE 0	TURN-L										
																		PRVTE	N E									000	00
																		PSNGR CAR		01	DRVR	INJC	52	M	OR-Y		028,004	000	02
																									OR<25				
01897	N	N	N			05/17/2014	CLACKAMAS	1	14		INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT										29
NO RPT		N				Sat 10P	OREGON CITY	MN 0		PACIFIC HY 99E	N		L-GRN-SIG	N	WET	REAR		PRVTE	N S									000	00
							PORTLAND UA	11.64		NB EXTO I-205 WB	06	0		N	DARK	INJ		PSNGR CAR		01	DRVR	NONE	37	M	OR-Y		026	000	29
No						*45 21 59.94 -122 36 3.37*		008100100S00		1															OR<25				
																	02	NONE 0	STOP										
																		PRVTE	N S									012	00
																		PSNGR CAR		01	DRVR	INJC	34	F	OR-Y		000	000	00
																									OR<25				
																				02	PSNG	INJC	47	F			000	000	00
01559	N	N	N			04/28/2015	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE		N				Tue 10A	OREGON CITY	MN 0		PACIFIC HY 99E	N		TRF SIGNAL	N	DRY	REAR		PRVTE	N S									000	00
							PORTLAND UA	11.64		NB EXTO I-205 WB	06	1		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	64	M	OR-Y		026	000	29
No						*45 21 59.94 -122 36 3.37*		008100100S00		1															OR<25				
																	02	NONE 0	STOP										
																		PRVTE	N S									011	00
																		PSNGR CAR		01	DRVR	INJC	65	F	OR-Y		000	000	00
																									OR<25				
04365	N	N	N			09/20/2015	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE		N				Sun UNK	OREGON CITY	MN 0		PACIFIC HY 99E	N		TRF SIGNAL	N	DRY	REAR		UNKN	N S									000	00
							PORTLAND UA	11.64		NB EXTO I-205 WB	06	1		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	M	UNK		026	000	29
No						*45 21 59.94 -122 36 3.37*		008100100S00		1															UNK				
																	02	NONE 0	STOP										
																		PRVTE	N S									012	00
																		PSNGR CAR		01	DRVR	NONE	34	M	OR-Y		000	000	00
																									OR<25				
																				02	PSNG	NO<5	01	M			000	000	00
																				03	PSNG	INJC	29	F			000	000	00
05481	N	N	N			12/18/2015	CLACKAMAS	1	14		INTER	3-LEG	N	N	UNK	S-1STOP	01	NONE 0	STRGHT										29
NONE		N				Fri 6A	OREGON CITY	MN 0		PACIFIC HY 99E	N		TRF SIGNAL	N	UNK	REAR		UNKN	N S									000	00
							PORTLAND UA	11.64		NB EXTO I-205 WB	06	1		N	DAWN	PDO		PSNGR CAR		01	DRVR	NONE	00	F	UNK		026	000	
No						*45 21 59.94 -122 36 3.37*		008100100S00		1															UNK				

Item #2.

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & I205 SB Off/On Ramp Terminal
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																02	NONE 0 PRVTE	STOP N S									012	00
																	PSNGR CAR		01	DRVR	NONE	72	M	OR-Y OR<25		000	000	00
00406 NONE	N N	N N	N N			01/30/2017 Mon 6P	CLACKAMAS OREGON CITY	1 MN	14 0	INTER N	3-LEG L-GRN-SIG	N N	N N	CLR DRY	S-1STOP REAR	01	NONE 9 N/A	STRGHT N S									000	29 00
							PORTLAND UA	11.64	NB EXTO I-205 WB	06	1		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45 21*		*59.94 -122 36*		*3.37*			008100100S00	1															UNK				
																02	NONE 9 N/A	STOP N S									012	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
05429 NONE	N N	N N	N N			12/17/2015 Thu 1P	CLACKAMAS OREGON CITY	1 MN	14 0	INTER CN	3-LEG TRF SIGNAL	N N	N N	RAIN WET	S-1STOP REAR	01	NONE 0 PRVTE	TURN-L N E									000	29 00
							PORTLAND UA	11.64	NB EXTO I-205 WB	01	1		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	25	F	OR-Y		026	000	29
No	*45 21*		*59.94 -122 36*		*3.37*			008100100S00	1															OR<25				
																02	NONE 0 PRVTE	STOP N E									013	00
																	PSNGR CAR		01	DRVR	NONE	64	M	OR-Y OR<25		000	000	00
01789 COUNTY	N N	N N	N N	N N	N N	04/19/2016 Tue 6A	CLACKAMAS OREGON CITY	1 MN	14 0	INTER CN	3-LEG TRF SIGNAL	N N	N N	CLR DRY	ANGL-OTH TURN	01	NONE 0 PRVTE	STRGHT S N									000	04 00
							PORTLAND UA	11.64	NB EXTO I-205 WB	02	1		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	24	M	OR-Y		020	000	04
No	*45 21*		*59.94 -122 36*		*3.37*			008100100S00	1															OR<25				
																02	NONE 0 PRVTE	TURN-L E S									000	00
																	PSNGR CAR		01	DRVR	INJC	36	M	OR-Y OR<25		000	000	00
00203 CITY	N N	N N	N N	N N	N N	01/16/2014 Thu 11P	CLACKAMAS OREGON CITY	1 MN	14 0	INTER CN	3-LEG L-GRN-SIG	N N	N N	CLD DRY	O-1 L-TURN TURN	01	NONE 0 UNKN	TURN-L N E									000	04 00
							PORTLAND UA	11.64	NB EXTO I-205 WB	04	1		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	M	UNK		003	000	04
No	*45 21*		*59.94 -122 36*		*3.37*			008100100S00	1															UNK				
																02	NONE 0 PRVTE	STRGHT S N									000	00
																	PSNGR CAR		01	DRVR	NONE	45	M	OR-Y OR<25		000	000	00

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & I205 SB Off/On Ramp Terminal
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
04525	N	N	N	N	N	11/09/2014	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLD	O-1 L-TURN	01	NONE 0	TURN-L										04
STATE		N				Sun 7A	OREGON CITY	MN 0	PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N E									000	00
							PORTLAND UA	11.64	NB EXTO I-205 WB	04	2		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	28	F	OTH-Y		003	000	04
No	*45 21*	*59.94*	*-122 36*	*3.37*				008100100S00	1															N-RES				
																02	NONE 0	STRGHT									000	00
																	PRVTE	S N										
																	PSNGR CAR		01	DRVR	NONE	31	M	OR-Y		000	000	00
																								OR<25				
02021	N	N	N	N	N	05/28/2015	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										02
NONE		N				Thu 9P	OREGON CITY	MN 0	PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	S N									000	00
							PORTLAND UA	11.64	NB EXTO I-205 WB	04	2		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJB	29	M	OR-Y		000	000	00
No	*45 21*	*59.94*	*-122 36*	*3.37*				008100100S00	1															OR<25				
																02	NONE 0	TURN-L									000	00
																	PRVTE	N E										
																	PSNGR CAR		01	DRVR	NONE	19	F	OR-Y		028,004	000	02
																								OR>25				
04587	N	N	N			11/03/2015	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										27,04
NO RPT		N				Tue 9P	OREGON CITY	MN 0	PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	S N									000	00
							PORTLAND UA	11.64	NB EXTO I-205 WB	04	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	25	F	OR-Y		016,020	000	27,04
No	*45 21*	*59.94*	*-122 36*	*3.37*				008100100S00	1															OR<25				
																			02	PSNG	INJC	05	F			000	000	00
																02	NONE 0	TURN-L									000	00
																	PRVTE	N E										
																	PSNGR CAR		01	DRVR	NONE	57	M	OR-Y		000	000	00
																								OR<25				
04319	N	N	N			10/17/2017	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 9	STRGHT										02,08
NO RPT		N				Tue 6A	OREGON CITY	MN 0	PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN		N/A	S N									000	00
							PORTLAND UA	11.64	NB EXTO I-205 WB	04	1		N	DAWN	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45 21*	*59.94*	*-122 36*	*3.37*				008100100S00	1															UNK				
																02	NONE 9	TURN-L									000	00
																	N/A	N E										
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																								UNK				
05309	N	N	N			12/13/2017	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 9	STRGHT										04
NONE		N				Wed 8P	OREGON CITY	MN 0	PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN		N/A	S N									000	00
							PORTLAND UA	11.64	NB EXTO I-205 WB	04	1		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45 21*	*59.94*	*-122 36*	*3.37*				008100100S00	1															UNK				

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & I205 SB Off/On Ramp Terminal
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	S P E D	E A L C	D R U G / M J	S W C O H R L K	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																02	NONE 9 N/A	TURN-L N E									000		00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
01702 CITY	N N	N N N N	05/19/2018 Sat 10P	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E		INTER CN	3-LEG	N TRF SIGNAL	N N	CLR DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	TURN-L N E										000		02,08 00
				PORTLAND UA	11.64	NB EXTO I-205 WB		04	1		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	29	F	SUSP OR<25		028,004	000		02,08
No	*45 21*	*59.95 -122*	*36 3.38*	008100100S00		1																						
																02	NONE 0 PRVTE	STRGHT S N									000		00
																	PSNGR CAR		01	DRVR	INJB	30	M	OR-Y OR<25		000	000		00
																			02	PSNG	INJA	28	F			000	000		00
02251 NONE	N N	N N N	06/28/2018 Thu 6P	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E		INTER CN	3-LEG	N TRF SIGNAL	N N	CLR DRY	O-1 L-TURN TURN	01	NONE 9 N/A	TURN-L N E										000		04 00
				PORTLAND UA	11.64	NB EXTO I-205 WB		04	1		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
No	*45 21*	*59.95 -122*	*36 3.37*	008100100S00		1																						
																02	NONE 9 N/A	STRGHT S N									000		00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
00322 NONE	N N	N N N	01/27/2018 Sat 8P	CLACKAMAS OREGON CITY	1 11 1 CN 0	PACIFIC HY 99E		INTER CN	3-LEG	N TRF SIGNAL	N N	RAIN WET	S-OTHER TURN	01	NONE 0 PRVTE	TURN-L W N										000	013	29 00
				PORTLAND UA	11.64	NB EXTO I-205 WB		03	1		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	18	M	OR-Y OR<25		026	000		29
No	*45 21*	*59.94 -122*	*36 3.37*	0081AM100S00		1																						
																02	NONE 0 PRVTE	STOP W N									011	013	00
																	PSNGR CAR		01	DRVR	INJC	26	F	OR-Y OR<25		000	000		00
																			02	PSNG	INJC	24	M			000	000		00
																03	NONE 0 PRVTE	STOP W N									022		00
																	PSNGR CAR		01	DRVR	NONE	55	F	OTH-Y OR<25		000	000		00

Intersectional Crashes at OR99E, Pacific Hwy (#081) & I205 NB Off/On Ramp Terminal
January 1, 2014 through December 31, 2018

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2018														
PEDESTRIAN	0	1	0	1	0	1	0	0	1	0	1	1	0	0
REAR-END	0	1	4	5	0	1	0	4	0	4	1	5	0	0
2018 TOTAL	0	2	4	6	0	2	0	4	1	4	2	6	0	0
YEAR: 2017														
REAR-END	0	3	4	7	0	4	0	5	2	5	2	7	0	0
TURNING MOVEMENTS	0	4	0	4	0	5	0	3	1	0	4	4	0	0
2017 TOTAL	0	7	4	11	0	9	0	8	3	5	6	11	0	0
YEAR: 2016														
REAR-END	0	1	1	2	0	2	0	1	1	0	2	2	0	0
TURNING MOVEMENTS	0	3	2	5	0	8	1	4	1	3	2	5	0	0
2016 TOTAL	0	4	3	7	0	10	1	5	2	3	4	7	0	0
YEAR: 2015														
REAR-END	0	1	0	1	0	2	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	3	0	3	0	4	0	3	0	2	1	3	0	0
2015 TOTAL	0	4	0	4	0	6	0	4	0	3	1	4	0	0
YEAR: 2014														
REAR-END	0	3	4	7	0	3	0	6	1	6	1	7	0	0
2014 TOTAL	0	3	4	7	0	3	0	6	1	6	1	7	0	0
FINAL TOTAL	0	20	15	35	0	30	1	27	7	21	14	35	0	0

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

064 EAST PORTLAND FREEWAY

Intersectional Crashes at OR99E, Pacific Hwy (#081) & I205 NB Off/On Ramp Terminal
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	MDRUG	SCHL	WORK	DATE / DAY/TIME	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
00395	N	N	N			01/30/2014	CLACKAMAS	1 11	1	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										07
NONE		N				Thu 3P	OREGON CITY	CN 0	PACIFIC HY 99E	NE		YIELD	N	DRY	REAR		PRVTE	SE NW									000	00
							PORTLAND UA	9.43	NB EXTO I-205 EB	09	1		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	59	M	OR-Y		026	000	07
No	*45*	*21*	*51.47*	*-122*	*36*	*3.42*		0064AQ100S00	1															OR<25				
																02	NONE 0	STOP										
																	PRVTE	SE NW									011	00
																	PSNGR CAR		01	DRVR	INJC	25	F	OR-Y		000	000	00
																								OR<25				
02990	N	N	N			08/03/2014	CLACKAMAS	1 11	1	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE		N				Sun UNK	OREGON CITY	CN 0	PACIFIC HY 99E	NE		TRF SIGNAL	N	DRY	REAR		PRVTE	SE NW									000	00
							PORTLAND UA	9.43	EB EX PAC HY 99E	09	1		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	60	F	OR-Y		026	000	29
No	*45*	*21*	*51.47*	*-122*	*36*	*3.42*		0064AQ100S00	1															OR<25				
																02	NONE 0	STOP										
																	PRVTE	SE NW									011	00
																	PSNGR CAR		01	DRVR	NONE	66	M	OR-Y		000	000	00
																								OR<25				
04196	N	N	N			10/22/2014	CLACKAMAS	1 11	1	INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT										29
NONE		N				Wed 3P	OREGON CITY	CN 0	PACIFIC HY 99E	NE		YIELD	N	WET	REAR		PRVTE	SE NW									000	00
							PORTLAND UA	9.43	NB EXTO I-205 EB	09	1		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	M	UNK		026	000	29
No	*45*	*21*	*51.47*	*-122*	*36*	*3.42*		0064AQ100S00	1															OR<25				
																02	NONE 0	STOP										
																	PRVTE	SE NW									011	00
																	PSNGR CAR		01	DRVR	INJC	59	F	OR-Y		000	000	00
																								OR<25				
05025	N	N	N			12/12/2014	CLACKAMAS	1 11	1	INTER	3-LEG	N	N	CLR	S-STRGHT	01	NONE 0	TURN-R										07
NONE		N				Fri 2P	OREGON CITY	CN 0	PACIFIC HY 99E	NE		YIELD	N	DRY	REAR		PRVTE	E N									000	00
							PORTLAND UA	9.43	EB EX PAC HY 99E	09	1		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	43	F	OR-Y		042	000	07
No	*45*	*21*	*51.47*	*-122*	*36*	*3.42*		0064AQ100S00	1															OR>25				
																02	NONE 0	TURN-R										
																	PRVTE	E N									000	00
																	PSNGR CAR		01	DRVR	INJC	65	F	OR-Y		000	000	00
																								OR<25				
03250	N	N	N			08/08/2017	CLACKAMAS	1 11	1	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 9	STRGHT										29
NONE		N				Tue 8A	OREGON CITY	CN 0	PACIFIC HY 99E	NE		YIELD	N	DRY	REAR		N/A	SE NW									000	00
							PORTLAND UA	9.43	EB EX PAC HY 99E	09	1		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45*	*21*	*51.47*	*-122*	*36*	*3.42*		0064AQ100S00	1															UNK				

Item #2.

064 EAST PORTLAND FREEWAY

Intersectional Crashes at OR99E, Pacific Hwy (#081) & I205 NB Off/On Ramp Terminal
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	MC	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																		02	NONE 9 N/A	STOP SE NW									011	00
																			PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
03562 NONE	N	N	N				08/30/2017 Wed 10A	CLACKAMAS OREGON CITY	1 CN 0	11	1 PACIFIC HY 99E	INTER NE	3-LEG	N TRF SIGNAL	N N	CLR DRY	S-1STOP REAR	01	NONE 9 N/A	STRGHT SE NW									000	29 00
								PORTLAND UA	9.43		EB EX PAC HY 99E	09	1		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
No	*45*	*21*	*51.47*	*-122*	*36*	*3.42*			0064AQ100S00		1																			
																		02	NONE 9 N/A	STOP SE NW									011	00
																			PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
03866 NONE	N	N	N				10/24/2018 Wed 8A	CLACKAMAS OREGON CITY	1 CN 0	11	1 PACIFIC HY 99E	INTER NE	3-LEG	N NONE	N N	UNK UNK	S-1STOP REAR	01	NONE 9 N/A	STRGHT SE NW									000	29 00
								PORTLAND UA	9.43		EB EX PAC HY 99E	09	1		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
No	*45*	*21*	*51.47*	*-122*	*36*	*3.42*			0064AQ100S00		1																			
																		02	NONE 9 N/A	STOP SE NW									011	00
																			PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
04185 NONE	N	N	N				11/16/2018 Fri 12P	CLACKAMAS OREGON CITY	1 CN 0	11	1 PACIFIC HY 99E	INTER NE	3-LEG	N TRF SIGNAL	N N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT SE NW									000	29 00
								PORTLAND UA	9.43		EB EX PAC HY 99E	09	1		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	19	F	OR-Y OR<25		026	000	29
No	*45*	*21*	*51.47*	*-122*	*36*	*3.42*			0064AQ100S00		1																			
																		02	NONE 0 PRVTE	STOP SE NW									011	00
																			PSNGR CAR		01	DRVR	NONE	57	M	OR-Y OR<25		000	000	00
04281 CITY	N	N	N	N	N		11/23/2018 Fri 6P	CLACKAMAS OREGON CITY	1 CN 0	11	1 PACIFIC HY 99E	INTER E	3-LEG	N TRF SIGNAL	N N	RAIN WET	PED PED	01	NONE 0 PRVTE	TURN-R S E									000	02,19 00
								PORTLAND UA	9.43		EB EX PAC HY 99E	05	1		N	DUSK	INJ		PSNGR CAR		01	DRVR	NONE	72	M	OTH-Y N-RES		029	000	02
No	*45*	*21*	*51.49*	*-122*	*36*	*3.42*			0064AQ100S00		1																			
																				STRGHT S N	01	PED	INJB	42	M		01	000	035	19
03474 NONE	N	N	N				09/05/2014 Fri 11A	CLACKAMAS OREGON CITY	1 CN 0	11	1 PACIFIC HY 99E	INTER E	3-LEG	N TRF SIGNAL	N N	CLR DRY	S-1STOP REAR	01	NONE 0 UNKN	STRGHT E W									000	29 00
								PORTLAND UA	9.43		NB EXTO I-205 EB	06	1		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	OR-Y UNK		026	000	00
No	*45*	*21*	*51.47*	*-122*	*36*	*3.42*			0064AQ100S00		1																			

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064 EAST PORTLAND FREEWAY

Intersectional Crashes at OR99E, Pacific Hwy (#081) & I205 NB Off/On Ramp Terminal
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																	02	NONE 0 PRVTE	STOP E W									011		00
																		PSNGR CAR		01	DRVR	NONE	40	F	OR-Y UNK		000	000		00
02480	N	N	N			06/23/2017	CLACKAMAS	1	11	1	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
NONE		N				Fri 12P	OREGON CITY	CN 0		PACIFIC HY 99E	E		TRF SIGNAL	N	DRY	REAR		N/A	E W									000		00
							PORTLAND UA	9.43		EB EX PAC HY 99E	06	1		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
No	*45*	*21*	*51.47*	*-122*	*36*	*3.42*		0064AQ100S00		1																			
																	02	NONE 9 N/A	STOP E W									012		00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
00207	N	N	N			01/17/2018	CLACKAMAS	1	11	1	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
NONE		N				Wed 7P	OREGON CITY	CN 0		PACIFIC HY 99E	E		TRF SIGNAL	N	DRY	REAR		N/A	E W									000		00
							PORTLAND UA	9.43		EB EX PAC HY 99E	06	1		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
No	*45*	*21*	*51.47*	*-122*	*36*	*3.42*		0064AQ100S00		1																			
																	02	NONE 9 N/A	STOP E W									012		00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
03991	Y	N	N	N	N	08/31/2016	CLACKAMAS	1	11	1	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										089	04,01
CITY		N				Wed 10A	OREGON CITY	CN 0		PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	NE SW									000	089	00
							PORTLAND UA	9.43		EB EX PAC HY 99E	01	1		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	39	F	OR-Y UNK		020,047,073	000		04,01
No	*45*	*21*	*51.47*	*-122*	*36*	*3.42*		0064AQ100S00		1																			
																				02	PSNG	INJC	19	M			000	000		00
																	02	NONE 1 PRVTE	TURN-L SE SW									000		00
																		SEMI TOW		01	DRVR	NONE	48	M	OR-Y OR>25		000	000		00

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & I205 NB Off/On Ramp Terminal
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	MJ	DRU	SCH	WRK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP / (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
00690	N	N	N				02/22/2015	CLACKAMAS	1 14		INTER	3-LEG	N		N CLR	S-1STOP	01	NONE 0	STRGHT										29
NO RPT			N				Sun 11A	OREGON CITY	MN 0	PACIFIC HY 99E	N		L-GRN-SIG		N DRY	REAR		PRVTE	N S								000	00
								PORTLAND UA	11.81	NB EXTO I-205 EB	06	1			N DAY	INJ		PSNGR CAR		01	DRVR	NONE	49	F	OR-Y		026	000	29
No	*45 21*		*51.47 -122 36*			*3.42*			008100100S00	1																UNK				
																	02	NONE 0	STOP										
																		RENTL	N S									012	00
																		PSNGR CAR		01	DRVR	NONE	47	M	OR-Y		000	000	00
																									OR<25				
																				02	PSNG	INJC	38	F			000	000	00
																				03	PSNG	INJC	15	M			000	000	00
00279	N	N	N	N	N		01/19/2017	CLACKAMAS	1 14		INTER	3-LEG	N		N CLD	S-1STOP	01	NONE 0	STRGHT										29,32
CITY			N				Thu 7A	OREGON CITY	MN 0	PACIFIC HY 99E	N		TRF SIGNAL		N WET	REAR		PRVTE	N S								000	00
								PORTLAND UA	11.81	NB EXTO I-205 EB	06	1			N DAWN	INJ		PSNGR CAR		01	DRVR	INJC	25	F	OR-Y		026,052	000	29,32
No	*45 21*		*51.47 -122 36*			*3.42*			008100100S00	1																OR<25				
																	02	NONE 0	STOP										
																		PRVTE	N S									012	00
																		PSNGR CAR		01	DRVR	INJC	42	M	OR-Y		000	000	00
																									OR<25				
02467	N	N	N				06/12/2017	CLACKAMAS	1 14		INTER	3-LEG	N		N CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE			N				Mon 12P	OREGON CITY	MN 0	PACIFIC HY 99E	N		TRF SIGNAL		N DRY	REAR		PRVTE	N S								000	00
								PORTLAND UA	11.81	NB EXTO I-205 EB	06	1			N DAY	INJ		PSNGR CAR		01	DRVR	NONE	16	M	OR-Y		026	000	29
No	*45 21*		*51.47 -122 36*			*3.42*			008100100S00	1																OR<25				
																	02	NONE 0	STOP										
																		PRVTE	N S									011	00
																		PSNGR CAR		01	DRVR	INJC	72	M	OR-Y		000	000	00
																									OR<25				
00474	N	N	N	N	N		02/04/2014	CLACKAMAS	1 14		INTER	3-LEG	N		N CLD	S-1STOP	01	NONE 0	STRGHT										27,07
CITY			N				Tue 10A	OREGON CITY	MN 0	PACIFIC HY 99E	NE		TRF SIGNAL		N DRY	REAR		PRVTE	SE NW								000	00
								PORTLAND UA	11.81	EB EX PAC HY 99E	09	1			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	35	M	OR-Y		026	038	27,07
No	*45 21*		*51.47 -122 36*			*3.42*			008100100S00	1																OR<25				
																	02	NONE 0	STOP										
																		PRVTE	SE NW									011	00
																		PSNGR CAR		01	DRVR	NONE	52	F	OR-Y		000	000	00
																									OR<25				
00923	N	N	N				03/04/2014	CLACKAMAS	1 14		INTER	3-LEG	N		N CLR	S-1STOP	01	NONE 0	STRGHT										07
NONE			N				Tue 8A	OREGON CITY	MN 0	PACIFIC HY 99E	NE		YIELD		N DRY	REAR		PRVTE	SE NW								000	00
								PORTLAND UA	11.81	EB EX PAC HY 99E	09	1			N DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	OR-Y		026	000	07
No	*45 21*		*51.47 -122 36*			*3.42*			008100100S00	1																OR<25				

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & I205 NB Off/On Ramp Terminal
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG / MC	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																02	NONE 0 PRVTE	STOP SE NW									011	00
																	PSNGR CAR		01	DRVR	NONE	52	F	OR-Y OR<25		000	000	00
01395 NONE	N	N	N			04/25/2018 Wed 1P	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E	INTER NE	3-LEG	N YIELD	N	CLR DRY	S-1STOP REAR	01	NONE 9 N/A	STRGHT SE NW									000	29 00
							PORTLAND UA	11.81	EB EX PAC HY 99E	09	1		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45*	*21*	*51.47*	*-122*	*36*	*3.42*		008100100S00	1															UNK				
																02	NONE 9 N/A	STOP SE NW									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
05696 STATE	N	N	N	N	N	12/07/2016 Wed 8P	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E	INTER E	3-LEG	N TRF SIGNAL	N	CLR DRY	O-1 L-TURN TURN	01	NONE 9 N/A	TURN-R S E									000	02 00
							PORTLAND UA	11.81	NB EXTO I-205 EB	05	1		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45*	*21*	*51.47*	*-122*	*36*	*3.42*		008100100S00	1															UNK				
																02	NONE 9 N/A	TURN-L N E									000	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
03200 CITY	N	N	N	N	N	08/05/2017 Sat 9P	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E	INTER S	3-LEG	N TRF SIGNAL	N	CLR DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT S N									000	04 00
							PORTLAND UA	11.81	NB EXTO I-205 EB	04	1		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	63	F	OR-Y OR>25		020	000	04
No	*45*	*21*	*51.47*	*-122*	*36*	*3.42*		008100100S00	1																			
																02	NONE 0 PRVTE	TURN-L N E									000	00
																	PSNGR CAR		01	DRVR	INJC	30	M	OR-Y OR<25		000	000	00
																			02	PSNG	INJC	30	F			000	000	00
00309 NONE	N	N	N			01/20/2016 Wed 5P	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E	INTER S	3-LEG	N TRF SIGNAL	N	UNK WET	S-1STOP REAR	01	NONE 9 N/A	STRGHT S N									000	29 00
							PORTLAND UA	11.81	WB EX PAC HY 99E	06	0		N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45*	*21*	*51.47*	*-122*	*36*	*3.42*		008100100S00	1															UNK				
																02	NONE 9 N/A	STOP S N									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & I205 NB Off/On Ramp Terminal
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPE	DED	ALC	MJ	SCH	WRK	ODAY	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
06032	Y	N	N	N	N	N		12/22/2016	CLACKAMAS	1	14		INTER	3-LEG	N	N	N	S-1STOP	01	NONE 0	STRGHT										32,01
CITY		N						Thu 4P	OREGON CITY	MN 0		PACIFIC HY 99E	S		TRF SIGNAL	N	DRY	REAR		PRVTE	S N								000		00
									PORTLAND UA	11.81		NB EXTO I-205 WB	06	1		N	DUSK	INJ		PSNGR CAR		01	DRVR	INJC	20	M	OR-Y		052,047,026	000		32,01
No								*45 21 51.47 -122 36 3.42*		008100100S00		1															OR<25					
																			02	NONE 0	STOP										
																				PRVTE	S N								011		00
																				PSNGR CAR		01	DRVR	INJC	29	F	OR-Y		000	000		00
																											OR<25					
00664	N	N	N					02/19/2017	CLACKAMAS	1	14		INTER	3-LEG	N	N	N	S-1STOP	01	NONE 9	STRGHT										29
STATE		N						Sun 9P	OREGON CITY	MN 0		PACIFIC HY 99E	S		TRF SIGNAL	N	WET	REAR		N/A	S N								000		00
									PORTLAND UA	11.81		NB EXTO I-205 EB	06	1		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No								*45 21 51.47 -122 36 3.42*		008100100S00		1															UNK					
																			02	NONE 9	STOP										
																				N/A	S N								011		00
																				PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																											UNK					
01150	N	N	N	N	N	N		03/25/2017	CLACKAMAS	1	14		INTER	3-LEG	N	N	N	ANGL-OTH	01	NONE 0	STRGHT										04
CITY		N						Sat 9P	OREGON CITY	MN 0		PACIFIC HY 99E	S		TRF SIGNAL	N	DRY	TURN		PRVTE	S N								000		00
									PORTLAND UA	11.81		EB EX PAC HY 99E	06	1		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	61	F	OR-Y		020	000		04
No								*45 21 51.47 -122 36 3.42*		008100100S00		1															OR<25					
																			02	NONE 0	TURN-L										
																				PRVTE	E S								000		00
																				PSNGR CAR		01	DRVR	INJC	16	F	OR-Y		000	000		00
																											OR<25					
01906	N	N	N					05/16/2017	CLACKAMAS	1	14		INTER	3-LEG	N	N	N	S-1STOP	01	NONE 0	STRGHT										29
NONE		N						Tue 12P	OREGON CITY	MN 0		PACIFIC HY 99E	S		TRF SIGNAL	N	DRY	REAR		UNKN	S N								000		00
									PORTLAND UA	11.81		NB EXTO I-205 EB	06	1		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	F	UNK		026	000		29
No								*45 21 51.47 -122 36 3.42*		008100100S00		1															UNK					
																			02	NONE 0	STOP										
																				PRVTE	S N								011		00
																				PSNGR CAR		01	DRVR	INJC	48	F	OR-Y		000	000		00
																											OR>25					
03515	N	N	N					10/02/2018	CLACKAMAS	1	14		INTER	3-LEG	N	N	N	S-1STOP	01	NONE 9	STRGHT										29
NONE		N						Tue 4P	OREGON CITY	MN 0		PACIFIC HY 99E	S		TRF SIGNAL	N	DRY	REAR		N/A	S N								000	004	00
									PORTLAND UA	11.81		NB EXTO I-205 EB	06	1		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No								*45 21 51.47 -122 36 3.42*		008100100S00		1															UNK					

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & I205 NB Off/On Ramp Terminal
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																02	NONE 9 N/A	STOP S N										011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
01337	N	N	N			04/14/2015	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0 PRVTE	STRGHT S N											04
NONE			N			Tue 3P	OREGON CITY	MN 0	PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN													000	00
							PORTLAND UA	11.81	EB EX PAC HY 99E	02	1		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	36	M	OR-Y OR<25		020	000		04
No	*45*	*21*	*51.47*	*-122*	*36*	*3.42*		008100100S00	1																				
																			02	PSNG	NO<5	04	M			000	000		00
																02	NONE 0 PRVTE	TURN-L E S									000		00
																	PSNGR CAR		01	DRVR	INJC	37	F	OR-Y OR<25		000	000		00
05735	N	N	N			12/31/2015	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0 PRVTE	STRGHT S N											04
NO RPT			N			Thu 7P	OREGON CITY	MN 0	PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN													000	00
							PORTLAND UA	11.81	EB EX PAC HY 99E	02	1		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	51	F	OR-Y OR<25		020	000		04
No	*45*	*21*	*51.47*	*-122*	*36*	*3.42*		008100100S00	1																				
																02	NONE 0 PRVTE	TURN-L E S									000		00
																	PSNGR CAR		01	DRVR	INJC	25	M	OR-Y OR<25		000	000		00
																			02	PSNG	INJC	27	F			000	000		00
01336	N	N	N			03/21/2016	CLACKAMAS	1 14		INTER	3-LEG	N	N	RAIN	ANGL-OTH	01	NONE 9 N/A	STRGHT S N											04
NO RPT			N			Mon 9A	OREGON CITY	MN 0	PACIFIC HY 99E	CN		TRF SIGNAL	N	WET	TURN													000	00
							PORTLAND UA	11.81	NB EXTO I-205 EB	02	1		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
No	*45*	*21*	*51.47*	*-122*	*36*	*3.42*		008100100S00	1																				
																02	NONE 9 N/A	TURN-L E S									000		00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
01891	N	N	N	N	N	05/18/2015	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0 PRVTE	STRGHT S N											04
STATE			N			Mon 8A	OREGON CITY	MN 0	PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN													000	00
							PORTLAND UA	11.81	NB EXTO I-205 EB	04	2		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	41	F	OR-Y OR<25		020	000		04
No	*45*	*21*	*51.47*	*-122*	*36*	*3.42*		008100100S00	1																				
																02	NONE 0 PRVTE	TURN-L N E									000		00
																	PSNGR CAR		01	DRVR	INJC	67	F	OR-Y OR<25		000	000		00

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & I205 NB Off/On Ramp Terminal
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / LRS	FC / MILEPNT	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
01600	N	N	N			04/08/2016	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	TURN-L										04
NO RPT			N			Fri 10P	OREGON CITY	MN 0		PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N E									000	00
							PORTLAND UA	11.81		EB EX PAC HY 99E	04	1		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJB	51	M	OR-Y		003	000	04
No	*45*	*21*	*51.47*	*-122*	*36*	*3.42*		008100100S00		1																OR<25				
																				02	PSNG	INJB	17	F			000	000	00
																	02	NONE 0	STRGHT										
																		PRVTE	S N									000	00
																		PSNGR CAR		01	DRVR	INJB	22	F	OR-Y		000	000	00
																									OR>25				
																				02	PSNG	INJB	22	M			000	000	00
02971	N	N	N	N	N	07/02/2016	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										04
STATE			N			Sat 2P	OREGON CITY	MN 0		PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	S N									000	00
							PORTLAND UA	11.81		NB EXTO I-205 EB	04	1		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	17	M	OR-Y		020	000	04
No	*45*	*21*	*51.47*	*-122*	*36*	*3.42*		008100100S00		1																OR<25				
																	02	NONE 0	TURN-L										
																		PRVTE	N E									000	00
																		PSNGR CAR		01	DRVR	INJC	22	M	OR-Y		000	000	00
																									OR<25				
																				02	PSNG	INJB	20	F			000	000	00
01198	N	N	N			03/30/2017	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLD	O-1 L-TURN	01	NONE 0	STRGHT										04
CITY			N			Thu 9P	OREGON CITY	MN 0		PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	S N									000	00
							PORTLAND UA	11.81		NB EXTO I-205 EB	04	1		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	72	M	OR-Y		020	000	04
No	*45*	*21*	*51.47*	*-122*	*36*	*3.42*		008100100S00		1																OR<25				
																	02	NONE 0	TURN-L										
																		PRVTE	N E									000	00
																		PSNGR CAR		01	DRVR	INJC	39	M	OTH-Y		000	000	00
																									OR<25				
03706	N	N	N	N	N	09/09/2017	CLACKAMAS	1	14		INTER	3-LEG	N	N	RAIN	O-1 L-TURN	01	NONE 0	STRGHT										02
STATE			N			Sat 9P	OREGON CITY	MN 0		PACIFIC HY 99E	CN		TRF SIGNAL	N	WET	TURN		PRVTE	S N									000	00
							PORTLAND UA	11.81		NB EXTO I-205 EB	04	1		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	39	F	OR-Y		000	000	00
No	*45*	*21*	*51.47*	*-122*	*36*	*3.42*		008100100S00		1																OR<25				
																	02	NONE 0	TURN-L										
																		PRVTE	N E									000	00
																		PSNGR CAR		01	DRVR	NONE	73	M	OR-Y		028,004	000	02,08
																									OR<25				

Intersectional Crashes at OR99E, Pacific Hwy (#081) & Dunes Dr
January 1, 2014 through December 31, 2018

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2018														
ANGLE	0	1	0	1	0	1	0	1	0	1	0	1	0	0
PEDESTRIAN	0	1	0	1	0	1	1	1	0	1	0	1	0	0
REAR-END	0	4	0	4	0	5	0	1	3	3	1	4	0	0
TURNING MOVEMENTS	0	1	1	2	0	2	1	2	0	2	0	2	0	0
2018 TOTAL	0	7	1	8	0	9	2	5	3	7	1	8	0	0
YEAR: 2017														
ANGLE	0	2	0	2	0	3	0	1	1	2	0	2	0	0
REAR-END	0	1	2	3	0	1	0	3	0	2	1	3	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	0	1	1	0	1	0	0
2017 TOTAL	0	4	2	6	0	5	0	4	2	5	1	6	0	0
YEAR: 2016														
BACKING	0	0	1	1	0	0	0	0	1	0	1	1	0	0
REAR-END	0	5	2	7	0	9	0	6	1	6	1	7	0	0
SIDESWIPE - OVERTAKING	0	1	0	1	0	1	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	2	3	5	0	3	0	4	1	3	2	5	0	0
2016 TOTAL	0	8	6	14	0	13	0	11	3	10	4	14	0	0
YEAR: 2015														
ANGLE	0	2	0	2	0	3	0	2	0	2	0	2	0	0
REAR-END	0	2	1	3	0	2	0	3	0	3	0	3	0	0
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	3	1	4	0	3	0	1	3	2	2	4	0	0
2015 TOTAL	0	7	3	10	0	8	0	7	3	8	2	10	0	0
YEAR: 2014														
ANGLE	0	1	2	3	0	1	0	2	1	2	1	3	0	0
PEDESTRIAN	0	2	0	2	0	2	0	1	1	0	2	2	0	0
REAR-END	0	2	1	3	0	3	0	2	1	2	1	3	0	0
TURNING MOVEMENTS	0	2	0	2	0	4	0	2	0	2	0	2	0	0
2014 TOTAL	0	7	3	10	0	10	0	7	3	6	4	10	0	0
FINAL TOTAL	0	33	15	48	0	45	2	34	14	36	12	48	0	0

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & Dunes Dr
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DAY/TIME / CITY / URBAN AREA / *LAT/LONG*	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS / RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00144	N	N	N	N	N	01/11/2014	1	14																				
STATE		N				Sat 7P	MN	0 DUNES DR	INTER	3-LEG	N	N	RAIN	PED	01	NONE 0	TURN-L										02,19
						OREGON CITY	MN	0 DUNES DR	N		TRF SIGNAL	N	WET	PED		PRVTE	W N									000		00
						PORTLAND UA	11.53	PACIFIC HY 99E	05	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	30	M	OR-Y		029	000		02
No	*45 22*		*5.51*	*-122 36*	*3.89*		008100100	S00 1															OR<25					
																	STRGHT	01	PED	INJC	19	F		01	055	035		19
																	E W											
02905	N	N	N	N	N	08/20/2018	1	14																				
CITY		N				Mon 2P	MN	0 DUNES DR	INTER	3-LEG	N	N	CLR	PED	01	NONE 1	TURN-L										19,02
						OREGON CITY	MN	0 DUNES DR	N		TRF SIGNAL	N	DRY	PED		PRVTE	W N									000		00
						PORTLAND UA	11.53	PACIFIC HY 99E	05	0		N	DAY	INJ		SEMI TOW		01	DRVR	NONE	75	F	OR-Y		029	000		02
No	*45 22*		*5.52*	*-122 36*	*3.88*		008100100	S00 1															OR<25					
																	STRGHT	01	PED	INJB	66	M		01	000	035		19
																	E W											
01298	N	Y	Y	N	N	04/04/2014	1	14																				
CITY		N				Fri 9P	MN	0 DUNES DR	INTER	3-LEG	N	N	CLR	PED	01	NONE 0	TURN-L										19
						OREGON CITY	MN	0 DUNES DR	N		TRF SIGNAL	N	DRY	PED		PRVTE	W N									000		00
						PORTLAND UA	11.53	PACIFIC HY 99E	06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	36	M	OR-Y		000	000		00
No	*45 22*		*5.51*	*-122 36*	*3.89*		008100100	S00 1															OR>25					
																	STRGHT	01	PED	INJC	48	F		01	000	035		19
																	E W											
01704	N	N	N	N	Y	05/02/2014	1	14																				
CITY		N				Fri 8A	MN	0 DUNES DR	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT									093		27,07
						OREGON CITY	MN	0 DUNES DR	N		TRF SIGNAL	N	DRY	REAR		PRVTE	N S									000		00
						PORTLAND UA	11.53	PACIFIC HY 99E	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	21	F	OR-Y		016,026	038	093	27,07
No	*45 22*		*5.51*	*-122 36*	*3.89*		008100100	S00 1															OR<25					
															02	NONE 0	STOP											
																PRVTE	N S									011		00
																PSNGR CAR		01	DRVR	NONE	51	F	OR-Y		000	000		00
																							OR<25					
04936	N	N	N			12/05/2014	1	14																				
NO RPT		N				Fri 6P	MN	0 DUNES DR	INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT										29
						OREGON CITY	MN	0 DUNES DR	N		TRF SIGNAL	N	WET	REAR		PRVTE	N S									000		00
						PORTLAND UA	11.53	PACIFIC HY 99E	06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	34	M	OR-Y		026	000		29
No	*45 22*		*5.51*	*-122 36*	*3.89*		008100100	S00 1															OR<25					
															02	NONE 0	STOP											
																PRVTE	N S									012		00
																PSNGR CAR		01	DRVR	INJC	46	F	OR-Y		000	000		00
																							OR<25					
01913	N	N	N			05/20/2015	1	14																				
NONE		N				Wed 9A	MN	0 DUNES DR	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										04
						OREGON CITY	MN	0 DUNES DR	N		TRF SIGNAL	N	DRY	ANGL		PRVTE	W E									000		00
						PORTLAND UA	11.53	PACIFIC HY 99E	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	52	M	OTH-Y		020	000		04
No	*45 22*		*5.51*	*-122 36*	*3.89*		008100100	S00 1															N-RES					

081 PACIFIC HIGHWAY EAST
Intersectional Crashes at OR99E, Pacific Hwy (#081) & Dunes Dr
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	S P E D	A L C	D R U G / M J	S W C H L	O R K	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# FC / CMPT/MLG / MILEPNT / LRS	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																02	NONE 0 PRVTE	STRGHT N S									000		00
																	PSNGR CAR		01	DRVR	INJC	56	F	OR-Y OR<25		000	000		00
02399 NONE	N	N	N			06/14/2015 Sun 5P	CLACKAMAS OREGON CITY	1 14 MN 0	 DUNES DR	INTER N	3-LEG (#LANES)	N TRF SIGNAL	N N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT N S									000	013	29 00
							PORTLAND UA	11.53	PACIFIC HY 99E	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	16	F	OR-Y OR<25		026	000		29
No	*45 22*		*5.51*	*-122 36*	*3.89*			008100100S00	1																			
																02	NONE 0 PRVTE	STOP N S									011	013	00
																	PSNGR CAR		01	DRVR	NONE	37	M	OR-Y OR<25		000	000		00
																03	NONE 0 PRVTE	STOP N S									022		00
																	PSNGR CAR		01	DRVR	NONE	26	F	OR-Y OR<25		000	000		00
																			02	PSNG	NO<5	01	M			000	000		00
05751 NO RPT	N	N	N			11/23/2016 Wed 12P	CLACKAMAS OREGON CITY	1 14 MN 0	 DUNES DR	INTER N	3-LEG (#LANES)	N TRF SIGNAL	N N	CLR DRY	S-1STOP REAR	01	NONE PRVTE	STRGHT N S									000		29 00
							PORTLAND UA	11.53	PACIFIC HY 99E	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	26	F	OR-Y OR>25		026	000		29
No	*45 22*		*5.51*	*-122 36*	*3.89*			008100100S00	1																			
																02	NONE PRVTE	STOP N S									011		00
																	PSNGR CAR		01	DRVR	INJC	33	F	OR-Y OR<25		000	000		00
06068 CITY	N	N	N			12/24/2016 Sat 1P	CLACKAMAS OREGON CITY	1 14 MN 0	 DUNES DR	INTER N	3-LEG (#LANES)	N TRF SIGNAL	N N	CLR DRY	S-1STOP REAR	01	NONE 9 N/A	STRGHT N S									000		29 00
							PORTLAND UA	11.53	PACIFIC HY 99E	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
No	*45 22*		*5.51*	*-122 36*	*3.89*			008100100S00	1																			
																02	NONE 9 N/A	STOP N S									011		00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
06106 CITY	N	N	N	N	N	12/27/2016 Tue 12P	CLACKAMAS OREGON CITY	1 14 MN 0	 DUNES DR	INTER N	3-LEG (#LANES)	N TRF SIGNAL	N N	RAIN WET	S-STRGHT REAR	01	NONE 0 PRVTE	STRGHT N S									000	013	29,32 00
							PORTLAND UA	11.53	PACIFIC HY 99E	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	37	F	OR-Y OR<25		026,052	000		29,32
No	*45 22*		*5.51*	*-122 36*	*3.89*			008100100S00	1																			
																			02	PSNG	INJC	42	M			000	000		

Item #2.

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & Dunes Dr
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUGS	SCHL ZN	WORK ZN	HIT RUN	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																	02	NONE 0 PRVTE	STOP N S									011	013	00
																		PSNGR CAR		01	DRVR	INJC	33	M	OR-Y OR<25		000	000		00
																	03	NONE 0 PRVTE	STOP N S									022	013	00
																		PSNGR CAR		01	DRVR	INJC	65	F	OR-Y OR<25		000	000		00
																				02	PSNG	INJC	68	M			000	000		00
																	04	NONE 0 PRVTE	STOP N S									022		00
																		PSNGR CAR		01	DRVR	NONE	48	M	OR-Y OR<25		000	000		00
04461 NONE	N	N	N				10/25/2017 Wed 7A	CLACKAMAS OREGON CITY	1 14 MN 0	DUNES DR	INTER N	3-LEG	N TRF SIGNAL	N	CLR DRY	S-STRGHT REAR	01	NONE 0 PRVTE	STRGHT N S									000		29 00
No							*45 22 5.51 -122 36 3.89*	PORTLAND UA	11.53 008100100S00	PACIFIC HY 99E 1	06	0		N	DAWN	INJ		PSNGR CAR		01	DRVR	INJC	31	F	OR-Y OR<25		042	000		29
																	02	NONE 0 PRVTE	STRGHT N S									000		00
																		PSNGR CAR		01	DRVR	NONE	34	M	OR-Y OR<25		000	000		00
00305 NONE	N	N	N				01/25/2018 Thu 4P	CLACKAMAS OREGON CITY	1 14 MN 0	DUNES DR	INTER N	3-LEG	N TRF SIGNAL	N	RAIN WET	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT N S									000	013	27,29 00
No							*45 22 5.51 -122 36 3.89*	PORTLAND UA	11.53 008100100S00	PACIFIC HY 99E 1	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	56	F	OR-Y OR<25		026	038		27,29
																	02	NONE 0 PRVTE	STOP N S									011	013	00
																		PSNGR CAR		01	DRVR	INJC	18	M	OR-Y OR<25		000	000		00
																				02	PSNG	INJC	18	M			000	000		00
																	03	NONE 0 PRVTE	STOP N S									022		00
																		PSNGR CAR		01	DRVR	NONE	35	M	OR-Y OR<25		000	000		00
03152 NONE	N	N	N				09/07/2018 Fri 11A	CLACKAMAS OREGON CITY	1 14 MN 0	DUNES DR	INTER N	3-LEG	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT N S									000		29 00
No							*45 22 5.51 -122 36 3.90*	PORTLAND UA	11.53 008100100S00	PACIFIC HY 99E 1	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	53	M	OTH-Y OR<25		026	000		00

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & Dunes Dr
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																02	NONE 0 PRVTE	STOP N S									011		00
																	PSNGR CAR		01	DRVR	INJC	31	M	OR-Y OR>25		000	000		00
04716 NONE	N	N	N			12/21/2018 Fri 6A	CLACKAMAS OREGON CITY	1 MN 0	14 DUNES DR	INTER N	3-LEG	N TRF SIGNAL	N	RAIN WET	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT N S									000		29 00
							PORTLAND UA	11.53	PACIFIC HY 99E	06	0		N	DAWN	INJ		PSNGR CAR		01	DRVR	NONE	37	M	OR-Y OR<25		026	000		29
No						*45 22 5.54 -122 36 3.90*		008100100S00	1																				
																02	NONE 0 PRVTE	STOP N S									011		00
																	PSNGR CAR		01	DRVR	INJC	28	F	OR-Y OR<25		000	000		00
01371 NONE	N	N	N			04/16/2015 Thu 4P	CLACKAMAS OREGON CITY	1 MN 0	14 DUNES DR	INTER E	3-LEG	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT E W									000		29 00
							PORTLAND UA	11.53	PACIFIC HY 99E	06	0		Y	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	OR-Y OR<25		026	000		29
No						*45 22 5.51 -122 36 3.89*		008100100S00	1																				
																02	NONE 0 PRVTE	STOP E W									011		00
																	PSNGR CAR		01	DRVR	NONE	53	M	OR-Y OR<25		000	000		00
03922 NONE	N	N	N			09/24/2015 Thu 1P	CLACKAMAS OREGON CITY	1 MN 0	14 DUNES DR	INTER E	3-LEG	N TRF SIGNAL	N	CLR DRY	S-STRGHT REAR	01	NONE 0 PRVTE	STRGHT E W									000		29 00
							PORTLAND UA	11.53	PACIFIC HY 99E	06	0		Y	DAY	INJ		PSNGR CAR		01	DRVR	NONE	54	M	OR-Y OR<25		042	000		29
No						*45 22 5.51 -122 36 3.89*		008100100S00	1																				
																02	NONE 0 PRVTE	TURN-R E N									000		00
																	PSNGR CAR		01	DRVR	INJC	40	F	OR-Y OR<25		000	000		00
06024 CITY	N	N	N	N	N	11/10/2016 Thu 2P	CLACKAMAS OREGON CITY	1 MN 0	14 DUNES DR	INTER S	3-LEG	N TRF SIGNAL	N	CLR DRY	BIKE TURN														110	02
							PORTLAND UA	11.53	PACIFIC HY 99E	05	0		N	DAY	INJ			STRGHT W E	01	BIKE	INJB	72	M		01	000	035	110	00
No						*45 22 5.51 -122 36 3.89*		008100100S00	1																				
																01	NONE PRVTE	TURN-L E S									000		00
																	PSNGR CAR		01	DRVR	NONE	66	M	OR-Y OR<25		027	000		02

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & Dunes Dr
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
02526	N	N	N			07/01/2014	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NO RPT			N			Tue 5P	OREGON CITY	MN 0	DUNES DR	S		TRF SIGNAL	N	DRY	REAR		PRVTE	S N										000	00
							PORTLAND UA	11.53	PACIFIC HY 99E	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	44	M	OR-Y		026	000	29
No	*45 22*		*5.51 -122 36*		*3.89*			008100100S00	1															OR<25				
																02	NONE 0	STOP										
																	PRVTE	S N									011	00
																	PSNGR CAR		01	DRVR	INJC	17	F	OR-Y		000	000	00
																								OR<25				
00310	N	N	N			01/20/2016	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE			N			Wed 8A	OREGON CITY	MN 0	DUNES DR	S		TRF SIGNAL	N	DRY	REAR		UNKN	S N										000	00
							PORTLAND UA	11.53	PACIFIC HY 99E	06	0		N	DAWN	INJ		PSNGR CAR		01	DRVR	NONE	00	U	UNK		026	000	29
No	*45 22*		*5.51 -122 36*		*3.89*			008100100S00	1															UNK				
																02	NONE 0	STOP										
																	PRVTE	S N									011	00
																	PSNGR CAR		01	DRVR	INJC	66	M	OR-Y		000	000	00
																								OR<25				
05255	N	N	N			08/26/2016	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 1	STRGHT										29
NONE			N			Fri 2P	OREGON CITY	MN 0	DUNES DR	S		TRF SIGNAL	N	DRY	REAR		PRVTE	S N										000	00
							PORTLAND UA	11.53	PACIFIC HY 99E	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	57	M	OR-Y		026	000	29
No	*45 22*		*5.51 -122 36*		*3.89*			008100100S00	1															OR<25				
																02	NONE 0	STOP										
																	PRVTE	S N									011	00
																	PSNGR CAR		01	DRVR	INJC	45	F	OR-Y		000	000	00
																								OR<25				
04443	N	N	N	N	N	09/26/2016	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
CITY			N			Mon 5P	OREGON CITY	MN 0	DUNES DR	S		TRF SIGNAL	N	DRY	REAR		PRVTE	S N										000	00
							PORTLAND UA	11.53	PACIFIC HY 99E	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	47	M	OR-Y		026	000	29
No	*45 22*		*5.51 -122 36*		*3.89*			008100100S00	1															OR<25				
																02	NONE 0	STOP										
																	PRVTE	S N									011	00
																	PSNGR CAR		01	DRVR	INJB	29	F	OR-Y		000	000	00
																								OR<25				
01502	N	N	N	N	N	04/20/2017	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 9	STRGHT										07,29
STATE			N			Thu 10A	OREGON CITY	MN 0	DUNES DR	S		TRF SIGNAL	N	DRY	REAR		N/A	S N										000	00
							PORTLAND UA	11.53	PACIFIC HY 99E	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45 22*		*5.51 -122 36*		*3.89*			008100100S00	1															UNK				

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & Dunes Dr
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																02	NONE 9 N/A	STOP S N									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
03984	N	N	N			09/26/2017 Tue 5P	CLACKAMAS OREGON CITY	1 14 MN 0	 DUNES DR	INTER S	3-LEG	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 9 N/A	STRGHT S N									000	29 00
							PORTLAND UA	11.53	PACIFIC HY 99E	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
NONE No		N				*45 22 5.51 -122 36 3.89*			008100100S00 1																			
																02	NONE 9 N/A	STOP S N									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
04836	N	N	N	N	N	12/29/2018 Sat 12P	CLACKAMAS OREGON CITY	1 14 MN 0	 DUNES DR	INTER S	3-LEG	N TRF SIGNAL	N	CLD WET	S-1STOP REAR	01	NONE 0 UNKN	STRGHT S N									000	29 00
							PORTLAND UA	11.53	PACIFIC HY 99E	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		026	000	29
CITY No		N				*45 22 5.52 -122 36 3.90*			008100100S00 1																			
																02	NONE 0 PRVTE	STOP S N									011	00
																	PSNGR CAR		01	DRVR	INJC	68	M	OR-Y OR<25		000	000	00
04318	N	N	N			09/19/2016 Mon 5P	CLACKAMAS OREGON CITY	1 14 MN 0	 DUNES DR	INTER W	3-LEG	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 9 N/A	STRGHT W E									000	29 00
							PORTLAND UA	11.53	PACIFIC HY 99E	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
NONE No		N				*45 22 5.51 -122 36 3.89*			008100100S00 1																			
																02	NONE 9 N/A	STOP W E									012	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
01529	N	N	N			03/15/2015 Sun 2P	CLACKAMAS OREGON CITY	1 14 MN 0	 DUNES DR	INTER CN	3-LEG	N TRF SIGNAL	N	CLR DRY	S-STRGHT SS-O	01	NONE 0 UNKN	STRGHT N S									000	10 00
							PORTLAND UA	11.53	PACIFIC HY 99E	01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	UNK UNK		080	000	10
NONE No		N				*45 22 5.51 -122 36 3.89*			008100100S00 1																			
																02	NONE 0 PRVTE	STRGHT N S									000	00
																	PSNGR CAR		01	DRVR	NONE	56	F	OR-Y OR<25		000	000	00

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & Dunes Dr
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
01306	N	N	N			04/11/2015	CLACKAMAS	1 14		INTER	3-LEG	N	N	UNK	ANGL-OTH	01	NONE 0	STRGHT										04
NO RPT			N			Sat 1P	OREGON CITY	MN 0	DUNES DR	CN		TRF SIGNAL	N	WET	TURN		PRVTE	N S									000	00
							PORTLAND UA	11.53	PACIFIC HY 99E	01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	40	M	OR-Y		020	000	04
No	*45 22*		*5.51 -122 36*			*3.89*		008100100	S00 1															OR<25				
																02	NONE 0	TURN-L										
																	PRVTE	E S									000	00
																	PSNGR CAR		01	DRVR	NONE	50	F	OR-Y		000	000	00
																								OR<25				
05491	N	N	N			12/19/2015	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										04
NONE			N			Sat 3P	OREGON CITY	MN 0	DUNES DR	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	N S									000	00
							PORTLAND UA	11.53	PACIFIC HY 99E	01	0		Y	DAY	INJ		PSNGR CAR		01	DRVR	INJC	23	M	OR-Y		000	000	00
No	*45 22*		*5.51 -122 36*			*3.89*		008100100	S00 1															OR<25				
																			02	PSNG	INJC	18	F			000	000	00
																02	NONE 0	STRGHT										
																	PRVTE	E W									018	00
																	PSNGR CAR		01	DRVR	NONE	54	F	OR-Y		020	000	04
																								OR<25				
02875	N	N	N			06/25/2016	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 9	STRGHT										02,08
NONE			N			Sat 5P	OREGON CITY	MN 0	DUNES DR	CN		TRF SIGNAL	N	DRY	TURN		N/A	N S									000	00
							PORTLAND UA	11.53	PACIFIC HY 99E	01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45 22*		*5.51 -122 36*			*3.89*		008100100	S00 1															UNK				
																02	NONE 9	TURN-L										
																	N/A	S W									000	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																								UNK				
01128	N	N	N	N	N	03/29/2018	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-OTHER	01	NONE 9	U-TURN										14,08
CITY			N			Thu 1P	OREGON CITY	MN 0	DUNES DR	CN		L-GRN-SIG	N	DRY	TURN		N/A	S S									000	00
							PORTLAND UA	11.53	PACIFIC HY 99E	01	0		N	DAY	PDO		SEMI TOW		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45 22*		*5.51 -122 36*			*3.89*		008100100	S00 1															UNK				
																02	NONE 9	TURN-L										
																	N/A	S W									000	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																								UNK				
01656	N	N	N	N	N	05/16/2018	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLD	ANGL-OTH	01	NONE 0	STRGHT										04
CITY			N			Wed 9A	OREGON CITY	MN 0	DUNES DR	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	N S									000	00
							PORTLAND UA	11.53	PACIFIC HY 99E	01	0		Y	DAY	INJ		PSNGR CAR		01	DRVR	INJC	58	F	OR-Y		020	000	04
No	*45 22*		*5.52 -122 36*			*3.90*		008100100	S00 1															OR<25				

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & Dunes Dr
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / LRS	FC / MILEPNT	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																	02	NONE 0 PRVTE	STRGHT E W									018	00
																		PSNGR CAR		01	DRVR	NONE	34	M	SUSP OR<25		000	000	00
																				02	PSNG	NONE	03	M			000	000	00
00034 NONE	N	N	N			01/04/2014 Sat 3P	CLACKAMAS OREGON CITY	1 14 MN 0		DUNES DR	INTER CN	3-LEG	N TRF SIGNAL	N	CLR DRY	S-OTHER TURN	01	NONE 0 PRVTE	TURN-R E N									018	07 00
							PORTLAND UA	11.53		PACIFIC HY 99E	02	0		Y	DAY	INJ		PSNGR CAR		01	DRVR	NONE	28	M	OR-Y OR<25		026	000	07
No	*45*	*22*	*5.51*	*-122*	*36*	*3.89*	008100100S00			1																			
																	02	NONE 0 PRVTE	STOP E W									013	00
																		PSNGR CAR		01	DRVR	INJC	33	M	OR-Y OR<25		000	000	00
02232 NO RPT	N	N	N			06/09/2015 Tue 10P	CLACKAMAS OREGON CITY	1 14 MN 0		DUNES DR	INTER CN	3-LEG	N TRF SIGNAL	N	CLR DRY	ANGL-OTH TURN	01	NONE 0 PRVTE	STRGHT S N									000	04 00
							PORTLAND UA	11.53		PACIFIC HY 99E	02	0		Y	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	51	M	OR-Y OR<25		020	000	04
No	*45*	*22*	*5.51*	*-122*	*36*	*3.89*	008100100S00			1																			
																	02	NONE 0 PRVTE	TURN-L E S									018	00
																		PSNGR CAR		01	DRVR	NONE	66	F	OR-Y OR<25		000	000	00
05095 NO RPT	N	N	N			12/02/2015 Wed 10P	CLACKAMAS OREGON CITY	1 14 MN 0		DUNES DR	INTER CN	3-LEG	N TRF SIGNAL	N	RAIN WET	ANGL-OTH TURN	01	NONE 0 PRVTE	TURN-L E S									018	04 00
							PORTLAND UA	11.53		PACIFIC HY 99E	02	0		Y	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	74	F	OR-Y OR<25		000	000	00
No	*45*	*22*	*5.51*	*-122*	*36*	*3.89*	008100100S00			1																			
																	02	NONE 0 PRVTE	STRGHT S N									000	00
																		PSNGR CAR		01	DRVR	INJC	19	M	OR-Y OR<25		020	000	04
00351 STATE	N	N	N	N	N	01/23/2014 Thu 2P	CLACKAMAS OREGON CITY	1 14 MN 0		DUNES DR	INTER CN	3-LEG	N TRF SIGNAL	N	CLR DRY	ANGL-OTH ANGL	01	NONE 0 PRVTE	STRGHT N S									000	04 00
							PORTLAND UA	11.53		PACIFIC HY 99E	03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	57	F	OR-Y OR<25		020	000	04
No	*45*	*22*	*5.51*	*-122*	*36*	*3.89*	008100100S00			1																			
																	02	NONE 0 PRVTE	STRGHT W E									019	00
																		PSNGR CAR		01	DRVR	NONE	43	M	OTH-Y N-RES		000	000	00

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & Dunes Dr
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	S P E D	A L C	D R U G / M J	S C H L	W O R K	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
02799	N	N	N	N	N	07/20/2014	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLD	O-1 L-TURN	01	NONE 0	TURN-L									02
STATE		N				Sun 4P	OREGON CITY	MN 0	DUNES DR	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	E S									018	00
							PORTLAND UA	11.53	PACIFIC HY 99E	03	0		Y	DAY	INJ		PSNGR CAR		01	DRVR	NONE	63	F	OR-Y		028	000	02
No	*45 22*		*5.51*	*-122 36*	*3.89*			008100100	S00 1															OR<25				
																			02	PSNG	INJC	87	F			000	000	00
																02	NONE 0	STRGHT									
																	PRVTE	W E								019	00
																	PSNGR CAR		01	DRVR	INJC	43	M	OR-Y		000	000	00
																								OR<25				
																			02	PSNG	INJC	26	M			000	000	00
02326	N	N	N	N	N	05/23/2016	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLD	ANGL-OTH	01	NONE 9	TURN-R									02
CITY		N				Mon 11A	OREGON CITY	MN 0	DUNES DR	CN		TRF SIGNAL	N	DRY	TURN		N/A	W S									016	00
							PORTLAND UA	11.53	PACIFIC HY 99E	03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45 22*		*5.51*	*-122 36*	*3.89*			008100100	S00 1															UNK				
																02	NONE 9	STRGHT									
																	N/A	N S								000	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																								UNK				
00496	N	N	N	N	N	02/06/2017	CLACKAMAS	1 14		INTER	3-LEG	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT									04
STATE		N				Mon 10A	OREGON CITY	MN 0	DUNES DR	CN		TRF SIGNAL	N	WET	ANGL		PRVTE	W E									000	00
							PORTLAND UA	11.53	PACIFIC HY 99E	03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	63	F	OTH-Y		020	000	04
No	*45 22*		*5.51*	*-122 36*	*3.89*			008100100	S00 1															N-RES				
																02	NONE 0	STRGHT									
																	PRVTE	N S								000	00
																	PSNGR CAR		01	DRVR	INJC	57	F	OR-Y		000	000	00
																								OR<25				
02436	N	N	N			06/20/2017	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT									04
CITY		N				Tue 2P	OREGON CITY	MN 0	DUNES DR	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	W E									000	00
							PORTLAND UA	11.53	PACIFIC HY 99E	03	0		Y	DAY	INJ		PSNGR CAR		01	DRVR	NONE	60	M	OR-Y		097	000	00
No	*45 22*		*5.51*	*-122 36*	*3.89*			008100100	S00 1															OR<25				
																			02	PSNG	INJC	56	F			000	000	00
																02	NONE 0	STRGHT									
																	PRVTE	N S								000	00
																	PSNGR CAR		01	DRVR	NONE	73	M	OR-Y		097	000	00
																								OR<25				
04476	N	N	N			11/06/2014	CLACKAMAS	1 14		INTER	3-LEG	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT									04
NONE		N				Thu 6P	OREGON CITY	MN 0	DUNES DR	CN		TRF SIGNAL	N	WET	ANGL		PRVTE	S N									000	00
							PORTLAND UA	11.53	PACIFIC HY 99E	04	0		Y	DUSK	INJ		PSNGR CAR		01	DRVR	INJC	63	M	OR-Y		000	000	
No	*45 22*		*5.51*	*-122 36*	*3.89*			008100100	S00 1															OR<25				

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & Dunes Dr
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																02	NONE 0 PRVTE	STRGHT W E									019		00
																	PSNGR CAR		01	DRVR	NONE	56	M	OR-Y OR<25		020	000		04
05711 NO RPT	N N	N	N		12/30/2015 Wed 8A	CLACKAMAS OREGON CITY	1 14 MN 0	DUNES DR		INTER CN	3-LEG	N TRF SIGNAL	N	CLR ICE	O-1 L-TURN TURN	01	NONE 0 PRVTE	TURN-L N E										000	124	08 00
						PORTLAND UA	11.53	PACIFIC HY 99E		04	0		Y	DAY	INJ		PSNGR CAR		01	DRVR	INJC	85	M	OR-Y OR<25		001	017		08
No	*45 22*		*5.51 -122 36*		*3.89*		008100100S00		1																				
																02	NONE 0 PRVTE	STRGHT S N									000		00
																	PSNGR CAR		01	DRVR	NONE	56	M	OR-Y OR<25		000	000		00
00517 NONE	N N	N	N		01/20/2016 Wed 8A	CLACKAMAS OREGON CITY	1 14 MN 0	DUNES DR		INTER CN	3-LEG	N TRF SIGNAL	N	CLR DRY	S-STRGHT SS-O	01	NONE 0 PRVTE	STRGHT S N									007		26,13 00
						PORTLAND UA	11.53	PACIFIC HY 99E		04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	24	M	OTH-Y N-RES		046	000		26,13
No	*45 22*		*5.51 -122 36*		*3.89*		008100100S00		1																				
																02	NONE 0 UNKN	STRGHT S N									000		00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
00377 NONE	N N	N	N		01/23/2016 Sat 10P	CLACKAMAS OREGON CITY	1 14 MN 0	DUNES DR		INTER CN	3-LEG	N TRF SIGNAL	N	CLR DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	TURN-L N E									018		02 00
						PORTLAND UA	11.53	PACIFIC HY 99E		04	0		Y	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	17	F	OR-Y OR<25		028	000		02
No	*45 22*		*5.51 -122 36*		*3.89*		008100100S00		1																				
																02	NONE 0 PRVTE	STRGHT S N									000		00
																	PSNGR CAR		01	DRVR	INJC	35	F	OR-Y OR<25		000	000		00
01160 NONE	N N	N	N		03/12/2016 Sat 6P	CLACKAMAS OREGON CITY	1 14 MN 0	DUNES DR		INTER CN	3-LEG	N TRF SIGNAL	N	RAIN WET	S-OTHER TURN	01	NONE 9 N/A	TURN-L N E									019	004	29 00
						PORTLAND UA	11.53	PACIFIC HY 99E		04	0		Y	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
No	*45 22*		*5.51 -122 36*		*3.89*		008100100S00		1																				
																02	NONE 9 N/A	STOP N E									013		00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & Dunes Dr
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUGS	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
01541	N	N	N	N	N	04/24/2017	CLACKAMAS	1 14		INTER	3-LEG	N	N	RAIN	O-1 L-TURN	01	NONE 0	STRGHT										02,08
CITY		N				Mon 3P	OREGON CITY	MN 0	DUNES DR	CN		TRF SIGNAL	N	WET	TURN		PRVTE	S N									000	00
							PORTLAND UA	11.53	PACIFIC HY 99E	04	0		Y	DAY	INJ		PSNGR CAR		01	DRVR	NONE	41	F	OR-Y		000	000	00
No						*45 22 5.51 -122 36 3.89*		008100100	S00 1																OR<25				
																			02	PSNG	INJC	16	M			000	000	00
																02	NONE 0	TURN-L										
																	PRVTE	N E									019	00
																	PSNGR CAR		01	DRVR	NONE	82	F	OR-Y		028,004	000	02,08
																								OR<25				
04553	N	N	N	N	N	12/11/2018	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLD	O-1 L-TURN	01	NONE 0	TURN-L										04
CITY		N				Tue 10A	OREGON CITY	MN 0	DUNES DR	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N E									000	00
							PORTLAND UA	11.53	PACIFIC HY 99E	04	0		Y	DAY	INJ		PSNGR CAR		01	DRVR	INJC	42	M	OR-Y		000	000	00
No						*45 22 5.52 -122 36 3.90*		008100100	S00 1																OR<25				
																02	NONE 0	STRGHT										
																	PRVTE	S N									000	00
																	PSNGR CAR		01	DRVR	INJC	25	M	OR-Y		020	000	04
																								OR<25				
03414	N	N	N			09/02/2014	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										02
NONE		N				Tue 4P	OREGON CITY	MN 0	DUNES DR	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	E W									018	00
							PORTLAND UA	11.54	PACIFIC HY 99E	02	0		Y	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	OR-Y		028	000	02
No						*45 22 5.51 -122 36 3.89*		008100100	S00 1																OR<25				
																02	NONE 0	STRGHT										
																	PRVTE	S N									000	00
																	PSNGR CAR		01	DRVR	NONE	65	F	OR-Y		000	000	00
																								OR<25				

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at OR99E, Pacific Hwy (#081) & Dunes Dr
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
06112	N	Y	N	N	N	12/27/2016	14	DUNES DR	INTER	3-LEG	N	N	RAIN	O-OTHER	01	NONE 9	STRGHT											10
STATE		N				Tue 5P	0	PACIFIC HY 99E	W		TRF SIGNAL	N	WET	BACK		N/A	E W									000		00
No	*45 22 5.51*					*-122 36 3.89*	1		06	0		N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9	STOP									011		00
																N/A	W E											
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00

Intersectional Crashes at OR99E, Pacific Hwy (#081) & 14th St
January 1, 2014 through December 31, 2018

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2018														
REAR-END	0	3	1	4	0	4	0	4	0	1	3	4	0	0
SIDESWIPE - MEETING	0	0	1	1	0	0	0	0	1	0	1	1	0	0
2018 TOTAL	0	3	2	5	0	4	0	4	1	1	4	5	0	0
YEAR: 2017														
REAR-END	0	2	1	3	0	2	0	3	0	3	0	3	0	0
TURNING MOVEMENTS	0	2	2	4	0	2	0	3	1	2	2	4	0	0
2017 TOTAL	0	4	3	7	0	4	0	6	1	5	2	7	0	0
YEAR: 2016														
REAR-END	0	0	1	1	0	0	0	1	0	0	1	1	0	0
SIDESWIPE - OVERTAKING	0	1	0	1	0	3	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2016 TOTAL	0	1	2	3	0	3	0	3	0	2	1	3	0	0
YEAR: 2015														
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	1	1	2	0	1	1	2	0	2	0	2	0	0
2015 TOTAL	0	1	2	3	0	1	1	3	0	3	0	3	0	0
YEAR: 2014														
REAR-END	0	2	0	2	0	2	0	1	1	2	0	2	0	0
TURNING MOVEMENTS	0	3	2	5	0	3	0	4	1	5	0	5	0	0
2014 TOTAL	0	5	2	7	0	5	0	5	2	7	0	7	0	0
FINAL TOTAL	0	14	11	25	0	17	1	21	4	18	7	25	0	0

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & 14th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	MJ	DRUG	SCHL	WORK	DATE / DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00799	N	Y	N	N	N		03/04/2018	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLD	S-1STOP	01	NONE 9	STRGHT											29
CITY		N					Sun 12A	OREGON CITY	MN 0	PACIFIC HY 99E	UN		TRF SIGNAL	N	DRY	REAR		N/A	UN UN									000		00
								PORTLAND UA	11.94	14TH ST	06	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No							45 21 45.18 -122 36 8.23		008100100S00	1																UNK					
																	02	NONE 9	STOP											
																		N/A	UN UN									011		00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																									UNK					
00152	N	N	N				01/08/2016	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
NONE		N					Fri 6P	OREGON CITY	MN 0	PACIFIC HY 99E	N		TRF SIGNAL	N	DRY	REAR		N/A	NE SW									000		00
								PORTLAND UA	11.94	14TH ST	06	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No							45 21 45.20 -122 36 8.22		008100100S00	1																UNK					
																	02	NONE 9	STOP											
																		N/A	NE SW									011		00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																									UNK					
01353	N	N	N	N	N		04/08/2014	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	BIKE													110	18,14
CITY		N					Tue 1P	OREGON CITY	MN 0	PACIFIC HY 99E	NE		TRF SIGNAL	N	DRY	TURN														
								PORTLAND UA	11.94	14TH ST	06	0		N	DAY	INJ			STRGHT	01	BIKE	INJB	50	M		01	020	035		18,14
No							45 21 45.20 -122 36 8.22		008100100S00	1									SE NW											
																	01	NONE 0	TURN-L											
																		PRVTE	NE SE									000		00
																		PSNGR CAR		01	DRVR	NONE	31	F	OR-Y		000	000		00
																									OR>25					
04183	N	N	N				10/21/2014	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLD	S-1STOP	01	NONE 0	STRGHT											26
NONE		N					Tue 2P	OREGON CITY	MN 0	PACIFIC HY 99E	NE		L-GRN-SIG	N	WET	REAR		UNKN	NE SW									000		00
								PORTLAND UA	11.94	14TH ST	06	0		N	DAY	INJ		UNKNOWN		01	DRVR	NONE	00	F	UNK		026	000		29
No							45 21 45.20 -122 36 8.22		008100100S00	1																UNK					
																	02	NONE 0	STOP											
																		PRVTE	NE SW									012		00
																		PSNGR CAR		01	DRVR	NONE	21	M	OTH-Y		000	000		00
																									N-RES					
																				02	PSNG	INJC	21	F			000	000		00
00640	N	N	N				02/17/2017	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE		N					Fri 12P	OREGON CITY	MN 0	PACIFIC HY 99E	NE		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW									000		00
								PORTLAND UA	11.94	14TH ST	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	U	UNK		026	000		29
No							45 21 45.20 -122 36 8.22		008100100S00	1																UNK					

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & 14th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	HOUR	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / LRS	FC / MILEPNT	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																		02	NONE 0 PRVTE	STOP NE SW									012		00
																			PSNGR CAR		01	DRVR	INJC	34	M	OR-Y OR<25		000	000		00
04269 CITY	N	N	N	N	N		10/10/2017 Tue 12P	CLACKAMAS OREGON CITY	1 MN 0	14	 PACIFIC HY 99E	INTER NE	3-LEG	N TRF SIGNAL	N	UNK DRY	S-1STOP REAR	01	NONE 0 UNKN	STRGHT NE SW									000		07 00
								PORTLAND UA	11.94		14TH ST	06	0		N	DAY	INJ		UNKNOWN		01	DRVR	NONE	00	M	UNK		043,026	000		07
No							*45 21 45.20 -122 36 8.22*		008100100S00		1															UNK					
																		02	NONE 0 PRVTE	STOP NE SW									012		00
																			PSNGR CAR		01	DRVR	INJC	18	M	OR-Y OR<25		000	000		00
00048 NO RPT	N	N	N				01/04/2018 Thu 6P	CLACKAMAS OREGON CITY	1 MN 0	14	 PACIFIC HY 99E	INTER NE	3-LEG	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT NE SW									000		29 00
								PORTLAND UA	11.94		14TH ST	06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	51	M	OTH-Y N-RES		026	000		29
No							*45 21 45.20 -122 36 8.22*		008100100S00		1																				
																		02	NONE 0 PRVTE	STOP NE SW									011		00
																			PSNGR CAR		01	DRVR	INJC	38	F	OR-Y OR<25		000	000		00
01256 UNK	N	Y	N	N	N		04/09/2018 Mon 10P	CLACKAMAS OREGON CITY	1 MN 0	14	 PACIFIC HY 99E	INTER NE	3-LEG	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT NE SW									000		29 00
								PORTLAND UA	11.94		14TH ST	06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	56	M	OR-Y OR<25		026	000		29
No							*45 21 45.20 -122 36 8.22*		008100100S00		1																				
																		02	NONE 0 PRVTE	STOP NE SW									011		00
																			PSNGR CAR		01	DRVR	INJC	21	M	OR-Y OR<25		000	000		00
																					02	PSNG	INJC	20	M			000	000		00
02872 CITY	N	N	N	N	N		08/17/2018 Fri 3P	CLACKAMAS OREGON CITY	1 MN 0	14	 PACIFIC HY 99E	INTER NE	3-LEG	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT NE SW									000	013	07 00
								PORTLAND UA	11.94		14TH ST	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	34	M	OR-Y OR<25		043,026	000		07
No							*45 21 45.20 -122 36 8.23*		008100100S00		1																				
																		02	NONE 0 PRVTE	STOP NE SW									011	013	00
																			PSNGR CAR		01	DRVR	INJC	39	M	OR-Y OR<25		000	000		00

Item #2.

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & 14th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUGS	MAX SEV	HAZMAT	WORK ZONE	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																	03	NONE 0 PRVTE	STOP NE SW									022		00
																		PSNGR CAR		01	DRVR	NONE	77	M	OR-Y OR<25		000	000		00
03503 NONE	N	N	N				08/28/2015 Fri 2P	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E	INTER SE	3-LEG	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT SE NW									000		29 00
								PORTLAND UA	11.94	14TH ST	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	UNK OR<25		026	000		29
No	*45*	*21*	*45.20*	*-122*	*36*	*8.22*			008100100	S00 1																				
																	02	NONE 0 PRVTE	STOP SE NW									011		00
																		PSNGR CAR		01	DRVR	NONE	37	F	OR-Y OR<25		000	000		00
00666 NO RPT	Y	N	N				02/22/2018 Thu 9P	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E	INTER SW	3-LEG	N TRF SIGNAL	N	RAIN WET	O-1STOP SS-M	01	NONE 9 N/A	STRGHT NE SW									000		05,01 00
								PORTLAND UA	11.94	14TH ST	06	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
No	*45*	*21*	*45.20*	*-122*	*36*	*8.22*			008100100	S00 1																				
																	02	NONE 9 N/A	STOP SW NE									011		00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
93991 CITY	Y	N	N	N	N		08/31/2016 Wed 10A	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E	INTER CN	3-LEG	N TRF SIGNAL	N	CLR DRY	S-STRGHT SS-O	01	NONE 0 PRVTE	STRGHT NE SW									000	089 089	01,13 00
								PORTLAND UA	11.94	14TH ST	01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	39	F	OR-Y UNK		047,045,073	000		01,13
No	*45*	*21*	*45.20*	*-122*	*36*	*8.22*			008100100	S00 1											02	PSNG	INJC	19	M			000	000		00
																	02	NONE 0 PRVTE	STRGHT NE SW									000	089	00
																		PSNGR CAR		01	DRVR	NONE	68	M	OR-Y OR<25		000	000		00
																				02	PSNG	INJB	65	F			000	000		00
00805 NONE	N	N	N				02/24/2014 Mon 11A	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E	INTER CN	3-LEG	N TRF SIGNAL	N	RAIN WET	ANGL-OTH TURN	01	NONE 0 PRVTE	TURN-L SE SW									000		04 00
								PORTLAND UA	11.94	14TH ST	02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	83	F	OR-Y OR<25		020	000		04
No	*45*	*21*	*45.20*	*-122*	*36*	*8.22*			008100100	S00 1																				
																	02	NONE 0 PRVTE	TURN-L NE SE									000		00
																		PSNGR CAR		01	DRVR	NONE	46	M	OR-Y OR<25		000	000		00

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & 14th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG / MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
03839	N	N	N	N	N	09/18/2017	CLACKAMAS	1 14		INTER	3-LEG	N	N	RAIN	O-1 L-TURN	01	NONE 9	STRGHT											02,08
CITY		N				Mon 1P	OREGON CITY	MN 0	PACIFIC HY 99E	CN		TRF SIGNAL	N	WET	TURN		N/A	SW NE									000		00
							PORTLAND UA	11.94	14TH ST	02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No						*45 21 45.20 -122 36 8.22*		008100100S00	1															UNK					
																02	NONE 9	TURN-L											
																	N/A	NE SE									000		00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																								UNK					
05044	N	N	N			11/29/2017	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-OTHER	01	NONE 9	TURN-R										004	29
NONE		N				Wed 4P	OREGON CITY	MN 0	PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	REAR		N/A	SE NE									000		00
							PORTLAND UA	11.94	14TH ST	02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No						*45 21 45.20 -122 36 8.22*		008100100S00	1															UNK					
																02	NONE 9	STOP											
																	N/A	SE NE									013		00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																								UNK					
02305	N	N	N			06/13/2015	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	TURN-L											02
NO RPT		N				Sat 9A	OREGON CITY	MN 0	PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	NE SE									000		00
							PORTLAND UA	11.94	14TH ST	03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	17	F	OR-Y		028	000		02
No						*45 21 45.20 -122 36 8.22*		008100100S00	1															OR<25					
																02	NONE 0	STRGHT											
																	PRVTE	SW NE									000		00
																	PSNGR CAR		01	DRVR	NONE	32	M	OR-Y		000	000		00
																								OR<25					
01684	N	N	N			05/03/2017	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 9	STRGHT											04
NONE		N				Wed 4P	OREGON CITY	MN 0	PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN		N/A	NE SW									000		00
							PORTLAND UA	11.94	14TH ST	03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No						*45 21 45.20 -122 36 8.22*		008100100S00	1															UNK					
																02	NONE 9	TURN-L											
																	N/A	SE SW									000		00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																								UNK					
01313	N	N	N			04/05/2014	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLD	O-1 L-TURN	01	NONE 0	STRGHT											04
CITY		N				Sat 4P	OREGON CITY	MN 0	PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	SW NE									000		00
							PORTLAND UA	11.94	14TH ST	04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	35	F	N-VAL		040	000		04
No						*45 21 45.20 -122 36 8.22*		008100100S00	1															OR<25					

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & 14th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																02	NONE 0 PRVTE	TURN-L NE SE									000	00
																	PSNGR CAR		01	DRVR	INJC	32	F	OR-Y OR<25		040	000	04
02244 NONE	N	N	N			06/11/2014 Wed 6P	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E	INTER CN	3-LEG	N TRF SIGNAL	N N	CLR DRY	BIKE TURN	01	NONE 0 PRVTE	TURN-R SW SE									000	02 00
							PORTLAND UA	11.94	14TH ST	04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	59	M	OR-Y OR<25		027	000	02
No	*45*	*21*	*45.20*	*-122*	*36*	*8.22*		008100100	S00	1																		
																		STRGHT SW NE	01	BIKE	INJB	48	M		02	000	000	00
03729 NONE	N	N	N			09/22/2014 Mon 9A	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E	INTER CN	3-LEG	N TRF SIGNAL	N N	CLR DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT SW NE									000	02 00
							PORTLAND UA	11.94	14TH ST	04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	42	F	OR-Y OR<25		000	000	00
No	*45*	*21*	*45.20*	*-122*	*36*	*8.22*		008100100	S00	1																		
																02	NONE 0 PRVTE	TURN-L NE SE									000	00
																	PSNGR CAR		01	DRVR	NONE	00	M	UNK UNK		028,004	000	02
00042 NO RPT	N	N	N			01/05/2015 Mon 11A	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E	INTER CN	3-LEG	N TRF SIGNAL	N N	CLR DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT SW NE									000	02 00
							PORTLAND UA	11.94	14TH ST	04	0		N	DAY	INJ		TRUCK		01	DRVR	NONE	21	M	OR-Y OR>25		000	000	00
No	*45*	*21*	*45.20*	*-122*	*36*	*8.22*		008100100	S00	1																		
																02	NONE 0 PRVTE	TURN-L NE SE									000	00
																	PSNGR CAR		01	DRVR	INJB	65	F	OR-Y OR<25		028,004	000	02
00862 NONE	N	N	N			02/24/2016 Wed 3P	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E	INTER CN	3-LEG	N TRF SIGNAL	N N	CLR DRY	ANGL-OTH TURN	01	NONE 9 N/A	TURN-R SE NE									016	02 00
							PORTLAND UA	11.94	14TH ST	04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
No	*45*	*21*	*45.20*	*-122*	*36*	*8.22*		008100100	S00	1																		
																02	NONE 9 N/A	STRGHT NE SW									000	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
04184 CITY	N	N	N	N	N	10/08/2017 Sun 8A	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E	INTER CN	3-LEG	N TRF SIGNAL	N N	UNK DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT SW NE									000	02,08 00
							PORTLAND UA	11.94	14TH ST	04	0		N	DAWN	INJ		PSNGR CAR		01	DRVR	INJC	37	M	OR-Y OR<25		000	000	00
No	*45*	*21*	*45.20*	*-122*	*36*	*8.22*		008100100	S00	1																		

Item #2.

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & 14th St
January 1, 2014 through December 31, 2018

SER# INVEST UNLOC?	SPEED	ALC	DRUG/MJ	SCHL	WORK	DATE DAY/TIME *LAT/LONG*	COUNTY CITY URBAN AREA	RD# FC CMPT/MLG MILEPNT LRS	CONN # FIRST STREET SECOND STREET INTERSECTION SEQ#	RD CHAR DIRECT LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF- CNTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH TYP COLL TYP SVRTY	V#	SPCL USE TRLR QTY OWNER VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																02	NONE 0 PRVTE	TURN-L NE SE									000	00
																	PSNGR CAR		01	DRVR	NONE	39	M	OR-Y OR<25		028,004	000	02,08
04747	N	N	N	N	N	11/11/2017	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	TURN-L										02
CITY		N		Sat	5P	OREGON CITY	MN 0	PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	NE SE									000	00
						PORTLAND UA	11.94	14TH ST	04	0		N	DUSK	INJ		PSNGR CAR		01	DRVR	NONE	66	F	OR-Y OR<25		004,028	000	02
No	*45*	*21*	*45.20*	*-122*	*36*	*8.22*	008100100S00	1																				
																02	NONE 0 PRVTE	STRGHT SW NE									000	00
																	PSNGR CAR		01	DRVR	INJC	53	F	OR-Y OR<25		000	000	00

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at OR99E, Pacific Hwy (#081) & 14th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
02271	N	N	N			06/13/2014	16	PACIFIC HY 99E	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE			N			Fri 10A	0	14TH ST	SE		TRF SIGNAL	N	DRY	REAR		PRVTE	SE NW									000		00
No	*45 21 45.20*					*-122 36 8.22*	1		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	46	M	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											00
																PRVTE	SE NW									011		
																PSNGR CAR		01	DRVR	INJC	23	M	OR-Y OR<25		000	000		00

Intersectional Crashes at OR99E, Pacific Hwy (#081) & 12th St
January 1, 2014 through December 31, 2018

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2018														
TURNING MOVEMENTS	0	0	2	2	0	0	0	2	0	2	0	2	0	0
2018 TOTAL	0	0	2	2	0	0	0	2	0	2	0	2	0	0
YEAR: 2017														
PEDESTRIAN	0	1	0	1	0	1	0	1	0	1	0	1	0	0
REAR-END	0	2	1	3	0	2	0	2	1	3	0	3	0	0
2017 TOTAL	0	3	1	4	0	3	0	3	1	4	0	4	0	0
YEAR: 2016														
REAR-END	0	2	0	2	0	2	0	1	1	1	1	2	0	0
TURNING MOVEMENTS	0	1	1	2	0	2	0	2	0	2	0	2	0	0
2016 TOTAL	0	3	1	4	0	4	0	3	1	3	1	4	0	0
YEAR: 2015														
TURNING MOVEMENTS	0	2	0	2	0	2	0	1	1	2	0	2	0	0
2015 TOTAL	0	2	0	2	0	2	0	1	1	2	0	2	0	0
YEAR: 2014														
REAR-END	0	3	0	3	0	4	0	2	1	3	0	3	0	0
2014 TOTAL	0	3	0	3	0	4	0	2	1	3	0	3	0	0
FINAL TOTAL	0	11	4	15	0	13	0	11	4	14	1	15	0	0

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & 12th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	MAJ	CMV	HAZ	WORK	DATE / DAY/TIME	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
04954	N	N	N				10/26/2016	CLACKAMAS	1 14		INTER	3-LEG	N		N	RAIN	S-1STOP	01	NONE 0	STRGHT										07
CITY		N					Wed 6P	OREGON CITY	MN 0	PACIFIC HY 99E	SW		TRF SIGNAL		N	WET	REAR		PRVTE	SW NE								000		00
								PORTLAND UA	12.07	12TH ST	06	0			N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	31	M	OR-Y		043	000		07
No	*45*	*21*					*40.22 -122 36 13.35*		008100100S00	1																OR<25					
																		02	NONE 0	STOP										
																			PRVTE	SW NE								011		00
																			PSNGR CAR		01	DRVR	NONE	31	F	SUSP		000	000		00
																										OR<25					
02011	N	Y	N	N	N		05/23/2017	CLACKAMAS	1 14		INTER	3-LEG	N		N	CLR	PED													110	18,04
CITY		N					Tue 2P	OREGON CITY	MN 0	PACIFIC HY 99E	NE		TRF SIGNAL		N	DRY	PED														
								PORTLAND UA	12.08	12TH ST	05	0			N	DAY	INJ			STRGHT	01	CONV	INJC	57	M		01	020	035	110	18,04
No	*45*	*21*					*39.98 -122 36 13.64*		008100100S00	1										SE NW										
																		01	NONE 0	TURN-R										
																			PRVTE	SE NE								000		00
																			PSNGR CAR		01	DRVR	NONE	79	F	OR-Y		000	000		00
																										OR<25					
04443	N	N	N				12/03/2018	CLACKAMAS	1 14		INTER	3-LEG	N		N	CLR	ANGL-STP	01	NONE 9	TURN-R										29
NONE		N					Mon 8A	OREGON CITY	MN 0	PACIFIC HY 99E	NE		TRF SIGNAL		N	DRY	TURN		N/A	SE NE								000		00
								PORTLAND UA	12.08	12TH ST	05	0			N	DAY	PDO		OTH BUS		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45*	*21*					*39.98 -122 36 13.65*		008100100S00	1																UNK					
																		02	NONE 9	STOP										
																			N/A	SW NE								011		00
																			PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																										UNK					
01619	N	N	N	N	N		04/28/2014	CLACKAMAS	1 14		INTER	3-LEG	N		N	CLR	S-1STOP	01	NONE 0	STRGHT										29
CITY		N					Mon 12P	OREGON CITY	MN 0	PACIFIC HY 99E	NE		TRF SIGNAL		N	DRY	REAR		PRVTE	NE SW								000		00
								PORTLAND UA	12.08	12TH ST	06	0			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	74	M	OR-Y		026	000		29
No	*45*	*21*					*39.98 -122 36 13.64*		008100100S00	1																OR<25					
																		02	NONE 0	STOP										
																			PRVTE	NE SW								011	004	00
																			PSNGR CAR		01	DRVR	INJB	34	F	OR-Y		000	000		00
																										OR<25					
03012	N	N	N	N	N		07/05/2016	CLACKAMAS	1 14		INTER	3-LEG	N		N	CLR	S-1STOP	01	NONE 0	STRGHT										29
CITY		N					Tue 4P	OREGON CITY	MN 0	PACIFIC HY 99E	NE		TRF SIGNAL		N	DRY	REAR		PRVTE	NE SW								000		00
								PORTLAND UA	12.08	12TH ST	06	0			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	42	M	OR-Y		026	000		29
No	*45*	*21*					*39.98 -122 36 13.64*		008100100S00	1																OR<25					

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & 12th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG	SWC	SHR	SWO	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																	02	NONE / 0 / PRVTE	STOP / NE SW									012	00
																		PSNGR CAR		01	DRVR	INJC	50	M	OR-Y / OR<25		000	000	00
01564	N	N	N	N	N		04/25/2017	CLACKAMAS	1	14		INTER	3-LEG	N		N	RAIN	S-1STOP	01	NONE / 9 / N/A	STRGHT / NE SW										29,32,07
CITY		N					Tue 4P	OREGON CITY	MN 0	PACIFIC HY 99E		NE		TRF SIGNAL		N	WET	REAR										000		00
								PORTLAND UA	12.08	12TH ST		06	0			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No							*45 21 39.98 -122 36 13.64*		008100100S00		1																UNK				
																	02	NONE / 9 / N/A	STOP / NE SW									011	00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK / UNK		000	000	00
02909	N	N	N				07/19/2017	CLACKAMAS	1	14		INTER	3-LEG	N		N	CLR	S-1STOP	01	NONE / 0 / PRVTE	STRGHT / NE SW										29
NONE		N					Wed 6A	OREGON CITY	MN 0	PACIFIC HY 99E		NE		TRF SIGNAL		N	DRY	REAR										000		00
								PORTLAND UA	12.08	12TH ST		06	0			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	46	M	OR-Y		026	000	29
No							*45 21 39.98 -122 36 13.64*		008100100S00		1																OR<25				
																	02	NONE / 0 / PRVTE	STOP / NE SW									011	00
																		PSNGR CAR		01	DRVR	INJC	22	F	OR-Y / OR<25		000	000	00
01255	N	N	N	N	N		04/01/2014	CLACKAMAS	1	14		INTER	3-LEG	N		N	CLD	S-1STOP	01	NONE / 0 / PRVTE	STRGHT / SW NE										04,07,32
STATE		N					Tue 10A	OREGON CITY	MN 0	PACIFIC HY 99E		SW		TRF SIGNAL		N	WET	REAR										000		00
								PORTLAND UA	12.08	12TH ST		06	0			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	49	F	OR-Y / OR<25		020,026,052	000	04,07,32
No							*45 21 39.98 -122 36 13.64*		008100100S00		1																				
																	02	NONE / 0 / PRVTE	STOP / SW NE									011	00
																		PSNGR CAR		01	DRVR	INJC	36	M	OR-Y / OR<25		000	000	00
02095	N	N	N				06/01/2014	CLACKAMAS	1	14		INTER	3-LEG	N		N	CLR	S-1STOP	01	NONE / 0 / PRVTE	STRGHT / SW NE										29
NO RPT		N					Sun 5P	OREGON CITY	MN 0	PACIFIC HY 99E		SW		TRF SIGNAL		N	DRY	REAR										000		00
								PORTLAND UA	12.08	12TH ST		06	0			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	80	F	OR-Y		026	000	29
No							*45 21 39.98 -122 36 13.64*		008100100S00		1																OR<25				
																	02	NONE / 0 / PRVTE	STOP / SW NE									011	00
																		PSNGR CAR		01	DRVR	INJC	53	M	OTH-Y / N-RES		000	000	00
																				02	PSNG	INJC	53	F			000	000	00

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & 12th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALCHL	DRUGS	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
02699	N	N	N	N	N	07/08/2017	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										07
CITY		N				Sat 8P	OREGON CITY	MN 0	PACIFIC HY 99E	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE									000	00
							PORTLAND UA	12.08	12TH ST	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	M	UNK		043	000	07
No	*45 21*		*39.98 -122 36*			*13.64*		008100100S00	1															UNK				
																02	NONE 0	STOP										
																	PRVTE	SW NE									011	00
																	PSNGR CAR		01	DRVR	INJC	43	F	OR-Y		000	000	00
																								OR<25				
02603	N	N	N			06/28/2015	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										04
NO RPT		N				Sun 4P	OREGON CITY	MN 0	PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	NE SW									000	00
							PORTLAND UA	12.08	12TH ST	01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	16	F	OR-Y		020	000	04
No	*45 21*		*39.98 -122 36*			*13.64*		008100100S00	1															OR<25				
																02	NONE 0	TURN-L										
																	PRVTE	SE SW									000	00
																	PSNGR CAR		01	DRVR	INJC	66	F	OTH-Y		000	000	00
																								OR<25				
04128	N	N	N			10/07/2015	CLACKAMAS	1 14		INTER	3-LEG	N	N	UNK	O-1 L-TURN	01	NONE 0	TURN-L										02
NO RPT		N				Wed 7A	OREGON CITY	MN 0	PACIFIC HY 99E	CN		TRF SIGNAL	N	WET	TURN		PRVTE	NE SE									000	00
							PORTLAND UA	12.08	12TH ST	04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	23	F	OR-Y		028,004	000	02
No	*45 21*		*39.98 -122 36*			*13.64*		008100100S00	1															OR<25				
																02	NONE 0	STRGHT										
																	PRVTE	SW NE									000	00
																	MTRCYCLE		01	DRVR	INJB	58	M	OR-Y		000	000	00
																								OR<25				
00759	N	N	N			02/04/2016	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										14
NONE		N				Thu 4P	OREGON CITY	MN 0	PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	SW NE									000	00
							PORTLAND UA	12.08	12TH ST	04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	38	M	OR-Y		000	000	00
No	*45 21*		*39.98 -122 36*			*13.64*		008100100S00	1															OR<25				
																			02	PSNG	INJC	44	M			000	000	00
																02	NONE 0	TURN-L										
																	PRVTE	NE SE									000	00
																	PSNGR CAR		01	DRVR	NONE	42	M	OR-Y		020,004	000	14
																								OR<25				
01608	N	N	N			04/08/2016	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 9	STRGHT										02
NONE		N				Fri 1P	OREGON CITY	MN 0	PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN		N/A	SW NE									000	00
							PORTLAND UA	12.08	12TH ST	04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45 21*		*39.98 -122 36*			*13.64*		008100100S00	1															UNK				

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & 12th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	S P E D	D R U G / A L C	S M J	W C H L	O R K	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS / RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																	02	NONE 9 N/A	TURN-L NE SE									000	00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
00444 CITY	N	N N N		02/07/2018 Wed 4P			CLACKAMAS OREGON CITY PORTLAND UA	1 MN 0 12.08	14	PACIFIC HY 99E 12TH ST	INTER CN 04	3-LEG 0	N TRF SIGNAL	N N	CLR DRY DAY	O-1 L-TURN TURN PDO	01	NONE 9 N/A PSNGR CAR	TURN-L NE SE	01	DRVR	NONE	00	U	UNK UNK		000	000	02,08 00 00
No	*45 21*		*39.97 -122 36*		*13.64*			008100100S00		1																		
																	02	NONE 9 N/A	STRGHT SW NE									000	00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00

Intersectional Crashes at OR99E, Pacific Hwy (#081) & 10th St
January 1, 2014 through December 31, 2018

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2018														
REAR-END	0	3	0	3	0	3	1	2	1	3	0	3	0	0
2018 TOTAL	0	3	0	3	0	3	1	2	1	3	0	3	0	0
YEAR: 2017														
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	0	2	2	0	0	0	1	1	2	0	2	0	0
2017 TOTAL	0	0	3	3	0	0	0	2	1	3	0	3	0	0
YEAR: 2016														
TURNING MOVEMENTS	0	2	2	4	0	3	0	4	0	3	1	4	0	0
2016 TOTAL	0	2	2	4	0	3	0	4	0	3	1	4	0	0
YEAR: 2015														
REAR-END	0	1	0	1	0	2	0	1	0	0	0	1	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2015 TOTAL	0	2	0	2	0	3	0	2	0	1	0	2	0	0
YEAR: 2014														
TURNING MOVEMENTS	0	0	2	2	0	0	0	2	0	2	0	2	0	0
2014 TOTAL	0	0	2	2	0	0	0	2	0	2	0	2	0	0
FINAL TOTAL	0	7	7	14	0	9	1	12	2	12	1	14	0	0

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

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081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & 10th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	MJ	SCHL	WORK	DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
02856	N	N	N				07/09/2015	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE		N					Thu 12A	OREGON CITY	MN 0	PACIFIC HY 99E	NE		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW									000	00
								PORTLAND UA	12.19	10TH ST	06	0		N	UNK	INJ		PSNGR CAR		01	DRVR	NONE	65	M	OR-Y		026	000	29
No	*45*	*21*					*36.00 -122 36 21.16*		008100100S00	1																OR<25				
																	02	NONE 0	STOP										
																		PRVTE	NE SW									011	00
																		PSNGR CAR		01	DRVR	INJC	38	M	OR-Y		000	000	00
																									OR<25				
																				02	PSNG	INJC	30	F			000	000	00
01251	N	N	N				04/03/2017	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 9	STRGHT										29
NONE		N					Mon 6P	OREGON CITY	MN 0	PACIFIC HY 99E	SE		TRF SIGNAL	N	DRY	REAR		N/A	NW SE									000	00
								PORTLAND UA	12.19	10TH ST	05	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45*	*21*					*36.00 -122 36 21.16*		008100100S00	1																UNK				
																	02	NONE 9	STOP										
																		N/A	NW SE									011	00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																									UNK				
01513	N	N	N				05/04/2018	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE		N					Fri 2P	OREGON CITY	MN 0	PACIFIC HY 99E	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE									000	00
								PORTLAND UA	12.19	10TH ST	06	0		N	DAY	INJ		TRUCK		01	DRVR	NONE	00	M	UNK		026	000	29
No	*45*	*21*					*36.00 -122 36 21.16*		008100100S00	1																UNK				
																	02	NONE 0	STOP										
																		PRVTE	SW NE									011	00
																		PSNGR CAR		01	DRVR	INJC	61	F	OR-Y		000	000	00
																									OR<25				
																				02	PSNG	NONE	04	F			000	000	00
03605	N	N	N				10/07/2018	CLACKAMAS	1 14		INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT										07
CITY		N					Sun 1P	OREGON CITY	MN 0	PACIFIC HY 99E	SW		TRF SIGNAL	N	WET	REAR		PRVTE	SW NE									000	00
								PORTLAND UA	12.19	10TH ST	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	37	M	OR-Y		043	000	07
No	*45*	*21*					*36.00 -122 36 21.17*		008100100S00	1																OR<25				
																	02	NONE 0	STOP										
																		PRVTE	SW NE									011	00
																		PSNGR CAR		01	DRVR	INJC	27	F	OR-Y		000	000	00
																									OR<25				
03472	N	N	N				09/05/2014	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										02
NONE		N					Fri 2P	OREGON CITY	MN 0	PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	SW NE									000	00
								PORTLAND UA	12.19	10TH ST	03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	51	M	OR-Y		000	000	00
No	*45*	*21*					*36.00 -122 36 21.16*		008100100S00	1																OR<25				

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & 10th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																02	NONE 0 PRVTE	TURN-L NE SE									000	00
																	PSNGR CAR		01	DRVR	NONE	29	M	OR-Y OR>25		028,004	000	02
02551	N	N	N			07/03/2014 Thu 11A	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E	INTER CN	3-LEG	N TRF SIGNAL	N	CLR DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT SW NE										000	02 00
NO RPT		N					PORTLAND UA	12.19	10TH ST	04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	68	M	OR-Y OR<25		000	000	00
No	*45*	*21*	*36.00*	*-122*	*36*	*21.16*		008100100	S00	1																		
																02	NONE 0 PRVTE	TURN-L NE SE									000	00
																	PSNGR CAR		01	DRVR	NONE	61	F	OR-Y OR<25		028,004	000	02
02207	N	N	N			06/08/2015 Mon 4P	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E	INTER CN	3-LEG	N STOP SIGN	N	CLR DRY	ANGL-OTH TURN	01	NONE 0 PRVTE	STRGHT SW NE										000	02 00
NONE		N					PORTLAND UA	12.19	10TH ST	04	0		N	DAY	INJ		MTRCYCLE		01	DRVR	INJB	60	M	OR-Y OR<25		000	000	00
No	*45*	*21*	*36.00*	*-122*	*36*	*21.16*		008100100	S00	1																		
																02	NONE 0 PRVTE	TURN-R SE NE									015	00
																	PSNGR CAR		01	DRVR	NONE	76	F	OR-Y OR<25		028	000	02
01638	N	N	N			04/10/2016 Sun 3P	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E	INTER CN	3-LEG	N TRF SIGNAL	N	CLR DRY	ANGL-OTH TURN	01	NONE 0 PRVTE	TURN-R SE NE										016	02 00
NO RPT		N					PORTLAND UA	12.19	10TH ST	04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	66	F	OR-Y OR<25		028	000	02
No	*45*	*21*	*36.00*	*-122*	*36*	*21.16*		008100100	S00	1																		
																02	NONE 0 PRVTE	STRGHT SW NE									000	00
																	PSNGR CAR		01	DRVR	INJC	22	M	OR-Y OR<25		000	000	00
																			02	PSNG	INJC	20	F			000	000	00
02917	N	N	N	N	N	06/29/2016 Wed 9P	CLACKAMAS OREGON CITY	1 14 MN 0	PACIFIC HY 99E	INTER CN	3-LEG	N TRF SIGNAL	N	CLR DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT SW NE										000	02 00
CITY		N					PORTLAND UA	12.19	10TH ST	04	0		N	DLIT	INJ		MTRCYCLE		01	DRVR	INJB	22	M	OR-Y OR<25		000	000	00
No	*45*	*21*	*36.00*	*-122*	*36*	*21.16*		008100100	S00	1																		
																02	NONE 0 PRVTE	TURN-L NE SE									000	00
																	PSNGR CAR		01	DRVR	NONE	18	F	OR-Y OR<25		028,004	000	02

081 PACIFIC HIGHWAY EAST

Intersectional Crashes at OR99E, Pacific Hwy (#081) & 10th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
03226	N	N	N			07/08/2016	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 9	STRGHT										02
NONE		N				Fri 2P	OREGON CITY	MN 0	PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN		N/A	SW NE									000	00
							PORTLAND UA	12.19	10TH ST	04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No						*45 21 36.00 -122 36 21.16*		008100100S00	1															UNK				
																02	NONE 9	TURN-R										
																	N/A	SE NE									016	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																								UNK				
03771	N	N	N			08/18/2016	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 9	TURN-R										02
NONE		N				Thu 10A	OREGON CITY	MN 0	PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN		N/A	SE NE									016	00
							PORTLAND UA	12.19	10TH ST	04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No						*45 21 36.00 -122 36 21.16*		008100100S00	1															UNK				
																02	NONE 9	STRGHT										
																	N/A	SW NE									000	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																								UNK				
01287	N	N	N			04/06/2017	CLACKAMAS	1 14		INTER	3-LEG	N	N	UNK	ANGL-OTH	01	NONE 9	STRGHT										02
NO RPT		N				Thu 7A	OREGON CITY	MN 0	PACIFIC HY 99E	CN		TRF SIGNAL	N	WET	TURN		N/A	SW NE									000	00
							PORTLAND UA	12.19	10TH ST	04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No						*45 21 36.00 -122 36 21.16*		008100100S00	1															UNK				
																02	NONE 9	TURN-R										
																	N/A	SE NE									016	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																								UNK				
03480	N	N	N			08/24/2017	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 9	TURN-R										02,08
NONE		N				Thu 3P	OREGON CITY	MN 0	PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN		N/A	SE NE									015	00
							PORTLAND UA	12.19	10TH ST	04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No						*45 21 36.00 -122 36 21.16*		008100100S00	1															UNK				
																02	NONE 9	STRGHT										
																	N/A	NE SW									000	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																								UNK				

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at OR99E, Pacific Hwy (#081) & 10th St
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
01796	N	N	N			05/26/2018	14	PACIFIC HY 99E	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE			N			Sat 11A	0	10TH ST	SE		TRF SIGNAL	N	DRY	REAR		PRVTE	SE NW									000		00
No						*45 21 36.01*	1	*-122 36 21.16*	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	25	M	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	SE NW									011		00
																PSNGR CAR		01	DRVR	INJC	35	F	OR-Y OR<25		000	000		00

Intersectional Crashes at OR-213, Park Pl Frontage Rd & I-205, East Portland Hwy (#064), SB Off/On Ramps. Includes Crashes Occuring on Turn Leg.
January 1, 2014 through December 31, 2018

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2018														
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
SIDESWIPE - OVERTAKING	0	1	1	2	0	1	0	2	0	1	1	0	0	0
2018 TOTAL	0	1	2	3	0	1	0	3	0	2	1	1	0	0
YEAR: 2017														
ANGLE	0	1	0	1	0	1	0	0	1	1	0	0	0	0
FIXED / OTHER OBJECT	0	1	0	1	0	2	0	0	1	1	0	0	0	0
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	0	1	0	1	0	0	0	0
TURNING MOVEMENTS	0	0	2	2	0	0	0	1	1	2	0	2	0	0
2017 TOTAL	0	2	3	5	0	3	0	2	3	5	0	2	0	0
YEAR: 2016														
FIXED / OTHER OBJECT	0	1	0	1	0	1	0	0	1	0	1	1	0	1
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2016 TOTAL	0	1	1	2	0	1	0	1	1	1	1	2	0	1
YEAR: 2015														
REAR-END	0	1	1	2	0	1	0	0	1	1	1	2	0	0
SIDESWIPE - OVERTAKING	0	0	3	3	0	0	0	2	1	3	0	0	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	0	1	1	0	1	0	0
2015 TOTAL	0	1	5	6	0	1	0	2	3	5	1	3	0	0
YEAR: 2014														
REAR-END	0	1	1	2	0	1	0	0	2	1	1	2	0	0
TURNING MOVEMENTS	0	2	2	4	0	3	0	4	0	3	1	4	0	0
2014 TOTAL	0	3	3	6	0	4	0	4	2	4	2	6	0	0
FINAL TOTAL	0	8	14	22	0	10	0	12	9	17	5	14	0	1

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

064 EAST PORTLAND FREEWAY — Intersectional Crashes at OR-213, Park Pl Frontage Rd & I-205, East Portland Hwy (#064), SB Off/On Ramps. Includes Crashes Occuring on Turn Leg.
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	MAJ	SCH BUS	WORK ZONE	DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / LRS	FC / MILEPNT	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
00233	N	N	N			01/17/2014	CLACKAMAS	1	14		INTER	3-LEG	N	N	FOG	ANGL-OTH	01	NONE 0	STRGHT										02
NONE		N				Fri 5P	OREGON CITY	FR 0		PARK PL FR	CN		STOP SIGN	N	DRY	TURN		PRVTE	NW SE									015	00
							PORTLAND UA	10.25		SB EX PARK PL FR	01	0		N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	34	F	OR-Y		028	000	02
No	*45*	*22*				*30.10 -122 35 13.73*		0064AW100S00		1															OR<25				
																				02	PSNG	NO<5	01	F			000	000	00
																				03	PSNG	NO<5	03	M			000	000	00
																	02	NONE 0	STRGHT										
																		PRVTE	N S									000	00
																		PSNGR CAR		01	DRVR	NONE	00	M	OR-Y		000	000	00
																									OR<25				
03283	N	N	N			08/23/2014	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										02
NONE		N				Sat 2P	OREGON CITY	FR 0		PARK PL FR	CN		STOP SIGN	N	DRY	TURN		PRVTE	NW SE									015	00
							PORTLAND UA	10.25		SB EX PARK PL FR	01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	29	M	OR-Y		028	000	02
No	*45*	*22*				*30.10 -122 35 13.73*		0064AW100S00		1															OR<25				
																	02	NONE 0	TURN-R										
																		PRVTE	W S									000	00
																		PSNGR CAR		01	DRVR	INJC	59	F	OR-Y		000	000	00
																									OR<25				
04666	N	N	N			11/07/2015	CLACKAMAS	1	14		INTER	3-LEG	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT										03
NONE		N				Sat 1P	OREGON CITY	FR 0		PARK PL FR	CN		STOP SIGN	N	WET	TURN		PRVTE	N S									000	00
							PORTLAND UA	10.25		SB EX PARK PL FR	01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	33	F	OR-Y		021	000	03
No	*45*	*22*				*30.10 -122 35 13.73*		0064AW100S00		1															OR<25				
																				02	PSNG	NO<5	01	F			000	000	00
																	02	NONE 0	TURN-R										
																		PRVTE	NW S									000	00
																		PSNGR CAR		01	DRVR	NONE	48	M	OR-Y		000	000	00
																									OR<25				
00820	N	N	N			02/25/2014	CLACKAMAS	1	14		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										08
NONE		N				Tue 10A	OREGON CITY	FR 0		PARK PL FR	CN		UNKNOWN	N	DRY	TURN		UNKN	N S									000	00
							PORTLAND UA	10.25		SB EX PARK PL FR	03	0		N	DAY	PDO		UNKNOWN		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45*	*22*				*30.10 -122 35 13.73*		0064AW100S00		1															UNK				
																	02	NONE 0	TURN-R										
																		PRVTE	NW S									000	00
																		PSNGR CAR		01	DRVR	NONE	78	F	OR-Y		007	000	08
																									OR<25				
05302	N	N	N			11/16/2015	CLACKAMAS	1	16		INTER	3-LEG	N	N	UNK	S-1STOP	01	NONE 0	STRGHT										29
NONE		N				Mon 10A	OREGON CITY	FR 0		PARK PL FR	SE		L-GRN-SIG	N	WET	REAR		UNKN	SE NW									000	00
							PORTLAND UA	10.31		SB EF PARK PL FR	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	48	F	OR-Y		026	000	
No	*45*	*22*				*33.15 -122 35 14.97*		0064AW100S00		1															UNK				

064 EAST PORTLAND FREEWAY Intersectional Crashes at OR-213, Park Pl Frontage Rd & I-205, East Portland Hwy (#064), SB Off/On Ramps. Includes Crashes Occuring on Turn Leg.
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUGS	MAJ	SCH	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																	02	NONE 0 PRVTE	STOP SE NW									012		00
																		PSNGR CAR		01	DRVR	INJC	20	M	OR-Y OR<25		000	000		00
04221	N	N	N				10/23/2014	CLACKAMAS	1 14		INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											013	29
NO RPT			N				Thu 8A	OREGON CITY	FR 0	PARK PL FR	W		UNKNOWN	N	WET	REAR		PRVTE	N S									000		00
								PORTLAND UA	10.31	SB EF PARK PL FR	09	1		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	59	M	OR-Y OR<25		026	000		29
No							*45 22 33.15 -122 35 14.97*		0064AW100S00	1																				
																	02	NONE 0 PRVTE	STOP N S									011	013	00
																		PSNGR CAR		01	DRVR	INJC	20	M	OR-Y OR<25		000	000		00
																	03	NONE 0 PRVTE	STOP N S									022		00
																		PSNGR CAR		01	DRVR	NONE	43	F	OR-Y OR<25		000	000		00
04373	N	N	N				10/23/2015	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT												29
NONE			N				Fri 6A	OREGON CITY	FR 0	PARK PL FR	NW		STOP SIGN	N	UNK	REAR		PRVTE	NW SE									000		00
								PORTLAND UA	10.31	SB EX PARK PL FR	06	0		N	DAWN	PDO		PSNGR CAR		01	DRVR	NONE	27	M	OR-Y OR<25		026	000		29
No							*45 22 33.15 -122 35 14.97*		0064AW100S00	1																				
																	02	NONE 0 PRVTE	STOP NW SE									011		00
																		PSNGR CAR		01	DRVR	NONE	00	F	OR-Y UNK		000	000		00
01111	N	N	N	N	N	N	03/20/2014	CLACKAMAS	1 14		INTER	3-LEG	N	N	CLD	O-1 L-TURN	01	NONE 0	TURN-L												02
CITY			N				Thu 6P	OREGON CITY	FR 0	PARK PL FR	CN		L-GRN-SIG	N	DRY	TURN		PRVTE	SE SW									000		00
								PORTLAND UA	10.31	SB EF PARK PL FR	01	1		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	21	F	OR-Y OR<25		028	000		02
No							*45 22 33.15 -122 35 14.97*		0064AW100S00	1																				
																	02	NONE 0 PRVTE	STRGHT NW SE									000		00
																		PSNGR CAR		01	DRVR	INJC	36	M	OR-Y OR<25		000	000		00
04230	N	N	N				10/23/2014	CLACKAMAS	1 14		INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	TURN-L												07
NONE			N				Thu 6A	OREGON CITY	FR 0	PARK PL FR	CN		UNKNOWN	N	WET	REAR		PRVTE	SE SW									000		00
								PORTLAND UA	10.31	SB EF PARK PL FR	04	1		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	52	F	OR-Y OR<25		026	000		07
No							*45 22 33.15 -122 35 14.97*		0064AW100S00	1																				

064 EAST PORTLAND FREEWAY Intersectional Crashes at OR-213, Park Pl Frontage Rd & I-205, East Portland Hwy (#064), SB Off/On Ramps. Includes Crashes Occuring on Turn Leg.
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	MAJ	SCH	WORK	DATE / DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																	02	NONE 0 PRVTE	STOP SE SW									013		00
																		PSNGR CAR		01	DRVR	NONE	00	F	UNK OR<25		000	000		00
01631 STATE	N	N	N	N	N		03/12/2016 Sat 8P	CLACKAMAS OREGON CITY	1 11 CN 0	4 PARK PL FR	INTER NE	3-LEG 2	N STOP SIGN	Y N	CLD WET	FIX OBJ FIX	01	NONE 0 PRVTE	STRGHT SW NE										000	040,079,121 040,079,121	03 00
								PORTLAND UA	9.66	SB EX PARK PL FR	05			N	DUSK	INJ		PSNGR CAR		01	DRVR	INJB	72	F	OTH-Y N-RES		021,081	000		03
No	*45*	*22*					*33.15 -122 35 14.97*		0064AV100S00	1																				
01913 NONE	N	N	N				06/04/2018 Mon 5P	CLACKAMAS OREGON CITY	1 11 CN 0	4 SB EF PARK PL FR	INTER SW	3-LEG 0	N STOP SIGN	N N	CLR DRY	S-1STOP REAR	01	NONE 9 N/A	STRGHT SW NE										000		29 00
								PORTLAND UA	9.66	PARK PL FR	06			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
No	*45*	*22*					*33.14 -122 35 14.97*		0064AV100S00	1																				
																	02	NONE 9 N/A	STOP SW NE									012		00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
02125 NONE	N	N	N				05/31/2017 Wed 6P	CLACKAMAS OREGON CITY	1 11 CN 0	3 SB EX PARK PL FR	CURVE SW	(NONE)	N UNKNOWN	N N	CLR DRY	S-STRGHT SS-O	01	NONE 9 N/A	STRGHT SW NE										000		10 00
								PORTLAND UA	10.53	PARK PL FR	04			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
No	*45*	*22*					*32.44 -122 35 16.74*		0064AU100S00	1		(02)																		
																	02	NONE 9 N/A	STRGHT SW NE									000		00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
03414 NONE	N	N	N				08/22/2015 Sat 2P	CLACKAMAS OREGON CITY	1 11 CN 0	3 SB EX PARK PL FR	STRGHT SE	(NONE)	N UNKNOWN	N N	CLR DRY	S-STRGHT SS-O	01	NONE 0 UNKN	STRGHT NW SE										000		29 00
								PORTLAND UA	10.55	PARK PL FR	04			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	F	UNK UNK		042	000		29
No	*45*	*22*					*31.57 -122 35 14.80*		0064AU100S00	1		(02)																		
																	02	NONE 0 PRVTE	STRGHT NW SE									000		00
																		MTRCYCLE		01	DRVR	NONE	29	M	OTH-Y N-RES		000	000		00
03659 NONE	N	N	N				09/06/2015 Sun 12P	CLACKAMAS OREGON CITY	1 11 CN 0	3 SB EX PARK PL FR	STRGHT NW	(NONE)	N UNKNOWN	N N	RAIN WET	S-STRGHT SS-O	01	NONE 0 PRVTE	STRGHT NW SE										000		29 00
								PORTLAND UA	10.55	PARK PL FR	03			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	69	M	OR-Y OR<25		042	000		29
No	*45*	*22*					*31.57 -122 35 14.80*		0064AU100S00	1		(02)																		

064 EAST PORTLAND FREEWAY Intersectional Crashes at OR-213, Park Pl Frontage Rd & I-205, East Portland Hwy (#064), SB Off/On Ramps. Includes Crashes Occuring on Turn Leg.
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL BUS	WORK ZONE	HOUR	DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																		02	NONE 0 PRVTE	STRGHT NW SE									000		00
																			PSNGR CAR		01	DRVR	NONE	59	F	OR-Y OR<25		000	000		00
01930 CITY	Y	N	N				06/06/2018 Wed 9P	CLACKAMAS OREGON CITY	1 11 CN 0	3 SB EX PARK PL FR	CURVE NW	(RSDMD)	N NONE	N	CLR DRY	S-STRGHT SS-O	01	NONE 0 PRVTE	STRGHT NW SE									052		01,02 00
								PORTLAND UA	10.55	PARK PL FR	03			N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	51	M	OR-Y OR<25		047,028	000		01,02
No	*45*	*22*	*31.57*	*-122*	*35*	*14.80*			0064AU100S00		1		(02)																		
																		02	NONE 0 PRVTE	STRGHT NW SE									052		00
																			PSNGR CAR		01	DRVR	INJC	37	M	OR-Y OR<25		000	000		00
02230 STATE	Y	N	N	N	N	N	06/26/2018 Tue 7P	CLACKAMAS OREGON CITY	1 11 CN 0	3 PARK PL FR	STRGHT NW	(NONE)	N STOP SIGN	N	CLR DRY	S-STRGHT SS-O	01	NONE 9 N/A	STRGHT N S									000		01,02 00
								PORTLAND UA	10.55	SB EX PARK PL FR	03			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
No	*45*	*22*	*31.58*	*-122*	*35*	*14.80*			0064AU100S00		1		(02)																		
																		02	NONE 9 N/A	STRGHT N S									000		00
																			PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
04179 CITY	Y	N	N	N	N	N	10/07/2017 Sat 7A	CLACKAMAS OREGON CITY	1 11 CN 0	3 SB EX PARK PL FR	INTER NW	3-LEG	N NONE	N	RAIN WET	ANGL-OTH TURN	01	NONE 9 N/A	STRGHT N S									052		01 00
								PORTLAND UA	10.55	PARK PL FR	05	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
No	*45*	*22*	*31.57*	*-122*	*35*	*14.80*			0064AU100S00		1																				
																		02	NONE 9 N/A	TURN-R NW S									000		00
																			PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
00953 STATE	Y	N	N	N	N	N	03/11/2017 Sat 1P	CLACKAMAS OREGON CITY	1 11 CN 0	3 SB EX PARK PL FR	CURVE NW	(NONE)	N UNKNOWN	N	RAIN WET	ANGL-OTH ANGL	01	NONE 0 PRVTE	STRGHT SW NE										051	051		01 00
								PORTLAND UA	10.55	PARK PL FR	06			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	19	M	OR-Y OR<25		017,079	000		01
No	*45*	*22*	*31.57*	*-122*	*35*	*14.80*			0064AU100S00		1		(02)																		
																		02	NONE 0 PRVTE	STRGHT NW SE									000		00
																			PSNGR CAR		01	DRVR	INJC	64	F	OR-Y OR<25		000	000		00

064 EAST PORTLAND FREEWAY Intersectional Crashes at OR-213, Park Pl Frontage Rd & I-205, East Portland Hwy (#064), SB Off/On Ramps. Includes Crashes Occuring on Turn Leg.
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPE	ALC	DRUGS	SWR	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																03	NONE 0 PRVTE	STRGHT NW SE									000		00
																	PSNGR CAR		01	DRVR	NONE	59	F	OR-Y OR<25		000	000		00
03229 NONE	N N	N N	N N		08/09/2015 Sun 5P	CLACKAMAS OREGON CITY	1 CN 0	11	3 SB EX PARK PL FR	STRGHT NW	(NONE)	N UNKNOWN	N	CLR DRY	S-STRGHT SS-O	01	NONE 0 PRVTE	STRGHT N S									000		13 00
						PORTLAND UA	10.56		PARK PL FR	04			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	18	F	OR-Y OR<25		045	000		13
No	*45 22*		*30.84 -122*	*35*	*14.25*	0064AU100S00			1		(02)																		
																02	NONE 0 PRVTE	STRGHT N S									000		00
																	PSNGR CAR		01	DRVR	NONE	21	F	OR-Y OR<25		000	000		00
01435 STATE	N N	N N	N N	N	04/14/2017 Fri 6P	CLACKAMAS OREGON CITY	1 CN 0	11	3 SB EX PARK PL FR	STRGHT NW	(RSDMD)	N UNKNOWN	N	UNK WET	OTH OBJ FIX	01	NONE 0 PRVTE	STRGHT NW SE									000	040,044 040,044	05 00
						PORTLAND UA	10.56		PARK PL FR	05			N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	35	F	OR-Y OR<25		079	000		05
No	*45 22*		*30.84 -122*	*35*	*14.25*	0064AU100S00			1		(04)																		
																02	NONE 0 PRVTE	STRGHT SE NW									000		00
																	PSNGR CAR		01	DRVR	INJC	57	M	OR-Y OR<25		000	000		00
05252 NONE	N N	N N	N		12/10/2017 Sun 1P	CLACKAMAS OREGON CITY	1 CN 0	11	3 PARK PL FR	INTER CN	3-LEG	N UNKNOWN	N	CLR DRY	ANGL-OTH TURN	01	NONE 9 N/A	STRGHT NW SE									000		03 00
						PORTLAND UA	10.57		SB EX PARK PL FR	01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
No	*45 22*		*30.10 -122*	*35*	*13.73*	0064AU100S00			1																				
																02	NONE 9 N/A	TURN-R W SE									000		00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
03175 NO RPT	N N	N N	N		07/14/2016 Thu 1P	CLACKAMAS OREGON CITY	1 CN 0	11	3 PARK PL FR	INTER CN	3-LEG	N STOP SIGN	N	CLR DRY	ANGL-OTH TURN	01	NONE 9 N/A	STRGHT NW SE									000		02 00
						PORTLAND UA	10.57		SB EX PARK PL FR	03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
No	*45 22*		*30.10 -122*	*35*	*13.73*	0064AU100S00			1																				
																02	NONE 9 N/A	TURN-R W SE									000		00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2018														
ANGLE	0	2	0	2	0	5	0	1	0	1	1	2	0	0
REAR-END	0	13	10	23	0	22	0	20	3	17	6	23	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	0	1	1	0	0
2018 TOTAL	0	15	11	26	0	27	0	22	3	18	8	26	0	0
YEAR: 2017														
ANGLE	0	2	0	2	0	4	0	1	1	1	1	2	0	0
PEDESTRIAN	1	0	0	1	1	0	0	0	1	1	0	1	0	0
REAR-END	0	11	14	25	0	16	0	14	10	18	7	25	0	0
TURNING MOVEMENTS	0	2	0	2	0	3	0	1	1	0	2	2	0	0
2017 TOTAL	1	15	14	30	1	23	0	16	13	20	10	30	0	0
YEAR: 2016														
ANGLE	0	0	1	1	0	0	0	1	0	0	1	1	0	0
FIXED / OTHER OBJECT	0	0	1	1	0	0	0	0	1	0	1	1	0	1
REAR-END	0	13	12	25	0	14	0	14	9	16	8	25	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2016 TOTAL	0	14	14	28	0	15	0	16	10	17	10	28	0	1
YEAR: 2015														
REAR-END	0	10	17	27	0	13	0	17	9	14	13	27	0	0
SIDESWIPE - OVERTAKING	0	1	0	1	0	1	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	1	1	2	0	1	0	2	0	0	2	2	0	0
2015 TOTAL	0	12	18	30	0	15	0	20	9	15	15	30	0	0
YEAR: 2014														
REAR-END	0	9	10	19	0	11	0	16	2	11	7	19	0	0
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	0	0	1	1	0	1	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	0	1	0	1	1	0	0
2014 TOTAL	0	9	12	21	0	11	0	16	4	12	8	21	0	0
FINAL TOTAL	1	65	69	135	1	91	0	90	39	82	51	135	0	1

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	MJ	DRUG	SCHL	WORK	DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / LRS	FC / MILEPNT / INTERSECTION SEQ#	CONN # / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
04839	N	N	N				11/29/2014	CLACKAMAS	1	14		INTER	CROSS	N		N UNK	S-1STOP	01	NONE 0	STRGHT										29
NO RPT			N				Sat UNK	OREGON CITY	MN 0	S BEAVERCREEK RD		UN		TRF SIGNAL		N UNK	REAR		PRVTE	UN UN									000	00
								PORTLAND UA	2.98	CASCADE HY SOUTH		06	3			N UNK	PDO		PSNGR CAR		01	DRVR	NONE	39	F	OR-Y		026	000	29
No	*45*	*19*	*54.97*	*-122*	*34*	*30.30*			016000100S00	1																OR<25				
																		02	NONE 0	STOP										
																			PRVTE	UN UN									011	00
																			PSNGR CAR		01	DRVR	NONE	27	M	OR-Y		000	000	00
																										OR<25				
04676	N	N	N				10/10/2016	CLACKAMAS	1	14		INTER	CROSS	N		N UNK	S-1STOP	01	NONE 9	STRGHT										29
NONE			N				Mon 3P	OREGON CITY	MN 0	S BEAVERCREEK RD		UN		TRF SIGNAL		N UNK	REAR		N/A	UN UN									000	00
								PORTLAND UA	2.98	CASCADE HY SOUTH		06	3			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45*	*19*	*54.97*	*-122*	*34*	*30.30*			016000100S00	1																UNK				
																		02	NONE 9	STOP										
																			N/A	UN UN									011	00
																			PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																										UNK				
02124	N	N	N				05/31/2017	CLACKAMAS	1	14		INTER	CROSS	N		N UNK	S-1STOP	01	NONE 9	STRGHT										29
NONE			N				Wed 4P	OREGON CITY	MN 0	S BEAVERCREEK RD		UN		TRF SIGNAL		N UNK	REAR		N/A	UN UN									000	00
								PORTLAND UA	2.98	CASCADE HY SOUTH		06	3			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45*	*19*	*54.97*	*-122*	*34*	*30.30*			016000100S00	1																UNK				
																		02	NONE 9	STOP										
																			N/A	UN UN									011	00
																			PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																										UNK				
01637	N	N	N				04/29/2014	CLACKAMAS	1	14		INTER	CROSS	N		N CLR	S-1STOP	01	NONE 0	STRGHT										29
NO RPT			N				Tue 2P	OREGON CITY	MN 0	S BEAVERCREEK RD		N		TRF SIGNAL		N DRY	REAR		PRVTE	N S									000	00
								PORTLAND UA	2.98	CASCADE HY SOUTH		06	3			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	OR-Y		026	000	07
No	*45*	*19*	*54.97*	*-122*	*34*	*30.30*			016000100S00	1																OR<25				
																		02	NONE 0	STOP										
																			PRVTE	N S									011	00
																			PSNGR CAR		01	DRVR	NONE	65	F	OR-Y		000	000	00
																										OR<25				
03308	N	N	N				08/25/2014	CLACKAMAS	1	14		INTER	CROSS	N		N CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE			N				Mon 4P	OREGON CITY	MN 0	S BEAVERCREEK RD		N		TRF SIGNAL		N DRY	REAR		PRVTE	S N									000	00
								PORTLAND UA	2.98	CASCADE HY SOUTH		06	3			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	22	F	OR-Y		026	000	29
No	*45*	*19*	*54.97*	*-122*	*34*	*30.30*			016000100S00	1																OR<25				

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	COND	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																		02	NONE 0 PRVTE	STOP S N									011	00
																			PSNGR CAR		01	DRVR	NONE	28	F	OR-Y OR<25		000	000	00
04757 NO RPT	N	N	N				11/22/2014 Sat 1P	CLACKAMAS OREGON CITY	1 MN 0	14	S BEAVERCREEK RD	INTER N	CROSS	N TRF SIGNAL	N	UNK WET	S-STRGHT SS-O	01	NONE 0 UNKN	STRGHT N S									000	13 00
								PORTLAND UA	2.98		CASCADE HY SOUTH	06	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	F	OR-Y UNK	045	000	13
No	*45*	*19*	*54.97*	*-122*	*34*	*30.30*			016000100S00		1																			
																		02	NONE 0 PRVTE	STRGHT N S									000	00
																			PSNGR CAR		01	DRVR	NONE	19	F	OR-Y OR<25		000	000	00
01497 NONE	N	N	N				04/21/2015 Tue 10P	CLACKAMAS OREGON CITY	1 MN 0	14	S BEAVERCREEK RD	INTER N	CROSS	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT N S									000	29 00
								PORTLAND UA	2.98		CASCADE HY SOUTH	06	3		N	DARK	INJ		PSNGR CAR		01	DRVR	INJB	54	M	OR-Y OR<25	026	000	29
No	*45*	*19*	*54.97*	*-122*	*34*	*30.30*			016000100S00		1																			
																		02	NONE 0 UNKN	STOP N S									011	00
																			PSNGR CAR		01	DRVR	NONE	49	M	OR-Y UNK		000	000	00
01876 NO RPT	N	N	N				05/21/2015 Thu 4P	CLACKAMAS OREGON CITY	1 MN 0	14	S BEAVERCREEK RD	INTER N	CROSS	N TRF SIGNAL	N	CLR DRY	S-STRGHT SS-O	01	NONE 0 PRVTE	STRGHT N S									000	10 00
								PORTLAND UA	2.98		CASCADE HY SOUTH	06	3		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	78	F	OR-Y OR<25	080	000	10
No	*45*	*19*	*54.97*	*-122*	*34*	*30.30*			016000100S00		1																			
																		02	NONE 0 PRVTE	STRGHT N S									000	00
																			PSNGR CAR		01	DRVR	NONE	44	M	OR-Y OR<25		000	000	00
																		03	NONE 0 PRVTE	STRGHT N S									000	00
																			PSNGR CAR		01	DRVR	INJC	54	F	OR-Y OR<25		000	000	00
02710 NO RPT	N	N	N				07/04/2015 Sat 3P	CLACKAMAS OREGON CITY	1 MN 0	14	S BEAVERCREEK RD	INTER N	CROSS	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT N S									000	16,29 00
								PORTLAND UA	2.98		CASCADE HY SOUTH	06	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	63	F	OR-Y OR<25	026	025	16,29
No	*45*	*19*	*54.97*	*-122*	*34*	*30.30*			016000100S00		1																			

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																02	NONE 0 PRVTE	STOP N S									011	00
																	PSNGR CAR		01	DRVR	NONE	62	F	OR-Y OR<25		000	000	00
03650 NONE	N	N	N			09/02/2015 Wed 2P	CLACKAMAS OREGON CITY	1 14 MN 0	S BEAVERCREEK RD	INTER N	CROSS	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT N S									000	29 00
							PORTLAND UA	2.98	CASCADE HY SOUTH	06	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	43	F	OR-Y OR<25		026	000	29
No	*45 19*		*54.97 -122*	*34*	*30.30*			016000100S00	1																			
																02	NONE 0 PRVTE	STOP N S									011	00
																	PSNGR CAR		01	DRVR	NONE	61	F	OR-Y OR<25		000	000	00
05088 NONE	N	N	N			12/01/2015 Tue 5P	CLACKAMAS OREGON CITY	1 14 MN 0	S BEAVERCREEK RD	INTER N	CROSS	N TRF SIGNAL	N	RAIN WET	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT N S									000	29 00
							PORTLAND UA	2.98	CASCADE HY SOUTH	06	3		N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	20	M	OR-Y OR<25		026	000	29
No	*45 19*		*54.97 -122*	*34*	*30.30*			016000100S00	1																			
																02	NONE 0 PRVTE	STOP N S									011	00
																	PSNGR CAR		01	DRVR	NONE	44	M	OR-Y OR<25		000	000	00
00977 NONE	N	N	N			02/29/2016 Mon 3P	CLACKAMAS OREGON CITY	1 14 MN 0	S BEAVERCREEK RD	INTER N	CROSS	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 9 N/A	STRGHT N S									000	29 00
							PORTLAND UA	2.98	CASCADE HY SOUTH	06	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
No	*45 19*		*54.97 -122*	*34*	*30.30*			016000100S00	1																			
																02	NONE 9 N/A	STOP N S									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
03487 NONE	N	N	N			07/31/2016 Sun 5P	CLACKAMAS OREGON CITY	1 14 MN 0	S BEAVERCREEK RD	INTER N	CROSS	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 9 N/A	STRGHT N S									000	29 00
							PORTLAND UA	2.98	CASCADE HY SOUTH	06	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
No	*45 19*		*54.97 -122*	*34*	*30.30*			016000100S00	1																			
																02	NONE 9 N/A	STOP N S									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
02025	N	N	N			05/24/2017	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT										29
NONE		N				Wed 3P	OREGON CITY	MN 0	S BEAVERCREEK RD	N		TRF SIGNAL	N	DRY	REAR		N/A	N S									000	00
							PORTLAND UA	2.98	CASCADE HY SOUTH	06	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No						*45 19 54.97 -122 34 30.30*		016000100S00	1															UNK				
																02	NONE 9	STOP										
																	N/A	N S									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																								UNK				
00463	N	N	N			02/07/2018	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE		N				Wed 7A	OREGON CITY	MN 0	S BEAVERCREEK RD	N		L-GRN-SIG	N	DRY	REAR		PRVTE	N S									000	00
							PORTLAND UA	2.98	CASCADE HY SOUTH	06	3		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	16	M	OR-Y		026	000	29
No						*45 19 54.98 -122 34 30.31*		016000100S00	1															OR<25				
																02	NONE 0	STOP										
																	PRVTE	N S									012	00
																	PSNGR CAR		01	DRVR	INJC	40	F	OR-Y		000	000	00
																								OR<25				
01454	N	N	N			04/30/2018	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT										29
NONE		N				Mon 11A	OREGON CITY	MN 0	S BEAVERCREEK RD	N		TRF SIGNAL	N	DRY	REAR		N/A	N S									000	00
							PORTLAND UA	2.98	CASCADE HY SOUTH	06	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No						*45 19 54.98 -122 34 30.31*		016000100S00	1															UNK				
																02	NONE 9	STOP										
																	N/A	N S									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																								UNK				
00987	N	N	N			03/11/2014	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										07
NONE		N				Tue 6P	OREGON CITY	MN 0	S BEAVERCREEK RD	NE		YIELD	N	DRY	REAR		PRVTE	SE NW									000	00
							PORTLAND UA	2.98	CASCADE HY SOUTH	09	3		N	DUSK	INJ		PSNGR CAR		01	DRVR	INJB	38	F	OR-Y		026	000	07
No						*45 19 54.97 -122 34 30.30*		016000100S00	1															OR<25				
																02	NONE 0	STOP										
																	PRVTE	SE NW									011	00
																	PSNGR CAR		01	DRVR	NONE	36	M	OR-Y		000	000	00
																								OR<25				
00273	N	N	N			01/22/2015	CLACKAMAS	1 14		INTER	CROSS	N	N	FOG	S-1STOP	01	NONE 0	STRGHT										29
NONE		N				Thu 6A	OREGON CITY	MN 0	S BEAVERCREEK RD	NE		YIELD	N	DRY	REAR		PRVTE	SE NW									000	00
							PORTLAND UA	2.98	CASCADE HY SOUTH	09	3		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	21	F	OR-Y		026	000	29
No						*45 19 54.97 -122 34 30.30*		016000100S00	1															OR<25				

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPE	ALC	DRU G/MJ	SWC HR	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
															02	NONE 0 PRVTE	STOP SE NW									011	00
																PSNGR CAR		01	DRVR	INJC	25	F	OR-Y OR<25		000	000	00
																		02	PSNG	INJC	04	F			000	000	00
00553 NONE	N N	N N	N		02/12/2015 Thu 7P	CLACKAMAS OREGON CITY	1 14 MN 0	S BEAVERCREEK RD	INTER NE	CROSS	N YIELD	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT SE NW									000	29 00
No			*45 19 54.97 -122 34 30.30*			PORTLAND UA	2.98 016000100S00	CASCADE HY SOUTH 1	09	3		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	65	M	OR-Y OR<25		026	000	29
															02	NONE 0 UNKN	STOP SE NW									011	00
																UNKNOWN		01	DRVR	NONE	45	F	OR-Y UNK		000	000	00
01159 NONE	N N	N N	N		04/02/2015 Thu 4P	CLACKAMAS OREGON CITY	1 14 MN 0	S BEAVERCREEK RD	INTER NE	CROSS	N YIELD	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT SE NW									000	29 00
No			*45 19 54.97 -122 34 30.30*			PORTLAND UA	2.98 016000100S00	CASCADE HY SOUTH 1	09	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	F	OR-Y OR>25		026	000	29
															02	NONE 0 PRVTE	STOP SE NW									011	00
																PSNGR CAR		01	DRVR	NONE	58	F	OR-Y OR<25		000	000	00
02876 NONE	N N	N N	N		07/17/2015 Fri 7A	CLACKAMAS OREGON CITY	1 14 MN 0	S BEAVERCREEK RD	INTER NE	CROSS	N YIELD	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT SE NW									000	29 00
No			*45 19 54.97 -122 34 30.30*			PORTLAND UA	2.98 016000100S00	CASCADE HY SOUTH 1	09	3		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	69	M	OR-Y OR<25		026	000	29
															02	NONE 0 PRVTE	STOP SE NW									011	00
																PSNGR CAR		01	DRVR	INJC	33	M	OR-Y OR<25		000	000	00
04182 NONE	N N	N N	N		09/14/2015 Mon 12A	CLACKAMAS OREGON CITY	1 14 MN 0	S BEAVERCREEK RD	INTER NE	CROSS	N YIELD	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT SE NW									000	29 00
No			*45 19 54.97 -122 34 30.30*			PORTLAND UA	2.98 016000100S00	CASCADE HY SOUTH 1	09	3		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	F	UNK N-RES		026	000	29
															02	NONE 0 PRVTE	STOP SE NW									011	00
																PSNGR CAR		01	DRVR	NONE	27	F	OR-Y OR<25		000	000	00

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / LRS	FC / MILEPNT	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
03849	N	N	N			09/17/2015	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE		N				Thu 6P	OREGON CITY	MN 0		S BEAVERCREEK RD	NE		YIELD	N	DRY	REAR		PRVTE	SE NW										000	00
							PORTLAND UA	2.98		CASCADE HY SOUTH	09	3		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	42	M	OR-Y		026	000	29
No						*45 19 54.97 -122 34 30.30*		016000100		S00 1															OR<25				
																	02	NONE 0	STOP										
																		PRVTE	SE NW									011	00
																		PSNGR CAR		01	DRVR	INJC	47	F	OR-Y		000	000	00
																									OR<25				
05566	N	N	N			12/22/2015	CLACKAMAS	1	14		INTER	CROSS	N	N	UNK	S-1STOP	01	NONE 0	STRGHT										29
NONE		N				Tue 5A	OREGON CITY	MN 0		S BEAVERCREEK RD	NE		YIELD	N	WET	REAR		UNKN	SE NW									000	00
							PORTLAND UA	2.98		CASCADE HY SOUTH	09	3		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	00	F	UNK		026	000	29
No						*45 19 54.97 -122 34 30.30*		016000100		S00 1															UNK				
																	02	NONE 0	STOP										
																		PRVTE	SE NW									011	00
																		PSNGR CAR		01	DRVR	NONE	42	F	OR-Y		000	000	00
																									OR<25				
00450	N	N	N			01/27/2016	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE		N				Wed 5P	OREGON CITY	MN 0		S BEAVERCREEK RD	NE		YIELD	N	DRY	REAR		PRVTE	SE NW									000	00
							PORTLAND UA	2.98		CASCADE HY SOUTH	09	3		N	DARK	INJ		PSNGR CAR		01	DRVR	NONE	23	F	OR-Y		026	000	29
No						*45 19 54.97 -122 34 30.30*		016000100		S00 1															OR<25				
																	02	NONE 0	STOP										
																		PRVTE	SE NW									011	00
																		PSNGR CAR		01	DRVR	INJC	55	F	OR-Y		000	000	00
																									OR<25				
00767	N	N	N			02/17/2016	CLACKAMAS	1	14		INTER	CROSS	N	N	UNK	S-1STOP	01	NONE 9	STRGHT										29
NONE		N				Wed 9P	OREGON CITY	MN 0		S BEAVERCREEK RD	NE		YIELD	N	WET	REAR		N/A	SE NW									000	00
							PORTLAND UA	2.98		CASCADE HY SOUTH	09	3		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No						*45 19 54.97 -122 34 30.30*		016000100		S00 1															UNK				
																	02	NONE 9	STOP										
																		N/A	SE NW									011	00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																									UNK				
01643	N	N	N			04/10/2016	CLACKAMAS	1	14		INTER	CROSS	N	N	UNK	S-1STOP	01	NONE 9	STRGHT										29
NONE		N				Sun 9A	OREGON CITY	MN 0		S BEAVERCREEK RD	NE		YIELD	N	DRY	REAR		N/A	SE NW									000	00
							PORTLAND UA	2.98		CASCADE HY SOUTH	09	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No						*45 19 54.97 -122 34 30.30*		016000100		S00 1															UNK				

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																02	NONE 9 N/A	STOP SE NW									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
02477 NONE	N	N	N			06/02/2016 Thu 2P	CLACKAMAS OREGON CITY	1 14 MN 0	S BEAVERCREEK RD	INTER NE	CROSS	N YIELD		N CLR N DRY	S-STRGHT REAR	01	NONE 9 N/A	STRGHT SE NW									000	29 00
							PORTLAND UA	2.98	CASCADE HY SOUTH	09	3			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
No	*45*	*19*	*54.97*	*-122*	*34*	*30.30*		016000100S00	1																			
																02	NONE 9 N/A	STOP SE NW									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
02602 NO RPT	N	N	N			06/09/2016 Thu 6A	CLACKAMAS OREGON CITY	1 14 MN 0	S BEAVERCREEK RD	INTER NE	CROSS	N YIELD		N CLR N DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT SE NW									000	29 00
							PORTLAND UA	2.98	CASCADE HY SOUTH	09	3			N DAY	INJ		PSNGR CAR		01	DRVR	NONE	71	F	OR-Y OR<25		026	000	29
No	*45*	*19*	*54.97*	*-122*	*34*	*30.30*		016000100S00	1																			
																02	NONE 0 PRVTE	STOP SE NW									011	00
																	PSNGR CAR		01	DRVR	INJC	43	F	OR-Y OR<25		000	000	00
02869 NONE	N	N	N			06/22/2016 Wed 8A	CLACKAMAS OREGON CITY	1 14 MN 0	S BEAVERCREEK RD	INTER NE	CROSS	N YIELD		N CLR N DRY	S-1STOP REAR	01	NONE 9 N/A	STRGHT SE NW									000	29 00
							PORTLAND UA	2.98	CASCADE HY SOUTH	09	3			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
No	*45*	*19*	*54.97*	*-122*	*34*	*30.30*		016000100S00	1																			
																02	NONE 9 N/A	STOP SE NW									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
03877 NONE	N	N	N			08/24/2016 Wed 8A	CLACKAMAS OREGON CITY	1 14 MN 0	S BEAVERCREEK RD	INTER NE	CROSS	N YIELD		N CLR N DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT SE NW									000	29 00
							PORTLAND UA	2.98	CASCADE HY SOUTH	09	3			N DAY	INJ		PSNGR CAR		01	DRVR	NONE	22	F	OR-Y OR<25		026	000	29
No	*45*	*19*	*54.97*	*-122*	*34*	*30.30*		016000100S00	1																			
																02	NONE 0 PRVTE	STOP SE NW									011	00
																	PSNGR CAR		01	DRVR	INJC	37	F	OR-Y OR<25		000	000	00

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	MJ	DRUG	SCH	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
03910	N	N	N				08/26/2016	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NO RPT			N				Fri 5A	OREGON CITY	MN 0		S BEAVERCREEK RD	NE		YIELD	N	DRY	REAR		PRVTE	SE NW									000	00
								PORTLAND UA	2.98		CASCADE HY SOUTH	09	3		N	DAWN	INJ		PSNGR CAR		01	DRVR	NONE	23	F	OR-Y		026	000	29
No	*45 19*						*54.97 -122 34 30.30*		016000100		S00 1																OR<25				
																		02	NONE 0	STOP										
																			PRVTE	SE NW									011	00
																			PSNGR CAR		01	DRVR	INJC	34	F	OR-Y		000	000	00
																										OR<25				
03993	N	N	N				08/31/2016	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT										29
NONE			N				Wed 7A	OREGON CITY	MN 0		S BEAVERCREEK RD	NE		YIELD	N	DRY	REAR		N/A	SE NW									000	00
								PORTLAND UA	2.98		CASCADE HY SOUTH	09	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45 19*						*54.97 -122 34 30.30*		016000100		S00 1																UNK				
																		02	NONE 9	STOP										
																			N/A	SE NW									011	00
																			PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																										UNK				
04000	N	N	N				09/01/2016	CLACKAMAS	1	14		INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT										29
NONE			N				Thu 7P	OREGON CITY	MN 0		S BEAVERCREEK RD	NE		YIELD	N	WET	REAR		PRVTE	SE NW									000	00
								PORTLAND UA	2.98		CASCADE HY SOUTH	09	3		N	DUSK	INJ		PSNGR CAR		01	DRVR	NONE	38	F	OR-Y		026	000	29
No	*45 19*						*54.97 -122 34 30.30*		016000100		S00 1																OR<25				
																		02	NONE 0	STOP										
																			PRVTE	SE NW									011	00
																			PSNGR CAR		01	DRVR	INJC	36	F	OR-Y		000	000	00
																										OR<25				
																					02	PSNG	INJC	14	M			000	000	00
04386	N	N	N				09/23/2016	CLACKAMAS	1	14		INTER	CROSS	N	N	UNK	S-1STOP	01	NONE 9	STRGHT										29
NONE			N				Fri 6A	OREGON CITY	MN 0		S BEAVERCREEK RD	NE		YIELD	N	WET	REAR		N/A	SE NW									000	00
								PORTLAND UA	2.98		CASCADE HY SOUTH	09	3		N	DAWN	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45 19*						*54.97 -122 34 30.30*		016000100		S00 1																UNK				
																		02	NONE 9	STOP										
																			N/A	SE NW									011	00
																			PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																										UNK				
04655	N	N	N				10/10/2016	CLACKAMAS	1	14		INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT										29
NONE			N				Mon 6A	OREGON CITY	MN 0		S BEAVERCREEK RD	NE		YIELD	N	WET	REAR		PRVTE	SE NW									000	00
								PORTLAND UA	2.98		CASCADE HY SOUTH	09	3		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	25	M	OR-Y		026	000	29
No	*45 19*						*54.97 -122 34 30.30*		016000100		S00 1																OR<25				

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																02	NONE 0 PRVTE	STOP SE NW									011	00
																	PSNGR CAR		01	DRVR	INJC	52	F	OR-Y OR<25		000	000	00
04952 CITY	N	N	N	N	N	10/27/2016 Thu 6A	CLACKAMAS OREGON CITY	1 MN	14 0 S BEAVERCREEK RD	INTER NE	CROSS YIELD	N	N	CLD WET	S-1STOP REAR	01	NONE 0 UNKN	STRGHT SE NW									000	07 00
							PORTLAND UA	2.98	CASCADE HY SOUTH	09	3		N	DAWN	INJ		UNKNOWN		01	DRVR	NONE	00	F	UNK		043,026	000	07
No						*45 19 54.97 -122 34 30.30*		016000100S00	1															UNK				
																02	NONE 0 PRVTE	STOP SE NW									011	00
																	PSNGR CAR		01	DRVR	INJC	30	F	OR-Y OR<25		000	000	00
05496 NONE	N	N	N			11/25/2016 Fri 3P	CLACKAMAS OREGON CITY	1 MN	14 0 S BEAVERCREEK RD	INTER NE	CROSS YIELD	N	N	RAIN WET	S-OTHER REAR	01	NONE 9 N/A	TURN-R E N									000	29 00
							PORTLAND UA	2.98	CASCADE HY SOUTH	09	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No						*45 19 54.97 -122 34 30.30*		016000100S00	1															UNK				
																02	NONE 9 N/A	TURN-R E N									000	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
00675 NONE	N	N	N			02/20/2017 Mon 7A	CLACKAMAS OREGON CITY	1 MN	14 0 S BEAVERCREEK RD	INTER NE	CROSS YIELD	N	N	RAIN WET	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT SE NW									000	29 00
							PORTLAND UA	2.98	CASCADE HY SOUTH	09	3		N	DAWN	INJ		PSNGR CAR		01	DRVR	NONE	43	M	OR-Y OR<25		026	000	29
No						*45 19 54.97 -122 34 30.30*		016000100S00	1																			
																02	NONE 0 PRVTE	STOP SE NW									011	00
																	PSNGR CAR		01	DRVR	INJC	26	F	OR-Y OR<25		000	000	00
00679 NONE	N	N	N			02/20/2017 Mon 3P	CLACKAMAS OREGON CITY	1 MN	14 0 S BEAVERCREEK RD	INTER NE	CROSS YIELD	N	N	CLR DRY	S-1STOP REAR	01	NONE 9 N/A	STRGHT SE NW									000	29 00
							PORTLAND UA	2.98	CASCADE HY SOUTH	09	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No						*45 19 54.97 -122 34 30.30*		016000100S00	1															UNK				
																02	NONE 9 N/A	STOP SE NW									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPE	ALC	DRU MJ	SWR CMK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# CMPT/MILEPNT LRS	FC / MLG / CONN #	FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
00721	N	N	N		02/23/2017	CLACKAMAS	1	14		INTER	CROSS	N	N	UNK	S-1STOP	01	NONE 9	STRGHT										29
NONE		N			Thu 11A	OREGON CITY	MN 0	S BEAVERCREEK RD		NE		YIELD	N	WET	REAR		N/A	SE NW										000	00
						PORTLAND UA	2.98	CASCADE HY SOUTH		09	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No					*45 19 54.97 -122 34 30.30*		016000100S00		1															UNK				
																02	NONE 9	STOP										
																	N/A	SE NW									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																								UNK				
02408	N	N	N		06/19/2017	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT										29
NONE		N			Mon 8A	OREGON CITY	MN 0	S BEAVERCREEK RD		NE		TRF SIGNAL	N	DRY	REAR		N/A	SE NW									000	00
						PORTLAND UA	2.98	CASCADE HY SOUTH		09	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No					*45 19 54.97 -122 34 30.30*		016000100S00		1															UNK				
																02	NONE 9	STOP										
																	N/A	SE NW									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																								UNK				
03102	N	N	N		07/29/2017	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT										29
NONE		N			Sat 11A	OREGON CITY	MN 0	S BEAVERCREEK RD		NE		YIELD	N	DRY	REAR		N/A	SE NW									000	00
						PORTLAND UA	2.98	CASCADE HY SOUTH		09	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No					*45 19 54.97 -122 34 30.30*		016000100S00		1															UNK				
																02	NONE 9	STOP										
																	N/A	SE NW									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																								UNK				
03206	N	N	N		08/06/2017	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE		N			Sun 12P	OREGON CITY	MN 0	S BEAVERCREEK RD		NE		YIELD	N	DRY	REAR		PRVTE	SE NW									000	00
						PORTLAND UA	2.98	CASCADE HY SOUTH		09	3		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	24	F	OR-Y		026	000	29
No					*45 19 54.97 -122 34 30.30*		016000100S00		1															OR>25				
																02	NONE 0	STOP										
																	PRVTE	SE NW									011	00
																	PSNGR CAR		01	DRVR	INJC	37	F	OR-Y		000	000	00
																								OR<25				
																			02	PSNG	INJC	15	M			000	000	00
04748	N	N	N		11/11/2017	CLACKAMAS	1	14		INTER	CROSS	N	N	CLD	S-1STOP	01	NONE 0	TURN-R										27,07,32
CITY		N			Sat 2P	OREGON CITY	MN 0	S BEAVERCREEK RD		NE		TRF SIGNAL	N	WET	REAR		PRVTE	E N									000	00
						PORTLAND UA	2.98	CASCADE HY SOUTH		09	3		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	21	M	OR-Y		016,043,052	038	27,07,32
No					*45 19 54.97 -122 34 30.30*		016000100S00		1															OR<25				
																			02	PSNG	INJC	01	M			000	000	

Item #2.

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																02	NONE 0 PRVTE	STOP E N									011	00
																	PSNGR CAR		01	DRVR	NONE	38	M	OR-Y OR<25		000	000	00
05393	N	N	N			12/14/2017	CLACKAMAS	1 14		INTER	CROSS	N		N CLR	S-1STOP	01	NONE 0	TURN-R										29
NONE		N				Thu 6P	OREGON CITY	MN 0	S BEAVERCREEK RD	NE		TRF SIGNAL		N DRY	REAR		PRVTE	E N									000	00
							PORTLAND UA	2.98	CASCADE HY SOUTH	09	3			N DLIT	INJ		PSNGR CAR		01	DRVR	NONE	52	M	OR-Y OR<25		026	000	29
No	*45*	*19*	*54.97*	*-122*	*34*	*30.30*		016000100S00	1																			
																02	NONE 0 PRVTE	STOP E N									011	00
																	PSNGR CAR		01	DRVR	NONE	51	M	OR-Y OR<25		000	000	00
																			02	PSNG	INJC	44	F			000	000	00
05408	N	N	N			12/18/2017	CLACKAMAS	1 14		INTER	CROSS	N		N UNK	S-1STOP	01	NONE 9	STRGHT										29
NONE		N				Mon 8P	OREGON CITY	MN 0	S BEAVERCREEK RD	NE		YIELD		N WET	REAR		N/A	SE NW									000	00
							PORTLAND UA	2.98	CASCADE HY SOUTH	09	3			N DARK	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
No	*45*	*19*	*54.97*	*-122*	*34*	*30.30*		016000100S00	1																			
																02	NONE 9 N/A	STOP SE NW									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
00300	N	N	N			01/24/2018	CLACKAMAS	1 14		INTER	CROSS	N		N RAIN	S-1STOP	01	NONE 0	STRGHT										29
NONE		N				Wed 6A	OREGON CITY	MN 0	S BEAVERCREEK RD	NE		YIELD		N WET	REAR		PRVTE	SE NW									000	00
							PORTLAND UA	2.98	CASCADE HY SOUTH	09	3			N DLIT	INJ		PSNGR CAR		01	DRVR	NONE	31	F	OR-Y OR<25		026	000	29
No	*45*	*19*	*54.97*	*-122*	*34*	*30.31*		016000100S00	1																			
																02	NONE 0 PRVTE	STOP SE NW									011	00
																	PSNGR CAR		01	DRVR	INJC	42	M	OR-Y OR<25		000	000	00
01205	N	N	N			03/17/2018	CLACKAMAS	1 14		INTER	CROSS	N		N CLR	S-1STOP	01	NONE 9	STRGHT										29
NONE		N				Sat 2P	OREGON CITY	MN 0	S BEAVERCREEK RD	NE		YIELD		N DRY	REAR		N/A	SE NW									000	00
							PORTLAND UA	2.98	CASCADE HY SOUTH	09	3			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
No	*45*	*19*	*54.97*	*-122*	*34*	*30.30*		016000100S00	1																			
																02	NONE 9 N/A	STOP SE NW									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00

Item #2.

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
01517	N	N	N			05/04/2018	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT										29
NONE		N				Fri 3P	OREGON CITY	MN 0	S BEAVERCREEK RD		NE		YIELD	N	DRY	REAR		N/A	SE NW									000	00
							PORTLAND UA	2.98	CASCADE HY SOUTH		09	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No						*45 19 54.99 -122 34 30.30*		016000100S00	1																UNK				
																	02	NONE 9	STOP									
																		N/A	SE NW								011	00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																									UNK				
01923	N	N	N			05/26/2018	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE		N				Sat 10A	OREGON CITY	MN 0	S BEAVERCREEK RD		NE		YIELD	N	DRY	REAR		PRVTE	SE NW									000	00
							PORTLAND UA	2.98	CASCADE HY SOUTH		09	3		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	38	F	OR-Y		026	000	29
No						*45 19 54.98 -122 34 30.31*		016000100S00	1																OR<25				
																	02	NONE 0	STOP									
																		PRVTE	SE NW								011	00
																		PSNGR CAR		01	DRVR	INJC	19	F	OR-Y		000	000	00
																									OR<25				
																				02	PSNG	INJC	19	F			000	000	00
01832	N	N	N			05/29/2018	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT										29
NONE		N				Tue 6A	OREGON CITY	MN 0	S BEAVERCREEK RD		NE		YIELD	N	DRY	REAR		N/A	SE NW									000	00
							PORTLAND UA	2.98	CASCADE HY SOUTH		09	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No						*45 19 54.99 -122 34 30.31*		016000100S00	1																UNK				
																	02	NONE 9	STOP									
																		N/A	SE NW								011	00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																									UNK				
02234	N	N	N			06/27/2018	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE		N				Wed 2P	OREGON CITY	MN 0	S BEAVERCREEK RD		NE		YIELD	N	DRY	REAR		PRVTE	SE NW									000	00
							PORTLAND UA	2.98	CASCADE HY SOUTH		09	3		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	64	F	OR-Y		026	000	29
No						*45 19 54.97 -122 34 30.30*		016000100S00	1																OR<25				
																				02	PSNG	NONE	01	F			000	000	00
																	02	NONE 0	STOP									
																		PRVTE	SE NW								011	00
																		PSNGR CAR		01	DRVR	INJC	42	F	OTH-Y		000	000	00
																									N-RES				
																				02	PSNG	INJC	15	F			000	000	00
02744	N	N	N	N	N	08/07/2018	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										07,32
CITY		N				Tue 3P	OREGON CITY	MN 0	S BEAVERCREEK RD		NE		YIELD	N	DRY	REAR		PRVTE	SE NW									000	00
							PORTLAND UA	2.98	CASCADE HY SOUTH		09	3		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	71	F	OR-Y		043,026,052	000	
No						*45 19 54.97 -122 34 30.30*		016000100S00	1																OR<25				

Item #2.

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / LRS	FC / MILEPNT	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																	02	NONE 0 PRVTE	STOP SE NW									011	00
																		PSNGR CAR		01	DRVR	INJC	42	M	OR-Y OR<25		000	000	00
																				02	PSNG	INJC	40	F			000	000	00
																				03	PSNG	INJC	44	F			000	000	00
																				04	PSNG	INJC	10	F			000	000	00
02858 NONE	N	N	N			08/15/2018 Wed 1P	CLACKAMAS OREGON CITY	1 MN 0	14	S BEAVERCREEK RD	INTER NE	CROSS	N YIELD	N	CLR DRY	S-1STOP REAR	01	NONE 9 N/A	STRGHT SE NW										29 00
							PORTLAND UA	2.98		CASCADE HY SOUTH	09	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45*	*19*	*54.97*	*-122*	*34*	*30.30*		016000100S00		1															UNK				
																	02	NONE 9 N/A	STOP SE NW									011	00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
03177 NONE	N	N	N			09/08/2018 Sat 12P	CLACKAMAS OREGON CITY	1 MN 0	14	S BEAVERCREEK RD	INTER NE	CROSS	N YIELD	N	CLR DRY	S-1STOP REAR	01	NONE 9 N/A	STRGHT SE NW										29 00
							PORTLAND UA	2.98		CASCADE HY SOUTH	09	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45*	*19*	*54.98*	*-122*	*34*	*30.31*		016000100S00		1															UNK				
																	02	NONE 9 N/A	STOP SE NW									011	00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
04903 NONE	N	N	N			12/30/2018 Sun 7P	CLACKAMAS OREGON CITY	1 MN 0	14	S BEAVERCREEK RD	INTER NE	CROSS	N YIELD	N	CLR DRY	ANGL-OTH TURN	01	NONE 9 N/A	TURN-R SE N										29 00
							PORTLAND UA	2.98		CASCADE HY SOUTH	09	3		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45*	*19*	*54.99*	*-122*	*34*	*30.32*		016000100S00		1															UNK				
																	02	NONE 9 N/A	STRGHT S N									000	00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
00120 NONE	N	N	N			01/09/2014 Thu 5P	CLACKAMAS OREGON CITY	1 MN 0	14	S BEAVERCREEK RD	INTER E	CROSS	N TRF SIGNAL	N	RAIN WET	ANGL-OTH TURN	01	NONE 0 PRVTE	TURN-R W S									016	02 00
							PORTLAND UA	2.98		CASCADE HY SOUTH	03	3		N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	56	F	OR-Y OR<25		028	000	02
No	*45*	*19*	*54.97*	*-122*	*34*	*30.30*		016000100S00		1																			
																	02	NONE 0 PRVTE	STRGHT N S									000	00
																		PSNGR CAR		01	DRVR	NONE	63	M	UNK OR>25		000	000	

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG / MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / LRS	FC / MILEPNT	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
01893	N	N	N			04/20/2015	CLACKAMAS	1	14		INTER	CROSS	N		N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE		N				Mon 3P	OREGON CITY	MN 0		S BEAVERCREEK RD	E		TRF SIGNAL		N	DRY	REAR		PRVTE	E W									000		00
							PORTLAND UA	2.98		CASCADE HY SOUTH	06	3			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	17	F	OR-Y		026	000		29
No	*45 19*	*54.97*	*-122*	*34*	*30.30*			016000100	S00	1																OR<25					
																		02	NONE 0	STOP										
																			PRVTE	E W									011		00
																			PSNGR CAR		01	DRVR	INJC	47	F	OR-Y		000	000		00
																										OR<25					
04437	N	N	N			10/27/2015	CLACKAMAS	1	14		INTER	4-LEG	N		N	CLR	S-STRGHT	01	NONE 0	STRGHT											29
NONE		N				Tue 5P	OREGON CITY	MN 0		S BEAVERCREEK RD	E		TRF SIGNAL		N	DRY	REAR		PRVTE	E W									000		00
							PORTLAND UA	2.98		CASCADE HY SOUTH	06	3			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	17	M	OR-Y		042	000		29
No	*45 19*	*54.97*	*-122*	*34*	*30.30*			016000100	S00	1																OR<25					
																		02	NONE 0	STRGHT										
																			PRVTE	E W									006		00
																			PSNGR CAR		01	DRVR	NONE	53	F	OR-Y		000	000		00
																										OR<25					
00269	N	N	N			01/18/2017	CLACKAMAS	1	14		INTER	CROSS	N		N	RAIN	S-1STOP	01	NONE 9	STRGHT											29
NONE		N				Wed 1P	OREGON CITY	MN 0		S BEAVERCREEK RD	E		TRF SIGNAL		N	WET	REAR		N/A	E W									000		00
							PORTLAND UA	2.98		CASCADE HY SOUTH	06	0			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45 19*	*54.97*	*-122*	*34*	*30.30*			016000100	S00	1																UNK					
																		02	NONE 9	STOP										
																			N/A	E W									011		00
																			PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																										UNK					
00689	N	N	N			02/21/2017	CLACKAMAS	1	14		INTER	CROSS	N		N	RAIN	S-1STOP	01	NONE 9	STRGHT											29
NONE		N				Tue 6A	OREGON CITY	MN 0		S BEAVERCREEK RD	E		TRF SIGNAL		N	WET	REAR		N/A	E W									000		00
							PORTLAND UA	2.98		CASCADE HY SOUTH	06	3			N	DAWN	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45 19*	*54.97*	*-122*	*34*	*30.30*			016000100	S00	1																UNK					
																		02	NONE 9	STOP										
																			N/A	E W									011		00
																			PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																										UNK					
00483	N	N	N			02/06/2014	CLACKAMAS	1	14		INTER	CROSS	N		N	SNOW	S-STRGHT	01	NONE 0	STRGHT										124	07
CITY		N				Thu 10P	OREGON CITY	MN 0		S BEAVERCREEK RD	SE		YIELD		N	SNO	REAR		UNKN	SW NE									000	124	00
							PORTLAND UA	2.98		CASCADE HY SOUTH	09	3			N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	M	UNK		042	000		07
No	*45 19*	*54.97*	*-122*	*34*	*30.30*			016000100	S00	1																UNK					

Item #2.

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG	SCHWK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
															02	NONE 0 PRVTE	STRGHT SW NE									006	00
																PSNGR CAR		01	DRVR	NONE	18	M	OR-Y OR<25		000	000	00
01591 NONE	N N	N N	N N		04/26/2014 Sat 4P	CLACKAMAS OREGON CITY	1 14 MN 0	S BEAVERCREEK RD	INTER SE	CROSS YIELD	N N	N N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT SW NE										000	29 00
						PORTLAND UA	2.98	CASCADE HY SOUTH	09	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	28	M	OR-Y OR<25		026	000	29
No					*45 19 54.97 -122 34 30.30*		016000100S00	1																			
															02	NONE 0 PRVTE	STOP SW NE									011	00
																PSNGR CAR		01	DRVR	NONE	69	M	OR-Y OR<25		000	000	00
00664 NONE	N N	N N	N N		02/20/2015 Fri 3P	CLACKAMAS OREGON CITY	1 14 MN 0	S BEAVERCREEK RD	INTER SE	CROSS YIELD	N N	N N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT SW NE										000	29 00
						PORTLAND UA	2.98	CASCADE HY SOUTH	09	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	46	M	OR-Y OR<25		026	000	29
No					*45 19 54.97 -122 34 30.30*		016000100S00	1																			
															02	NONE 0 PRVTE	STOP SW NE									011	00
																PSNGR CAR		01	DRVR	NONE	17	F	OR-Y OR<25		000	000	00
00930 NONE	N N	N N	N N		03/15/2015 Sun 10A	CLACKAMAS OREGON CITY	1 14 MN 0	S BEAVERCREEK RD	INTER SE	CROSS YIELD	N N	N N	RAIN WET	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT SW NE										000	29 00
						PORTLAND UA	2.98	CASCADE HY SOUTH	09	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	20	M	OR-Y OR<25		026	000	29
No					*45 19 54.97 -122 34 30.30*		016000100S00	1																			
															02	NONE 0 PRVTE	STOP SW NE									011	00
																PSNGR CAR		01	DRVR	NONE	00	M	UNK OR<25		000	000	00
05136 NONE	N N	N N	N N		12/03/2015 Thu 5P	CLACKAMAS OREGON CITY	1 14 MN 0	S BEAVERCREEK RD	INTER SE	CROSS YIELD	N N	N N	RAIN WET	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT SW NE										000	29 00
						PORTLAND UA	2.98	CASCADE HY SOUTH	09	3		N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	41	M	OR-Y OR<25		026	000	29
No					*45 19 54.97 -122 34 30.30*		016000100S00	1																			
															02	NONE 0 PRVTE	STOP SW NE									011	00
																PSNGR CAR		01	DRVR	NONE	56	F	OR-Y OR<25		000	000	00

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG / MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / LRS	FC / MILEPNT	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
00484	N	N	N			01/29/2016	CLACKAMAS	1	14		INTER	CROSS	N		N UNK	S-1STOP	01	NONE 0	STRGHT										29
NONE			N			Fri 6A	OREGON CITY	MN 0		S BEAVERCREEK RD	SE		YIELD		N WET	REAR		PRVTE	SW NE									000	00
							PORTLAND UA	2.98		CASCADE HY SOUTH	09	3			N DLIT	INJ		PSNGR CAR		01	DRVR	INJC	45	F	OR-Y		026	000	29
No	*45 19*		*54.97 -122*		*34 30.30*			016000100		S00 1															OR<25				
																	02	NONE 0	STOP									011	00
																		PRVTE	SW NE										
																		PSNGR CAR		01	DRVR	NONE	37	M	OR-Y		000	000	00
																									OR<25				
02867	N	N	N			03/03/2016	CLACKAMAS	1	14		INTER	CROSS	N		N CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE			N			Thu 4P	OREGON CITY	MN 0		S BEAVERCREEK RD	SE		YIELD		N DRY	REAR		PRVTE	SW NE									000	00
							PORTLAND UA	2.98		CASCADE HY SOUTH	09	3			N DAY	INJ		PSNGR CAR		01	DRVR	INJC	20	F	OR-Y		026	000	29
No	*45 19*		*54.97 -122*		*34 30.30*			016000100		S00 1															OR<25				
																	02	NONE 0	STOP									011	00
																		PRVTE	SW NE										
																		PSNGR CAR		01	DRVR	NONE	70	F	OR-Y		000	000	00
																									OR<25				
03998	N	N	N			09/01/2016	CLACKAMAS	1	14		INTER	CROSS	N		N UNK	S-1STOP	01	NONE 0	STRGHT										29
NO RPT			N			Thu 7A	OREGON CITY	MN 0		S BEAVERCREEK RD	SE		YIELD		N UNK	REAR		PRVTE	SW NE									000	00
							PORTLAND UA	2.98		CASCADE HY SOUTH	09	3			N UNK	INJ		PSNGR CAR		01	DRVR	NONE	27	M	OR-Y		026	000	29
No	*45 19*		*54.97 -122*		*34 30.30*			016000100		S00 1															OR<25				
																	02	NONE 0	STOP									011	00
																		PRVTE	SW NE										
																		PSNGR CAR		01	DRVR	INJC	42	M	OR-Y		000	000	00
																									OR<25				
01453	N	N	N			04/17/2017	CLACKAMAS	1	14		INTER	CROSS	N		N CLR	S-1STOP	01	NONE 9	STRGHT										29
NONE			N			Mon 10A	OREGON CITY	MN 0		S BEAVERCREEK RD	SE		YIELD		N DRY	REAR		N/A	NE SW									000	00
							PORTLAND UA	2.98		CASCADE HY SOUTH	09	3			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45 19*		*54.97 -122*		*34 30.30*			016000100		S00 1															UNK				
																	02	NONE 9	STOP									011	00
																		N/A	NE SW										
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
																									UNK				
02662	N	N	N			07/05/2017	CLACKAMAS	1	14		INTER	CROSS	N		N CLR	S-1STOP	01	NONE 9	STRGHT										29
NONE			N			Wed 5P	OREGON CITY	MN 0		S BEAVERCREEK RD	SE		YIELD		N DRY	REAR		N/A	SW NE									000	00
							PORTLAND UA	2.98		CASCADE HY SOUTH	09	3			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000	00
No	*45 19*		*54.97 -122*		*34 30.30*			016000100		S00 1															UNK				

Item #2.

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																02	NONE 9 N/A	STOP SW NE									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
05446 NONE	N	N	N			12/20/2017 Wed 6P	CLACKAMAS OREGON CITY	1 14 MN 0	 S BEAVERCREEK RD	INTER SE	CROSS	N TRF SIGNAL	N	CLR ICE	S-1STOP REAR	01	NONE 0 PRVTE	TURN-R S E									000	29 00
							PORTLAND UA	2.98	CASCADE HY SOUTH	09	3		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	25	M	OR-Y OR<25		026	000	29
No	*45 19 54.97 -122 34 30.30*							016000100S00	1																			
																02	NONE 0 PRVTE	STOP S E									011	00
																	PSNGR CAR		01	DRVR	INJC	29	F	OR-Y OR<25		000	000	00
00046 CITY	N	N	N			01/04/2018 Thu 12P	CLACKAMAS OREGON CITY	1 14 MN 0	 S BEAVERCREEK RD	INTER SE	CROSS	N YIELD	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT SW NE									000	29,32 00
							PORTLAND UA	2.98	CASCADE HY SOUTH	09	3		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	21	F	OR-Y OR<25		026,052	000	29,32
No	*45 19 54.94 -122 34 30.28*							016000100S00	1																			
																02	NONE 0 PRVTE	STOP SW NE									011	00
																	PSNGR CAR		01	DRVR	INJC	92	F	OR-Y OR<25		000	000	00
03383 NONE	N	N	N			09/08/2018 Sat 1P	CLACKAMAS OREGON CITY	1 14 MN 0	 S BEAVERCREEK RD	INTER SE	CROSS	N YIELD	N	CLR DRY	S-1STOP REAR	01	NONE 9 N/A	STRGHT SW NE									000	29 00
							PORTLAND UA	2.98	CASCADE HY SOUTH	09	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
No	*45 19 54.98 -122 34 30.29*							016000100S00	1																			
																02	NONE 9 N/A	STOP SW NE									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
00463 COUNTY	Y	N	N	N	N	02/05/2014 Wed 5A	CLACKAMAS OREGON CITY	1 14 MN 0	 S BEAVERCREEK RD	INTER S	CROSS	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT S N									000	07,01 00
							PORTLAND UA	2.98	CASCADE HY SOUTH	06	3		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	19	M	OTH-Y N-RES		026,047	000	07,01
No	*45 19 54.97 -122 34 30.30*							016000100S00	1																			
																02	NONE 0 PRVTE	STOP S N									011	00
																	PSNGR CAR		01	DRVR	INJC	44	F	OR-Y OR<25		000	000	00

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / LRS	FC / MILEPNT	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
00709	N	N	N			02/17/2014	CLACKAMAS	1	14		INTER	CROSS	N		N	RAIN	S-1STOP	01	NONE 0	STRGHT										07
NONE		N				Mon 5A	OREGON CITY	MN 0		S BEAVERCREEK RD	S		TRF SIGNAL		N	WET	REAR		UNKN	S N									000	00
							PORTLAND UA	2.98		CASCADE HY SOUTH	06	3			N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	00	M	UNK		026	000	07
No	*45 19*	*54.97*	*-122*	*34*	*30.30*			016000100S00		1																UNK				
																	02	NONE 0	STOP										
																		PRVTE	S N									011	00
																		PSNGR CAR		01	DRVR	INJC	55	M	OR-Y		000	000	00
																									OR<25				
01295	N	N	N			04/03/2014	CLACKAMAS	1	14		INTER	CROSS	N		N	CLR	S-1STOP	01	NONE 0	STRGHT										07
NONE		N				Thu 9A	OREGON CITY	MN 0		S BEAVERCREEK RD	S		TRF SIGNAL		N	DRY	REAR		PRVTE	S N									000	00
							PORTLAND UA	2.98		CASCADE HY SOUTH	06	3			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	20	F	OR-Y		026	000	07
No	*45 19*	*54.97*	*-122*	*34*	*30.30*			016000100S00		1																OR<25				
																	02	NONE 0	STOP										
																		UNKN	S N									011	00
																		PSNGR CAR		01	DRVR	NONE	00	M	UNK		000	000	00
																									UNK				
02651	N	N	N			06/26/2014	CLACKAMAS	1	14		INTER	CROSS	N		N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NO RPT		N				Thu 2P	OREGON CITY	MN 0		S BEAVERCREEK RD	S		TRF SIGNAL		N	DRY	REAR		PRVTE	S N									000	00
							PORTLAND UA	2.98		CASCADE HY SOUTH	06	3			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	F	UNK		026	000	29
No	*45 19*	*54.97*	*-122*	*34*	*30.30*			016000100S00		1																OR<25				
																	02	NONE 0	STOP										
																		PRVTE	S N									011	00
																		PSNGR CAR		01	DRVR	NONE	22	M	OR-Y		000	000	00
																									OR<25				
02801	N	N	N			07/21/2014	CLACKAMAS	1	14		INTER	CROSS	N		N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE		N				Mon 11A	OREGON CITY	MN 0		S BEAVERCREEK RD	S		TRF SIGNAL		N	DRY	REAR		PRVTE	S N									000	00
							PORTLAND UA	2.98		CASCADE HY SOUTH	06	3			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	25	F	OR-Y		026	000	29
No	*45 19*	*54.97*	*-122*	*34*	*30.30*			016000100S00		1																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				
04596	N	N	N			11/04/2015	CLACKAMAS	1	14		INTER	CROSS	N		N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE		N				Wed 5P	OREGON CITY	MN 0		S BEAVERCREEK RD	S		TRF SIGNAL		N	DRY	REAR		PRVTE	S N									000	00
							PORTLAND UA	2.98		CASCADE HY SOUTH	06	3			N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	76	M	OR-Y		026	000	29
No	*45 19*	*54.97*	*-122*	*34*	*30.30*			016000100S00		1																OR>25				

Item #2.

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUGS	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																02	NONE 0 PRVTE	STOP S N									011	00
																	PSNGR CAR		01	DRVR	INJC	81	M	OR-Y OR<25		000	000	00
																			02	PSNG	INJC	60	F			000	000	00
04973 NONE	N	N	N			11/23/2015 Mon 6P	CLACKAMAS OREGON CITY	1 14 MN 0	S BEAVERCREEK RD	INTER S	CROSS	N TRF SIGNAL	N	RAIN WET	S-1STOP REAR	01	NONE 0 UNKN	STRGHT S N									000	29 00
							PORTLAND UA	2.98	CASCADE HY SOUTH	06	3		N	DUSK	PDO		UNKNOWN		01	DRVR	NONE	00	U	UNK UNK		026	000	29
No	*45 19*		*54.97 -122*		*34 30.30*			016000100S00	1																		
																02	NONE 0 PRVTE	STOP S N									011	00
																	PSNGR CAR		01	DRVR	NONE	72	M	OR-Y OR<25		000	000	00
00087 NONE	N	N	N			01/05/2016 Tue 9A	CLACKAMAS OREGON CITY	1 14 MN 0	S BEAVERCREEK RD	INTER S	CROSS	N TRF SIGNAL	N	RAIN WET	S-1STOP REAR	01	NONE 9 N/A	STRGHT S N									000	29 00
							PORTLAND UA	2.98	CASCADE HY SOUTH	06	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
No	*45 19*		*54.97 -122*		*34 30.30*			016000100S00	1																		
																02	NONE 9 N/A	STOP S N									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
01296 STATE	N	Y	Y	N	N	01/02/2017 Mon 12P	CLACKAMAS OREGON CITY	1 14 MN 0	S BEAVERCREEK RD	INTER S	CROSS	N SP PED SIG	N	CLD WET	PED PED	01	NONE 0 PRVTE	STRGHT S N									001	04,18 00
							PORTLAND UA	2.98	CASCADE HY SOUTH	06	0		N	DAY	FAT		PSNGR CAR		01	DRVR	NONE	62	M	OR-Y OR<25		000	000	00
No	*45 19*		*54.97 -122*		*34 30.30*			016000100S00	1																		
																		STRGHT E W	01	PED	KILL	39	M		01	020	000	04
01056 NONE	N	N	N			03/18/2017 Sat 2P	CLACKAMAS OREGON CITY	1 14 MN 0	S BEAVERCREEK RD	INTER S	CROSS	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT S N									000	29 00
							PORTLAND UA	2.98	CASCADE HY SOUTH	06	3		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	23	F	OR-Y OR<25		026	000	29
No	*45 19*		*54.97 -122*		*34 30.30*			016000100S00	1																		
																02	NONE 0 PRVTE	STOP S N									011	00
																	PSNGR CAR		01	DRVR	INJC	66	M	OR-Y OR<25		000	000	00
																			02	PSNG	INJC	33	M			000	000	00
																			03	PSNG	INJC	66	F			000	000	00

Item #2.

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG / MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / LRS	FC / MILEPNT	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
03597	N	N	N	N	N	09/01/2017	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
CITY		N				Fri 8P	OREGON CITY	MN 0		S BEAVERCREEK RD	S		TRF SIGNAL	N	DRY	REAR		PRVTE	S N										000		00
							PORTLAND UA	2.98		CASCADE HY SOUTH	06	3		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJB	56	M	OR-Y		026	000		29
No	*45 19*	*54.97*	*-122 34*	*30.30*				016000100	S00	1															OR<25					
																	02	NONE 0	STOP											
																		PRVTE	S N									012		00
																		PSNGR CAR		01	DRVR	NONE	31	M	OTH-Y		000	000		00
																									OR<25					
04289	Y	N	N			09/17/2016	CLACKAMAS	1	14		INTER	CROSS	N	Y	RAIN	FIX OBJ	01	NONE 9	STRGHT										124,050	01
NO RPT		N				Sat 11P	OREGON CITY	MN 0		S BEAVERCREEK RD	SW		TRF SIGNAL	N	WET	FIX		N/A	S N									000		00
							PORTLAND UA	2.98		CASCADE HY SOUTH	06	3		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45 19*	*54.97*	*-122 34*	*30.30*				016000100	S00	1															UNK					
03959	N	N	N			10/07/2014	CLACKAMAS	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE		N				Tue 7A	OREGON CITY	MN 0		S BEAVERCREEK RD	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W E									000		00
							PORTLAND UA	2.98		CASCADE HY SOUTH	06	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	18	M	OR-Y		026	026		29
No	*45 19*	*54.97*	*-122 34*	*30.30*				016000100	S00	1															OR<25					
																	02	NONE 0	STOP											
																		PRVTE	W E									011		00
																		PSNGR CAR		01	DRVR	NONE	28	M	OR-Y		000	000		00
																									OR<25					
04748	N	N	N			11/12/2015	CLACKAMAS	1	14		INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											29
NONE		N				Thu 1P	OREGON CITY	MN 0		S BEAVERCREEK RD	W		TRF SIGNAL	N	WET	REAR		PRVTE	W E									000		00
							PORTLAND UA	2.98		CASCADE HY SOUTH	06	3		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	20	F	OR-Y		026	000		29
No	*45 19*	*54.97*	*-122 34*	*30.30*				016000100	S00	1															OR<25					
																				02	PSNG	INJC	18	F			000	000		00
																	02	NONE 0	STOP											
																		PRVTE	W E									011		00
																		PSNGR CAR		01	DRVR	NONE	17	M	OR-Y		000	000		00
																									OR<25					
05677	N	N	N			12/29/2015	CLACKAMAS	1	14		INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											29
NONE		N				Tue 5P	OREGON CITY	MN 0		S BEAVERCREEK RD	W		TRF SIGNAL	N	WET	REAR		PRVTE	W E									000		00
							PORTLAND UA	2.98		CASCADE HY SOUTH	06	3		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	80	M	OR-Y		026	000		29
No	*45 19*	*54.97*	*-122 34*	*30.30*				016000100	S00	1															OR<25					
																	02	NONE 0	STOP											
																		PRVTE	W E									011		00
																		PSNGR CAR		01	DRVR	INJC	27	M	OR-Y		000	000		00
																									OR<25					

Item #2.

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	S P E D	A L C	D R U G / M J	S C H L	W O R K	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
01250	N	N	N			03/16/2016	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NO RPT		N				Wed 11A	OREGON CITY	MN 0	S BEAVERCREEK RD	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W E									000		00
							PORTLAND UA	2.98	CASCADE HY SOUTH	06	3		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	40	F	OR-Y		026	000		29
No	*45 19*		*54.97 -122*	*34*	*30.30*			016000100	S00 1															OR<25					
																02	NONE 0	STOP										
																	PRVTE	W E								012		00
																	PSNGR CAR		01	DRVR	INJC	81	M	OR-Y		000	000		00
																								OR<25				
00112	N	N	N			01/07/2017	CLACKAMAS	1 14		INTER	CROSS	N	N	SNOW	S-1STOP	01	NONE 9	STRGHT										124	29
NONE		N				Sat 4P	OREGON CITY	MN 0	S BEAVERCREEK RD	W		TRF SIGNAL	N	ICE	REAR		N/A	W E									000		00
							PORTLAND UA	2.98	CASCADE HY SOUTH	06	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45 19*		*54.97 -122*	*34*	*30.30*			016000100	S00 1															UNK				
																02	NONE 9	STOP										
																	N/A	W E								011		00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																								UNK				
01345	N	N	N			03/30/2017	CLACKAMAS	1 14		INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 9	STRGHT											29
NONE		N				Thu 7A	OREGON CITY	MN 0	S BEAVERCREEK RD	W		TRF SIGNAL	N	WET	REAR		N/A	W E									000		00
							PORTLAND UA	2.98	CASCADE HY SOUTH	06	3		N	DAWN	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45 19*		*54.97 -122*	*34*	*30.30*			016000100	S00 1															UNK				
																02	NONE 9	STOP										
																	N/A	W E								011		00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																								UNK				
02897	N	N	N			07/18/2017	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE		N				Tue 5P	OREGON CITY	MN 0	S BEAVERCREEK RD	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W E									000		00
							PORTLAND UA	2.98	CASCADE HY SOUTH	06	3		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	20	M	OR-Y		026	000		29
No	*45 19*		*54.97 -122*	*34*	*30.30*			016000100	S00 1															OR<25				
																02	NONE 0	STOP										
																	PRVTE	W E								011		00
																	PSNGR CAR		01	DRVR	INJC	34	F	OR-Y		000	000		00
																								OR<25				
																			02	PSNG	INJC	43	F			000	000		00
03921	Y	Y	N	N	N	08/10/2018	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT										093	27,01,29
COUNTY		N				Fri 10P	OREGON CITY	MN 0	S BEAVERCREEK RD	W		TRF SIGNAL	N	DRY	REAR		N/A	W E									000		00
							PORTLAND UA	2.98	CASCADE HY SOUTH	06	3		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45 19*		*54.97 -122*	*34*	*30.30*			016000100	S00 1															UNK				

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																	02	NONE 9 N/A	STOP W E									011	00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
00348	N	N	N			01/26/2014	CLACKAMAS	1	14		INTER	CROSS	N		N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE		N				Sun 4P	OREGON CITY	MN 0		S BEAVERCREEK RD	NW		YIELD		N	DRY	REAR		PRVTE	NE SW									000	00
							PORTLAND UA	2.98		CASCADE HY SOUTH	09	3			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	F	UNK		026	000	07
No	*45*	*19*	*54.97*	*-122*	*34*	*30.30*		016000100S00		1																OR<25				
																	02	NONE 0 PRVTE	STOP NE SW									011	00
																		PSNGR CAR		01	DRVR	NONE	18	F	OR-Y OR<25		000	000	00
00768	N	N	N			02/21/2014	CLACKAMAS	1	14		INTER	CROSS	N		N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE		N				Fri 7A	OREGON CITY	MN 0		S BEAVERCREEK RD	NW		YIELD		N	DRY	REAR		PRVTE	NE SW									000	00
							PORTLAND UA	2.98		CASCADE HY SOUTH	09	3			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	61	M	OR-Y		026	000	07
No	*45*	*19*	*54.97*	*-122*	*34*	*30.30*		016000100S00		1																OR<25				
																	02	NONE 0 PRVTE	STOP NE SW									011	00
																		PSNGR CAR		01	DRVR	NONE	49	F	OR-Y OR<25		000	000	00
01784	N	N	N			05/09/2014	CLACKAMAS	1	14		INTER	CROSS	N		N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE		N				Fri 10A	OREGON CITY	MN 0		S BEAVERCREEK RD	NW		YIELD		N	DRY	REAR		PRVTE	NE SW									000	00
							PORTLAND UA	2.98		CASCADE HY SOUTH	09	3			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	23	F	OR-Y		026	000	07
No	*45*	*19*	*54.97*	*-122*	*34*	*30.30*		016000100S00		1																OR<25				
																	02	NONE 0 PRVTE	STOP NE SW									011	00
																		PSNGR CAR		01	DRVR	INJC	41	M	OR-Y OR<25		000	000	00
02955	N	N	N			08/01/2014	CLACKAMAS	1	14		INTER	CROSS	N		N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE		N				Fri 9P	OREGON CITY	MN 0		S BEAVERCREEK RD	NW		YIELD		N	DRY	REAR		PRVTE	NE SW									000	00
							PORTLAND UA	2.98		CASCADE HY SOUTH	09	3			N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	29	F	OR-Y		026	000	29
No	*45*	*19*	*54.97*	*-122*	*34*	*30.30*		016000100S00		1																OR<25				
																	02	NONE 0 PRVTE	STOP NE SW									011	00
																		PSNGR CAR		01	DRVR	INJC	34	M	OR-Y OR<25		000	000	00
																				02	PSNG	INJC	36	F			000	000	00

Item #2.

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	MCJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
04683	N	N	N				11/18/2014	CLACKAMAS	1 14		INTER	CROSS	N		N CLR	S-1STOP	01	NONE 0	STRGHT										29
NO RPT			N				Tue 5P	OREGON CITY	MN 0	S BEAVERCREEK RD	NW		YIELD		N DRY	REAR		PRVTE	NE SW									000	00
								PORTLAND UA	2.98	CASCADE HY SOUTH	09	3			N DLIT	INJ		PSNGR CAR		01	DRVR	NONE	50	M	OR-Y		026	000	29
No	*45 19*		*54.97 -122*	*34*	*30.30*				016000100	S00 1																OR<25				
																	02	NONE 0	STOP										
																		PRVTE	NE SW									011	00
																		PSNGR CAR		01	DRVR	INJB	35	M	OR-Y		000	000	00
																									OR<25				
01216	N	N	N				04/06/2015	CLACKAMAS	1 14		INTER	CROSS	N		N CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE			N				Mon 3P	OREGON CITY	MN 0	S BEAVERCREEK RD	NW		YIELD		N DRY	REAR		PRVTE	NE SW									000	00
								PORTLAND UA	2.98	CASCADE HY SOUTH	09	3			N DAY	PDO		PSNGR CAR		01	DRVR	NONE	57	F	OR-Y		026	000	29
No	*45 19*		*54.97 -122*	*34*	*30.30*				016000100	S00 1																OR<25				
																	02	NONE 0	STOP										
																		PRVTE	NE SW									011	00
																		PSNGR CAR		01	DRVR	NONE	60	F	OR-Y		000	000	00
																									OR<25				
04227	N	N	N				10/13/2015	CLACKAMAS	1 14		INTER	CROSS	N		N CLR	S-1STOP	01	NONE 0	STRGHT										29
NO RPT			N				Tue 7P	OREGON CITY	MN 0	S BEAVERCREEK RD	NW		YIELD		N DRY	REAR		PRVTE	NE SW									000	00
								PORTLAND UA	2.98	CASCADE HY SOUTH	09	3			N DLIT	INJ		PSNGR CAR		01	DRVR	NONE	37	M	OR-Y		026	000	29
No	*45 19*		*54.97 -122*	*34*	*30.30*				016000100	S00 1																OR<25				
																	02	NONE 0	STOP										
																		PRVTE	NE SW									011	00
																		PSNGR CAR		01	DRVR	INJB	77	F	OR-Y		000	000	00
																									OR<25				
04738	N	N	N				11/09/2015	CLACKAMAS	1 14		INTER	CROSS	N		N RAIN	S-1STOP	01	NONE 0	STRGHT										29
NO RPT			N				Mon 6P	OREGON CITY	MN 0	S BEAVERCREEK RD	NW		YIELD		N WET	REAR		PRVTE	NE SW									000	00
								PORTLAND UA	2.98	CASCADE HY SOUTH	09	3			N DUSK	PDO		PSNGR CAR		01	DRVR	NONE	00	M	OR-Y		026	000	29
No	*45 19*		*54.97 -122*	*34*	*30.30*				016000100	S00 1																OR<25				
																	02	NONE 0	STOP										
																		PRVTE	NE SW									011	00
																		PSNGR CAR		01	DRVR	NONE	59	F	OR-Y		000	000	00
																									OR<25				
01270	N	N	N				04/05/2017	CLACKAMAS	1 14		INTER	CROSS	N		N CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE			N				Wed 4P	OREGON CITY	MN 0	S BEAVERCREEK RD	NW		YIELD		N DRY	REAR		PRVTE	NE SW									000	00
								PORTLAND UA	2.98	CASCADE HY SOUTH	09	3			N DAY	INJ		PSNGR CAR		01	DRVR	NONE	34	M	OR-Y		026	000	29
No	*45 19*		*54.97 -122*	*34*	*30.30*				016000100	S00 1																OR<25				

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																02	NONE 0 PRVTE	STOP NE SW									011	00
																	PSNGR CAR		01	DRVR	INJC	47	F	OR-Y OR<25		000	000	00
																			02	PSNG	INJC	15	F			000	000	00
03031 NONE	N N	N N	N			07/26/2017 Wed 4P	CLACKAMAS OREGON CITY	1 14 MN 0	S BEAVERCREEK RD	INTER NW	CROSS	N YIELD	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT NE SW									000	29 00
No						*45 19 54.97 -122 34 30.30*	PORTLAND UA	2.98 016000100S00	CASCADE HY SOUTH 1	09	3		N	DAY	INJ		UNKNOWN		01	DRVR	NONE	00	M	UNK OR<25		026	000	29
																02	NONE 0 PRVTE	STOP NE SW									011	00
																	PSNGR CAR		01	DRVR	INJC	29	F	OR-Y OR<25		000	000	00
04218 NONE	N N	N N	N			10/11/2017 Wed 5P	CLACKAMAS OREGON CITY	1 14 MN 0	S BEAVERCREEK RD	INTER NW	CROSS	N YIELD	N	RAIN WET	S-1STOP REAR	01	NONE 9 N/A	STRGHT NE SW									000	29 00
No						*45 19 54.97 -122 34 30.30*	PORTLAND UA	2.98 016000100S00	CASCADE HY SOUTH 1	09	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
																02	NONE 9 N/A	STOP NE SW									011	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
01536 CITY	N N	N N	N			05/07/2018 Mon 8A	CLACKAMAS OREGON CITY	1 14 MN 0	S BEAVERCREEK RD	INTER NW	CROSS	N YIELD	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT NE SW									000	07,29 00
No						*45 19 54.98 -122 34 30.30*	PORTLAND UA	2.98 016000100S00	CASCADE HY SOUTH 1	09	3		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	56	F	OR-Y OR<25		043,026	000	07,29
																02	NONE 0 PRVTE	STOP NE SW									011	00
																	PSNGR CAR		01	DRVR	INJC	28	F	OR-Y OR<25		000	000	00
02261 NONE	N N	N N	N			06/28/2018 Thu 7A	CLACKAMAS OREGON CITY	1 14 MN 0	S BEAVERCREEK RD	INTER NW	CROSS	N YIELD	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT NE SW									000	29 00
No						*45 19 54.97 -122 34 30.30*	PORTLAND UA	2.98 016000100S00	CASCADE HY SOUTH 1	09	3		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	72	F	OR-Y OR<25		026	000	29
																02	NONE 0 PRVTE	STOP NE SW									011	00
																	PSNGR CAR		01	DRVR	INJC	39	F	OR-Y OR<25		000	000	00

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	MCR	SCH BUS	WORK ZONE	DATE / DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
03399	N	N	N	N	N		09/24/2018	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29,32
CITY		N					Mon 3P	OREGON CITY	MN 0	S BEAVERCREEK RD	NW		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW									000		00
								PORTLAND UA	2.98	CASCADE HY SOUTH	09	3		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	31	M	OR-Y		026,052	000		29,32
No							*45 19 54.98 -122 34 30.33*		016000100S00	1																OR<25					
																	02	NONE 0	STOP											
																		PRVTE	NE SW									011		00
																		PSNGR CAR		01	DRVR	INJC	52	F	OR-Y		000	000		00
																									OR<25					
																				02	PSNG	INJC	30	M			000	000		00
04306	N	N	N				11/22/2018	CLACKAMAS	1 14		INTER	CROSS	N	N	UNK	S-1STOP	01	NONE 0	STRGHT											29
NO RPT		N					Thu 9P	OREGON CITY	MN 0	S BEAVERCREEK RD	NW		YIELD	N	WET	REAR		PRVTE	NE SW									000		00
								PORTLAND UA	2.98	CASCADE HY SOUTH	09	3		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	37	M	OR-Y		026	000		29
No							*45 19 54.97 -122 34 30.30*		016000100S00	1																OR<25					
																	02	NONE 0	STOP											
																		PRVTE	NE SW									011		00
																		PSNGR CAR		01	DRVR	INJC	34	F	OR-Y		000	000		00
																									OR<25					
04783	N	N	N				11/13/2015	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											02
NO RPT		N					Fri 11P	OREGON CITY	MN 0	S BEAVERCREEK RD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	SE NW									000		00
								PORTLAND UA	2.98	CASCADE HY SOUTH	01	3		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	16	F	OR-Y		000	000		00
No							*45 19 54.97 -122 34 30.30*		016000100S00	1																OR<25					
																	02	NONE 0	TURN-L											
																		UNKN	NW NE									000		00
																		UNKNOWN		01	DRVR	NONE	00	U	UNK		028,004	000		02
																									UNK					
00638	N	N	N	N	N		02/17/2017	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	TURN-L											04
CITY		N					Fri 7P	OREGON CITY	MN 0	S BEAVERCREEK RD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	S W									000		00
								PORTLAND UA	2.98	CASCADE HY SOUTH	01	3		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	48	F	SUSP		097	000		00
No							*45 19 54.97 -122 34 30.30*		016000100S00	1																OR<25					
																	02	NONE 0	STRGHT											
																		PRVTE	N S									000		00
																		PSNGR CAR		01	DRVR	INJC	65	F	OR-Y		097	000		00
																									OR<25					
02648	N	N	N	N	N		07/04/2017	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										013	27,04
CITY		N					Tue 2P	OREGON CITY	MN 0	S BEAVERCREEK RD	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	N S									000		00
								PORTLAND UA	2.98	CASCADE HY SOUTH	01	3		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	19	M	OR-Y		020	000		27,04
No							*45 19 54.97 -122 34 30.30*		016000100S00	1																OR>25					

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / LRS	FC / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	CONN # / RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																02	NONE 0 PRVTE	STRGHT E W									000	013	00
																	PSNGR CAR		01	DRVR	INJC	21	F	OTH-Y N-RES		000	000		00
																			02	PSNG	INJC	26	M			000	000		00
																			03	PSNG	INJC	14	M			000	000		00
																03	NONE 0 PRVTE	STRGHT E W									022		00
																	PSNGR CAR		01	DRVR	NONE	47	F	OR-Y OR<25		000	000		00
00292	N	N	N			01/23/2015	CLACKAMAS	1 14		INTER	CROSS	N		N CLR	S-OTHER	01	NONE 0	TURN-L											08
NO RPT		N				Fri 11P	OREGON CITY	MN 0	S BEAVERCREEK RD	CN		L-GRN-SIG		N DRY	TURN		PRVTE	W N								000		00
							PORTLAND UA	2.98	CASCADE HY SOUTH 02		3			N DLIT	INJ		PSNGR CAR		01	DRVR	NONE	28	F	OR-Y OR<25		007	000		08
No	*45 19*		*54.97*	*-122 34*	*30.30*			016000100S00	1																				
																02	NONE 0 PRVTE	TURN-L W N									000		00
																	PSNGR CAR		01	DRVR	INJC	20	M	OR-Y OR<25		000	000		00
01910	N	N	N			04/27/2016	CLACKAMAS	1 14		INTER	CROSS	N		N CLR	ANGL-OTH	01	NONE 9	STRGHT											04
NONE		N				Wed 5A	OREGON CITY	MN 0	S BEAVERCREEK RD	CN		TRF SIGNAL		N DRY	ANGL		N/A	E W								000		00
							PORTLAND UA	2.98	CASCADE HY SOUTH 02		3			N DAWN	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
No	*45 19*		*54.97*	*-122 34*	*30.30*			016000100S00	1																				
																02	NONE 9 N/A	STRGHT S N									000		00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
04078	N	N	N	N	N	10/02/2017	CLACKAMAS	1 14		INTER	CROSS	N		N RAIN	ANGL-OTH	01	NONE 0	STRGHT										093	27,04
CITY		N				Mon 5A	OREGON CITY	MN 0	S BEAVERCREEK RD	CN		TRF SIGNAL		N WET	ANGL		PRVTE	S N								000		00
							PORTLAND UA	2.98	CASCADE HY SOUTH 02		3			N DLIT	INJ		PSNGR CAR		01	DRVR	NONE	32	M	OR-Y OR<25		000	000		00
No	*45 19*		*54.97*	*-122 34*	*30.30*			016000100S00	1																				
																02	NONE 0 PRVTE	STRGHT E W									000		00
																	PSNGR CAR		01	DRVR	NONE	19	M	OTH-Y OR<25		020	038	093	27,04
																03	NONE 0 PRVTE	STRGHT S N									000		00
																	PSNGR CAR		01	DRVR	INJC	55	F	OR-Y OR<25		000	000		00

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
03507	N	N	N			10/02/2018	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										013,099	27,04
CITY		N				Tue 12P	OREGON CITY	MN 0	S BEAVERCREEK RD	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	S N									000		00
							PORTLAND UA	2.98	CASCADE HY SOUTH	02	3		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	18	M	OR-Y		020	038	099	27,04
No	*45*	*19*				*54.97 -122 34 30.30*		016000100	S00 1															OR<25					
																			02	PSNG	INJC	20	M			000	000		00
																02	NONE 0	STRGHT											
																	PRVTE	E W									000	013	00
																	PSNGR CAR		01	DRVR	INJB	70	F	OR-Y		000	000		00
																								OR<25					
																03	NONE 0	STOP											
																	PRVTE	E W									022		00
																	PSNGR CAR		01	DRVR	INJB	66	M	OR-Y		000	000		00
																								OR<25					
																			02	PSNG	INJC	61	M			000	000		00
																04	NONE 0	STOP											
																	PRVTE	E W									022		00
																	PSNGR CAR		01	DRVR	NONE	19	F	OR-Y		000	000		00
																								OR<25					
03384	N	N	N			07/26/2016	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	BIKE	01	NONE 0	TURN-R											02
CITY		N				Tue 7P	OREGON CITY	MN 0	S BEAVERCREEK RD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	W S									000		00
							PORTLAND UA	2.98	CASCADE HY SOUTH	03	3		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	32	F	OR-Y		027	000		02
No	*45*	*19*				*54.97 -122 34 30.30*		016000100	S00 1															OR<25					
																			02	PSNG	NO<5	04	M			000	000		00
																		STRGHT	01	BIKE	INJB	57	M		02	000	035		00
																		W E											
01544	N	N	N	N	N	04/24/2017	CLACKAMAS	1 14		INTER	CROSS	N	N	RAIN	O-1 L-TURN	01	NONE 0	STRGHT											04
CITY		N				Mon 10P	OREGON CITY	MN 0	S BEAVERCREEK RD	CN		TRF SIGNAL	N	WET	TURN		PRVTE	S N									000		00
							PORTLAND UA	2.98	CASCADE HY SOUTH	04	3		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	31	M	SUSP		020	000		04
No	*45*	*19*				*54.97 -122 34 30.30*		016000100	S00 1															OR<25					
																02	NONE 0	TURN-L											
																	PRVTE	N E									000		00
																	PSNGR CAR		01	DRVR	INJB	38	F	OR-Y		000	000		00
																								OR<25					
02040	N	N	N	N	N	06/14/2018	CLACKAMAS	1 14		INTER	CROSS	N	N	CLR	BIKE													110	04,18,19
CITY		N				Thu 9P	OREGON CITY	MN 0	S BEAVERCREEK RD	CN		TRF SIGNAL	N	UNK	ANGL														
							PORTLAND UA	2.98	CASCADE HY SOUTH	04	3		N	DLIT	INJ			STRGHT	01	BIKE	INJC	44	M		02	020	035	110	04,18,19
No	*45*	*19*				*54.98 -122 34 30.31*		016000100	S00 1									W E											

Item #2.

160 CASCADE HWY SOUTH

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALCHL	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# FC / CMPT/MLG / MILEPNT / LRS	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																01	NONE PRVTE	0 S	STRGHT N									000	00
																	PSNGR CAR		01	DRVR	NONE	22	M	OR-Y OR>25		000	000	00

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
01181	N	N	N			04/08/2018	16	S BEAVERCREEK RD	INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											27,29
CITY			N			Sun 1P	0	CASCADE HY SOUTH	UN		TRF SIGNAL	N	WET	REAR		PRVTE	UN UN										000		00
No	*45 19 54.97*					*-122 34 30.29*		1	06	3		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	51	F	OR-Y OR<25		026	038		27,29
															02	NONE 0	STOP											
																PRVTE	UN UN									011		00
																PSNGR CAR		01	DRVR	INJC	64	F	OR-Y OR<25		000	000		00
00520	N	N	N			02/11/2018	16	S BEAVERCREEK RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT												29
NONE			N			Sun 10A	0	CASCADE HY SOUTH	NE		YIELD	N	DRY	REAR		N/A	SE NW										000		00
No	*45 19 54.84*					*-122 34 29.32*		1	09	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9	STOP											
																N/A	SE NW									011		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
05319	N	N	N			12/31/2014	16	S BEAVERCREEK RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT												29
NONE			N			Wed 9P	0	CASCADE HY SOUTH	E		TRF SIGNAL	N	DRY	REAR		UNKN	UN UN										000		00
No	*45 19 54.97*					*-122 34 30.30*		1	06	3		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		026	000		29
															02	NONE 0	STOP											
																PRVTE	UN UN									011		00
																PSNGR CAR		01	DRVR	INJC	16	F	OR-Y OR<25		000	000		00
																		02	PSNG	INJC	18	F			000	000		00
03287	N	N	N			08/13/2015	16	S BEAVERCREEK RD	INTER	CROSS	N	N	UNK	S-1STOP	01	NONE 0	STRGHT												29
NO RPT			N			Thu 3P	0	CASCADE HY SOUTH	E		TRF SIGNAL	N	UNK	REAR		UNKN	E W										000		00
No	*45 19 54.97*					*-122 34 30.30*		1	06	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	F	OR-Y UNK		026	000		29
															02	NONE 0	STOP											
																PRVTE	E W									011		00
																PSNGR CAR		01	DRVR	NONE	65	F	OR-Y OR<25		000	000		00
05236	N	N	N			12/09/2017	16	S BEAVERCREEK RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT												27,07
CITY			N			Sat 9A	0	CASCADE HY SOUTH	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E W										000		00
No	*45 19 54.97*					*-122 34 30.30*		1	06	3		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	56	M	OR-Y OR<25		016,043	038		27,07
															02	NONE 0	STOP											
																PRVTE	E W									011		00
																PSNGR CAR		01	DRVR	INJC	37	M	OR-Y OR<25		000	000		
																		02	PSNG	NO<5	01	M			000	000		

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00273	N	N	N	N	N	01/01/2014	16	S BEAVERCREEK RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
CITY			N			Wed 9A	0	CASCADE HY SOUTH	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W E									000		00
No	*45 19 54.97*					*-122 34 30.30*		1	06	3		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	65	F	SUSP OR<25		026	000		07
															02	NONE 0	STOP											
																PRVTE	W E									011		00
																PSNGR CAR		01	DRVR	INJC	21	F	OR-Y OR<25		000	000		00
00762	N	N	N			03/02/2015	16	S BEAVERCREEK RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT												29
NONE			N			Mon 2P	0	CASCADE HY SOUTH	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W E									000		00
No	*45 19 54.97*					*-122 34 30.30*		1	06	2		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	65	M	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	W E									011		00
																PSNGR CAR		01	DRVR	INJC	54	F	OR-Y OR<25		000	000		00
04147	N	N	N			10/08/2015	14	S BEAVERCREEK RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT												29
NONE			N			Thu 10A	0	CASCADE HY SOUTH	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W E									000		00
No	*45 19 54.97*					*-122 34 30.30*		1	06	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	W E									011		00
																PSNGR CAR		01	DRVR	NONE	59	F	OR-Y OR<25		000	000		00
																		02	PSNG	NO<5	03	F			000	000		00
04684	N	N	N			11/08/2015	14	S BEAVERCREEK RD	INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT												29
NONE			N			Sun 5P	0	CASCADE HY SOUTH	W		TRF SIGNAL	N	WET	REAR		PRVTE	W E									000		00
No	*45 19 54.97*					*-122 34 30.30*		1	06	3		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	F	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	W E									011		00
																PSNGR CAR		01	DRVR	NONE	64	M	OR-Y OR<25		000	000		00
00101	N	N	N			01/06/2016	16	S BEAVERCREEK RD	INTER	CROSS	N	N	UNK	S-1STOP	01	NONE 9	STRGHT												29
NO RPT			N			Wed 1P	0	CASCADE HY SOUTH	W		TRF SIGNAL	N	WET	REAR		N/A	W E									000		00
No	*45 19 54.97*					*-122 34 30.30*		1	06	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9	STOP											
																N/A	W E									011		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Beavercreek Rd & OR213, Cascade Hwy (#160)
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
02701	N	N	N			06/15/2016	14	S BEAVERCREEK RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE			N			Wed 2P	0	CASCADE HY SOUTH	W		L-GRN-SIG	N	DRY	REAR		PRVTE	W E									000		00
No	*45 19 54.97*		*-122 34 30.30*				1		06	3		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	33	F	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	W E									012		00
																PSNGR CAR		01	DRVR	INJC	30	F	OR-Y OR<25		000	000		00
03418	N	N	N	N	N	07/26/2016	14	S BEAVERCREEK RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
CITY			N			Tue 2P	0	CASCADE HY SOUTH	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W E									000		00
No	*45 19 54.97*		*-122 34 30.30*				1		06	3		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	52	M	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	W E									011		00
																PSNGR CAR		01	DRVR	NONE	82	F	OR-Y OR<25		000	000		00
00731	N	N	N			02/26/2018	16	S BEAVERCREEK RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE			N			Mon 7P	0	CASCADE HY SOUTH	W		TRF SIGNAL	N	DRY	REAR		UNKN	N S									000		00
No	*45 19 54.99*		*-122 34 30.32*				1		06	3		N	DLIT	INJ		UNKNOWN		01	DRVR	NONE	00	U	UNK UNK		026	000		29
															02	NONE 0	STOP											
																PRVTE	N S									011		00
																PSNGR CAR		01	DRVR	INJC	28	M	OR-Y OR<25		000	000		00
01552	N	N	N			04/22/2018	16	S BEAVERCREEK RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
NONE			N			Sun 9A	0	CASCADE HY SOUTH	W		TRF SIGNAL	N	DRY	REAR		N/A	W E									000		00
No	*45 19 54.98*		*-122 34 30.30*				1		06	3		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9	STOP											
																N/A	W E									011		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
03711	Y	N	N	N	N	10/14/2018	16	S BEAVERCREEK RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											01,29
CITY			N			Sun 8P	0	CASCADE HY SOUTH	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W E									000		00
No	*45 19 54.98*		*-122 34 30.31*				1		06	3		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	22	M	OR-Y OR<25		047,026	000		01,29
															02	NONE 0	STOP											
																PRVTE	W E									011		00
																PSNGR CAR		01	DRVR	INJC	23	F	OR-Y OR<25		000	000		00
																		02	PSNG	INJC	49	F			000	000		

Intersectional Crashes at Beavercreek Rd & Molalla Ave
January 1, 2014 through December 31, 2018

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2018														
FIXED / OTHER OBJECT	0	1	0	1	0	1	0	1	0	0	1	1	0	1
PEDESTRIAN	0	1	0	1	0	1	0	0	1	0	1	1	0	0
REAR-END	0	2	0	2	0	4	0	1	1	1	1	2	0	0
TURNING MOVEMENTS	0	3	1	4	0	6	0	4	0	3	1	4	0	0
2018 TOTAL	0	7	1	8	0	12	0	6	2	4	4	8	0	1
YEAR: 2017														
ANGLE	0	1	0	1	0	1	0	0	1	0	1	1	0	0
BACKING	0	0	1	1	0	0	0	1	0	1	0	1	0	0
REAR-END	0	1	2	3	0	1	0	3	0	3	0	3	0	0
TURNING MOVEMENTS	0	3	3	6	0	4	0	5	1	4	2	6	0	0
2017 TOTAL	0	5	6	11	0	6	0	9	2	8	3	11	0	0
YEAR: 2016														
FIXED / OTHER OBJECT	0	1	0	1	0	1	0	1	0	1	0	1	0	1
REAR-END	0	1	1	2	0	1	0	2	0	2	0	2	0	0
TURNING MOVEMENTS	0	5	6	11	0	8	0	9	2	7	4	11	0	0
2016 TOTAL	0	7	7	14	0	10	0	12	2	10	4	14	0	1
YEAR: 2015														
ANGLE	0	0	1	1	0	0	0	0	1	1	0	1	0	0
REAR-END	0	3	1	4	0	3	0	3	1	4	0	4	0	0
TURNING MOVEMENTS	0	2	0	2	0	2	0	1	1	0	2	2	0	0
2015 TOTAL	0	5	2	7	0	5	0	4	3	5	2	7	0	0
YEAR: 2014														
ANGLE	0	1	0	1	0	1	0	1	0	1	0	1	0	0
BACKING	0	1	0	1	0	1	0	0	0	1	0	1	0	0
REAR-END	0	3	3	6	0	6	0	3	3	5	1	6	0	0
SIDESWIPE - OVERTAKING	0	1	0	1	0	2	0	0	1	0	1	1	0	0
TURNING MOVEMENTS	0	4	3	7	0	7	0	6	1	5	2	7	0	0
2014 TOTAL	0	10	6	16	0	17	0	10	5	12	4	16	0	0
FINAL TOTAL	0	34	22	56	0	50	0	41	14	39	17	56	0	2

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Beavercreek Rd & Molalla Ave
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
03597	N	N	N			09/29/2018	16	BEAVERCREEK RD	INTER	CROSS	N	Y	CLD	FIX OBJ	01	NONE 0	TURN-L										040	08
CITY			N			Sat 1A	0	MOLALLA AVE	UN		TRF SIGNAL	N	DRY	FIX		PRVTE	UN UN									000	040	00
No	*45 20*		*1.93*			*-122 35 18.61*		1	05	0		N	DLIT	INJ		MTRCYCLE		01	DRVR	INJC	35	M	OR-Y OR<25		001	000		08
03356	N	N	N			08/28/2014	16	BEAVERCREEK RD	INTER	CROSS	N	N	UNK	O-1STOP	01	NONE 0	BACK											10
NONE			N			Thu 10A	0	MOLALLA AVE	UN		TRF SIGNAL	N	UNK	BACK		PRVTE	UN UN									000		00
No	*45 20*		*1.93*			*-122 35 18.61*		1	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	36	F	OR-Y UNK		011	000		10
															02	NONE 0	STOP											
																PRVTE	UN UN									011		00
																PSNGR CAR		01	DRVR	INJC	45	F	OR-Y OR<25		000	000		00
04659	N	N	N			11/06/2017	16	BEAVERCREEK RD	INTER	CROSS	N	N	CLR	O-OTHER	01	NONE 9	BACK											10
NONE			N			Mon 11A	0	MOLALLA AVE	UN		TRF SIGNAL	N	DRY	BACK		N/A	UN UN									000		00
No	*45 20*		*1.93*			*-122 35 18.61*		1	06	0		N	DAY	PDO		UNKNOWN		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9	STRGHT											
																N/A	UN UN									000		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
00299	N	N	N			01/24/2018	16	BEAVERCREEK RD	INTER	CROSS	N	N	RAIN	PED	01	NONE 0	TURN-R											02
CITY			N			Wed 9P	0	MOLALLA AVE	E		TRF SIGNAL	N	WET	PED		PRVTE	SE E									000		00
No	*45 20*		*1.93*			*-122 35 18.61*		1	05	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	73	M	OR-Y OR<25		029	000		02
																	STRGHT S N	01	PED	INJC	47	F		01	000	035		00
04076	N	N	N			10/14/2014	16	BEAVERCREEK RD	INTER	CROSS	N	N	CLD	S-1STOP	01	NONE 0	STRGHT										004	29
NO RPT			N			Tue 7A	0	MOLALLA AVE	E		TRF SIGNAL	N	WET	REAR		PRVTE	E W									000		00
No	*45 20*		*1.93*			*-122 35 18.61*		1	06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	53	F	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	E W									011	004	00
																PSNGR CAR		01	DRVR	INJC	50	F	OR-Y OR<25		000	000		00
04875	N	N	N			12/01/2014	16	BEAVERCREEK RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE			N			Mon 1P	0	MOLALLA AVE	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E W									000		00
No	*45 20*		*1.93*			*-122 35 18.61*		1	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	62	F	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	E W									011		00
																PSNGR CAR		01	DRVR	NONE	65	F	OR-Y OR<25		000	000		00

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Beavercreek Rd & Molalla Ave
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
03933	N	N	N			10/28/2018	16	BEAVERCREEK RD	INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											29
NO RPT			N			Sun 7P	0	MOLALLA AVE	E		TRF SIGNAL	N	WET	REAR		PRVTE	E W									000		00
No	*45 20*		*1.94*			*-122 35 18.61*		1	06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	16	M	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	E W									011		00
																PSNGR CAR		01	DRVR	INJC	27	M	OR-Y OR<25		000	000		00
																		02	PSNG	INJC	33	F			000	000		00
																		03	PSNG	INJC	04	F			000	000		00
01824	N	N	N			05/12/2014	16	BEAVERCREEK RD	INTER	CROSS	N	N	CLR	O-OTHER	01	NONE 0	TURN-L											08
NONE			N			Mon 4P	0	MOLALLA AVE	SE		TRF SIGNAL	N	DRY	TURN		PRVTE	NE SE									000		00
No	*45 20*		*1.93*			*-122 35 18.61*		1	05	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	31	M	OR-Y OR<25		007	000		08
															02	NONE 0	TURN-R											
																PRVTE	SW SE									016		00
																PSNGR CAR		01	DRVR	INJA	78	F	OR-Y OR<25		000	000		00
03552	N	N	N			08/04/2016	16	BEAVERCREEK RD	INTER	CROSS	N	N	CLR	O-OTHER	01	NONE 9	TURN-R											02
NONE			N			Thu 2P	0	MOLALLA AVE	SE		TRF SIGNAL	N	DRY	TURN		N/A	W SE									000		00
No	*45 20*		*1.93*			*-122 35 18.61*		1	05	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9	TURN-L											
																N/A	E SE									000		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
00898	N	N	N			03/03/2014	16	BEAVERCREEK RD	INTER	CROSS	N	N	UNK	S-1STOP	01	NONE 0	STRGHT											07
NONE			N			Mon 4P	0	MOLALLA AVE	SE		TRF SIGNAL	N	WET	REAR		PRVTE	SE NW									000		00
No	*45 20*		*1.93*			*-122 35 18.61*		1	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	38	F	OR-Y OR<25		026	000		07
															02	NONE 0	STOP											
																PRVTE	SE NW									011		00
																PSNGR CAR		01	DRVR	INJC	19	M	OR-Y OR<25		000	000		00
																		02	PSNG	INJC	16	F			000	000		00
																		03	PSNG	INJC	18	F			000	000		00
																		04	PSNG	INJC	18	M			000	000		00
04457	N	N	N			11/05/2014	16	BEAVERCREEK RD	INTER	CROSS	N	N	UNK	S-STRGHT	01	NONE 0	STRGHT											06
NONE			N			Wed 8A	0	MOLALLA AVE	SE		TRF SIGNAL	N	WET	SS-O		PRVTE	SE NW									031		00
No	*45 20*		*1.93*			*-122 35 18.61*		1	06	0		N	DAWN	INJ		PSNGR CAR		01	DRVR	INJC	34	M	OR-Y OR<25		034,031	000		06
																		02	PSNG	INJC	19	M			000	000		

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Beavercreek Rd & Molalla Ave
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
															02	NONE 0 PRVTE	STRGHT SE NW									000		00
																PSNGR CAR		01	DRVR	NONE	18	M	OR-Y OR<25		000	000		00
01152	N	N	N	N	N	04/02/2015	16	BEAVERCREEK RD	INTER	CROSS	N	N	CLD	S-1STOP	01	NONE 0	STRGHT										013	07
CITY			N			Thu 12P	0	MOLALLA AVE	SE		TRF SIGNAL	N	DRY	REAR		PRVTE	SE NW									000		00
No	*45*	*20*	*1.93*			*-122 35 18.61*	1		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	19	F	OR-Y OR<25		043,026	000		07
															02	NONE 0 PRVTE	STOP SE NW									011	013	00
																PSNGR CAR		01	DRVR	INJC	66	M	OR-Y OR<25		000	000		00
															03	NONE 0 PRVTE	STOP SE NW									022	013	00
																PSNGR CAR		01	DRVR	NONE	55	M	OR-Y OR<25		000	000		00
															04	NONE 0 PRVTE	STOP SE NW									022	013	00
																PSNGR CAR		01	DRVR	NONE	30	M	OR-Y OR<25		000	000		00
															05	NONE 0 PRVTE	STOP SE NW									022		00
																PSNGR CAR		01	DRVR	NONE	68	F	OR-Y OR<25		000	000		00
03095	N	N	N			07/08/2016	16	BEAVERCREEK RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
NONE			N			Fri UNK	0	MOLALLA AVE	SE		TRF SIGNAL	N	DRY	REAR		N/A	SE NW									000		00
No	*45*	*20*	*1.93*			*-122 35 18.61*	1		06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9 N/A	STOP SE NW									011		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
04495	N	N	N			09/30/2016	16	BEAVERCREEK RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE			N			Fri 9A	0	MOLALLA AVE	SE		TRF SIGNAL	N	DRY	REAR		PRVTE	SE NW									000		00
No	*45*	*20*	*1.93*			*-122 35 18.61*	1		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	53	M	OR-Y OR<25		026	000		29
															02	NONE 0 PRVTE	STOP SE NW									012		00
																PSNGR CAR		01	DRVR	INJC	22	F	OR-Y OR<25		000	000		00

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Beavercreek Rd & Molalla Ave
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
02661	N	N	N			07/05/2017	16	BEAVERCREEK RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE			N			Wed 2P	0	MOLALLA AVE	SE		TRF SIGNAL	N	DRY	REAR		PRVTE	SE NW									000		00
No	*45*	*20*	*1.93*	*-122*	*35*	*18.61*	1		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	53	M	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	SE NW									011		00
																PSNGR CAR		01	DRVR	INJC	19	M	OR-Y OR<25		000	000		00
03461	N	N	N			08/22/2017	16	BEAVERCREEK RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
NONE			N			Tue 5P	0	MOLALLA AVE	SE		TRF SIGNAL	N	DRY	REAR		N/A	SE NW									000		00
No	*45*	*20*	*1.93*	*-122*	*35*	*18.61*	1		06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9	STOP											
																N/A	SE NW									012		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
04689	N	N	N			11/30/2018	16	BEAVERCREEK RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											27,29
NONE			N			Fri 2P	0	MOLALLA AVE	SE		TRF SIGNAL	N	DRY	REAR		PRVTE	SE NW									000		00
No	*45*	*20*	*1.93*	*-122*	*35*	*18.61*	1		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	60	M	OR-Y OR>25		026	038		27,29
															02	NONE 0	STOP											
																PRVTE	SE NW									011		00
																PSNGR CAR		01	DRVR	INJC	78	F	OR-Y OR<25		000	000		00
03124	N	N	N	N	N	07/13/2016	16	BEAVERCREEK RD	INTER	CROSS	N	Y	CLR	FIX OBJ	01	NONE 0	STRGHT										058,072	17
CITY			N			Wed 3P	0	MOLALLA AVE	S		TRF SIGNAL	N	DRY	FIX		PRVTE	NW SE									000	058,072	00
No	*45*	*20*	*1.93*	*-122*	*35*	*18.61*	1		05	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	37	M	OTH-Y N-RES		081	028		17
00633	N	N	N			02/11/2014	16	BEAVERCREEK RD	INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											07
NONE			N			Tue 10A	0	MOLALLA AVE	W		TRF SIGNAL	N	WET	REAR		PRVTE	W E									000		00
No	*45*	*20*	*1.93*	*-122*	*35*	*18.61*	1		06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	33	M	OR-Y OR<25		026	000		07
															02	NONE 0	STOP											
																PRVTE	W E									011		00
																PSNGR CAR		01	DRVR	NONE	17	M	OR-Y OR<25		000	000		00
04656	N	N	N			11/17/2014	16	BEAVERCREEK RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE			N			Mon 9A	0	MOLALLA AVE	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W E									000		00
No	*45*	*20*	*1.93*	*-122*	*35*	*18.61*	1		06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	21	M	OR-Y OR<25		026	000		29

CITY OF OREGON CITY, CLACKAMAS COUNTY

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SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
															02	NONE 0 PRVTE	STOP W E									011	00
																PSNGR CAR		01	DRVR	NONE	00	F	OR-Y OR<25		000	000	00
00768 NONE	N	N	N			03/02/2015 Mon 4P	16 0	BEAVERCREEK RD MOLALLA AVE	INTER W	CROSS	N TRF SIGNAL	N N	CLR DRY	S-STRGHT REAR	01	NONE 0 UNKN	STRGHT W E									000	29 00
No	*45*	*20*	*1.93*	*-122*	*35*	*18.61*	1		06	0		N	DAY	INJ		UNKNOWN		01	DRVR	NONE	00	M	UNK UNK		026	000		29
															02	NONE 0 PRVTE	STRGHT W E									000	00
																PSNGR CAR		01	DRVR	INJC	21	F	OR-Y OR<25		000	000	00
04538 NONE	N	N	N			10/29/2017 Sun 2P	16 0	BEAVERCREEK RD MOLALLA AVE	INTER W	CROSS	N TRF SIGNAL	N N	CLR DRY	S-STRGHT REAR	01	NONE 9 N/A	STRGHT W E									000	13 00
No	*45*	*20*	*1.93*	*-122*	*35*	*18.61*	1		06	0 (04)		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9 N/A	STRGHT W E									000	00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
03977 NO RPT	N	N	N			10/08/2014 Wed 2P	16 0	BEAVERCREEK RD MOLALLA AVE	INTER NW	CROSS	N L-GRN-SIG	N N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT NW SE									000	29 00
No	*45*	*20*	*1.93*	*-122*	*35*	*18.61*	1		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	34	F	OR-Y OR<25		026	000		29
																		02	PSNG	INJB	11	F			000	000		00
															02	NONE 0 PRVTE	STOP NW SE									012	00
																PSNGR CAR		01	DRVR	NONE	53	F	OR-Y OR<25		000	000	00
03508 NONE	N	N	N			06/15/2015 Mon 11A	16 0	BEAVERCREEK RD MOLALLA AVE	INTER NW	CROSS	N TRF SIGNAL	N N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT NW SE									000	29 00
No	*45*	*20*	*1.93*	*-122*	*35*	*18.61*	1		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	56	M	OR-Y OR<25		026	000		29
															02	NONE 0 PRVTE	STOP NW SE									011	00
																PSNGR CAR		01	DRVR	INJC	43	F	OR-Y OR<25		000	000	00
03616 NONE	N	N	N			09/03/2015 Thu 4P	16 0	BEAVERCREEK RD MOLALLA AVE	INTER NW	CROSS	N TRF SIGNAL	N N	RAIN WET	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT SE NW									000	29 00
No	*45*	*20*	*1.93*	*-122*	*35*	*18.61*	1		06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	77	F	OR-Y OR<25		026	000		

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Intersectional Crashes at Beavercreek Rd & Molalla Ave
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SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	SWORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
															02	NONE 0 PRVTE	STOP SE NW									011	00
																PSNGR CAR		01	DRVR	NONE	19	F	OR-Y OR<25		000	000	00
00073 CITY	N N	N	N			01/06/2014 Mon 9P	16 0	BEAVERCREEK RD MOLALLA AVE	INTER CN	CROSS	N TRF SIGNAL	N N	CLR DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT NW SE									000	02 00
No	*45 20 1.93*					*-122 35 18.61*		1	01	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	62	F	OR-Y OR<25		000	000	00
															02	NONE 0 PRVTE	TURN-L SE W									000	00
																PSNGR CAR		01	DRVR	NONE	18	F	OR-Y OR<25		028,004	000	02
00256 CITY	N N	N	N	N	N	01/22/2014 Wed 9A	16 0	BEAVERCREEK RD MOLALLA AVE	INTER CN	CROSS	N TRF SIGNAL	N N	CLD DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	TURN-L SE W									000	02 00
No	*45 20 1.93*					*-122 35 18.61*		1	01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	86	M	OR-Y OR<25		028	000	02
															02	NONE 0 PRVTE	STRGHT NW SE									000	00
																PSNGR CAR		01	DRVR	NONE	66	F	OR-Y OR<25		000	000	00
01506 CITY	N N	N	N			04/19/2014 Sat 12P	16 0	BEAVERCREEK RD MOLALLA AVE	INTER CN	CROSS	N TRF SIGNAL	N N	RAIN WET	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT NW SE									000	02,04 00
No	*45 20 1.93*					*-122 35 18.61*		1	01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	44	F	OR-Y OR<25		000	000	00
															02	NONE 0 PRVTE	TURN-L SE W									000	00
																PSNGR CAR		01	DRVR	INJC	62	F	OTH-Y N-RES		028,004,003	000	02
04022 CITY	N N	N	N			09/01/2016 Thu 7P	16 0	BEAVERCREEK RD MOLALLA AVE	INTER CN	CROSS	N TRF SIGNAL	N N	RAIN WET	O-1 L-TURN TURN	01	NONE 9 N/A	STRGHT NW SE									000	02 00
No	*45 20 1.93*					*-122 35 18.61*		1	01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
															02	NONE 9 N/A	TURN-L SE W									000	00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
06127 NO RPT	N N	N	N			12/28/2016 Wed 9P	16 0	BEAVERCREEK RD MOLALLA AVE	INTER CN	CROSS	N TRF SIGNAL	N N	CLR DRY	O-1 L-TURN TURN	01	NONE 9 N/A	TURN-L SE W									000	02 00
No	*45 20 1.93*					*-122 35 18.61*		1	01	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00

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Intersectional Crashes at Beavercreek Rd & Molalla Ave
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
															02	NONE 9 N/A	STRGHT NW SE									000		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
00639	N	N	N	N	N	02/17/2017	16	BEAVERCREEK RD	INTER	CROSS	N		N	CLR	O-1 L-TURN	01	NONE 0 PRVTE	TURN-L SE W											08,02
CITY		N				Fri 6P	0	MOLALLA AVE	CN		TRF SIGNAL		N	DRY	TURN											000		00
No	*45*	*20*	*1.93*	*-122*	*35*	*18.61*	1		01	0			N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	40	F	OR-Y OR<25		028,004	000		08,02
															02	NONE 0 PRVTE	STRGHT NW SE									000	013	00
																PSNGR CAR		01	DRVR	INJB	50	M	OR-Y OR<25		000	000		00
															03	NONE 0 PRVTE	STRGHT NW SE									000		00
																PSNGR CAR		01	DRVR	NONE	48	F	OR-Y OR<25		000	000		00
01134	N	N	N	N	N	03/24/2017	16	BEAVERCREEK RD	INTER	CROSS	N		N	CLR	ANGL-OTH	01	NONE 9 N/A	TURN-R NW W											02
CITY		N				Fri 12P	0	MOLALLA AVE	CN		TRF SIGNAL		N	DRY	TURN											015		00
No	*45*	*20*	*1.93*	*-122*	*35*	*18.61*	1		01	0			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9 N/A	STRGHT E W									000		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
00381	N	N	N	N	N	01/31/2018	16	BEAVERCREEK RD	INTER	CROSS	N		N	CLD	O-1 L-TURN	01	NONE 9 N/A	STRGHT NW SE									000		02,08,32 00
CITY		N				Wed 5P	0	MOLALLA AVE	CN		TRF SIGNAL		N	DRY	TURN													
No	*45*	*20*	*1.93*	*-122*	*35*	*18.61*	1		01	0			N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9 N/A	TURN-L SE W									000		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
02861	N	N	N	N	N	08/16/2018	16	BEAVERCREEK RD	INTER	CROSS	N		N	CLR	O-1 L-TURN	01	NONE 0 PRVTE	STRGHT NW SE									000		02,08 00
CITY		N				Thu 3P	0	MOLALLA AVE	CN		TRF SIGNAL		N	DRY	TURN													
No	*45*	*20*	*1.94*	*-122*	*35*	*18.61*	1		01	0			N	DAY	INJ		PSNGR CAR		01	DRVR	INJA	70	M	OR-Y OR<25		000	000		00
															02	NONE 0 PRVTE	TURN-L SE SW									000		00
																PSNGR CAR		01	DRVR	INJB	38	F	OR-Y OR<25		028,004	000		02,08
																		02	PSNG	INJC	03	M			000	000		

Item #2.

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Beavercreek Rd & Molalla Ave
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SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
03774	N	N	N			10/18/2018	16	BEAVERCREEK RD	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											02,08
NO RPT			N			Thu 4P	0	MOLALLA AVE	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	NW SE									000		00
No	*45 20*		*1.93*			*-122 35 18.61*		1	01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	57	F	OR-Y OR<25		000	000		00
															02	NONE 0	TURN-L											
																PRVTE	SE W									000		00
																PSNGR CAR		01	DRVR	INJB	54	F	OR-Y OR<25		028,004	000		02,08
00136	N	N	N			01/13/2015	16	BEAVERCREEK RD	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											02
NONE			N			Tue 8P	0	MOLALLA AVE	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	E W									000		00
No	*45 20*		*1.93*			*-122 35 18.61*		1	02	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	28	F	OR-Y OR<25		000	000		00
															02	NONE 0	TURN-L											
																PRVTE	W N									000		00
																PSNGR CAR		01	DRVR	NONE	00	F	UNK UNK		028,004	000		02
04108	N	N	N	N	N	09/07/2016	16	BEAVERCREEK RD	INTER	CROSS	N	N	CLD	O-OTHER	01	NONE 9	TURN-R											08
CITY			N			Wed 5A	0	MOLALLA AVE	CN		TRF SIGNAL	N	DRY	TURN		N/A	E NW									000		00
No	*45 20*		*1.93*			*-122 35 18.61*		1	02	0		N	DAWN	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9	TURN-L											
																N/A	W NW									000		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
04770	N	N	N			11/13/2017	16	BEAVERCREEK RD	INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT											04
NO RPT			N			Mon 9P	0	MOLALLA AVE	CN		TRF SIGNAL	N	WET	ANGL		PRVTE	SE NW									000		00
No	*45 20*		*1.93*			*-122 35 18.61*		1	02	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	36	F	OR-Y OR<25		097	000		00
																		02	PSNG	NO<5	03	F			000	000		00
															02	NONE 0	STRGHT											
																PRVTE	E W									000		00
																PSNGR CAR		01	DRVR	NONE	20	M	OR-Y OR<25		097	000		00
00900	N	N	N			02/25/2016	16	BEAVERCREEK RD	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											02
NO RPT			N			Thu 2P	0	MOLALLA AVE	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	W E									000		00
No	*45 20*		*1.93*			*-122 35 18.61*		1	03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	69	M	OTH-Y N-RES		000	000		00
															02	NONE 0	TURN-L											
																PRVTE	E SE									000		00
																PSNGR CAR		01	DRVR	INJB	55	F	OR-Y OR<25		028,004	000		

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SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
03243	N	N	N			07/18/2016	16	BEAVERCREEK RD	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 9	STRGHT										04
NONE			N			Mon 9P	0	MOLALLA AVE	CN		TRF SIGNAL	N	DRY	TURN		N/A	W E									000	00
No	*45 20*		*1.93*			*-122 35 18.61*	1		03	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
															02	NONE 9	TURN-L										
																N/A	NW E									000	00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
00879	N	N	N	N	N	03/06/2017	16	BEAVERCREEK RD	INTER	CROSS	N	N	SNOW	O-1 L-TURN	01	NONE 0	STRGHT										02,08
CITY			N			Mon 9A	0	MOLALLA AVE	CN		TRF SIGNAL	N	ICE	TURN		PRVTE	W E									000	00
No	*45 20*		*1.93*			*-122 35 18.61*	1		03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	37	F	OR-Y OR<25		000	000	00
																		02	PSNG	NO<5	04	M			000	000	00
															02	NONE 0	TURN-L										
																PRVTE	E S									000	00
																PSNGR CAR		01	DRVR	INJB	36	M	OR-Y OR<25		028,004	000	02,08
04329	N	N	N	N	N	10/18/2017	16	BEAVERCREEK RD	INTER	CROSS	N	N	CLD	O-1 L-TURN	01	NONE 0	STRGHT										02,08
CITY			N			Wed 6P	0	MOLALLA AVE	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	W E									000	00
No	*45 20*		*1.93*			*-122 35 18.61*	1		03	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	24	M	OR-Y OR<25		000	000	00
															02	NONE 0	TURN-L										
																PRVTE	E SE									000	00
																PSNGR CAR		01	DRVR	INJC	43	F	OR-Y OR<25		028,004	000	02,08
03255	N	N	N			08/22/2014	16	BEAVERCREEK RD	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										02
NO RPT			N			Fri 8P	0	MOLALLA AVE	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	SE NW									000	00
No	*45 20*		*1.93*			*-122 35 18.61*	1		04	0		N	DUSK	INJ		PSNGR CAR		01	DRVR	INJB	22	M	OR-Y OR<25		000	000	00
																		02	PSNG	INJC	20	F			000	000	00
															02	NONE 0	TURN-L										
																PRVTE	NW E									000	00
																PSNGR CAR		01	DRVR	NONE	32	M	OR-Y OR<25		028,004	000	02
03293	N	N	N			08/24/2014	16	BEAVERCREEK RD	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										27,04
NO RPT			N			Sun 7P	0	MOLALLA AVE	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	SE NW									000	00
No	*45 20*		*1.93*			*-122 35 18.61*	1		04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	19	F	OR-Y OR<25		016,020	038	27,04
															02	NONE 0	STRGHT										
																PRVTE	W E									000	00
																PSNGR CAR		01	DRVR	INJB	66	F	OR-Y OR<25		000	000	

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Beavercreek Rd & Molalla Ave
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
															03	NONE 0 PRVTE	STRGHT W E									000	00
																PSNGR CAR		01	DRVR	NONE	66	F	OR-Y OR<25		000	000	00
03486 NO RPT	N N	N	N			09/06/2014 Sat 12P	16 0	BEAVERCREEK RD MOLALLA AVE	INTER CN	CROSS	N TRF SIGNAL	N N	CLR DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	TURN-L NW E										000	04 00
No						*45 20 1.93 -122 35 18.61*		1	04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	57	M	OTH-Y N-RES		097	000	00
																		02	PSNG	NO<5	04	M			000	000	00
															02	NONE 0 PRVTE	STRGHT SE NW									000	00
																PSNGR CAR		01	DRVR	NONE	22	M	OR-Y OR<25		097	000	00
03669 NONE	N N	N	N			09/19/2014 Fri 7P	16 0	BEAVERCREEK RD MOLALLA AVE	INTER CN	CROSS	N TRF SIGNAL	N N	CLR DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT SE NW										000	02,08 00
No						*45 20 1.93 -122 35 18.61*		1	04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	49	F	OR-Y OR<25		000	000	00
															02	NONE 0 UNKN	TURN-L NW E									000	00
																PSNGR CAR		01	DRVR	NONE	00	F	UNK UNK		028,004	000	02,08
05311 NONE	N N	N	N			12/11/2015 Fri 10A	16 0	BEAVERCREEK RD MOLALLA AVE	INTER CN	CROSS	N TRF SIGNAL	N N	RAIN WET	ANGL-OTH ANGL	01	NONE 0 PRVTE	STRGHT W E										000	04 00
No						*45 20 1.93 -122 35 18.61*		1	04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	19	F	OR-Y OR<25		020	000	04
															02	NONE 0 PRVTE	STRGHT SE NW									000	00
																PSNGR CAR		01	DRVR	NONE	81	F	OR-Y OR<25		000	000	00
05605 NONE	N N	N	N			12/24/2015 Thu 7P	16 0	BEAVERCREEK RD MOLALLA AVE	INTER CN	CROSS	N TRF SIGNAL	N N	RAIN WET	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT SE NW										000	02 00
No						*45 20 1.93 -122 35 18.61*		1	04	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	43	F	OR-Y OR<25		000	000	00
															02	NONE 0 PRVTE	TURN-L NW E									000	00
																PSNGR CAR		01	DRVR	INJC	57	F	OR-Y OR<25		028,004	000	02
00312 NO RPT	N N	N	N			01/20/2016 Wed 5P	16 0	BEAVERCREEK RD MOLALLA AVE	INTER CN	CROSS	N TRF SIGNAL	N N	CLR DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT SE NW										000	02 00
No						*45 20 1.93 -122 35 18.61*		1	04	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	32	F	OR-Y OR<25		000	000	
																		02	PSNG	INJC	33	M			000	000	

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Intersectional Crashes at Beavercreek Rd & Molalla Ave
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	SWORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
															02	NONE 0 PRVTE	TURN-L NW E									000		00
																PSNGR CAR		01	DRVR	NONE	44	F	OR-Y OR<25		028,004	000		02
01899 NO RPT	N	N	N N			04/26/2016 Tue 7A	16 0	BEAVERCREEK RD MOLALLA AVE	INTER CN	CROSS	N TRF SIGNAL	N N	CLR DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT SE NW									000		02 00
No	*45*	*20*	*1.93*	*-122*	*35*	*18.61*	1		04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	29	F	OR-Y OR<25		000	000		00
															02	NONE 0 PRVTE	TURN-L NW E									000		00
																PSNGR CAR		01	DRVR	NONE	17	F	OR-Y OR<25		028,004	000		02
																		02	PSNG	INJC	18	M			000	000		00
03069 CITY	N	N	N N	N	N	07/09/2016 Sat 10A	16 0	BEAVERCREEK RD MOLALLA AVE	INTER CN	CROSS	N TRF SIGNAL	N N	CLD DRY	O-1 L-TURN TURN	01	NONE 9 N/A	STRGHT NW SE									000		02,08 00
No	*45*	*20*	*1.93*	*-122*	*35*	*18.61*	1		04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9 N/A	TURN-L SE W									000		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
04609 CITY	N	N	N N	N	N	10/07/2016 Fri 9A	16 0	BEAVERCREEK RD MOLALLA AVE	INTER CN	CROSS	N TRF SIGNAL	N N	RAIN WET	ANGL-OTH TURN	01	NONE 0 PRVTE	STRGHT SE NW									000		17,04 00
No	*45*	*20*	*1.93*	*-122*	*35*	*18.61*	1		04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	56	M	OR-Y OR<25		020	028		17,04
															02	NONE 0 PRVTE	TURN-L W N									000		00
																PSNGR CAR		01	DRVR	NONE	49	M	OR-Y OR<25		000	000		00
05259 COUNTY	N	N	N N	N	N	11/12/2016 Sat 10A	16 0	BEAVERCREEK RD MOLALLA AVE	INTER CN	CROSS	N TRF SIGNAL	N N	CLD DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT SE NW									000		02,08 00
No	*45*	*20*	*1.93*	*-122*	*35*	*18.61*	1		04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	19	F	OR-Y OR<25		000	000		00
															02	NONE 0 PRVTE	TURN-L NW E									000		00
																PSNGR CAR		01	DRVR	NONE	41	F	OR-Y OR<25		028,004	000		02,08
01364 NO RPT	N	N	N N			04/10/2017 Mon 5P	16 0	BEAVERCREEK RD MOLALLA AVE	INTER CN	CROSS	N TRF SIGNAL	N N	CLR DRY	O-1 L-TURN TURN	01	NONE 9 N/A	STRGHT SE NW									000		02,08 00
No	*45*	*20*	*1.93*	*-122*	*35*	*18.61*	1		04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Beavercreek Rd & Molalla Ave
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
															02	NONE 9 N/A	TURN-L NW NE									000		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
02805	N	N	N			07/12/2017	16	BEAVERCREEK RD	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 9	STRGHT												08
NONE			N			Wed 2P	0	MOLALLA AVE	CN		TRF SIGNAL	N	DRY	TURN		N/A	SE NW									000		00
No	*45 20*		*1.93*			*-122 35 18.61*		1	04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9 N/A	TURN-L NW E									000		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
03350	N	N	N			09/21/2018	16	BEAVERCREEK RD	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT												02,08
NO RPT			N			Fri 12P	0	MOLALLA AVE	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	SE NW									000		00
No	*45 20*		*1.93*			*-122 35 18.61*		1	04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	44	F	OR-Y OR<25		000	000		00
															02	NONE 0 PRVTE	TURN-L NW E									000		00
																PSNGR CAR		01	DRVR	NONE	43	F	OR-Y OR>25		028,004	000		02,08

Intersectional Crashes at Beavercreek Rd & Maplelane Rd
January 1, 2014 through December 31, 2018

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2018														
ANGLE	0	1	1	2	0	3	0	2	0	2	0	2	0	0
TURNING MOVEMENTS	0	2	2	4	0	3	0	4	0	1	3	4	0	0
2018 TOTAL	0	3	3	6	0	6	0	6	0	3	3	6	0	0
YEAR: 2017														
REAR-END	0	1	1	2	0	1	0	1	1	2	0	2	0	0
TURNING MOVEMENTS	0	5	1	6	0	7	0	3	3	3	3	6	0	0
2017 TOTAL	0	6	2	8	0	8	0	4	4	5	3	8	0	0
YEAR: 2016														
ANGLE	0	1	0	1	0	1	0	0	1	1	0	1	0	0
REAR-END	0	1	4	5	0	1	0	3	1	2	3	5	0	0
TURNING MOVEMENTS	0	3	2	5	0	12	0	5	0	4	1	5	0	0
2016 TOTAL	0	5	6	11	0	14	0	8	2	7	4	11	0	0
YEAR: 2015														
REAR-END	0	0	2	2	0	0	0	1	1	2	0	2	0	0
TURNING MOVEMENTS	0	6	1	7	0	10	0	6	1	7	0	7	0	0
2015 TOTAL	0	6	3	9	0	10	0	7	2	9	0	9	0	0
YEAR: 2014														
ANGLE	0	0	1	1	0	0	0	0	1	0	1	1	0	0
REAR-END	0	2	1	3	0	2	0	1	2	2	1	3	0	0
SIDESWIPE - OVERTAKING	0	1	0	1	0	1	0	0	1	1	0	1	0	0
TURNING MOVEMENTS	0	8	3	11	0	16	0	9	2	7	4	11	0	0
2014 TOTAL	0	11	5	16	0	19	0	10	6	10	6	16	0	0
FINAL TOTAL	0	31	19	50	0	57	0	35	14	34	16	50	0	0

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Beavercreek Rd & Maplelane Rd
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00522	N	N	N			02/07/2014	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	SNOW	S-1STOP	01	NONE 0	STRGHT										124	07
NONE			N			Fri 4P	0	MAPLELANE RD	NE		TRF SIGNAL	N	SNO	REAR		PRVTE	NE SW									000	124	00
No	*45 19 51.95*					*-122 34 19.16*		1	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	31	M	OR-Y OR<25		026	000		07
															02	NONE 0	STOP											
																PRVTE	NE SW									011		00
																PSNGR CAR		01	DRVR	INJC	76	M	OR-Y OR<25		000	000		00
00528	Y	N	N	N	N	02/07/2014	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	SNOW	S-STRGHT	01	NONE 0	STRGHT										124	01,06,04
CITY			N			Fri 3P	0	MAPLELANE RD	NE		TRF SIGNAL	N	ICE	SS-O		PRVTE	NE SW									031	124	00
No	*45 19 51.95*					*-122 34 19.16*		1	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	40	M	OR-Y OR<25		047,032,020	000		01,06,04
															02	NONE 0	STRGHT											
																PRVTE	NE SW									000		00
																PSNGR CAR		01	DRVR	NONE	35	M	OR-Y OR<25		000	000		00
															03	NONE 0	STRGHT											
																PRVTE	SE NW									000		00
																PSNGR CAR		01	DRVR	NONE	64	M	OR-Y OR<25		000	000		00
																		02	PSNG	INJC	56	F			000	000		00
00314	N	N	N			01/20/2016	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 9	STRGHT											29
NO RPT			N			Wed 7A	0	MAPLELANE RD	NE		TRF SIGNAL	N	WET	REAR		N/A	NE SW									000		00
No	*45 19 51.95*					*-122 34 19.16*		1	06	0		N	DAWN	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9	STOP											
																N/A	NE SW									011		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
01082	N	N	N			03/21/2017	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
NO RPT			N			Tue 3P	0	MAPLELANE RD	NE		TRF SIGNAL	N	DRY	REAR		N/A	NE SW									000		00
No	*45 19 51.95*					*-122 34 19.16*		1	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9	STOP											
																N/A	NE SW									011		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
00168	N	N	N			01/09/2016	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
NONE			N			Sat 5P	0	MAPLELANE RD	SE		TRF SIGNAL	N	DRY	REAR		N/A	SE NW									000		00
No	*45 19 51.95*					*-122 34 19.16*		1	06	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		

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SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
															02	NONE 9 N/A	STOP SE NW									011	00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
03249	N	N	N			07/18/2016	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
NONE			N			Mon 8P	0	MAPLELANE RD	SE		TRF SIGNAL	N	UNK	REAR		N/A	SE NW									000	00
No	*45 19 51.95*		*-122 34 19.16*					1	06	0		N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
															02	NONE 9 N/A	STOP SE NW									011	00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
03256	N	N	N			07/19/2016	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
NONE			N			Tue 7P	0	MAPLELANE RD	SE		TRF SIGNAL	N	DRY	REAR		N/A	SE NW									000	00
No	*45 19 51.95*		*-122 34 19.16*					1	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
															02	NONE 9 N/A	STOP SE NW									011	00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000	00
01532	N	N	N			04/10/2017	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											29
NONE			N			Mon 11A	0	MAPLELANE RD	SE		TRF SIGNAL	N	WET	REAR		PRVTE	SE NW									000	00
No	*45 19 51.95*		*-122 34 19.16*					1	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	16	M	OR-Y OR<25		026	000	29
															02	NONE 0 PRVTE	STOP SE NW									011	00
																PSNGR CAR		01	DRVR	INJC	49	F	OR-Y OR<25		000	000	00
00135	N	N	N			01/10/2014	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	UNK	S-1STOP	01	NONE 0	STRGHT											07
NONE			N			Fri 5P	0	MAPLELANE RD	NW		L-GRN-SIG	N	WET	REAR		PRVTE	NW SE									000	00
No	*45 19 51.95*		*-122 34 19.16*					1	06	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	35	F	OR-Y OR<25		026	000	07
															02	NONE 0 PRVTE	STOP NW SE									012	00
																PSNGR CAR		01	DRVR	NONE	57	F	OR-Y OR<25		000	000	00
04612	N	N	N			11/14/2014	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE			N			Fri 2P	0	MAPLELANE RD	NW		TRF SIGNAL	N	DRY	REAR		PRVTE	NW SE									000	00
No	*45 19 51.95*		*-122 34 19.16*					1	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	24	F	OR-Y OR<25		026	000	29

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Beavercreek Rd & Maplelane Rd
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
															02	NONE 0 PRVTE	STOP NW SE									011	00
																PSNGR CAR		01	DRVR	INJC	45	M	OR-Y OR<25		000	000	00
00572 NONE	N	N	N N			02/05/2015 Thu 2P	16 0	S BEAVERCREEK RD MAPLELANE RD	INTER NW	3-LEG	N TRF SIGNAL	N	RAIN WET	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT NW SE									000	29 00
No	*45 19 51.95*					*-122 34 19.16*	1		06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	F	OR-Y OR<25		026	000		29
															02	NONE 0 PRVTE	STOP NW SE									011	00
																PSNGR CAR		01	DRVR	NONE	75	F	OR-Y OR<25		000	000	00
01838 NONE	N	N	N N			05/14/2015 Thu 6P	16 0	S BEAVERCREEK RD MAPLELANE RD	INTER NW	3-LEG	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT NW SE									000	29 00
No	*45 19 51.95*					*-122 34 19.16*	1		06	0		N	DAY	PDO		UNKNOWN		01	DRVR	NONE	00	M	OR-Y OR<25		026	000		29
															02	NONE 0 PRVTE	STOP NW SE									011	013 00
																PSNGR CAR		01	DRVR	NONE	39	M	OR-Y OR<25		000	000	00
															03	NONE 0 UNKN	STOP NW SE									022	00
																UNKNOWN		01	DRVR	NONE	00	M	OR-Y OR<25		000	000	00
04221 CITY	N	N	N N	N	N	09/14/2016 Wed 1P	16 0	S BEAVERCREEK RD MAPLELANE RD	INTER NW	3-LEG	N TRF SIGNAL	N	CLR DRY	S-1STOP REAR	01	NONE 0 PRVTE	STRGHT NW SE									000	29 00
No	*45 19 51.95*					*-122 34 19.16*	1		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	19	F	OR-Y OR<25		026	000		29
															02	NONE 0 PRVTE	STOP NW SE									011	00
																PSNGR CAR		01	DRVR	INJC	74	F	OR-Y OR<25		000	000	00
03095 NO RPT	N	N	N N			07/31/2015 Fri 7A	16 0	S BEAVERCREEK RD MAPLELANE RD	INTER CN	3-LEG	N TRF SIGNAL	N	CLR DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT NE SW									000	02,08 00
No	*45 19 51.95*					*-122 34 19.16*	1		01	0		Y	DAY	INJ		PSNGR CAR		01	DRVR	INJC	53	M	OR-Y OR<25		000	000		00
															02	NONE 0 PRVTE	TURN-L SW NW									018	00
																PSNGR CAR		01	DRVR	NONE	18	M	OR-Y OR<25		028,004	000		02,08

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Beavercreek Rd & Maplelane Rd
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SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
04186	N	N	N			10/11/2015	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
NONE			N			Sun 6P	0	MAPLELANE RD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	SE NW									000		00
No	*45 19 51.95*		*-122 34 19.16*				1		01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	44	F	OR-Y OR<25		000	000		00
																		02	PSNG	INJC	47	M			000	000		00
															02	NONE 0	TURN-R											
																PRVTE	NE NW									016		00
																PSNGR CAR		01	DRVR	NONE	73	F	OR-Y OR<25		028	000		02
02183	N	N	N			05/14/2016	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT												02,04
NO RPT			N			Sat 10A	0	MAPLELANE RD	CN		TRF SIGNAL	N	WET	ANGL		PRVTE	N S									000		00
No	*45 19 51.95*		*-122 34 19.16*				1		01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	49	M	OR-Y OR<25		024	000		02
																		02	PSNG	INJC	00	F			000	000		00
															02	POLCE 0	STRGHT											
																PUBLC	E W									000		00
																PSNGR CAR		01	DRVR	NONE	33	M	OR-Y OR<25		000	000		00
01863	N	N	N			05/13/2017	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	RAIN	O-1 L-TURN	01	NONE 0	STRGHT												02,08
CITY			N			Sat 12P	0	MAPLELANE RD	CN		TRF SIGNAL	N	WET	TURN		PRVTE	SE NW									000		00
No	*45 19 51.95*		*-122 34 19.16*				1		01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	45	M	OTH-Y N-RES		000	000		00
															02	NONE 0	TURN-L											
																PRVTE	NW NE									000		00
																PSNGR CAR		01	DRVR	INJC	61	M	OR-Y OR<25		028,004	000		02,08
00058	N	N	N			01/04/2018	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 9	STRGHT												04
NONE			N			Thu 3P	0	MAPLELANE RD	CN		TRF SIGNAL	N	DRY	ANGL		N/A	SE NW									000		00
No	*45 19 51.96*		*-122 34 19.17*				1		01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9	STRGHT											
																N/A	NE SW									019		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
00778	N	N	N			02/21/2014	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	TURN-L												02
NO RPT			N			Fri 12P	0	MAPLELANE RD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	NW NE									000		00
No	*45 19 51.95*		*-122 34 19.16*				1		02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	71	M	OR-Y OR<25		028	000		02
															02	NONE 0	STRGHT											
																PRVTE	SE NW									000		00
																PSNGR CAR		01	DRVR	NONE	66	F	OR-Y OR<25		000	000		00

Item #2.

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Beavercreek Rd & Maplelane Rd
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00899	N	N	N			03/03/2014	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	RAIN	O-1 L-TURN	01	NONE 0	STRGHT											02
NO RPT			N			Mon 2P	0	MAPLELANE RD	CN		TRF SIGNAL	N	WET	TURN		PRVTE	NE SW									000		00
No	*45 19 51.95*		*-122 34 19.16*					1	02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	29	F	OR-Y OR<25		000	000		00
															02	NONE 0	TURN-L											
																PRVTE	SW NW									000		00
																PSNGR CAR		01	DRVR	INJC	29	F	OR-Y OR<25		028,004	000		02
00927	N	N	N			03/05/2014	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	RAIN	O-1 L-TURN	01	NONE 0	STRGHT											02
CITY			N			Wed 4P	0	MAPLELANE RD	CN		TRF SIGNAL	N	WET	TURN		PRVTE	SE NW									000		00
No	*45 19 51.95*		*-122 34 19.16*					1	02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	17	F	OR-Y OR<25		000	000		00
															02	NONE 0	TURN-L											
																PRVTE	NW NE									000		00
																PSNGR CAR		01	DRVR	NONE	31	M	OR-Y OR<25		028,004	000		02
01236	N	N	N	N	N	03/30/2014	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	CLD	O-1 L-TURN	01	NONE 0	STRGHT										013	02
STATE			N			Sun 7P	0	MAPLELANE RD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	SE NW									000		00
No	*45 19 51.95*		*-122 34 19.16*					1	02	0		N	DUSK	INJ		PSNGR CAR		01	DRVR	INJC	20	F	OR-Y OR>25		000	000		00
																		02	PSNG	INJB	29	M			000	000		00
															02	NONE 0	TURN-L											
																PRVTE	NW NE									000	013	00
																PSNGR CAR		01	DRVR	INJC	88	M	OR-Y OR<25		028,004	000		02
															03	NONE 0	STOP											
																PRVTE	NE SW									012		00
																PSNGR CAR		01	DRVR	INJC	60	F	OR-Y OR<25		000	000		00
																		02	PSNG	INJC	63	M			000	000		00
01751	N	N	N	N	N	05/07/2014	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											02
CITY			N			Wed 12P	0	MAPLELANE RD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	SE NW									000		00
No	*45 19 51.95*		*-122 34 19.16*					1	02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	19	M	OR-Y OR<25		000	000		00
															02	NONE 0	TURN-L											
																PRVTE	NW NE									000		00
																PSNGR CAR		01	DRVR	NONE	53	F	OR-Y OR<25		028	000		02
02033	N	N	N			05/28/2014	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											02
NONE			N			Wed 2P	0	MAPLELANE RD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	SE NW									000		00
No	*45 19 51.95*		*-122 34 19.16*					1	02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	16	M	OR-Y OR<25		000	000		00

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Beavercreek Rd & Maplelane Rd
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SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	SWOR	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																		02	PSNG	INJB	16	F			000	000		00
															02	NONE 0 PRVTE	TURN-L NW NE									000		00
																PSNGR CAR		01	DRVR	INJB	48	F	OR-Y OR<25		028,004	000		02
02897 NONE	N	N	N N			07/29/2014 Tue 2P	16 0	S BEAVERCREEK RD MAPLELANE RD	INTER CN	3-LEG	N TRF SIGNAL	N N	CLR DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT SE NW												02 00
No	*45 19 51.95*					*-122 34 19.16*		1	02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	62	F	OR-Y OR<25		000	000		00
															02	NONE 0 PRVTE	TURN-L NW NE									000		00
																PSNGR CAR		01	DRVR	INJB	51	F	OR-Y OR<25		028,004	000		02
03931 NO RPT	N	N	N N			10/05/2014 Sun 7P	16 0	S BEAVERCREEK RD MAPLELANE RD	INTER CN	3-LEG	N TRF SIGNAL	N N	CLR DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT SE NW												02 00
No	*45 19 51.95*					*-122 34 19.16*		1	02	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 0 PRVTE	TURN-L NW NE									000		00
																PSNGR CAR		01	DRVR	INJB	58	F	OR-Y OR<25		028,004	000		02
03932 NONE	N	N	N N			10/05/2014 Sun 7P	16 0	S BEAVERCREEK RD MAPLELANE RD	INTER CN	3-LEG	N TRF SIGNAL	N N	CLR DRY	O-1 L-TURN TURN	01	NONE 0 UNKN	TURN-L NW NE												02 00
No	*45 19 51.95*					*-122 34 19.16*		1	02	0		N	DLIT	INJ		UNKNOWN		01	DRVR	NONE	00	U	UNK UNK		028	000		02
															02	NONE 0 PRVTE	STRGHT SE NW									000		00
																PSNGR CAR		01	DRVR	INJB	46	F	OR-Y OR<25		000	000		00
																		02	PSNG	INJB	56	M			000	000		00
02051 NO RPT	N	N	N N			05/29/2015 Fri 8P	16 0	S BEAVERCREEK RD MAPLELANE RD	INTER CN	3-LEG	N TRF SIGNAL	N N	CLR DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT SE NW												02 00
No	*45 19 51.95*					*-122 34 19.16*		1	02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	27	M	OR-Y OR<25		000	000		00
															02	NONE 0 PRVTE	TURN-L NW NE									000		00
																PSNGR CAR		01	DRVR	NONE	62	F	OR-Y OR<25		028,004	000		02
05053 NO RPT	N	N	N N			11/29/2015 Sun 2P	16 0	S BEAVERCREEK RD MAPLELANE RD	INTER CN	3-LEG	N TRF SIGNAL	N N	CLR DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT SE NW												04 00
No	*45 19 51.95*					*-122 34 19.16*		1	02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	27	M	OR-Y OR<25		097	000		

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SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
															02	NONE 0 PRVTE	TURN-L NW NE								000		00
																PSNGR CAR		01	DRVR	INJC	37	F	OR-Y OR<25	097	000		00
																		02	PSNG	NO<5	03	F		000	000		00
01193 NO RPT	N	N	N N			03/13/2016 Sun 6P	16 0	S BEAVERCREEK RD MAPLELANE RD	INTER CN	3-LEG	N TRF SIGNAL	N N	CLD DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	TURN-L NW NE								000		02 00
No	*45 19 51.95*			*-122 34 19.16*			1		02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	49	M	OR-Y OR<25	028	000		02
																		02	PSNG	INJC	12	F		000	000		00
															02	NONE 0 PRVTE	STRGHT SE NW								000		00
																PSNGR CAR		01	DRVR	INJC	29	F	OR-Y OR<25	000	000		00
																		02	PSNG	INJC	07	M		000	000		00
																		03	PSNG	INJC	09	M		000	000		00
01644 NO RPT	N	N	N N			04/10/2016 Sun 12P	16 0	S BEAVERCREEK RD MAPLELANE RD	INTER CN	3-LEG	N TRF SIGNAL	N N	CLR DRY	O-1 L-TURN TURN	01	NONE 9 N/A	STRGHT SE NW								000		02,08 00
No	*45 19 51.95*			*-122 34 19.16*			1		02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK	000	000		00
															02	NONE 9 N/A	TURN-L NW NE								000		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK	000	000		00
06183 NONE	N	N	N N			11/17/2016 Thu 6A	16 0	S BEAVERCREEK RD MAPLELANE RD	INTER CN	3-LEG	N TRF SIGNAL	N N	CLR DRY	O-1 L-TURN TURN	01	NONE 9 N/A	TURN-L NW NE								000		02 00
No	*45 19 51.95*			*-122 34 19.16*			1		02	0		N	DAWN	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK	000	000		00
															02	NONE 9 N/A	STRGHT SE NW								000		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK	000	000		00
01756 CITY	N	N	N N	N	N	05/06/2017 Sat 3P	16 0	S BEAVERCREEK RD MAPLELANE RD	INTER CN	3-LEG	N TRF SIGNAL	N N	CLR DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	TURN-L NW NE								000	013	04 00
No	*45 19 51.95*			*-122 34 19.16*			1		02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	19	M	OR-Y OR<25	020	000		04
															02	NONE 0 PRVTE	STRGHT SE NW								000	013	00
																PSNGR CAR		01	DRVR	INJC	34	M	OR-Y OR<25	000	000		00

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Intersectional Crashes at Beavercreek Rd & Maplelane Rd
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
															03	NONE 0 PRVTE	STOP NE SW									022		00
																PSNGR CAR		01	DRVR	NONE	33	M	OR-Y OR<25		000	000		00
02310 CITY	N	N	N N			06/12/2017 Mon 8P	16 0	S BEAVERCREEK RD MAPLELANE RD	INTER CN	3-LEG	N TRF SIGNAL	N N	CLR DRY	O-1 L-TURN TURN	01	NONE 9 N/A	STRGHT SE NW									000		02,08 00
No	*45 19 51.95*		*-122 34 19.16*				1		02	0		N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9 N/A	TURN-L NW NE									000		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
04209 CITY	Y	N	N N			10/11/2017 Wed 6A	16 0	S BEAVERCREEK RD MAPLELANE RD	INTER CN	3-LEG	N TRF SIGNAL	N N	CLD WET	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT SE NW									000	013	02,01 00
No	*45 19 51.95*		*-122 34 19.16*				1		02	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	35	F	OR-Y OR<25		047	000		01
															02	NONE 0 PRVTE	TURN-L NW NE									000	013	00
																PSNGR CAR		01	DRVR	NONE	18	M	OR-Y OR<25		028,004	000		02
															03	NONE 0 PRVTE	STRGHT SE NW									022		00
																PSNGR CAR		01	DRVR	INJC	66	F	OR-Y OR<25		000	000		00
01630 NO RPT	N	N	N N			05/13/2018 Sun 8P	16 0	S BEAVERCREEK RD MAPLELANE RD	INTER CN	3-LEG	N TRF SIGNAL	N N	CLR DRY	O-1 L-TURN TURN	01	NONE 9 N/A	STRGHT SE NW									000		02,08 00
No	*45 19 51.95*		*-122 34 19.17*				1		02	0		N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9 N/A	TURN-L NW NE									000		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
01802 NONE	N	N	N N			05/27/2018 Sun 10P	16 0	S BEAVERCREEK RD MAPLELANE RD	INTER CN	3-LEG	N TRF SIGNAL	N N	CLR DRY	O-1 L-TURN TURN	01	NONE 0 PRVTE	STRGHT SE NW									000		02,08 00
No	*45 19 51.95*		*-122 34 19.16*				1		02	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	33	F	OR-Y OR<25		000	000		00
																		02	PSNG	INJC	08	M			000	000		00
															02	NONE 0 PRVTE	TURN-L NW NE									000		00
																PSNGR CAR		01	DRVR	NONE	61	F	OR-Y OR<25		028,004	000		00

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Beavercreek Rd & Maplelane Rd
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
02365	N	N	N	N	N	07/08/2018	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 9	STRGHT											04
CITY			N			Sun 7P	0	MAPLELANE RD	CN		TRF SIGNAL	N	DRY	TURN		N/A	SE NW									000		00
No	*45 19 51.95*		*-122 34 19.17*			1		02	0			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9	TURN-L											
																N/A	NW N									000		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
00983	N	N	N			03/10/2014	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT											04
NO RPT			N			Mon 1A	0	MAPLELANE RD	CN		TRF SIGNAL	N	WET	ANGL		PRVTE	NW SE									000		00
No	*45 19 51.95*		*-122 34 19.16*			1		03	0			N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	22	F	OR-Y OR<25		097	000		00
															02	NONE 0	STRGHT											
																PRVTE	NE SW									000		00
																PSNGR CAR		01	DRVR	NONE	31	M	OR-Y OR<25		097	000		00
01985	N	N	N			05/24/2014	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											04
NONE			N			Sat 10P	0	MAPLELANE RD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	NE SW									000		00
No	*45 19 51.95*		*-122 34 19.16*			1		03	0			N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	18	F	OR-Y OR<25		020	000		04
															02	NONE 0	TURN-L											
																PRVTE	NW NE									000		00
																PSNGR CAR		01	DRVR	NONE	16	F	OR-Y OR<25		000	000		00
00499	N	N	N			02/07/2015	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	RAIN	O-1 L-TURN	01	NONE 0	STRGHT											02
NO RPT			N			Sat 2P	0	MAPLELANE RD	CN		TRF SIGNAL	N	WET	TURN		PRVTE	NW SE									000		00
No	*45 19 51.95*		*-122 34 19.16*			1		03	0			Y	DAY	INJ		PSNGR CAR		01	DRVR	INJA	19	F	OR-Y OR<25		000	000		00
															02	NONE 0	TURN-L											
																PRVTE	SE SW									019		00
																PSNGR CAR		01	DRVR	NONE	78	F	OR-Y OR<25		028,004	000		02
00976	N	N	N			03/19/2015	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											02,08,04
NONE			N			Thu 11A	0	MAPLELANE RD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	NW SE									000		00
No	*45 19 51.95*		*-122 34 19.16*			1		03	0			Y	DAY	INJ		PSNGR CAR		01	DRVR	INJC	39	M	OR-Y OR<25		000	000		00
															02	NONE 0	TURN-L											
																PRVTE	SE SW									018		00
																PSNGR CAR		01	DRVR	INJB	18	F	OR-Y OR<25		028,004,003	000		02,08,04

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Beavercreek Rd & Maplelane Rd
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
02475	N	N	N			06/21/2015	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											02
NO RPT			N			Sun 2P	0	MAPLELANE RD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	NW SE									000		00
No	*45 19 51.95*		*-122 34 19.16*					1	03	0		Y	DAY	INJ		PSNGR CAR		01	DRVR	INJB	55	M	OR-Y OR<25		000	000		00
															02	NONE 0	TURN-L											
																PRVTE	SE SW									019		00
																PSNGR CAR		01	DRVR	NONE	34	F	OR-Y OR<25		028,004	000		02
																		02	PSNG	INJC	09	F			000	000		00
																		03	PSNG	INJC	07	M			000	000		00
01503	N	N	N			04/02/2016	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	TURN-L											02
NO RPT			N			Sat 4P	0	MAPLELANE RD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	SE SW									019		00
No	*45 19 51.95*		*-122 34 19.16*					1	03	0		Y	DAY	INJ		PSNGR CAR		01	DRVR	INJC	17	F	OR-Y OR<25		028	000		02
																		02	PSNG	INJC	17	M			000	000		00
															02	NONE 0	STRGHT											
																PRVTE	NW SE									000		00
																PSNGR CAR		01	DRVR	INJC	60	M	OR-Y OR<25		000	000		00
																		02	PSNG	INJC	56	F			000	000		00
03899	N	N	N	N	N	08/25/2016	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	TURN-L											04
CITY			N			Thu 11A	0	MAPLELANE RD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	SE SW									019		00
No	*45 19 51.95*		*-122 34 19.16*					1	03	0		Y	DAY	INJ		PSNGR CAR		01	DRVR	INJC	45	M	OR-Y OR<25		000	000		00
															02	NONE 0	STRGHT											
																PRVTE	NW SE									000		00
																PSNGR CAR		01	DRVR	INJC	46	F	OR-Y OR<25		020	000		04
																		02	PSNG	INJC	24	F			000	000		00
03342	N	N	N			08/15/2017	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											02
NO RPT			N			Tue 12P	0	MAPLELANE RD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	NW SE									000		00
No	*45 19 51.95*		*-122 34 19.16*					1	03	0		Y	DAY	INJ		PSNGR CAR		01	DRVR	INJC	54	F	OR-Y OR<25		000	000		00
															02	NONE 0	TURN-L											
																PRVTE	SE SW									019		00
																PSNGR CAR		01	DRVR	NONE	20	M	OR-Y OR<25		028,004	000		02
02949	Y	N	N			08/25/2018	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											01,04
CITY			N			Sat 8A	0	MAPLELANE RD	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	NW SE									000		00
No	*45 19 51.94*		*-122 34 19.17*					1	03	0		Y	DAY	INJ		PSNGR CAR		01	DRVR	INJC	21	M	OR-Y OR<25		047,020	000		01,04
																		02	PSNG	INJC	19	F			000	000		

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Beavercreek Rd & Maplelane Rd
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	SWORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
															02	NONE 0 PRVTE	STRGHT NE SW									019	00
																PSNGR CAR		01	DRVR	INJC	65	M	OR-Y OR<25		000	000	00
02701	N	N	N			07/11/2014	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											02
NO RPT			N			Fri 4P	0	MAPLELANE RD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	SE NW									000	00
No	*45 19 51.95*		*-122 34 19.16*					1	04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	51	M	OR-Y OR<25		000	000	00
															02	NONE 0 PRVTE	TURN-L NW NE									000	00
																PSNGR CAR		01	DRVR	NONE	67	F	OR-Y OR<25		028,004	000	02
03694	N	N	N			09/09/2017	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT											04
NO RPT			N			Sat 8P	0	MAPLELANE RD	CN		TRF SIGNAL	N	WET	TURN		PRVTE	NW SE									000	00
No	*45 19 51.95*		*-122 34 19.16*					1	04	0		Y	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	41	M	OR-Y OR<25		020	000	04
																		02	PSNG	INJB	05	F			000	000	00
															02	NONE 0 PRVTE	STRGHT SW NE									018	00
																PSNGR CAR		01	DRVR	INJA	20	M	OR-Y OR<25		000	000	00
																		02	PSNG	INJC	22	F			000	000	00
00502	N	N	N	N	N	02/10/2018	16	S BEAVERCREEK RD	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											04
CITY			N			Sat 10P	0	MAPLELANE RD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	NW SE									000	00
No	*45 19 51.95*		*-122 34 19.16*					1	04	0		Y	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	19	M	OR-Y OR<25		020	000	04
															02	NONE 0 PRVTE	TURN-L SW NW									018	00
																PSNGR CAR		01	DRVR	NONE	70	M	OR-Y OR<25		000	000	00

OREGON DEPARTMENT OF TRANSPORTATION - POLICY, DATA AND ANALYSIS DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Intersectional Crashes at Redland Rd & Abernethy Rd / Holcomb Blvd
January 1, 2014 through December 31, 2018

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2018														
REAR-END	0	1	0	1	0	1	0	1	0	0	1	1	0	0
2018 TOTAL	0	1	0	1	0	1	0	1	0	0	1	1	0	0
YEAR: 2016														
REAR-END	0	1	1	2	0	1	0	2	0	2	0	2	0	0
TURNING MOVEMENTS	0	1	0	1	0	3	0	1	0	1	0	1	0	0
2016 TOTAL	0	2	1	3	0	4	0	3	0	3	0	3	0	0
YEAR: 2015														
REAR-END	0	1	2	3	0	1	0	3	0	2	1	3	0	0
TURNING MOVEMENTS	0	1	1	2	0	1	0	1	1	1	1	2	0	0
2015 TOTAL	0	2	3	5	0	2	0	4	1	3	2	5	0	0
YEAR: 2014														
ANGLE	0	0	1	1	0	0	0	1	0	1	0	1	0	0
REAR-END	0	1	0	1	0	1	0	1	0	0	1	1	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2014 TOTAL	0	1	2	3	0	1	0	3	0	2	1	3	0	0
FINAL TOTAL	0	6	6	12	0	8	0	11	1	8	4	12	0	0

Disclaimers: *Effective 2016,* ***collection of "Property Damage Only" (PDO) crash data elements was reduced for vehicles and participants.*** *Age, Gender, License, Error and other elements are no longer available for PDO crash reporting. Please keep this in mind when comparing 2016 PDO crash data to prior years.*

A higher number of crashes may be reported as of 2011 compared to prior years. This does not necessarily reflect an increase in annual crashes. The higher numbers may result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics. For all disclaimers, see https://www.oregon.gov/ODOT/Data/documents/Crash_Data_Disclaimers.pdf.

CITY OF OREGON CITY, CLACKAMAS COUNTY

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03547	N	Y	N	N	N	08/04/2016	16	ABERNATHY RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
CITY		N				Thu 5P	0	REDLAND RD	SW		TRF SIGNAL	N	DRY	REAR		N/A	SW NE										000		00
No	*45 21 52.28*					*-122 35 13.36*	1		06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
															02	NONE 9	STOP											
																N/A	SW NE										011		00
																PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
05143	N	N	N			11/07/2016	16	ABERNATHY RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE		N				Mon 4P	0	REDLAND RD	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW NE										000		00
No	*45 21 52.28*					*-122 35 13.36*	1		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	33	F	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	SW NE										011		00
																PSNGR CAR		01	DRVR	INJC	56	F	OR-Y OR<25		000	000		00
00995	N	N	N			03/11/2014	16	ABERNATHY RD	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											04
NONE		N				Tue 2P	0	REDLAND RD	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	SE NW										000		00
No	*45 21 52.33*					*-122 35 13.25*	1		03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	62	F	OR-Y OR<25		020	000		04
															02	NONE 0	STRGHT											
																UNKN	SW NE										000		00
																PSNGR CAR		01	DRVR	NONE	00	F	UNK UNK		000	000		00
04246	N	N	N			10/14/2015	16	HOLCOMB BLVD	INTER	CROSS	N	N	CLR	O-OTHER	01	NONE 0	TURN-R											02
NONE		N				Wed 9P	0	REDLAND RD	NE		TRF SIGNAL	N	DRY	TURN		PRVTE	SE NE										000		00
No	*45 21 52.33*					*-122 35 13.25*	1		05	0		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	00	F	UNK OR<25		000	000		00
															02	NONE 0	TURN-L											
																PRVTE	NW NE										000		00
																PSNGR CAR		01	DRVR	NONE	17	F	OR-Y OR<25		028	000		02
00207	N	N	N			01/16/2014	16	HOLCOMB BLVD	INTER	CROSS	N	N	FOG	S-1STOP	01	NONE 0	STRGHT											07
NONE		N				Thu 7A	0	REDLAND RD	NE		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW										000		00
No	*45 21 52.33*					*-122 35 13.25*	1		06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	16	M	OR-Y OR<25		026	000		07
															02	NONE 0	STOP											
																PRVTE	NE SW										011		00
																PSNGR CAR		01	DRVR	INJC	41	F	OR-Y OR<25		000	000		00

CITY OF OREGON CITY, CLACKAMAS COUNTY

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03773	N	N	N	N	N	09/25/2014	16	HOLCOMB BLVD	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	POLCE 0	STRGHT											02
COUNTY			N			Thu 6P	0	REDLAND RD	NE		TRF SIGNAL	N	DRY	TURN		PUBLC	NE SW									000		00
No	*45 21 52.33*		*-122 35 13.25*					1	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	37	M	OR-Y OR<25		000	000		00
															02	NONE 0	TURN-L											
																PRVTE	SW NW									000		00
																PSNGR CAR		01	DRVR	NONE	16	M	OR-Y OR<25		028,004	000		02
03807	N	N	N			09/18/2015	16	HOLCOMB BLVD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT												29
NONE			N			Fri 10P	0	REDLAND RD	NE		TRF SIGNAL	N	DRY	REAR		UNKN	NE SW									000		00
No	*45 21 52.33*		*-122 35 13.25*					1	06	0		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	00	M	UNK UNK		026	000		29
															02	NONE 0	STOP											
																PRVTE	NE SW									011		00
																PSNGR CAR		01	DRVR	NONE	17	F	OR-Y OR<25		000	000		00
01162	N	N	N			04/06/2018	16	HOLCOMB BLVD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT												29
NONE			N			Fri 6A	0	REDLAND RD	NE		TRF SIGNAL	N	DRY	REAR		PRVTE	NE SW									000		00
No	*45 21 52.28*		*-122 35 13.36*					1	06	0		N	DAWN	INJ		PSNGR CAR		01	DRVR	NONE	46	F	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	NE SW									011		00
																PSNGR CAR		01	DRVR	INJC	45	F	OR-Y OR<25		000	000		00
02001	N	N	N			05/27/2015	16	HOLCOMB BLVD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT												29
NONE			N			Wed 10A	0	REDLAND RD	SE		TRF SIGNAL	N	DRY	REAR		PRVTE	SE NW									000		00
No	*45 21 52.33*		*-122 35 13.25*					1	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	45	F	OR-Y OR<25		026	000		29
															02	NONE 0	STOP											
																PRVTE	SE NW									011		00
																PSNGR CAR		01	DRVR	INJB	65	F	OR-Y OR<25		000	000		00
02812	N	N	N			07/12/2015	16	HOLCOMB BLVD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT												29
NONE			N			Sun 5P	0	REDLAND RD	NW		TRF SIGNAL	N	DRY	REAR		PRVTE	NW SE									000		00
No	*45 21 52.33*		*-122 35 13.25*					1	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	58	M	OTH-Y N-RES		026	000		29
															02	NONE 0	STOP											
																PRVTE	NW SE									011		00
																PSNGR CAR		01	DRVR	NONE	58	M	OR-Y OR<25		000	000		00

CITY OF OREGON CITY, CLACKAMAS COUNTY

Intersectional Crashes at Redland Rd & Abernethy Rd / Holcomb Blvd
January 1, 2014 through December 31, 2018

SER# / INVEST / UNLOC?	SPED	ALC	DRUG/MJ	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	FC / DISTNC	CITY STREET / FIRST STREET / SECOND STREET / INTERSECTION SEQ #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFF-RD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
05202	N	N	N			12/07/2015	16	HOLCOMB BLVD	INTER	CROSS	N	N	RAIN	O-1 L-TURN	01	NONE 0	STRGHT											02
NONE			N			Mon 7A	0	REDLAND RD	CN		TRF SIGNAL	N	WET	TURN		PRVTE	N S									000		00
No	*45 21 52.33*		*-122 35 13.25*				1		01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	35	M	OTH-Y OR<25		000	000		00
															02	NONE 0	TURN-L											
																PRVTE	S W									000		00
																PSNGR CAR		01	DRVR	INJC	30	M	OR-Y OR<25		028,004	000		02
03617	N	N	N	N	N	08/08/2016	16	HOLCOMB BLVD	INTER	CROSS	N	N	CLD	O-1 L-TURN	01	NONE 0	TURN-L											04,08
CITY			N			Mon 2P	0	REDLAND RD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	SE SW									000		00
No	*45 21 52.28*		*-122 35 13.36*				1		01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	62	F	OR-Y OR<25		020,004	000		04,08
															02	NONE 0	STRGHT											
																PRVTE	NW SE									000		00
																PSNGR CAR		01	DRVR	INJC	20	F	OR-Y OR<25		000	000		00
																		02	PSNG	INJC	03	F			000	000		00

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
000	NONE	NO ACTION OR NON-WARRANTED
001	SKIDDED	SKIDDED
002	ON/OFF V	GETTING ON OR OFF STOPPED OR PARKED VEHICLE
003	LOAD OVR	OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC.
006	SLOW DN	SLOWED DOWN
007	AVOIDING	AVOIDING MANEUVER
008	PAR PARK	PARALLEL PARKING
009	ANG PARK	ANGLE PARKING
010	INTERFERE	PASSENGER INTERFERING WITH DRIVER
011	STOPPED	STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN
012	STP/L TRN	STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC.
013	STP TURN	STOPPED WHILE EXECUTING A TURN
014	EMR V PKD	EMERGENCY VEHICLE LEGALLY PARKED IN THE ROADWAY
015	GO A/STOP	PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED.
016	TRN A/RED	TURNED ON RED AFTER STOPPING
017	LOSTCTRL	LOST CONTROL OF VEHICLE
018	EXIT DWY	ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY
019	ENTR DWY	ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY
020	STR ENTR	BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER
021	NO DRVR	CAR RAN AWAY - NO DRIVER
022	PREV COL	STRUCK, OR WAS STRUCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED
023	STALLED	VEHICLE STALLED OR DISABLED
024	DRVR DEAD	DEAD BY UNASSOCIATED CAUSE
025	FATIGUE	FATIGUED, SLEEPY, ASLEEP
026	SUN	DRIVER BLINDED BY SUN
027	HDLGHTS	DRIVER BLINDED BY HEADLIGHTS
028	ILLNESS	PHYSICALLY ILL
029	THRU MED	VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER
030	PURSUIT	PURSUING OR ATTEMPTING TO STOP A VEHICLE
031	PASSING	PASSING SITUATION
032	PRKOFFRD	VEHICLE PARKED BEYOND CURB OR SHOULDER
033	CROS MED	VEHICLE CROSSED EARTH OR GRASS MEDIAN
034	X N/SGNL	CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT
035	X W/ SGNL	CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT
036	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
037	BTWN INT	CROSSING BETWEEN INTERSECTIONS
038	DISTRACT	DRIVER'S ATTENTION DISTRACTED
039	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
040	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
041	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
042	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
043	PLAYINRD	PLAYING IN STREET OR ROAD
044	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
045	WORK ON	WORKING IN ROADWAY OR ALONG SHOULDER
046	W/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. WITH TRAFFIC
047	A/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. FACING TRAFFIC
050	LAY ON RD	STANDING OR LYING IN ROADWAY
051	ENT OFFRD	ENTERING / STARTING IN TRAFFIC LANE FROM OFF ROAD
052	MERGING	MERGING

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
055	SPRAY	BLINDED BY WATER SPRAY
088	OTHER	OTHER ACTION
099	UNK	UNKNOWN ACTION

CAUSE CODE TRANSLATION LIST

CAUSE CODE	SHORT DESCRIPTION	LONG DESCRIPTION
00	NO CODE	NO CAUSE ASSOCIATED AT THIS LEVEL
01	TOO-FAST	TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED
02	NO-YIELD	DID NOT YIELD RIGHT-OF-WAY
03	PAS-STOP	PASSED STOP SIGN OR RED FLASHER
04	DIS SIG	DISREGARDED TRAFFIC SIGNAL
05	LEFT-CTR	DROVE LEFT OF CENTER ON TWO-WAY ROAD; STRADDLING
06	IMP-OVER	IMPROPER OVERTAKING
07	TOO-CLOS	FOLLOWED TOO CLOSELY
08	IMP-TURN	MADE IMPROPER TURN
09	DRINKING	ALCOHOL OR DRUG INVOLVED
10	OTHR-IMP	OTHER IMPROPER DRIVING
11	MECH-DEF	MECHANICAL DEFECT
12	OTHER	OTHER (NOT IMPROPER DRIVING)
13	IMP LN C	IMPROPER CHANGE OF TRAFFIC LANES
14	DIS TCD	DISREGARDED OTHER TRAFFIC CONTROL DEVICE
15	WRNG WAY	WRONG WAY ON ONE-WAY ROAD; WRONG SIDE DIVIDED RO
16	FATIGUE	DRIVER DROWSY/FATIGUED/SLEEPY
17	ILLNESS	PHYSICAL ILLNESS
18	IN RDWY	NON-MOTORIST ILLEGALLY IN ROADWAY
19	NT VISBL	NON-MOTORIST NOT VISIBLE; NON-REFLECTIVE CLOTHIN
20	IMP PKNG	VEHICLE IMPROPERLY PARKED
21	DEF STER	DEFECTIVE STEERING MECHANISM
22	DEF BRKE	INADEQUATE OR NO BRAKES
24	LOADSHFT	VEHICLE LOST LOAD OR LOAD SHIFTED
25	TIREFAIL	TIRE FAILURE
26	PHANTOM	PHANTOM / NON-CONTACT VEHICLE
27	INATTENT	INATTENTION
28	NM INATT	NON-MOTORIST INATTENTION
29	F AVOID	FAILED TO AVOID VEHICLE AHEAD
30	SPEED	DRIVING IN EXCESS OF POSTED SPEED
31	RACING	SPEED RACING (PER PAR)
32	CARELESS	CARELESS DRIVING (PER PAR)
33	RECKLESS	RECKLESS DRIVING (PER PAR)
34	AGGRESV	AGGRESSIVE DRIVING (PER PAR)
35	RD RAGE	ROAD RAGE (PER PAR)
40	VIEW OBS	VIEW OBSCURED
50	USED MDN	IMPROPER USE OF MEDIAN OR SHOULDER
51	FAIL LN	FAILED TO MAINTAIN LANE
52	OFF RD	RAN OFF ROAD

COLLISION TYPE CODE TRANSLATION LIST

COLL CODE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OTH	MISCELLANEOUS
-	BACK	BACKING
0	PED	PEDESTRIAN
1	ANGL	ANGLE
2	HEAD	HEAD-ON
3	REAR	REAR-END
4	SS-M	SIDESWIPE - MEETING
5	SS-O	SIDESWIPE - OVERTAKING
6	TURN	TURNING MOVEMENT
7	PARK	PARKING MANEUVER
8	NCOL	NON-COLLISION
9	FIX	FIXED OBJECT OR OTHER OBJECT

CRASH TYPE CODE TRANSLATION LIST

CRASH TYPE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OVERTURN	OVERTURNED
0	NON-COLL	OTHER NON-COLLISION
1	OTH RDWY	MOTOR VEHICLE ON OTHER ROADWAY
2	PRKD MV	PARKED MOTOR VEHICLE
3	PED	PEDESTRIAN
4	TRAIN	RAILWAY TRAIN
6	BIKE	PEDALCYCLIST
7	ANIMAL	ANIMAL
8	FIX OBJ	FIXED OBJECT
9	OTH OBJ	OTHER OBJECT
A	ANGL-STP	ENTERING AT ANGLE - ONE VEHICLE STOPPED
B	ANGL-OTH	ENTERING AT ANGLE - ALL OTHERS
C	S-STRGHT	FROM SAME DIRECTION - BOTH GOING STRAIGHT
D	S-1TURN	FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT
E	S-1STOP	FROM SAME DIRECTION - ONE STOPPED
F	S-OTHER	FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING
G	O-STRGHT	FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT
H	O-1 L-TURN	FROM OPPOSITE DIRECTION-ONE LEFT TURN,ONE STRAIGHT
I	O-1STOP	FROM OPPOSITE DIRECTION - ONE STOPPED
J	O-OTHER	FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING

DRIVER LICENSE CODE TRANSLATION LIST

LIC CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NOT LICENSED (HAD NEVER BEEN LICENSED)
1	OR-Y	VALID OREGON LICENSE
2	OTH-Y	VALID LICENSE, OTHER STATE OR COUNTRY
3	SUSP	SUSPENDED/REVOKED
4	EXP	EXPIRED
8	N-VAL	OTHER NON-VALID LICENSE
9	UNK	UNKNOWN IF DRIVER WAS LICENSED AT TIME OF CRASH

DRIVER RESIDENCE CODE TRANSLATION LIST

RES CODE	SHORT DESC	LONG DESCRIPTION
1	OR<25	OREGON RESIDENT WITHIN 25 MILE OF HOME
2	OR>25	OREGON RESIDENT 25 OR MORE MILES FROM HOME
3	OR-?	OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME
4	N-RES	NON-RESIDENT
9	UNK	UNKNOWN IF OREGON RESIDENT

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
000	NONE	NO ERROR
001	WIDE TRN	WIDE TURN
002	CUT CORN	CUT CORNER ON TURN
003	FAIL TRN	FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS
004	L IN TRF	LEFT TURN IN FRONT OF ONCOMING TRAFFIC
005	L PROHIB	LEFT TURN WHERE PROHIBITED
006	FRM WRNG	TURNED FROM WRONG LANE
007	TO WRONG	TURNED INTO WRONG LANE
008	ILLEG U	U-TURNED ILLEGALLY
009	IMP STOP	IMPROPERLY STOPPED IN TRAFFIC LANE
010	IMP SIG	IMPROPER SIGNAL OR FAILURE TO SIGNAL
011	IMP BACK	BACKING IMPROPERLY (NOT PARKING)
012	IMP PARK	IMPROPERLY PARKED
013	UNPARK	IMPROPER START LEAVING PARKED POSITION
014	IMP STRT	IMPROPER START FROM STOPPED POSITION
015	IMP LGHT	IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC)
016	INATTENT	INATTENTION (FAILURE TO DIM LIGHTS PRIOR TO 4/1/97)
017	UNSF VEH	DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT)
018	OTH PARK	ENTERING/EXITING PARKED POSITION W/ INSUFFICIENT CLEARANCE; OTHER IMPROPER PARKING MANEUVER
019	DIS DRIV	DISREGARDED OTHER DRIVER'S SIGNAL
020	DIS SGNL	DISREGARDED TRAFFIC SIGNAL
021	RAN STOP	DISREGARDED STOP SIGN OR FLASHING RED
022	DIS SIGN	DISREGARDED WARNING SIGN, FLARES OR FLASHING AMBER
023	DIS OFCR	DISREGARDED POLICE OFFICER OR FLAGMAN
024	DIS EMER	DISREGARDED SIREN OR WARNING OF EMERGENCY VEHICLE
025	DIS RR	DISREGARDED RR SIGNAL, RR SIGN, OR RR FLAGMAN
026	REAR-END	FAILED TO AVOID STOPPED OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS
027	BIKE ROW	DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST
028	NO ROW	DID NOT HAVE RIGHT-OF-WAY
029	PED ROW	FAILED TO YIELD RIGHT-OF-WAY TO PEDESTRIAN
030	PAS CURV	PASSING ON A CURVE
031	PAS WRNG	PASSING ON THE WRONG SIDE
032	PAS TANG	PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS
033	PAS X-WK	PASSED VEHICLE STOPPED AT CROSSWALK FOR PEDESTRIAN
034	PAS INTR	PASSING AT INTERSECTION
035	PAS HILL	PASSING ON CREST OF HILL
036	N/PAS ZN	PASSING IN "NO PASSING" ZONE
037	PAS TRAF	PASSING IN FRONT OF ONCOMING TRAFFIC
038	CUT-IN	CUTTING IN (TWO LANES - TWO WAY ONLY)
039	WRNGSIDE	DRIVING ON WRONG SIDE OF THE ROAD (2-WAY UNDIVIDED ROADWAYS)

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
040	THRU MED	DRIVING THROUGH SAFETY ZONE OR OVER ISLAND
041	F/ST BUS	FAILED TO STOP FOR SCHOOL BUS
042	F/SLO MV	FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE
043	TOO CLOSE	FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT)
044	STRDL LN	STRADDLING OR DRIVING ON WRONG LANES
045	IMP CHG	IMPROPER CHANGE OF TRAFFIC LANES
046	WRNG WAY	WRONG WAY ON ONE-WAY ROADWAY; WRONG SIDE DIVIDED ROAD
047	BASCRULE	DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED)
048	OPN DOOR	OPENED DOOR INTO ADJACENT TRAFFIC LANE
049	IMPEDING	IMPEDING TRAFFIC
050	SPEED	DRIVING IN EXCESS OF POSTED SPEED
051	RECKLESS	RECKLESS DRIVING (PER PAR)
052	CARELESS	CARELESS DRIVING (PER PAR)
053	RACING	SPEED RACING (PER PAR)
054	X N/SGNL	CROSSING AT INTERSECTION, NO TRAFFIC SIGNAL PRESENT
055	X W/SGNL	CROSSING AT INTERSECTION, TRAFFIC SIGNAL PRESENT
056	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
057	BTWN INT	CROSSING BETWEEN INTERSECTIONS
059	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
060	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
061	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
062	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
063	PLAYINRD	PLAYING IN STREET OR ROAD
064	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
065	WORK IN RD	WORKING IN ROADWAY OR ALONG SHOULDER
070	LAY ON RD	STANDING OR LYING IN ROADWAY
071	NM IMP USE	IMPROPER USE OF TRAFFIC LANE BY NON-MOTORIST
073	ELUDING	ELUDING / ATTEMPT TO ELUDE
079	F NEG CURV	FAILED TO NEGOTIATE A CURVE
080	FAIL LN	FAILED TO MAINTAIN LANE
081	OFF RD	RAN OFF ROAD
082	NO CLEAR	DRIVER MISJUDGED CLEARANCE
083	OVRSTEER	OVER-CORRECTING
084	NOT USED	CODE NOT IN USE
085	OVRLOAD	OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS
097	UNA DIS TC	UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
001	FEL/JUMP	OCCUPANT FELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE
002	INTERFER	PASSENGER INTERFERED WITH DRIVER
003	BUG INTF	ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER
004	INDRCT PED	PEDESTRIAN INDIRECTLY INVOLVED (NOT STRUCK)
005	SUB-PED	"SUB-PED": PEDESTRIAN INJURED SUBSEQUENT TO COLLISION, ETC.
006	INDRCT BIK	PEDALCYCLIST INDIRECTLY INVOLVED (NOT STRUCK)
007	HITCHIKR	HITCHHIKER (SOLICITING A RIDE)
008	PSNGR TOW	PASSENGER OR NON-MOTORIST BEING TOWED OR PUSHED ON CONVEYANCE
009	ON/OFF V	GETTING ON/OFF STOPPED/PARKED VEHICLE (OCCUPANTS ONLY; MUST HAVE PHYSICAL CONTACT W/ VEHIC
010	SUB OTRN	OVERTURNED AFTER FIRST HARMFUL EVENT
011	MV PUSHD	VEHICLE BEING PUSHED
012	MV TOWED	VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE
013	FORCED	VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN
014	SET MOTN	VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.)
015	RR ROW	AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL)
016	LT RL ROW	AT OR ON LIGHT-RAIL RIGHT-OF-WAY
017	RR HIT V	TRAIN STRUCK VEHICLE
018	V HIT RR	VEHICLE STRUCK TRAIN
019	HIT RR CAR	VEHICLE STRUCK RAILROAD CAR ON ROADWAY
020	JACKNIFE	JACKKNIFE; TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE
021	TRL OTRN	TRAILER OR TOWED VEHICLE OVERTURNED
022	CN BROKE	TRAILER CONNECTION BROKE
023	DETACH TRL	DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT
024	V DOOR OPN	VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE
025	WHEELOFF	WHEEL CAME OFF
026	HOOD UP	HOOD FLEW UP
028	LOAD SHIFT	LOST LOAD, LOAD MOVED OR SHIFTED
029	TIREFAIL	TIRE FAILURE
030	PET	PET: CAT, DOG AND SIMILAR
031	LVSTOCK	STOCK: COW, CALF, BULL, STEER, SHEEP, ETC.
032	HORSE	HORSE, MULE, OR DONKEY
033	HRSE&RID	HORSE AND RIDER
034	GAME	WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK)
035	DEER ELK	DEER OR ELK, WAPITI
036	ANML VEH	ANIMAL-DRAWN VEHICLE
037	CULVERT	CULVERT, OPEN LOW OR HIGH MANHOLE
038	ATENUATN	IMPACT ATTENUATOR
039	PK METER	PARKING METER
040	CURB	CURB (ALSO NARROW SIDEWALKS ON BRIDGES)
041	JIGGLE	JIGGLE BAR OR TRAFFIC SNAKE FOR CHANNELIZATION
042	GDRL END	LEADING EDGE OF GUARDRAIL
043	GARDRAIL	GUARD RAIL (NOT METAL MEDIAN BARRIER)
044	BARRIER	MEDIAN BARRIER (RAISED OR METAL)
045	WALL	RETAINING WALL OR TUNNEL WALL
046	BR RAIL	BRIDGE RAILING OR PARAPET (ON BRIDGE OR APPROACH)
047	BR ABUTMNT	BRIDGE ABUTMENT (INCLUDED "APPROACH END" THRU 2013)
048	BR COLMN	BRIDGE PILLAR OR COLUMN
049	BR GIRDR	BRIDGE GIRDER (HORIZONTAL BRIDGE STRUCTURE OVERHEAD)
050	ISLAND	TRAFFIC RAISED ISLAND
051	GORE	GORE
052	POLE UNK	POLE - TYPE UNKNOWN
053	POLE UTL	POLE - POWER OR TELEPHONE
054	ST LIGHT	POLE - STREET LIGHT ONLY
055	TRF SGNL	POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY
056	SGN BRDG	POLE - SIGN BRIDGE
057	STOPSIGN	STOP OR YIELD SIGN

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
058	OTH SIGN	OTHER SIGN, INCLUDING STREET SIGNS
059	HYDRANT	HYDRANT
060	MARKER	DELINEATOR OR MARKER (REFLECTOR POSTS)
061	MAILBOX	MAILBOX
062	TREE	TREE, STUMP OR SHRUBS
063	VEG OHED	TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC.
064	WIRE/CBL	WIRE OR CABLE ACROSS OR OVER THE ROAD
065	TEMP SGN	TEMPORARY SIGN OR BARRICADE IN ROAD, ETC.
066	PERM SGN	PERMANENT SIGN OR BARRICADE IN/OFF ROAD
067	SLIDE	SLIDES, FALLEN OR FALLING ROCKS
068	FRGN OBJ	FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL)
069	EQP WORK	EQUIPMENT WORKING IN/OFF ROAD
070	OTH EQP	OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT)
071	MAIN EQP	WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT
072	OTHER WALL	ROCK, BRICK OR OTHER SOLID WALL
073	IRRGL PVMT	OTHER BUMP (NOT SPEED BUMP), POTHOLE OR PAVEMENT IRREGULARITY (PER PAR)
074	OVERHD OBJ	OTHER OVERHEAD OBJECT (HIGHWAY SIGN, SIGNAL HEAD, ETC.); NOT BRIDGE
075	CAVE IN	BRIDGE OR ROAD CAVE IN
076	HI WATER	HIGH WATER
077	SNO BANK	SNOW BANK
078	LO-HI EDGE	LOW OR HIGH SHOULDER AT PAVEMENT EDGE
079	DITCH	CUT SLOPE OR DITCH EMBANKMENT
080	OBJ FRM MV	STRUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS)
081	FLY-OBJ	STRUCK BY ROCK OR OTHER MOVING OR FLYING OBJECT (NOT SET IN MOTION BY VEHICLE)
082	VEH HID	VEHICLE OBSCURED VIEW
083	VEG HID	VEGETATION OBSCURED VIEW
084	BLDG HID	VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC.
085	WIND GUST	WIND GUST
086	IMMERSED	VEHICLE IMMERSED IN BODY OF WATER
087	FIRE/EXP	FIRE OR EXPLOSION
088	FENC/BLD	FENCE OR BUILDING, ETC.
089	OTHR CRASH	CRASH RELATED TO ANOTHER SEPARATE CRASH
090	TO 1 SIDE	TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE
091	BUILDING	BUILDING OR OTHER STRUCTURE
092	PHANTOM	OTHER (PHANTOM) NON-CONTACT VEHICLE
093	CELL PHONE	CELL PHONE (ON PAR OR DRIVER IN USE)
094	VIOL GDL	TEENAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGM
095	GUY WIRE	GUY WIRE
096	BERM	BERM (EARTHEN OR GRAVEL MOUND)
097	GRAVEL	GRAVEL IN ROADWAY
098	ABR EDGE	ABRUPT EDGE
099	CELL WTNSD	CELL PHONE USE WITNESSED BY OTHER PARTICIPANT
100	UNK FIXD	FIXED OBJECT, UNKNOWN TYPE.
101	OTHER OBJ	NON-FIXED OBJECT, OTHER OR UNKNOWN TYPE
102	TEXTING	TEXTING
103	WZ WORKER	WORK ZONE WORKER
104	ON VEHICLE	PASSENGER RIDING ON VEHICLE EXTERIOR
105	PEDAL PSGR	PASSENGER RIDING ON PEDALCYCLE
106	MAN WHLCHR	PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR
107	MTR WHLCHR	PEDESTRIAN IN MOTORIZED WHEELCHAIR
108	OFFICER	LAW ENFORCEMENT / POLICE OFFICER
109	SUB-BIKE	"SUB-BIKE": PEDALCYCLIST INJURED SUBSEQUENT TO COLLISION, ETC.
110	N-MTR	NON-MOTORIST STRUCK VEHICLE
111	S CAR VS V	STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE
112	V VS S CAR	VEHICLE STRUCK STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM)
113	S CAR ROW	AT OR ON STREET CAR OR TROLLEY RIGHT-OF-WAY

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
114	RR EQUIP	VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS
115	DSTRCT GPS	DISTRACTED BY NAVIGATION SYSTEM OR GPS DEVICE
116	DSTRCT OTH	DISTRACTED BY OTHER ELECTRONIC DEVICE
117	RR GATE	RAIL CROSSING DROP-ARM GATE
118	EXPNSN JNT	EXPANSION JOINT
119	JERSEY BAR	JERSEY BARRIER
120	WIRE BAR	WIRE OR CABLE MEDIAN BARRIER
121	FENCE	FENCE
123	OBJ IN VEH	LOOSE OBJECT IN VEHICLE STRUCK OCCUPANT
124	SLIPPERY	SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE (NOT GRAVEL)
125	SHLDR	SHOULDER GAVE WAY
126	BOULDER	ROCK(S), BOULDER (NOT GRAVEL; NOT ROCK SLIDE)
127	LAND SLIDE	ROCK SLIDE OR LAND SLIDE
128	CURVE INV	CURVE PRESENT AT CRASH LOCATION
129	HILL INV	VERTICAL GRADE / HILL PRESENT AT CRASH LOCATION
130	CURVE HID	VIEW OBSCURED BY CURVE
131	HILL HID	VIEW OBSCURED BY VERTICAL GRADE / HILL
132	WINDOW HID	VIEW OBSCURED BY VEHICLE WINDOW CONDITIONS
133	SPRAY HID	VIEW OBSCURED BY WATER SPRAY
134	TORRENTIAL	TORRENTIAL RAIN (EXCEPTIONALLY HEAVY RAIN)
135	RAIL OCC	INJURED OCCUPANT OF RAILWAY TRAIN, LIGHT RAIL, STREET CAR OR CABLE CAR

FUNCTIONAL CLASSIFICATION TRANSLATION LIST

FUNC CLASS	DESCRIPTION
01	RURAL PRINCIPAL ARTERIAL - INTERSTATE
02	RURAL PRINCIPAL ARTERIAL - OTHER
06	RURAL MINOR ARTERIAL
07	RURAL MAJOR COLLECTOR
08	RURAL MINOR COLLECTOR
09	RURAL LOCAL
11	URBAN PRINCIPAL ARTERIAL - INTERSTATE
12	URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP
14	URBAN PRINCIPAL ARTERIAL - OTHER
16	URBAN MINOR ARTERIAL
17	URBAN MAJOR COLLECTOR
18	URBAN MINOR COLLECTOR
19	URBAN LOCAL
78	UNKNOWN RURAL SYSTEM
79	UNKNOWN RURAL NON-SYSTEM
98	UNKNOWN URBAN SYSTEM
99	UNKNOWN URBAN NON-SYSTEM

HIGHWAY COMPONENT TRANSLATION LIST

CODE	DESCRIPTION
0	MAINLINE STATE HIGHWAY
1	COUPLET
3	FRONTAGE ROAD
6	CONNECTION
8	HIGHWAY - OTHER

INJURY SEVERITY CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
1	KILL	FATAL INJURY (K)
2	INJA	SUSPECTED SERIOUS INJURY (A)
3	INJB	SUSPECTED MINOR INJURY (B)
4	INJC	POSSIBLE INJURY (C)
5	PRI	DIED PRIOR TO CRASH
7	NO<5	NO INJURY - 0 TO 4 YEARS OF AGE
9	NONE	NO APPARENT INJURY (O)

LIGHT CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	DAY	DAYLIGHT
2	DLIT	DARKNESS - WITH STREET LIGHTS
3	DARK	DARKNESS - NO STREET LIGHTS
4	DAWN	DAWN (TWILIGHT)
5	DUSK	DUSK (TWILIGHT)

MEDIAN TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NO MEDIAN
1	RSDMD	SOLID MEDIAN BARRIER
2	DIVMD	EARTH, GRASS OR PAVED MEDIAN

MILEAGE TYPE CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
0	REGULAR MILEAGE
T	TEMPORARY
Y	SPUR
Z	OVERLAPPING

MOVEMENT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	STRGHT	STRAIGHT AHEAD
2	TURN-R	TURNING RIGHT
3	TURN-L	TURNING LEFT
4	U-TURN	MAKING A U-TURN
5	BACK	BACKING
6	STOP	STOPPED IN TRAFFIC
7	PRKD-P	PARKED - PROPERLY
8	PRKD-I	PARKED - IMPROPERLY
9	PARKNG	PARKING MANEUVER

NON-MOTORIST LOCATION CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
00	AT INTERSECTION - NOT IN ROADWAY
01	AT INTERSECTION - INSIDE CROSSWALK
02	AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK
03	AT INTERSECTION - IN ROADWAY, XWALK AVAIL UNKNWN
04	NOT AT INTERSECTION - IN ROADWAY
05	NOT AT INTERSECTION - ON SHOULDER
06	NOT AT INTERSECTION - ON MEDIAN
07	NOT AT INTERSECTION - WITHIN TRAFFIC RIGHT-OF-WAY
08	NOT AT INTERSECTION - IN BIKE PATH OR PARKING LANE
09	NOT-AT INTERSECTION - ON SIDEWALK
10	OUTSIDE TRAFFICWAY BOUNDARIES
13	AT INTERSECTION - IN BIKE LANE
14	NOT AT INTERSECTION - IN BIKE LANE
15	NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK
16	NOT AT INTERSECTION - IN PARKING LANE
18	OTHER, NOT IN ROADWAY
99	UNKNOWN LOCATION

ROAD CHARACTER CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	INTER	INTERSECTION
2	ALLEY	DRIVEWAY OR ALLEY
3	STRGHT	STRAIGHT ROADWAY
4	TRANS	TRANSITION
5	CURVE	CURVE (HORIZONTAL CURVE)
6	OPENAC	OPEN ACCESS OR TURNOUT
7	GRADE	GRADE (VERTICAL CURVE)
8	BRIDGE	BRIDGE STRUCTURE
9	TUNNEL	TUNNEL

PARTICIPANT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	OCC	UNKNOWN OCCUPANT TYPE
1	DRVR	DRIVER
2	PSNG	PASSENGER
3	PED	PEDESTRIAN
4	CONV	PEDESTRIAN USING A PEDESTRIAN CONVEYA
5	PTOW	PEDESTRIAN TOWING OR TRAILERING AN OB
6	BIKE	PEDALCYCLIST
7	BTOW	PEDALCYCLIST TOWING OR TRAILERING AN
8	PRKD	OCCUPANT OF A PARKED MOTOR VEHICLE
9	OTHR	OTHER TYPE OF NON-MOTORIST

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST

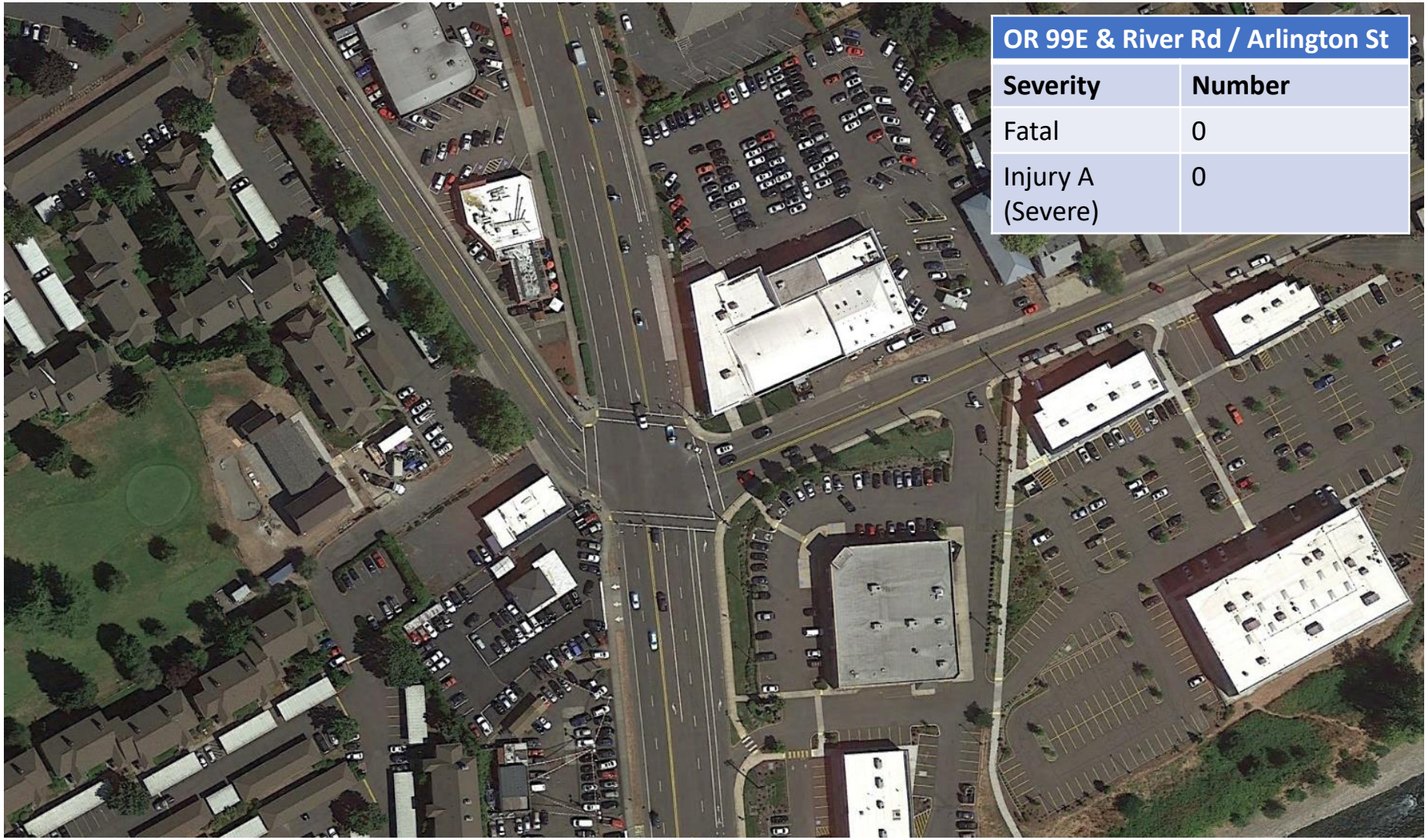
CODE	SHORT DESC	LONG DESCRIPTION
000	NONE	NO CONTROL
001	TRF SIGNAL	TRAFFIC SIGNALS
002	FLASHBCN-R	FLASHING BEACON - RED (STOP)
003	FLASHBCN-A	FLASHING BEACON - AMBER (SLOW)
004	STOP SIGN	STOP SIGN
005	SLOW SIGN	SLOW SIGN
006	REG-SIGN	REGULATORY SIGN
007	YIELD	YIELD SIGN
008	WARNING	WARNING SIGN
009	CURVE	CURVE SIGN
010	SCHL X-ING	SCHOOL CROSSING SIGN OR SPECIAL SIGNAL
011	OFCR/FLAG	POLICE OFFICER, FLAGMAN - SCHOOL PATROL
012	BRDG-GATE	BRIDGE GATE - BARRIER
013	TEMP-BARR	TEMPORARY BARRIER
014	NO-PASS-ZN	NO PASSING ZONE
015	ONE-WAY	ONE-WAY STREET
016	CHANNEL	CHANNELIZATION
017	MEDIAN BAR	MEDIAN BARRIER
018	PILOT CAR	PILOT CAR
019	SP PED SIG	SPECIAL PEDESTRIAN SIGNAL
020	X-BUCK	CROSSBUCK
021	THR-GN-SIG	THROUGH GREEN ARROW OR SIGNAL
022	L-GRN-SIG	LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
023	R-GRN-SIG	RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
024	WIGWAG	WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE
025	X-BUCK WRN	CROSSBUCK AND ADVANCE WARNING
026	WW W/ GATE	FLASHING LIGHTS WITH DROP-ARM GATES
027	OVRHD SGNL	SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY)
028	SP RR STOP	SPECIAL RR STOP SIGN
029	ILUM GRD X	ILLUMINATED GRADE CROSSING
037	RAMP METER	METERED RAMPS
038	RUMBLE STR	RUMBLE STRIP
090	L-TURN REF	LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED)
091	R-TURN ALL	RIGHT TURN AT ALL TIMES SIGN, ETC.
092	EMR SGN/FL	EMERGENCY SIGNS OR FLARES
093	ACCEL LANE	ACCELERATION OR DECELERATION LANES
094	R-TURN PRO	RIGHT TURN PROHIBITED ON RED AFTER STOPPING
095	BUS STPSGN	BUS STOP SIGN AND RED LIGHTS
099	UNKNOWN	UNKNOWN OR NOT DEFINITE

VEHICLE TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
00	PDO	NOT COLLECTED FOR PDO CRASHES
01	PSNGR CAR	PASSENGER CAR, PICKUP, LIGHT DELIVERY, ETC.
02	BOBTAIL	TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL)
03	FARM TRCTR	FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT
04	SEMI TOW	TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW
05	TRUCK	TRUCK WITH NON-DETACHABLE BED, PANEL, ETC.
06	MOPED	MOPED, MINIBIKE, SEATED MOTOR SCOOTER, MOTOR BIKE
07	SCHL BUS	SCHOOL BUS (INCLUDES VAN)
08	OTH BUS	OTHER BUS
09	MTRCYCLE	MOTORCYCLE, DIRT BIKE
10	OTHER	OTHER: FORKLIFT, BACKHOE, ETC.
11	MOTRHOME	MOTORHOME
12	TROLLEY	MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES)
13	ATV	ATV
14	MTRSCTR	MOTORIZED SCOOTER (STANDING)
15	SNOWMOBILE	SNOWMOBILE
99	UNKNOWN	UNKNOWN VEHICLE TYPE

WEATHER CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	CLR	CLEAR
2	CLD	CLOUDY
3	RAIN	RAIN
4	SLT	SLEET
5	FOG	FOG
6	SNOW	SNOW
7	DUST	DUST
8	SMOK	SMOKE
9	ASH	ASH



OR 99E & River Rd / Arlington St	
Severity	**Number**
Fatal	0
Injury A (Severe)	0



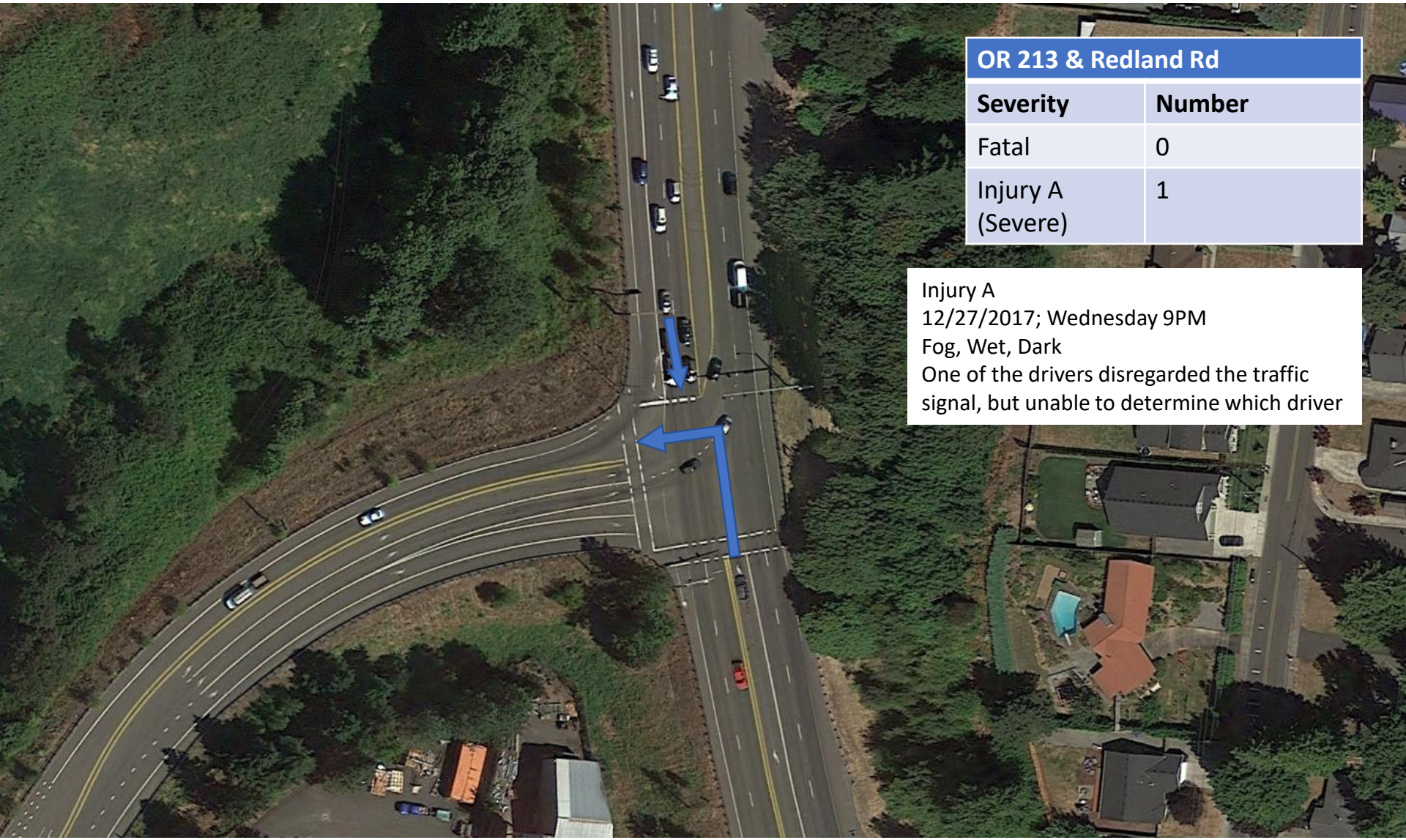
OR 99E & I-205 SB Ramps	
Severity	**Number**
Fatal	0
Injury A (Severe)	1

Injury A
5/19/2018; Saturday, 10PM
Clear, Dry
Left turning vehicle did not have ROW / left turn in front of oncoming traffic



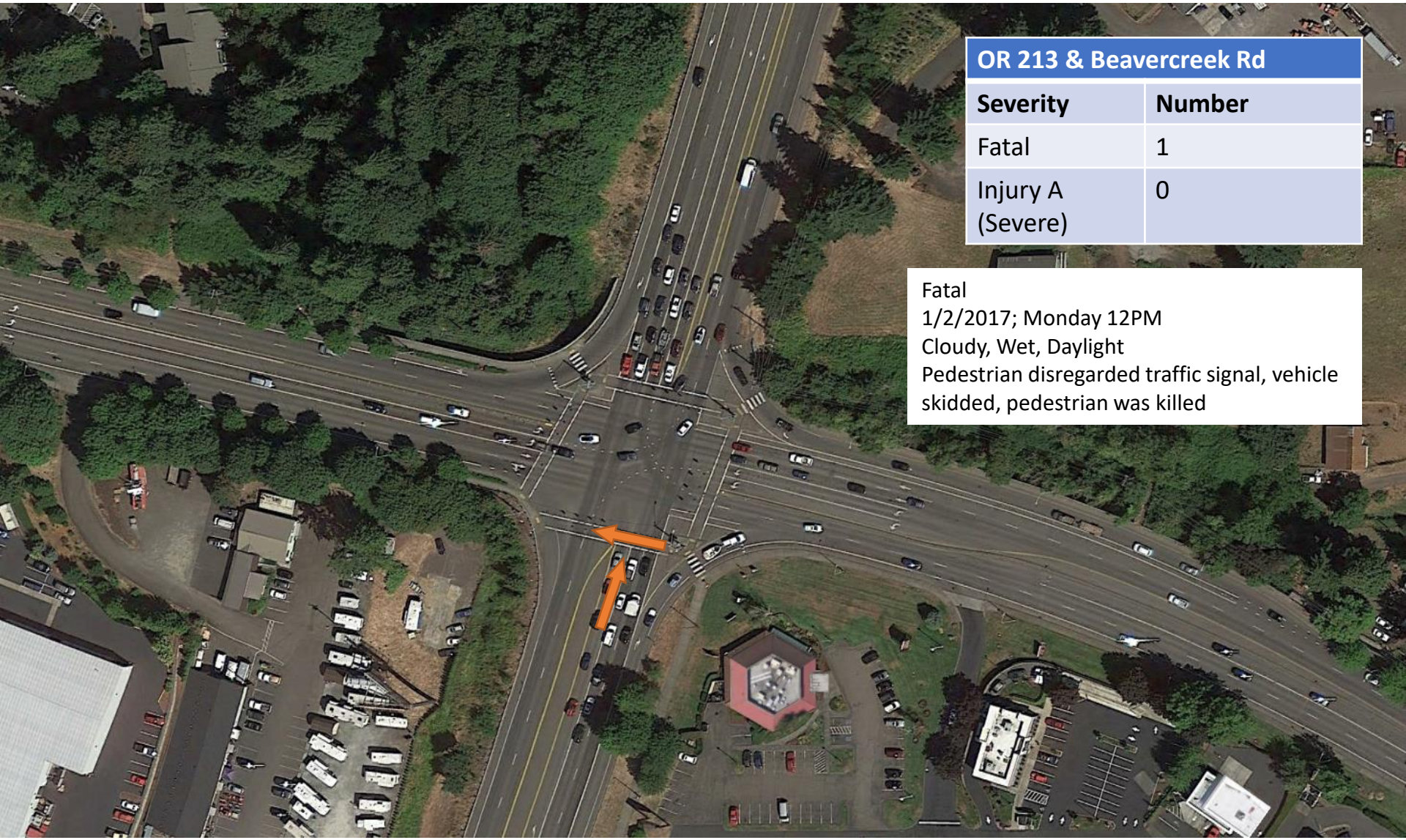
Washington St & 12th St	
Severity	**Number**
Fatal	1
Injury A (Severe)	0

Fatal
1/3/2014; Friday 6 PM
Cloudy, Dry, Daylight
Driver failed to yield ROW to pedestrian, pedestrian was killed



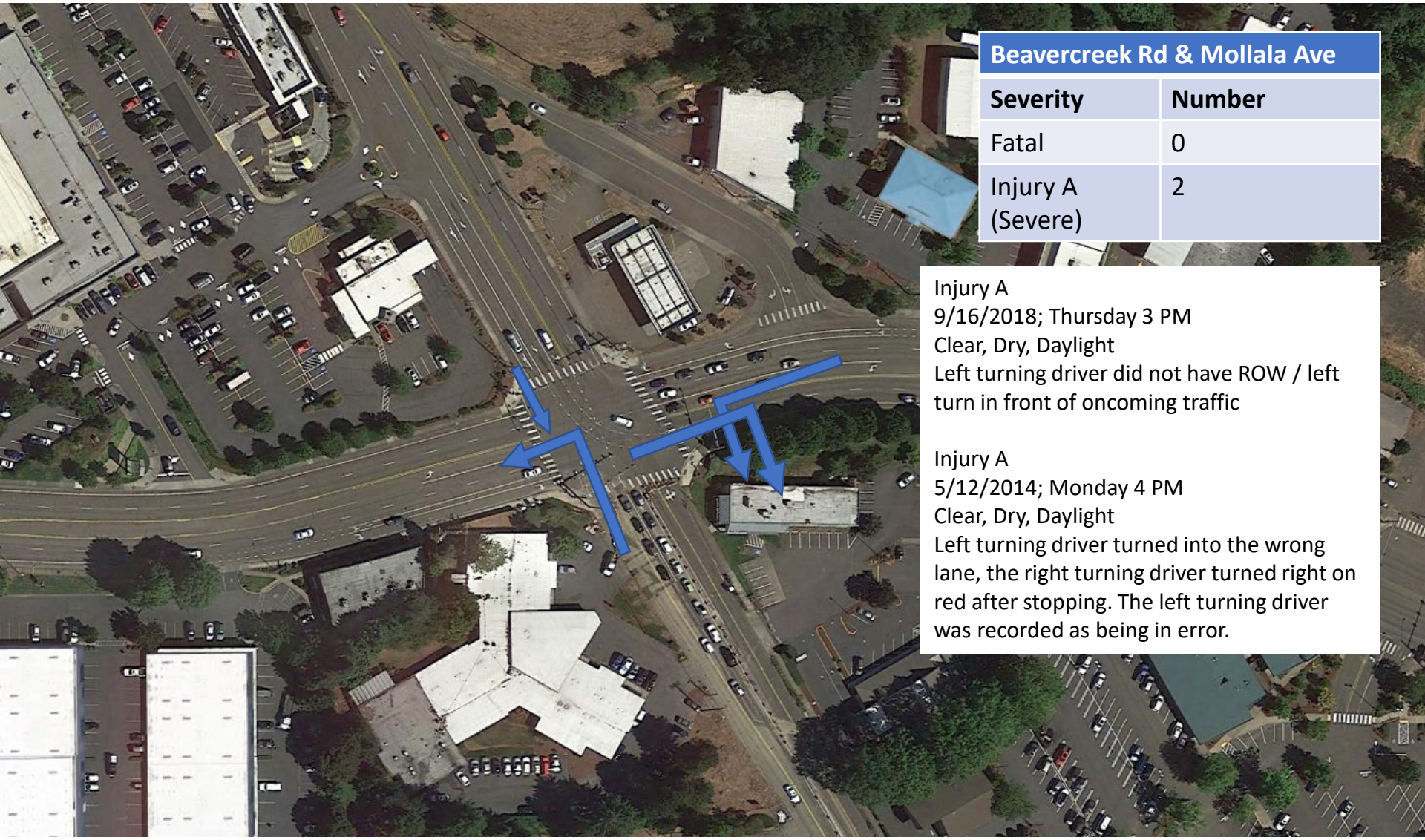
OR 213 & Redland Rd	
Severity	**Number**
Fatal	0
Injury A (Severe)	1

Injury A
12/27/2017; Wednesday 9PM
Fog, Wet, Dark
One of the drivers disregarded the traffic signal, but unable to determine which driver



OR 213 & Beavercreek Rd	
Severity	**Number**
Fatal	1
Injury A (Severe)	0

Fatal
1/2/2017; Monday 12PM
Cloudy, Wet, Daylight
Pedestrian disregarded traffic signal, vehicle skidded, pedestrian was killed



Beavercreek Rd & Mollala Ave	
Severity	**Number**
Fatal	0
Injury A (Severe)	2

Injury A
9/16/2018; Thursday 3 PM
Clear, Dry, Daylight
Left turning driver did not have ROW / left turn in front of oncoming traffic

Injury A
5/12/2014; Monday 4 PM
Clear, Dry, Daylight
Left turning driver turned into the wrong lane, the right turning driver turned right on red after stopping. The left turning driver was recorded as being in error.



Beavercreek Rd & Maple Ln	
Severity	**Number**
Fatal	0
Injury A (Severe)	2

Injury A
2/7/2016; Saturday 2 PM
Rain, Wet, Daylight
Left turning driver did not have ROW / left turn in front of oncoming traffic

Injury A
9/9/2017; Saturday 8 PM
Rain, Wet, Daylight
Southbound driver disregarded the traffic signal

Appendix E
Year 2025 Background Traffic Conditions Analysis Worksheets

Intersection Level Of Service Report
Intersection 1: OR 99E/ River Rd/ W Arlington St

Control Type:	Signalized	Delay (sec / veh):	7.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.661

Intersection Setup

Name	OR 99E			OR 99E			River Rd			W Arlington St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	185.00	100.00	275.00	250.00	100.00	100.00	550.00	100.00	100.00	100.00	100.00	160.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 99E			OR 99E			River Rd			W Arlington St		
Base Volume Input [veh/h]	59	847	60	32	629	3	0	25	126	81	13	47
Base Volume Adjustment Factor	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
Heavy Vehicles Percentage [%]	8.00	6.00	8.00	6.00	7.00	0.00	0.00	8.00	6.00	11.00	8.00	4.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	23	0	0	55	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	18	0	0	12	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	48	0	0	0	0	0	100	0	0	38
Total Hourly Volume [veh/h]	94	1312	47	51	1011	5	0	40	100	129	21	37
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	395	14	15	305	2	0	12	30	39	6	11
Total Analysis Volume [veh/h]	113	1581	57	61	1218	6	0	48	120	155	25	45
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			3			0			3		
v_di, Inbound Pedestrian Volume crossing m	0			3			0			3		
v_co, Outbound Pedestrian Volume crossing	0			1			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	42.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	20	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	18	52	0	18	52	0	0	30	0	0	30	0
Vehicle Extension [s]	2.3	4.7	0.0	2.3	4.7	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	9	0	0	8	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	20	0	0	15	0	0	26	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	C	R	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.80	4.80	4.80	4.40	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.80	2.80	0.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	68	68	68	68	68	68	16	16	16	16
g / C, Green / Cycle	0.68	0.68	0.68	0.68	0.68	0.68	0.16	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.21	0.46	0.04	0.12	0.34	0.34	0.03	0.08	0.12	0.03
s, saturation flow rate [veh/h]	542	3446	1481	522	1795	1791	1780	1538	1440	1546
c, Capacity [veh/h]	444	2350	1010	350	1214	1212	315	241	293	243
d1, Uniform Delay [s]	2.01	1.93	1.46	4.96	1.89	1.89	36.53	38.55	40.17	36.59
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.38	1.56	0.11	1.08	1.50	1.50	0.16	1.18	1.56	0.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.25	0.67	0.06	0.17	0.50	0.50	0.15	0.50	0.61	0.19
d, Delay for Lane Group [s/veh]	3.39	3.48	1.56	6.04	3.39	3.39	36.69	39.72	41.73	36.86
Lane Group LOS	A	A	A	A	A	A	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.36	2.03	0.13	0.20	1.67	1.66	1.03	2.75	4.33	0.97
50th-Percentile Queue Length [ft/ln]	9.08	50.85	3.17	4.92	41.63	41.60	25.70	68.82	108.29	24.25
95th-Percentile Queue Length [veh/ln]	0.65	3.66	0.23	0.35	3.00	2.99	1.85	4.96	7.74	1.75
95th-Percentile Queue Length [ft/ln]	16.35	91.53	5.70	8.86	74.93	74.87	46.26	123.88	193.62	43.66

Movement, Approach, & Intersection Results

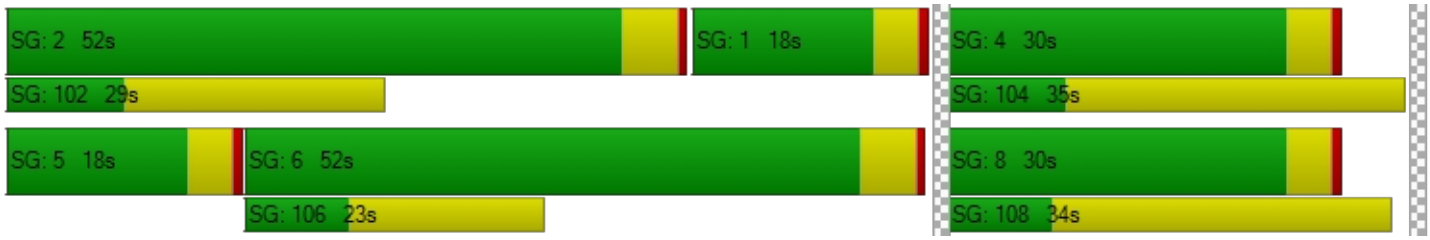
d_M, Delay for Movement [s/veh]	3.39	3.48	1.56	6.04	3.39	3.39	36.69	36.69	39.72	41.73	41.73	36.86
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	3.41			3.52			38.86			40.75		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	7.64											
Intersection LOS	A											
Intersection V/C	0.661											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	1579.36	3424.40	7385.70
d_p, Pedestrian Delay [s]	37.85	38.72	38.72	37.85
l_p,int, Pedestrian LOS Score for Intersection	3.296	3.071	2.354	2.227
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	944	944	520	520
d_b, Bicycle Delay [s]	13.95	13.95	27.38	27.38
l_b,int, Bicycle LOS Score for Intersection	3.044	2.620	2.002	1.994
Bicycle LOS	C	B	B	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: OR 99E / Dunes Dr

Control Type:	Signalized	Delay (sec / veh):	16.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.843

Intersection Setup

Name	OR 99E			OR 99E			Dunes Dr			Dunes Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	220.00	100.00	100.00	370.00	100.00	155.00	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 99E			OR 99E			Dunes Dr			Dunes Dr		
Base Volume Input [veh/h]	46	911	71	37	733	53	16	3	35	107	3	35
Base Volume Adjustment Factor	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
Heavy Vehicles Percentage [%]	9.00	7.00	7.00	5.00	8.00	9.00	0.00	0.00	0.00	7.00	0.00	6.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	129	0	0	0	28	0	0	55	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	18	0	0	12	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	1514	113	59	1112	113	25	5	111	170	5	56
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	440	33	17	323	33	7	1	32	49	1	16
Total Analysis Volume [veh/h]	85	1760	131	69	1293	131	29	6	129	198	6	65
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			3			0			2		
v_di, Inbound Pedestrian Volume crossing m	0			2			0			3		
v_co, Outbound Pedestrian Volume crossing	0			0			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	2	0	5	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	20	40	0	20	40	0	0	20	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	16	58	0	20	54	0	0	16	0	0	16	0
Vehicle Extension [s]	2.3	4.8	0.0	2.3	4.8	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	18	0	0	38	0	0	37	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.00	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.80	2.80	2.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	53	53	11	45	45	20	20	20	20
g / C, Green / Cycle	0.04	0.59	0.59	0.13	0.50	0.50	0.23	0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.06	0.37	0.37	0.30	0.28	0.28	0.02	0.08	0.16	0.04
s, saturation flow rate [veh/h]	1336	3418	1723	234	3389	1697	1343	1626	1204	1626
c, Capacity [veh/h]	95	2020	1019	80	1702	852	308	370	243	370
d1, Uniform Delay [s]	41.67	5.35	5.37	43.08	9.59	9.60	31.69	29.28	39.99	28.08
k, delay calibration	0.50	0.50	0.50	0.50	0.13	0.50	0.08	0.08	0.21	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	66.96	1.44	2.91	67.50	0.34	2.63	0.10	0.45	12.17	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.62	0.63	0.86	0.56	0.56	0.09	0.36	0.82	0.19
d, Delay for Lane Group [s/veh]	108.63	6.79	8.28	110.58	9.94	12.22	31.78	29.73	52.16	28.26
Lane Group LOS	F	A	A	F	A	B	C	C	D	C
Critical Lane Group	No	No	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.59	3.16	3.64	2.93	3.58	4.13	0.54	2.50	5.24	1.26
50th-Percentile Queue Length [ft/ln]	89.78	79.10	90.96	73.32	89.61	103.29	13.61	62.45	131.12	31.39
95th-Percentile Queue Length [veh/ln]	6.46	5.69	6.55	5.28	6.45	7.44	0.98	4.50	9.00	2.26
95th-Percentile Queue Length [ft/ln]	161.60	142.37	163.74	131.98	161.30	185.92	24.51	112.40	225.01	56.49

Movement, Approach, & Intersection Results

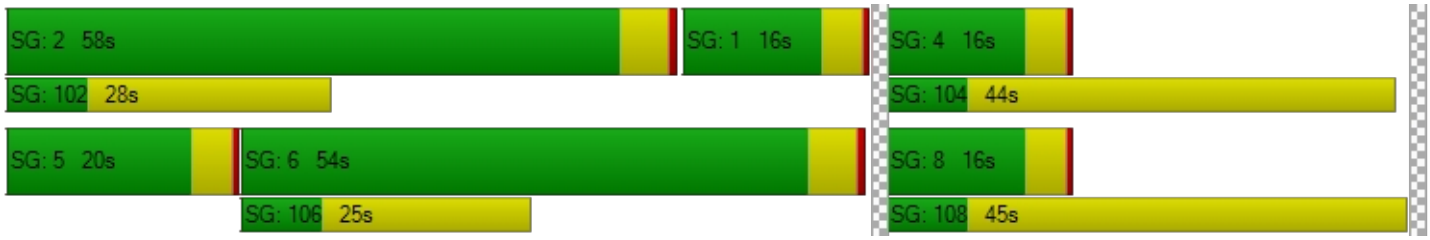
d_M, Delay for Movement [s/veh]	108.63	7.22	8.28	110.58	10.55	12.22	31.78	29.73	29.73	52.16	28.26	28.26
Movement LOS	F	A	A	F	B	B	C	C	C	D	C	C
d_A, Approach Delay [s/veh]	11.65			15.32			30.09			45.85		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	16.19											
Intersection LOS	B											
Intersection V/C	0.843											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	1951.84	4387.90	4648.80
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	3.543	3.256	2.158	2.166
Crosswalk LOS	D	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1182	1093	267	267
d_b, Bicycle Delay [s]	7.53	9.25	33.80	33.80
l_b,int, Bicycle LOS Score for Intersection	2.646	2.381	1.830	2.003
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: OR 99E/I-205 SB Loop Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	53.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.980

Intersection Setup

Name	OR 99E		OR 99E		I-205 WB Loop Off-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	1
Entry Pocket Length [ft]	100.00	200.00	240.00	100.00	575.00	275.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	No		No		Yes	

Volumes

Name	OR 99E		OR 99E		I-205 WB Loop Off-Ramp	
Base Volume Input [veh/h]	827	207	342	542	374	263
Base Volume Adjustment Factor	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
Heavy Vehicles Percentage [%]	7.00	18.00	7.00	8.00	13.00	7.00
Growth Factor	1.0000	1.0130	1.0130	1.0000	1.0130	1.0130
In-Process Volume [veh/h]	55	0	23	32	0	74
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	18	0	0	12	0	0
Right Turn on Red Volume [veh/h]	0	315	0	0	0	237
Total Hourly Volume [veh/h]	1314	0	543	857	568	237
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	373	0	154	243	161	67
Total Analysis Volume [veh/h]	1493	0	617	974	645	269
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	35.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	6	6
Maximum Green [s]	40	0	20	40	20	20
Amber [s]	4.3	0.0	3.5	4.3	4.0	4.0
All red [s]	0.5	0.0	0.5	0.5	1.5	1.5
Split [s]	34	0	36	70	20	20
Vehicle Extension [s]	4.8	0.0	2.3	4.8	2.3	2.3
Walk [s]	8	0	0	0	0	0
Pedestrian Clearance [s]	29	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.8	0.0	2.0	2.8	3.5	3.5
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.80	4.80	4.00	4.80	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.80	2.80	2.00	2.80	3.50	0.00
g_i, Effective Green Time [s]	24	24	34	62	18	55
g / C, Green / Cycle	0.27	0.27	0.37	0.69	0.19	0.61
(v / s)_i Volume / Saturation Flow Rate	0.31	0.00	0.36	0.20	0.20	0.18
s, saturation flow rate [veh/h]	4889	1385	1709	4849	3153	1526
c, Capacity [veh/h]	1330	377	640	3351	613	936
d1, Uniform Delay [s]	28.69	0.00	21.93	1.17	36.26	8.16
k, delay calibration	0.50	0.50	0.39	0.50	0.07	0.22
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	65.61	0.00	23.84	0.22	29.42	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.12	0.00	0.96	0.29	1.05	0.29
d, Delay for Lane Group [s/veh]	94.30	0.00	45.77	1.39	65.68	8.50
Lane Group LOS	F	A	D	A	F	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	16.07	0.00	13.83	0.45	9.08	2.30
50th-Percentile Queue Length [ft/ln]	401.79	0.00	345.65	11.25	226.94	57.51
95th-Percentile Queue Length [veh/ln]	24.18	0.00	19.92	0.81	14.37	4.14
95th-Percentile Queue Length [ft/ln]	604.57	0.00	498.10	20.24	359.21	103.51

Movement, Approach, & Intersection Results

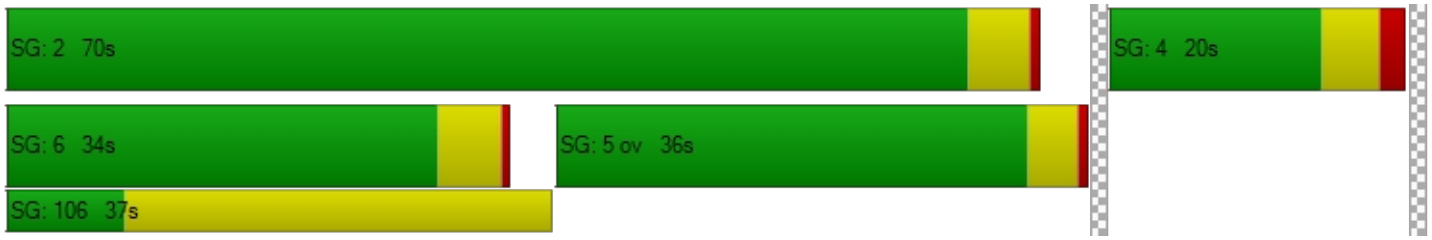
d_M, Delay for Movement [s/veh]	94.30	0.00	45.77	1.39	65.68	8.50
Movement LOS	F	A	D	A	F	A
d_A, Approach Delay [s/veh]	94.30		18.60		48.85	
Approach LOS	F		B		D	
d_I, Intersection Delay [s/veh]	53.79					
Intersection LOS	D					
Intersection V/C	0.980					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	5446.76
d_p, Pedestrian Delay [s]	0.00	0.00	33.80
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.974
Crosswalk LOS	F	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	649	1449	322
d_b, Bicycle Delay [s]	20.55	3.42	31.67
l_b,int, Bicycle LOS Score for Intersection	2.554	2.435	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: OR 99E/I-205 EB Loop Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	15.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.558

Intersection Setup

Name	OR 99E		OR 99E		I-205 EB Loop Off-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	185.00	500.00	100.00	100.00	130.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		Yes		Yes	
Crosswalk	No		No		Yes	

Volumes

Name	OR 99E		OR 99E		I-205 EB Loop Off-Ramp	
Base Volume Input [veh/h]	723	728	186	721	125	304
Base Volume Adjustment Factor	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
Heavy Vehicles Percentage [%]	9.00	10.00	6.00	10.00	17.00	7.00
Growth Factor	1.0000	1.0130	1.0130	1.0000	1.0130	1.0130
In-Process Volume [veh/h]	23	0	28	5	0	32
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	18	0	0	12	0	0
Right Turn on Red Volume [veh/h]	0	553	0	0	0	494
Total Hourly Volume [veh/h]	1126	553	311	1099	190	0
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	324	159	89	316	55	0
Total Analysis Volume [veh/h]	1294	636	357	1263	218	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	14.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	6	6	5	2	4	0
Auxiliary Signal Groups		4,6				
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	10	4	10	6	0
Maximum Green [s]	40	40	20	40	20	0
Amber [s]	4.3	4.3	3.5	4.3	4.0	0.0
All red [s]	0.5	0.5	0.5	0.5	1.5	0.0
Split [s]	44	44	22	66	24	0
Vehicle Extension [s]	4.8	4.8	3.0	4.8	2.3	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	16	16	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.8	2.8	2.0	2.8	3.5	0.0
Minimum Recall	Yes	Yes	No	Yes	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.80	4.80	4.00	4.80	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.80	0.00	2.00	2.80	3.50	3.50
g_i, Effective Green Time [s]	43	63	18	65	15	15
g / C, Green / Cycle	0.47	0.70	0.20	0.72	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.27	0.43	0.21	0.26	0.14	0.00
s, saturation flow rate [veh/h]	4808	1464	1724	4767	1567	1526
c, Capacity [veh/h]	2279	1029	345	3425	262	255
d1, Uniform Delay [s]	11.28	1.04	33.01	0.57	36.28	0.00
k, delay calibration	0.50	0.50	0.38	0.50	0.09	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.03	2.79	51.60	0.31	6.01	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.57	0.62	1.04	0.37	0.83	0.00
d, Delay for Lane Group [s/veh]	12.31	3.82	84.61	0.87	42.28	0.00
Lane Group LOS	B	A	F	A	D	A
Critical Lane Group	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	3.86	1.41	11.48	0.34	4.98	0.00
50th-Percentile Queue Length [ft/ln]	96.62	35.30	286.90	8.46	124.53	0.00
95th-Percentile Queue Length [veh/ln]	6.96	2.54	17.34	0.61	8.64	0.00
95th-Percentile Queue Length [ft/ln]	173.91	63.54	433.50	15.23	216.04	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.31	3.82	84.61	0.87	42.28	0.00
Movement LOS	B	A	F	A	D	A
d_A, Approach Delay [s/veh]	9.51		19.33		42.28	
Approach LOS	A		B		D	
d_I, Intersection Delay [s/veh]	15.63					
Intersection LOS	B					
Intersection V/C	0.558					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	34.67
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	3.376
Crosswalk LOS	F	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	871	1360	411
d_b, Bicycle Delay [s]	14.34	4.61	28.40
l_b,int, Bicycle LOS Score for Intersection	2.925	2.451	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: OR 99E / 14th St

Control Type:	Signalized	Delay (sec / veh):	20.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.821

Intersection Setup

Name	OR 99E		OR 99E		14th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		14th St	
Base Volume Input [veh/h]	1015	29	180	671	41	254
Base Volume Adjustment Factor	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
Heavy Vehicles Percentage [%]	11.00	24.00	9.00	12.00	22.00	7.00
Growth Factor	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570
In-Process Volume [veh/h]	28	0	0	9	5	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	18	0	0	12	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	202
Total Hourly Volume [veh/h]	1569	47	285	1028	71	201
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	451	14	82	295	20	58
Total Analysis Volume [veh/h]	1803	54	328	1182	82	231
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	88.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	43	0	23	70	12	12
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	47	0	27	74	16	16
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	7	0	0	0	7	7
Pedestrian Clearance [s]	11	0	0	0	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	51	51	70	70	12	31
g / C, Green / Cycle	0.57	0.57	0.78	0.78	0.13	0.34
(v / s)_i Volume / Saturation Flow Rate	0.54	0.54	0.56	0.36	0.05	0.15
s, saturation flow rate [veh/h]	1735	1716	585	3275	1495	1526
c, Capacity [veh/h]	983	973	459	2547	199	525
d1, Uniform Delay [s]	9.77	9.97	30.82	0.00	35.77	22.80
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.48
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.02	19.79	9.20	0.61	0.83	2.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.95	0.72	0.46	0.41	0.44
d, Delay for Lane Group [s/veh]	27.79	29.77	40.02	0.61	36.60	25.34
Lane Group LOS	C	C	D	A	D	C
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	12.19	12.82	1.17	0.22	1.68	4.05
50th-Percentile Queue Length [ft/ln]	304.66	320.54	29.30	5.40	41.89	101.30
95th-Percentile Queue Length [veh/ln]	17.91	18.69	2.11	0.39	3.02	7.29
95th-Percentile Queue Length [ft/ln]	447.79	467.35	52.74	9.72	75.40	182.33

Movement, Approach, & Intersection Results

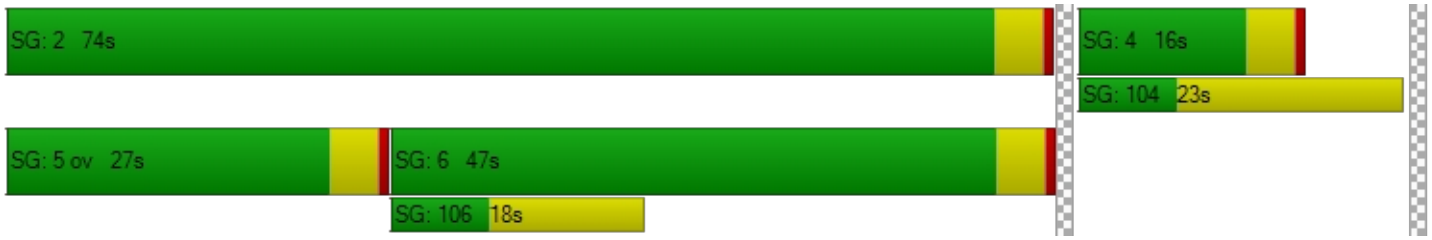
d_M, Delay for Movement [s/veh]	28.75	29.77	40.02	0.61	36.60	25.34
Movement LOS	C	C	D	A	D	C
d_A, Approach Delay [s/veh]	28.78		9.17		28.29	
Approach LOS	C		A		C	
d_I, Intersection Delay [s/veh]	20.69					
Intersection LOS	C					
Intersection V/C	0.821					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	737.92
d_p, Pedestrian Delay [s]	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.891	3.030	2.990
Crosswalk LOS	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	956	1556	267
d_b, Bicycle Delay [s]	12.28	2.22	33.80
l_b,int, Bicycle LOS Score for Intersection	3.092	2.805	1.560
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: OR 99E / 12th St

Control Type:	Signalized	Delay (sec / veh):	3.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.628

Intersection Setup

Name	OR 99E		OR 99E		12th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	175.00	100.00	100.00	120.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		12th St	
Base Volume Input [veh/h]	911	12	77	623	5	135
Base Volume Adjustment Factor	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
Heavy Vehicles Percentage [%]	13.00	8.00	9.00	13.00	0.00	7.00
Growth Factor	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570
In-Process Volume [veh/h]	28	0	0	14	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	18	0	0	12	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	108
Total Hourly Volume [veh/h]	1413	19	123	961	8	107
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	397	5	35	270	2	30
Total Analysis Volume [veh/h]	1588	21	138	1080	9	120
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		1		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	2		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	60.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	50	0	16	70	12	12
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	54	0	20	74	16	16
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	9	0	0	0	8	8
Pedestrian Clearance [s]	11	0	0	0	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	66	66	74	74	8	16
g / C, Green / Cycle	0.74	0.74	0.83	0.83	0.09	0.17
(v / s)_i Volume / Saturation Flow Rate	0.47	0.47	0.29	0.33	0.00	0.08
s, saturation flow rate [veh/h]	1705	1696	482	3246	1803	1526
c, Capacity [veh/h]	1255	1249	422	2676	156	267
d1, Uniform Delay [s]	0.23	0.23	0.46	0.00	37.72	33.26
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.52	2.57	2.06	0.45	0.09	0.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.64	0.64	0.33	0.40	0.06	0.45
d, Delay for Lane Group [s/veh]	2.75	2.80	2.52	0.45	37.81	34.05
Lane Group LOS	A	A	A	A	D	C
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.07	1.09	0.24	0.17	0.18	2.37
50th-Percentile Queue Length [ft/ln]	26.84	27.16	6.03	4.22	4.62	59.32
95th-Percentile Queue Length [veh/ln]	1.93	1.96	0.43	0.30	0.33	4.27
95th-Percentile Queue Length [ft/ln]	48.30	48.88	10.86	7.60	8.31	106.77

Movement, Approach, & Intersection Results

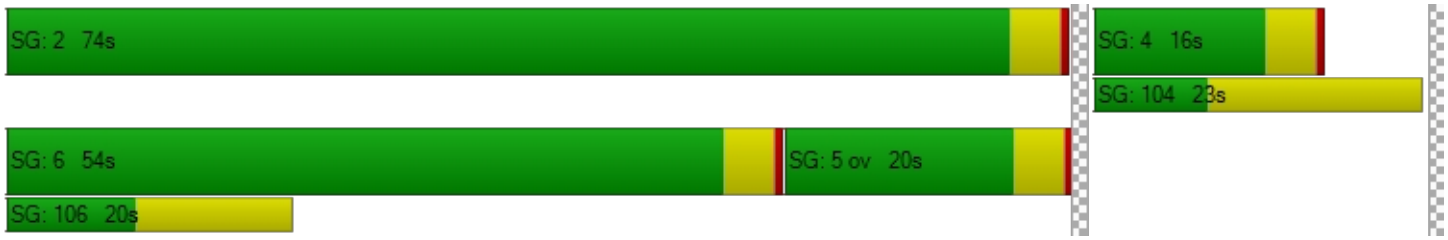
d_M, Delay for Movement [s/veh]	2.78	2.80	2.52	0.45	37.81	34.05
Movement LOS	A	A	A	A	D	C
d_A, Approach Delay [s/veh]	2.78		0.69		34.31	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	3.29					
Intersection LOS	A					
Intersection V/C	0.628					

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	10893.53	0.00	2587.68
d_p, Pedestrian Delay [s]	33.80	33.80	32.94
l_p,int, Pedestrian LOS Score for Intersection	2.787	2.890	2.390
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1111	1556	267
d_b, Bicycle Delay [s]	8.90	2.22	33.80
l_b,int, Bicycle LOS Score for Intersection	2.887	2.564	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: OR 99E / 10th St

Control Type:	Signalized	Delay (sec / veh):	5.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.572

Intersection Setup

Name	OR 99E		OR 99E		7th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	250.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		7th St	
Base Volume Input [veh/h]	696	12	169	444	16	211
Base Volume Adjustment Factor	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
Heavy Vehicles Percentage [%]	14.00	0.00	5.00	14.00	12.00	8.00
Growth Factor	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570
In-Process Volume [veh/h]	28	0	0	14	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	18	0	0	12	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	168
Total Hourly Volume [veh/h]	1090	19	268	692	25	167
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	306	5	75	194	7	47
Total Analysis Volume [veh/h]	1225	21	301	778	28	188
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		2	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	53.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	51	0	16	70	12	12
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	54	0	20	74	16	16
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	7	0	0	0	7	7
Pedestrian Clearance [s]	11	0	0	0	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	62	62	72	72	10	20
g / C, Green / Cycle	0.69	0.69	0.80	0.80	0.11	0.23
(v / s)_i Volume / Saturation Flow Rate	0.37	0.37	0.46	0.24	0.02	0.13
s, saturation flow rate [veh/h]	1690	1680	655	3217	1638	1500
c, Capacity [veh/h]	1157	1151	516	2564	187	340
d1, Uniform Delay [s]	1.48	1.48	4.84	0.00	35.92	30.77
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.33
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.80	1.83	4.78	0.31	0.22	4.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.54	0.54	0.58	0.30	0.15	0.55
d, Delay for Lane Group [s/veh]	3.27	3.31	9.61	0.31	36.14	35.03
Lane Group LOS	A	A	A	A	D	D
Critical Lane Group	No	Yes	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	1.51	1.52	0.68	0.11	0.56	3.94
50th-Percentile Queue Length [ft/ln]	37.87	38.07	17.10	2.72	14.02	98.53
95th-Percentile Queue Length [veh/ln]	2.73	2.74	1.23	0.20	1.01	7.09
95th-Percentile Queue Length [ft/ln]	68.16	68.52	30.79	4.90	25.24	177.35

Movement, Approach, & Intersection Results

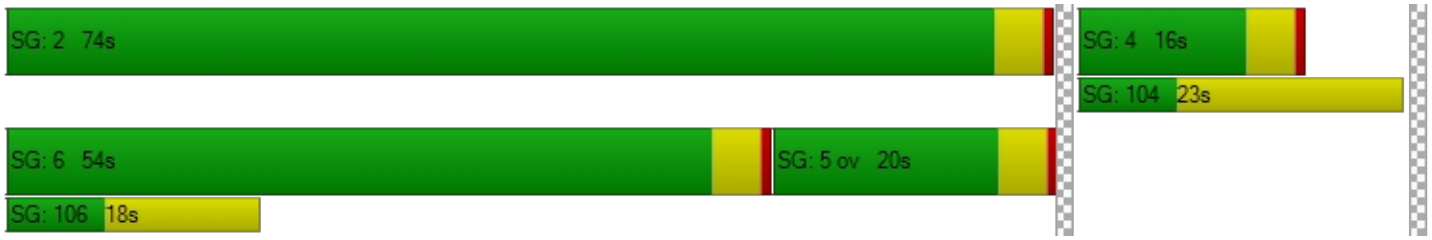
d_M, Delay for Movement [s/veh]	3.29	3.31	9.61	0.31	36.14	35.03
Movement LOS	A	A	A	A	D	D
d_A, Approach Delay [s/veh]	3.29		2.90		35.18	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	5.84					
Intersection LOS	A					
Intersection V/C	0.572					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.631	2.818	2.764
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1111	1556	267
d_b, Bicycle Delay [s]	8.89	2.22	33.83
l_b,int, Bicycle LOS Score for Intersection	2.588	2.450	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Washington St / Clackamas River Dr

Control Type:	Roundabout	Delay (sec / veh):	5.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Washington St		Washington St		Clackamas River Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Washington St		Washington St		Clackamas River Dr	
Base Volume Input [veh/h]	140	215	196	119	80	42
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	10.00	29.00	8.00	7.00	20.00	14.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	0	5	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	208	320	292	178	124	62
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	89	81	49	34	17
Total Analysis Volume [veh/h]	231	356	324	198	138	69
Pedestrian Volume [ped/h]	0		0		2	

Intersection Settings

Number of Conflicting Circulating Lanes	1		1		1	
Circulating Flow Rate [veh/h]	350		166		254	
Exiting Flow Rate [veh/h]	377		333		350	
Demand Flow Rate [veh/h]	208	320	292	178	124	62
Adjusted Demand Flow Rate [veh/h]	231	356	324	198	138	69

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	0.00	1380.00	1380.00
B (coefficient)	0.00102	0.00000	0.00102	0.00102
HV Adjustment Factor	0.83	0.78	0.93	0.85
Entry Flow Rate [veh/h]	280	0	562	245
Capacity of Entry and Bypass Lanes [veh/h]	966	129001	1166	1065
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	800	100000	1084	903
X, volume / capacity	0.29	0.00	0.48	0.23

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	1.20	0.00	2.69	0.88
95th-Percentile Queue Length [ft]	29.96	0.00	67.21	22.09
Approach Delay [s/veh]	3.06		8.79	6.32
Approach LOS	A		A	A
Intersection Delay [s/veh]	5.84			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 9: Washington St/ Prairie Schooner Way

Control Type:	Signalized	Delay (sec / veh):	8.5
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.551

Intersection Setup

Name	Washington St		Washington St		Prairie Schooner Way	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	0	1	0
Entry Pocket Length [ft]	100.00	100.00	150.00	100.00	165.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	No		Yes		Yes	

Volumes

Name	Washington St		Washington St		Prairie Schooner Way	
Base Volume Input [veh/h]	217	53	37	161	222	135
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	27.00	8.00	11.00	11.00	24.00	19.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	5	0	5	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	101
Total Hourly Volume [veh/h]	323	84	55	245	331	100
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	91	24	15	69	93	28
Total Analysis Volume [veh/h]	363	94	62	275	372	112
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	93
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	2	0	1	6	8	8
Auxiliary Signal Groups						1,8
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	8	0	4	8	4	4
Maximum Green [s]	30	0	20	30	30	30
Amber [s]	4.0	0.0	3.5	4.0	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	35	0	24	35	34	34
Vehicle Extension [s]	4.2	0.0	2.3	5.2	2.5	2.5
Walk [s]	8	0	0	0	7	7
Pedestrian Clearance [s]	24	0	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	0.0	2.0	2.5	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	29	29	29	29	29	29
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	0.00	2.50	2.00	0.00
g_i, Effective Green Time [s]	8	8	14	14	6	12
g / C, Green / Cycle	0.29	0.29	0.48	0.48	0.22	0.42
(v / s)_i Volume / Saturation Flow Rate	0.15	0.17	0.06	0.08	0.13	0.08
s, saturation flow rate [veh/h]	1495	1385	1071	3303	2848	1373
c, Capacity [veh/h]	430	398	764	1595	630	572
d1, Uniform Delay [s]	8.61	8.74	4.28	4.19	10.02	5.32
k, delay calibration	0.17	0.17	0.07	0.26	0.08	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.56	1.99	0.03	0.12	0.66	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.53	0.57	0.08	0.17	0.59	0.20
d, Delay for Lane Group [s/veh]	10.17	10.73	4.31	4.31	10.68	5.42
Lane Group LOS	B	B	A	A	B	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.94	0.98	0.08	0.21	0.76	0.23
50th-Percentile Queue Length [ft/ln]	23.39	24.52	2.12	5.26	19.11	5.74
95th-Percentile Queue Length [veh/ln]	1.68	1.77	0.15	0.38	1.38	0.41
95th-Percentile Queue Length [ft/ln]	42.11	44.13	3.82	9.47	34.39	10.33

Movement, Approach, & Intersection Results

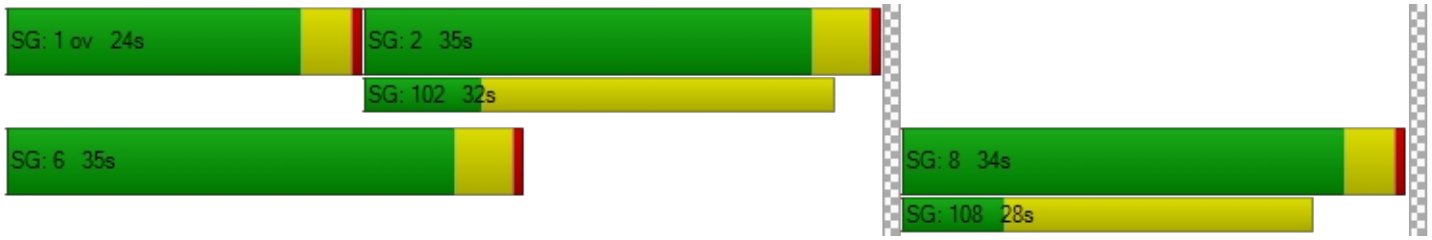
d_M, Delay for Movement [s/veh]	10.38	10.73	4.31	4.31	10.68	5.42
Movement LOS	B	B	A	A	B	A
d_A, Approach Delay [s/veh]	10.45		4.31		9.46	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	8.46					
Intersection LOS	A					
Intersection V/C	0.551					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	9131.44
d_p, Pedestrian Delay [s]	0.00	36.15	35.27
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.479	2.620
Crosswalk LOS	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	656	656	645
d_b, Bicycle Delay [s]	21.01	21.00	21.34
l_b,int, Bicycle LOS Score for Intersection	1.937	1.838	1.560
Bicycle LOS	A	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 10: Washington St / Home Depot-Site Access A

Control Type:	Signalized	Delay (sec / veh):	10.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.381

Intersection Setup

Name	Washington St			Washington St			Home Depot Dwy			Home Depot Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	335.00	100.00	330.00	250.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	470.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	370.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			Home Depot Dwy			Home Depot Dwy		
Base Volume Input [veh/h]	13	112	61	157	180	31	25	5	10	31	2	34
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	62.00	12.00	10.00	13.00	10.00	77.00	68.00	60.00	80.00	13.00	13.00	21.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	5	0	0	5	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	24	0	0	0	0	0	26
Total Hourly Volume [veh/h]	19	172	91	234	273	23	37	7	15	47	3	25
Peak Hour Factor	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	53	28	72	84	7	11	2	5	15	1	8
Total Analysis Volume [veh/h]	23	212	112	289	337	28	46	9	19	58	4	31
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			0			1		
v_di, Inbound Pedestrian Volume crossing m	1			0			0			1		
v_co, Outbound Pedestrian Volume crossing	1			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	134
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	10	0	4	10	0	0	8	0	0	6	0
Maximum Green [s]	30	60	0	30	60	0	0	30	0	0	20	0
Amber [s]	3.5	4.5	0.0	3.5	4.5	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	34	65	0	34	65	0	0	35	0	0	25	0
Vehicle Extension [s]	2.5	4.2	0.0	2.5	4.2	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	9	0	0	7	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	R
C, Cycle Length [s]	41	41	41	41	41	41	41	41	41
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	2.50	2.50	2.50
g_i, Effective Green Time [s]	21	10	10	21	15	15	11	11	11
g / C, Green / Cycle	0.50	0.24	0.24	0.50	0.37	0.37	0.26	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.04	0.10	0.10	0.23	0.10	0.04	0.11	0.05	0.02
s, saturation flow rate [veh/h]	604	1720	1497	1241	3332	633	662	1286	1347
c, Capacity [veh/h]	489	419	364	798	1242	236	283	509	355
d1, Uniform Delay [s]	5.25	13.02	13.11	6.34	8.98	8.45	13.07	11.66	11.39
k, delay calibration	0.17	0.17	0.17	0.08	0.17	0.17	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.06	0.95	1.22	0.21	0.18	0.34	0.36	0.08	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.40	0.43	0.36	0.27	0.12	0.26	0.12	0.09
d, Delay for Lane Group [s/veh]	5.31	13.96	14.33	6.54	9.16	8.79	13.43	11.74	11.47
Lane Group LOS	A	B	B	A	A	A	B	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.07	1.17	1.12	1.01	0.82	0.15	0.52	0.37	0.18
50th-Percentile Queue Length [ft/ln]	1.82	29.24	27.93	25.17	20.62	3.66	12.96	9.20	4.54
95th-Percentile Queue Length [veh/ln]	0.13	2.11	2.01	1.81	1.48	0.26	0.93	0.66	0.33
95th-Percentile Queue Length [ft/ln]	3.27	52.64	50.28	45.31	37.12	6.59	23.32	16.55	8.18

Movement, Approach, & Intersection Results

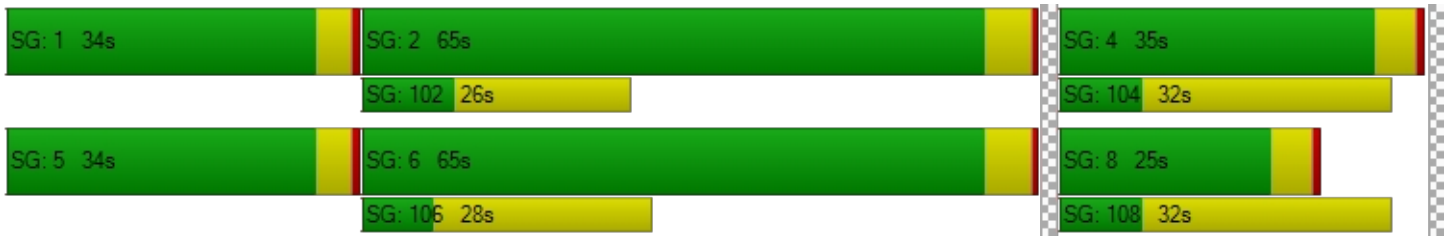
d_M, Delay for Movement [s/veh]	5.31	14.04	14.33	6.54	9.16	8.79	13.43	13.43	13.43	11.74	11.74	11.47
Movement LOS	A	B	B	A	A	A	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	13.56			7.99			13.43			11.65		
Approach LOS	B			A			B			B		
d_I, Intersection Delay [s/veh]	10.28											
Intersection LOS	B											
Intersection V/C	0.381											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	6392.80	0.00	0.00	1395.70
d_p, Pedestrian Delay [s]	55.54	55.54	56.45	54.63
l_p,int, Pedestrian LOS Score for Intersection	2.549	2.732	2.023	2.287
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	896	896	455	306
d_b, Bicycle Delay [s]	20.44	20.43	39.97	48.07
l_b,int, Bicycle LOS Score for Intersection	1.846	2.119	1.682	1.756
Bicycle LOS	A	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Washington St / Abernethy Rd

Control Type:	Signalized	Delay (sec / veh):	10.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.339

Intersection Setup

Name	Washington St			Washington St			17th St			17th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	115.00	100.00	225.00	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			30.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			17th St			17th St		
Base Volume Input [veh/h]	1	144	76	15	200	0	0	0	0	165	1	44
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	0.00	11.00	5.00	47.00	14.00	0.00	0.00	0.00	0.00	8.00	0.00	23.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	5	5	0	5	0	0	0	0	14	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	44	8	0	0	0	0	0	84	0	22
Right Turn on Red Volume [veh/h]	0	0	81	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	220	81	30	303	0	0	0	0	344	1	88
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	66	24	9	91	0	0	0	0	104	0	27
Total Analysis Volume [veh/h]	1	265	98	36	365	0	0	0	0	414	1	106
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			1			0			3		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	0	0	8	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	15	0	0	30	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	35	0	0	20	0	0	35	0
Vehicle Extension [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	16	0	0	8	0	0	13	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C
C, Cycle Length [s]	37	37	37	37	37	37	37	37
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	11	11	11	11	11	15	15	15
g / C, Green / Cycle	0.31	0.31	0.31	0.31	0.31	0.42	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.00	0.15	0.06	0.05	0.22	0.00	0.31	0.07
s, saturation flow rate [veh/h]	1033	1735	1518	712	1690	1900	1349	1581
c, Capacity [veh/h]	252	527	462	282	514	902	694	669
d1, Uniform Delay [s]	16.42	10.47	9.47	14.94	11.31	0.00	8.87	6.54
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.15	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.28	0.08	0.08	0.69	0.00	1.18	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.50	0.21	0.13	0.71	0.00	0.60	0.16
d, Delay for Lane Group [s/veh]	16.43	10.75	9.55	15.02	12.00	0.00	10.05	6.58
Lane Group LOS	B	B	A	B	B	A	B	A
Critical Lane Group	No	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.01	1.28	0.43	0.24	2.05	0.00	1.90	0.33
50th-Percentile Queue Length [ft/ln]	0.17	32.05	10.65	5.90	51.28	0.00	47.57	8.17
95th-Percentile Queue Length [veh/ln]	0.01	2.31	0.77	0.42	3.69	0.00	3.43	0.59
95th-Percentile Queue Length [ft/ln]	0.30	57.69	19.17	10.62	92.31	0.00	85.63	14.70

Movement, Approach, & Intersection Results

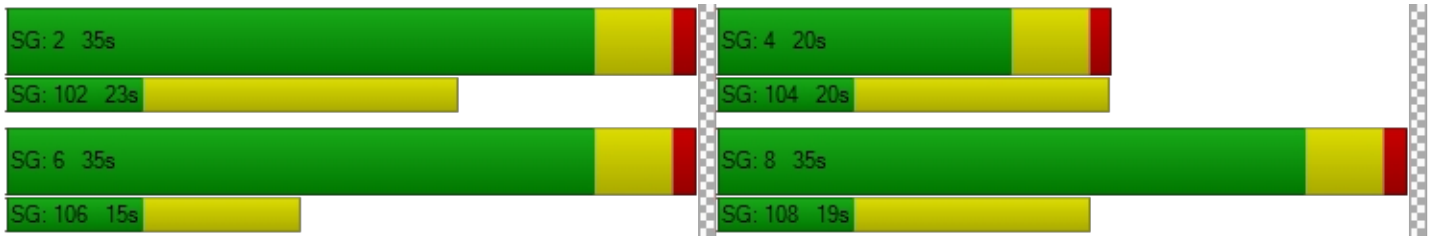
d_M, Delay for Movement [s/veh]	16.43	10.75	9.55	15.02	12.00	12.00	0.00	0.00	0.00	10.05	6.58	6.58
Movement LOS	B	B	A	B	B	B	A	A	A	B	A	A
d_A, Approach Delay [s/veh]	10.44			12.27			0.00			9.33		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	10.56											
Intersection LOS	B											
Intersection V/C	0.339											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	24.86	24.86	24.86	24.86
l_p,int, Pedestrian LOS Score for Intersection	3.169	2.177	1.703	2.257
Crosswalk LOS	C	B	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	857	857	429	857
d_b, Bicycle Delay [s]	11.43	11.43	21.61	11.45
l_b,int, Bicycle LOS Score for Intersection	2.294	2.221	1.560	2.419
Bicycle LOS	B	B	A	B

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: Washington St / 15th St

Control Type:	Signalized	Delay (sec / veh):	9.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.662

Intersection Setup

Name	Washington St			Washington St			15th St			15th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	260.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			15th St			15th St		
Base Volume Input [veh/h]	19	171	64	22	220	0	36	22	17	9	84	14
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.0000	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	11.00	11.00	3.00	9.00	12.00	2.00	3.00	0.00	24.00	11.00	5.00	7.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	0	5	18	9	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	29	255	95	33	333	18	63	33	25	14	125	21
Peak Hour Factor	0.8400	0.8400	0.8400	0.8400	0.8400	1.0000	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	76	28	10	99	5	19	10	7	4	37	6
Total Analysis Volume [veh/h]	35	304	113	39	396	18	75	39	30	17	149	25
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			3			1			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	35	0	0	35	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	19	54	0	19	54	0	0	39	0	0	39	0
Vehicle Extension [s]	2.3	4.1	0.0	2.3	4.1	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	9	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	28	28	28	28	28	28
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	10	15	10	5	5
g / C, Green / Cycle	0.54	0.36	0.54	0.36	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.03	0.25	0.04	0.24	0.08	0.11
s, saturation flow rate [veh/h]	1051	1644	1072	1705	1781	1790
c, Capacity [veh/h]	769	589	767	617	500	445
d1, Uniform Delay [s]	3.54	7.63	3.63	7.44	10.38	10.69
k, delay calibration	0.07	0.16	0.16	0.16	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	2.32	0.04	1.88	0.23	0.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.71	0.05	0.67	0.29	0.43
d, Delay for Lane Group [s/veh]	3.56	9.95	3.67	9.32	10.61	11.17
Lane Group LOS	A	A	A	A	B	B
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.03	1.52	0.03	1.42	0.58	0.80
50th-Percentile Queue Length [ft/ln]	0.64	37.90	0.84	35.49	14.40	20.08
95th-Percentile Queue Length [veh/ln]	0.05	2.73	0.06	2.56	1.04	1.45
95th-Percentile Queue Length [ft/ln]	1.16	68.22	1.52	63.88	25.92	36.15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3.56	9.95	9.95	3.67	9.32	9.32	10.61	10.61	10.61	11.17	11.17	11.17
Movement LOS	A	A	A	A	A	A	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	9.46			8.83			10.61			11.17		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	9.63											
Intersection LOS	A											
Intersection V/C	0.662											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	45.54	43.75	45.54	45.54
l_p,int, Pedestrian LOS Score for Intersection	2.266	2.334	1.916	1.935
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	893	893	625	625
d_b, Bicycle Delay [s]	17.19	17.19	26.48	26.47
l_b,int, Bicycle LOS Score for Intersection	2.305	2.307	1.797	1.875
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Washington St / 14th St

Control Type:	Signalized	Delay (sec / veh):	13.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.820

Intersection Setup

Name	Washington St			Washington St			14th St			14th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			14th St			14th St		
Base Volume Input [veh/h]	223	128	0	1	151	91	124	16	55	1	13	2
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	7.00	5.00	0.00	0.00	10.00	15.00	14.00	19.00	2.00	0.00	15.00	0.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	9	0	0	0	0	5	0	0	5	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	44	0	0	0
Total Hourly Volume [veh/h]	341	190	0	1	225	140	185	24	43	1	19	3
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	103	57	0	0	68	42	56	7	13	0	6	1
Total Analysis Volume [veh/h]	411	229	0	1	271	169	223	29	52	1	23	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			1			2			1		
v_di, Inbound Pedestrian Volume crossing m	1			2			1			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			2			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	35	0	0	35	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	19	54	0	19	54	0	0	39	0	0	39	0
Vehicle Extension [s]	2.3	4.1	0.0	2.3	4.1	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C
C, Cycle Length [s]	47	47	47	47	47	47	47
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	28	24	28	16	11	11	11
g / C, Green / Cycle	0.60	0.51	0.60	0.34	0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.34	0.13	0.00	0.27	0.19	0.03	0.02
s, saturation flow rate [veh/h]	1204	1825	1216	1628	1304	1589	1640
c, Capacity [veh/h]	721	939	878	550	446	369	459
d1, Uniform Delay [s]	7.50	6.41	3.92	14.29	17.10	14.49	14.26
k, delay calibration	0.46	0.16	0.16	0.16	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.00	0.20	0.00	4.01	0.84	0.13	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.57	0.24	0.00	0.80	0.57	0.14	0.06
d, Delay for Lane Group [s/veh]	10.49	6.61	3.92	18.30	17.94	14.61	14.30
Lane Group LOS	B	A	A	B	B	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.89	0.97	0.00	4.27	2.41	0.41	0.22
50th-Percentile Queue Length [ft/ln]	47.32	24.29	0.07	106.74	60.22	10.35	5.44
95th-Percentile Queue Length [veh/ln]	3.41	1.75	0.01	7.66	4.34	0.75	0.39
95th-Percentile Queue Length [ft/ln]	85.18	43.72	0.13	191.45	108.40	18.63	9.79

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.49	6.61	6.61	3.92	18.30	18.30	17.94	17.94	14.61	14.30	14.30	14.30
Movement LOS	B	A	A	A	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	9.10			18.27			17.37			14.30		
Approach LOS	A			B			B			B		
d_I, Intersection Delay [s/veh]	13.84											
Intersection LOS	B											
Intersection V/C	0.820											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	6727.24
d_p, Pedestrian Delay [s]	45.54	45.54	45.54	45.54
l_p,int, Pedestrian LOS Score for Intersection	2.280	2.511	2.619	1.750
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	893	893	625	625
d_b, Bicycle Delay [s]	17.17	17.18	26.47	26.47
l_b,int, Bicycle LOS Score for Intersection	2.616	2.287	2.134	1.606
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Washington St / 12th St

Control Type:	Signalized	Delay (sec / veh):	9.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.625

Intersection Setup

Name	Washington St			Washington St			12th St			12th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			12th St			12th St		
Base Volume Input [veh/h]	104	335	2	8	180	16	9	15	43	0	17	4
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	10.00	7.00	0.00	25.00	7.00	6.00	0.00	7.00	5.00	0.00	6.00	0.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	9	0	0	5	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	155	508	3	12	273	24	14	22	64	0	25	6
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	155	1	4	83	7	4	7	20	0	8	2
Total Analysis Volume [veh/h]	189	620	4	15	333	29	17	27	78	0	30	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			1			1			1		
v_di, Inbound Pedestrian Volume crossing m	1			1			1			0		
v_co, Outbound Pedestrian Volume crossing	2			2			1			2		
v_ci, Inbound Pedestrian Volume crossing mi	1			2			2			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			1			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	98
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	15	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	19	55	0	19	55	0	0	19	0	0	24	0
Vehicle Extension [s]	2.3	5.2	0.0	2.3	5.2	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	12	0	0	12	0	0	12	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	35	35	35	35	35	35
L, Total Lost Time per Cycle [s]	4.80	4.80	4.80	4.80	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.80	0.00	2.80	2.00	2.00
g_i, Effective Green Time [s]	22	17	22	14	4	4
g / C, Green / Cycle	0.62	0.49	0.62	0.41	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.17	0.35	0.02	0.20	0.08	0.04
s, saturation flow rate [veh/h]	1130	1793	747	1766	1621	976
c, Capacity [veh/h]	863	882	578	726	322	172
d1, Uniform Delay [s]	3.30	6.93	3.82	7.64	14.44	13.65
k, delay calibration	0.07	0.26	0.26	0.26	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.08	2.47	0.04	1.25	0.54	0.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.22	0.71	0.03	0.50	0.38	0.21
d, Delay for Lane Group [s/veh]	3.37	9.40	3.86	8.89	14.98	14.11
Lane Group LOS	A	A	A	A	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.23	2.78	0.02	1.65	0.82	0.24
50th-Percentile Queue Length [ft/ln]	5.86	69.60	0.55	41.16	20.40	6.05
95th-Percentile Queue Length [veh/ln]	0.42	5.01	0.04	2.96	1.47	0.44
95th-Percentile Queue Length [ft/ln]	10.54	125.29	1.00	74.08	36.71	10.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3.37	9.40	9.40	3.86	8.89	8.89	14.98	14.98	14.98	14.11	14.11	14.11
Movement LOS	A	A	A	A	A	A	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	8.00			8.69			14.98			14.11		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	8.99											
Intersection LOS	A											
Intersection V/C	0.625											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	2257.74	2013.06	1987.88	7320.36
d_p, Pedestrian Delay [s]	38.62	38.62	38.62	38.62
l_p,int, Pedestrian LOS Score for Intersection	2.276	2.245	1.995	1.764
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1024	1024	306	408
d_b, Bicycle Delay [s]	11.66	11.66	35.15	31.06
l_b,int, Bicycle LOS Score for Intersection	2.901	2.182	1.761	1.621
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: Washington St/7th St

Control Type:	Signalized	Delay (sec / veh):	18.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.781

Intersection Setup

Name	Washington St			Washington St			7th St			Molalla Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	270.00	45.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			7th St			Molalla Ave		
Base Volume Input [veh/h]	108	196	11	86	101	14	0	220	31	0	285	202
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.0000	1.4100	1.4100	1.0000	1.4100	1.4100
Heavy Vehicles Percentage [%]	6.00	8.00	9.00	9.00	4.00	7.00	2.00	2.00	10.00	2.00	4.00	8.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	9	0	0	5	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	24	0	0	151
Total Hourly Volume [veh/h]	161	301	17	128	155	21	0	328	23	0	425	150
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	1.0000	0.8300	0.8300	1.0000	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	91	5	39	47	6	0	99	7	0	128	45
Total Analysis Volume [veh/h]	194	363	20	154	187	25	0	395	28	0	512	181
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			2			2			0		
v_di, Inbound Pedestrian Volume crossing m	0			2			2			0		
v_co, Outbound Pedestrian Volume crossing	4			3			3			3		
v_ci, Inbound Pedestrian Volume crossing mi	3			3			4			3		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			1			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	142
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap
Signal Group	0	8	0	0	4	0	0	2	0	0	6	6
Auxiliary Signal Groups												4,6
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	10	0	0	10	10
Maximum Green [s]	0	40	0	0	40	0	0	50	0	0	50	50
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	3.5
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.5
Split [s]	0	44	0	0	44	0	0	54	0	0	54	54
Vehicle Extension [s]	0.0	2.5	0.0	0.0	2.5	0.0	0.0	4.7	0.0	0.0	4.7	4.7
Walk [s]	0	7	0	0	7	0	0	7	0	0	9	9
Pedestrian Clearance [s]	0	11	0	0	10	0	0	10	0	0	11	11
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
Minimum Recall		No			No			Yes			Yes	Yes
Maximum Recall		No			No			No			No	No
Pedestrian Recall		No			No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	56	56	56	56	56	56	56	56
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	15	15	10	10	20	20	20	33
g / C, Green / Cycle	0.26	0.26	0.17	0.17	0.35	0.35	0.35	0.60
(v / s)_i Volume / Saturation Flow Rate	0.11	0.22	0.09	0.12	0.21	0.02	0.28	0.12
s, saturation flow rate [veh/h]	1724	1764	1681	1797	1870	1460	1840	1487
c, Capacity [veh/h]	449	459	288	308	662	517	651	886
d1, Uniform Delay [s]	17.27	19.58	21.17	21.80	14.82	11.91	16.20	5.17
k, delay calibration	0.08	0.08	0.08	0.08	0.20	0.20	0.20	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.49	3.04	1.14	2.03	1.61	0.08	3.93	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.83	0.53	0.69	0.60	0.05	0.79	0.20
d, Delay for Lane Group [s/veh]	17.76	22.61	22.31	23.84	16.43	11.99	20.13	5.26
Lane Group LOS	B	C	C	C	B	B	C	A
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.99	4.70	1.78	2.57	3.98	0.22	5.77	0.71
50th-Percentile Queue Length [ft/ln]	49.69	117.49	44.51	64.22	99.54	5.54	144.32	17.83
95th-Percentile Queue Length [veh/ln]	3.58	8.25	3.20	4.62	7.17	0.40	9.71	1.28
95th-Percentile Queue Length [ft/ln]	89.45	206.37	80.12	115.59	179.17	9.97	242.83	32.09

Movement, Approach, & Intersection Results

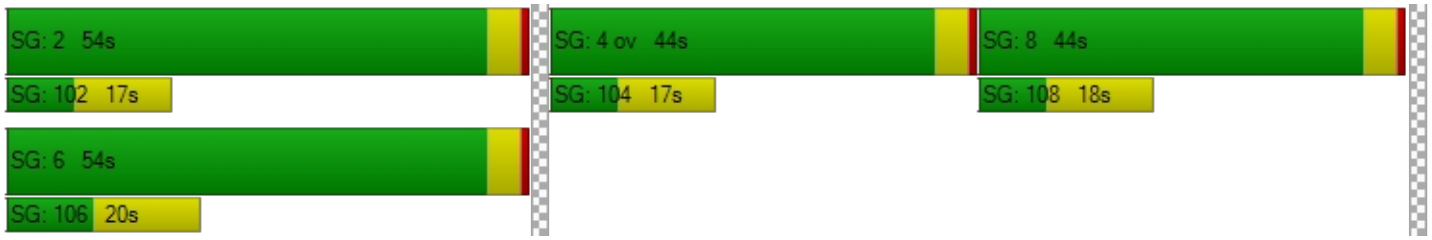
d_M, Delay for Movement [s/veh]	17.76	22.61	22.61	22.31	23.84	23.84	0.00	16.43	11.99	0.00	20.13	5.26
Movement LOS	B	C	C	C	C	C		B	B		C	A
d_A, Approach Delay [s/veh]	20.98			23.20			16.14			16.25		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	18.79											
Intersection LOS	B											
Intersection V/C	0.781											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	753.92	456.27	1338.64	0.00
d_p, Pedestrian Delay [s]	60.43	58.60	60.43	60.43
l_p,int, Pedestrian LOS Score for Intersection	2.319	2.306	2.426	2.712
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	563	563	704	704
d_b, Bicycle Delay [s]	36.63	36.65	29.82	29.83
l_b,int, Bicycle LOS Score for Intersection	2.512	2.164	2.297	2.952
Bicycle LOS	B	B	B	C

Sequence

Ring 1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: S Redland Rd/Abernethy Rd

Control Type:	Signalized	Delay (sec / veh):	27.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.759

Intersection Setup

Name	S Redland Rd			S Redland Rd			17th St			Holocomb Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	125.00	100.00	100.00	330.00	100.00	250.00	120.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
Speed [mph]	30.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Redland Rd			S Redland Rd			17th St			Holocomb Blvd		
Base Volume Input [veh/h]	98	378	22	97	271	26	20	40	45	25	89	191
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.0000	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	11.00	8.00	9.00	4.00	11.00	2.00	45.00	10.00	24.00	0.00	7.00	5.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	5	4	0	0	1	9	5	5	5	0	5	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	49	0	0	0	0	13	10	20	22	0	44	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	25	0	0	0	0	0	142
Total Hourly Volume [veh/h]	200	567	33	145	405	24	45	84	94	37	181	142
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	1.0000	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	55	156	9	40	111	6	12	23	26	10	50	39
Total Analysis Volume [veh/h]	220	623	36	159	445	24	49	92	103	41	199	156
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	13.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	0
Maximum Green [s]	30	45	0	30	45	0	30	35	0	20	30	0
Amber [s]	3.5	4.7	0.0	3.5	4.7	0.0	3.5	4.0	0.0	3.5	4.7	0.0
All red [s]	0.5	0.7	0.0	0.5	0.7	0.0	0.5	0.5	0.0	0.5	0.7	0.0
Split [s]	34	51	0	34	51	0	34	40	0	24	36	0
Vehicle Extension [s]	2.3	4.5	0.0	2.3	4.5	0.0	2.3	2.3	0.0	2.3	2.3	0.0
Walk [s]	0	7	0	5	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	10	24	0	0	22	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.4	0.0	2.0	3.4	0.0	2.0	2.5	0.0	2.0	3.4	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	4.00	5.40	4.00	5.40	5.40	4.00	4.50	4.00	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.40	2.00	3.40	3.40	2.00	2.50	2.00	3.40	3.40
g_i, Effective Green Time [s]	11	30	8	27	27	3	12	2	10	10
g / C, Green / Cycle	0.16	0.43	0.11	0.38	0.38	0.04	0.17	0.03	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.13	0.37	0.09	0.26	0.02	0.04	0.12	0.02	0.11	0.10
s, saturation flow rate [veh/h]	1652	1763	1752	1735	1589	1166	1601	1810	1795	1530
c, Capacity [veh/h]	265	755	202	664	608	52	270	57	257	219
d1, Uniform Delay [s]	28.37	18.22	30.05	17.88	13.50	33.27	27.45	33.47	28.80	28.47
k, delay calibration	0.07	0.21	0.07	0.19	0.19	0.07	0.07	0.07	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.15	6.21	4.22	2.02	0.05	34.65	2.24	9.74	3.07	2.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.87	0.79	0.67	0.04	0.95	0.72	0.72	0.77	0.71
d, Delay for Lane Group [s/veh]	32.51	24.43	34.27	19.90	13.54	67.91	29.69	43.21	31.87	31.09
Lane Group LOS	C	C	C	B	B	E	C	D	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.69	9.91	2.65	5.52	0.22	1.29	3.10	0.82	3.28	2.53
50th-Percentile Queue Length [ft/ln]	92.34	247.69	66.13	137.99	5.43	32.35	77.44	20.48	82.04	63.32
95th-Percentile Queue Length [veh/ln]	6.65	15.07	4.76	9.37	0.39	2.33	5.58	1.47	5.91	4.56
95th-Percentile Queue Length [ft/ln]	166.22	376.74	119.03	234.32	9.77	58.22	139.39	36.87	147.67	113.97

Movement, Approach, & Intersection Results

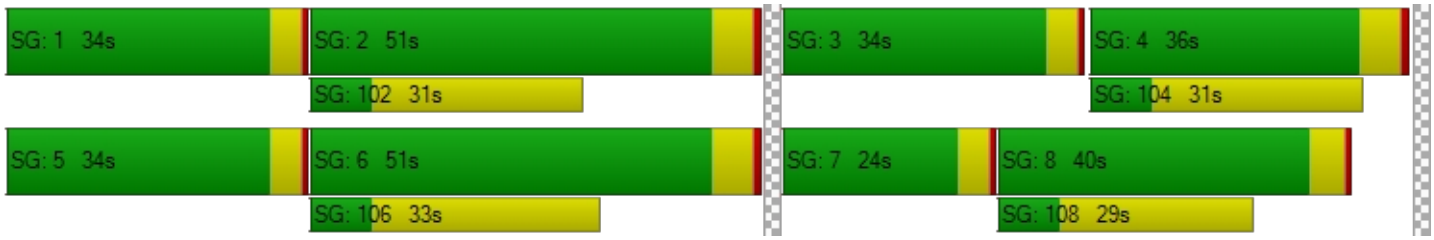
d_M, Delay for Movement [s/veh]	32.51	24.43	24.43	34.27	19.90	13.54	67.91	29.69	29.69	43.21	31.87	31.09
Movement LOS	C	C	C	C	B	B	E	C	C	D	C	C
d_A, Approach Delay [s/veh]	26.46			23.29			37.37			32.74		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	27.93											
Intersection LOS	C											
Intersection V/C	0.759											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	66.89	66.89	66.89	66.89
l_p,int, Pedestrian LOS Score for Intersection	2.443	2.783	2.330	2.560
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	588	588	458	395
d_b, Bicycle Delay [s]	38.61	38.61	46.07	49.95
l_b,int, Bicycle LOS Score for Intersection	3.010	2.637	1.962	2.447
Bicycle LOS	C	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: S Anchor Way / S Redland Rd

Control Type:	Two-way stop	Delay (sec / veh):	53.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.569

Intersection Setup

Name	S Redland Rd		S Redland Rd		S Anchor Way	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	S Redland Rd		S Redland Rd		S Anchor Way	
Base Volume Input [veh/h]	31	429	195	139	50	11
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	3.00	11.00	21.00	2.00	4.00	9.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	9	6	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	47	648	297	207	75	17
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	188	86	60	22	5
Total Analysis Volume [veh/h]	55	753	345	241	87	20
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			Yes
Storage Area [veh]	0	0	1
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.01	0.00	0.00	0.57	0.03
d_M, Delay for Movement [s/veh]	8.88	0.00	0.00	0.00	53.07	35.73
Movement LOS	A	A	A	A	F	E
95th-Percentile Queue Length [veh/ln]	0.18	0.18	0.00	0.00	3.17	3.17
95th-Percentile Queue Length [ft/ln]	4.43	4.43	0.00	0.00	79.29	79.29
d_A, Approach Delay [s/veh]	0.60		0.00		49.83	
Approach LOS	A		A		E	
d_I, Intersection Delay [s/veh]	3.88					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 18: Holly Ln / S Redland Rd

Control Type:	Two-way stop	Delay (sec / veh):	40.3
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.642

Intersection Setup

Name	S Holly Ln		S Redland Rd		S Redland Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	S Holly Ln		S Redland Rd		S Redland Rd	
Base Volume Input [veh/h]	96	8	170	31	7	352
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	9.00	0.00	18.00	23.00	14.00	9.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	6	0	0	9
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	143	12	260	47	11	533
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	4	76	14	3	157
Total Analysis Volume [veh/h]	168	14	306	55	13	627
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	Yes		
Storage Area [veh]	1	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.64	0.02	0.00	0.00	0.01	0.01
d_M, Delay for Movement [s/veh]	40.30	31.60	0.00	0.00	8.21	0.00
Movement LOS	E	D	A	A	A	A
95th-Percentile Queue Length [veh/ln]	4.21	4.21	0.00	0.00	0.03	0.03
95th-Percentile Queue Length [ft/ln]	105.23	105.23	0.00	0.00	0.87	0.87
d_A, Approach Delay [s/veh]	39.63		0.00		0.17	
Approach LOS	E		A		A	
d_I, Intersection Delay [s/veh]	6.19					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 19: I 205 SB-Ramp / OR 213

Control Type:	Two-way stop	Delay (sec / veh):	1,220.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.887

Intersection Setup

Name	OR 213		Washington St		Washington Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	OR 213		Washington St		Washington Dr	
Base Volume Input [veh/h]	744	37	22	7	15	0
Base Volume Adjustment Factor	1.3900	1.0000	1.0000	1.0000	1.0000	1.2500
Heavy Vehicles Percentage [%]	10.00	5.00	32.00	14.00	7.00	10.00
Growth Factor	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	27	0	0	0	0	0
Total Hourly Volume [veh/h]	1061	39	23	7	16	0
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	288	11	6	2	4	0
Total Analysis Volume [veh/h]	1153	42	25	8	17	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.75	0.00	0.00	0.00	1.89	0.00
d_M, Delay for Movement [s/veh]	14.16	0.00	0.00	0.00	1220.28	0.00
Movement LOS	B	A	A	A	F	
95th-Percentile Queue Length [veh/ln]	7.88	0.00	0.00	0.00	3.07	0.00
95th-Percentile Queue Length [ft/ln]	197.12	0.00	0.00	0.00	76.83	0.00
d_A, Approach Delay [s/veh]	13.67		0.00		1220.28	
Approach LOS	B		A		F	
d_I, Intersection Delay [s/veh]	29.78					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 20: OR 213 / Clackamas River Dr

Control Type:	Signalized	Delay (sec / veh):	26.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.966

Intersection Setup

Name	OR 213			OR 213			Prairie Schooner Way			Clackamas River Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	450.00	100.00	100.00	415.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			Yes			Yes			Yes		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	OR 213			OR 213			Prairie Schooner Way			Clackamas River Dr		
Base Volume Input [veh/h]	0	1937	128	0	1244	357	0	0	85	0	0	412
Base Volume Adjustment Factor	1.0000	1.3900	1.3900	1.0000	1.3900	1.3900	1.0000	1.0000	1.3900	1.0000	1.0000	1.3900
Heavy Vehicles Percentage [%]	2.00	8.00	18.00	2.00	8.00	18.00	2.00	2.00	7.00	2.00	2.00	21.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	26	5	0	56	0	0	0	5	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	27	0	0	14	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	193	0	0	524	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	2745	0	0	1799	0	0	0	130	0	0	606
Peak Hour Factor	1.0000	0.8900	0.8900	1.0000	0.8900	0.8900	1.0000	1.0000	0.8900	1.0000	1.0000	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	771	0	0	505	0	0	0	37	0	0	170
Total Analysis Volume [veh/h]	0	3084	0	0	2021	0	0	0	146	0	0	681
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	0	1	0	0	5
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	0	4	0	0	4
Maximum Green [s]	0	96	0	0	96	0	0	0	26	0	0	31
Amber [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	0.0	3.5	0.0	0.0	3.5
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.5	0.0	0.0	0.5
Split [s]	0	44	0	0	44	0	0	0	30	0	0	79
Vehicle Extension [s]	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	2.3	0.0	0.0	2.3
Walk [s]	0	0	0	0	0	0	0	0	7	0	0	7
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	15	0	0	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0
Minimum Recall		Yes			Yes				No			No
Maximum Recall		No			No				No			No
Pedestrian Recall		No			No				No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	R	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	81	81	111	111	9	39
g / C, Green / Cycle	0.62	0.62	0.85	0.85	0.07	0.30
(v / s)_i Volume / Saturation Flow Rate	0.64	0.00	0.42	0.00	0.05	0.29
s, saturation flow rate [veh/h]	4849	1385	4849	1385	2700	2384
c, Capacity [veh/h]	3007	859	4138	1182	188	722
d1, Uniform Delay [s]	11.26	0.00	2.40	0.00	59.47	44.21
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	23.39	0.00	0.41	0.00	4.18	4.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.03	0.00	0.49	0.00	0.78	0.94
d, Delay for Lane Group [s/veh]	34.65	0.00	2.81	0.00	63.66	48.80
Lane Group LOS	F	A	A	A	E	D
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	12.73	0.00	1.63	0.00	2.48	11.07
50th-Percentile Queue Length [ft/ln]	318.35	0.00	40.69	0.00	61.99	276.81
95th-Percentile Queue Length [veh/ln]	18.95	0.00	2.93	0.00	4.46	16.53
95th-Percentile Queue Length [ft/ln]	473.87	0.00	73.24	0.00	111.59	413.24

Movement, Approach, & Intersection Results

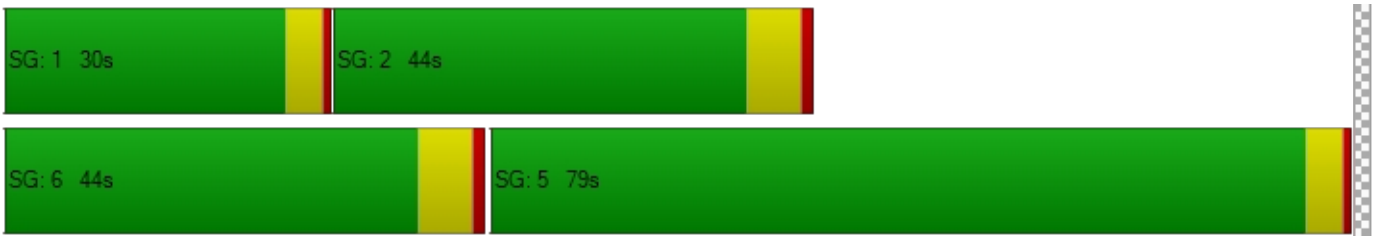
d_M, Delay for Movement [s/veh]	0.00	34.65	0.00	0.00	2.81	0.00	0.00	0.00	63.66	0.00	0.00	48.80
Movement LOS		F	A		A	A			E			D
d_A, Approach Delay [s/veh]	34.65			2.81			63.66			48.80		
Approach LOS	C			A			E			D		
d_I, Intersection Delay [s/veh]	26.14											
Intersection LOS	C											
Intersection V/C	0.966											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	38.0	38.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	32.55	32.55
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.291	2.221
Crosswalk LOS	F	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	585	585	400	1154
d_b, Bicycle Delay [s]	32.55	32.55	41.60	11.63
l_b,int, Bicycle LOS Score for Intersection	3.362	2.959	1.560	1.560
Bicycle LOS	C	C	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: OR 213 / S Redland Rd

Control Type:	Signalized	Delay (sec / veh):	50.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.047

Intersection Setup

Name	OR 213		OR 213		S Redland Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	350.00	100.00	100.00	100.00	335.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		40.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		Yes		Yes	
Crosswalk	Yes		No		Yes	

Volumes

Name	OR 213		OR 213		S Redland Rd	
Base Volume Input [veh/h]	63	1590	993	333	492	77
Base Volume Adjustment Factor	1.3900	1.3900	1.3900	1.3900	1.3900	1.3900
Heavy Vehicles Percentage [%]	19.00	8.00	9.00	8.00	8.00	10.00
Growth Factor	1.0570	1.0000	1.0000	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	10	31	61	0	0	9
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	27	14	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	245	0	61
Total Hourly Volume [veh/h]	103	2268	1455	244	723	61
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	637	409	69	203	17
Total Analysis Volume [veh/h]	116	2548	1635	274	812	69
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	22.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Overlap	Permissive	Overlap
Signal Group	1	6	2	2	8	8
Auxiliary Signal Groups				2,8		1,8
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	6	6
Maximum Green [s]	16	94	74	74	28	28
Amber [s]	3.5	5.0	5.0	5.0	3.0	3.0
All red [s]	0.5	1.0	1.0	1.0	0.7	0.7
Split [s]	20	98	78	78	32	32
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	5	5	5
Pedestrian Clearance [s]	0	10	10	10	10	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	4.0	1.7	1.7
Minimum Recall	No	Yes	Yes	Yes	No	No
Maximum Recall	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	3.70	3.70	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	0.00	1.70	0.00
g_i, Effective Green Time [s]	12	92	76	111	28	44
g / C, Green / Cycle	0.09	0.71	0.59	0.85	0.22	0.34
(v / s)_i Volume / Saturation Flow Rate	0.08	0.75	0.49	0.18	0.25	0.05
s, saturation flow rate [veh/h]	1538	3389	3360	1513	3292	1487
c, Capacity [veh/h]	139	2399	1972	1287	716	500
d1, Uniform Delay [s]	58.21	19.00	10.11	0.11	50.88	30.04
k, delay calibration	0.14	0.50	0.50	0.50	0.14	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.59	37.51	4.20	0.38	65.54	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.33	1.16	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	1.06	0.83	0.21	1.13	0.14
d, Delay for Lane Group [s/veh]	73.79	56.51	14.31	0.49	116.43	30.17
Lane Group LOS	E	F	B	A	F	C
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.22	39.33	7.44	0.16	17.92	1.51
50th-Percentile Queue Length [ft/ln]	105.52	983.16	186.07	4.04	448.07	37.78
95th-Percentile Queue Length [veh/ln]	7.59	52.38	11.92	0.29	26.59	2.72
95th-Percentile Queue Length [ft/ln]	189.76	1309.50	297.92	7.27	664.65	68.01

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	73.79	56.51	14.31	0.49	116.43	30.17
Movement LOS	E	F	B	A	F	C
d_A, Approach Delay [s/veh]	57.26		12.32		109.67	
Approach LOS	E		B		F	
d_I, Intersection Delay [s/veh]	50.00					
Intersection LOS	D					
Intersection V/C	1.047					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	0.00	56.31
l_p,int, Pedestrian LOS Score for Intersection	3.902	0.000	2.749
Crosswalk LOS	D	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1415	1108	435
d_b, Bicycle Delay [s]	5.55	12.94	39.78
l_b,int, Bicycle LOS Score for Intersection	3.757	3.337	1.560
Bicycle LOS	D	C	A

Sequence

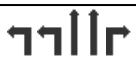
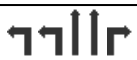
Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: OR 213 / Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	63.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.883

Intersection Setup

Name	OR 213			OR 213			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	2	0	1	2	0	0	2	0	1
Entry Pocket Length [ft]	530.00	100.00	580.00	600.00	100.00	525.00	500.00	100.00	100.00	160.00	100.00	465.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 213			OR 213			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	88	751	64	214	477	400	255	136	36	59	257	533
Base Volume Adjustment Factor	1.3700	1.3700	1.3700	1.3700	1.3700	1.3700	1.3700	1.3700	1.3700	1.3700	1.3700	1.3700
Heavy Vehicles Percentage [%]	10.00	8.00	3.00	5.00	12.00	7.00	13.00	10.00	22.00	2.00	2.00	4.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	23	6	18	9	42	12	19	0	2	20	6
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	27	0	0	14	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	50	0	0	311	0	0	0	0	0	389
Total Hourly Volume [veh/h]	128	1079	49	328	676	310	381	216	52	88	392	389
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	278	13	85	174	80	98	56	13	23	101	100
Total Analysis Volume [veh/h]	132	1112	51	338	697	320	393	223	54	91	404	401
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			1			0		
v_di, Inbound Pedestrian Volume crossing m	1			0			1			0		
v_co, Outbound Pedestrian Volume crossing	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	142
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	0
Maximum Green [s]	15	40	0	32	40	0	38	30	0	15	20	0
Amber [s]	4.0	5.0	0.0	4.0	5.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.5	2.0	0.0	1.5	2.0	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	21	47	0	38	47	0	44	36	0	21	26	0
Vehicle Extension [s]	2.3	4.7	0.0	2.3	4.7	0.0	2.3	2.3	0.0	2.3	2.3	0.0
Walk [s]	0	8	0	0	9	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	31	0	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.5	5.0	0.0	3.5	5.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	113	113	113	113	113	113	113	113	113	113	113	113
L, Total Lost Time per Cycle [s]	5.50	7.00	7.00	5.50	7.00	7.00	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	5.00	5.00	3.50	5.00	5.00	3.50	3.50	3.50	3.50	3.50	3.50
g_i, Effective Green Time [s]	11	40	40	14	43	43	17	32	32	5	20	20
g / C, Green / Cycle	0.10	0.35	0.35	0.12	0.38	0.38	0.15	0.28	0.28	0.04	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.08	0.33	0.03	0.10	0.21	0.21	0.12	0.08	0.08	0.03	0.11	0.26
s, saturation flow rate [veh/h]	1667	3389	1577	3375	3275	1506	3153	1750	1632	3459	3560	1543
c, Capacity [veh/h]	159	1183	550	410	1229	565	462	491	458	146	627	272
d1, Uniform Delay [s]	50.47	35.81	24.87	48.70	28.16	28.05	47.25	32.01	32.03	53.50	43.47	46.64
k, delay calibration	0.07	0.20	0.20	0.07	0.20	0.22	0.07	0.07	0.07	0.07	0.07	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.77	7.54	0.13	2.64	0.77	1.84	2.82	0.20	0.21	2.66	0.68	232.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.94	0.09	0.82	0.57	0.57	0.85	0.29	0.29	0.62	0.64	1.48
d, Delay for Lane Group [s/veh]	57.24	43.35	25.00	51.34	28.93	29.89	50.06	32.20	32.24	56.16	44.15	279.40
Lane Group LOS	E	D	C	D	C	C	D	C	C	E	D	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.97	15.82	0.95	4.81	7.57	7.09	5.52	3.07	2.89	1.32	5.26	25.08
50th-Percentile Queue Length [ft/ln]	99.27	395.38	23.72	120.16	189.16	177.21	137.97	76.66	72.14	32.96	131.51	627.10
95th-Percentile Queue Length [veh/ln]	7.15	22.34	1.71	8.40	12.08	11.45	9.37	5.52	5.19	2.37	9.02	39.16
95th-Percentile Queue Length [ft/ln]	178.69	558.43	42.70	210.05	301.93	286.36	234.29	137.99	129.85	59.33	225.55	979.07

Movement, Approach, & Intersection Results

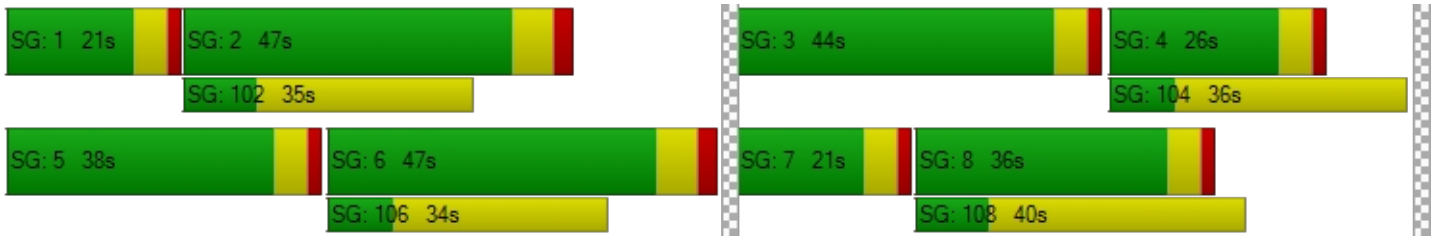
d_M, Delay for Movement [s/veh]	57.24	43.35	25.00	51.34	28.93	29.89	50.06	32.22	32.24	56.16	44.15	279.40
Movement LOS	E	D	C	D	C	C	D	C	C	E	D	F
d_A, Approach Delay [s/veh]	44.05			34.75			42.69			150.66		
Approach LOS	D			C			D			F		
d_I, Intersection Delay [s/veh]	63.50											
Intersection LOS	E											
Intersection V/C	0.883											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	13.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	4535.02	0.00	4595.91	0.00
d_p, Pedestrian Delay [s]	58.60	59.51	58.60	59.51
l_p,int, Pedestrian LOS Score for Intersection	2.900	3.609	2.822	3.485
Crosswalk LOS	C	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	563	563	430	289
d_b, Bicycle Delay [s]	36.63	36.65	43.78	52.01
l_b,int, Bicycle LOS Score for Intersection	2.669	2.934	2.112	2.620
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 23: OR 213 / Molalla Ave

Control Type:	Signalized	Delay (sec / veh):	26.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.577

Intersection Setup

Name	OR 213			OR 213			Molalla Ave			S Douglas Loop		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	650.00	100.00	100.00	525.00	100.00	355.00	100.00	100.00	100.00	275.00	100.00	275.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 213			OR 213			Molalla Ave			S Douglas Loop		
Base Volume Input [veh/h]	183	817	17	21	436	109	70	18	61	10	21	10
Base Volume Adjustment Factor	1.4800	1.4800	1.4800	1.4800	1.4800	1.4800	1.4800	1.4800	1.4800	1.4800	1.4800	1.4800
Heavy Vehicles Percentage [%]	2.00	7.00	6.00	33.00	12.00	4.00	10.00	33.00	3.00	20.00	24.00	50.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	23	29	0	0	11	0	0	0	7	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	27	0	0	14	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	13	0	0	85	0	0	51	0	0	8
Total Hourly Volume [veh/h]	309	1265	13	33	670	85	110	29	51	16	33	8
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	80	326	3	9	173	22	28	7	13	4	9	2
Total Analysis Volume [veh/h]	319	1304	13	34	691	88	113	30	53	16	34	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			1			0			1		
v_di, Inbound Pedestrian Volume crossing m	0			1			0			1		
v_co, Outbound Pedestrian Volume crossing	0			1			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	70.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	13.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	6
Maximum Green [s]	20	200	0	20	50	0	20	20	0	20	40	40
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	3.5	4.7	0.0	3.5	4.7	4.7
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.5	0.7	0.0	0.5	0.7	0.7
Split [s]	38	48	0	30	40	0	16	26	0	16	26	26
Vehicle Extension [s]	2.3	4.5	0.0	2.3	4.5	0.0	2.3	2.3	0.0	2.3	2.3	2.3
Walk [s]	0	9	0	0	10	0	0	14	0	0	11	11
Pedestrian Clearance [s]	0	23	0	0	27	0	0	28	0	0	30	30
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	4.0	0.0	2.0	4.0	0.0	2.0	3.4	0.0	2.0	3.4	3.4
Minimum Recall	No	Yes		No	Yes		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	5.40	5.40	4.00	5.40	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	3.40	3.40	2.00	3.40	0.00
g_i, Effective Green Time [s]	23	77	77	3	57	57	14	6	6	14	6	33
g / C, Green / Cycle	0.20	0.65	0.65	0.03	0.48	0.48	0.12	0.05	0.05	0.12	0.05	0.27
(v / s)_i Volume / Saturation Flow Rate	0.18	0.38	0.01	0.03	0.21	0.06	0.09	0.02	0.03	0.01	0.02	0.01
s, saturation flow rate [veh/h]	1781	3418	1538	1338	3275	1561	1326	1405	1577	1524	1540	975
c, Capacity [veh/h]	348	2208	994	38	1570	748	190	67	75	177	74	264
d1, Uniform Delay [s]	47.35	12.16	7.59	58.09	20.60	17.23	53.35	55.65	56.36	47.36	55.63	32.18
k, delay calibration	0.15	0.50	0.50	0.07	0.50	0.50	0.07	0.07	0.07	0.07	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.88	1.17	0.02	29.95	0.90	0.32	1.81	2.90	7.36	0.13	2.72	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.59	0.01	0.88	0.44	0.12	0.59	0.45	0.71	0.09	0.46	0.03
d, Delay for Lane Group [s/veh]	60.23	13.33	7.61	88.03	21.50	17.55	55.16	58.55	63.71	47.50	58.35	32.21
Lane Group LOS	E	B	A	F	C	B	E	E	E	D	E	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.11	8.58	0.11	1.31	6.04	1.31	3.48	0.95	1.75	0.44	1.07	0.18
50th-Percentile Queue Length [ft/ln]	252.70	214.48	2.72	32.73	150.99	32.77	86.97	23.64	43.72	10.99	26.67	4.41
95th-Percentile Queue Length [veh/ln]	15.32	13.38	0.20	2.36	10.07	2.36	6.26	1.70	3.15	0.79	1.92	0.32
95th-Percentile Queue Length [ft/ln]	383.05	334.57	4.90	58.91	251.75	58.99	156.54	42.55	78.69	19.78	48.01	7.95

Movement, Approach, & Intersection Results

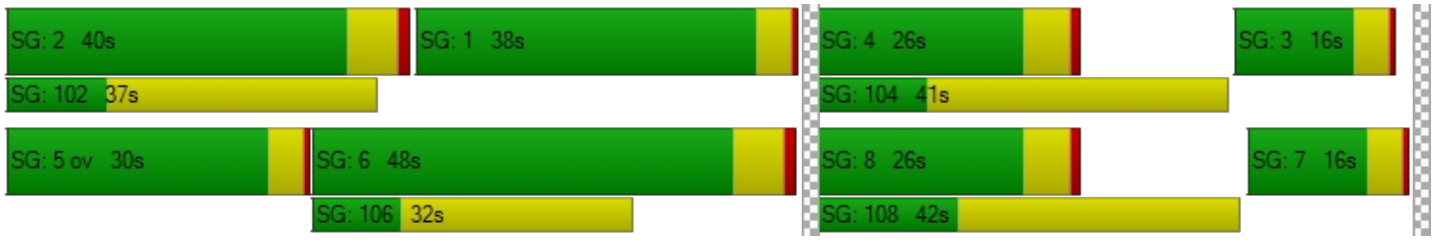
d_M, Delay for Movement [s/veh]	60.23	13.33	7.61	88.03	21.50	17.55	55.16	58.55	63.71	47.50	58.35	32.21
Movement LOS	E	B	A	F	C	B	E	E	E	D	E	C
d_A, Approach Delay [s/veh]	22.43			23.86			57.99			51.75		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	26.07											
Intersection LOS	C											
Intersection V/C	0.577											

Other Modes

g_Walk,mi, Effective Walk Time [s]	18.0	15.0	14.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	4635.96	3933.29	0.00
d_p, Pedestrian Delay [s]	43.35	45.94	46.82	47.70
l_p,int, Pedestrian LOS Score for Intersection	3.213	3.440	2.372	2.186
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	567	343	343
d_b, Bicycle Delay [s]	25.35	30.82	41.17	41.17
l_b,int, Bicycle LOS Score for Intersection	2.920	2.300	1.967	1.669
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Molalla Ave / Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	26.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.320

Intersection Setup

Name	Molalla Ave			Molalla Ave			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	170.00	100.00	150.00	350.00	100.00	100.00	175.00	100.00	190.00	210.00	100.00	245.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			35.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Molalla Ave			Molalla Ave			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	61	184	37	165	122	25	22	133	55	25	257	210
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	7.00	4.00	0.00	4.00	2.00	8.00	5.00	9.00	7.00	20.00	4.00	4.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	22	6	0	14	8	4	1	8	8	0	45	4
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	45	0	0	159
Total Hourly Volume [veh/h]	113	280	55	260	190	41	34	207	45	37	428	158
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	78	15	72	53	11	9	58	13	10	119	44
Total Analysis Volume [veh/h]	126	311	61	289	211	46	38	230	50	41	476	176
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			1			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			1			1		
v_co, Outbound Pedestrian Volume crossing	1			2			2			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			2			2			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	10	0	6	10	0	4	6	0	6	6	0
Maximum Green [s]	30	40	0	30	40	0	20	25	0	20	25	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	3.5	4.0	0.0	3.5	4.0	0.0
All red [s]	2.0	2.0	0.0	2.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	16	40	0	16	40	0	12	22	0	12	22	0
Vehicle Extension [s]	2.3	4.6	0.0	2.3	4.2	0.0	2.3	2.5	0.0	2.3	2.5	0.0
Walk [s]	0	9	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	26	0	0	22	0	0	23	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	4.0	0.0	4.0	4.0	0.0	2.5	4.0	0.0	2.5	4.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	44	44	44	44	44	44	22	13	13	22	15	15
g / C, Green / Cycle	0.49	0.49	0.49	0.49	0.49	0.49	0.24	0.15	0.15	0.24	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.10	0.10	0.10	0.23	0.07	0.07	0.03	0.07	0.03	0.04	0.14	0.11
s, saturation flow rate [veh/h]	1219	1840	1736	1235	1870	1754	1089	3360	1523	1141	3503	1561
c, Capacity [veh/h]	665	900	849	560	920	863	265	505	229	331	579	258
d1, Uniform Delay [s]	12.80	13.12	13.14	22.65	12.52	12.53	27.23	34.95	33.66	26.71	36.37	35.41
k, delay calibration	0.07	0.50	0.50	0.50	0.50	0.50	0.07	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.08	0.53	0.58	3.37	0.33	0.35	0.15	0.48	0.35	0.12	2.25	2.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.19	0.21	0.21	0.52	0.14	0.15	0.14	0.46	0.22	0.12	0.82	0.68
d, Delay for Lane Group [s/veh]	12.89	13.65	13.71	26.02	12.85	12.89	27.38	35.43	34.01	26.84	38.62	37.78
Lane Group LOS	B	B	B	C	B	B	C	D	C	C	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.36	2.23	2.14	3.84	1.44	1.38	0.63	2.28	0.96	0.69	5.14	3.74
50th-Percentile Queue Length [ft/ln]	33.95	55.66	53.54	95.96	36.03	34.40	15.66	56.90	24.04	17.21	128.55	93.55
95th-Percentile Queue Length [veh/ln]	2.44	4.01	3.86	6.91	2.59	2.48	1.13	4.10	1.73	1.24	8.86	6.74
95th-Percentile Queue Length [ft/ln]	61.12	100.18	96.38	172.73	64.85	61.92	28.19	102.43	43.27	30.98	221.52	168.38

Movement, Approach, & Intersection Results

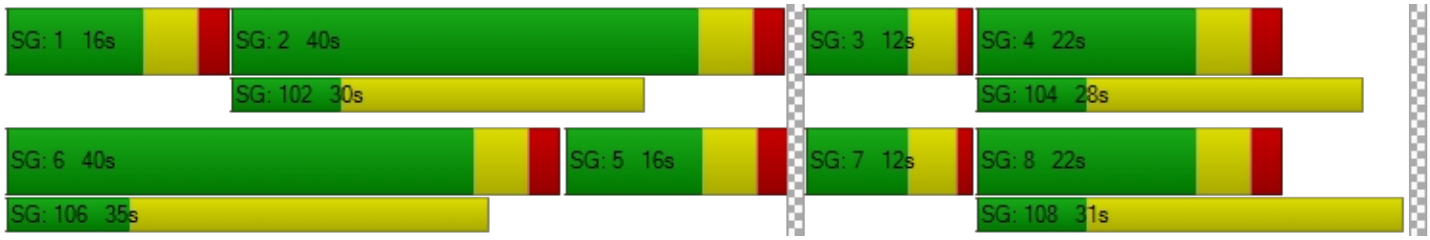
d_M, Delay for Movement [s/veh]	12.89	13.68	13.71	26.02	12.86	12.89	27.38	35.43	34.01	26.84	38.62	37.78
Movement LOS	B	B	B	C	B	B	C	D	C	C	D	D
d_A, Approach Delay [s/veh]	13.48			19.83			34.24			37.71		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	26.55											
Intersection LOS	C											
Intersection V/C	0.320											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	13031.77	10553.75	3237.34	3538.35
d_p, Pedestrian Delay [s]	33.80	33.80	33.80	32.94
l_p,int, Pedestrian LOS Score for Intersection	2.473	2.588	2.775	3.256
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	756	756	356	356
d_b, Bicycle Delay [s]	17.42	17.42	30.42	30.42
l_b,int, Bicycle LOS Score for Intersection	1.970	2.010	1.859	2.263
Bicycle LOS	A	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: Maple Lane Rd / Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	18.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.689

Intersection Setup

Name	Maple Lane Rd			Maple Lane Rd			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	150.00	430.00	100.00	100.00	360.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Maple Lane Rd			Maple Lane Rd			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	54	12	7	26	13	266	129	209	43	5	516	34
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	6.00	0.00	0.00	12.00	0.00	3.00	8.00	5.00	7.00	0.00	4.00	6.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	12	0	0	0	43	0	0	28	4
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	198	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	18	11	51	19	198	192	355	64	7	797	55
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	5	3	14	5	53	52	95	17	2	214	15
Total Analysis Volume [veh/h]	86	19	12	55	20	213	206	382	69	8	857	59
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	0	3	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	4	10	0	4	10	0
Maximum Green [s]	0	20	0	0	20	20	35	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	4.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.5	0.5	0.5	0.0	0.5	0.5	0.0
Split [s]	0	25	0	0	25	25	40	55	0	25	55	0
Vehicle Extension [s]	0.0	2.5	0.0	0.0	2.5	2.5	2.5	5.2	0.0	2.3	5.2	0.0
Walk [s]	0	8	0	0	8	8	0	7	0	0	8	0
Pedestrian Clearance [s]	0	19	0	0	19	19	0	12	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	0.0	0.0	2.5	2.5	2.5	2.5	0.0	2.5	2.5	0.0
Minimum Recall		No			No	No	No	Yes		No	Yes	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	62	62	62	62	62	62	62	62	62	62	62
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	0.00	2.50	2.50	2.50	0.00	2.50	2.50
g_i, Effective Green Time [s]	5	5	6	6	20	10	32	32	37	23	23
g / C, Green / Cycle	0.08	0.08	0.10	0.10	0.33	0.16	0.52	0.52	0.60	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.05	0.02	0.03	0.01	0.14	0.12	0.13	0.13	0.01	0.25	0.25
s, saturation flow rate [veh/h]	1724	1779	1638	1900	1577	1695	1825	1729	808	1840	1793
c, Capacity [veh/h]	145	150	157	182	513	266	952	902	689	686	669
d1, Uniform Delay [s]	27.41	26.51	26.25	25.64	16.33	25.11	8.14	8.14	5.22	16.31	16.33
k, delay calibration	0.08	0.08	0.08	0.08	0.08	0.08	0.26	0.26	0.07	0.26	0.26
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.86	0.50	0.98	0.19	0.40	3.58	0.31	0.33	0.00	2.73	2.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.21	0.35	0.11	0.41	0.77	0.24	0.24	0.01	0.67	0.68
d, Delay for Lane Group [s/veh]	30.27	27.01	27.24	25.84	16.73	28.70	8.45	8.47	5.22	19.04	19.16
Lane Group LOS	C	C	C	C	B	C	A	A	A	B	B
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.30	0.43	0.74	0.26	2.10	2.94	1.44	1.38	0.03	5.28	5.18
50th-Percentile Queue Length [ft/ln]	32.55	10.87	18.47	6.42	52.38	73.51	36.00	34.44	0.77	132.03	129.61
95th-Percentile Queue Length [veh/ln]	2.34	0.78	1.33	0.46	3.77	5.29	2.59	2.48	0.06	9.05	8.92
95th-Percentile Queue Length [ft/ln]	58.59	19.56	33.24	11.56	94.28	132.32	64.80	61.99	1.39	226.25	222.96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.27	27.01	27.01	27.24	25.84	16.73	28.70	8.46	8.47	5.22	19.10	19.16
Movement LOS	C	C	C	C	C	B	C	A	A	A	B	B
d_A, Approach Delay [s/veh]	29.41			19.37			14.80			18.98		
Approach LOS	C			B			B			B		
d_I, Intersection Delay [s/veh]	18.27											
Intersection LOS	B											
Intersection V/C	0.689											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.47	53.55	53.55	53.55
l_p,int, Pedestrian LOS Score for Intersection	2.022	2.680	2.774	2.629
Crosswalk LOS	B	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	315	315	777	777
d_b, Bicycle Delay [s]	46.12	46.12	24.31	24.32
l_b,int, Bicycle LOS Score for Intersection	1.753	2.362	2.102	2.322
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 199: I 205 SB-Ramp / OR 213

Control Type:	Two-way stop	Delay (sec / veh):	78.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.418

Intersection Setup

Name	OR 213		OR 213			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	OR 213		OR 213			
Base Volume Input [veh/h]	0	781	22	0	0	1067
Base Volume Adjustment Factor	1.0000	1.3900	1.3900	1.0000	1.0000	1.3900
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0570	1.0000	1.0000	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	9	0	0	0	56
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	27	0	0	0	14
Total Hourly Volume [veh/h]	0	1122	31	0	0	1638
Peak Hour Factor	1.0000	0.9200	0.9200	1.0000	1.0000	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	305	8	0	0	445
Total Analysis Volume [veh/h]	0	1220	34	0	0	1780
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Stop	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.42	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	77.98	0.00	0.00	0.00
Movement LOS		A	F			A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	1.68	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	41.99	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		77.98		0.00	
Approach LOS	A		F		A	
d_I, Intersection Delay [s/veh]	0.87					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 1: OR 99E/ River Rd/ W Arlington St

Control Type:	Signalized	Delay (sec / veh):	15.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.755

Intersection Setup

Name	OR 99E			OR 99E			River Rd			W Arlington St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	185.00	100.00	275.00	250.00	100.00	100.00	550.00	100.00	100.00	100.00	100.00	160.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 99E			OR 99E			River Rd			W Arlington St		
Base Volume Input [veh/h]	114	1038	113	68	1257	4	6	45	205	145	40	93
Base Volume Adjustment Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
Heavy Vehicles Percentage [%]	0.00	3.00	4.00	3.00	3.00	0.00	17.00	2.00	2.00	3.00	0.00	1.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	64	0	0	46	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	12	0	0	18	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	69	0	0	0	0	0	126	0	0	57
Total Hourly Volume [veh/h]	140	1280	69	84	1522	5	7	55	126	178	49	57
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	337	18	22	401	1	2	14	33	47	13	15
Total Analysis Volume [veh/h]	147	1347	73	88	1602	5	7	58	133	187	52	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	7			2			7			1		
v_di, Inbound Pedestrian Volume crossing m	7			1			7			2		
v_co, Outbound Pedestrian Volume crossing	2			0			0			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			0			0			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			3			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	51.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	20	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	18	72	0	18	72	0	0	30	0	0	30	0
Vehicle Extension [s]	2.3	4.7	0.0	2.3	4.7	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	9	0	0	8	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	20	0	0	15	0	0	26	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.40	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.80	2.80	0.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	80	80	74	73	73	23	23	23	23
g / C, Green / Cycle	0.10	0.67	0.67	0.61	0.61	0.61	0.19	0.19	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.08	0.38	0.05	0.15	0.43	0.43	0.04	0.09	0.17	0.04
s, saturation flow rate [veh/h]	1810	3532	1526	599	1855	1853	1825	1555	1397	1595
c, Capacity [veh/h]	173	2367	1023	358	1125	1124	382	297	320	305
d1, Uniform Delay [s]	51.48	2.63	2.13	9.09	6.75	6.76	40.65	42.82	47.58	40.77
k, delay calibration	0.13	0.50	0.50	0.50	0.50	0.50	0.08	0.08	0.28	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.84	1.00	0.14	1.64	3.88	3.89	0.15	0.79	8.46	0.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.57	0.07	0.25	0.71	0.71	0.17	0.45	0.75	0.20
d, Delay for Lane Group [s/veh]	64.32	3.62	2.27	10.73	10.63	10.65	40.81	43.61	56.04	41.00
Lane Group LOS	E	A	A	B	B	B	D	D	E	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.81	2.32	0.23	0.57	6.04	6.04	1.64	3.56	7.70	1.52
50th-Percentile Queue Length [ft/ln]	120.24	58.06	5.77	14.19	151.00	151.05	40.94	88.99	192.62	38.01
95th-Percentile Queue Length [veh/ln]	8.41	4.18	0.42	1.02	10.07	10.07	2.95	6.41	12.26	2.74
95th-Percentile Queue Length [ft/ln]	210.16	104.51	10.39	25.54	251.77	251.82	73.70	160.17	306.43	68.42

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	64.32	3.62	2.27	10.73	10.64	10.65	40.81	40.81	43.61	56.04	56.04	41.00
Movement LOS	E	A	A	B	B	B	D	D	D	E	E	D
d_A, Approach Delay [s/veh]	9.25			10.65			42.69			53.02		
Approach LOS	A			B			D			D		
d_I, Intersection Delay [s/veh]	15.12											
Intersection LOS	B											
Intersection V/C	0.755											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	366.44	2478.51	0.00	1187.25
d_p, Pedestrian Delay [s]	47.70	48.60	48.60	47.70
l_p,int, Pedestrian LOS Score for Intersection	3.428	3.146	2.304	2.353
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1120	1120	433	433
d_b, Bicycle Delay [s]	11.63	11.63	36.82	36.82
l_b,int, Bicycle LOS Score for Intersection	2.909	2.958	2.094	2.147
Bicycle LOS	C	C	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: OR 99E / Dunes Dr

Control Type:	Signalized	Delay (sec / veh):	60.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.950

Intersection Setup

Name	OR 99E			OR 99E			Dunes Dr			Dunes Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	220.00	100.00	100.00	370.00	100.00	155.00	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 99E			OR 99E			Dunes Dr			Dunes Dr		
Base Volume Input [veh/h]	43	1146	146	107	1354	116	26	5	78	265	17	47
Base Volume Adjustment Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
Heavy Vehicles Percentage [%]	5.00	3.00	2.00	1.00	3.00	1.00	0.00	0.00	5.00	2.00	6.00	2.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	101	0	0	0	23	0	0	152	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	12	0	0	18	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	53	1442	179	131	1589	166	32	6	247	324	21	58
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	379	47	34	418	44	8	2	65	85	6	15
Total Analysis Volume [veh/h]	56	1518	188	138	1673	175	34	6	260	341	22	61
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			1			0			1		
v_di, Inbound Pedestrian Volume crossing m	0			1			1			1		
v_co, Outbound Pedestrian Volume crossing	2			0			0			3		
v_ci, Inbound Pedestrian Volume crossing mi	3			0			0			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	12.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	2	0	5	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	12	62	0	23	51	0	0	34	0	0	34	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	16	66	0	27	55	0	0	38	0	0	38	0
Vehicle Extension [s]	2.3	4.8	0.0	2.3	4.8	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	18	0	0	38	0	0	37	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.00	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.80	2.80	0.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	62	62	4	69	69	34	34	34	34
g / C, Green / Cycle	0.10	0.51	0.51	0.03	0.58	0.58	0.28	0.28	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.23	0.32	0.33	0.11	0.35	0.35	0.03	0.16	0.31	0.05
s, saturation flow rate [veh/h]	244	3532	1736	1223	3532	1767	1334	1619	1113	1600
c, Capacity [veh/h]	60	1813	891	72	2034	1017	363	459	200	453
d1, Uniform Delay [s]	58.07	12.60	12.67	56.61	8.02	8.04	36.75	36.88	54.73	32.51
k, delay calibration	0.50	0.30	0.50	0.50	0.50	0.50	0.08	0.08	0.50	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	98.26	1.01	3.46	459.86	1.34	2.71	0.08	0.86	338.65	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.63	0.64	1.92	0.60	0.61	0.09	0.58	1.71	0.18
d, Delay for Lane Group [s/veh]	156.33	13.61	16.12	516.47	9.36	10.75	36.83	37.74	393.38	32.65
Lane Group LOS	F	B	B	F	A	B	D	D	F	C
Critical Lane Group	Yes	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.26	6.30	6.93	11.33	4.85	5.27	0.81	6.87	24.92	1.88
50th-Percentile Queue Length [ft/ln]	81.62	157.57	173.14	283.28	121.28	131.83	20.35	171.71	622.95	46.92
95th-Percentile Queue Length [veh/ln]	5.88	10.42	11.24	18.95	8.46	9.04	1.47	11.17	41.51	3.38
95th-Percentile Queue Length [ft/ln]	146.92	260.50	281.04	473.80	211.59	225.98	36.63	279.16	1037.72	84.45

Movement, Approach, & Intersection Results

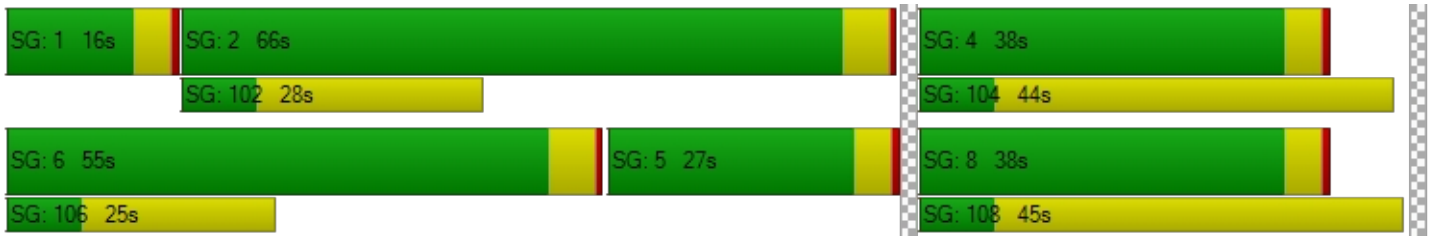
d_M, Delay for Movement [s/veh]	156.33	14.24	16.12	516.47	9.73	10.75	36.83	37.74	37.74	393.38	32.65	32.65
Movement LOS	F	B	B	F	A	B	D	D	D	F	C	C
d_A, Approach Delay [s/veh]	18.95			45.03			37.64			322.76		
Approach LOS	B			D			D			F		
d_I, Intersection Delay [s/veh]	60.59											
Intersection LOS	E											
Intersection V/C	0.950											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	1082.03	3516.59	0.00	232.19
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	3.842	3.324	2.183	2.244
Crosswalk LOS	D	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1020	837	567	567
d_b, Bicycle Delay [s]	14.41	20.30	30.82	30.82
l_b,int, Bicycle LOS Score for Intersection	2.529	2.652	2.055	2.259
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: OR 99E/I-205 SB Loop Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	48.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.954

Intersection Setup

Name	OR 99E		OR 99E		I-205 WB Loop Off-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	1
Entry Pocket Length [ft]	100.00	200.00	240.00	100.00	575.00	275.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	No		No		Yes	

Volumes

Name	OR 99E		OR 99E		I-205 WB Loop Off-Ramp	
Base Volume Input [veh/h]	1109	200	445	1267	792	353
Base Volume Adjustment Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
Heavy Vehicles Percentage [%]	3.00	10.00	5.00	3.00	5.00	3.00
Growth Factor	1.0000	1.0130	1.0130	1.0000	1.0130	1.0130
In-Process Volume [veh/h]	55	0	37	110	0	46
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	12	0	0	18	0	0
Right Turn on Red Volume [veh/h]	0	235	0	0	0	230
Total Hourly Volume [veh/h]	1353	0	560	1598	931	230
Peak Hour Factor	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	342	0	141	404	235	58
Total Analysis Volume [veh/h]	1367	0	566	1614	940	232
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	2		0		3	
v_ci, Inbound Pedestrian Volume crossing mi	3		0		2	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	106.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	6	6
Maximum Green [s]	40	0	36	40	20	20
Amber [s]	4.3	0.0	3.5	4.3	4.0	4.0
All red [s]	0.5	0.0	0.5	0.5	1.5	1.5
Split [s]	33	0	43	76	44	44
Vehicle Extension [s]	4.8	0.0	2.3	4.8	2.3	2.3
Walk [s]	8	0	0	0	0	0
Pedestrian Clearance [s]	29	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.8	0.0	2.0	2.8	3.5	3.5
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.80	4.80	4.00	4.80	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.80	2.80	2.00	2.80	3.50	0.00
g_i, Effective Green Time [s]	29	29	41	74	36	81
g / C, Green / Cycle	0.24	0.24	0.34	0.61	0.30	0.67
(v / s)_i Volume / Saturation Flow Rate	0.27	0.00	0.33	0.32	0.28	0.15
s, saturation flow rate [veh/h]	5053	1487	1738	5053	3375	1577
c, Capacity [veh/h]	1223	360	587	3097	1017	1060
d1, Uniform Delay [s]	40.62	0.00	32.29	5.36	40.60	7.56
k, delay calibration	0.50	0.50	0.39	0.50	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	64.44	0.00	25.07	0.63	2.66	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.12	0.00	0.96	0.52	0.92	0.22
d, Delay for Lane Group [s/veh]	105.06	0.00	57.35	5.99	43.26	7.63
Lane Group LOS	F	A	E	A	D	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	18.21	0.00	17.96	3.04	13.66	2.20
50th-Percentile Queue Length [ft/ln]	455.32	0.00	449.10	76.12	341.62	55.11
95th-Percentile Queue Length [veh/ln]	26.83	0.00	24.92	5.48	19.73	3.97
95th-Percentile Queue Length [ft/ln]	670.67	0.00	622.88	137.01	493.18	99.20

Movement, Approach, & Intersection Results

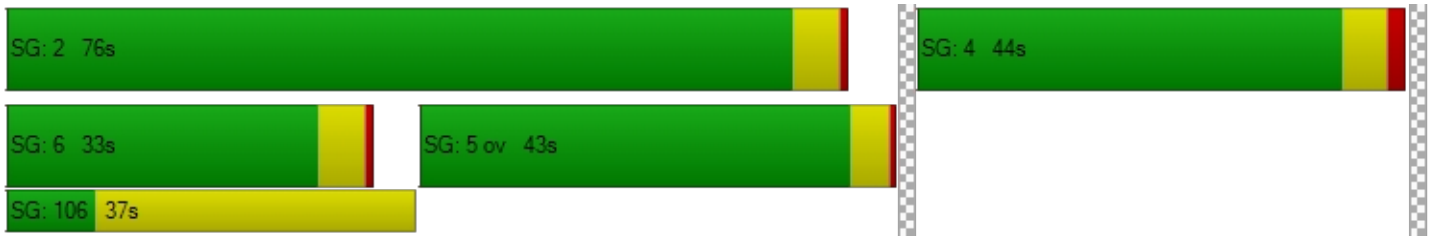
d_M, Delay for Movement [s/veh]	105.06	0.00	57.35	5.99	43.26	7.63
Movement LOS	F	A	E	A	D	A
d_A, Approach Delay [s/veh]	105.06		19.32		36.21	
Approach LOS	F		B		D	
d_I, Intersection Delay [s/veh]	48.35					
Intersection LOS	D					
Intersection V/C	0.954					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	1632.56
d_p, Pedestrian Delay [s]	0.00	0.00	48.60
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	3.008
Crosswalk LOS	F	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	470	1187	642
d_b, Bicycle Delay [s]	35.13	9.93	27.68
I_b,int, Bicycle LOS Score for Intersection	2.441	2.759	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: OR 99E/I-205 EB Loop Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	31.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.736

Intersection Setup

Name	OR 99E		OR 99E		I-205 EB Loop Off-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	185.00	500.00	100.00	100.00	130.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		Yes		Yes	
Crosswalk	No		No		Yes	

Volumes

Name	OR 99E		OR 99E		I-205 EB Loop Off-Ramp	
Base Volume Input [veh/h]	837	623	451	1620	125	477
Base Volume Adjustment Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
Heavy Vehicles Percentage [%]	4.00	5.00	4.00	5.00	10.00	3.00
Growth Factor	1.0000	1.0130	1.0130	1.0000	1.0130	1.0130
In-Process Volume [veh/h]	0	0	83	28	0	41
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	12	0	0	18	0	0
Right Turn on Red Volume [veh/h]	0	366	0	0	0	601
Total Hourly Volume [veh/h]	983	366	613	1925	147	0
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	261	97	163	512	39	0
Total Analysis Volume [veh/h]	1046	389	652	2048	156	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	2		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		2	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		2		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	72.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	6	6	5	2	4	0
Auxiliary Signal Groups		4,6				
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	6	0
Maximum Green [s]	40	40	20	40	20	0
Amber [s]	4.3	4.3	3.5	4.3	4.0	0.0
All red [s]	0.5	0.5	0.5	0.5	1.5	0.0
Split [s]	60	60	40	100	20	0
Vehicle Extension [s]	4.8	4.8	3.0	4.8	2.3	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	16	16	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.8	2.8	2.0	2.8	3.5	0.0
Minimum Recall	Yes	Yes	No	Yes	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.80	5.50	4.00	4.80	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.80	0.00	2.00	2.80	3.50	3.50
g_i, Effective Green Time [s]	57	75	36	96	13	13
g / C, Green / Cycle	0.47	0.62	0.30	0.80	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.21	0.25	0.37	0.41	0.09	0.00
s, saturation flow rate [veh/h]	5012	1547	1752	4971	1667	1577
c, Capacity [veh/h]	2366	963	523	3997	184	174
d1, Uniform Delay [s]	14.12	4.52	36.09	0.47	52.40	0.00
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.60	1.26	125.94	0.47	6.67	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.20	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.44	0.40	1.25	0.51	0.85	0.00
d, Delay for Lane Group [s/veh]	14.72	5.78	162.04	0.94	59.07	0.00
Lane Group LOS	B	A	F	A	E	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.23	2.18	31.85	0.59	4.95	0.00
50th-Percentile Queue Length [ft/ln]	105.83	54.51	796.33	14.83	123.69	0.00
95th-Percentile Queue Length [veh/ln]	7.61	3.92	46.72	1.07	8.60	0.00
95th-Percentile Queue Length [ft/ln]	190.19	98.11	1168.09	26.69	214.88	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.72	5.78	162.04	0.94	59.07	0.00
Movement LOS	B	A	F	A	E	A
d_A, Approach Delay [s/veh]	12.30		39.84		59.07	
Approach LOS	B		D		E	
d_I, Intersection Delay [s/veh]	31.33					
Intersection LOS	C					
Intersection V/C	0.736					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	49.50
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	3.512
Crosswalk LOS	F	F	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	920	1587	242
d_b, Bicycle Delay [s]	17.50	2.57	46.38
l_b,int, Bicycle LOS Score for Intersection	2.550	3.045	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: OR 99E / 14th St

Control Type:	Signalized	Delay (sec / veh):	6.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.659

Intersection Setup

Name	OR 99E		OR 99E		14th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		14th St	
Base Volume Input [veh/h]	1042	45	316	1445	70	217
Base Volume Adjustment Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
Heavy Vehicles Percentage [%]	4.00	13.00	3.00	5.00	9.00	3.00
Growth Factor	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570
In-Process Volume [veh/h]	14	0	0	32	5	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	12	0	0	18	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	133
Total Hourly Volume [veh/h]	1235	55	388	1726	91	133
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	322	14	101	449	24	35
Total Analysis Volume [veh/h]	1286	57	404	1798	95	139
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1		0		0	
v_di, Inbound Pedestrian Volume crossing m	1		0		0	
v_co, Outbound Pedestrian Volume crossing	2		1		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		1		2	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		6		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	41.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	61	0	33	98	14	14
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	65	0	37	102	18	18
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	7	0	0	0	7	7
Pedestrian Clearance [s]	11	0	0	0	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	82	82	101	101	11	30
g / C, Green / Cycle	0.69	0.69	0.84	0.84	0.09	0.25
(v / s)_i Volume / Saturation Flow Rate	0.36	0.37	0.64	0.52	0.06	0.09
s, saturation flow rate [veh/h]	1840	1812	630	3475	1670	1577
c, Capacity [veh/h]	1263	1244	590	2931	150	389
d1, Uniform Delay [s]	1.90	1.91	12.86	0.00	52.70	37.33
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.21
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.61	1.68	6.35	0.97	2.69	1.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.22	1.22	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.53	0.54	0.68	0.61	0.63	0.36
d, Delay for Lane Group [s/veh]	3.50	3.59	19.21	0.97	55.39	38.38
Lane Group LOS	A	A	B	A	E	D
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.07	2.10	1.04	0.39	2.88	3.50
50th-Percentile Queue Length [ft/ln]	51.86	52.38	26.00	9.87	71.91	87.58
95th-Percentile Queue Length [veh/ln]	3.73	3.77	1.87	0.71	5.18	6.31
95th-Percentile Queue Length [ft/ln]	93.35	94.28	46.79	17.76	129.44	157.65

Movement, Approach, & Intersection Results

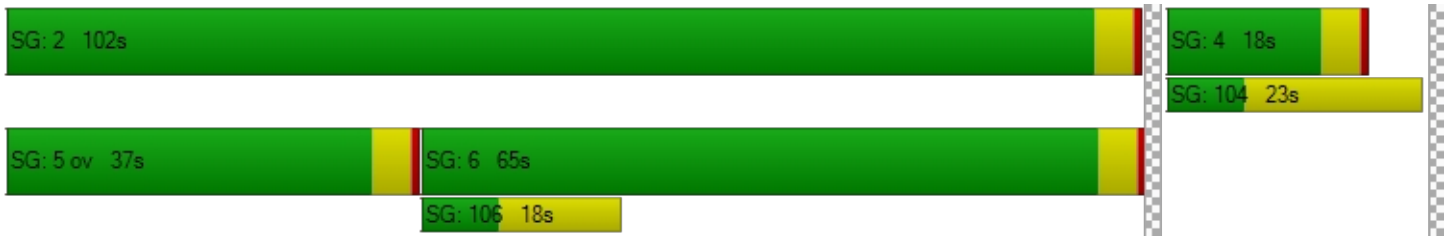
d_M, Delay for Movement [s/veh]	3.54	3.59	19.21	0.97	55.39	38.38
Movement LOS	A	A	B	A	E	D
d_A, Approach Delay [s/veh]	3.55		4.32		45.28	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	6.58					
Intersection LOS	A					
Intersection V/C	0.659					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	3870.65	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	2.934	3.047	3.015
Crosswalk LOS	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1017	1633	233
d_b, Bicycle Delay [s]	14.50	2.02	46.82
l_b,int, Bicycle LOS Score for Intersection	2.668	3.376	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: OR 99E / 12th St

Control Type:	Signalized	Delay (sec / veh):	2.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.540

Intersection Setup

Name	OR 99E		OR 99E		12th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	175.00	100.00	100.00	120.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		12th St	
Base Volume Input [veh/h]	968	21	152	1367	8	136
Base Volume Adjustment Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
Heavy Vehicles Percentage [%]	5.00	0.00	4.00	5.00	0.00	3.00
Growth Factor	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570
In-Process Volume [veh/h]	14	0	0	32	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	12	0	0	18	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	84
Total Hourly Volume [veh/h]	1149	25	186	1636	10	83
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	293	6	47	417	3	21
Total Analysis Volume [veh/h]	1172	26	190	1669	10	85
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1		0		0	
v_di, Inbound Pedestrian Volume crossing m	1		0		0	
v_co, Outbound Pedestrian Volume crossing	3		1		3	
v_ci, Inbound Pedestrian Volume crossing mi	3		1		3	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		3		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	25.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	80	0	16	100	12	12
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	84	0	20	104	16	16
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	9	0	0	0	8	8
Pedestrian Clearance [s]	11	0	0	0	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	96	96	104	104	8	16
g / C, Green / Cycle	0.80	0.80	0.87	0.87	0.06	0.13
(v / s)_i Volume / Saturation Flow Rate	0.33	0.33	0.32	0.48	0.01	0.05
s, saturation flow rate [veh/h]	1825	1811	586	3475	1792	1564
c, Capacity [veh/h]	1463	1451	527	3022	114	207
d1, Uniform Delay [s]	0.00	0.00	0.10	0.00	52.89	47.79
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.85	0.87	1.91	0.73	0.20	0.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.21	1.21	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.41	0.36	0.55	0.09	0.41
d, Delay for Lane Group [s/veh]	0.85	0.87	2.01	0.73	53.09	48.59
Lane Group LOS	A	A	A	A	D	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.35	0.35	0.28	0.31	0.29	2.39
50th-Percentile Queue Length [ft/ln]	8.64	8.76	6.99	7.68	7.28	59.73
95th-Percentile Queue Length [veh/ln]	0.62	0.63	0.50	0.55	0.52	4.30
95th-Percentile Queue Length [ft/ln]	15.56	15.76	12.59	13.83	13.10	107.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.86	0.87	2.01	0.73	53.09	48.59
Movement LOS	A	A	A	A	D	D
d_A, Approach Delay [s/veh]	0.86		0.86		49.06	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	2.31					
Intersection LOS	A					
Intersection V/C	0.540					

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	4084.53	0.00	605.45
d_p, Pedestrian Delay [s]	48.60	48.60	47.70
l_p,int, Pedestrian LOS Score for Intersection	2.845	2.937	2.445
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1333	1667	200
d_b, Bicycle Delay [s]	6.67	1.67	48.62
l_b,int, Bicycle LOS Score for Intersection	2.548	3.093	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: OR 99E / 10th St

Control Type:	Signalized	Delay (sec / veh):	3.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.450

Intersection Setup

Name	OR 99E		OR 99E		7th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	250.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		7th St	
Base Volume Input [veh/h]	753	22	276	1086	17	211
Base Volume Adjustment Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
Heavy Vehicles Percentage [%]	5.00	0.00	1.00	6.00	12.00	4.00
Growth Factor	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570
In-Process Volume [veh/h]	14	0	0	32	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	12	0	0	18	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	130
Total Hourly Volume [veh/h]	899	27	338	1310	21	129
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	232	7	87	338	5	33
Total Analysis Volume [veh/h]	927	28	348	1351	22	133
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		2		1	
v_di, Inbound Pedestrian Volume crossing m	0		1		2	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		2		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	78	0	18	100	12	12
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	82	0	22	104	16	16
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	7	0	0	0	7	7
Pedestrian Clearance [s]	11	0	0	0	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	92	92	98	98	10	20
g / C, Green / Cycle	0.77	0.77	0.82	0.82	0.08	0.17
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.47	0.39	0.01	0.09
s, saturation flow rate [veh/h]	1825	1806	740	3446	1638	1559
c, Capacity [veh/h]	1396	1381	619	2806	139	263
d1, Uniform Delay [s]	0.00	0.00	0.15	0.00	50.97	45.38
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.27
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.67	0.69	3.67	0.59	0.32	3.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.25	1.25	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.34	0.35	0.56	0.48	0.16	0.51
d, Delay for Lane Group [s/veh]	0.67	0.69	3.82	0.59	51.29	49.06
Lane Group LOS	A	A	A	A	D	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.26	0.26	0.63	0.23	0.63	3.88
50th-Percentile Queue Length [ft/ln]	6.49	6.59	15.77	5.79	15.73	97.09
95th-Percentile Queue Length [veh/ln]	0.47	0.47	1.14	0.42	1.13	6.99
95th-Percentile Queue Length [ft/ln]	11.67	11.86	28.38	10.42	28.31	174.76

Movement, Approach, & Intersection Results

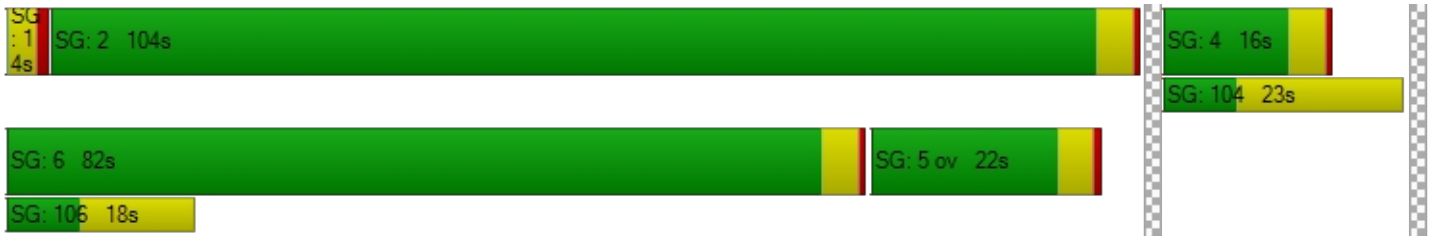
d_M, Delay for Movement [s/veh]	0.68	0.69	3.82	0.59	51.29	49.06
Movement LOS	A	A	A	A	D	D
d_A, Approach Delay [s/veh]	0.68		1.25		49.38	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	3.71					
Intersection LOS	A					
Intersection V/C	0.450					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	1896.86	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	2.712	2.877	2.788
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1300	1667	200
d_b, Bicycle Delay [s]	7.35	1.67	48.60
l_b,int, Bicycle LOS Score for Intersection	2.347	2.961	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Washington St / Clackamas River Dr

Control Type:	Roundabout	Delay (sec / veh):	5.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Washington St		Washington St		Clackamas River Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Washington St		Washington St		Clackamas River Dr	
Base Volume Input [veh/h]	306	260	177	153	114	85
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	5.00	17.00	2.00	5.00	15.00	12.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	0	5	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	363	308	209	181	140	100
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	96	81	55	48	37	26
Total Analysis Volume [veh/h]	382	324	220	191	147	105
Pedestrian Volume [ped/h]	0		0		2	

Intersection Settings

Number of Conflicting Circulating Lanes	1		1		1	
Circulating Flow Rate [veh/h]	224		169		401	
Exiting Flow Rate [veh/h]	370		519		224	
Demand Flow Rate [veh/h]	363	308	209	181	140	100
Adjusted Demand Flow Rate [veh/h]	382	324	220	191	147	105

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	0.00	1380.00	1380.00
B (coefficient)	0.00102	0.00000	0.00102	0.00102
HV Adjustment Factor	0.91	0.85	0.97	0.88
Entry Flow Rate [veh/h]	421	0	425	287
Capacity of Entry and Bypass Lanes [veh/h]	1098	117000	1162	917
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	997	100000	1124	806
X, volume / capacity	0.38	0.00	0.37	0.31

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	1.82	0.00	1.70	1.34
95th-Percentile Queue Length [ft]	45.57	0.00	42.45	33.48
Approach Delay [s/veh]	4.20		6.87	8.05
Approach LOS	A		A	A
Intersection Delay [s/veh]	5.71			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 9: Washington St/ Prairie Schooner Way

Control Type:	Signalized	Delay (sec / veh):	8.5
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.535

Intersection Setup

Name	Washington St		Washington St		Prairie Schooner Way	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	0	1	0
Entry Pocket Length [ft]	100.00	100.00	150.00	100.00	165.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	No		Yes		Yes	

Volumes

Name	Washington St		Washington St		Prairie Schooner Way	
Base Volume Input [veh/h]	319	125	59	210	312	254
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	12.00	4.00	5.00	7.00	12.00	7.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	9	0	5	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	150
Total Hourly Volume [veh/h]	377	157	70	253	369	150
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	97	40	18	65	95	39
Total Analysis Volume [veh/h]	389	162	72	261	380	155
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		1		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		1	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	93
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	2	0	1	6	8	8
Auxiliary Signal Groups						1,8
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	8	0	4	8	4	4
Maximum Green [s]	30	0	20	30	30	30
Amber [s]	4.0	0.0	3.5	4.0	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	35	0	24	35	34	34
Vehicle Extension [s]	4.2	0.0	2.3	5.2	2.5	2.5
Walk [s]	8	0	0	0	7	7
Pedestrian Clearance [s]	24	0	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	0.0	2.0	2.5	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	30	30	30	30	30	30
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	0.00	2.50	2.00	0.00
g_i, Effective Green Time [s]	9	9	15	15	6	12
g / C, Green / Cycle	0.31	0.31	0.51	0.51	0.21	0.41
(v / s)_i Volume / Saturation Flow Rate	0.16	0.18	0.07	0.08	0.12	0.10
s, saturation flow rate [veh/h]	1720	1555	1071	3418	3181	1525
c, Capacity [veh/h]	537	485	777	1746	664	621
d1, Uniform Delay [s]	8.54	8.72	4.14	3.93	10.78	5.92
k, delay calibration	0.17	0.17	0.07	0.26	0.08	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.16	1.60	0.03	0.09	0.58	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.57	0.09	0.15	0.57	0.25
d, Delay for Lane Group [s/veh]	9.71	10.31	4.17	4.02	11.36	6.05
Lane Group LOS	A	B	A	A	B	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.12	1.18	0.10	0.20	0.86	0.38
50th-Percentile Queue Length [ft/ln]	28.04	29.57	2.47	4.89	21.60	9.56
95th-Percentile Queue Length [veh/ln]	2.02	2.13	0.18	0.35	1.55	0.69
95th-Percentile Queue Length [ft/ln]	50.47	53.23	4.44	8.79	38.87	17.21

Movement, Approach, & Intersection Results

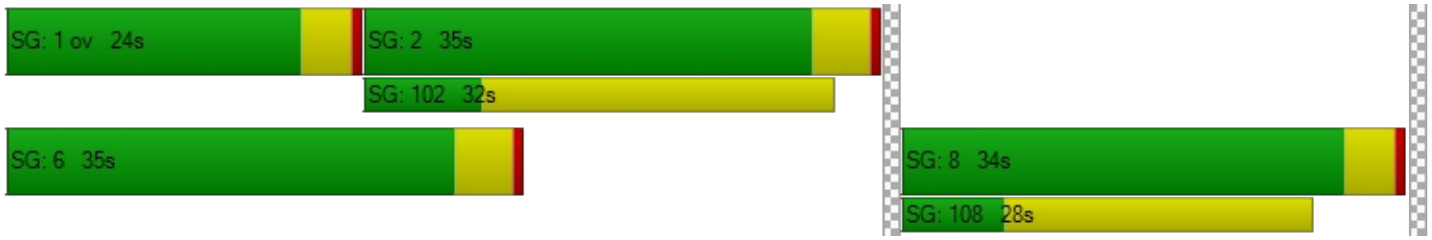
d_M, Delay for Movement [s/veh]	9.88	10.31	4.17	4.02	11.36	6.05
Movement LOS	A	B	A	A	B	A
d_A, Approach Delay [s/veh]	10.01		4.05		9.82	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	8.54					
Intersection LOS	A					
Intersection V/C	0.535					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	7606.62	2660.13
d_p, Pedestrian Delay [s]	0.00	36.15	35.27
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.501	2.731
Crosswalk LOS	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	656	656	645
d_b, Bicycle Delay [s]	21.00	21.00	21.34
l_b,int, Bicycle LOS Score for Intersection	2.014	1.834	1.560
Bicycle LOS	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 10: Washington St / Home Depot-Site Access A

Control Type:	Signalized	Delay (sec / veh):	8.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.424

Intersection Setup

Name	Washington St			Washington St			Home Depot Dwy			Home Depot Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	335.00	100.00	330.00	250.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	470.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	370.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			Home Depot Dwy			Home Depot Dwy		
Base Volume Input [veh/h]	11	163	90	208	279	34	43	4	12	94	1	60
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	36.00	5.00	2.00	6.00	10.00	56.00	56.00	50.00	33.00	2.00	2.00	10.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	9	0	0	5	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	20	0	0	0	0	0	36
Total Hourly Volume [veh/h]	13	202	107	246	335	20	51	4	14	111	1	35
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	57	30	70	95	6	14	1	4	32	0	10
Total Analysis Volume [veh/h]	15	230	122	280	381	23	58	5	16	126	1	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			2			2			2		
v_di, Inbound Pedestrian Volume crossing m	2			2			2			1		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	134
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	10	0	4	10	0	0	8	0	0	6	0
Maximum Green [s]	30	60	0	30	60	0	0	30	0	0	20	0
Amber [s]	3.5	4.5	0.0	3.5	4.5	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	34	65	0	34	65	0	0	35	0	0	25	0
Vehicle Extension [s]	2.5	4.2	0.0	2.5	4.2	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	9	0	0	7	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	R
C, Cycle Length [s]	34	34	34	34	34	34	34	34	34
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	2.50	2.50	2.50
g_i, Effective Green Time [s]	19	10	10	19	14	14	5	5	5
g / C, Green / Cycle	0.56	0.29	0.29	0.56	0.42	0.42	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.02	0.10	0.11	0.22	0.11	0.03	0.07	0.08	0.03
s, saturation flow rate [veh/h]	813	1825	1613	1267	3332	898	1057	1680	1487
c, Capacity [veh/h]	693	534	472	943	1392	375	353	480	238
d1, Uniform Delay [s]	3.40	9.42	9.48	4.07	6.49	5.90	12.89	12.89	12.30
k, delay calibration	0.17	0.17	0.17	0.08	0.17	0.17	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	0.58	0.70	0.13	0.16	0.10	0.24	0.22	0.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.02	0.34	0.36	0.30	0.27	0.06	0.22	0.26	0.17
d, Delay for Lane Group [s/veh]	3.42	10.00	10.18	4.20	6.65	6.00	13.13	13.11	12.55
Lane Group LOS	A	B	B	A	A	A	B	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.02	0.85	0.80	0.45	0.59	0.07	0.45	0.71	0.22
50th-Percentile Queue Length [ft/ln]	0.56	21.14	20.03	11.24	14.65	1.79	11.23	17.85	5.55
95th-Percentile Queue Length [veh/ln]	0.04	1.52	1.44	0.81	1.05	0.13	0.81	1.28	0.40
95th-Percentile Queue Length [ft/ln]	1.01	38.06	36.06	20.23	26.37	3.23	20.21	32.12	9.99

Movement, Approach, & Intersection Results

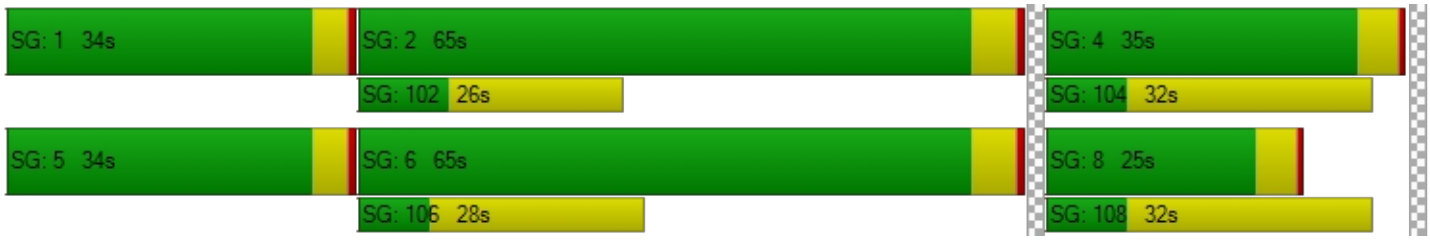
d_M, Delay for Movement [s/veh]	3.42	10.04	10.18	4.20	6.65	6.00	13.13	13.13	13.13	13.11	13.11	12.55
Movement LOS	A	B	B	A	A	A	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	9.81			5.63			13.13			12.98		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	8.21											
Intersection LOS	A											
Intersection V/C	0.424											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	1168.45	739.89
d_p, Pedestrian Delay [s]	55.54	55.54	56.45	54.63
l_p,int, Pedestrian LOS Score for Intersection	2.671	2.756	2.014	2.348
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	896	896	455	306
d_b, Bicycle Delay [s]	20.43	20.43	39.97	48.07
l_b,int, Bicycle LOS Score for Intersection	1.862	2.140	1.690	1.895
Bicycle LOS	A	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Washington St / Abernethy Rd

Control Type:	Signalized	Delay (sec / veh):	9.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.373

Intersection Setup

Name	Washington St			Washington St			17th St			17th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	115.00	100.00	225.00	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			30.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			17th St			17th St		
Base Volume Input [veh/h]	3	207	259	66	328	0	1	3	5	150	0	47
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	0.00	4.00	4.00	20.00	7.00	0.00	100.00	0.00	0.00	3.00	0.00	6.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	9	23	0	5	0	0	0	0	9	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	165	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	254	165	78	393	0	1	3	6	187	0	56
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	75	49	23	116	0	0	1	2	55	0	16
Total Analysis Volume [veh/h]	4	299	194	92	462	0	1	4	7	220	0	66
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			1			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	0	0	8	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	15	0	0	30	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	35	0	0	20	0	0	35	0
Vehicle Extension [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	16	0	0	8	0	0	13	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C
C, Cycle Length [s]	30	30	30	30	30	30	30	30
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	11	11	11	11	11	9	9	9
g / C, Green / Cycle	0.36	0.36	0.36	0.36	0.36	0.30	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.00	0.16	0.12	0.10	0.26	0.01	0.16	0.04
s, saturation flow rate [veh/h]	944	1840	1562	923	1795	1672	1392	1615
c, Capacity [veh/h]	316	660	560	408	644	643	291	495
d1, Uniform Delay [s]	12.72	7.34	7.02	11.12	8.28	7.23	10.71	7.49
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	0.18	0.14	0.10	0.57	0.00	1.50	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.45	0.35	0.23	0.72	0.02	0.75	0.13
d, Delay for Lane Group [s/veh]	12.73	7.52	7.15	11.23	8.85	7.24	12.21	7.53
Lane Group LOS	B	A	A	B	A	A	B	A
Critical Lane Group	No	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.02	0.81	0.51	0.41	1.60	0.04	1.00	0.19
50th-Percentile Queue Length [ft/ln]	0.47	20.37	12.65	10.23	40.12	0.96	25.12	4.73
95th-Percentile Queue Length [veh/ln]	0.03	1.47	0.91	0.74	2.89	0.07	1.81	0.34
95th-Percentile Queue Length [ft/ln]	0.84	36.67	22.78	18.41	72.21	1.73	45.22	8.52

Movement, Approach, & Intersection Results

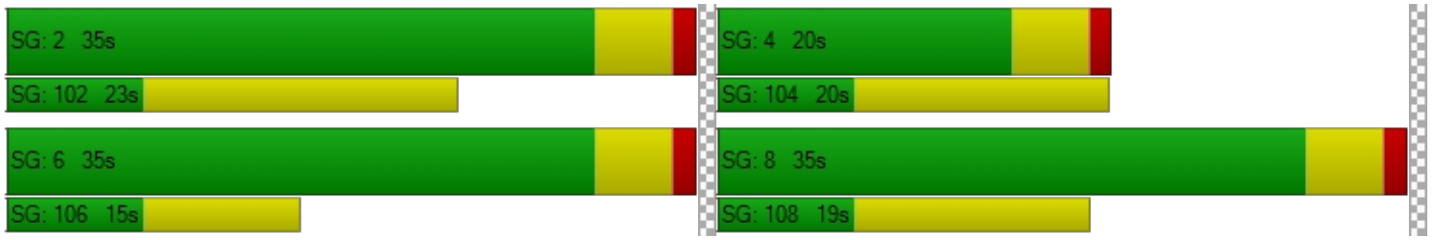
d_M, Delay for Movement [s/veh]	12.73	7.52	7.15	11.23	8.85	8.85	7.24	7.24	7.24	12.21	7.53	7.53
Movement LOS	B	A	A	B	A	A	A	A	A	B	A	A
d_A, Approach Delay [s/veh]	7.42			9.24			7.24			11.13		
Approach LOS	A			A			A			B		
d_I, Intersection Delay [s/veh]	8.95											
Intersection LOS	A											
Intersection V/C	0.373											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	5334.02	5293.18
d_p, Pedestrian Delay [s]	24.86	24.86	24.86	24.86
l_p,int, Pedestrian LOS Score for Intersection	3.049	2.227	1.713	2.338
Crosswalk LOS	C	B	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	857	857	429	857
d_b, Bicycle Delay [s]	11.43	11.43	21.61	11.43
l_b,int, Bicycle LOS Score for Intersection	2.652	2.474	1.579	2.032
Bicycle LOS	B	B	A	B

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: Washington St / 15th St

Control Type:	Signalized	Delay (sec / veh):	18.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.582

Intersection Setup

Name	Washington St			Washington St			15th St			15th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	260.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			15th St			15th St		
Base Volume Input [veh/h]	37	341	22	26	349	0	108	37	43	13	104	22
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	3.00	4.00	0.00	4.00	5.00	2.00	5.00	0.00	5.00	0.00	0.00	9.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	5	0	0	5	9	32	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	43	409	26	31	418	9	160	43	51	16	123	26
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	1.0000	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	115	7	9	117	2	45	12	14	4	35	7
Total Analysis Volume [veh/h]	48	460	29	35	470	9	180	48	57	18	138	29
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			1			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	35	0	0	35	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	14	45	0	14	45	0	0	31	0	0	31	0
Vehicle Extension [s]	2.3	4.1	0.0	2.3	4.1	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	9	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	60	53	60	53	22	22
g / C, Green / Cycle	0.66	0.59	0.66	0.59	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.05	0.27	0.04	0.26	0.23	0.10
s, saturation flow rate [veh/h]	978	1821	956	1819	1248	1830
c, Capacity [veh/h]	631	1077	617	1066	376	499
d1, Uniform Delay [s]	6.34	10.28	6.32	10.47	33.62	28.24
k, delay calibration	0.07	0.50	0.50	0.50	0.13	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.03	1.38	0.18	1.37	3.70	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.08	0.45	0.06	0.45	0.76	0.37
d, Delay for Lane Group [s/veh]	6.37	11.67	6.49	11.84	37.32	28.58
Lane Group LOS	A	B	A	B	D	C
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.28	5.33	0.23	5.27	6.31	3.31
50th-Percentile Queue Length [ft/ln]	7.03	133.24	5.74	131.75	157.64	82.79
95th-Percentile Queue Length [veh/ln]	0.51	9.12	0.41	9.03	10.42	5.96
95th-Percentile Queue Length [ft/ln]	12.65	227.89	10.33	225.87	260.59	149.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.37	11.67	11.67	6.49	11.84	11.84	37.32	37.32	37.32	28.58	28.58	28.58
Movement LOS	A	B	B	A	B	B	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	11.19			11.47			37.32			28.58		
Approach LOS	B			B			D			C		
d_I, Intersection Delay [s/veh]	18.30											
Intersection LOS	B											
Intersection V/C	0.582											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	7613.60	0.00	0.00	6790.70
d_p, Pedestrian Delay [s]	34.67	32.94	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.317	2.578	1.990	1.890
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	911	911	600	600
d_b, Bicycle Delay [s]	13.34	13.34	22.05	22.05
l_b,int, Bicycle LOS Score for Intersection	2.446	2.408	2.030	1.865
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Washington St / 14th St

Control Type:	Signalized	Delay (sec / veh):	17.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.629

Intersection Setup

Name	Washington St			Washington St			14th St			14th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			14th St			14th St		
Base Volume Input [veh/h]	173	189	7	6	284	113	202	33	153	1	29	5
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	3.00	3.00	14.00	17.00	4.00	7.00	5.00	3.00	2.00	0.00	0.00	0.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	5	0	0	0	0	5	5	0	9	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	95	0	0	0
Total Hourly Volume [veh/h]	210	224	8	7	336	139	244	39	95	1	34	6
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	60	2	2	89	37	65	10	25	0	9	2
Total Analysis Volume [veh/h]	223	238	9	7	357	148	260	41	101	1	36	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			1		
v_di, Inbound Pedestrian Volume crossing m	1			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			1			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	75.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	35	0	0	35	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	14	38	0	14	38	0	0	38	0	0	38	0
Vehicle Extension [s]	2.3	4.1	0.0	2.3	4.1	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	62	57	62	51	20	20	20
g / C, Green / Cycle	0.68	0.63	0.68	0.57	0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.22	0.13	0.01	0.29	0.21	0.06	0.02
s, saturation flow rate [veh/h]	1005	1843	1021	1749	1465	1589	1859
c, Capacity [veh/h]	646	1164	752	996	408	362	465
d1, Uniform Delay [s]	7.12	7.06	4.70	11.75	33.38	28.66	27.48
k, delay calibration	0.50	0.50	0.50	0.50	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.46	0.42	0.02	1.85	1.95	0.31	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.34	0.21	0.01	0.51	0.74	0.28	0.09
d, Delay for Lane Group [s/veh]	8.58	7.48	4.72	13.60	35.33	28.97	27.54
Lane Group LOS	A	A	A	B	D	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.54	1.94	0.04	6.26	6.51	1.83	0.74
50th-Percentile Queue Length [ft/ln]	38.59	48.39	1.04	156.41	162.75	45.71	18.54
95th-Percentile Queue Length [veh/ln]	2.78	3.48	0.07	10.36	10.69	3.29	1.34
95th-Percentile Queue Length [ft/ln]	69.46	87.11	1.87	258.96	267.35	82.27	33.38

Movement, Approach, & Intersection Results

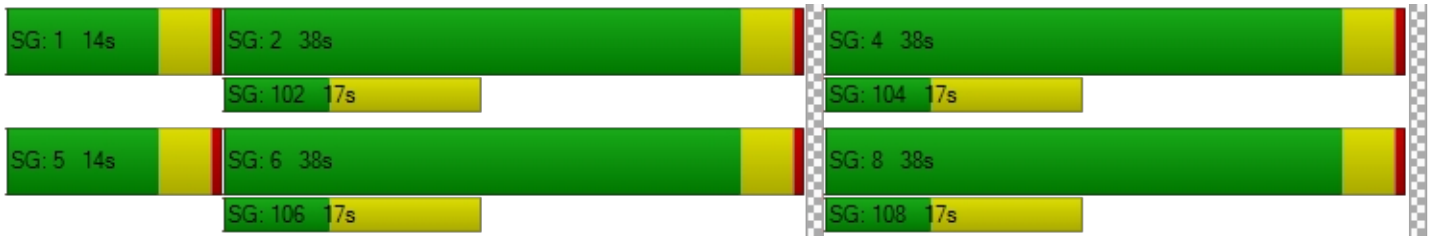
d_M, Delay for Movement [s/veh]	8.58	7.48	7.48	4.72	13.60	13.60	35.33	35.33	28.97	27.54	27.54	27.54
Movement LOS	A	A	A	A	B	B	D	D	C	C	C	C
d_A, Approach Delay [s/veh]	8.00			13.48			33.73			27.54		
Approach LOS	A			B			C			C		
d_I, Intersection Delay [s/veh]	17.80											
Intersection LOS	B											
Intersection V/C	0.629											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	3083.39	0.00	7963.20
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.274	2.585	2.637	1.762
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	756	756	756	756
d_b, Bicycle Delay [s]	17.42	17.42	17.42	17.42
l_b,int, Bicycle LOS Score for Intersection	2.335	2.404	2.380	1.631
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Washington St / 12th St

Control Type:	Signalized	Delay (sec / veh):	10.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.641

Intersection Setup

Name	Washington St			Washington St			12th St			12th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			12th St			12th St		
Base Volume Input [veh/h]	78	343	5	19	410	9	24	39	102	5	19	8
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	5.00	3.00	0.00	11.00	3.00	0.00	8.00	0.00	1.00	0.00	5.00	12.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	5	0	0	9	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	92	411	6	22	494	11	29	47	120	6	22	10
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	112	2	6	134	3	8	13	33	2	6	3
Total Analysis Volume [veh/h]	100	447	7	24	537	12	32	51	130	7	24	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			1			0		
v_di, Inbound Pedestrian Volume crossing m	0			1			0			0		
v_co, Outbound Pedestrian Volume crossing	1			2			0			2		
v_ci, Inbound Pedestrian Volume crossing mi	0			2			1			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	98
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	15	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	19	55	0	19	55	0	0	19	0	0	24	0
Vehicle Extension [s]	2.3	5.2	0.0	2.3	5.2	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	12	0	0	12	0	0	12	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	38	38	38	38	38	38
L, Total Lost Time per Cycle [s]	4.80	4.80	4.80	4.80	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.80	0.00	2.80	2.00	2.00
g_i, Effective Green Time [s]	23	18	23	16	6	6
g / C, Green / Cycle	0.60	0.47	0.60	0.43	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.10	0.25	0.02	0.30	0.13	0.02
s, saturation flow rate [veh/h]	1020	1850	969	1848	1683	1772
c, Capacity [veh/h]	696	875	716	790	386	402
d1, Uniform Delay [s]	4.40	6.95	3.57	8.80	15.06	13.52
k, delay calibration	0.07	0.26	0.26	0.26	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.06	1.13	0.04	2.60	0.92	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.14	0.52	0.03	0.69	0.55	0.10
d, Delay for Lane Group [s/veh]	4.46	8.07	3.62	11.40	15.98	13.61
Lane Group LOS	A	A	A	B	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.17	1.99	0.05	3.17	1.58	0.27
50th-Percentile Queue Length [ft/ln]	4.23	49.74	1.13	79.25	39.41	6.79
95th-Percentile Queue Length [veh/ln]	0.30	3.58	0.08	5.71	2.84	0.49
95th-Percentile Queue Length [ft/ln]	7.62	89.53	2.03	142.65	70.93	12.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	4.46	8.07	8.07	3.62	11.40	11.40	15.98	15.98	15.98	13.61	13.61	13.61
Movement LOS	A	A	A	A	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	7.42			11.08			15.98			13.61		
Approach LOS	A			B			B			B		
d_I, Intersection Delay [s/veh]	10.44											
Intersection LOS	B											
Intersection V/C	0.641											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	5376.09	1900.46	5800.12	0.00
d_p, Pedestrian Delay [s]	38.62	38.62	38.62	38.62
l_p,int, Pedestrian LOS Score for Intersection	2.287	2.277	1.929	1.787
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1024	1024	306	408
d_b, Bicycle Delay [s]	11.66	11.66	35.15	31.04
l_b,int, Bicycle LOS Score for Intersection	2.474	2.505	1.911	1.629
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: Washington St/7th St

Control Type:	Signalized	Delay (sec / veh):	16.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.733

Intersection Setup

Name	Washington St			Washington St			7th St			Molalla Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	270.00	45.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			7th St			Molalla Ave		
Base Volume Input [veh/h]	76	154	10	216	229	20	0	364	90	0	272	220
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.0000	1.1200	1.1200	1.0000	1.1200	1.1200
Heavy Vehicles Percentage [%]	1.00	3.00	0.00	2.00	4.00	0.00	2.00	1.00	0.00	2.00	0.00	3.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	5	0	0	9	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	54	0	0	130
Total Hourly Volume [veh/h]	90	187	12	256	280	23	0	431	53	0	322	130
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	1.0000	0.9200	0.9200	1.0000	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	51	3	70	76	6	0	117	14	0	88	35
Total Analysis Volume [veh/h]	98	203	13	278	304	25	0	468	58	0	350	141
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			3			4			1		
v_di, Inbound Pedestrian Volume crossing m	1			4			3			1		
v_co, Outbound Pedestrian Volume crossing	4			4			3			3		
v_ci, Inbound Pedestrian Volume crossing mi	3			3			4			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	142
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap
Signal Group	0	8	0	0	4	0	0	2	0	0	6	6
Auxiliary Signal Groups												4,6
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	10	0	0	10	10
Maximum Green [s]	0	40	0	0	40	0	0	50	0	0	50	50
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	3.5
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.5
Split [s]	0	44	0	0	44	0	0	54	0	0	54	54
Vehicle Extension [s]	0.0	2.5	0.0	0.0	2.5	0.0	0.0	4.7	0.0	0.0	4.7	4.7
Walk [s]	0	7	0	0	7	0	0	7	0	0	9	9
Pedestrian Clearance [s]	0	11	0	0	10	0	0	10	0	0	11	11
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
Minimum Recall		No			No			Yes			Yes	Yes
Maximum Recall		No			No			No			No	No
Pedestrian Recall		No			No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	47	47	47	47	47	47	47	47
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	8	8	12	12	16	16	16	32
g / C, Green / Cycle	0.17	0.17	0.24	0.24	0.34	0.34	0.34	0.67
(v / s)_i Volume / Saturation Flow Rate	0.05	0.12	0.16	0.18	0.25	0.04	0.18	0.09
s, saturation flow rate [veh/h]	1795	1835	1781	1812	1885	1605	1900	1572
c, Capacity [veh/h]	298	304	435	443	637	542	642	1047
d1, Uniform Delay [s]	17.50	18.75	16.09	16.59	13.87	10.82	12.78	2.91
k, delay calibration	0.08	0.08	0.08	0.08	0.20	0.20	0.20	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.48	2.29	1.17	1.86	3.09	0.16	1.35	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.33	0.71	0.64	0.74	0.74	0.11	0.55	0.13
d, Delay for Lane Group [s/veh]	17.98	21.04	17.26	18.45	16.96	10.98	14.13	2.96
Lane Group LOS	B	C	B	B	B	B	B	A
Critical Lane Group	No	Yes	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.90	2.23	2.47	3.07	4.32	0.39	2.74	0.25
50th-Percentile Queue Length [ft/ln]	22.55	55.76	61.69	76.70	107.94	9.72	68.57	6.17
95th-Percentile Queue Length [veh/ln]	1.62	4.01	4.44	5.52	7.73	0.70	4.94	0.44
95th-Percentile Queue Length [ft/ln]	40.58	100.36	111.05	138.05	193.14	17.49	123.43	11.11

Movement, Approach, & Intersection Results

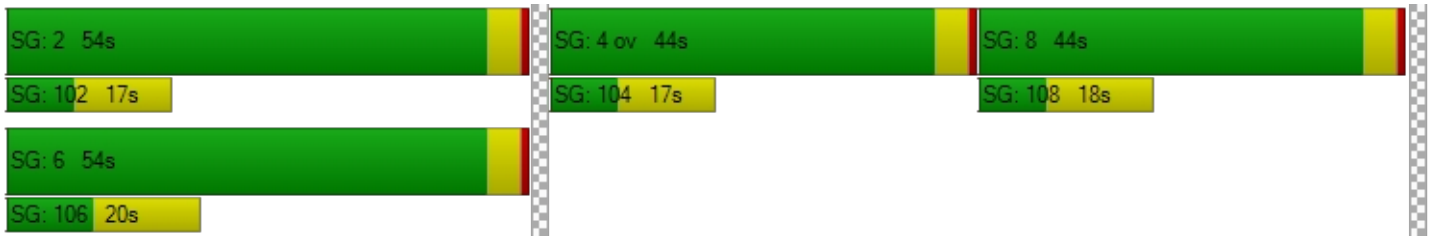
d_M, Delay for Movement [s/veh]	17.98	21.04	21.04	17.26	18.45	18.45	0.00	16.96	10.98	0.00	14.13	2.96
Movement LOS	B	C	C	B	B	B		B	B		B	A
d_A, Approach Delay [s/veh]	20.08			17.91			16.30			10.92		
Approach LOS	C			B			B			B		
d_I, Intersection Delay [s/veh]	16.05											
Intersection LOS	B											
Intersection V/C	0.733											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	652.49	526.18	764.07	2821.51
d_p, Pedestrian Delay [s]	60.43	58.60	60.43	60.43
l_p,int, Pedestrian LOS Score for Intersection	2.301	2.312	2.444	2.674
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	563	563	704	704
d_b, Bicycle Delay [s]	36.63	36.65	29.80	29.80
l_b,int, Bicycle LOS Score for Intersection	2.078	2.561	2.517	2.584
Bicycle LOS	B	B	B	B

Sequence

Ring 1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: S Redland Rd/Abernaty Rd

Control Type:	Signalized	Delay (sec / veh):	30.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.795

Intersection Setup

Name	S Redland Rd			S Redland Rd			17th St			Holocomb Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	125.00	100.00	100.00	330.00	100.00	250.00	120.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
Speed [mph]	30.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Redland Rd			S Redland Rd			17th St			Holocomb Blvd		
Base Volume Input [veh/h]	79	293	52	268	508	42	35	118	149	42	84	188
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	8.00	5.00	4.00	3.00	4.00	2.00	6.00	3.00	3.00	5.00	4.00	3.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	5	1	0	0	4	5	18	5	5	0	5	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	28	0	0	0	0	0	112
Total Hourly Volume [veh/h]	98	348	61	317	605	27	59	145	182	50	104	111
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	91	16	83	158	7	15	38	47	13	27	29
Total Analysis Volume [veh/h]	102	363	64	330	630	27	61	151	190	52	108	116
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	13.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	0
Maximum Green [s]	30	45	0	30	45	0	30	35	0	20	30	0
Amber [s]	3.5	4.7	0.0	3.5	4.7	0.0	3.5	4.0	0.0	3.5	4.7	0.0
All red [s]	0.5	0.7	0.0	0.5	0.7	0.0	0.5	0.5	0.0	0.5	0.7	0.0
Split [s]	34	51	0	34	51	0	34	40	0	24	36	0
Vehicle Extension [s]	2.3	4.5	0.0	2.3	4.5	0.0	2.3	2.3	0.0	2.3	2.3	0.0
Walk [s]	0	7	0	5	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	10	24	0	0	22	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.4	0.0	2.0	3.4	0.0	2.0	2.5	0.0	2.0	3.4	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C	R
C, Cycle Length [s]	76	76	76	76	76	76	76	76	76	76
L, Total Lost Time per Cycle [s]	4.00	5.40	4.00	5.40	5.40	4.00	4.50	4.00	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.40	2.00	3.40	3.40	2.00	2.50	2.00	3.40	3.40
g_i, Effective Green Time [s]	6	22	16	32	32	3	17	3	16	16
g / C, Green / Cycle	0.08	0.29	0.21	0.42	0.42	0.05	0.23	0.04	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.06	0.24	0.19	0.34	0.02	0.04	0.20	0.03	0.06	0.07
s, saturation flow rate [veh/h]	1695	1778	1767	1840	1589	1724	1689	1738	1840	1577
c, Capacity [veh/h]	131	507	376	775	669	78	386	66	386	330
d1, Uniform Delay [s]	34.49	25.61	28.99	19.41	12.99	35.97	28.38	36.33	25.27	25.68
k, delay calibration	0.07	0.19	0.07	0.21	0.19	0.07	0.07	0.07	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.01	6.44	4.17	4.05	0.04	9.85	4.28	11.97	0.24	0.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.84	0.88	0.81	0.04	0.78	0.88	0.79	0.28	0.35
d, Delay for Lane Group [s/veh]	40.50	32.05	33.16	23.47	13.03	45.82	32.65	48.30	25.51	26.07
Lane Group LOS	D	C	C	C	B	D	C	D	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.02	7.77	5.82	9.39	0.25	1.31	6.18	1.15	1.61	1.76
50th-Percentile Queue Length [ft/ln]	50.49	194.19	145.58	234.68	6.30	32.64	154.59	28.83	40.24	44.10
95th-Percentile Queue Length [veh/ln]	3.64	12.34	9.78	14.41	0.45	2.35	10.26	2.08	2.90	3.18
95th-Percentile Queue Length [ft/ln]	90.88	308.45	244.51	360.30	11.34	58.76	256.54	51.89	72.43	79.38

Movement, Approach, & Intersection Results

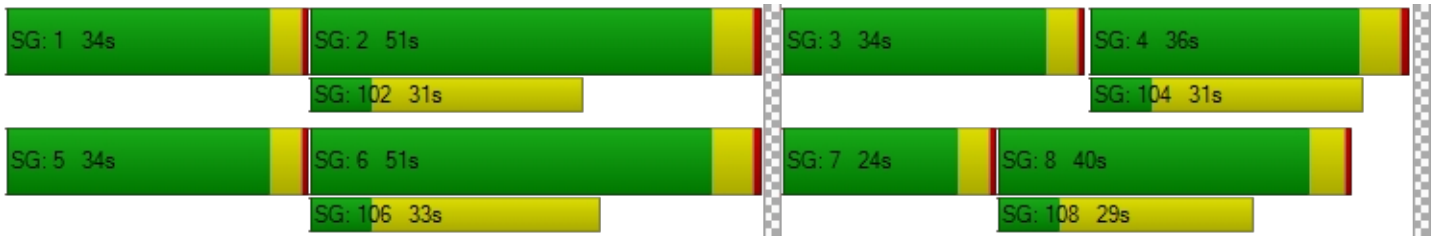
d_M, Delay for Movement [s/veh]	40.50	32.05	32.05	33.16	23.47	13.03	45.82	32.65	32.65	48.30	25.51	26.07
Movement LOS	D	C	C	C	C	B	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	33.68			26.42			34.65			30.04		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	30.13											
Intersection LOS	C											
Intersection V/C	0.795											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	66.89	66.89	66.89	66.89
l_p,int, Pedestrian LOS Score for Intersection	2.421	2.799	2.320	2.544
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	588	588	458	395
d_b, Bicycle Delay [s]	38.61	38.61	46.07	49.92
l_b,int, Bicycle LOS Score for Intersection	2.432	3.234	2.223	2.200
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: S Anchor Way / S Redland Rd

Control Type:	Two-way stop	Delay (sec / veh):	84.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.788

Intersection Setup

Name	S Redland Rd		S Redland Rd		S Anchor Way	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	S Redland Rd		S Redland Rd		S Anchor Way	
Base Volume Input [veh/h]	28	287	553	127	112	43
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	0.00	8.00	5.00	0.00	0.00	0.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	6	9	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	33	345	663	150	132	51
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	94	180	41	36	14
Total Analysis Volume [veh/h]	36	375	721	163	143	55
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			Yes
Storage Area [veh]	0	0	1
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.00	0.01	0.00	0.79	0.14
d_M, Delay for Movement [s/veh]	9.88	0.00	0.00	0.00	84.41	73.87
Movement LOS	A	A	A	A	F	F
95th-Percentile Queue Length [veh/ln]	0.15	0.15	0.00	0.00	7.23	7.23
95th-Percentile Queue Length [ft/ln]	3.65	3.65	0.00	0.00	180.67	180.67
d_A, Approach Delay [s/veh]	0.87		0.00		81.48	
Approach LOS	A		A		F	
d_I, Intersection Delay [s/veh]	11.04					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 18: S Holly Ln / S Redland Rd

Control Type:	Two-way stop	Delay (sec / veh):	26.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.312

Intersection Setup

Name	S Holly Ln		S Redland Rd		S Redland Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	S Holly Ln		S Redland Rd		S Redland Rd	
Base Volume Input [veh/h]	56	15	453	111	15	247
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	2.00	0.00	6.00	5.00	0.00	9.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	9	0	0	6
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	67	18	545	131	18	299
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	5	153	37	5	84
Total Analysis Volume [veh/h]	75	20	612	147	20	336
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	Yes		
Storage Area [veh]	1	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.31	0.04	0.01	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	26.11	19.13	0.00	0.00	9.28	0.00
Movement LOS	D	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.41	1.41	0.00	0.00	0.07	0.07
95th-Percentile Queue Length [ft/ln]	35.26	35.26	0.00	0.00	1.78	1.78
d_A, Approach Delay [s/veh]	24.64		0.00		0.52	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	2.09					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 19: I 205 SB-Ramp / OR 213

Control Type:	Two-way stop	Delay (sec / veh):	116.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.135

Intersection Setup

Name	OR 213		Washington St		Washington Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	OR 213		Washington St		Washington Dr	
Base Volume Input [veh/h]	650	14	31	22	5	2077
Base Volume Adjustment Factor	1.1700	1.0000	1.0000	1.0000	1.0000	1.1000
Heavy Vehicles Percentage [%]	5.00	7.00	0.00	0.00	20.00	4.00
Growth Factor	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	5	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	17	0	0	0	0	0
Total Hourly Volume [veh/h]	778	20	33	23	5	2415
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	211	5	9	6	1	656
Total Analysis Volume [veh/h]	846	22	36	25	5	2625
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.56	0.00	0.00	0.00	0.13	0.00
d_M, Delay for Movement [s/veh]	10.27	0.00	0.00	0.00	116.68	0.00
Movement LOS	B	A	A	A	F	
95th-Percentile Queue Length [veh/ln]	3.59	0.00	0.00	0.00	0.42	0.00
95th-Percentile Queue Length [ft/ln]	89.87	0.00	0.00	0.00	10.57	0.00
d_A, Approach Delay [s/veh]	10.01		0.00		116.68	
Approach LOS	B		A		F	
d_I, Intersection Delay [s/veh]	9.93					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 20: OR 213 / Clackamas River Dr

Control Type:	Signalized	Delay (sec / veh):	12.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.802

Intersection Setup

Name	OR 213			OR 213			Prairie Schooner Way			Clackamas River Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	450.00	100.00	100.00	415.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			Yes			Yes			Yes		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	OR 213			OR 213			Prairie Schooner Way			Clackamas River Dr		
Base Volume Input [veh/h]	0	1689	156	0	2677	565	0	0	186	0	0	408
Base Volume Adjustment Factor	1.0000	1.1700	1.1700	1.0000	1.1700	1.1700	1.0000	1.0000	1.1700	1.0000	1.0000	1.1700
Heavy Vehicles Percentage [%]	2.00	4.00	6.00	2.00	4.00	7.00	2.00	2.00	4.00	2.00	2.00	8.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	59	5	0	17	0	0	0	9	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	17	0	0	24	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	198	0	0	699	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	2052	0	0	3173	0	0	0	239	0	0	504
Peak Hour Factor	1.0000	0.9400	0.9400	1.0000	0.9400	0.9400	1.0000	1.0000	0.9400	1.0000	1.0000	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	546	0	0	844	0	0	0	64	0	0	134
Total Analysis Volume [veh/h]	0	2183	0	0	3376	0	0	0	254	0	0	536
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	0	1	0	0	5
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	0	4	0	0	4
Maximum Green [s]	0	86	0	0	96	0	0	0	26	0	0	86
Amber [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	0.0	3.5	0.0	0.0	3.5
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.5	0.0	0.0	0.5
Split [s]	0	44	0	0	44	0	0	0	30	0	0	84
Vehicle Extension [s]	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	2.3	0.0	0.0	2.3
Walk [s]	0	0	0	0	0	0	0	0	7	0	0	7
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	15	0	0	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0
Minimum Recall		Yes			Yes				No			No
Maximum Recall		No			No				No			No
Pedestrian Recall		No			No				No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	R	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	92	92	106	106	14	28
g / C, Green / Cycle	0.70	0.70	0.81	0.81	0.11	0.22
(v / s)_i Volume / Saturation Flow Rate	0.44	0.00	0.67	0.00	0.09	0.20
s, saturation flow rate [veh/h]	5012	1538	5012	1526	2768	2678
c, Capacity [veh/h]	3528	1083	4082	1243	301	587
d1, Uniform Delay [s]	1.44	0.00	6.86	0.00	56.95	49.61
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.82	0.00	2.05	0.00	4.05	3.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.62	0.00	0.83	0.00	0.84	0.91
d, Delay for Lane Group [s/veh]	2.27	0.00	8.91	0.00	61.00	53.46
Lane Group LOS	A	A	A	A	E	D
Critical Lane Group	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.36	0.00	9.98	0.00	4.27	8.81
50th-Percentile Queue Length [ft/ln]	34.10	0.00	249.57	0.00	106.80	220.20
95th-Percentile Queue Length [veh/ln]	2.46	0.00	15.16	0.00	7.66	13.68
95th-Percentile Queue Length [ft/ln]	61.38	0.00	379.11	0.00	191.54	341.88

Movement, Approach, & Intersection Results

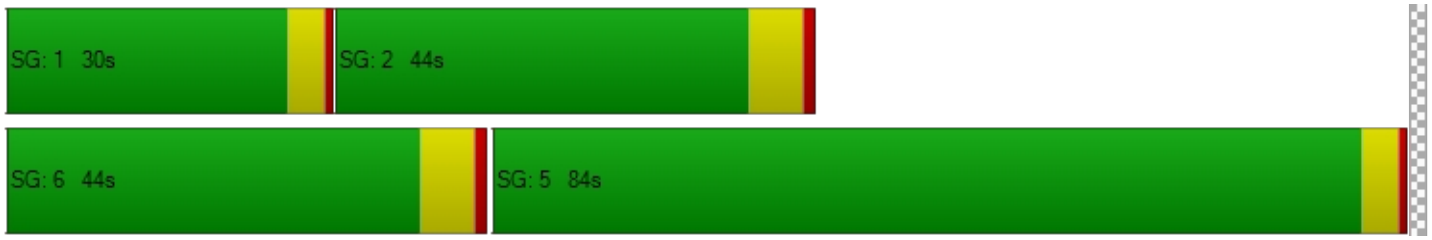
d_M, Delay for Movement [s/veh]	0.00	2.27	0.00	0.00	8.91	0.00	0.00	0.00	61.00	0.00	0.00	53.46
Movement LOS		A	A		A	A			E			D
d_A, Approach Delay [s/veh]	2.27			8.91			61.00			53.46		
Approach LOS	A			A			E			D		
d_I, Intersection Delay [s/veh]	12.47											
Intersection LOS	B											
Intersection V/C	0.802											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	38.0	38.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	32.55	32.55
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.360	2.176
Crosswalk LOS	F	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	585	585	400	1231
d_b, Bicycle Delay [s]	32.55	32.55	41.60	9.62
l_b,int, Bicycle LOS Score for Intersection	2.869	3.801	1.560	1.560
Bicycle LOS	C	D	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: OR 213 / S Redland Rd

Control Type:	Signalized	Delay (sec / veh):	53.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.033

Intersection Setup

Name	OR 213		OR 213		S Redland Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	350.00	100.00	100.00	100.00	335.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		40.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		Yes		Yes	
Crosswalk	Yes		No		Yes	

Volumes

Name	OR 213		OR 213		S Redland Rd	
Base Volume Input [veh/h]	117	1445	2130	704	385	92
Base Volume Adjustment Factor	1.1700	1.1700	1.1700	1.1700	1.1700	1.1700
Heavy Vehicles Percentage [%]	5.00	3.00	4.00	3.00	5.00	2.00
Growth Factor	1.0570	1.0000	1.0000	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	9	59	27	0	0	19
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	17	24	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	436	0	67
Total Hourly Volume [veh/h]	154	1767	2543	435	476	66
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	455	655	112	123	17
Total Analysis Volume [veh/h]	159	1822	2622	448	491	68
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	0		1		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	22.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Overlap	Permissive	Overlap
Signal Group	1	6	2	2	8	8
Auxiliary Signal Groups				2,8		1,8
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	6	6
Maximum Green [s]	12	101	85	85	21	21
Amber [s]	3.5	5.0	5.0	5.0	3.0	3.0
All red [s]	0.5	1.0	1.0	1.0	0.7	0.7
Split [s]	16	105	89	89	25	25
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	5	5	5
Pedestrian Clearance [s]	0	10	10	10	10	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	4.0	1.7	1.7
Minimum Recall	No	Yes	Yes	Yes	No	No
Maximum Recall	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	3.70	3.70	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	0.00	1.70	0.00
g_i, Effective Green Time [s]	12	99	83	110	21	37
g / C, Green / Cycle	0.09	0.76	0.64	0.85	0.16	0.28
(v / s)_i Volume / Saturation Flow Rate	0.09	0.52	0.75	0.28	0.15	0.04
s, saturation flow rate [veh/h]	1738	3532	3503	1576	3375	1589
c, Capacity [veh/h]	160	2701	2249	1338	543	447
d1, Uniform Delay [s]	59.06	7.44	9.39	0.57	53.66	35.13
k, delay calibration	0.38	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	60.39	1.37	79.97	0.68	5.98	0.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.33	1.12	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.99	0.67	1.17	0.33	0.90	0.15
d, Delay for Lane Group [s/veh]	119.45	8.81	89.36	1.24	59.64	35.28
Lane Group LOS	F	A	F	A	E	D
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.72	8.95	30.43	0.49	8.21	1.63
50th-Percentile Queue Length [ft/ln]	193.12	223.80	760.86	12.31	205.13	40.68
95th-Percentile Queue Length [veh/ln]	12.28	13.86	44.50	0.89	12.90	2.93
95th-Percentile Queue Length [ft/ln]	307.08	346.47	1112.53	22.15	322.58	73.22

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	119.45	8.81	89.36	1.24	59.64	35.28
Movement LOS	F	A	F	A	E	D
d_A, Approach Delay [s/veh]	17.69		76.50		56.68	
Approach LOS	B		E		E	
d_I, Intersection Delay [s/veh]	53.76					
Intersection LOS	D					
Intersection V/C	1.033					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	0.00	56.31
I_p,int, Pedestrian LOS Score for Intersection	4.013	0.000	2.788
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1523	1277	328
d_b, Bicycle Delay [s]	3.70	8.50	45.44
I_b,int, Bicycle LOS Score for Intersection	3.194	4.452	1.560
Bicycle LOS	C	E	A

Sequence

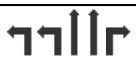
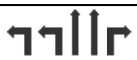
Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: OR 213/Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	70.1
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.894

Intersection Setup

Name	OR 213			OR 213			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	2	0	1	2	0	0	2	0	1
Entry Pocket Length [ft]	530.00	100.00	580.00	600.00	100.00	525.00	500.00	100.00	100.00	160.00	100.00	465.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 213			OR 213			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	85	641	155	680	1071	512	522	592	112	117	400	399
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	2.00	4.00	1.00	4.00	5.00	3.00	3.00	1.00	4.00	0.00	2.00	3.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	9	1	5	28	13	41	18	0	6	19	18
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	17	0	0	24	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	93	0	0	313	0	0	0	0	0	248
Total Hourly Volume [veh/h]	101	750	93	817	1262	312	665	725	134	146	497	247
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	195	24	213	329	81	173	189	35	38	129	64
Total Analysis Volume [veh/h]	105	781	97	851	1315	325	693	755	140	152	518	257
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	7			0			7			0		
v_di, Inbound Pedestrian Volume crossing m	7			0			7			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			1			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	142
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	0
Maximum Green [s]	15	40	0	32	40	0	38	30	0	15	20	0
Amber [s]	4.0	5.0	0.0	4.0	5.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.5	2.0	0.0	1.5	2.0	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	21	47	0	38	47	0	44	36	0	21	26	0
Vehicle Extension [s]	2.3	4.7	0.0	2.3	4.7	0.0	2.3	2.3	0.0	2.3	2.3	0.0
Walk [s]	0	8	0	0	9	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	31	0	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.5	5.0	0.0	3.5	5.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	143	143	143	143	143	143	143	143	143	143	143	143
L, Total Lost Time per Cycle [s]	5.50	7.00	7.00	5.50	7.00	7.00	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	5.00	5.00	3.50	5.00	5.00	3.50	3.50	3.50	3.50	3.50	3.50
g_i, Effective Green Time [s]	10	36	36	32	58	58	31	43	43	8	20	20
g / C, Green / Cycle	0.07	0.25	0.25	0.22	0.40	0.40	0.22	0.30	0.30	0.06	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.06	0.22	0.06	0.25	0.38	0.21	0.20	0.24	0.25	0.04	0.15	0.16
s, saturation flow rate [veh/h]	1781	3503	1602	3403	3475	1577	3431	1885	1768	3514	3560	1577
c, Capacity [veh/h]	128	885	405	761	1405	638	754	568	533	204	498	220
d1, Uniform Delay [s]	65.48	51.42	42.53	55.55	40.83	31.97	54.60	46.01	46.48	66.37	61.55	61.55
k, delay calibration	0.07	0.20	0.20	0.07	0.26	0.29	0.07	0.50	0.50	0.07	0.07	0.49
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.69	5.55	0.56	56.15	7.73	1.71	3.30	11.29	13.63	3.34	26.77	112.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.88	0.24	1.12	0.94	0.51	0.92	0.80	0.83	0.75	1.04	1.17
d, Delay for Lane Group [s/veh]	73.17	56.97	43.09	111.70	48.56	33.68	57.90	57.30	60.11	69.71	88.32	173.97
Lane Group LOS	E	E	D	F	D	C	E	E	E	E	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.06	14.15	2.83	19.62	23.46	8.80	12.45	16.54	16.44	2.82	10.83	14.83
50th-Percentile Queue Length [ft/ln]	101.60	353.68	70.75	490.58	586.51	219.98	311.35	413.62	411.10	70.48	270.67	370.81
95th-Percentile Queue Length [veh/ln]	7.32	20.32	5.09	28.59	31.40	13.66	18.24	23.22	23.09	5.07	16.52	22.63
95th-Percentile Queue Length [ft/ln]	182.88	507.90	127.34	714.80	785.09	341.60	456.03	580.39	577.36	126.86	413.09	565.74

Movement, Approach, & Intersection Results

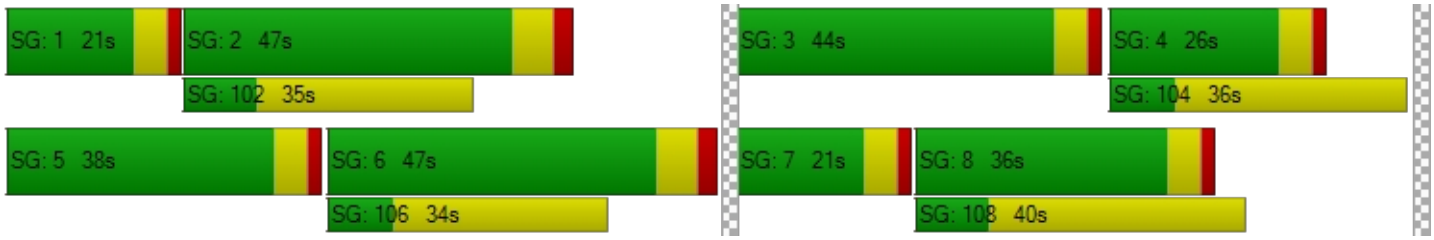
d_M, Delay for Movement [s/veh]	73.17	56.97	43.09	111.70	48.56	33.68	57.90	58.42	60.11	69.71	88.32	173.97
Movement LOS	E	E	D	F	D	C	E	E	E	E	F	F
d_A, Approach Delay [s/veh]	57.33			68.19			58.34			109.01		
Approach LOS	E			E			E			F		
d_I, Intersection Delay [s/veh]	70.11											
Intersection LOS	E											
Intersection V/C	0.894											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	13.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	543.21	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	58.60	59.51	58.60	59.51
l_p,int, Pedestrian LOS Score for Intersection	3.042	3.727	3.014	3.451
Crosswalk LOS	C	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	563	563	430	289
d_b, Bicycle Delay [s]	36.63	36.63	43.80	51.98
l_b,int, Bicycle LOS Score for Intersection	2.447	3.873	2.870	2.529
Bicycle LOS	B	D	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 23: OR 213 / Molalla Ave

Control Type:	Signalized	Delay (sec / veh):	37.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.818

Intersection Setup

Name	OR 213			OR 213			Molalla Ave			S Douglas Loop		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	650.00	100.00	100.00	525.00	100.00	355.00	100.00	100.00	100.00	275.00	100.00	275.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 213			OR 213			Molalla Ave			S Douglas Loop		
Base Volume Input [veh/h]	212	739	10	13	1071	197	129	16	334	19	20	19
Base Volume Adjustment Factor	1.1700	1.1700	1.1700	1.1700	1.1700	1.1700	1.1700	1.1700	1.1700	1.1700	1.1700	1.1700
Heavy Vehicles Percentage [%]	0.00	4.00	20.00	15.00	5.00	2.00	2.00	19.00	1.00	11.00	30.00	11.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	8	10	0	0	34	0	0	0	20	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	17	0	0	24	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	7	0	0	122	0	0	217	0	0	12
Total Hourly Volume [veh/h]	270	892	6	16	1311	121	160	20	216	23	24	11
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	242	2	4	356	33	43	5	59	6	7	3
Total Analysis Volume [veh/h]	293	970	7	17	1425	132	174	22	235	25	26	12
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	4			2			4			1		
v_di, Inbound Pedestrian Volume crossing m	4			1			4			2		
v_co, Outbound Pedestrian Volume crossing	0			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	13.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	6
Maximum Green [s]	31	55	0	21	45	0	16	22	0	16	22	22
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	3.5	4.7	0.0	3.5	4.7	4.7
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.5	0.7	0.0	0.5	0.7	0.7
Split [s]	35	59	0	25	49	0	20	26	0	20	26	26
Vehicle Extension [s]	2.3	4.5	0.0	2.3	4.5	0.0	2.3	2.3	0.0	2.3	2.3	2.3
Walk [s]	0	9	0	0	10	0	0	14	0	0	11	11
Pedestrian Clearance [s]	0	23	0	0	27	0	0	28	0	0	30	30
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	4.0	0.0	2.0	4.0	0.0	2.0	3.4	0.0	2.0	3.4	3.4
Minimum Recall	No	Yes		No	Yes		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	5.40	5.40	4.00	5.40	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	3.40	3.40	2.00	3.40	0.00
g_i, Effective Green Time [s]	23	83	83	2	61	61	20	21	21	6	6	37
g / C, Green / Cycle	0.18	0.63	0.63	0.01	0.47	0.47	0.15	0.16	0.16	0.04	0.05	0.29
(v / s)_i Volume / Saturation Flow Rate	0.16	0.28	0.01	0.01	0.41	0.08	0.12	0.01	0.15	0.02	0.02	0.01
s, saturation flow rate [veh/h]	1810	3503	1359	1595	3475	1589	1417	1615	1578	1652	1450	1471
c, Capacity [veh/h]	319	2222	862	23	1640	750	251	256	250	72	72	424
d1, Uniform Delay [s]	52.60	12.02	8.74	63.84	30.71	19.75	55.06	46.67	53.94	60.36	59.78	33.16
k, delay calibration	0.19	0.50	0.50	0.07	0.50	0.50	0.07	0.07	0.29	0.07	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.18	0.63	0.02	25.26	6.53	0.51	2.11	0.09	30.85	1.73	1.85	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.44	0.01	0.75	0.87	0.18	0.69	0.09	0.94	0.35	0.36	0.03
d, Delay for Lane Group [s/veh]	68.78	12.64	8.75	89.10	37.24	20.27	57.16	46.76	84.79	62.09	61.63	33.17
Lane Group LOS	E	B	A	F	D	C	E	D	F	E	E	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	10.43	6.34	0.07	0.70	19.64	2.27	5.80	0.62	9.78	0.84	0.88	0.28
50th-Percentile Queue Length [ft/ln]	260.67	158.54	1.71	17.56	491.01	56.75	144.90	15.62	244.49	21.11	21.88	7.02
95th-Percentile Queue Length [veh/ln]	15.72	10.47	0.12	1.26	26.91	4.09	9.74	1.12	14.91	1.52	1.58	0.51
95th-Percentile Queue Length [ft/ln]	393.06	261.78	3.09	31.60	672.72	102.15	243.61	28.11	372.71	37.99	39.39	12.63

Movement, Approach, & Intersection Results

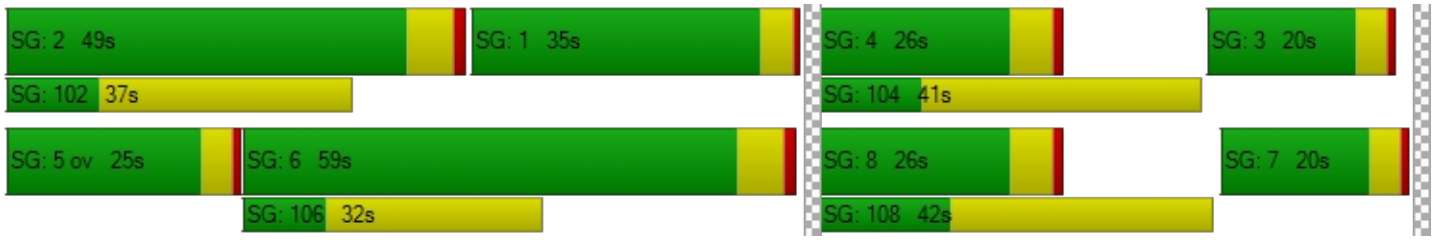
d_M, Delay for Movement [s/veh]	68.78	12.64	8.75	89.10	37.24	20.27	57.16	46.76	84.79	62.09	61.63	33.17
Movement LOS	E	B	A	F	D	C	E	D	F	E	E	C
d_A, Approach Delay [s/veh]	25.57			36.38			71.70			56.39		
Approach LOS	C			D			E			E		
d_I, Intersection Delay [s/veh]	37.21											
Intersection LOS	D											
Intersection V/C	0.818											

Other Modes

g_Walk,mi, Effective Walk Time [s]	18.0	15.0	14.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	1475.59	3148.61	0.00	10045.46
d_p, Pedestrian Delay [s]	48.25	50.87	51.75	52.65
l_p,int, Pedestrian LOS Score for Intersection	3.423	3.742	2.703	2.190
Crosswalk LOS	C	D	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	815	662	317	317
d_b, Bicycle Delay [s]	22.80	29.11	46.03	46.03
l_b,int, Bicycle LOS Score for Intersection	2.613	2.959	2.629	1.683
Bicycle LOS	B	C	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Molalla Ave / Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	39.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.589

Intersection Setup

Name	Molalla Ave			Molalla Ave			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	170.00	100.00	150.00	350.00	100.00	100.00	175.00	100.00	190.00	210.00	100.00	245.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			35.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Molalla Ave			Molalla Ave			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	127	251	45	480	304	16	24	342	150	86	302	293
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	4.00	1.00	2.00	2.00	1.00	0.00	0.00	2.00	3.00	6.00	3.00	1.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	7	5	0	7	8	1	5	50	20	0	12	14
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	99	0	0	181
Total Hourly Volume [veh/h]	157	302	53	576	367	20	34	455	99	101	369	180
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	79	14	152	97	5	9	120	26	27	97	47
Total Analysis Volume [veh/h]	165	318	56	606	386	21	36	479	104	106	388	189
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3			3			3			2		
v_di, Inbound Pedestrian Volume crossing m	3			2			3			3		
v_co, Outbound Pedestrian Volume crossing	7			2			3			7		
v_ci, Inbound Pedestrian Volume crossing mi	7			3			2			7		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	10	0	6	10	0	4	6	0	6	6	0
Maximum Green [s]	30	40	0	30	40	0	20	25	0	20	25	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	3.5	4.0	0.0	3.5	4.0	0.0
All red [s]	2.0	2.0	0.0	2.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	20	38	0	24	42	0	12	26	0	12	26	0
Vehicle Extension [s]	2.3	4.6	0.0	2.3	4.2	0.0	2.3	2.5	0.0	2.3	2.5	0.0
Walk [s]	0	9	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	26	0	0	22	0	0	23	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	4.0	0.0	4.0	4.0	0.0	2.5	4.0	0.0	2.5	4.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	36	36	36	46	46	46	28	17	17	28	21	21
g / C, Green / Cycle	0.36	0.36	0.36	0.46	0.46	0.46	0.28	0.17	0.17	0.28	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.13	0.10	0.10	0.42	0.11	0.11	0.03	0.13	0.07	0.09	0.11	0.12
s, saturation flow rate [veh/h]	1240	1885	1781	1450	1885	1850	1158	3560	1560	1154	3532	1591
c, Capacity [veh/h]	491	683	646	601	858	842	327	601	264	312	729	328
d1, Uniform Delay [s]	22.74	22.64	22.68	31.75	16.68	16.68	27.20	39.96	37.03	28.80	35.42	35.75
k, delay calibration	0.07	0.50	0.50	0.50	0.50	0.50	0.07	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.24	1.02	1.10	38.61	0.66	0.67	0.09	1.84	0.71	0.47	0.45	1.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.34	0.28	0.28	1.01	0.24	0.24	0.11	0.80	0.39	0.34	0.53	0.58
d, Delay for Lane Group [s/veh]	22.99	23.66	23.77	70.36	17.34	17.35	27.29	41.80	37.74	29.27	35.87	36.93
Lane Group LOS	C	C	C	F	B	B	C	D	D	C	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.74	3.35	3.22	17.36	2.93	2.88	0.63	5.69	2.28	1.98	4.22	4.22
50th-Percentile Queue Length [ft/ln]	68.38	83.63	80.58	434.05	73.16	71.92	15.79	142.21	56.98	49.60	105.57	105.38
95th-Percentile Queue Length [veh/ln]	4.92	6.02	5.80	24.33	5.27	5.18	1.14	9.60	4.10	3.57	7.59	7.58
95th-Percentile Queue Length [ft/ln]	123.09	150.53	145.04	608.33	131.70	129.46	28.43	239.99	102.56	89.29	189.83	189.55

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	22.99	23.70	23.77	70.36	17.34	17.35	27.29	41.80	37.74	29.27	35.87	36.93
Movement LOS	C	C	C	F	B	B	C	D	D	C	D	D
d_A, Approach Delay [s/veh]	23.49			49.06			40.27			35.14		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	38.99											
Intersection LOS	D											
Intersection V/C	0.589											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	1715.58	1771.47	2413.63	734.95
d_p, Pedestrian Delay [s]	38.72	38.72	38.72	37.85
l_p,int, Pedestrian LOS Score for Intersection	2.573	2.711	2.898	3.286
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	640	720	400	400
d_b, Bicycle Delay [s]	23.12	20.48	32.00	32.00
l_b,int, Bicycle LOS Score for Intersection	2.004	2.395	2.152	2.272
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: Maple Lane Rd / Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	22.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.749

Intersection Setup

Name	Maple Lane Rd			Maple Lane Rd			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	150.00	430.00	100.00	100.00	360.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Maple Lane Rd			Maple Lane Rd			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	226	92	46	58	59	303	393	706	108	15	411	48
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	1.00	0.00	2.00	2.00	2.00	1.00	2.00	4.00	2.00	0.00	3.00	2.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	0	0	0	0	24	0	0	43	11
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	179	0	0	0	0	0	0
Total Hourly Volume [veh/h]	267	109	55	69	70	179	465	860	128	18	529	68
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	70	28	14	18	18	47	121	224	33	5	138	18
Total Analysis Volume [veh/h]	278	114	57	72	73	186	484	896	133	19	551	71
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3			0			3			0		
v_di, Inbound Pedestrian Volume crossing m	3			0			3			0		
v_co, Outbound Pedestrian Volume crossing	4			0			0			4		
v_ci, Inbound Pedestrian Volume crossing mi	4			0			0			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	0	3	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	4	10	0	4	10	0
Maximum Green [s]	0	20	0	0	20	20	35	50	0	20	35	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	4.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.5	0.5	0.5	0.0	0.5	0.5	0.0
Split [s]	0	25	0	0	25	25	40	55	0	25	40	0
Vehicle Extension [s]	0.0	2.5	0.0	0.0	2.5	2.5	2.5	5.2	0.0	2.3	5.2	0.0
Walk [s]	0	8	0	0	8	8	0	7	0	0	8	0
Pedestrian Clearance [s]	0	19	0	0	19	19	0	12	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	0.0	0.0	2.5	2.5	2.5	2.5	0.0	2.5	2.5	0.0
Minimum Recall		No			No	No	No	Yes		No	Yes	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	76	76	76	76	76	76	76	76	76	76	76
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	0.00	0.00	2.50	2.50	0.00	2.50	2.50
g_i, Effective Green Time [s]	15	15	6	6	29	41	36	36	41	18	18
g / C, Green / Cycle	0.20	0.20	0.08	0.08	0.38	0.55	0.47	0.47	0.55	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.15	0.10	0.04	0.04	0.12	0.37	0.28	0.29	0.03	0.17	0.17
s, saturation flow rate [veh/h]	1795	1777	1781	1870	1602	1301	1840	1755	672	1855	1772
c, Capacity [veh/h]	352	348	141	148	616	727	865	825	392	449	429
d1, Uniform Delay [s]	29.03	27.14	33.54	33.49	16.28	12.65	14.87	14.97	9.66	26.29	26.35
k, delay calibration	0.10	0.08	0.08	0.08	0.08	0.27	0.26	0.26	0.07	0.26	0.26
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.67	0.80	2.13	1.89	0.20	2.65	1.60	1.75	0.03	4.73	5.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.49	0.51	0.49	0.30	0.67	0.60	0.61	0.05	0.71	0.71
d, Delay for Lane Group [s/veh]	32.70	27.94	35.67	35.38	16.48	15.30	16.48	16.71	9.69	31.03	31.47
Lane Group LOS	C	C	D	D	B	B	B	B	A	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.05	2.78	1.29	1.30	2.06	4.80	6.26	6.12	0.13	5.49	5.35
50th-Percentile Queue Length [ft/ln]	126.27	69.40	32.16	32.40	51.46	120.10	156.39	153.10	3.17	137.31	133.75
95th-Percentile Queue Length [veh/ln]	8.74	5.00	2.32	2.33	3.70	8.40	10.36	10.18	0.23	9.34	9.14
95th-Percentile Queue Length [ft/ln]	218.42	124.92	57.90	58.32	92.62	209.96	258.93	254.57	5.70	233.40	228.59

Movement, Approach, & Intersection Results

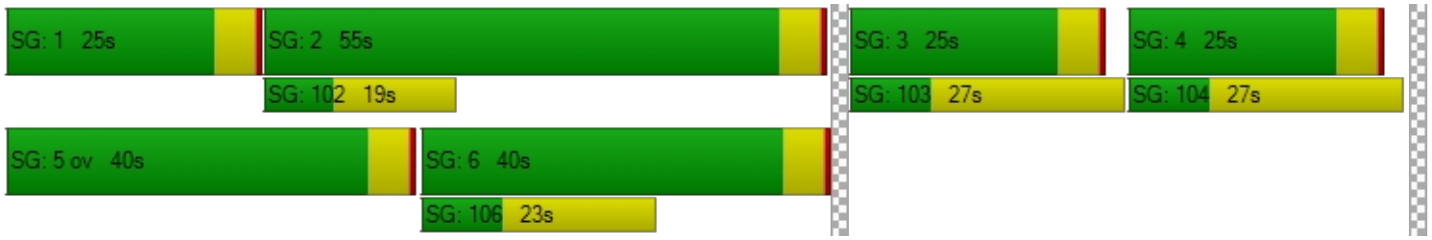
d_M, Delay for Movement [s/veh]	32.70	27.94	27.94	35.67	35.38	16.48	15.30	16.58	16.71	9.69	31.21	31.47
Movement LOS	C	C	C	D	D	B	B	B	B	A	C	C
d_A, Approach Delay [s/veh]	30.88			24.82			16.18			30.60		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	22.56											
Intersection LOS	C											
Intersection V/C	0.749											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	649.88	0.00	0.00	1083.17
d_p, Pedestrian Delay [s]	54.47	53.55	53.55	53.55
l_p,int, Pedestrian LOS Score for Intersection	2.154	2.970	2.933	2.696
Crosswalk LOS	B	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	315	315	777	546
d_b, Bicycle Delay [s]	46.14	46.12	24.31	34.36
l_b,int, Bicycle LOS Score for Intersection	2.300	2.401	2.808	2.088
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	



Intersection Level Of Service Report
Intersection 199: I 205 SB-Ramp / OR 213

Control Type:	Two-way stop	Delay (sec / veh):	807.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.908

Intersection Setup

Name	OR 213		OR 213			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	OR 213		OR 213			
Base Volume Input [veh/h]	0	664	31	0	0	2077
Base Volume Adjustment Factor	1.0000	1.1700	1.1700	1.0000	1.0000	1.1700
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0570	1.0000
In-Process Volume [veh/h]	0	5	0	0	0	17
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	17	0	0	0	24
Total Hourly Volume [veh/h]	0	799	38	0	0	2471
Peak Hour Factor	1.0000	0.9200	0.9200	1.0000	1.0000	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	217	10	0	0	671
Total Analysis Volume [veh/h]	0	868	41	0	0	2686
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Stop	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	1.91	0.00	0.00	0.03
d_M, Delay for Movement [s/veh]	0.00	0.00	807.82	0.00	0.00	0.00
Movement LOS		A	F			A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	5.33	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	133.15	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		807.82		0.00	
Approach LOS	A		F		A	
d_I, Intersection Delay [s/veh]	9.21					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 1: OR 99E/ River Rd/ W Arlington St

Control Type:	Signalized	Delay (sec / veh):	12.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.601

Intersection Setup

Name				OR 99E			River Rd			W Arlington St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	185.00	100.00	275.00	250.00	100.00	100.00	550.00	100.00	100.00	100.00	100.00	160.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				OR 99E			River Rd			W Arlington St		
Base Volume Input [veh/h]	135	1079	103	81	1050	12	6	41	177	131	28	98
Base Volume Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
Heavy Vehicles Percentage [%]	4.00	3.00	6.00	1.00	4.00	0.00	0.00	7.00	2.00	3.00	4.00	5.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	36	0	0	26	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	16	0	0	14	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	54
Total Hourly Volume [veh/h]	147	1163	112	88	1122	13	6	44	192	143	31	53
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	300	29	23	289	3	2	11	49	37	8	14
Total Analysis Volume [veh/h]	152	1199	115	91	1157	13	6	45	198	147	32	55
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		7			2			7			1	
v_di, Inbound Pedestrian Volume crossing m		7			1			7			2	
v_co, Outbound Pedestrian Volume crossing		3			2			2			3	
v_ci, Inbound Pedestrian Volume crossing mi		3			2			2			3	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		3			2			4			1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	42.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	20	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	18	52	0	18	52	0	0	30	0	0	30	0
Vehicle Extension [s]	2.3	4.7	0.0	2.3	4.7	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	9	0	0	8	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	20	0	0	15	0	0	26	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	C	R	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.40	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.80	2.80	0.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	66	66	60	59	59	18	18	18	18
g / C, Green / Cycle	0.10	0.66	0.66	0.60	0.59	0.59	0.18	0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.09	0.34	0.08	0.13	0.32	0.32	0.03	0.13	0.12	0.04
s, saturation flow rate [veh/h]	1752	3532	1498	705	1840	1832	1773	1526	1446	1523
c, Capacity [veh/h]	182	2315	982	405	1085	1080	357	273	324	272
d1, Uniform Delay [s]	42.25	2.66	2.23	8.74	5.66	5.66	34.70	38.52	38.13	34.96
k, delay calibration	0.07	0.50	0.50	0.50	0.50	0.50	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.92	0.83	0.24	1.28	1.93	1.95	0.13	2.74	1.09	0.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.52	0.12	0.22	0.54	0.54	0.14	0.73	0.55	0.20
d, Delay for Lane Group [s/veh]	49.18	3.49	2.48	10.02	7.59	7.60	34.84	41.26	39.22	35.23
Lane Group LOS	D	A	A	B	A	A	C	D	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.86	1.93	0.35	0.51	3.53	3.53	1.06	4.71	4.15	1.16
50th-Percentile Queue Length [ft/ln]	96.48	48.23	8.84	12.85	88.35	88.13	26.48	117.86	103.74	28.91
95th-Percentile Queue Length [veh/ln]	6.95	3.47	0.64	0.92	6.36	6.35	1.91	8.28	7.47	2.08
95th-Percentile Queue Length [ft/ln]	173.66	86.82	15.91	23.12	159.02	158.63	47.67	206.88	186.73	52.04

Movement, Approach, & Intersection Results

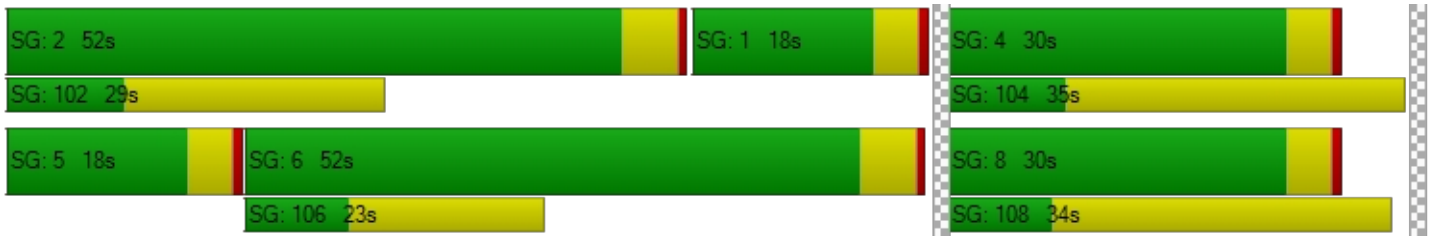
d_M, Delay for Movement [s/veh]	49.18	3.49	2.48	10.02	7.60	7.60	34.84	34.84	41.26	39.22	39.22	35.23
Movement LOS	D	A	A	B	A	A	C	C	D	D	D	D
d_A, Approach Delay [s/veh]	8.15			7.77			39.94			38.28		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	12.66											
Intersection LOS	B											
Intersection V/C	0.601											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	3076.24	2227.14	900.27
d_p, Pedestrian Delay [s]	37.85	38.72	38.72	37.85
l_p,int, Pedestrian LOS Score for Intersection	3.147	2.982	2.089	2.306
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	944	944	520	520
d_b, Bicycle Delay [s]	13.96	13.95	27.43	27.39
l_b,int, Bicycle LOS Score for Intersection	2.769	2.600	1.970	2.035
Bicycle LOS	C	B	A	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: OR 99E/Dunes Dr

Control Type:	Signalized	Delay (sec / veh):	53.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.169

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	220.00	100.00	100.00	370.00	100.00	155.00	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	73	1088	279	138	1096	129	39	12	73	357	17	114
Base Volume Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
Heavy Vehicles Percentage [%]	8.00	3.00	1.00	0.00	4.00	4.00	8.00	0.00	11.00	0.00	0.00	1.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	56	0	0	0	13	0	0	84	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	16	0	0	14	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	79	1193	303	150	1143	154	42	13	163	389	19	124
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	307	78	39	295	40	11	3	42	100	5	32
Total Analysis Volume [veh/h]	81	1230	312	155	1178	159	43	13	168	401	20	128
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			2			0			1		
v_di, Inbound Pedestrian Volume crossing m	0			1			0			2		
v_co, Outbound Pedestrian Volume crossing	1			0			0			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			2			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	17.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	2	0	5	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	20	40	0	20	40	0	0	20	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	16	50	0	21	45	0	0	34	0	0	34	0
Vehicle Extension [s]	2.3	4.8	0.0	2.3	4.8	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	18	0	0	38	0	0	37	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.00	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.80	2.80	2.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	45	45	17	32	32	38	38	38	38
g / C, Green / Cycle	0.04	0.45	0.45	0.17	0.32	0.32	0.38	0.38	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.06	0.30	0.30	0.45	0.26	0.26	0.04	0.11	0.33	0.09
s, saturation flow rate [veh/h]	1326	3532	1666	341	3503	1715	1178	1633	1222	1645
c, Capacity [veh/h]	86	1603	756	72	1120	548	421	624	414	629
d1, Uniform Delay [s]	46.67	14.60	14.63	47.17	25.90	25.99	25.71	21.45	38.06	20.96
k, delay calibration	0.50	0.50	0.50	0.50	0.14	0.50	0.08	0.08	0.34	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	83.43	2.09	4.40	561.30	1.71	12.03	0.08	0.19	29.54	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	0.65	0.66	2.15	0.80	0.81	0.10	0.29	0.97	0.24
d, Delay for Lane Group [s/veh]	130.10	16.69	19.03	608.46	27.61	38.02	25.79	21.64	67.60	21.10
Lane Group LOS	F	B	B	F	C	D	C	C	E	C
Critical Lane Group	No	No	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.99	6.66	6.80	12.96	8.50	10.00	0.76	2.98	13.47	2.38
50th-Percentile Queue Length [ft/ln]	99.74	166.42	169.97	323.91	212.42	250.01	19.05	74.47	336.79	59.46
95th-Percentile Queue Length [veh/ln]	7.18	10.89	11.08	23.25	13.28	15.19	1.37	5.36	19.49	4.28
95th-Percentile Queue Length [ft/ln]	179.53	272.20	276.88	581.25	331.93	379.67	34.29	134.05	487.28	107.03

Movement, Approach, & Intersection Results

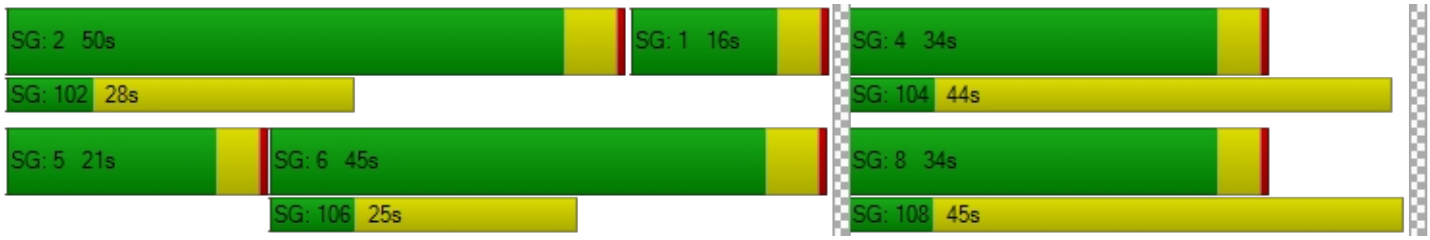
d_M, Delay for Movement [s/veh]	130.10	17.04	19.03	608.46	30.11	38.02	25.79	21.64	21.64	67.60	21.10	21.10
Movement LOS	F	B	B	F	C	D	C	C	C	E	C	C
d_A, Approach Delay [s/veh]	23.06			91.04			22.44			55.06		
Approach LOS	C			F			C			E		
d_I, Intersection Delay [s/veh]	53.63											
Intersection LOS	D											
Intersection V/C	1.169											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	2589.53	0.00	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	39.61	39.61
l_p,int, Pedestrian LOS Score for Intersection	3.639	3.063	2.179	2.444
Crosswalk LOS	D	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	904	804	600	600
d_b, Bicycle Delay [s]	15.02	17.90	24.50	24.50
l_b,int, Bicycle LOS Score for Intersection	2.452	2.380	1.929	2.465
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: OR 99E/I-205 SB Loop Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	20.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.760

Intersection Setup

Name	OR 99E					
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	1
Entry Pocket Length [ft]	100.00	200.00	240.00	100.00	575.00	275.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	No		No		Yes	

Volumes

Name	OR 99E					
Base Volume Input [veh/h]	1122	180	448	1086	467	443
Base Volume Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
Heavy Vehicles Percentage [%]	3.00	5.00	3.00	3.00	4.00	2.00
Growth Factor	1.0000	1.0130	1.0130	1.0000	1.0130	1.0130
In-Process Volume [veh/h]	31	0	20	61	0	26
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	16	0	0	14	0	0
Right Turn on Red Volume [veh/h]	0	187	0	0	0	244
Total Hourly Volume [veh/h]	1203	0	487	1194	487	244
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	313	0	127	311	127	64
Total Analysis Volume [veh/h]	1253	0	507	1244	507	254
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	11.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	6	6
Maximum Green [s]	40	0	36	40	20	20
Amber [s]	4.3	0.0	3.5	4.3	4.0	4.0
All red [s]	0.5	0.0	0.5	0.5	1.5	1.5
Split [s]	34	0	38	72	28	28
Vehicle Extension [s]	4.8	0.0	2.3	4.8	2.3	2.3
Walk [s]	8	0	0	0	0	0
Pedestrian Clearance [s]	29	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.8	0.0	2.0	2.8	3.5	3.5
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.80	4.80	4.00	4.80	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.80	2.80	2.00	2.80	3.50	0.00
g_i, Effective Green Time [s]	38	38	30	72	18	52
g / C, Green / Cycle	0.38	0.38	0.30	0.72	0.18	0.52
(v / s)_i Volume / Saturation Flow Rate	0.25	0.00	0.29	0.25	0.15	0.16
s, saturation flow rate [veh/h]	5053	1551	1767	5053	3403	1589
c, Capacity [veh/h]	1901	584	539	3644	598	828
d1, Uniform Delay [s]	20.15	0.00	28.81	0.56	39.92	13.67
k, delay calibration	0.50	0.50	0.27	0.50	0.07	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.81	0.00	17.43	0.26	2.13	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.00	0.94	0.34	0.85	0.31
d, Delay for Lane Group [s/veh]	21.96	0.00	46.24	0.82	42.06	13.88
Lane Group LOS	C	A	D	A	D	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.18	0.00	12.49	0.35	6.14	3.20
50th-Percentile Queue Length [ft/ln]	154.44	0.00	312.36	8.65	153.50	80.08
95th-Percentile Queue Length [veh/ln]	10.25	0.00	18.29	0.62	10.20	5.77
95th-Percentile Queue Length [ft/ln]	256.34	0.00	457.29	15.57	255.09	144.15

Movement, Approach, & Intersection Results

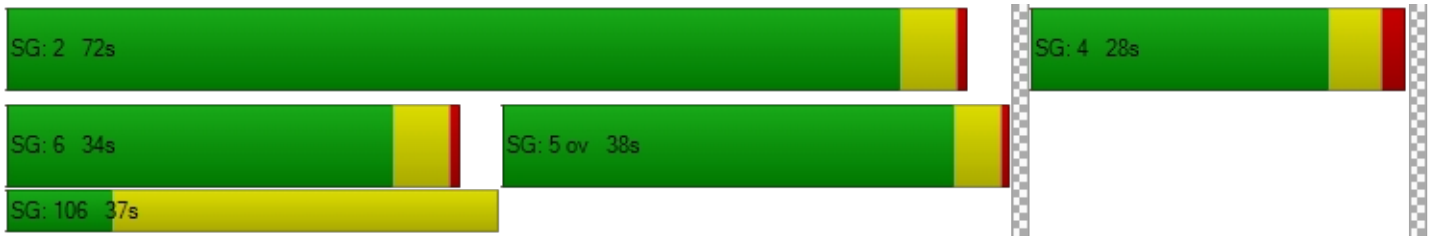
d_M, Delay for Movement [s/veh]	21.96	0.00	46.24	0.82	42.06	13.88
Movement LOS	C	A	D	A	D	B
d_A, Approach Delay [s/veh]	21.96		13.97		32.65	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	20.41					
Intersection LOS	C					
Intersection V/C	0.760					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	4901.87
d_p, Pedestrian Delay [s]	0.00	0.00	38.72
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.896
Crosswalk LOS	F	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	584	1344	450
d_b, Bicycle Delay [s]	25.08	5.38	30.03
l_b,int, Bicycle LOS Score for Intersection	2.352	2.523	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: OR 99E/I-205 EB Loop Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	15.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.641

Intersection Setup

Name	OR 99E		OR 99E		I-205 EB Loop Off-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	185.00	500.00	100.00	100.00	130.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		Yes		Yes	
Crosswalk	No		No		Yes	

Volumes

Name	OR 99E		OR 99E		I-205 EB Loop Off-Ramp	
Base Volume Input [veh/h]	864	577	460	1108	94	447
Base Volume Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
Heavy Vehicles Percentage [%]	3.00	4.00	4.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0130	1.0130	1.0000	1.0130	1.0130
In-Process Volume [veh/h]	5	0	46	15	0	23
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	16	0	0	14	0	0
Right Turn on Red Volume [veh/h]	0	301	0	0	0	489
Total Hourly Volume [veh/h]	911	301	526	1170	98	0
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	237	78	137	305	26	0
Total Analysis Volume [veh/h]	949	314	548	1219	102	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	99.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	6	6	5	2	4	0
Auxiliary Signal Groups		4,6				
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	10	4	10	6	0
Maximum Green [s]	36	36	34	70	22	0
Amber [s]	4.3	4.3	3.5	4.3	4.0	0.0
All red [s]	0.5	0.5	0.5	0.5	1.5	0.0
Split [s]	36	36	38	74	26	0
Vehicle Extension [s]	4.8	4.8	3.0	4.8	2.3	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	16	16	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.8	2.8	2.0	2.8	3.5	0.0
Minimum Recall	Yes	Yes	No	Yes	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.80	4.80	4.00	4.80	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.80	0.00	2.00	2.80	3.50	3.50
g_i, Effective Green Time [s]	44	59	33	81	9	9
g / C, Green / Cycle	0.44	0.59	0.33	0.81	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.19	0.20	0.31	0.24	0.06	0.00
s, saturation flow rate [veh/h]	5053	1535	1752	5053	1767	1577
c, Capacity [veh/h]	2240	900	572	4092	154	138
d1, Uniform Delay [s]	13.49	5.20	27.58	0.00	44.22	0.00
k, delay calibration	0.50	0.33	0.40	0.50	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.59	0.70	24.69	0.19	2.95	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.42	0.35	0.96	0.30	0.66	0.00
d, Delay for Lane Group [s/veh]	14.07	5.91	52.27	0.19	47.18	0.00
Lane Group LOS	B	A	D	A	D	A
Critical Lane Group	Yes	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	3.38	1.69	14.49	0.07	2.56	0.00
50th-Percentile Queue Length [ft/ln]	84.57	42.36	362.28	1.77	64.03	0.00
95th-Percentile Queue Length [veh/ln]	6.09	3.05	20.73	0.13	4.61	0.00
95th-Percentile Queue Length [ft/ln]	152.23	76.26	518.36	3.18	115.26	0.00

Movement, Approach, & Intersection Results

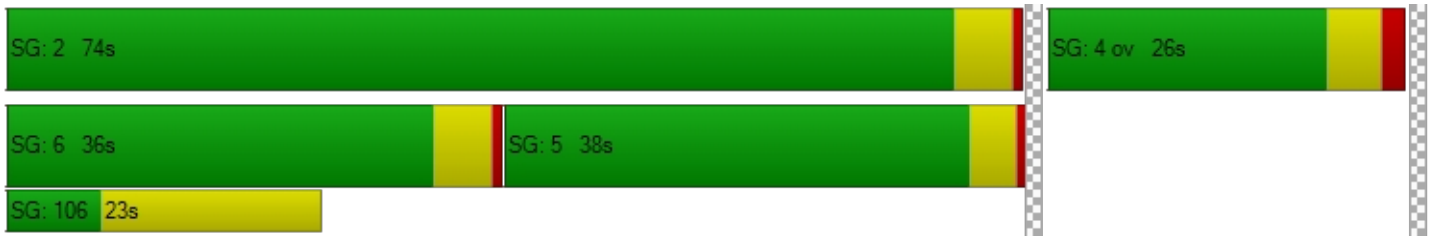
d_M, Delay for Movement [s/veh]	14.07	5.91	52.27	0.19	47.18	0.00
Movement LOS	B	A	D	A	D	A
d_A, Approach Delay [s/veh]	12.04		16.34		47.18	
Approach LOS	B		B		D	
d_I, Intersection Delay [s/veh]	15.61					
Intersection LOS	B					
Intersection V/C	0.641					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	335.09
d_p, Pedestrian Delay [s]	0.00	0.00	39.61
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	3.211
Crosswalk LOS	F	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	624	1384	410
d_b, Bicycle Delay [s]	23.68	4.74	31.60
l_b,int, Bicycle LOS Score for Intersection	2.420	2.531	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: OR 99E / 14th St

Control Type:	Signalized	Delay (sec / veh):	4.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.471

Intersection Setup

Name	OR 99E		OR 99E		14th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		14th St	
Base Volume Input [veh/h]	978	44	306	901	58	234
Base Volume Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
Heavy Vehicles Percentage [%]	4.00	5.00	2.00	4.00	9.00	1.00
Growth Factor	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570
In-Process Volume [veh/h]	8	0	0	18	3	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	16	0	0	14	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	128
Total Hourly Volume [veh/h]	1031	48	333	960	66	127
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	268	13	87	250	17	33
Total Analysis Volume [veh/h]	1074	50	347	1000	69	132
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2		3		2	
v_di, Inbound Pedestrian Volume crossing m	2		2		3	
v_co, Outbound Pedestrian Volume crossing	0		2		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		2		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	2		9		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	75.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	52	0	24	80	12	12
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	56	0	28	84	16	16
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	7	0	0	0	7	7
Pedestrian Clearance [s]	11	0	0	0	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	67	67	83	83	9	25
g / C, Green / Cycle	0.67	0.67	0.83	0.83	0.09	0.25
(v / s)_i Volume / Saturation Flow Rate	0.31	0.31	0.49	0.29	0.04	0.08
s, saturation flow rate [veh/h]	1840	1809	712	3503	1658	1598
c, Capacity [veh/h]	1241	1220	666	2914	146	392
d1, Uniform Delay [s]	1.90	1.91	1.69	0.00	43.38	31.02
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.19	1.25	2.90	0.32	1.45	0.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.45	0.46	0.52	0.34	0.47	0.34
d, Delay for Lane Group [s/veh]	3.09	3.16	4.60	0.32	44.83	31.69
Lane Group LOS	A	A	A	A	D	C
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.58	1.60	0.54	0.13	1.67	2.67
50th-Percentile Queue Length [ft/ln]	39.62	39.99	13.42	3.26	41.86	66.87
95th-Percentile Queue Length [veh/ln]	2.85	2.88	0.97	0.23	3.01	4.81
95th-Percentile Queue Length [ft/ln]	71.31	71.98	24.16	5.87	75.35	120.37

Movement, Approach, & Intersection Results

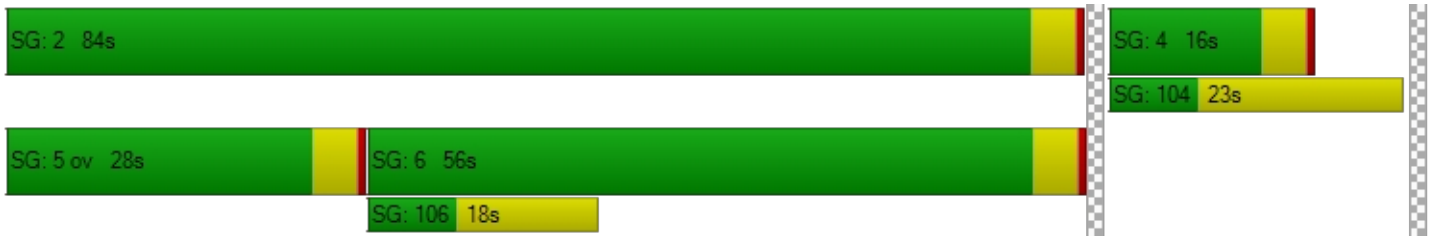
d_M, Delay for Movement [s/veh]	3.12	3.16	4.60	0.32	44.83	31.69
Movement LOS	A	A	A	A	D	C
d_A, Approach Delay [s/veh]	3.13		1.42		36.20	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	4.76					
Intersection LOS	A					
Intersection V/C	0.471					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	2321.78	1452.24	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	39.61
l_p,int, Pedestrian LOS Score for Intersection	2.670	2.827	2.907
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1040	1600	240
d_b, Bicycle Delay [s]	11.53	2.01	38.72
l_b,int, Bicycle LOS Score for Intersection	2.487	2.671	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: OR 99E / 12th St

Control Type:	Signalized	Delay (sec / veh):	1.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.378

Intersection Setup

Name	OR 99E		OR 99E		12th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	175.00	100.00	100.00	120.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		12th St	
Base Volume Input [veh/h]	916	17	102	861	6	125
Base Volume Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
Heavy Vehicles Percentage [%]	4.00	0.00	1.00	4.00	0.00	2.00
Growth Factor	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570
In-Process Volume [veh/h]	8	0	0	18	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	16	0	0	14	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	68
Total Hourly Volume [veh/h]	967	19	111	919	6	68
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	260	5	30	247	2	18
Total Analysis Volume [veh/h]	1040	20	119	988	6	73
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1		1		1	
v_di, Inbound Pedestrian Volume crossing m	1		1		1	
v_co, Outbound Pedestrian Volume crossing	1		1		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		1		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	4		12		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	51.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	80	0	16	80	12	12
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	64	0	20	84	16	16
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	9	0	0	0	8	8
Pedestrian Clearance [s]	11	0	0	0	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	79	79	87	87	6	14
g / C, Green / Cycle	0.78	0.78	0.86	0.86	0.06	0.14
(v / s)_i Volume / Saturation Flow Rate	0.29	0.29	0.17	0.28	0.00	0.05
s, saturation flow rate [veh/h]	1840	1826	682	3503	1790	1574
c, Capacity [veh/h]	1442	1431	611	3027	101	215
d1, Uniform Delay [s]	0.00	0.00	0.06	0.00	44.83	39.20
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.72	0.74	0.71	0.29	0.15	0.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.37	0.37	0.19	0.33	0.06	0.34
d, Delay for Lane Group [s/veh]	0.72	0.74	0.77	0.29	44.98	39.77
Lane Group LOS	A	A	A	A	D	D
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.29	0.29	0.12	0.12	0.14	1.65
50th-Percentile Queue Length [ft/ln]	7.24	7.33	3.02	3.03	3.62	41.35
95th-Percentile Queue Length [veh/ln]	0.52	0.53	0.22	0.22	0.26	2.98
95th-Percentile Queue Length [ft/ln]	13.04	13.20	5.44	5.45	6.52	74.44

Movement, Approach, & Intersection Results

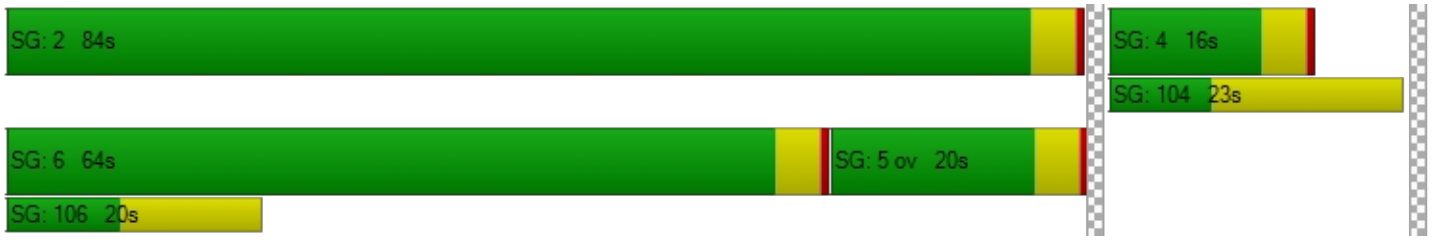
d_M, Delay for Movement [s/veh]	0.73	0.74	0.77	0.29	44.98	39.77
Movement LOS	A	A	A	A	D	D
d_A, Approach Delay [s/veh]	0.73		0.34		40.16	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	1.93					
Intersection LOS	A					
Intersection V/C	0.378					

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	4901.87	4521.01	3508.75
d_p, Pedestrian Delay [s]	38.72	38.72	37.85
l_p,int, Pedestrian LOS Score for Intersection	2.636	2.750	2.283
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1200	1600	240
d_b, Bicycle Delay [s]	8.02	2.01	38.74
l_b,int, Bicycle LOS Score for Intersection	2.434	2.473	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: OR 99E / 10th St

Control Type:	Signalized	Delay (sec / veh):	4.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.346

Intersection Setup

Name	OR 99E		OR 99E		7th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	250.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		7th St	
Base Volume Input [veh/h]	657	35	236	611	12	255
Base Volume Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
Heavy Vehicles Percentage [%]	5.00	0.00	0.00	4.00	8.00	1.00
Growth Factor	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570
In-Process Volume [veh/h]	8	0	0	18	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	16	0	0	14	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	139
Total Hourly Volume [veh/h]	701	38	257	661	13	139
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	188	10	69	178	3	37
Total Analysis Volume [veh/h]	754	41	276	711	14	149
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	4		1		1	
v_di, Inbound Pedestrian Volume crossing m	3		1		1	
v_co, Outbound Pedestrian Volume crossing	0		3		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		4		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		6		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	53.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	64	0	16	80	12	12
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	64	0	20	84	16	16
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	7	0	0	0	7	7
Pedestrian Clearance [s]	11	0	0	0	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	74	74	83	83	9	18
g / C, Green / Cycle	0.74	0.74	0.83	0.83	0.09	0.18
(v / s)_i Volume / Saturation Flow Rate	0.22	0.22	0.33	0.20	0.01	0.09
s, saturation flow rate [veh/h]	1825	1788	845	3503	1657	1586
c, Capacity [veh/h]	1341	1314	708	2896	155	295
d1, Uniform Delay [s]	0.28	0.28	0.16	0.00	41.47	36.61
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.21
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.56	0.59	1.61	0.20	0.15	2.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.30	0.30	0.39	0.25	0.09	0.51
d, Delay for Lane Group [s/veh]	0.84	0.87	1.77	0.20	41.63	39.26
Lane Group LOS	A	A	A	A	D	D
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.34	0.35	0.32	0.08	0.32	3.47
50th-Percentile Queue Length [ft/ln]	8.57	8.73	7.93	2.03	8.05	86.64
95th-Percentile Queue Length [veh/ln]	0.62	0.63	0.57	0.15	0.58	6.24
95th-Percentile Queue Length [ft/ln]	15.43	15.71	14.28	3.66	14.48	155.95

Movement, Approach, & Intersection Results

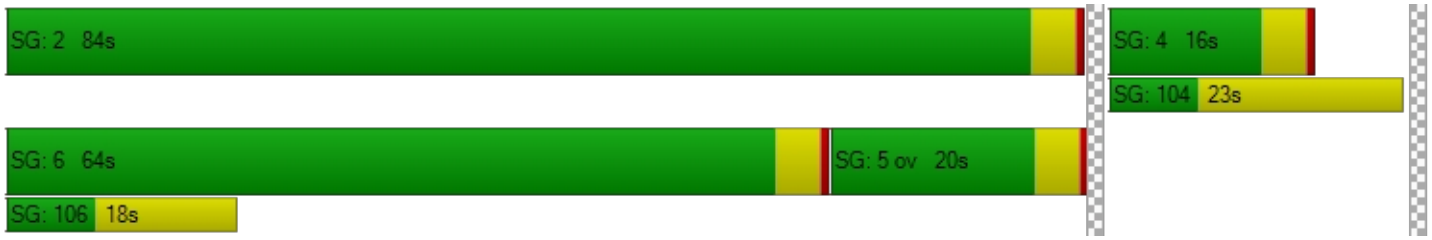
d_M, Delay for Movement [s/veh]	0.86	0.87	1.77	0.20	41.63	39.26
Movement LOS	A	A	A	A	D	D
d_A, Approach Delay [s/veh]	0.86		0.64		39.47	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	3.98					
Intersection LOS	A					
Intersection V/C	0.346					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	1282.52	3498.85	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	39.61
l_p,int, Pedestrian LOS Score for Intersection	2.506	2.700	2.683
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1200	1600	240
d_b, Bicycle Delay [s]	8.00	2.01	38.74
l_b,int, Bicycle LOS Score for Intersection	2.215	2.374	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Washington St / Clackamas River Dr

Control Type:	Roundabout	Delay (sec / veh):	4.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Washington St		Washington St		Clackamas River Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Washington St		Washington St		Clackamas River Dr	
Base Volume Input [veh/h]	228	364	174	121	150	77
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	5.00	12.00	5.00	6.00	7.00	5.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	0	3	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	243	389	186	129	164	82
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	68	109	52	36	46	23
Total Analysis Volume [veh/h]	273	437	209	145	184	92
Pedestrian Volume [ped/h]	0		0		1	

Intersection Settings

Number of Conflicting Circulating Lanes	1		1		1	
Circulating Flow Rate [veh/h]	219		197		287	
Exiting Flow Rate [veh/h]	351		383		219	
Demand Flow Rate [veh/h]	243	389	186	129	164	82
Adjusted Demand Flow Rate [veh/h]	273	437	209	145	184	92

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	0.00	1380.00	1380.00
B (coefficient)	0.00102	0.00000	0.00102	0.00102
HV Adjustment Factor	0.92	0.89	0.95	0.94
Entry Flow Rate [veh/h]	299	0	374	294
Capacity of Entry and Bypass Lanes [veh/h]	1104	112001	1129	1031
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1011	100000	1072	969
X, volume / capacity	0.27	0.00	0.33	0.28

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	1.10	0.00	1.46	1.18
95th-Percentile Queue Length [ft]	27.44	0.00	36.44	29.48
Approach Delay [s/veh]	2.39		6.66	6.61
Approach LOS	A		A	A
Intersection Delay [s/veh]	4.39			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 9: Washington St/ Prairie Schooner Way

Control Type:	Signalized	Delay (sec / veh):	9.5
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.600

Intersection Setup

Name	Washington St		Washington St		Prairie Schooner Way	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	0	1	0
Entry Pocket Length [ft]	100.00	100.00	150.00	100.00	165.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	No		Yes		Yes	

Volumes

Name	Washington St		Washington St		Prairie Schooner Way	
Base Volume Input [veh/h]	403	164	47	228	410	178
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	14.00	8.00	2.00	7.00	11.00	6.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	5	0	3	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	95
Total Hourly Volume [veh/h]	430	180	50	246	438	95
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	116	48	13	66	118	26
Total Analysis Volume [veh/h]	462	194	54	265	471	102
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	93
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	2	0	1	6	8	8
Auxiliary Signal Groups						1,8
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	8	0	4	8	4	4
Maximum Green [s]	30	0	20	30	30	30
Amber [s]	4.0	0.0	3.5	4.0	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	35	0	24	35	34	34
Vehicle Extension [s]	4.2	0.0	2.3	5.2	2.5	2.5
Walk [s]	8	0	0	0	7	7
Pedestrian Clearance [s]	24	0	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	0.0	2.0	2.5	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	33	33	33	33	33	33
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	0.00	2.50	2.00	0.00
g_i, Effective Green Time [s]	11	11	17	17	8	13
g / C, Green / Cycle	0.34	0.34	0.51	0.51	0.23	0.40
(v / s)_i Volume / Saturation Flow Rate	0.19	0.22	0.05	0.08	0.15	0.07
s, saturation flow rate [veh/h]	1690	1518	991	3418	3209	1524
c, Capacity [veh/h]	579	520	694	1750	739	608
d1, Uniform Delay [s]	8.85	9.10	4.62	4.26	11.46	6.37
k, delay calibration	0.17	0.17	0.07	0.26	0.08	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.33	1.93	0.03	0.09	0.68	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.57	0.63	0.08	0.15	0.64	0.17
d, Delay for Lane Group [s/veh]	10.18	11.03	4.65	4.35	12.14	6.44
Lane Group LOS	B	B	A	A	B	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.49	1.59	0.09	0.25	1.22	0.30
50th-Percentile Queue Length [ft/ln]	37.17	39.68	2.33	6.23	30.40	7.44
95th-Percentile Queue Length [veh/ln]	2.68	2.86	0.17	0.45	2.19	0.54
95th-Percentile Queue Length [ft/ln]	66.91	71.42	4.20	11.22	54.72	13.39

Movement, Approach, & Intersection Results

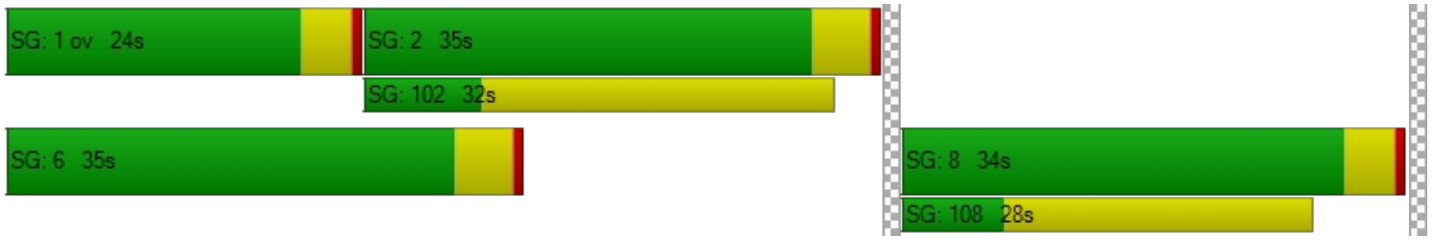
d_M, Delay for Movement [s/veh]	10.43	11.03	4.65	4.35	12.14	6.44
Movement LOS	B	B	A	A	B	A
d_A, Approach Delay [s/veh]	10.61		4.40		11.12	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	9.52					
Intersection LOS	A					
Intersection V/C	0.600					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	36.15	35.27
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.492	2.645
Crosswalk LOS	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	656	656	645
d_b, Bicycle Delay [s]	21.01	21.00	21.35
l_b,int, Bicycle LOS Score for Intersection	2.101	1.823	1.560
Bicycle LOS	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 10: Washington St / Home Depot-Site Access A

Control Type:	Signalized	Delay (sec / veh):	12.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.592

Intersection Setup

Name	Washington St			Washington St			Home Depot Dwy			Home Depot Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	335.00	100.00	330.00	250.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	470.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	370.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			Home Depot Dwy			Home Depot Dwy		
Base Volume Input [veh/h]	39	147	185	340	214	97	82	22	32	181	2	148
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	28.00	7.00	2.00	3.00	8.00	34.00	39.00	32.00	22.00	3.00	3.00	7.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	5	0	0	3	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	52	0	0	0	0	0	79
Total Hourly Volume [veh/h]	41	161	198	363	231	52	88	23	34	193	2	78
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	42	52	96	61	14	23	6	9	51	1	21
Total Analysis Volume [veh/h]	43	169	208	382	243	55	93	24	36	203	2	82
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			1			1			1		
v_di, Inbound Pedestrian Volume crossing m	1			1			1			1		
v_co, Outbound Pedestrian Volume crossing	0			1			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	134
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	10	0	4	10	0	0	8	0	0	6	0
Maximum Green [s]	30	60	0	30	60	0	0	30	0	0	20	0
Amber [s]	3.5	4.5	0.0	3.5	4.5	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	34	65	0	34	65	0	0	35	0	0	25	0
Vehicle Extension [s]	2.5	4.2	0.0	2.5	4.2	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	9	0	0	7	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	R
C, Cycle Length [s]	46	46	46	46	46	46	46	46	46
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	2.50	2.50	2.50
g_i, Effective Green Time [s]	23	10	10	23	16	16	13	13	13
g / C, Green / Cycle	0.50	0.22	0.22	0.50	0.36	0.36	0.29	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.04	0.09	0.14	0.28	0.07	0.05	0.13	0.15	0.05
s, saturation flow rate [veh/h]	1001	1795	1486	1360	3389	1179	1208	1362	1524
c, Capacity [veh/h]	686	401	332	800	1225	426	473	547	437
d1, Uniform Delay [s]	5.82	15.22	16.04	7.70	10.05	9.78	13.20	13.65	12.30
k, delay calibration	0.17	0.17	0.17	0.08	0.17	0.17	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.06	1.07	2.94	0.33	0.12	0.21	0.29	0.32	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.42	0.63	0.48	0.20	0.13	0.32	0.37	0.19
d, Delay for Lane Group [s/veh]	5.87	16.30	18.98	8.02	10.17	9.99	13.49	13.96	12.45
Lane Group LOS	A	B	B	A	B	A	B	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.16	1.42	1.95	1.72	0.70	0.32	1.11	1.53	0.55
50th-Percentile Queue Length [ft/ln]	4.03	35.42	48.83	43.08	17.55	8.12	27.66	38.17	13.79
95th-Percentile Queue Length [veh/ln]	0.29	2.55	3.52	3.10	1.26	0.58	1.99	2.75	0.99
95th-Percentile Queue Length [ft/ln]	7.25	63.76	87.90	77.54	31.58	14.62	49.79	68.70	24.82

Movement, Approach, & Intersection Results

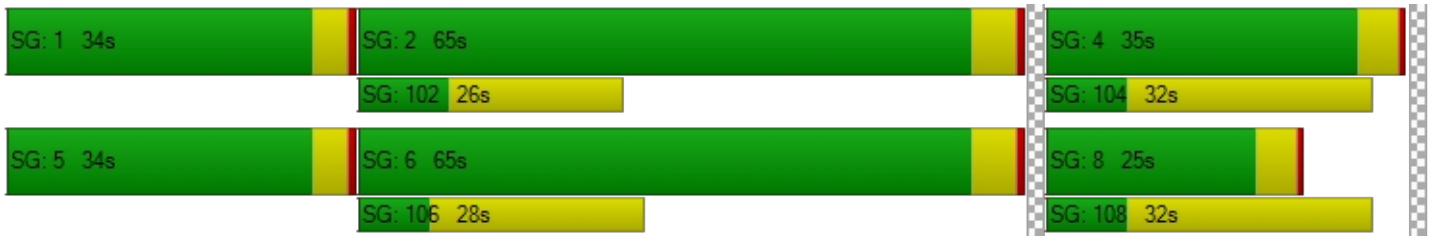
d_M, Delay for Movement [s/veh]	5.87	16.30	18.98	8.02	10.17	9.99	13.49	13.49	13.49	13.96	13.96	12.45
Movement LOS	A	B	B	A	B	A	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	16.56			8.95			13.49			13.53		
Approach LOS	B			A			B			B		
d_I, Intersection Delay [s/veh]	12.33											
Intersection LOS	B											
Intersection V/C	0.592											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	5453.84	1667.28	50.85
d_p, Pedestrian Delay [s]	55.54	55.54	56.45	54.63
l_p,int, Pedestrian LOS Score for Intersection	2.783	2.865	2.083	2.534
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	896	896	455	306
d_b, Bicycle Delay [s]	20.44	20.43	39.97	48.07
l_b,int, Bicycle LOS Score for Intersection	1.906	2.164	1.812	2.164
Bicycle LOS	A	B	A	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Washington St / Abernethy Rd

Control Type:	Signalized	Delay (sec / veh):	8.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.381

Intersection Setup

Name	Washington St			Washington St			17th St			17th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	115.00	100.00	225.00	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			30.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			17th St			17th St		
Base Volume Input [veh/h]	2	299	212	39	386	1	0	1	2	189	1	79
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	0.00	6.00	5.00	8.00	6.00	0.00	0.00	0.00	0.00	3.00	0.00	6.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	5	13	0	3	0	0	0	0	5	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	120	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	324	119	41	415	1	0	1	2	207	1	85
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	87	32	11	112	0	0	0	1	56	0	23
Total Analysis Volume [veh/h]	2	348	128	44	446	1	0	1	2	223	1	91
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			1			0		
v_di, Inbound Pedestrian Volume crossing m	1			0			1			0		
v_co, Outbound Pedestrian Volume crossing	1			1			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	0	0	8	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	15	0	0	30	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	35	0	0	20	0	0	35	0
Vehicle Extension [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	16	0	0	8	0	0	13	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C
C, Cycle Length [s]	30	30	30	30	30	30	30	30
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	10	10	10	10	10	9	9	9
g / C, Green / Cycle	0.35	0.35	0.35	0.35	0.35	0.31	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.00	0.19	0.08	0.04	0.25	0.00	0.16	0.06
s, saturation flow rate [veh/h]	957	1810	1511	982	1809	1696	1398	1618
c, Capacity [veh/h]	314	630	526	376	630	657	601	511
d1, Uniform Delay [s]	12.76	7.83	6.89	11.63	8.40	6.98	8.35	7.39
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.28	0.09	0.05	0.56	0.00	0.14	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.55	0.24	0.12	0.71	0.00	0.37	0.18
d, Delay for Lane Group [s/veh]	12.76	8.11	6.98	11.68	8.96	6.98	8.49	7.45
Lane Group LOS	B	A	A	B	A	A	A	A
Critical Lane Group	No	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.01	1.02	0.33	0.20	1.57	0.01	0.71	0.26
50th-Percentile Queue Length [ft/ln]	0.23	25.56	8.20	5.01	39.32	0.23	17.82	6.49
95th-Percentile Queue Length [veh/ln]	0.02	1.84	0.59	0.36	2.83	0.02	1.28	0.47
95th-Percentile Queue Length [ft/ln]	0.42	46.00	14.76	9.02	70.77	0.42	32.07	11.69

Movement, Approach, & Intersection Results

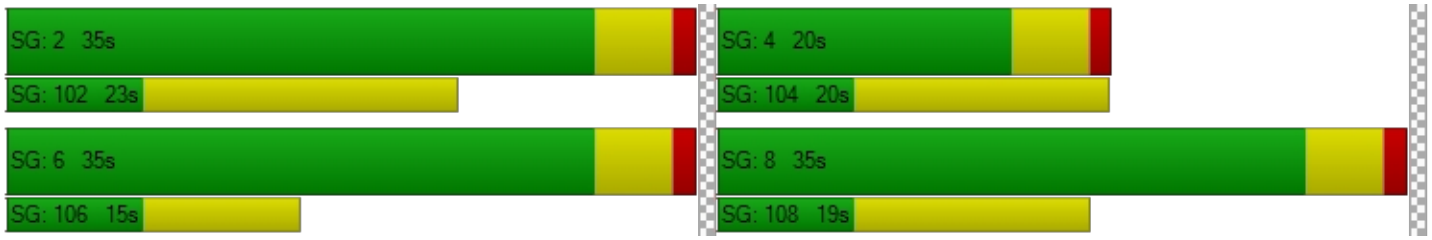
d_M, Delay for Movement [s/veh]	12.76	8.11	6.98	11.68	8.96	8.96	6.98	6.98	6.98	8.49	7.45	7.45
Movement LOS	B	A	A	B	A	A	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	7.83			9.20			6.98			8.18		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	8.44											
Intersection LOS	A											
Intersection V/C	0.381											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	4292.12	0.00	5349.92	3998.69
d_p, Pedestrian Delay [s]	24.86	24.86	24.86	24.86
l_p,int, Pedestrian LOS Score for Intersection	2.966	2.229	1.707	2.219
Crosswalk LOS	C	B	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	857	857	429	857
d_b, Bicycle Delay [s]	11.45	11.43	21.61	11.43
l_b,int, Bicycle LOS Score for Intersection	2.546	2.370	1.565	2.079
Bicycle LOS	B	B	A	B

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: Washington St / 15th St

Control Type:	Signalized	Delay (sec / veh):	9.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.672

Intersection Setup

Name	Washington St			Washington St			15th St			15th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	260.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			15th St			15th St		
Base Volume Input [veh/h]	33	389	32	29	375	0	101	27	38	14	75	30
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0000	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	3.00	5.00	0.00	0.00	3.00	2.00	4.00	0.00	3.00	0.00	0.00	0.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	3	0	0	3	5	18	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	35	418	34	31	404	5	126	29	40	15	80	32
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	109	9	8	105	1	33	8	10	4	21	8
Total Analysis Volume [veh/h]	36	435	35	32	421	5	131	30	42	16	83	33
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			2			0			2		
v_di, Inbound Pedestrian Volume crossing m	0			2			1			2		
v_co, Outbound Pedestrian Volume crossing	3			1			2			4		
v_ci, Inbound Pedestrian Volume crossing mi	4			2			1			3		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			0			3			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	35	0	0	35	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	19	54	0	19	54	0	0	39	0	0	39	0
Vehicle Extension [s]	2.3	4.1	0.0	2.3	4.1	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	9	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	28	28	28	28	28	28
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	11	16	11	5	5
g / C, Green / Cycle	0.55	0.37	0.55	0.37	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.03	0.26	0.03	0.23	0.12	0.07
s, saturation flow rate [veh/h]	1110	1796	1101	1851	1735	1858
c, Capacity [veh/h]	809	674	778	689	506	461
d1, Uniform Delay [s]	3.48	7.54	3.67	7.31	11.00	10.55
k, delay calibration	0.07	0.16	0.16	0.16	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	1.93	0.03	1.34	0.38	0.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.04	0.70	0.04	0.62	0.40	0.29
d, Delay for Lane Group [s/veh]	3.49	9.47	3.70	8.65	11.39	10.81
Lane Group LOS	A	A	A	A	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.03	1.67	0.03	1.41	0.89	0.55
50th-Percentile Queue Length [ft/ln]	0.71	41.76	0.74	35.24	22.23	13.83
95th-Percentile Queue Length [veh/ln]	0.05	3.01	0.05	2.54	1.60	1.00
95th-Percentile Queue Length [ft/ln]	1.28	75.17	1.32	63.43	40.01	24.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3.49	9.47	9.47	3.70	8.65	8.65	11.39	11.39	11.39	10.81	10.81	10.81
Movement LOS	A	A	A	A	A	A	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	9.04			8.31			11.39			10.81		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	9.33											
Intersection LOS	A											
Intersection V/C	0.672											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	6171.11	1256.67	2025.86	738.49
d_p, Pedestrian Delay [s]	45.54	43.75	45.54	45.54
l_p,int, Pedestrian LOS Score for Intersection	2.294	2.479	1.907	1.857
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	893	893	625	625
d_b, Bicycle Delay [s]	17.19	17.16	26.51	26.47
l_b,int, Bicycle LOS Score for Intersection	2.395	2.315	1.895	1.777
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Washington St / 14th St

Control Type:	Signalized	Delay (sec / veh):	10.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.745

Intersection Setup

Name	Washington St			Washington St			14th St			14th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			14th St			14th St		
Base Volume Input [veh/h]	177	229	5	11	274	145	222	28	100	5	28	3
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	2.00	6.00	0.00	0.00	4.00	5.00	5.00	0.00	3.00	0.00	0.00	0.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	3	0	0	0	0	3	3	0	5	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	56	0	0	0
Total Hourly Volume [veh/h]	192	244	5	12	293	157	240	30	56	5	30	3
Peak Hour Factor	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	62	1	3	74	40	61	8	14	1	8	1
Total Analysis Volume [veh/h]	194	246	5	12	296	159	242	30	57	5	30	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			2			3			3		
v_di, Inbound Pedestrian Volume crossing m	3			3			2			2		
v_co, Outbound Pedestrian Volume crossing	2			4			2			4		
v_ci, Inbound Pedestrian Volume crossing mi	2			4			2			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			3			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	35	0	0	35	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	19	54	0	19	54	0	0	39	0	0	39	0
Vehicle Extension [s]	2.3	4.1	0.0	2.3	4.1	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C
C, Cycle Length [s]	37	37	37	37	37	37	37
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	16	21	13	8	8	8
g / C, Green / Cycle	0.56	0.44	0.56	0.35	0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.17	0.14	0.01	0.26	0.18	0.04	0.02
s, saturation flow rate [veh/h]	1166	1803	1225	1730	1529	1524	1868
c, Capacity [veh/h]	722	791	872	610	531	348	536
d1, Uniform Delay [s]	5.37	6.87	3.83	10.67	13.33	11.58	11.39
k, delay calibration	0.07	0.16	0.16	0.16	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.12	0.34	0.01	2.70	0.57	0.16	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.27	0.32	0.01	0.75	0.51	0.16	0.07
d, Delay for Lane Group [s/veh]	5.49	7.20	3.84	13.36	13.90	11.74	11.43
Lane Group LOS	A	A	A	B	B	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.39	0.93	0.03	2.96	1.82	0.33	0.21
50th-Percentile Queue Length [ft/ln]	9.85	23.29	0.64	74.06	45.57	8.30	5.34
95th-Percentile Queue Length [veh/ln]	0.71	1.68	0.05	5.33	3.28	0.60	0.38
95th-Percentile Queue Length [ft/ln]	17.73	41.93	1.15	133.30	82.03	14.94	9.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	5.49	7.20	7.20	3.84	13.36	13.36	13.90	13.90	11.74	11.43	11.43	11.43
Movement LOS	A	A	A	A	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	6.46			13.12			13.52			11.43		
Approach LOS	A			B			B			B		
d_I, Intersection Delay [s/veh]	10.85											
Intersection LOS	B											
Intersection V/C	0.745											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	1518.21	216.67	381.42	1278.13
d_p, Pedestrian Delay [s]	45.54	45.54	45.54	45.54
l_p,int, Pedestrian LOS Score for Intersection	2.237	2.554	2.489	1.768
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	893	893	625	625
d_b, Bicycle Delay [s]	17.16	17.16	26.51	26.48
l_b,int, Bicycle LOS Score for Intersection	2.294	2.330	2.195	1.622
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Washington St / 12th St

Control Type:	Signalized	Delay (sec / veh):	8.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.515

Intersection Setup

Name	Washington St			Washington St			12th St			12th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			12th St			12th St		
Base Volume Input [veh/h]	69	395	2	13	357	13	12	19	69	6	20	9
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	3.00	4.00	0.00	0.00	3.00	8.00	17.00	0.00	1.00	0.00	0.00	0.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	3	0	0	5	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	74	425	2	14	387	14	13	20	74	6	21	10
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	113	1	4	103	4	3	5	20	2	6	3
Total Analysis Volume [veh/h]	79	452	2	15	412	15	14	21	79	6	22	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			1			1			1		
v_di, Inbound Pedestrian Volume crossing m	1			1			1			1		
v_co, Outbound Pedestrian Volume crossing	0			1			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	98
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	15	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	19	55	0	19	55	0	0	19	0	0	24	0
Vehicle Extension [s]	2.3	5.2	0.0	2.3	5.2	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	12	0	0	12	0	0	12	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	29	29	29	29	29	29
L, Total Lost Time per Cycle [s]	4.80	4.80	4.80	4.80	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.80	0.00	2.80	2.00	2.00
g_i, Effective Green Time [s]	17	12	17	11	4	4
g / C, Green / Cycle	0.57	0.42	0.57	0.37	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.07	0.25	0.01	0.23	0.07	0.02
s, saturation flow rate [veh/h]	1142	1839	1077	1843	1749	1856
c, Capacity [veh/h]	847	778	814	689	358	375
d1, Uniform Delay [s]	3.32	6.51	3.18	7.53	12.05	11.51
k, delay calibration	0.07	0.26	0.26	0.26	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.03	1.64	0.02	2.15	0.38	0.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.58	0.02	0.62	0.32	0.10
d, Delay for Lane Group [s/veh]	3.35	8.14	3.20	9.68	12.43	11.60
Lane Group LOS	A	A	A	A	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.07	1.59	0.02	1.78	0.58	0.19
50th-Percentile Queue Length [ft/ln]	1.84	39.76	0.43	44.39	14.58	4.69
95th-Percentile Queue Length [veh/ln]	0.13	2.86	0.03	3.20	1.05	0.34
95th-Percentile Queue Length [ft/ln]	3.31	71.56	0.77	79.91	26.24	8.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3.35	8.14	8.14	3.20	9.68	9.68	12.43	12.43	12.43	11.60	11.60	11.60
Movement LOS	A	A	A	A	A	A	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	7.43			9.46			12.43			11.60		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	8.88											
Intersection LOS	A											
Intersection V/C	0.515											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	4016.22	3062.62	3705.90
d_p, Pedestrian Delay [s]	38.62	38.62	38.62	38.62
l_p,int, Pedestrian LOS Score for Intersection	2.232	2.213	1.862	1.760
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1024	1024	306	408
d_b, Bicycle Delay [s]	11.66	11.66	35.15	31.04
l_b,int, Bicycle LOS Score for Intersection	2.439	2.289	1.748	1.624
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: Washington St/7th St

Control Type:	Signalized	Delay (sec / veh):	13.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.637

Intersection Setup

Name	Washington St			Washington St			7th St			Molalla Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	270.00	45.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			7th St			Molalla Ave		
Base Volume Input [veh/h]	77	175	10	188	156	22	0	347	62	0	310	221
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0000	1.0100	1.0100	1.0000	1.0100	1.0100
Heavy Vehicles Percentage [%]	1.00	5.00	10.00	3.00	2.00	9.00	2.00	0.00	2.00	2.00	0.00	2.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	3	0	0	5	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	34	0	0	118
Total Hourly Volume [veh/h]	82	190	11	201	172	23	0	370	33	0	331	118
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	1.0000	0.9700	0.9700	1.0000	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	49	3	52	44	6	0	95	9	0	85	30
Total Analysis Volume [veh/h]	85	196	11	207	177	24	0	381	34	0	341	122
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3			2			3			4		
v_di, Inbound Pedestrian Volume crossing m	4			3			2			3		
v_co, Outbound Pedestrian Volume crossing	5			4			5			3		
v_ci, Inbound Pedestrian Volume crossing mi	5			3			5			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	142
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap
Signal Group	0	8	0	0	4	0	0	2	0	0	6	6
Auxiliary Signal Groups												4,6
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	10	0	0	10	10
Maximum Green [s]	0	40	0	0	40	0	0	50	0	0	50	50
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	3.5
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.5
Split [s]	0	44	0	0	44	0	0	54	0	0	54	54
Vehicle Extension [s]	0.0	2.5	0.0	0.0	2.5	0.0	0.0	4.7	0.0	0.0	4.7	4.7
Walk [s]	0	7	0	0	7	0	0	7	0	0	9	9
Pedestrian Clearance [s]	0	11	0	0	10	0	0	10	0	0	11	11
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
Minimum Recall		No			No			Yes			Yes	Yes
Maximum Recall		No			No			No			No	No
Pedestrian Recall		No			No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	37	37	37	37	37	37	37	37
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	7	7	7	7	11	11	11	23
g / C, Green / Cycle	0.18	0.18	0.20	0.20	0.31	0.31	0.31	0.61
(v / s)_i Volume / Saturation Flow Rate	0.05	0.11	0.12	0.11	0.20	0.02	0.18	0.08
s, saturation flow rate [veh/h]	1795	1807	1767	1829	1900	1554	1900	1565
c, Capacity [veh/h]	320	322	346	358	582	476	582	950
d1, Uniform Delay [s]	13.30	14.31	13.76	13.64	11.30	9.23	11.01	3.12
k, delay calibration	0.08	0.08	0.08	0.08	0.20	0.20	0.20	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.33	1.59	1.24	1.03	2.33	0.12	1.75	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.27	0.64	0.60	0.56	0.65	0.07	0.59	0.13
d, Delay for Lane Group [s/veh]	13.63	15.90	14.99	14.67	13.64	9.35	12.76	3.16
Lane Group LOS	B	B	B	B	B	A	B	A
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.55	1.51	1.40	1.33	2.54	0.17	2.08	0.17
50th-Percentile Queue Length [ft/ln]	13.81	37.86	34.97	33.37	63.54	4.33	51.91	4.19
95th-Percentile Queue Length [veh/ln]	0.99	2.73	2.52	2.40	4.57	0.31	3.74	0.30
95th-Percentile Queue Length [ft/ln]	24.86	68.14	62.95	60.07	114.37	7.80	93.45	7.55

Movement, Approach, & Intersection Results

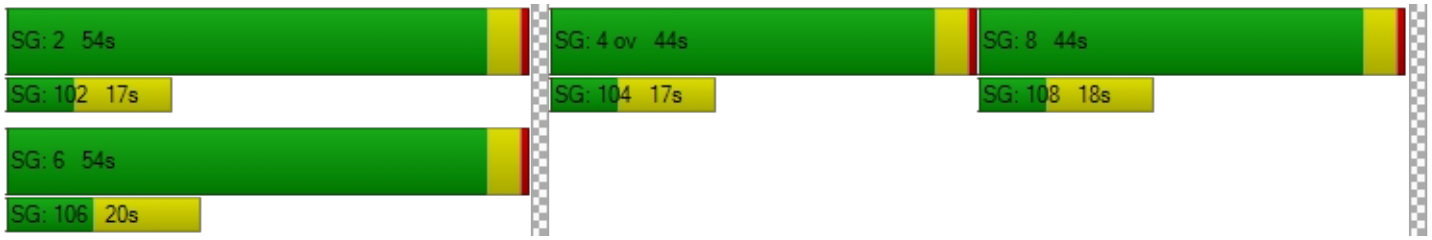
d_M, Delay for Movement [s/veh]	13.63	15.90	15.90	14.99	14.67	14.67	0.00	13.64	9.35	0.00	12.76	3.16
Movement LOS	B	B	B	B	B	B		B	A		B	A
d_A, Approach Delay [s/veh]	15.24			14.83			13.28			10.23		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	13.15											
Intersection LOS	B											
Intersection V/C	0.637											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	513.01	590.42	1075.18	811.40
d_p, Pedestrian Delay [s]	60.43	58.60	60.43	60.43
l_p,int, Pedestrian LOS Score for Intersection	2.262	2.235	2.384	2.608
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	563	563	704	704
d_b, Bicycle Delay [s]	36.63	36.63	29.82	29.82
l_b,int, Bicycle LOS Score for Intersection	2.041	2.233	2.300	2.518
Bicycle LOS	B	B	B	B

Sequence

Ring 1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: S Redland Rd/Abernaty Rd

Control Type:	Signalized	Delay (sec / veh):	23.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.715

Intersection Setup

Name	S Redland Rd			S Redland Rd			17th St			Holocomb Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	125.00	100.00	100.00	330.00	100.00	250.00	120.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	2	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
Speed [mph]	30.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Redland Rd			S Redland Rd			17th St			Holocomb Blvd		
Base Volume Input [veh/h]	120	355	37	187	397	62	21	93	131	39	87	210
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0000	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	3.00	4.00	11.00	5.00	3.00	2.00	10.00	6.00	6.00	8.00	3.00	4.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	3	0	0	0	0	3	10	3	3	0	3	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	35	0	0	0	0	0	112
Total Hourly Volume [veh/h]	131	379	39	200	424	34	32	102	143	41	96	112
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	1.0000	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	101	10	53	113	9	9	27	38	11	26	30
Total Analysis Volume [veh/h]	139	403	41	213	451	34	34	109	152	44	102	119
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			1			0		
v_di, Inbound Pedestrian Volume crossing m	1			0			1			0		
v_co, Outbound Pedestrian Volume crossing	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			2			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	13.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	0
Maximum Green [s]	30	45	0	30	45	0	30	35	0	20	30	0
Amber [s]	3.5	4.7	0.0	3.5	4.7	0.0	3.5	4.0	0.0	3.5	4.7	0.0
All red [s]	0.5	0.7	0.0	0.5	0.7	0.0	0.5	0.5	0.0	0.5	0.7	0.0
Split [s]	34	51	0	34	51	0	34	40	0	24	36	0
Vehicle Extension [s]	2.3	4.5	0.0	2.3	4.5	0.0	2.3	2.3	0.0	2.3	2.3	0.0
Walk [s]	0	7	0	5	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	10	24	0	0	22	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.4	0.0	2.0	3.4	0.0	2.0	2.5	0.0	2.0	3.4	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C	R
C, Cycle Length [s]	58	58	58	58	58	58	58	58	58	58
L, Total Lost Time per Cycle [s]	4.00	5.40	4.00	5.40	5.40	4.00	4.50	4.00	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.40	2.00	3.40	3.40	2.00	2.50	2.00	3.40	3.40
g_i, Effective Green Time [s]	6	18	9	21	21	2	12	2	11	11
g / C, Green / Cycle	0.10	0.31	0.15	0.36	0.36	0.03	0.20	0.04	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.08	0.25	0.12	0.24	0.02	0.02	0.16	0.03	0.05	0.08
s, saturation flow rate [veh/h]	1767	1810	1738	1855	1588	1667	1612	1695	1855	1564
c, Capacity [veh/h]	182	554	267	661	566	49	322	60	353	298
d1, Uniform Delay [s]	25.58	18.69	23.91	16.02	12.39	28.17	22.38	27.98	20.32	20.78
k, delay calibration	0.07	0.19	0.07	0.19	0.19	0.07	0.07	0.07	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.07	4.63	3.39	2.13	0.08	10.32	3.06	10.21	0.27	0.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.80	0.80	0.68	0.06	0.70	0.81	0.74	0.29	0.40
d, Delay for Lane Group [s/veh]	29.65	23.32	27.31	18.16	12.47	38.49	25.44	38.19	20.59	21.32
Lane Group LOS	C	C	C	B	B	D	C	D	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.97	5.64	2.77	4.62	0.26	0.59	3.42	0.75	1.13	1.36
50th-Percentile Queue Length [ft/ln]	49.14	140.97	69.35	115.59	6.46	14.66	85.45	18.65	28.33	34.11
95th-Percentile Queue Length [veh/ln]	3.54	9.53	4.99	8.15	0.47	1.06	6.15	1.34	2.04	2.46
95th-Percentile Queue Length [ft/ln]	88.45	238.32	124.84	203.75	11.64	26.38	153.80	33.56	51.00	61.39

Movement, Approach, & Intersection Results

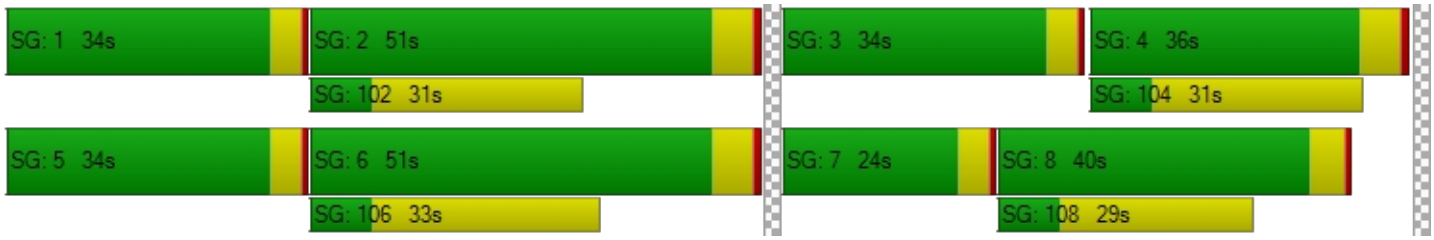
d_M, Delay for Movement [s/veh]	29.65	23.32	23.32	27.31	18.16	12.47	38.49	25.44	25.44	38.19	20.59	21.32
Movement LOS	C	C	C	C	B	B	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	24.83			20.67			26.94			23.84		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	23.45											
Intersection LOS	C											
Intersection V/C	0.715											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	66.89	66.89	66.89	66.89
l_p,int, Pedestrian LOS Score for Intersection	2.366	2.740	2.444	2.497
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	588	588	458	395
d_b, Bicycle Delay [s]	38.61	38.61	46.11	49.92
l_b,int, Bicycle LOS Score for Intersection	2.522	2.769	2.046	2.182
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: S Anchor Way / S Redland Rd

Control Type:	Two-way stop	Delay (sec / veh):	30.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.331

Intersection Setup

Name	S Redland Rd		S Redland Rd		S Anchor Way	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	S Redland Rd		S Redland Rd		S Anchor Way	
Base Volume Input [veh/h]	16	438	473	73	55	23
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	0.00	3.00	4.00	1.00	7.00	0.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	3	3	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	470	508	78	59	24
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	132	143	22	17	7
Total Analysis Volume [veh/h]	19	528	571	88	66	27
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			Yes
Storage Area [veh]	0	0	1
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.01	0.00	0.33	0.05
d_M, Delay for Movement [s/veh]	8.92	0.00	0.00	0.00	30.52	19.72
Movement LOS	A	A	A	A	D	C
95th-Percentile Queue Length [veh/ln]	0.06	0.06	0.00	0.00	1.55	1.55
95th-Percentile Queue Length [ft/ln]	1.55	1.55	0.00	0.00	38.68	38.68
d_A, Approach Delay [s/veh]	0.31		0.00		27.38	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	2.09					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 18: S Holly Ln / S Redland Rd

Control Type:	Two-way stop	Delay (sec / veh):	23.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.232

Intersection Setup

Name	S Holly Ln		S Redland Rd		S Redland Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	S Holly Ln		S Redland Rd		S Redland Rd	
Base Volume Input [veh/h]	45	26	422	64	15	404
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	7.00	8.00	5.00	3.00	0.00	3.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	3	0	0	3
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	48	27	453	69	16	434
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	8	127	19	4	122
Total Analysis Volume [veh/h]	54	30	509	78	18	488
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	Yes		
Storage Area [veh]	1	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.23	0.06	0.01	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	23.44	14.84	0.00	0.00	8.67	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.88	0.88	0.00	0.00	0.06	0.06
95th-Percentile Queue Length [ft/ln]	22.08	22.08	0.00	0.00	1.38	1.38
d_A, Approach Delay [s/veh]	20.36		0.00		0.31	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.59					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 19: I 205 SB-Ramp / OR 213

Control Type:	Two-way stop	Delay (sec / veh):	96.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.133

Intersection Setup

Name	OR 213		Washington St		Washington Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	OR 213		Washington St		Washington Dr	
Base Volume Input [veh/h]	756	21	17	10	6	1572
Base Volume Adjustment Factor	1.0400	1.0000	1.0000	1.0000	1.0000	1.0400
Heavy Vehicles Percentage [%]	5.00	5.00	6.00	10.00	0.00	5.00
Growth Factor	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	3	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	21	0	0	0	0	0
Total Hourly Volume [veh/h]	807	25	18	11	6	1728
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	210	7	5	3	2	450
Total Analysis Volume [veh/h]	841	26	19	11	6	1800
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.54	0.00	0.00	0.00	0.13	0.00
d_M, Delay for Movement [s/veh]	9.95	0.00	0.00	0.00	96.52	0.00
Movement LOS	A	A	A	A	F	
95th-Percentile Queue Length [veh/ln]	3.37	0.00	0.00	0.00	0.42	0.00
95th-Percentile Queue Length [ft/ln]	84.15	0.00	0.00	0.00	10.57	0.00
d_A, Approach Delay [s/veh]	9.65		0.00		96.52	
Approach LOS	A		A		F	
d_I, Intersection Delay [s/veh]	9.91					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 20: OR 213 / Clackamas River Dr

Control Type:	Signalized	Delay (sec / veh):	10.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.648

Intersection Setup

Name	OR 213			OR 213			Prairie Schooner Way			Clackamas River Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	450.00	100.00	100.00	415.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			Yes			Yes			Yes		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	OR 213			OR 213			Prairie Schooner Way			Clackamas River Dr		
Base Volume Input [veh/h]	0	1813	216	0	1879	600	0	0	216	0	0	519
Base Volume Adjustment Factor	1.0000	1.0400	1.0400	1.0000	1.0400	1.0400	1.0000	1.0000	1.0400	1.0000	1.0000	1.0400
Heavy Vehicles Percentage [%]	2.00	3.00	6.00	2.00	4.00	8.00	2.00	2.00	6.00	2.00	2.00	11.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	3	0	0	0	0	0	0	5	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	21	0	0	20	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	238	0	0	660	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1910	0	0	1974	0	0	0	243	0	0	571
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800	1.0000	1.0000	0.9800	1.0000	1.0000	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	487	0	0	504	0	0	0	62	0	0	146
Total Analysis Volume [veh/h]	0	1949	0	0	2014	0	0	0	248	0	0	583
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	0	1	0	0	5
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	0	4	0	0	4
Maximum Green [s]	0	76	0	0	76	0	0	0	26	0	0	26
Amber [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	0.0	3.5	0.0	0.0	3.5
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.5	0.0	0.0	0.5
Split [s]	0	44	0	0	44	0	0	0	30	0	0	74
Vehicle Extension [s]	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	2.3	0.0	0.0	2.3
Walk [s]	0	0	0	0	0	0	0	0	7	0	0	7
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	15	0	0	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0
Minimum Recall		Yes			Yes				No			No
Maximum Recall		No			No				No			No
Pedestrian Recall		No			No				No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	R	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	65	65	79	79	11	25
g / C, Green / Cycle	0.65	0.65	0.79	0.79	0.11	0.25
(v / s)_i Volume / Saturation Flow Rate	0.39	0.00	0.40	0.00	0.09	0.22
s, saturation flow rate [veh/h]	5053	1538	5012	1513	2723	2610
c, Capacity [veh/h]	3298	1004	3945	1191	308	646
d1, Uniform Delay [s]	2.92	0.00	3.79	0.00	43.32	36.50
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.79	0.00	0.47	0.00	3.09	3.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.00	0.51	0.00	0.81	0.90
d, Delay for Lane Group [s/veh]	3.71	0.00	4.27	0.00	46.41	39.69
Lane Group LOS	A	A	A	A	D	D
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.83	0.00	2.29	0.00	3.10	7.06
50th-Percentile Queue Length [ft/ln]	45.82	0.00	57.22	0.00	77.58	176.40
95th-Percentile Queue Length [veh/ln]	3.30	0.00	4.12	0.00	5.59	11.41
95th-Percentile Queue Length [ft/ln]	82.48	0.00	103.00	0.00	139.65	285.31

Movement, Approach, & Intersection Results

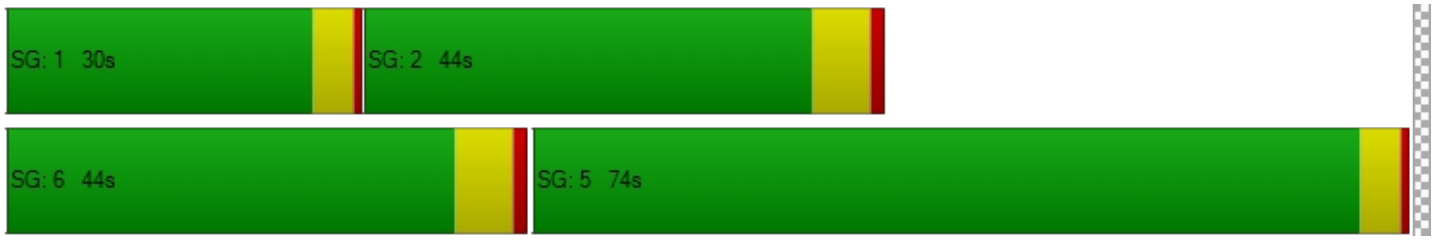
d_M, Delay for Movement [s/veh]	0.00	3.71	0.00	0.00	4.27	0.00	0.00	0.00	46.41	0.00	0.00	39.69
Movement LOS		A	A		A	A			D			D
d_A, Approach Delay [s/veh]	3.71			4.27			46.41			39.69		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	10.53											
Intersection LOS	B											
Intersection V/C	0.648											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	38.0	38.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	29204.85	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	19.22	19.22
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.328	2.183
Crosswalk LOS	F	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	760	760	520	1400
d_b, Bicycle Delay [s]	19.22	19.22	27.38	4.50
l_b,int, Bicycle LOS Score for Intersection	2.762	3.030	1.560	1.560
Bicycle LOS	C	C	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: OR 213 / S Redland Rd

Control Type:	Signalized	Delay (sec / veh):	15.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.752

Intersection Setup

Name	OR 213		OR 213		S Redland Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	350.00	100.00	100.00	100.00	335.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		40.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		Yes		Yes	
Crosswalk	Yes		No		Yes	

Volumes

Name	OR 213		OR 213		S Redland Rd	
Base Volume Input [veh/h]	107	1585	1539	547	479	113
Base Volume Adjustment Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
Heavy Vehicles Percentage [%]	3.00	3.00	4.00	4.00	3.00	4.00
Growth Factor	1.0570	1.0000	1.0000	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	3	3	5	0	0	10
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	21	20	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	301	0	68
Total Hourly Volume [veh/h]	120	1672	1626	300	526	67
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	431	419	77	136	17
Total Analysis Volume [veh/h]	124	1724	1676	309	542	69
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	22.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Overlap	Permissive	Overlap
Signal Group	1	6	2	2	8	8
Auxiliary Signal Groups				2,8		1,8
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	6	6
Maximum Green [s]	16	88	68	68	24	24
Amber [s]	3.5	5.0	5.0	5.0	3.0	3.0
All red [s]	0.5	1.0	1.0	1.0	0.7	0.7
Split [s]	20	72	52	52	28	28
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	5	5	5
Pedestrian Clearance [s]	0	10	10	10	10	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	4.0	1.7	1.7
Minimum Recall	No	Yes	Yes	Yes	No	No
Maximum Recall	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	3.70	3.70	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	0.00	1.70	0.00
g_i, Effective Green Time [s]	9	71	58	84	19	32
g / C, Green / Cycle	0.09	0.71	0.58	0.83	0.19	0.32
(v / s)_i Volume / Saturation Flow Rate	0.07	0.49	0.48	0.20	0.16	0.04
s, saturation flow rate [veh/h]	1767	3532	3503	1564	3431	1564
c, Capacity [veh/h]	157	2515	2043	1304	655	496
d1, Uniform Delay [s]	44.69	8.10	7.92	0.00	38.93	24.44
k, delay calibration	0.11	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.41	1.54	3.84	0.43	2.75	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.33	1.25	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.69	0.82	0.24	0.83	0.14
d, Delay for Lane Group [s/veh]	53.10	9.65	11.76	0.43	41.68	24.57
Lane Group LOS	D	A	B	A	D	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.21	7.23	5.61	0.16	6.42	1.15
50th-Percentile Queue Length [ft/ln]	80.26	180.65	140.22	3.88	160.46	28.72
95th-Percentile Queue Length [veh/ln]	5.78	11.63	9.49	0.28	10.57	2.07
95th-Percentile Queue Length [ft/ln]	144.46	290.86	237.32	6.98	264.34	51.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.10	9.65	11.76	0.43	41.68	24.57
Movement LOS	D	A	B	A	D	C
d_A, Approach Delay [s/veh]	12.56		10.00		39.75	
Approach LOS	B		A		D	
d_I, Intersection Delay [s/veh]	15.15					
Intersection LOS	B					
Intersection V/C	0.752					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	0.00	41.41
I_p,int, Pedestrian LOS Score for Intersection	3.615	0.000	2.694
Crosswalk LOS	D	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1320	920	486
d_b, Bicycle Delay [s]	5.78	14.58	28.65
I_b,int, Bicycle LOS Score for Intersection	3.084	3.446	1.560
Bicycle LOS	C	C	A

Sequence

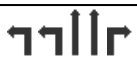
Ring 1	2	1	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: OR 213/Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	46.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.763

Intersection Setup

Name	OR 213			OR 213			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	2	0	1	2	0	0	2	0	1
Entry Pocket Length [ft]	530.00	100.00	580.00	600.00	100.00	525.00	500.00	100.00	100.00	160.00	100.00	465.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 213			OR 213			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	130	725	173	417	695	532	474	564	159	177	459	509
Base Volume Adjustment Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
Heavy Vehicles Percentage [%]	3.00	3.00	1.00	5.00	6.00	3.00	3.00	2.00	2.00	1.00	2.00	3.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	5	0	0	15	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	21	0	0	20	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	95	0	0	293	0	0	0	0	0	280
Total Hourly Volume [veh/h]	143	780	95	459	758	292	521	620	174	194	504	279
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	199	24	117	193	74	133	158	44	49	129	71
Total Analysis Volume [veh/h]	146	796	97	468	773	298	532	633	178	198	514	285
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			1			1			0		
v_di, Inbound Pedestrian Volume crossing m	1			0			2			1		
v_co, Outbound Pedestrian Volume crossing	0			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			2			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	142
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	0
Maximum Green [s]	15	40	0	32	40	0	38	30	0	15	20	0
Amber [s]	4.0	5.0	0.0	4.0	5.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.5	2.0	0.0	1.5	2.0	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	21	47	0	38	47	0	44	36	0	21	26	0
Vehicle Extension [s]	2.3	4.7	0.0	2.3	4.7	0.0	2.3	2.3	0.0	2.3	2.3	0.0
Walk [s]	0	8	0	0	9	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	31	0	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.5	5.0	0.0	3.5	5.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	113	113	113	113	113	113	113	113	113	113	113	113
L, Total Lost Time per Cycle [s]	5.50	7.00	7.00	5.50	7.00	7.00	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	5.00	5.00	3.50	5.00	5.00	3.50	3.50	3.50	3.50	3.50	3.50
g_i, Effective Green Time [s]	11	31	31	18	38	38	20	32	32	8	20	20
g / C, Green / Cycle	0.10	0.28	0.28	0.16	0.34	0.34	0.18	0.28	0.28	0.08	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.08	0.23	0.06	0.14	0.22	0.19	0.16	0.22	0.23	0.06	0.14	0.18
s, saturation flow rate [veh/h]	1767	3532	1602	3375	3446	1577	3431	1870	1717	3486	3560	1556
c, Capacity [veh/h]	175	975	442	542	1164	532	610	523	480	262	631	276
d1, Uniform Delay [s]	49.93	38.18	31.48	46.14	31.90	30.51	45.13	37.71	37.92	51.15	44.63	46.28
k, delay calibration	0.07	0.20	0.20	0.07	0.20	0.20	0.07	0.29	0.30	0.07	0.07	0.40
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.65	3.19	0.46	2.65	1.22	1.72	2.54	7.33	8.99	2.72	1.62	57.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.82	0.22	0.86	0.66	0.56	0.87	0.80	0.82	0.75	0.81	1.03
d, Delay for Lane Group [s/veh]	56.57	41.37	31.94	48.79	33.13	32.23	47.68	45.03	46.90	53.87	46.25	103.37
Lane Group LOS	E	D	C	D	C	C	D	D	D	D	D	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.35	10.59	2.10	6.55	9.09	6.81	7.34	11.55	11.07	2.81	6.94	11.94
50th-Percentile Queue Length [ft/ln]	108.82	264.87	52.47	163.85	227.31	170.33	183.48	288.81	276.72	70.27	173.49	298.44
95th-Percentile Queue Length [veh/ln]	7.77	15.93	3.78	10.75	14.04	11.09	11.78	17.13	16.53	5.06	11.26	17.90
95th-Percentile Queue Length [ft/ln]	194.35	398.33	94.45	268.82	350.94	277.35	294.55	428.16	413.13	126.48	281.49	447.46

Movement, Approach, & Intersection Results

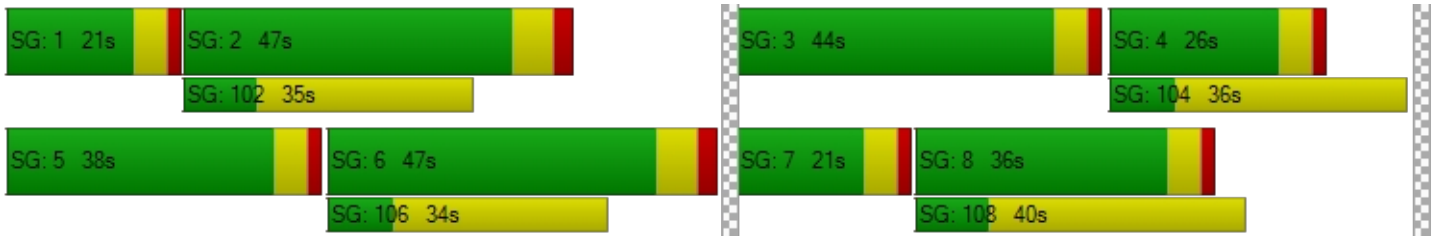
d_M, Delay for Movement [s/veh]	56.57	41.37	31.94	48.79	33.13	32.23	47.68	45.67	46.90	53.87	46.25	103.37
Movement LOS	E	D	C	D	C	C	D	D	D	D	D	F
d_A, Approach Delay [s/veh]	42.62			37.72			46.63			64.09		
Approach LOS	D			D			D			E		
d_I, Intersection Delay [s/veh]	46.53											
Intersection LOS	D											
Intersection V/C	0.763											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	13.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	2327.49	5202.15	0.00	8266.00
d_p, Pedestrian Delay [s]	58.60	59.51	58.60	59.51
l_p,int, Pedestrian LOS Score for Intersection	2.980	3.551	2.965	3.431
Crosswalk LOS	C	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	563	563	430	289
d_b, Bicycle Delay [s]	36.63	36.63	43.82	52.01
l_b,int, Bicycle LOS Score for Intersection	2.495	3.071	2.668	2.613
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 23: OR 213 / Molalla Ave

Control Type:	Signalized	Delay (sec / veh):	26.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.701

Intersection Setup

Name	OR 213			OR 213			Molalla Ave			S Douglas Loop		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	650.00	100.00	100.00	525.00	100.00	355.00	100.00	100.00	100.00	275.00	100.00	275.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 213			OR 213			Molalla Ave			S Douglas Loop		
Base Volume Input [veh/h]	286	888	9	3	840	189	136	13	308	17	15	8
Base Volume Adjustment Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
Heavy Vehicles Percentage [%]	1.00	3.00	0.00	33.00	5.00	2.00	0.00	31.00	0.00	0.00	27.00	12.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	5	0	0	15	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	21	0	0	20	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	5	0	0	104	0	0	169	0	0	4
Total Hourly Volume [veh/h]	314	950	5	3	909	104	149	15	169	19	17	4
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	85	258	1	1	247	28	40	4	46	5	5	1
Total Analysis Volume [veh/h]	341	1033	5	3	988	113	162	16	184	21	18	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			5			0			5		
v_di, Inbound Pedestrian Volume crossing m	0			5			0			5		
v_co, Outbound Pedestrian Volume crossing	1			0			0			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	35.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	13.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	6
Maximum Green [s]	26	31	0	11	16	0	16	16	0	16	16	16
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	3.5	4.7	0.0	3.5	4.7	4.7
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.5	0.7	0.0	0.5	0.7	0.7
Split [s]	30	35	0	15	20	0	20	20	0	20	20	20
Vehicle Extension [s]	2.3	4.5	0.0	2.3	4.5	0.0	2.3	2.3	0.0	2.3	2.3	2.3
Walk [s]	0	9	0	0	10	0	0	14	0	0	5	5
Pedestrian Clearance [s]	0	23	0	0	27	0	0	28	0	0	10	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	4.0	0.0	2.0	4.0	0.0	2.0	3.4	0.0	2.0	3.4	3.4
Minimum Recall	No	Yes		No	Yes		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	5.40	5.40	4.00	5.40	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	3.40	3.40	2.00	3.40	0.00
g_i, Effective Green Time [s]	19	52	52	0	34	34	14	12	12	6	4	28
g / C, Green / Cycle	0.21	0.58	0.58	0.00	0.37	0.37	0.15	0.14	0.14	0.06	0.04	0.31
(v / s)_i Volume / Saturation Flow Rate	0.19	0.29	0.00	0.00	0.28	0.07	0.11	0.01	0.11	0.01	0.01	0.00
s, saturation flow rate [veh/h]	1795	3532	1578	1338	3475	1589	1440	1435	1615	1810	1495	1449
c, Capacity [veh/h]	378	2058	919	5	1305	597	267	195	219	113	67	443
d1, Uniform Delay [s]	34.61	11.07	7.86	44.79	24.52	18.89	38.40	33.99	37.93	40.02	41.54	21.73
k, delay calibration	0.16	0.50	0.50	0.07	0.50	0.50	0.07	0.07	0.07	0.07	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.26	0.88	0.01	67.14	4.14	0.70	1.36	0.11	5.27	0.48	1.28	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.50	0.01	0.65	0.76	0.19	0.61	0.08	0.84	0.19	0.27	0.01
d, Delay for Lane Group [s/veh]	45.87	11.95	7.87	111.93	28.66	19.59	39.76	34.10	43.20	40.50	42.82	21.73
Lane Group LOS	D	B	A	F	C	B	D	C	D	D	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.80	4.94	0.03	0.15	8.77	1.53	3.58	0.31	4.26	0.46	0.41	0.06
50th-Percentile Queue Length [ft/ln]	194.94	123.59	0.87	3.72	219.15	38.23	89.56	7.81	106.40	11.40	10.26	1.49
95th-Percentile Queue Length [veh/ln]	12.38	8.59	0.06	0.27	13.62	2.75	6.45	0.56	7.64	0.82	0.74	0.11
95th-Percentile Queue Length [ft/ln]	309.43	214.76	1.57	6.70	340.54	68.81	161.20	14.06	190.98	20.52	18.48	2.68

Movement, Approach, & Intersection Results

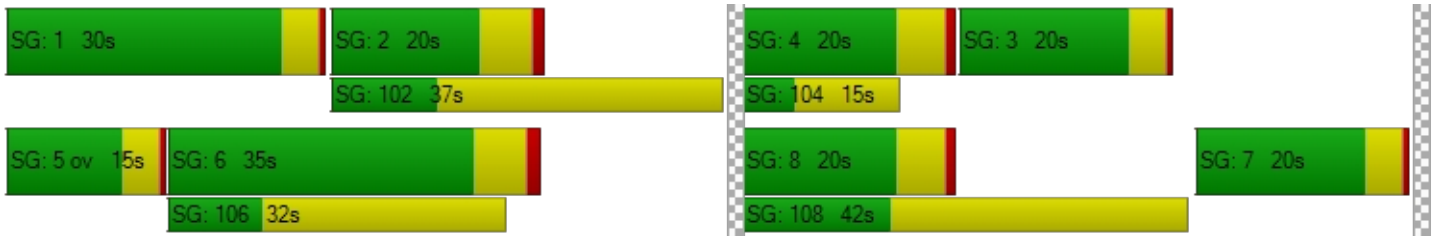
d_M, Delay for Movement [s/veh]	45.87	11.95	7.87	111.93	28.66	19.59	39.76	34.10	43.20	40.50	42.82	21.73
Movement LOS	D	B	A	F	C	B	D	C	D	D	D	C
d_A, Approach Delay [s/veh]	20.32			27.96			41.26			39.73		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	26.16											
Intersection LOS	C											
Intersection V/C	0.701											

Other Modes

g_Walk,mi, Effective Walk Time [s]	18.0	9.0	14.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	810.02	0.00	4876.73
d_p, Pedestrian Delay [s]	28.80	36.45	32.09	32.94
l_p,int, Pedestrian LOS Score for Intersection	3.270	3.551	2.593	2.150
Crosswalk LOS	C	D	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	644	311	324	324
d_b, Bicycle Delay [s]	20.68	32.09	31.58	31.58
l_b,int, Bicycle LOS Score for Intersection	2.701	2.556	2.436	1.637
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Molalla Ave / Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	31.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.387

Intersection Setup

Name	Molalla Ave			Molalla Ave			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	170.00	100.00	150.00	350.00	100.00	100.00	175.00	100.00	190.00	210.00	100.00	245.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			35.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Molalla Ave			Molalla Ave			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	152	257	65	486	287	18	27	286	128	74	305	240
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	4.00	2.00	3.00	2.00	1.00	0.00	4.00	1.00	4.00	0.00	2.00	2.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	68	0	0	128
Total Hourly Volume [veh/h]	163	275	70	519	307	19	29	305	68	79	326	128
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	72	18	135	80	5	8	79	18	21	85	33
Total Analysis Volume [veh/h]	170	286	73	541	320	20	30	318	71	82	340	133
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			4			1			3		
v_di, Inbound Pedestrian Volume crossing m	1			3			2			4		
v_co, Outbound Pedestrian Volume crossing	7			3			4			7		
v_ci, Inbound Pedestrian Volume crossing mi	7			4			3			7		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			1			1			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	10	0	4	10	0	4	5	0	4	5	0
Maximum Green [s]	30	40	0	30	40	0	20	25	0	20	25	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	3.5	4.0	0.0	3.5	4.0	0.0
All red [s]	2.0	2.0	0.0	2.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	20	42	0	20	42	0	14	24	0	14	24	0
Vehicle Extension [s]	2.3	4.6	0.0	2.3	4.2	0.0	2.3	2.5	0.0	2.3	2.5	0.0
Walk [s]	0	9	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	26	0	0	22	0	0	23	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	4.0	0.0	4.0	4.0	0.0	2.5	4.0	0.0	2.5	4.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	49	49	49	53	53	53	22	12	12	22	15	15
g / C, Green / Cycle	0.49	0.49	0.49	0.53	0.53	0.53	0.22	0.12	0.12	0.22	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.14	0.10	0.10	0.41	0.09	0.09	0.03	0.09	0.05	0.06	0.10	0.08
s, saturation flow rate [veh/h]	1198	1870	1724	1307	1885	1842	1184	3589	1531	1338	3560	1567
c, Capacity [veh/h]	639	909	838	645	995	973	271	428	182	305	528	232
d1, Uniform Delay [s]	14.78	14.66	14.70	27.08	12.25	12.26	31.69	42.56	40.63	32.59	40.10	39.58
k, delay calibration	0.07	0.50	0.50	0.50	0.50	0.50	0.07	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.13	0.50	0.56	12.40	0.38	0.39	0.11	1.92	1.00	0.35	0.98	1.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.27	0.20	0.21	0.84	0.17	0.17	0.11	0.74	0.39	0.27	0.64	0.57
d, Delay for Lane Group [s/veh]	14.92	15.17	15.27	39.48	12.63	12.64	31.80	44.48	41.64	32.94	41.08	41.23
Lane Group LOS	B	B	B	D	B	B	C	D	D	C	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.16	2.46	2.34	9.99	1.99	1.96	0.58	3.84	1.64	1.65	3.98	3.12
50th-Percentile Queue Length [ft/ln]	54.12	61.41	58.44	249.70	49.82	48.88	14.45	95.99	40.98	41.31	99.41	78.04
95th-Percentile Queue Length [veh/ln]	3.90	4.42	4.21	15.17	3.59	3.52	1.04	6.91	2.95	2.97	7.16	5.62
95th-Percentile Queue Length [ft/ln]	97.41	110.53	105.18	379.28	89.68	87.98	26.01	172.79	73.76	74.36	178.94	140.47

Movement, Approach, & Intersection Results

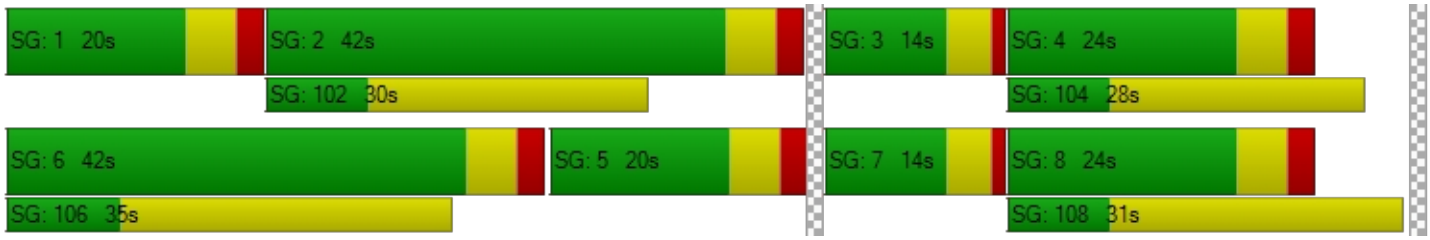
d_M, Delay for Movement [s/veh]	14.92	15.20	15.27	39.48	12.63	12.64	31.80	44.48	41.64	32.94	41.08	41.23
Movement LOS	B	B	B	D	B	B	C	D	D	C	D	D
d_A, Approach Delay [s/veh]	15.12			29.12			43.09			39.91		
Approach LOS	B			C			D			D		
d_I, Intersection Delay [s/veh]	30.98											
Intersection LOS	C											
Intersection V/C	0.387											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	3705.00	1430.79	1667.90	529.95
d_p, Pedestrian Delay [s]	38.72	38.72	38.72	37.85
l_p,int, Pedestrian LOS Score for Intersection	2.529	2.643	2.836	3.366
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	720	720	360	360
d_b, Bicycle Delay [s]	20.49	20.49	33.64	33.62
l_b,int, Bicycle LOS Score for Intersection	1.996	2.286	1.961	2.123
Bicycle LOS	A	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: Maple Lane Rd / Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	21.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.717

Intersection Setup

Name	Maple Lane Rd			Maple Lane Rd			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	150.00	430.00	100.00	100.00	360.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Maple Lane Rd			Maple Lane Rd			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	252	76	36	40	62	317	291	490	132	19	572	32
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	1.00	0.00	0.00	5.00	0.00	2.00	4.00	5.00	2.00	0.00	3.00	3.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	169	0	0	0	0	0	0
Total Hourly Volume [veh/h]	270	81	38	42	67	169	311	523	141	20	611	34
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	22	10	11	18	45	84	141	38	5	164	9
Total Analysis Volume [veh/h]	290	87	41	45	72	182	334	562	152	22	657	37
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			1			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			1		
v_co, Outbound Pedestrian Volume crossing	1			1			2			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			2			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	165
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	0	3	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	4	10	0	4	10	0
Maximum Green [s]	0	30	0	0	30	30	35	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	4.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.5	0.5	0.5	0.0	0.5	0.5	0.0
Split [s]	0	35	0	0	35	35	40	55	0	25	55	0
Vehicle Extension [s]	0.0	2.5	0.0	0.0	2.5	2.5	2.5	5.2	0.0	2.3	5.2	0.0
Walk [s]	0	8	0	0	8	8	0	7	0	0	8	0
Pedestrian Clearance [s]	0	19	0	0	19	19	0	12	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	0.0	0.0	2.5	2.5	2.5	2.5	0.0	2.5	2.5	0.0
Minimum Recall		No			No	No	No	Yes		No	Yes	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	71	71	71	71	71	71	71	71	71	71	71
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	0.00	0.00	2.50	2.50	0.00	2.50	2.50
g_i, Effective Green Time [s]	14	14	7	7	24	37	31	31	37	20	20
g / C, Green / Cycle	0.20	0.20	0.09	0.09	0.34	0.52	0.43	0.43	0.52	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.16	0.07	0.03	0.04	0.12	0.29	0.20	0.20	0.05	0.19	0.19
s, saturation flow rate [veh/h]	1795	1795	1738	1900	1580	1158	1825	1693	447	1855	1820
c, Capacity [veh/h]	357	357	162	177	530	627	794	737	418	512	502
d1, Uniform Delay [s]	27.25	24.60	30.04	30.42	17.74	12.03	14.23	14.24	9.86	22.99	23.00
k, delay calibration	0.08	0.08	0.08	0.08	0.08	0.26	0.26	0.26	0.07	0.26	0.26
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.38	0.45	0.69	1.12	0.28	1.66	1.01	1.08	0.03	3.78	3.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.36	0.28	0.41	0.34	0.53	0.47	0.47	0.05	0.68	0.68
d, Delay for Lane Group [s/veh]	30.63	25.05	30.73	31.54	18.02	13.69	15.24	15.32	9.89	26.77	26.86
Lane Group LOS	C	C	C	C	B	B	B	B	A	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.88	1.86	0.70	1.14	2.05	2.92	3.95	3.69	0.15	5.36	5.28
50th-Percentile Queue Length [ft/ln]	122.08	46.43	17.57	28.58	51.20	73.12	98.84	92.13	3.65	133.92	131.93
95th-Percentile Queue Length [veh/ln]	8.51	3.34	1.26	2.06	3.69	5.26	7.12	6.63	0.26	9.15	9.04
95th-Percentile Queue Length [ft/ln]	212.69	83.57	31.62	51.45	92.16	131.62	177.91	165.84	6.57	228.82	226.12

Movement, Approach, & Intersection Results

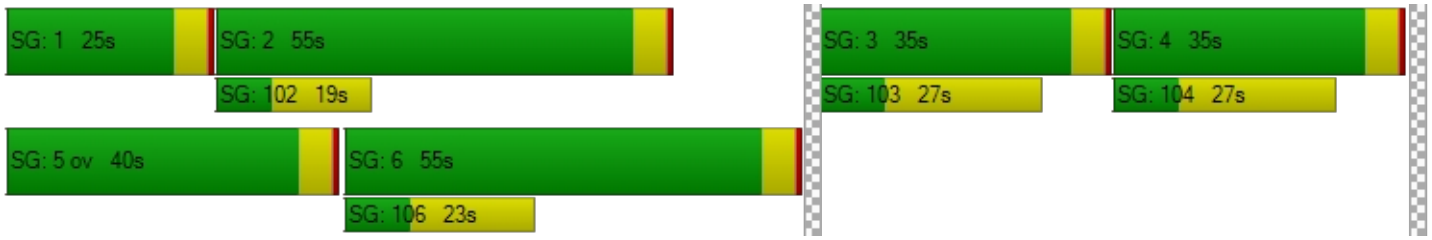
d_M, Delay for Movement [s/veh]	30.63	25.05	25.05	30.73	31.54	18.02	13.69	15.27	15.32	9.89	26.81	26.86
Movement LOS	C	C	C	C	C	B	B	B	B	A	C	C
d_A, Approach Delay [s/veh]	28.92			23.19			14.77			26.29		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	21.50											
Intersection LOS	C											
Intersection V/C	0.717											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	4151.57	1379.87	2303.16
d_p, Pedestrian Delay [s]	71.87	70.94	70.94	70.94
l_p,int, Pedestrian LOS Score for Intersection	2.163	2.845	2.862	2.638
Crosswalk LOS	B	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	370	370	612	612
d_b, Bicycle Delay [s]	54.82	54.85	39.73	39.73
l_b,int, Bicycle LOS Score for Intersection	2.249	2.332	2.424	2.150
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 199: I 205 SB-Ramp / OR 213

Control Type:	Two-way stop	Delay (sec / veh):	57.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.227

Intersection Setup

Name	OR 213		OR 213			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	OR 213		OR 213			
Base Volume Input [veh/h]	0	777	17	0	0	1572
Base Volume Adjustment Factor	1.0000	1.0400	1.0400	1.0000	1.0000	1.0400
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0570	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	21	0	0	0	20
Total Hourly Volume [veh/h]	0	829	19	0	0	1655
Peak Hour Factor	1.0000	0.9600	0.9600	1.0000	1.0000	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	216	5	0	0	431
Total Analysis Volume [veh/h]	0	864	20	0	0	1724
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Stop	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.23	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	57.50	0.00	0.00	0.00
Movement LOS		A	F			A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.81	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	20.13	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		57.50		0.00	
Approach LOS	A		F		A	
d_I, Intersection Delay [s/veh]	0.44					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 2: OR 99E / Dunes Dr

Control Type:	Signalized	Delay (sec / veh):	24.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.667

Intersection Setup

Name	OR 99E			OR 99E			Dunes Dr			Dunes Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	220.00	100.00	100.00	370.00	100.00	155.00	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 99E			OR 99E			Dunes Dr			Dunes Dr		
Base Volume Input [veh/h]	46	911	71	37	733	53	16	3	35	107	3	35
Base Volume Adjustment Factor	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
Heavy Vehicles Percentage [%]	9.00	7.00	7.00	5.00	8.00	9.00	0.00	0.00	0.00	7.00	0.00	6.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	129	0	0	0	28	0	0	55	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	18	0	0	12	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	1514	113	59	1112	113	25	5	111	170	5	56
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	440	33	17	323	33	7	1	32	49	1	16
Total Analysis Volume [veh/h]	85	1760	131	69	1293	131	29	6	129	198	6	65
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			3			0			2		
v_di, Inbound Pedestrian Volume crossing m	0			2			0			3		
v_co, Outbound Pedestrian Volume crossing	0			0			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	2	0	5	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	20	40	0	20	40	0	0	20	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	16	58	0	20	54	0	0	16	0	0	16	0
Vehicle Extension [s]	2.3	4.8	0.0	2.3	4.8	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	18	0	0	38	0	0	37	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.00	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.80	2.80	2.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	59	59	5	61	61	12	12	12	12
g / C, Green / Cycle	0.06	0.66	0.66	0.05	0.67	0.67	0.13	0.13	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.05	0.37	0.37	0.04	0.28	0.28	0.02	0.08	0.16	0.04
s, saturation flow rate [veh/h]	1681	3418	1723	1738	3389	1697	1340	1626	1204	1619
c, Capacity [veh/h]	109	2253	1136	90	2277	1140	179	218	122	217
d1, Uniform Delay [s]	40.52	2.33	2.34	41.36	1.75	1.75	39.47	36.81	44.47	35.31
k, delay calibration	0.07	0.50	0.50	0.07	0.50	0.50	0.08	0.08	0.23	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.34	1.00	2.01	7.98	0.56	1.12	0.31	2.13	296.55	0.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.56	0.56	0.77	0.42	0.42	0.16	0.62	1.62	0.33
d, Delay for Lane Group [s/veh]	47.85	3.33	4.35	49.34	2.32	2.88	39.79	38.95	341.02	35.95
Lane Group LOS	D	A	A	D	A	A	D	D	F	D
Critical Lane Group	Yes	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.97	1.62	1.97	1.64	0.97	1.15	0.62	2.93	12.78	1.45
50th-Percentile Queue Length [ft/ln]	49.36	40.56	49.25	40.92	24.26	28.73	15.59	73.17	319.46	36.25
95th-Percentile Queue Length [veh/ln]	3.55	2.92	3.55	2.95	1.75	2.07	1.12	5.27	21.81	2.61
95th-Percentile Queue Length [ft/ln]	88.84	73.00	88.65	73.66	43.67	51.72	28.06	131.70	545.15	65.25

Movement, Approach, & Intersection Results

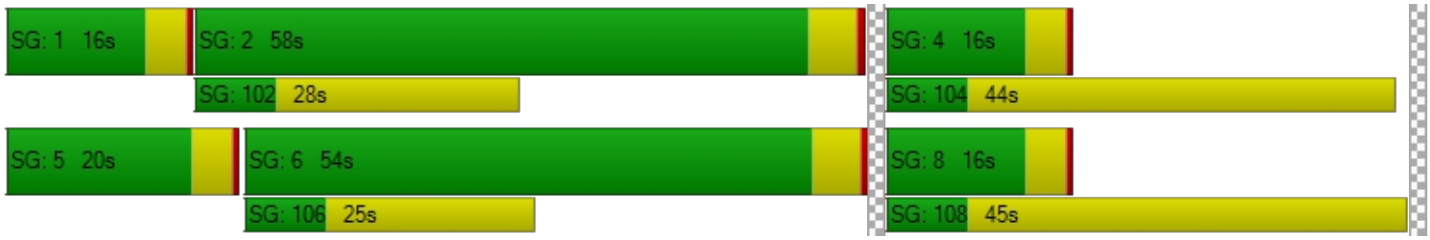
d_M, Delay for Movement [s/veh]	47.85	3.62	4.35	49.34	2.47	2.88	39.79	38.95	38.95	341.02	35.95	35.95
Movement LOS	D	A	A	D	A	A	D	D	D	F	D	D
d_A, Approach Delay [s/veh]	5.57			4.67			39.09			260.50		
Approach LOS	A			A			D			F		
d_I, Intersection Delay [s/veh]	24.21											
Intersection LOS	C											
Intersection V/C	0.667											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	1951.84	6285.37	6285.37
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	3.543	3.256	2.044	2.068
Crosswalk LOS	D	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1182	1093	267	267
d_b, Bicycle Delay [s]	7.53	9.25	33.80	33.80
l_b,int, Bicycle LOS Score for Intersection	2.646	2.381	1.830	2.003
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: OR 99E / Dunes Dr

Control Type:	Signalized	Delay (sec / veh):	45.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.805

Intersection Setup

Name	OR 99E			OR 99E			Dunes Dr			Dunes Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	220.00	100.00	100.00	370.00	100.00	155.00	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 99E			OR 99E			Dunes Dr			Dunes Dr		
Base Volume Input [veh/h]	43	1146	146	107	1354	116	26	5	78	265	17	47
Base Volume Adjustment Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
Heavy Vehicles Percentage [%]	5.00	3.00	2.00	1.00	3.00	1.00	0.00	0.00	5.00	2.00	6.00	2.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	101	0	0	0	23	0	0	152	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	12	0	0	18	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	53	1442	179	131	1589	166	32	6	247	324	21	58
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	379	47	34	418	44	8	2	65	85	6	15
Total Analysis Volume [veh/h]	56	1518	188	138	1673	175	34	6	260	341	22	61
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			1			0			1		
v_di, Inbound Pedestrian Volume crossing m	0			1			1			1		
v_co, Outbound Pedestrian Volume crossing	2			0			0			3		
v_ci, Inbound Pedestrian Volume crossing mi	3			0			0			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	12.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	2	0	5	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	12	62	0	23	51	0	0	34	0	0	34	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	16	66	0	27	55	0	0	38	0	0	38	0
Vehicle Extension [s]	2.3	4.8	0.0	2.3	4.8	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	18	0	0	38	0	0	37	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.00	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.80	2.80	0.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	68	68	9	64	64	34	34	34	34
g / C, Green / Cycle	0.04	0.57	0.57	0.08	0.53	0.53	0.28	0.28	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.03	0.32	0.33	0.10	0.35	0.35	0.03	0.16	0.31	0.05
s, saturation flow rate [veh/h]	1738	3532	1736	1359	3532	1767	1334	1619	1113	1600
c, Capacity [veh/h]	72	2009	987	194	1884	942	363	459	200	453
d1, Uniform Delay [s]	56.16	8.24	8.28	54.16	11.33	11.37	36.75	36.88	54.72	32.50
k, delay calibration	0.07	0.50	0.50	0.07	0.50	0.50	0.08	0.12	0.50	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.59	1.17	2.43	2.95	1.77	3.57	0.08	1.29	338.39	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.57	0.57	0.71	0.65	0.66	0.09	0.58	1.71	0.18
d, Delay for Lane Group [s/veh]	66.75	9.41	10.71	57.11	13.11	14.94	36.83	38.17	393.11	32.65
Lane Group LOS	E	A	B	E	B	B	D	D	F	C
Critical Lane Group	No	No	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.84	4.63	4.95	4.14	6.36	6.90	0.81	6.92	24.91	1.88
50th-Percentile Queue Length [ft/ln]	46.07	115.64	123.84	103.61	158.95	172.49	20.35	173.07	622.80	46.91
95th-Percentile Queue Length [veh/ln]	3.32	8.15	8.60	7.46	10.49	11.21	1.47	11.24	41.50	3.38
95th-Percentile Queue Length [ft/ln]	82.93	203.82	215.09	186.49	262.33	280.19	36.63	280.95	1037.42	84.45

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.75	9.73	10.71	57.11	13.59	14.94	36.83	38.17	38.17	393.11	32.65	32.65
Movement LOS	E	A	B	E	B	B	D	D	D	F	C	C
d_A, Approach Delay [s/veh]	11.65			16.74			38.02			322.55		
Approach LOS	B			B			D			F		
d_I, Intersection Delay [s/veh]	45.15											
Intersection LOS	D											
Intersection V/C	0.805											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	1082.03	3516.59	0.00	497.51
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	3.842	3.324	2.104	2.164
Crosswalk LOS	D	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1020	837	567	567
d_b, Bicycle Delay [s]	14.41	20.30	30.82	30.82
l_b,int, Bicycle LOS Score for Intersection	2.529	2.652	2.055	2.259
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: OR 99E/Dunes Dr

Control Type:	Signalized	Delay (sec / veh):	36.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.756

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	220.00	100.00	100.00	370.00	100.00	155.00	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	73	1088	279	138	1096	129	39	12	73	357	17	114
Base Volume Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
Heavy Vehicles Percentage [%]	8.00	3.00	1.00	0.00	4.00	4.00	8.00	0.00	11.00	0.00	0.00	1.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	56	0	0	0	13	0	0	84	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	16	0	0	14	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	79	1193	303	150	1143	154	42	13	163	389	19	124
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	307	78	39	295	40	11	3	42	100	5	32
Total Analysis Volume [veh/h]	81	1230	312	155	1178	159	43	13	168	401	20	128
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			2			0			1		
v_di, Inbound Pedestrian Volume crossing m	0			1			0			2		
v_co, Outbound Pedestrian Volume crossing	1			0			0			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			2			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	17.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	2	0	5	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	20	40	0	20	40	0	0	20	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	16	50	0	21	45	0	0	34	0	0	34	0
Vehicle Extension [s]	2.3	4.8	0.0	2.3	4.8	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	18	0	0	38	0	0	37	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.00	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.80	2.80	0.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	51	51	10	47	47	30	30	30	30
g / C, Green / Cycle	0.06	0.51	0.51	0.10	0.47	0.47	0.30	0.30	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.05	0.30	0.30	0.11	0.26	0.26	0.04	0.11	0.33	0.09
s, saturation flow rate [veh/h]	1695	3532	1666	1435	3503	1715	1177	1633	1222	1644
c, Capacity [veh/h]	102	1809	853	254	1650	808	317	489	304	492
d1, Uniform Delay [s]	45.34	10.20	10.22	42.54	12.52	12.55	32.53	27.59	42.73	26.96
k, delay calibration	0.07	0.50	0.50	0.07	0.50	0.50	0.08	0.08	0.50	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.06	1.36	2.88	1.46	1.28	2.66	0.14	0.35	164.25	0.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.58	0.58	0.61	0.54	0.55	0.14	0.37	1.32	0.30
d, Delay for Lane Group [s/veh]	53.39	11.56	13.09	44.00	13.80	15.21	32.67	27.94	206.99	27.21
Lane Group LOS	D	B	B	D	B	B	C	C	F	C
Critical Lane Group	Yes	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.16	4.84	4.94	3.69	4.81	5.07	0.88	3.47	21.53	2.77
50th-Percentile Queue Length [ft/ln]	53.99	120.99	123.58	92.37	120.37	126.75	21.88	86.63	538.26	69.13
95th-Percentile Queue Length [veh/ln]	3.89	8.45	8.59	6.65	8.41	8.76	1.58	6.24	33.74	4.98
95th-Percentile Queue Length [ft/ln]	97.19	211.19	214.73	166.27	210.33	219.06	39.38	155.93	843.38	124.44

Movement, Approach, & Intersection Results

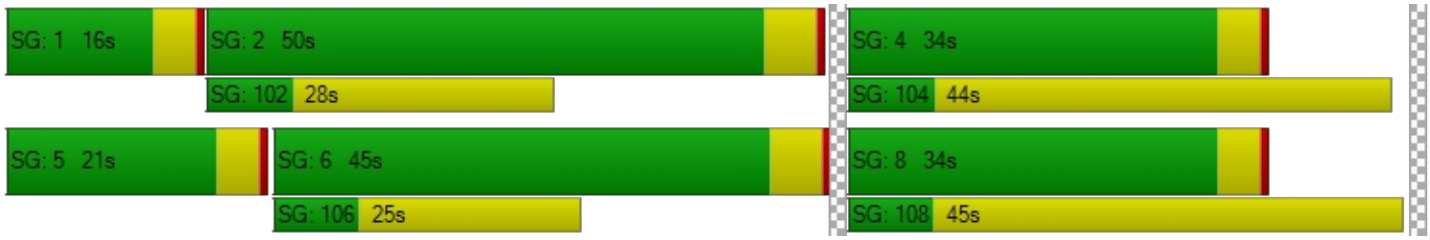
d_M, Delay for Movement [s/veh]	53.39	11.79	13.09	44.00	14.14	15.21	32.67	27.94	27.94	206.99	27.21	27.21
Movement LOS	D	B	B	D	B	B	C	C	C	F	C	C
d_A, Approach Delay [s/veh]	14.12			17.35			28.84			158.52		
Approach LOS	B			B			C			F		
d_I, Intersection Delay [s/veh]	36.60											
Intersection LOS	D											
Intersection V/C	0.756											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	2589.53	0.00	317.43
d_p, Pedestrian Delay [s]	39.61	39.61	39.61	39.61
l_p,int, Pedestrian LOS Score for Intersection	3.639	3.063	2.076	2.230
Crosswalk LOS	D	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	904	804	600	600
d_b, Bicycle Delay [s]	15.02	17.90	24.50	24.50
l_b,int, Bicycle LOS Score for Intersection	2.452	2.380	1.929	2.465
Bicycle LOS	B	B	A	B

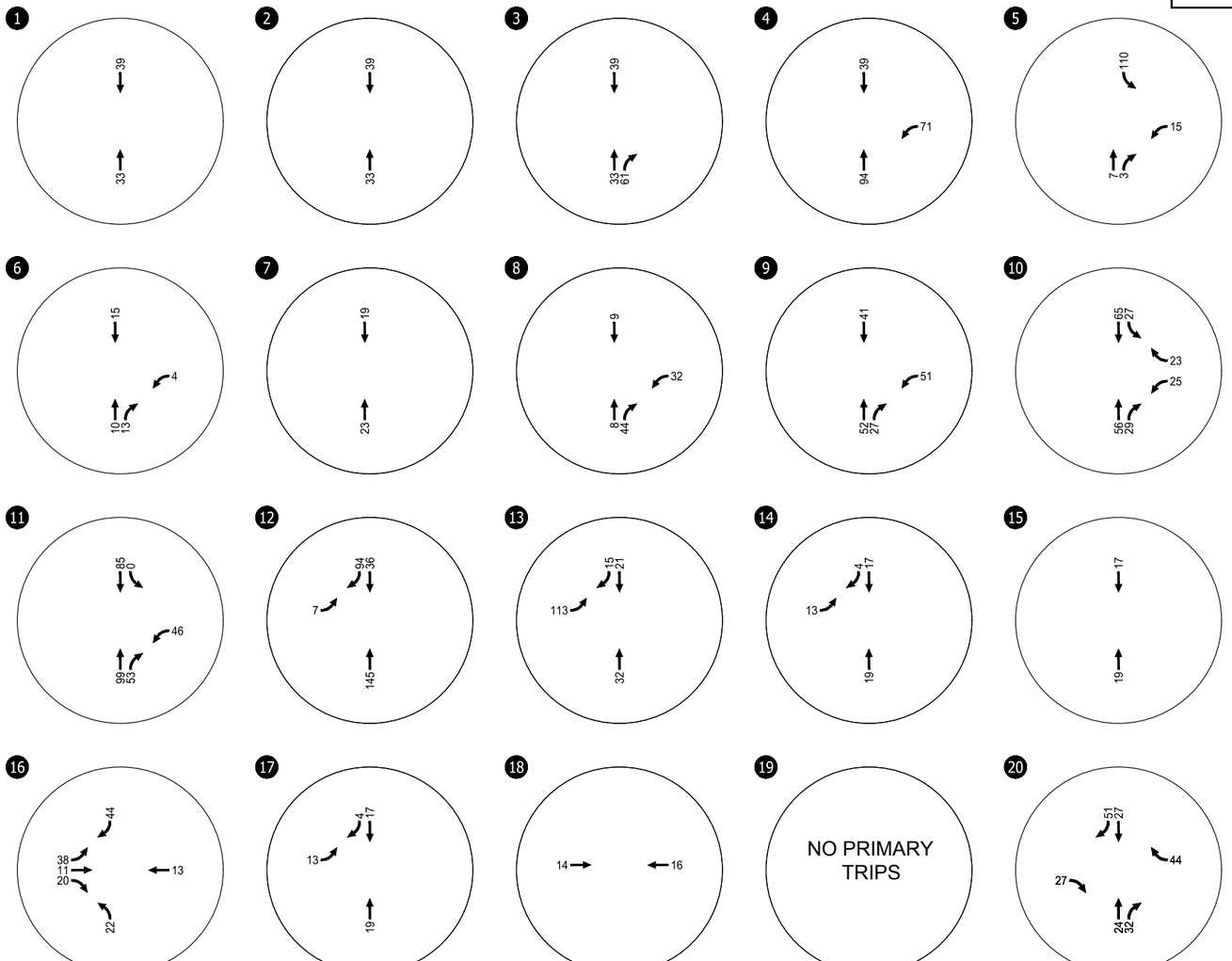
Sequence

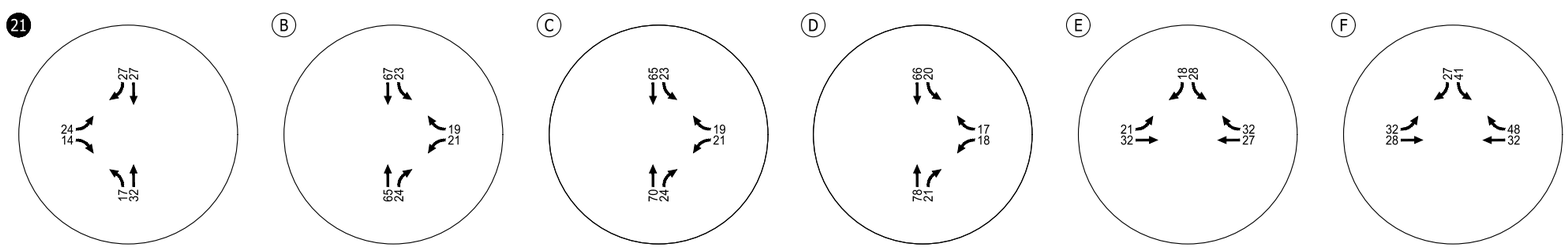
Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Appendix F
Additional Site Trip Assignment Figures



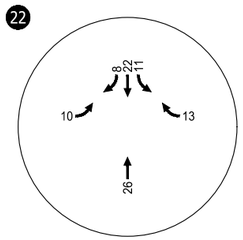


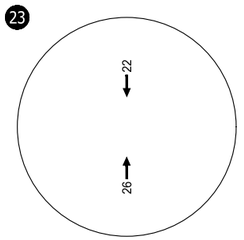


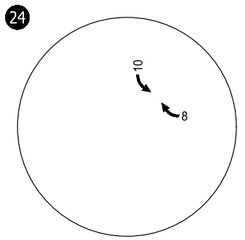
Primary Site Trips
Weekday AM Peak Hour
Oregon City, Oregon

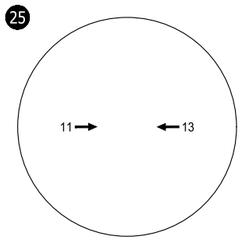
Figure
1











Primary Site Trips
Weekday AM Peak Hour
Oregon City, Oregon

Figure
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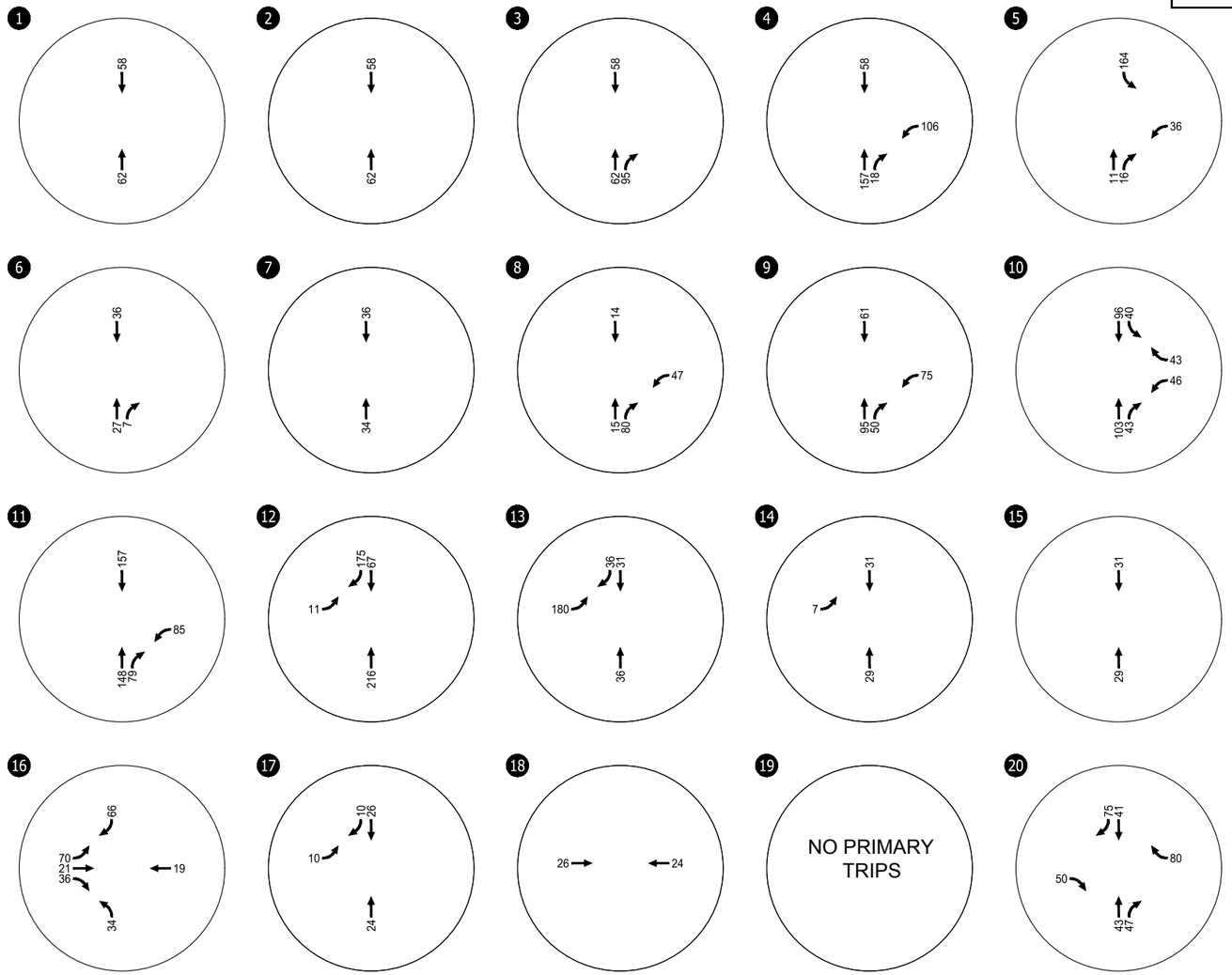
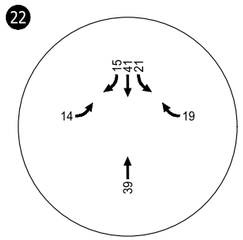
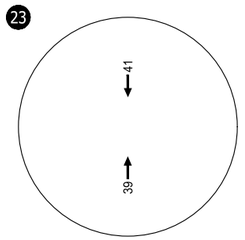


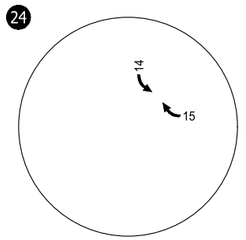
Primary Site Trips
Weekday PM Peak Hour
Oregon City, Oregon

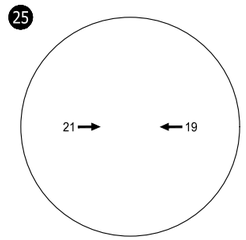
Figure
3







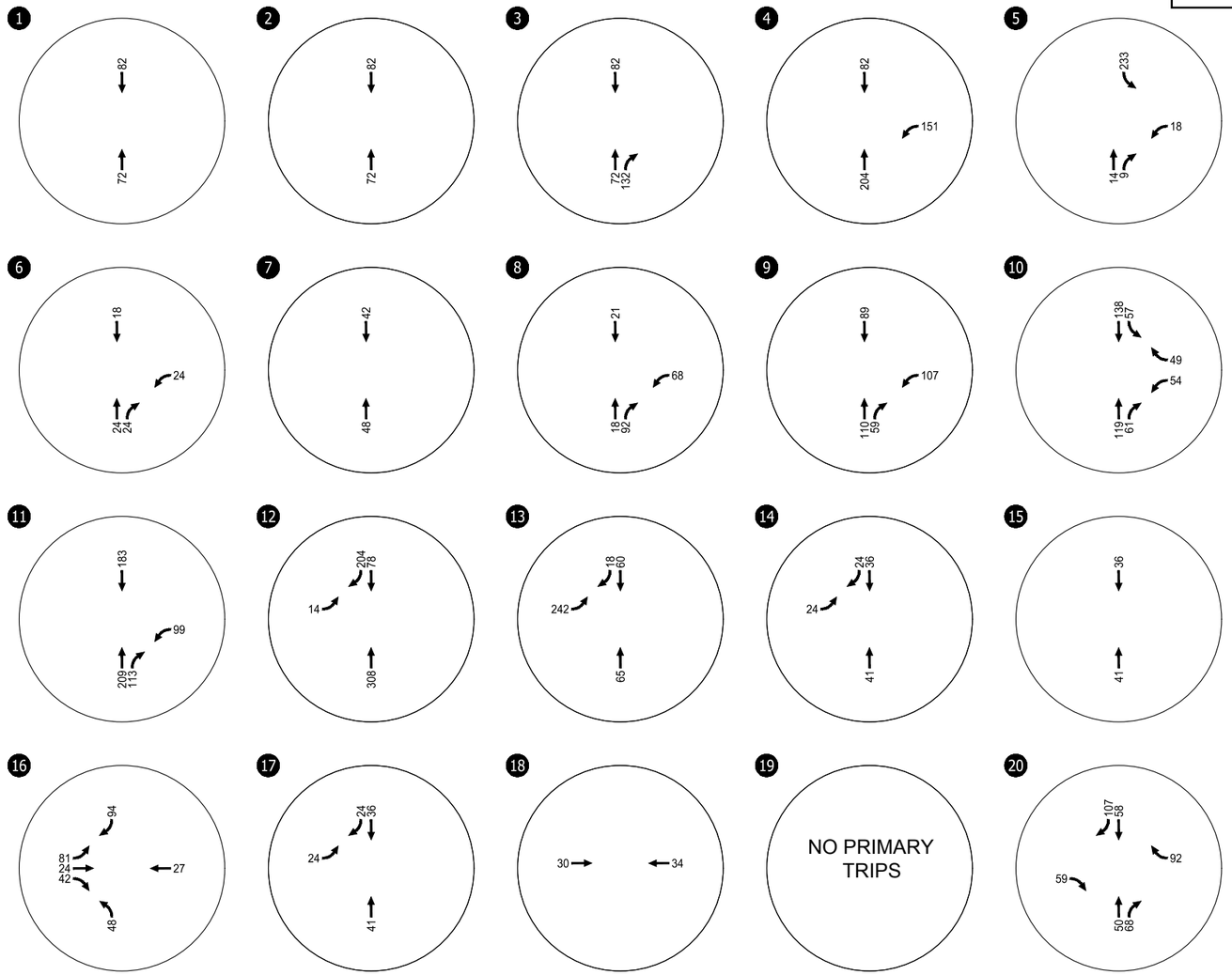




Primary Site Trips
Weekday PM Peak Hour
Oregon City, Oregon

Figure
4

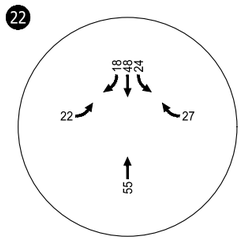


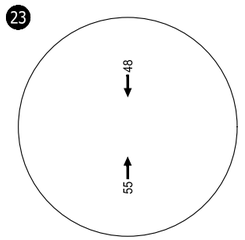


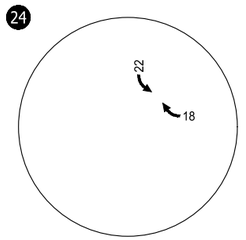
Primary Site Trips
Saturday Midday Peak Hour
Oregon City, Oregon

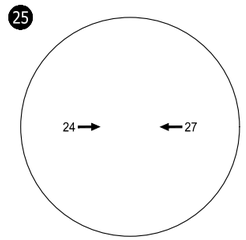
Figure
5











Primary Site Trips
Saturday Midday Peak Hour
Oregon City, Oregon

Figure
6



1 NO PASS-BY TRIPS

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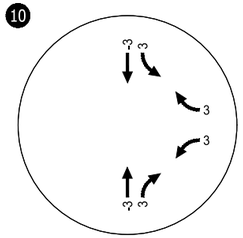
10 

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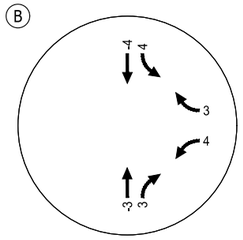
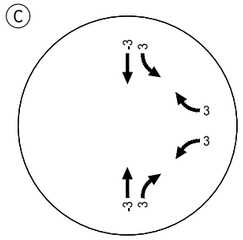
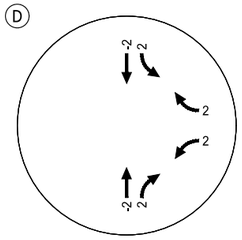
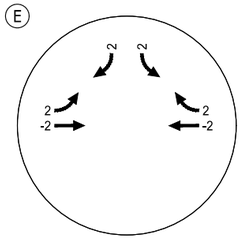
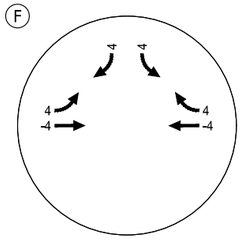
B 

C 

D 

E 

F 

Pass-by Site Trips
Weekday AM Peak Hour
Oregon City, Oregon

Figure
7



22 NO PASS-BY TRIPS

23 NO PASS-BY TRIPS

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25 NO PASS-BY TRIPS

Pass-by Site Trips
Weekday AM Peak Hour
Oregon City, Oregon

Figure
8

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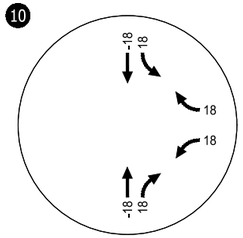

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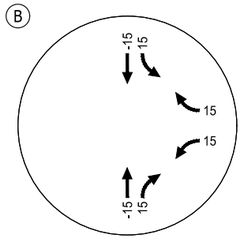

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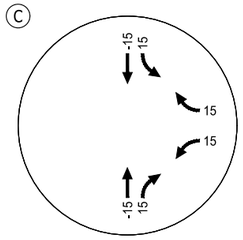

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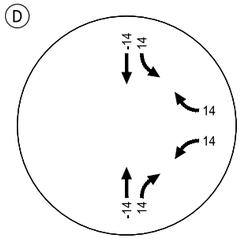

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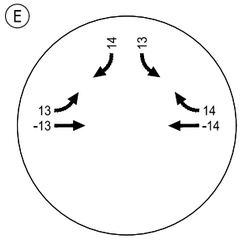

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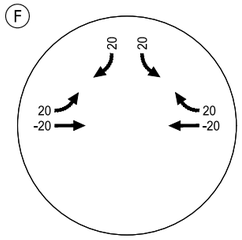

Pass-by Site Trips
Weekday PM Peak Hour
Oregon City, Oregon

Figure
9

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Pass-by Site Trips
Weekday PM Peak Hour
Oregon City, Oregon

Figure
10

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Pass-by Site Trips
Saturday Midday Peak Hour
Oregon City, Oregon

Figure
11

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Pass-by Site Trips
Saturday Midday Peak Hour
Oregon City, Oregon

Figure
12

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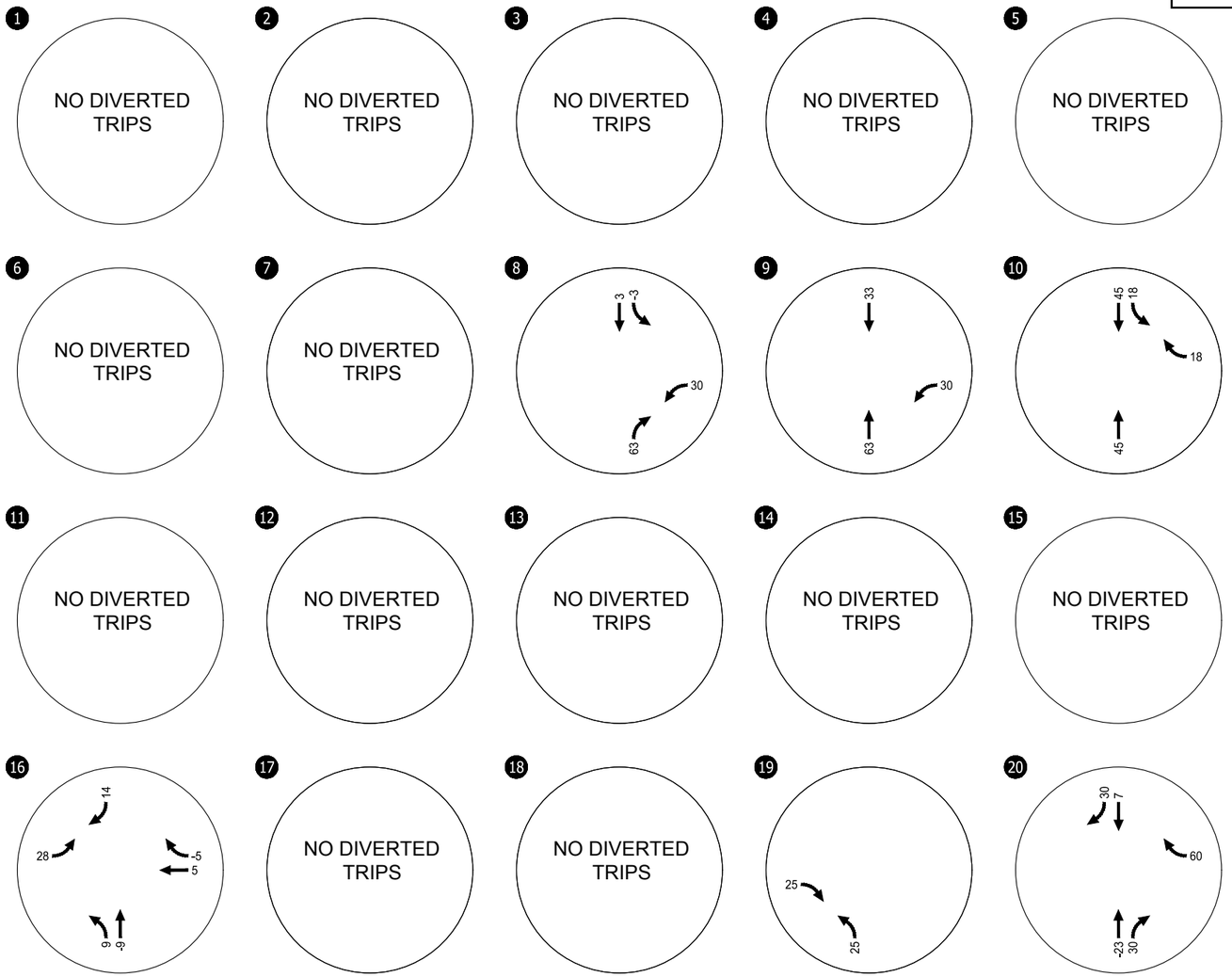

Diverted Site Trips
Weekday AM Peak Hour
Oregon City, Oregon

Figure
13



22 NO DIVERTED TRIPS

23 NO DIVERTED TRIPS

24 NO DIVERTED TRIPS

25 NO DIVERTED TRIPS

Diverted Site Trips
Weekday AM Peak Hour
Oregon City, Oregon

Figure
14

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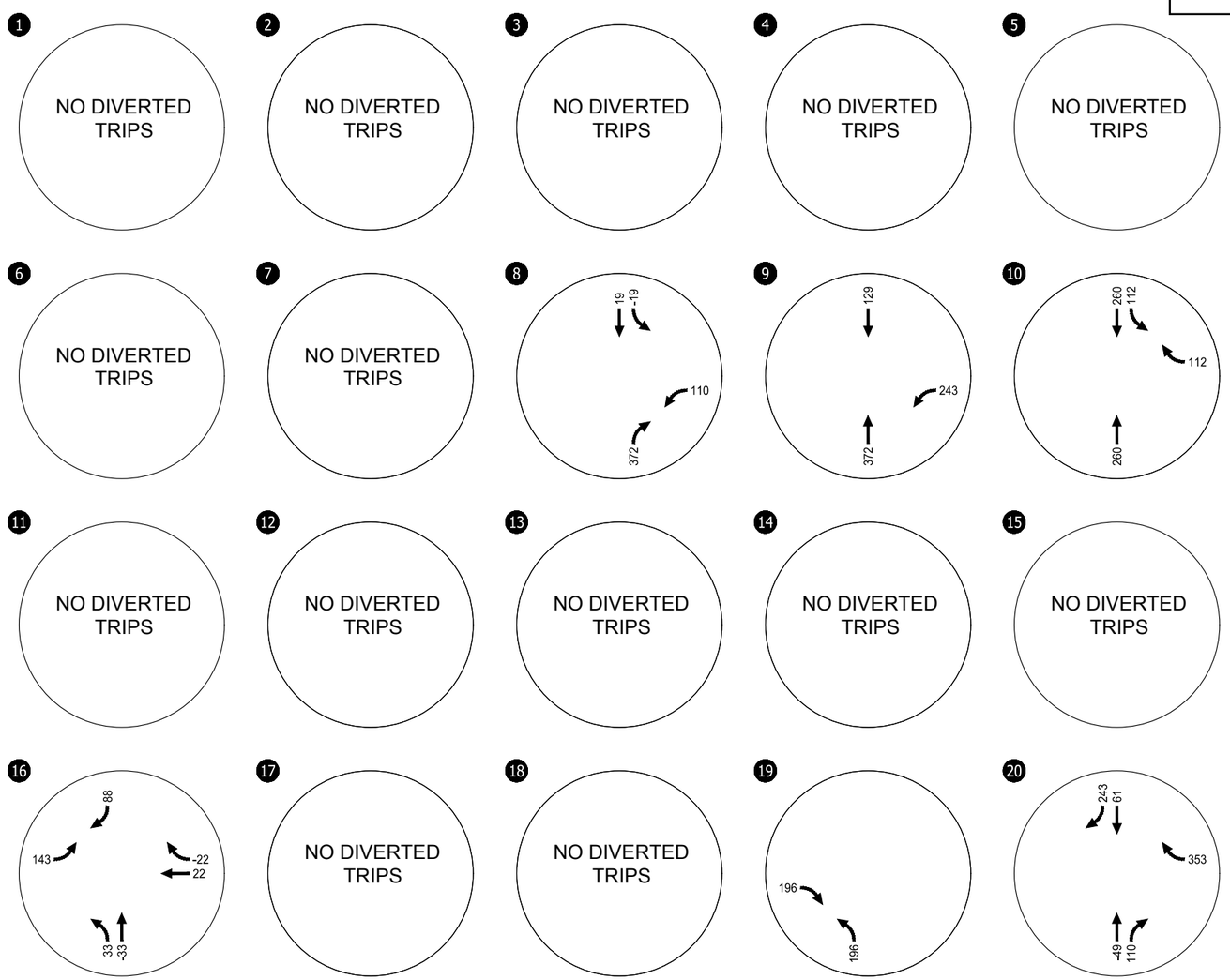

Diverted Site Trips
Weekday PM Peak Hour
Oregon City, Oregon

Figure
15



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24 NO DIVERTED TRIPS

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Diverted Site Trips
Weekday PM Peak Hour
Oregon City, Oregon

Figure
16

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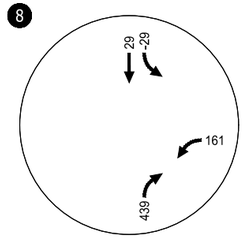

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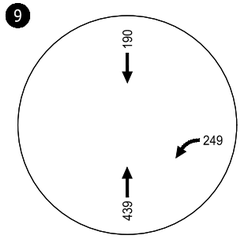

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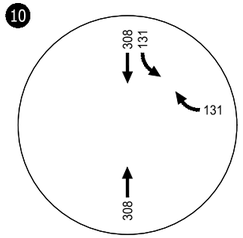

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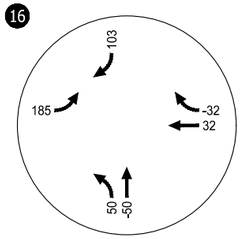

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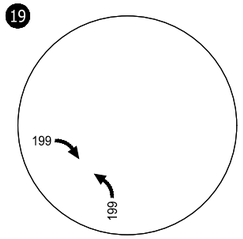

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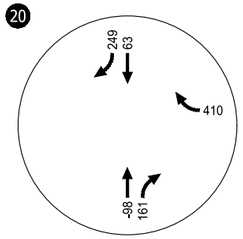

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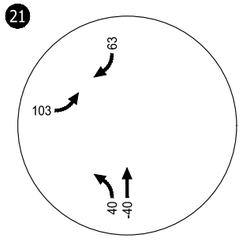

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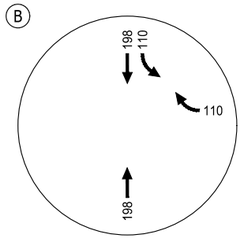

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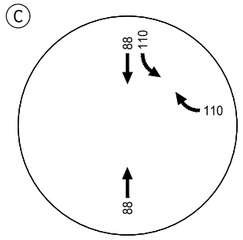

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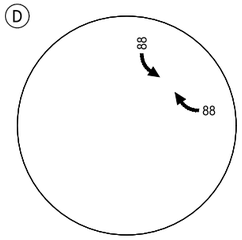

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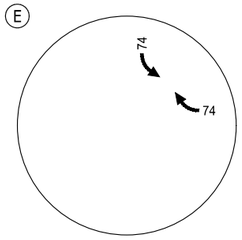

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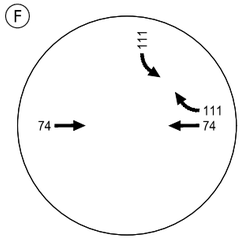

Diverted Site Trips
Saturday Midday Peak Hour
Oregon City, Oregon

Figure
17

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22 NO DIVERTED TRIPS

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Diverted Site Trips
Saturday Midday Peak Hour
Oregon City, Oregon

Figure
18

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Appendix G
Year 2025 Total Traffic Conditions Analysis Worksheets

Intersection Level Of Service Report
Intersection 1: OR 99E/ River Rd/ W Arlington St

Control Type:	Signalized	Delay (sec / veh):	7.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.674

Intersection Setup

Name	OR 99E			OR 99E			River Rd			W Arlington St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	185.00	100.00	275.00	250.00	100.00	100.00	550.00	100.00	100.00	100.00	100.00	160.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 99E			OR 99E			River Rd			W Arlington St		
Base Volume Input [veh/h]	59	847	60	32	629	3	0	25	126	81	13	47
Base Volume Adjustment Factor	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
Heavy Vehicles Percentage [%]	8.00	6.00	8.00	6.00	7.00	0.00	0.00	8.00	6.00	11.00	8.00	4.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	23	0	0	55	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	33	0	0	39	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	18	0	0	12	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	48	0	0	0	0	0	100	0	0	38
Total Hourly Volume [veh/h]	94	1345	47	51	1050	5	0	40	100	129	21	37
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	405	14	15	316	2	0	12	30	39	6	11
Total Analysis Volume [veh/h]	113	1620	57	61	1265	6	0	48	120	155	25	45
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			3			0			3		
v_di, Inbound Pedestrian Volume crossing m	0			3			0			3		
v_co, Outbound Pedestrian Volume crossing	0			1			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	42.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	20	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	18	52	0	18	52	0	0	30	0	0	30	0
Vehicle Extension [s]	2.3	4.7	0.0	2.3	4.7	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	9	0	0	8	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	20	0	0	15	0	0	26	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	C	R	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.80	4.80	4.80	4.40	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.80	2.80	0.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	68	68	68	68	68	68	16	16	16	16
g / C, Green / Cycle	0.68	0.68	0.68	0.68	0.68	0.68	0.16	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.22	0.47	0.04	0.12	0.35	0.35	0.03	0.08	0.12	0.03
s, saturation flow rate [veh/h]	525	3446	1481	512	1795	1791	1780	1538	1440	1546
c, Capacity [veh/h]	432	2350	1010	343	1214	1212	315	241	293	243
d1, Uniform Delay [s]	2.10	1.96	1.46	5.30	1.91	1.91	36.53	38.55	40.17	36.59
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.47	1.68	0.11	1.13	1.62	1.62	0.16	1.18	1.56	0.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.26	0.69	0.06	0.18	0.52	0.52	0.15	0.50	0.61	0.19
d, Delay for Lane Group [s/veh]	3.57	3.64	1.56	6.43	3.53	3.54	36.69	39.72	41.73	36.86
Lane Group LOS	A	A	A	A	A	A	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.37	2.12	0.13	0.20	1.76	1.75	1.03	2.75	4.33	0.97
50th-Percentile Queue Length [ft/ln]	9.25	52.93	3.17	4.99	43.88	43.85	25.70	68.82	108.29	24.25
95th-Percentile Queue Length [veh/ln]	0.67	3.81	0.23	0.36	3.16	3.16	1.85	4.96	7.74	1.75
95th-Percentile Queue Length [ft/ln]	16.64	95.27	5.70	8.99	78.98	78.93	46.26	123.88	193.62	43.66

Movement, Approach, & Intersection Results

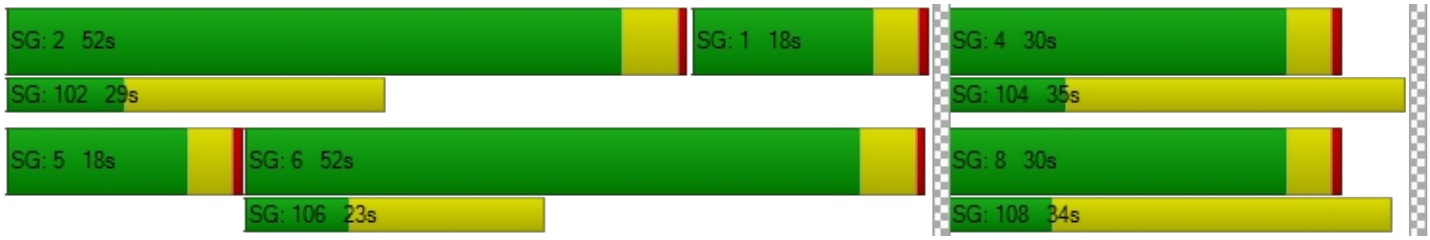
d_M, Delay for Movement [s/veh]	3.57	3.64	1.56	6.43	3.53	3.54	36.69	36.69	39.72	41.73	41.73	36.86
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	3.57			3.67			38.86			40.75		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	7.67											
Intersection LOS	A											
Intersection V/C	0.674											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	1579.36	3424.40	7385.70
d_p, Pedestrian Delay [s]	37.85	38.72	38.72	37.85
l_p,int, Pedestrian LOS Score for Intersection	3.310	3.093	2.354	2.227
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	944	944	520	520
d_b, Bicycle Delay [s]	13.95	13.95	27.38	27.38
l_b,int, Bicycle LOS Score for Intersection	3.076	2.659	2.002	1.994
Bicycle LOS	C	B	B	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: OR 99E / Dunes Dr

Control Type:	Signalized	Delay (sec / veh):	16.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.866

Intersection Setup

Name	OR 99E			OR 99E			Dunes Dr			Dunes Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	220.00	100.00	100.00	370.00	100.00	155.00	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 99E			OR 99E			Dunes Dr			Dunes Dr		
Base Volume Input [veh/h]	46	911	71	37	733	53	16	3	35	107	3	35
Base Volume Adjustment Factor	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
Heavy Vehicles Percentage [%]	9.00	7.00	7.00	5.00	8.00	9.00	0.00	0.00	0.00	7.00	0.00	6.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	129	0	0	0	28	0	0	55	0	0	0
Site-Generated Trips [veh/h]	0	33	0	0	39	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	18	0	0	12	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	1547	113	59	1151	113	25	5	111	170	5	56
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	450	33	17	335	33	7	1	32	49	1	16
Total Analysis Volume [veh/h]	85	1799	131	69	1338	131	29	6	129	198	6	65
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			3			0			2		
v_di, Inbound Pedestrian Volume crossing m	0			2			0			3		
v_co, Outbound Pedestrian Volume crossing	0			0			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	2	0	5	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	20	40	0	20	40	0	0	20	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	16	58	0	20	54	0	0	16	0	0	16	0
Vehicle Extension [s]	2.3	4.8	0.0	2.3	4.8	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	18	0	0	38	0	0	37	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.00	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.80	2.80	2.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	53	53	11	45	45	20	20	20	20
g / C, Green / Cycle	0.04	0.59	0.59	0.13	0.50	0.50	0.23	0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.06	0.37	0.38	0.31	0.29	0.29	0.02	0.08	0.16	0.04
s, saturation flow rate [veh/h]	1336	3418	1725	225	3389	1699	1343	1626	1204	1626
c, Capacity [veh/h]	95	2020	1020	80	1701	853	308	370	243	370
d1, Uniform Delay [s]	41.67	5.40	5.44	43.08	9.72	9.73	31.69	29.28	39.99	28.08
k, delay calibration	0.50	0.50	0.50	0.50	0.14	0.50	0.08	0.08	0.21	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	66.96	1.52	3.07	67.50	0.41	2.82	0.10	0.45	12.17	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.63	0.64	0.86	0.58	0.58	0.09	0.36	0.82	0.19
d, Delay for Lane Group [s/veh]	108.63	6.93	8.50	110.57	10.14	12.54	31.78	29.73	52.16	28.26
Lane Group LOS	F	A	A	F	B	B	C	C	D	C
Critical Lane Group	No	No	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.59	3.25	3.76	2.93	3.74	4.32	0.54	2.50	5.24	1.26
50th-Percentile Queue Length [ft/ln]	89.78	81.37	93.98	73.30	93.54	108.10	13.61	62.45	131.12	31.39
95th-Percentile Queue Length [veh/ln]	6.46	5.86	6.77	5.28	6.73	7.73	0.98	4.50	9.00	2.26
95th-Percentile Queue Length [ft/ln]	161.60	146.46	169.16	131.94	168.37	193.36	24.51	112.40	225.01	56.49

Movement, Approach, & Intersection Results

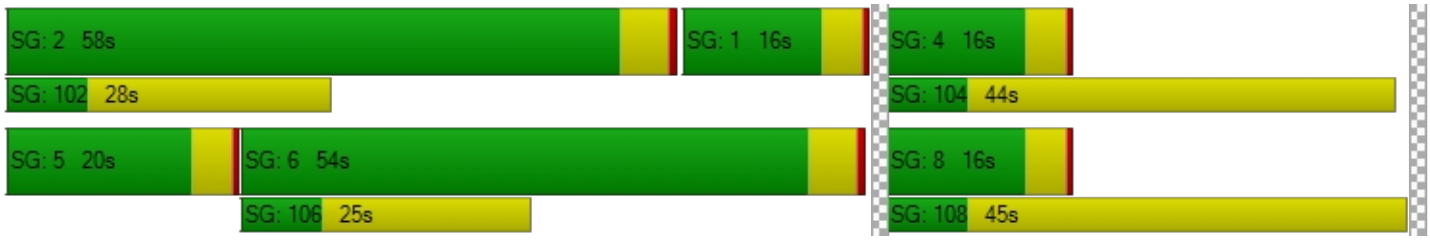
d_M, Delay for Movement [s/veh]	108.63	7.38	8.50	110.57	10.78	12.54	31.78	29.73	29.73	52.16	28.26	28.26
Movement LOS	F	A	A	F	B	B	C	C	C	D	C	C
d_A, Approach Delay [s/veh]	11.73			15.41			30.09			45.85		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	16.21											
Intersection LOS	B											
Intersection V/C	0.866											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	1951.84	4387.90	4648.80
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	3.558	3.272	2.158	2.166
Crosswalk LOS	D	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1182	1093	267	267
d_b, Bicycle Delay [s]	7.53	9.25	33.80	33.80
l_b,int, Bicycle LOS Score for Intersection	2.668	2.406	1.830	2.003
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: OR 99E/I-205 SB Loop Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	57.9
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.988

Intersection Setup

Name	OR 99E		OR 99E		I-205 WB Loop Off-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	1
Entry Pocket Length [ft]	100.00	200.00	240.00	100.00	575.00	275.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	No		No		Yes	

Volumes

Name	OR 99E		OR 99E		I-205 WB Loop Off-Ramp	
Base Volume Input [veh/h]	827	207	342	542	374	263
Base Volume Adjustment Factor	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
Heavy Vehicles Percentage [%]	7.00	18.00	7.00	8.00	13.00	7.00
Growth Factor	1.0000	1.0130	1.0130	1.0000	1.0130	1.0130
In-Process Volume [veh/h]	55	0	23	32	0	74
Site-Generated Trips [veh/h]	33	61	0	39	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	18	0	0	12	0	0
Right Turn on Red Volume [veh/h]	0	376	0	0	0	237
Total Hourly Volume [veh/h]	1347	0	543	896	568	237
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	383	0	154	255	161	67
Total Analysis Volume [veh/h]	1531	0	617	1018	645	269
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	35.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	6	6
Maximum Green [s]	40	0	20	40	20	20
Amber [s]	4.3	0.0	3.5	4.3	4.0	4.0
All red [s]	0.5	0.0	0.5	0.5	1.5	1.5
Split [s]	34	0	36	70	20	20
Vehicle Extension [s]	4.8	0.0	2.3	4.8	2.3	2.3
Walk [s]	8	0	0	0	0	0
Pedestrian Clearance [s]	29	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.8	0.0	2.0	2.8	3.5	3.5
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.80	4.80	4.00	4.80	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.80	2.80	2.00	2.80	3.50	0.00
g_i, Effective Green Time [s]	24	24	34	62	18	55
g / C, Green / Cycle	0.27	0.27	0.37	0.69	0.19	0.61
(v / s)_i Volume / Saturation Flow Rate	0.31	0.00	0.36	0.21	0.20	0.18
s, saturation flow rate [veh/h]	4889	1385	1709	4849	3153	1526
c, Capacity [veh/h]	1330	377	640	3351	613	936
d1, Uniform Delay [s]	28.69	0.00	21.93	1.17	36.26	8.16
k, delay calibration	0.50	0.50	0.39	0.50	0.07	0.22
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	77.13	0.00	23.84	0.23	29.42	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.15	0.00	0.96	0.30	1.05	0.29
d, Delay for Lane Group [s/veh]	105.82	0.00	45.77	1.41	65.68	8.50
Lane Group LOS	F	A	D	A	F	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	17.49	0.00	13.83	0.47	9.08	2.30
50th-Percentile Queue Length [ft/ln]	437.27	0.00	345.65	11.81	226.94	57.51
95th-Percentile Queue Length [veh/ln]	26.36	0.00	19.92	0.85	14.37	4.14
95th-Percentile Queue Length [ft/ln]	658.90	0.00	498.10	21.26	359.21	103.51

Movement, Approach, & Intersection Results

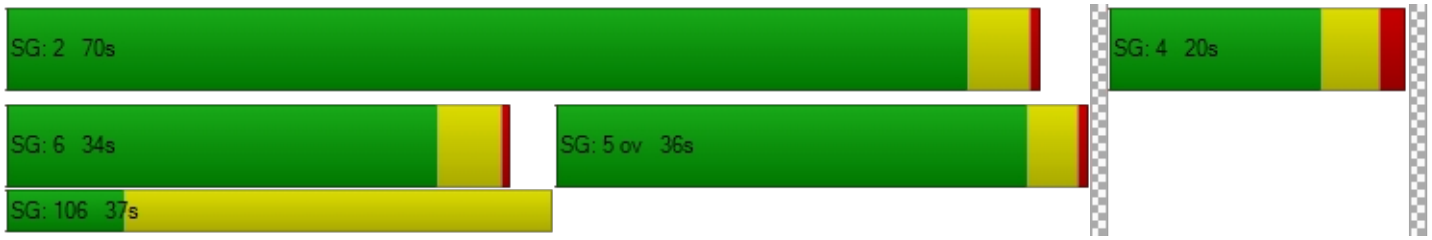
d_M, Delay for Movement [s/veh]	105.82	0.00	45.77	1.41	65.68	8.50
Movement LOS	F	A	D	A	F	A
d_A, Approach Delay [s/veh]	105.82		18.15		48.85	
Approach LOS	F		B		D	
d_I, Intersection Delay [s/veh]	57.93					
Intersection LOS	E					
Intersection V/C	0.988					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	5446.76
d_p, Pedestrian Delay [s]	0.00	0.00	33.80
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.989
Crosswalk LOS	F	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	649	1449	322
d_b, Bicycle Delay [s]	20.55	3.42	31.67
l_b,int, Bicycle LOS Score for Intersection	2.608	2.459	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: OR 99E/I-205 EB Loop Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	18.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.776

Intersection Setup

Name	OR 99E		OR 99E		I-205 EB Loop Off-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	185.00	500.00	100.00	100.00	130.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		Yes		Yes	
Crosswalk	No		No		Yes	

Volumes

Name	OR 99E		OR 99E		I-205 EB Loop Off-Ramp	
Base Volume Input [veh/h]	723	728	186	721	125	304
Base Volume Adjustment Factor	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
Heavy Vehicles Percentage [%]	9.00	10.00	6.00	10.00	17.00	7.00
Growth Factor	1.0000	1.0130	1.0130	1.0000	1.0130	1.0130
In-Process Volume [veh/h]	23	0	28	5	0	32
Site-Generated Trips [veh/h]	94	0	0	39	71	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	18	0	0	12	0	0
Right Turn on Red Volume [veh/h]	0	553	0	0	0	494
Total Hourly Volume [veh/h]	1220	553	311	1138	261	0
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	351	159	89	327	75	0
Total Analysis Volume [veh/h]	1402	636	357	1308	300	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	14.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	6	6	5	2	4	0
Auxiliary Signal Groups		4,6				
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	10	4	10	6	0
Maximum Green [s]	40	40	20	40	20	0
Amber [s]	4.3	4.3	3.5	4.3	4.0	0.0
All red [s]	0.5	0.5	0.5	0.5	1.5	0.0
Split [s]	44	44	22	66	24	0
Vehicle Extension [s]	4.8	4.8	3.0	4.8	2.3	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	16	16	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.8	2.8	2.0	2.8	3.5	0.0
Minimum Recall	Yes	Yes	No	Yes	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.80	4.80	4.00	4.80	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.80	0.00	2.00	2.80	3.50	3.50
g_i, Effective Green Time [s]	39	63	18	61	19	19
g / C, Green / Cycle	0.44	0.70	0.20	0.68	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.29	0.43	0.21	0.27	0.19	0.00
s, saturation flow rate [veh/h]	4808	1466	1724	4767	1567	1526
c, Capacity [veh/h]	2094	1030	345	3241	322	314
d1, Uniform Delay [s]	14.44	1.04	33.01	1.51	35.14	0.00
k, delay calibration	0.50	0.50	0.38	0.50	0.27	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.72	2.77	51.60	0.38	23.27	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.62	1.04	0.40	0.93	0.00
d, Delay for Lane Group [s/veh]	16.16	3.81	84.61	1.89	58.41	0.00
Lane Group LOS	B	A	F	A	E	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.11	1.41	11.48	0.76	8.38	0.00
50th-Percentile Queue Length [ft/ln]	127.75	35.24	286.90	18.93	209.56	0.00
95th-Percentile Queue Length [veh/ln]	8.82	2.54	17.34	1.36	13.13	0.00
95th-Percentile Queue Length [ft/ln]	220.43	63.43	433.50	34.08	328.27	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.16	3.81	84.61	1.89	58.41	0.00
Movement LOS	B	A	F	A	E	A
d_A, Approach Delay [s/veh]	12.31		19.63		58.41	
Approach LOS	B		B		E	
d_I, Intersection Delay [s/veh]	18.81					
Intersection LOS	B					
Intersection V/C	0.776					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	34.67
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	3.403
Crosswalk LOS	F	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	871	1360	411
d_b, Bicycle Delay [s]	14.34	4.61	28.40
l_b,int, Bicycle LOS Score for Intersection	2.985	2.475	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: OR 99E / 14th St

Control Type:	Signalized	Delay (sec / veh):	40.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.861

Intersection Setup

Name	OR 99E		OR 99E		14th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		14th St	
Base Volume Input [veh/h]	1015	29	180	671	41	254
Base Volume Adjustment Factor	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
Heavy Vehicles Percentage [%]	11.00	24.00	9.00	12.00	22.00	7.00
Growth Factor	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570
In-Process Volume [veh/h]	28	0	0	9	5	0
Site-Generated Trips [veh/h]	7	3	110	0	15	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	18	0	0	12	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	202
Total Hourly Volume [veh/h]	1576	50	395	1028	86	201
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	453	14	114	295	25	58
Total Analysis Volume [veh/h]	1811	57	454	1182	99	231
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	88.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	43	0	23	70	12	12
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	47	0	27	74	16	16
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	7	0	0	0	7	7
Pedestrian Clearance [s]	11	0	0	0	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	45	45	70	70	12	37
g / C, Green / Cycle	0.50	0.50	0.78	0.78	0.13	0.41
(v / s)_i Volume / Saturation Flow Rate	0.54	0.54	0.64	0.36	0.07	0.15
s, saturation flow rate [veh/h]	1735	1715	709	3275	1495	1526
c, Capacity [veh/h]	872	862	557	2566	191	623
d1, Uniform Delay [s]	14.83	14.83	29.50	0.00	36.68	18.57
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.48
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	51.21	55.75	12.34	0.60	1.34	1.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.07	1.08	0.81	0.46	0.52	0.37
d, Delay for Lane Group [s/veh]	66.04	70.58	41.84	0.60	38.02	20.18
Lane Group LOS	F	F	D	A	D	C
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	24.03	24.83	1.91	0.21	2.08	3.52
50th-Percentile Queue Length [ft/ln]	600.74	620.86	47.78	5.33	51.91	88.05
95th-Percentile Queue Length [veh/ln]	33.77	35.06	3.44	0.38	3.74	6.34
95th-Percentile Queue Length [ft/ln]	844.36	876.50	86.00	9.59	93.45	158.49

Movement, Approach, & Intersection Results

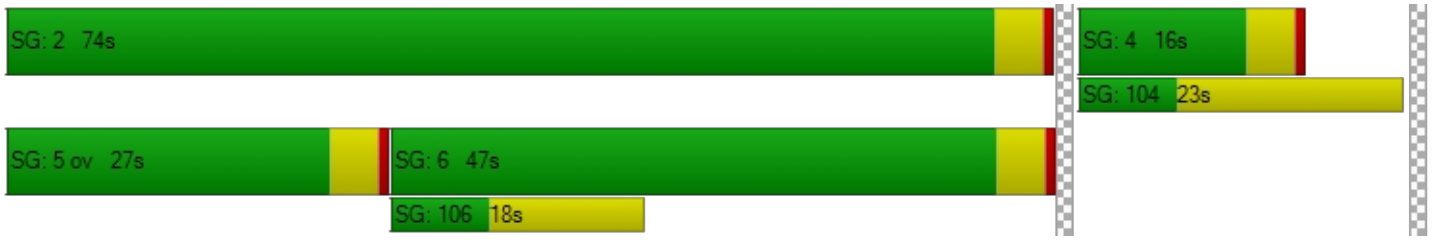
d_M, Delay for Movement [s/veh]	68.24	70.58	41.84	0.60	38.02	20.18
Movement LOS	F	E	D	A	D	C
d_A, Approach Delay [s/veh]	68.31		12.04		25.53	
Approach LOS	E		B		C	
d_I, Intersection Delay [s/veh]	40.62					
Intersection LOS	D					
Intersection V/C	0.861					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	273.39
d_p, Pedestrian Delay [s]	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.898	3.056	3.105
Crosswalk LOS	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	956	1556	267
d_b, Bicycle Delay [s]	12.28	2.22	33.80
l_b,int, Bicycle LOS Score for Intersection	3.101	2.909	1.560
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: OR 99E / 12th St

Control Type:	Signalized	Delay (sec / veh):	3.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.639

Intersection Setup

Name	OR 99E		OR 99E		12th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	175.00	100.00	100.00	120.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		12th St	
Base Volume Input [veh/h]	911	12	77	623	5	135
Base Volume Adjustment Factor	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
Heavy Vehicles Percentage [%]	13.00	8.00	9.00	13.00	0.00	7.00
Growth Factor	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570
In-Process Volume [veh/h]	28	0	0	14	0	0
Site-Generated Trips [veh/h]	10	13	0	15	4	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	18	0	0	12	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	108
Total Hourly Volume [veh/h]	1423	32	123	976	12	107
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	400	9	35	274	3	30
Total Analysis Volume [veh/h]	1599	36	138	1097	13	120
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		1		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	2		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	60.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	50	0	16	70	12	12
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	54	0	20	74	16	16
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	9	0	0	0	8	8
Pedestrian Clearance [s]	11	0	0	0	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	66	66	74	74	8	16
g / C, Green / Cycle	0.74	0.74	0.82	0.82	0.09	0.17
(v / s)_i Volume / Saturation Flow Rate	0.48	0.48	0.29	0.34	0.01	0.08
s, saturation flow rate [veh/h]	1705	1690	476	3246	1803	1526
c, Capacity [veh/h]	1255	1244	416	2675	157	267
d1, Uniform Delay [s]	0.24	0.24	0.52	0.00	37.78	33.24
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.64	2.73	2.13	0.47	0.14	0.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.66	0.33	0.41	0.08	0.45
d, Delay for Lane Group [s/veh]	2.88	2.97	2.65	0.47	37.91	34.01
Lane Group LOS	A	A	A	A	D	C
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.12	1.15	0.25	0.17	0.27	2.37
50th-Percentile Queue Length [ft/ln]	28.09	28.68	6.15	4.34	6.68	59.28
95th-Percentile Queue Length [veh/ln]	2.02	2.06	0.44	0.31	0.48	4.27
95th-Percentile Queue Length [ft/ln]	50.57	51.62	11.07	7.81	12.03	106.71

Movement, Approach, & Intersection Results

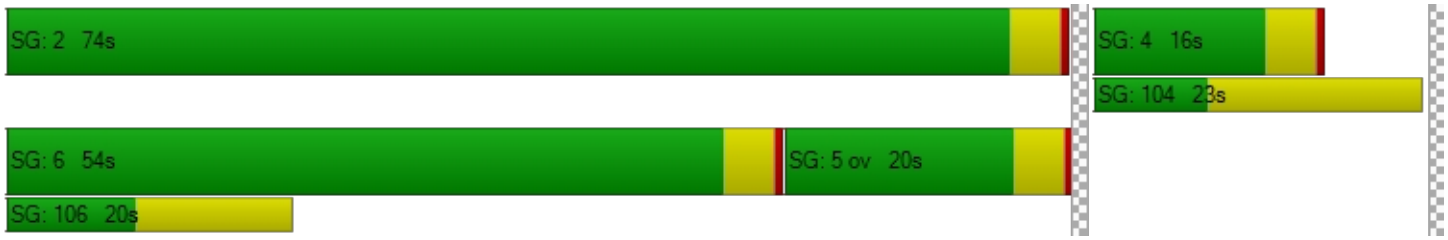
d_M, Delay for Movement [s/veh]	2.92	2.97	2.65	0.47	37.91	34.01
Movement LOS	A	A	A	A	D	C
d_A, Approach Delay [s/veh]	2.93		0.71		34.39	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	3.41					
Intersection LOS	A					
Intersection V/C	0.639					

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	10893.53	0.00	2469.19
d_p, Pedestrian Delay [s]	33.80	33.80	32.94
l_p,int, Pedestrian LOS Score for Intersection	2.799	2.895	2.396
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1111	1556	267
d_b, Bicycle Delay [s]	8.90	2.22	33.80
l_b,int, Bicycle LOS Score for Intersection	2.908	2.578	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: OR 99E / 10th St

Control Type:	Signalized	Delay (sec / veh):	5.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.581

Intersection Setup

Name	OR 99E		OR 99E		7th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	250.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		7th St	
Base Volume Input [veh/h]	696	12	169	444	16	211
Base Volume Adjustment Factor	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
Heavy Vehicles Percentage [%]	14.00	0.00	5.00	14.00	12.00	8.00
Growth Factor	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570
In-Process Volume [veh/h]	28	0	0	14	0	0
Site-Generated Trips [veh/h]	23	0	0	19	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	18	0	0	12	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	168
Total Hourly Volume [veh/h]	1113	19	268	711	25	167
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	313	5	75	200	7	47
Total Analysis Volume [veh/h]	1251	21	301	799	28	188
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		2	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	53.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	51	0	16	70	12	12
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	54	0	20	74	16	16
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	7	0	0	0	7	7
Pedestrian Clearance [s]	11	0	0	0	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	62	62	72	72	10	20
g / C, Green / Cycle	0.69	0.69	0.80	0.80	0.11	0.22
(v / s)_i Volume / Saturation Flow Rate	0.38	0.38	0.47	0.25	0.02	0.13
s, saturation flow rate [veh/h]	1690	1680	646	3217	1638	1500
c, Capacity [veh/h]	1159	1152	513	2567	186	339
d1, Uniform Delay [s]	1.46	1.46	4.81	0.00	35.99	30.84
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.33
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.87	1.91	4.85	0.32	0.23	4.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	0.55	0.59	0.31	0.15	0.56
d, Delay for Lane Group [s/veh]	3.33	3.37	9.66	0.32	36.22	35.14
Lane Group LOS	A	A	A	A	D	D
Critical Lane Group	No	Yes	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	1.55	1.56	0.69	0.11	0.56	3.95
50th-Percentile Queue Length [ft/ln]	38.87	39.08	17.29	2.82	14.03	98.65
95th-Percentile Queue Length [veh/ln]	2.80	2.81	1.24	0.20	1.01	7.10
95th-Percentile Queue Length [ft/ln]	69.97	70.35	31.12	5.08	25.26	177.56

Movement, Approach, & Intersection Results

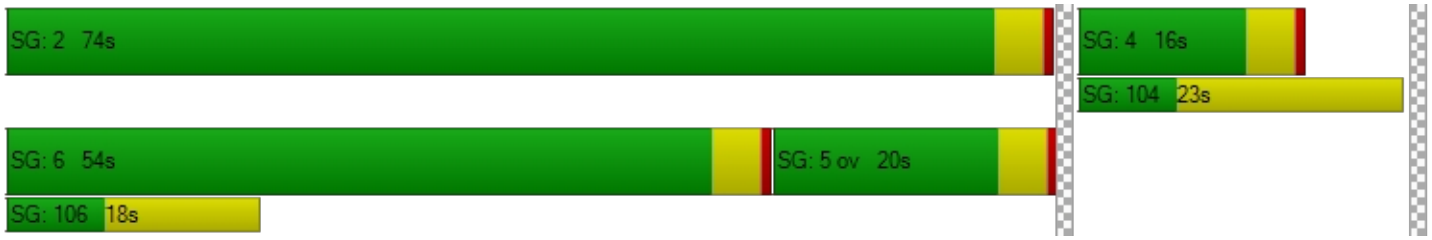
d_M, Delay for Movement [s/veh]	3.35	3.37	9.66	0.32	36.22	35.14
Movement LOS	A	A	A	A	D	D
d_A, Approach Delay [s/veh]	3.35		2.87		35.28	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	5.81					
Intersection LOS	A					
Intersection V/C	0.581					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.642	2.827	2.764
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1111	1556	267
d_b, Bicycle Delay [s]	8.89	2.22	33.83
l_b,int, Bicycle LOS Score for Intersection	2.609	2.467	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Washington St / Clackamas River Dr

Control Type:	Roundabout	Delay (sec / veh):	6.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Washington St		Washington St		Clackamas River Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Washington St		Washington St		Clackamas River Dr	
Base Volume Input [veh/h]	140	215	196	119	80	42
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	10.00	29.00	8.00	7.00	20.00	14.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	0	5	0
Site-Generated Trips [veh/h]	8	44	0	9	32	0
Diverted Trips [veh/h]	0	63	-3	3	30	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	216	427	289	190	186	62
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	60	119	80	53	52	17
Total Analysis Volume [veh/h]	240	474	321	211	207	69
Pedestrian Volume [ped/h]	0		0		2	

Intersection Settings

Number of Conflicting Circulating Lanes	1		1		1	
Circulating Flow Rate [veh/h]	347		248		264	
Exiting Flow Rate [veh/h]	474		343		347	
Demand Flow Rate [veh/h]	216	427	289	190	186	62
Adjusted Demand Flow Rate [veh/h]	240	474	321	211	207	69

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	0.00	1380.00	1380.00
B (coefficient)	0.00102	0.00000	0.00102	0.00102
HV Adjustment Factor	0.82	0.78	0.93	0.84
Entry Flow Rate [veh/h]	293	0	573	327
Capacity of Entry and Bypass Lanes [veh/h]	969	129000	1072	1055
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	795	100000	996	890
X, volume / capacity	0.30	0.00	0.53	0.31

Movement, Approach, & Intersection Results

Lane LOS	A	A	B	A
95th-Percentile Queue Length [veh]	1.27	0.00	3.26	1.33
95th-Percentile Queue Length [ft]	31.86	0.00	81.50	33.15
Approach Delay [s/veh]	2.68		10.36	7.41
Approach LOS	A		B	A
Intersection Delay [s/veh]	6.22			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 9: Washington St/ Prairie Schooner Way

Control Type:	Signalized	Delay (sec / veh):	9.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.627

Intersection Setup

Name	Washington St		Washington St		Prairie Schooner Way	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	0	1	0
Entry Pocket Length [ft]	100.00	100.00	150.00	100.00	165.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	No		Yes		Yes	

Volumes

Name	Washington St		Washington St		Prairie Schooner Way	
Base Volume Input [veh/h]	217	53	37	161	222	135
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	27.00	8.00	11.00	11.00	24.00	19.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	5	0	5	0	0
Site-Generated Trips [veh/h]	52	27	0	41	51	0
Diverted Trips [veh/h]	63	0	0	33	30	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	101
Total Hourly Volume [veh/h]	438	111	55	319	412	100
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	123	31	15	90	116	28
Total Analysis Volume [veh/h]	492	125	62	358	463	112
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	93
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	2	0	1	6	8	8
Auxiliary Signal Groups						1,8
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	8	0	4	8	4	4
Maximum Green [s]	30	0	20	30	30	30
Amber [s]	4.0	0.0	3.5	4.0	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	35	0	24	35	34	34
Vehicle Extension [s]	4.2	0.0	2.3	5.2	2.5	2.5
Walk [s]	8	0	0	0	7	7
Pedestrian Clearance [s]	24	0	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	0.0	2.0	2.5	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	34	34	34	34	34	34
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	0.00	2.50	2.00	0.00
g_i, Effective Green Time [s]	12	12	17	17	8	14
g / C, Green / Cycle	0.34	0.34	0.51	0.51	0.24	0.41
(v / s)_i Volume / Saturation Flow Rate	0.21	0.22	0.07	0.11	0.16	0.08
s, saturation flow rate [veh/h]	1495	1387	946	3303	2848	1373
c, Capacity [veh/h]	509	472	648	1686	692	567
d1, Uniform Delay [s]	9.44	9.64	4.95	4.63	11.79	6.47
k, delay calibration	0.17	0.17	0.07	0.26	0.08	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.78	2.34	0.04	0.15	0.84	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.61	0.65	0.10	0.21	0.67	0.20
d, Delay for Lane Group [s/veh]	11.22	11.98	4.99	4.78	12.63	6.57
Lane Group LOS	B	B	A	A	B	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.57	1.66	0.12	0.39	1.28	0.35
50th-Percentile Queue Length [ft/ln]	39.37	41.44	3.05	9.82	31.98	8.69
95th-Percentile Queue Length [veh/ln]	2.83	2.98	0.22	0.71	2.30	0.63
95th-Percentile Queue Length [ft/ln]	70.87	74.59	5.49	17.68	57.56	15.64

Movement, Approach, & Intersection Results

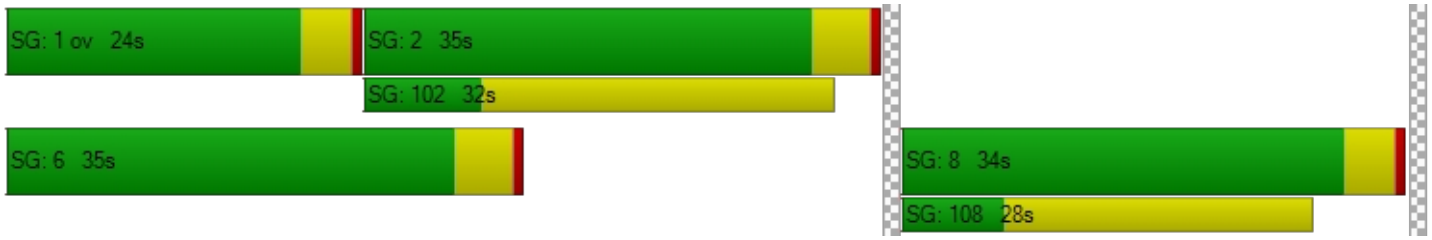
d_M, Delay for Movement [s/veh]	11.50	11.98	4.99	4.78	12.63	6.57
Movement LOS	B	B	A	A	B	A
d_A, Approach Delay [s/veh]	11.60		4.81		11.45	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	9.78					
Intersection LOS	A					
Intersection V/C	0.627					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	8603.18
d_p, Pedestrian Delay [s]	0.00	36.15	35.27
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.520	2.647
Crosswalk LOS	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	656	656	645
d_b, Bicycle Delay [s]	21.01	21.00	21.34
l_b,int, Bicycle LOS Score for Intersection	2.069	1.906	1.560
Bicycle LOS	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 10: Washington St / Home Depot-Site Access A

Control Type:	Signalized	Delay (sec / veh):	12.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.508

Intersection Setup

Name	Washington St			Washington St			Home Depot Dwy			Home Depot Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	335.00	100.00	330.00	250.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	470.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	370.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			Home Depot Dwy			Home Depot Dwy		
Base Volume Input [veh/h]	13	112	61	157	180	31	25	5	10	31	2	34
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	62.00	12.00	10.00	13.00	10.00	77.00	68.00	60.00	80.00	13.00	13.00	21.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	5	0	0	5	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	56	29	27	65	0	0	0	0	25	0	23
Diverted Trips [veh/h]	0	45	0	18	45	0	0	0	0	0	0	18
Pass-by Trips [veh/h]	0	-3	3	3	-3	0	0	0	0	3	0	3
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	24	0	0	0	0	0	48
Total Hourly Volume [veh/h]	19	270	123	282	380	23	37	7	15	75	3	47
Peak Hour Factor	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	83	38	87	117	7	11	2	5	23	1	15
Total Analysis Volume [veh/h]	23	333	152	348	469	28	46	9	19	93	4	58
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			0			1		
v_di, Inbound Pedestrian Volume crossing m	1			0			0			1		
v_co, Outbound Pedestrian Volume crossing	1			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	134
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	10	0	4	10	0	0	8	0	0	6	0
Maximum Green [s]	30	60	0	30	60	0	0	30	0	0	20	0
Amber [s]	3.5	4.5	0.0	3.5	4.5	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	34	65	0	34	65	0	0	35	0	0	25	0
Vehicle Extension [s]	2.5	4.2	0.0	2.5	4.2	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	9	0	0	7	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	R
C, Cycle Length [s]	46	46	46	46	46	46	46	46	46
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	2.50	2.50	2.50
g_i, Effective Green Time [s]	24	11	11	24	18	18	13	13	13
g / C, Green / Cycle	0.52	0.24	0.24	0.52	0.40	0.40	0.28	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.04	0.15	0.15	0.29	0.14	0.04	0.13	0.08	0.04
s, saturation flow rate [veh/h]	545	1720	1514	1184	3332	633	589	1208	1347
c, Capacity [veh/h]	430	417	367	723	1319	250	244	489	376
d1, Uniform Delay [s]	5.80	15.60	15.71	7.65	9.85	8.85	14.93	13.10	12.58
k, delay calibration	0.17	0.17	0.17	0.08	0.17	0.17	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.08	2.17	2.74	0.37	0.25	0.30	0.52	0.15	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.61	0.63	0.48	0.36	0.11	0.30	0.20	0.15
d, Delay for Lane Group [s/veh]	5.88	17.77	18.45	8.02	10.09	9.15	15.45	13.24	12.72
Lane Group LOS	A	B	B	A	B	A	B	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.09	2.28	2.16	1.55	1.38	0.16	0.63	0.69	0.40
50th-Percentile Queue Length [ft/ln]	2.20	57.01	53.91	38.78	34.41	4.09	15.81	17.31	10.02
95th-Percentile Queue Length [veh/ln]	0.16	4.10	3.88	2.79	2.48	0.29	1.14	1.25	0.72
95th-Percentile Queue Length [ft/ln]	3.96	102.62	97.04	69.81	61.94	7.36	28.46	31.17	18.04

Movement, Approach, & Intersection Results

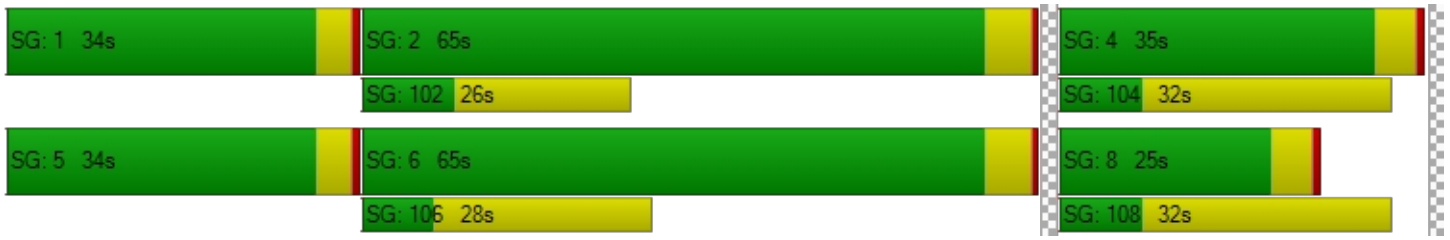
d_M, Delay for Movement [s/veh]	5.88	17.93	18.45	8.02	10.09	9.15	15.45	15.45	15.45	13.24	13.24	12.72
Movement LOS	A	B	B	A	B	A	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	17.54			9.21			15.45			13.05		
Approach LOS	B			A			B			B		
d_I, Intersection Delay [s/veh]	12.55											
Intersection LOS	B											
Intersection V/C	0.508											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	5842.48	0.00	0.00	746.82
d_p, Pedestrian Delay [s]	55.54	55.54	56.45	54.63
l_p,int, Pedestrian LOS Score for Intersection	2.663	2.791	2.023	2.399
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	896	896	455	306
d_b, Bicycle Delay [s]	20.44	20.43	39.97	48.07
l_b,int, Bicycle LOS Score for Intersection	1.979	2.277	1.682	1.895
Bicycle LOS	A	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Washington St / Abernethy Rd

Control Type:	Signalized	Delay (sec / veh):	12.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.406

Intersection Setup

Name	Washington St			Washington St			Abernethy Rd			Abernethy Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	115.00	100.00	225.00	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			30.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			Abernethy Rd			Abernethy Rd		
Base Volume Input [veh/h]	1	144	76	15	200	0	0	0	0	165	1	44
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	0.00	11.00	5.00	47.00	14.00	0.00	0.00	0.00	0.00	8.00	0.00	23.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	5	5	0	5	0	0	0	0	14	0	0
Site-Generated Trips [veh/h]	0	99	53	0	85	0	0	0	0	46	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	44	8	0	0	0	0	0	84	0	22
Right Turn on Red Volume [veh/h]	0	0	108	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	319	107	30	388	0	0	0	0	390	1	88
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	96	32	9	117	0	0	0	0	117	0	27
Total Analysis Volume [veh/h]	1	384	129	36	467	0	0	0	0	470	1	106
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			1			0			3		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	0	0	8	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	15	0	0	30	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	35	0	0	20	0	0	35	0
Vehicle Extension [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	16	0	0	8	0	0	13	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C
C, Cycle Length [s]	39	39	39	39	39	39	39	39
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	14	14	14	14	14	16	16	16
g / C, Green / Cycle	0.35	0.35	0.35	0.35	0.35	0.40	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.00	0.22	0.08	0.06	0.28	0.00	0.35	0.07
s, saturation flow rate [veh/h]	941	1735	1519	638	1690	1900	1349	1581
c, Capacity [veh/h]	240	599	524	263	583	852	661	633
d1, Uniform Delay [s]	17.36	10.82	9.19	15.93	11.64	0.00	10.91	7.57
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.28	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.43	0.09	0.09	0.99	0.00	3.65	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.64	0.25	0.14	0.80	0.00	0.71	0.17
d, Delay for Lane Group [s/veh]	17.36	11.25	9.28	16.01	12.63	0.00	14.56	7.62
Lane Group LOS	B	B	A	B	B	A	B	A
Critical Lane Group	No	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.01	2.05	0.58	0.26	2.90	0.00	3.17	0.40
50th-Percentile Queue Length [ft/ln]	0.18	51.34	14.46	6.50	72.48	0.00	79.37	10.10
95th-Percentile Queue Length [veh/ln]	0.01	3.70	1.04	0.47	5.22	0.00	5.71	0.73
95th-Percentile Queue Length [ft/ln]	0.33	92.40	26.03	11.69	130.47	0.00	142.87	18.18

Movement, Approach, & Intersection Results

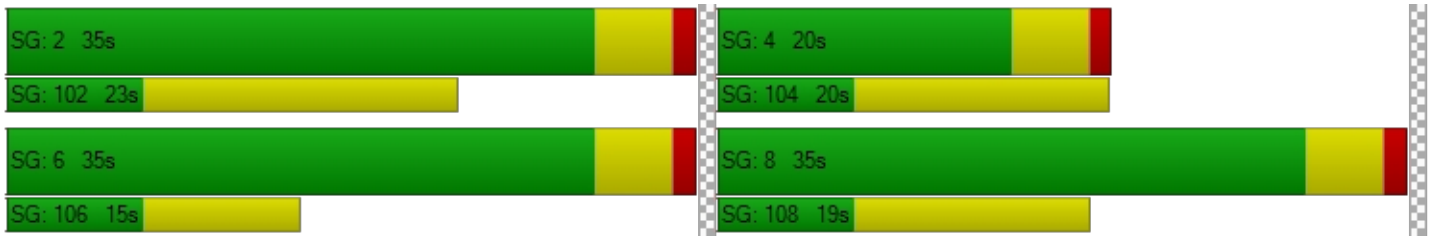
d_M, Delay for Movement [s/veh]	17.36	11.25	9.28	16.01	12.63	12.63	0.00	0.00	0.00	14.56	7.62	7.62
Movement LOS	B	B	A	B	B	B	A	A	A	B	A	A
d_A, Approach Delay [s/veh]	10.77			12.87			0.00			13.28		
Approach LOS	B			B			A			B		
d_I, Intersection Delay [s/veh]	12.34											
Intersection LOS	B											
Intersection V/C	0.406											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	24.86	24.86	24.86	24.86
l_p,int, Pedestrian LOS Score for Intersection	3.383	2.249	1.703	2.300
Crosswalk LOS	C	B	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	857	857	429	857
d_b, Bicycle Delay [s]	11.43	11.43	21.61	11.45
l_b,int, Bicycle LOS Score for Intersection	2.586	2.390	1.560	2.512
Bicycle LOS	B	B	A	B

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: Washington St / 15th St

Control Type:	Signalized	Delay (sec / veh):	10.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.733

Intersection Setup

Name	Washington St			Washington St			15th St			15th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	260.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			15th St			15th St		
Base Volume Input [veh/h]	19	171	64	22	220	0	36	22	17	9	84	14
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.0000	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	11.00	11.00	3.00	9.00	12.00	2.00	3.00	0.00	24.00	11.00	5.00	7.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	0	5	18	9	0	0	0	0	0
Site-Generated Trips [veh/h]	0	145	0	0	36	94	7	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	29	400	95	33	369	112	70	33	25	14	125	21
Peak Hour Factor	0.8400	0.8400	0.8400	0.8400	0.8400	1.0000	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	119	28	10	110	28	21	10	7	4	37	6
Total Analysis Volume [veh/h]	35	476	113	39	439	112	83	39	30	17	149	25
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			3			1			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	35	0	0	35	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	19	54	0	19	54	0	0	39	0	0	39	0
Vehicle Extension [s]	2.3	4.1	0.0	2.3	4.1	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	9	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	33	33	33	33	33	33
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	15	20	15	5	5
g / C, Green / Cycle	0.61	0.45	0.61	0.46	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.04	0.35	0.04	0.33	0.09	0.11
s, saturation flow rate [veh/h]	926	1670	923	1652	1675	1800
c, Capacity [veh/h]	666	761	650	758	417	387
d1, Uniform Delay [s]	3.84	7.69	4.12	7.38	13.32	13.59
k, delay calibration	0.07	0.16	0.16	0.16	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	2.52	0.06	1.98	0.40	0.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.77	0.06	0.73	0.36	0.49
d, Delay for Lane Group [s/veh]	3.86	10.21	4.17	9.37	13.72	14.31
Lane Group LOS	A	B	A	A	B	B
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.03	2.52	0.04	2.20	0.88	1.15
50th-Percentile Queue Length [ft/ln]	0.75	63.06	0.99	55.02	22.11	28.80
95th-Percentile Queue Length [veh/ln]	0.05	4.54	0.07	3.96	1.59	2.07
95th-Percentile Queue Length [ft/ln]	1.34	113.50	1.77	99.04	39.79	51.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3.86	10.21	10.21	4.17	9.37	9.37	13.72	13.72	13.72	14.31	14.31	14.31
Movement LOS	A	B	B	A	A	A	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	9.86			9.02			13.72			14.31		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	10.46											
Intersection LOS	B											
Intersection V/C	0.733											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	45.54	43.75	45.54	45.54
l_p,int, Pedestrian LOS Score for Intersection	2.336	2.449	1.969	1.940
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	893	893	625	625
d_b, Bicycle Delay [s]	17.19	17.19	26.48	26.47
l_b,int, Bicycle LOS Score for Intersection	2.589	2.533	1.810	1.875
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Washington St / 14th St

Control Type:	Signalized	Delay (sec / veh):	24.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.901

Intersection Setup

Name	Washington St			Washington St			14th St			14th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			14th St			14th St		
Base Volume Input [veh/h]	223	128	0	1	151	91	124	16	55	1	13	2
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	7.00	5.00	0.00	0.00	10.00	15.00	14.00	19.00	2.00	0.00	15.00	0.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	9	0	0	0	0	5	0	0	5	0	0	0
Site-Generated Trips [veh/h]	0	32	0	0	21	15	113	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	44	0	0	0
Total Hourly Volume [veh/h]	341	222	0	1	246	155	298	24	43	1	19	3
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	103	67	0	0	74	47	90	7	13	0	6	1
Total Analysis Volume [veh/h]	411	267	0	1	296	187	359	29	52	1	23	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			1			2			1		
v_di, Inbound Pedestrian Volume crossing m	1			2			1			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			2			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	35	0	0	35	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	19	54	0	19	54	0	0	39	0	0	39	0
Vehicle Extension [s]	2.3	4.1	0.0	2.3	4.1	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C
C, Cycle Length [s]	76	76	76	76	76	76	76
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	43	39	43	26	25	25	25
g / C, Green / Cycle	0.56	0.51	0.56	0.34	0.33	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.35	0.15	0.00	0.30	0.31	0.03	0.02
s, saturation flow rate [veh/h]	1165	1825	1163	1627	1254	1589	1640
c, Capacity [veh/h]	548	925	700	552	510	532	597
d1, Uniform Delay [s]	14.19	10.86	7.63	23.66	24.11	17.46	17.18
k, delay calibration	0.50	0.16	0.16	0.16	0.20	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.12	0.25	0.00	6.50	4.22	0.06	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.29	0.00	0.87	0.76	0.10	0.05
d, Delay for Lane Group [s/veh]	23.31	11.11	7.63	30.16	28.33	17.51	17.20
Lane Group LOS	C	B	A	C	C	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.86	2.42	0.01	8.77	6.98	0.62	0.33
50th-Percentile Queue Length [ft/ln]	121.39	60.58	0.17	219.13	174.47	15.56	8.23
95th-Percentile Queue Length [veh/ln]	8.47	4.36	0.01	13.62	11.31	1.12	0.59
95th-Percentile Queue Length [ft/ln]	211.73	109.05	0.31	340.52	282.78	28.00	14.81

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.31	11.11	11.11	7.63	30.16	30.16	28.33	28.33	17.51	17.20	17.20	17.20
Movement LOS	C	B	B	A	C	C	C	C	B	B	B	B
d_A, Approach Delay [s/veh]	18.51			30.12			27.05			17.20		
Approach LOS	B			C			C			B		
d_I, Intersection Delay [s/veh]	24.24											
Intersection LOS	C											
Intersection V/C	0.901											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	6727.97
d_p, Pedestrian Delay [s]	45.54	45.54	45.54	45.54
l_p,int, Pedestrian LOS Score for Intersection	2.300	2.763	2.642	1.750
Crosswalk LOS	B	C	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	893	893	625	625
d_b, Bicycle Delay [s]	17.17	17.18	26.47	26.47
l_b,int, Bicycle LOS Score for Intersection	2.678	2.358	2.358	1.606
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Washington St / 12th St

Control Type:	Signalized	Delay (sec / veh):	9.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.647

Intersection Setup

Name	Washington St			Washington St			12th St			12th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			12th St			12th St		
Base Volume Input [veh/h]	104	335	2	8	180	16	9	15	43	0	17	4
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	10.00	7.00	0.00	25.00	7.00	6.00	0.00	7.00	5.00	0.00	6.00	0.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	9	0	0	5	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	19	0	0	17	4	13	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	155	527	3	12	290	28	27	22	64	0	25	6
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	161	1	4	88	9	8	7	20	0	8	2
Total Analysis Volume [veh/h]	189	643	4	15	354	34	33	27	78	0	30	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			1			1			1		
v_di, Inbound Pedestrian Volume crossing m	1			1			1			0		
v_co, Outbound Pedestrian Volume crossing	2			2			1			2		
v_ci, Inbound Pedestrian Volume crossing mi	1			2			2			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			1			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	98
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	15	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	19	55	0	19	55	0	0	19	0	0	24	0
Vehicle Extension [s]	2.3	5.2	0.0	2.3	5.2	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	12	0	0	12	0	0	12	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	36	36	36	36	36	36
L, Total Lost Time per Cycle [s]	4.80	4.80	4.80	4.80	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.80	0.00	2.80	2.00	2.00
g_i, Effective Green Time [s]	23	18	23	15	5	5
g / C, Green / Cycle	0.63	0.50	0.63	0.42	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.17	0.36	0.02	0.22	0.09	0.04
s, saturation flow rate [veh/h]	1106	1793	731	1763	1612	1014
c, Capacity [veh/h]	835	900	558	747	334	176
d1, Uniform Delay [s]	3.43	7.08	4.00	7.77	15.00	14.06
k, delay calibration	0.07	0.26	0.26	0.26	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.08	2.56	0.05	1.32	0.61	0.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.23	0.72	0.03	0.52	0.41	0.21
d, Delay for Lane Group [s/veh]	3.51	9.64	4.05	9.09	15.60	14.49
Lane Group LOS	A	A	A	A	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.26	3.05	0.02	1.85	0.98	0.25
50th-Percentile Queue Length [ft/ln]	6.40	76.23	0.60	46.31	24.41	6.32
95th-Percentile Queue Length [veh/ln]	0.46	5.49	0.04	3.33	1.76	0.45
95th-Percentile Queue Length [ft/ln]	11.51	137.21	1.07	83.36	43.93	11.37

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3.51	9.64	9.64	4.05	9.09	9.09	15.60	15.60	15.60	14.49	14.49	14.49
Movement LOS	A	A	A	A	A	A	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	8.26			8.91			15.60			14.49		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	9.32											
Intersection LOS	A											
Intersection V/C	0.647											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	2257.74	1918.24	1878.15	7316.74
d_p, Pedestrian Delay [s]	38.62	38.62	38.62	38.62
l_p,int, Pedestrian LOS Score for Intersection	2.287	2.285	2.006	1.764
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1024	1024	306	408
d_b, Bicycle Delay [s]	11.66	11.66	35.15	31.06
l_b,int, Bicycle LOS Score for Intersection	2.939	2.225	1.787	1.621
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: Washington St/7th St

Control Type:	Signalized	Delay (sec / veh):	20.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.799

Intersection Setup

Name	Washington St			Washington St			7th St			Molalla Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	270.00	45.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			7th St			Molalla Ave		
Base Volume Input [veh/h]	108	196	11	86	101	14	0	220	31	0	285	202
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.0000	1.4100	1.4100	1.0000	1.4100	1.4100
Heavy Vehicles Percentage [%]	6.00	8.00	9.00	9.00	4.00	7.00	2.00	2.00	10.00	2.00	4.00	8.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	9	0	0	5	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	19	0	0	17	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	24	0	0	151
Total Hourly Volume [veh/h]	161	320	17	128	172	21	0	328	23	0	425	150
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	1.0000	0.8300	0.8300	1.0000	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	96	5	39	52	6	0	99	7	0	128	45
Total Analysis Volume [veh/h]	194	386	20	154	207	25	0	395	28	0	512	181
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			2			2			0		
v_di, Inbound Pedestrian Volume crossing m	0			2			2			0		
v_co, Outbound Pedestrian Volume crossing	4			3			3			3		
v_ci, Inbound Pedestrian Volume crossing mi	3			3			4			3		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			1			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	142
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap
Signal Group	0	8	0	0	4	0	0	2	0	0	6	6
Auxiliary Signal Groups												4,6
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	10	0	0	10	10
Maximum Green [s]	0	40	0	0	40	0	0	50	0	0	50	50
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	3.5
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.5
Split [s]	0	44	0	0	44	0	0	54	0	0	54	54
Vehicle Extension [s]	0.0	2.5	0.0	0.0	2.5	0.0	0.0	4.7	0.0	0.0	4.7	4.7
Walk [s]	0	7	0	0	7	0	0	7	0	0	9	9
Pedestrian Clearance [s]	0	11	0	0	10	0	0	10	0	0	11	11
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
Minimum Recall		No			No			Yes			Yes	Yes
Maximum Recall		No			No			No			No	No
Pedestrian Recall		No			No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	59	59	59	59	59	59	59	59
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	16	16	11	11	21	21	21	35
g / C, Green / Cycle	0.27	0.27	0.18	0.18	0.35	0.35	0.35	0.59
(v / s)_i Volume / Saturation Flow Rate	0.11	0.23	0.09	0.13	0.21	0.02	0.28	0.12
s, saturation flow rate [veh/h]	1724	1765	1681	1801	1870	1460	1840	1487
c, Capacity [veh/h]	466	477	300	322	653	510	642	884
d1, Uniform Delay [s]	17.83	20.55	22.08	23.02	15.97	12.84	17.45	5.54
k, delay calibration	0.08	0.08	0.08	0.08	0.20	0.20	0.20	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.44	3.28	1.01	2.28	1.69	0.08	4.24	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.42	0.85	0.51	0.72	0.61	0.05	0.80	0.20
d, Delay for Lane Group [s/veh]	18.27	23.83	23.09	25.31	17.65	12.92	21.69	5.62
Lane Group LOS	B	C	C	C	B	B	C	A
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.10	5.37	1.89	3.04	4.34	0.24	6.31	0.80
50th-Percentile Queue Length [ft/ln]	52.55	134.20	47.19	75.92	108.54	6.04	157.84	19.97
95th-Percentile Queue Length [veh/ln]	3.78	9.17	3.40	5.47	7.76	0.44	10.43	1.44
95th-Percentile Queue Length [ft/ln]	94.58	229.19	84.94	136.66	193.97	10.88	260.86	35.95

Movement, Approach, & Intersection Results

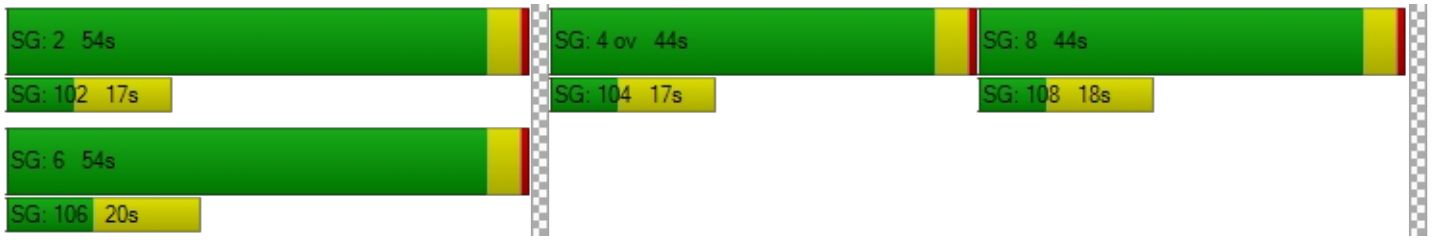
d_M, Delay for Movement [s/veh]	18.27	23.83	23.83	23.09	25.31	25.31	0.00	17.65	12.92	0.00	21.69	5.62
Movement LOS	B	C	C	C	C	C		B	B		C	A
d_A, Approach Delay [s/veh]	22.03			24.42			17.34			17.49		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	20.03											
Intersection LOS	C											
Intersection V/C	0.799											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	753.92	456.27	1338.64	0.00
d_p, Pedestrian Delay [s]	60.43	58.60	60.43	60.43
l_p,int, Pedestrian LOS Score for Intersection	2.327	2.320	2.426	2.712
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	563	563	704	704
d_b, Bicycle Delay [s]	36.63	36.65	29.82	29.83
l_b,int, Bicycle LOS Score for Intersection	2.550	2.197	2.297	2.952
Bicycle LOS	B	B	B	C

Sequence

Ring 1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: S Redland Rd/Abernethy Rd

Control Type:	Signalized	Delay (sec / veh):	36.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.804

Intersection Setup

Name	S Redland Rd			S Redland Rd			Abernethy Rd			Holocomb Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	125.00	100.00	100.00	330.00	100.00	250.00	120.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
Speed [mph]	30.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Redland Rd			S Redland Rd			Abernethy Rd			Holocomb Blvd		
Base Volume Input [veh/h]	98	378	22	97	271	26	20	40	45	25	89	191
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	11.00	8.00	9.00	4.00	11.00	2.00	45.00	10.00	24.00	0.00	7.00	5.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	5	4	0	0	1	9	5	5	5	0	5	0
Site-Generated Trips [veh/h]	22	0	0	0	0	44	38	11	20	0	13	0
Diverted Trips [veh/h]	9	-9	0	0	0	14	28	0	0	0	5	-5
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	49	0	0	0	0	13	10	20	22	0	44	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	60	0	0	0	0	0	140
Total Hourly Volume [veh/h]	231	558	33	145	405	59	111	95	114	37	199	139
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	153	9	40	111	16	30	26	31	10	55	38
Total Analysis Volume [veh/h]	254	613	36	159	445	65	122	104	125	41	219	153
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	13.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	0
Maximum Green [s]	30	45	0	30	45	0	30	35	0	20	30	0
Amber [s]	3.5	4.7	0.0	3.5	4.7	0.0	3.5	4.0	0.0	3.5	4.7	0.0
All red [s]	0.5	0.7	0.0	0.5	0.7	0.0	0.5	0.5	0.0	0.5	0.7	0.0
Split [s]	34	51	0	34	51	0	34	40	0	24	36	0
Vehicle Extension [s]	2.3	4.5	0.0	2.3	4.5	0.0	2.3	2.3	0.0	2.3	2.3	0.0
Walk [s]	0	7	0	5	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	10	24	0	0	22	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.4	0.0	2.0	3.4	0.0	2.0	2.5	0.0	2.0	3.4	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C	R
C, Cycle Length [s]	88	88	88	88	88	88	88	88	88	88
L, Total Lost Time per Cycle [s]	4.00	5.40	4.00	5.40	5.40	4.00	4.50	4.00	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.40	2.00	3.40	3.40	2.00	2.50	2.00	3.40	3.40
g_i, Effective Green Time [s]	16	36	10	30	30	11	22	3	13	13
g / C, Green / Cycle	0.18	0.41	0.11	0.34	0.34	0.12	0.25	0.03	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.15	0.37	0.09	0.26	0.04	0.10	0.14	0.02	0.12	0.10
s, saturation flow rate [veh/h]	1652	1763	1752	1735	1589	1166	1596	1810	1795	1530
c, Capacity [veh/h]	291	716	196	593	543	142	399	53	265	226
d1, Uniform Delay [s]	35.35	24.60	38.27	25.70	19.93	38.02	28.95	42.53	36.50	35.55
k, delay calibration	0.07	0.29	0.07	0.19	0.19	0.07	0.07	0.07	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.09	11.23	4.97	3.29	0.17	9.14	0.80	14.08	4.08	2.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.91	0.81	0.75	0.12	0.86	0.57	0.78	0.83	0.68
d, Delay for Lane Group [s/veh]	40.44	35.83	43.24	29.00	20.09	47.16	29.75	56.61	40.58	37.73
Lane Group LOS	D	D	D	C	C	D	C	E	D	D
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.59	14.18	3.48	8.18	0.89	2.89	4.22	1.08	4.78	3.19
50th-Percentile Queue Length [ft/ln]	139.78	354.58	87.11	204.48	22.25	72.34	105.51	27.01	119.50	79.63
95th-Percentile Queue Length [veh/ln]	9.47	20.36	6.27	12.87	1.60	5.21	7.59	1.94	8.37	5.73
95th-Percentile Queue Length [ft/ln]	236.73	508.99	156.81	321.73	40.05	130.21	189.73	48.61	209.13	143.34

Movement, Approach, & Intersection Results

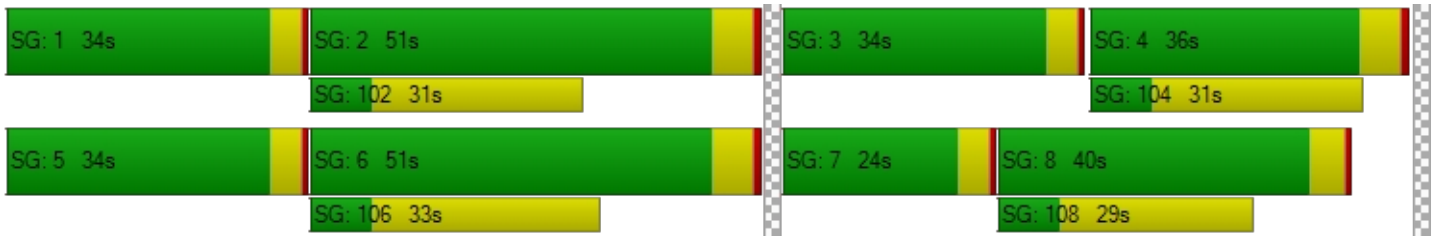
d_M, Delay for Movement [s/veh]	40.44	35.83	35.83	43.24	29.00	20.09	47.16	29.75	29.75	56.61	40.58	37.73
Movement LOS	D	D	D	D	C	C	D	C	C	E	D	D
d_A, Approach Delay [s/veh]	37.13			31.52			35.80			41.12		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	36.03											
Intersection LOS	D											
Intersection V/C	0.804											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	66.89	66.89	66.89	66.89
l_p,int, Pedestrian LOS Score for Intersection	2.458	2.868	2.388	2.564
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	588	588	458	395
d_b, Bicycle Delay [s]	38.61	38.61	46.07	49.95
l_b,int, Bicycle LOS Score for Intersection	3.050	2.762	2.139	2.472
Bicycle LOS	C	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: S Anchor Way / S Redland Rd

Control Type:	Two-way stop	Delay (sec / veh):	65.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.652

Intersection Setup

Name	S Redland Rd		S Redland Rd		S Anchor Way	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	S Redland Rd		S Redland Rd		S Anchor Way	
Base Volume Input [veh/h]	31	429	195	139	50	11
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	3.00	11.00	21.00	2.00	4.00	9.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	9	6	0	0	0
Site-Generated Trips [veh/h]	0	16	14	6	6	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	47	664	311	213	81	17
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	193	90	62	24	5
Total Analysis Volume [veh/h]	55	772	362	248	94	20
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			Yes
Storage Area [veh]	0	0	1
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.01	0.00	0.00	0.65	0.04
d_M, Delay for Movement [s/veh]	8.96	0.00	0.00	0.00	65.60	46.97
Movement LOS	A	A	A	A	F	E
95th-Percentile Queue Length [veh/ln]	0.18	0.18	0.00	0.00	3.95	3.95
95th-Percentile Queue Length [ft/ln]	4.53	4.53	0.00	0.00	98.85	98.85
d_A, Approach Delay [s/veh]	0.60		0.00		62.33	
Approach LOS	A		A		F	
d_I, Intersection Delay [s/veh]	4.90					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 18: Holly Ln / S Redland Rd

Control Type:	Two-way stop	Delay (sec / veh):	44.7
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.674

Intersection Setup

Name	S Holly Ln		S Redland Rd		S Redland Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	S Holly Ln		S Redland Rd		S Redland Rd	
Base Volume Input [veh/h]	96	8	170	31	7	352
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	9.00	0.00	18.00	23.00	14.00	9.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	6	0	0	9
Site-Generated Trips [veh/h]	0	0	14	0	0	16
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	143	12	274	47	11	549
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	4	81	14	3	161
Total Analysis Volume [veh/h]	168	14	322	55	13	646
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	Yes		
Storage Area [veh]	1	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.67	0.02	0.00	0.00	0.01	0.01
d_M, Delay for Movement [s/veh]	44.75	35.46	0.00	0.00	8.26	0.00
Movement LOS	E	E	A	A	A	A
95th-Percentile Queue Length [veh/ln]	4.57	4.57	0.00	0.00	0.04	0.04
95th-Percentile Queue Length [ft/ln]	114.29	114.29	0.00	0.00	0.88	0.88
d_A, Approach Delay [s/veh]	44.03		0.00		0.16	
Approach LOS	E		A		A	
d_I, Intersection Delay [s/veh]	6.67					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 19: I 205 SB-Ramp / OR 213

Control Type:	Two-way stop	Delay (sec / veh):	1,474.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.203

Intersection Setup

Name	OR 213		Washington St		Washington Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	OR 213		Washington St		Washington Dr	
Base Volume Input [veh/h]	744	37	22	7	15	0
Base Volume Adjustment Factor	1.3900	1.0000	1.0000	1.0000	1.0000	1.2500
Heavy Vehicles Percentage [%]	10.00	5.00	32.00	14.00	7.00	10.00
Growth Factor	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	25	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	27	0	0	0	0	0
Total Hourly Volume [veh/h]	1086	39	23	7	16	0
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	295	11	6	2	4	0
Total Analysis Volume [veh/h]	1180	42	25	8	17	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.77	0.00	0.00	0.00	2.20	0.00
d_M, Delay for Movement [s/veh]	14.79	0.00	0.00	0.00	1474.21	0.00
Movement LOS	B	A	A	A	F	
95th-Percentile Queue Length [veh/ln]	8.50	0.00	0.00	0.00	3.17	0.00
95th-Percentile Queue Length [ft/ln]	212.44	0.00	0.00	0.00	79.27	0.00
d_A, Approach Delay [s/veh]	14.28		0.00		1474.21	
Approach LOS	B		A		F	
d_I, Intersection Delay [s/veh]	33.42					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 20: OR 213 / Clackamas River Dr

Control Type:	Signalized	Delay (sec / veh):	45.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.018

Intersection Setup

Name	OR 213			OR 213			Prairie Schooner Way			Clackamas River Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	450.00	100.00	100.00	415.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			Yes			Yes			Yes		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	OR 213			OR 213			Prairie Schooner Way			Clackamas River Dr		
Base Volume Input [veh/h]	0	1937	128	0	1244	357	0	0	85	0	0	412
Base Volume Adjustment Factor	1.0000	1.3900	1.3900	1.0000	1.3900	1.3900	1.0000	1.0000	1.3900	1.0000	1.0000	1.3900
Heavy Vehicles Percentage [%]	2.00	8.00	18.00	2.00	8.00	18.00	2.00	2.00	7.00	2.00	2.00	21.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	26	5	0	56	0	0	0	5	0	0	0
Site-Generated Trips [veh/h]	0	24	32	0	27	51	0	0	27	0	0	44
Diverted Trips [veh/h]	0	-23	30	0	7	30	0	0	0	0	0	60
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	27	0	0	14	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	255	0	0	605	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	2746	0	0	1833	0	0	0	157	0	0	710
Peak Hour Factor	1.0000	0.8900	0.8900	1.0000	0.8900	0.8900	1.0000	1.0000	0.8900	1.0000	1.0000	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	771	0	0	515	0	0	0	44	0	0	199
Total Analysis Volume [veh/h]	0	3085	0	0	2060	0	0	0	176	0	0	798
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	0	1	0	0	5
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	0	4	0	0	4
Maximum Green [s]	0	96	0	0	96	0	0	0	26	0	0	31
Amber [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	0.0	3.5	0.0	0.0	3.5
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.5	0.0	0.0	0.5
Split [s]	0	44	0	0	44	0	0	0	30	0	0	79
Vehicle Extension [s]	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	2.3	0.0	0.0	2.3
Walk [s]	0	0	0	0	0	0	0	0	7	0	0	7
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	15	0	0	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0
Minimum Recall		Yes			Yes				No			No
Maximum Recall		No			No				No			No
Pedestrian Recall		No			No				No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	R	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	74	74	109	109	11	46
g / C, Green / Cycle	0.57	0.57	0.84	0.84	0.08	0.35
(v / s)_i Volume / Saturation Flow Rate	0.64	0.00	0.42	0.00	0.07	0.33
s, saturation flow rate [veh/h]	4849	1385	4849	1385	2700	2384
c, Capacity [veh/h]	2766	790	4083	1167	219	841
d1, Uniform Delay [s]	15.56	0.00	2.82	0.00	58.72	40.95
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	57.55	0.00	0.45	0.00	4.26	4.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.12	0.00	0.50	0.00	0.80	0.95
d, Delay for Lane Group [s/veh]	73.11	0.00	3.27	0.00	62.98	45.38
Lane Group LOS	F	A	A	A	E	D
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	27.51	0.00	2.18	0.00	2.98	12.79
50th-Percentile Queue Length [ft/ln]	687.74	0.00	54.43	0.00	74.55	319.85
95th-Percentile Queue Length [veh/ln]	39.29	0.00	3.92	0.00	5.37	18.66
95th-Percentile Queue Length [ft/ln]	982.25	0.00	97.98	0.00	134.19	466.50

Movement, Approach, & Intersection Results

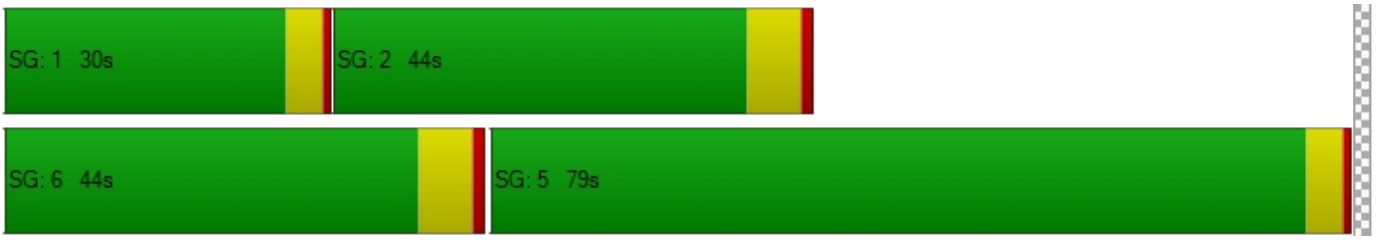
d_M, Delay for Movement [s/veh]	0.00	73.11	0.00	0.00	3.27	0.00	0.00	0.00	62.98	0.00	0.00	45.38
Movement LOS		F	A		A	A			E			D
d_A, Approach Delay [s/veh]	73.11			3.27			62.98			45.38		
Approach LOS	E			A			E			D		
d_I, Intersection Delay [s/veh]	45.69											
Intersection LOS	D											
Intersection V/C	1.018											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	38.0	38.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	32.55	32.55
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.318	2.279
Crosswalk LOS	F	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	585	585	400	1154
d_b, Bicycle Delay [s]	32.55	32.55	41.60	11.63
l_b,int, Bicycle LOS Score for Intersection	3.397	3.025	1.560	1.560
Bicycle LOS	C	C	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: OR 213 / S Redland Rd

Control Type:	Signalized	Delay (sec / veh):	57.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.069

Intersection Setup

Name	OR 213		OR 213		S Redland Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	350.00	100.00	100.00	100.00	335.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		40.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		Yes		Yes	
Crosswalk	Yes		No		Yes	

Volumes

Name	OR 213		OR 213		S Redland Rd	
Base Volume Input [veh/h]	63	1590	993	333	492	77
Base Volume Adjustment Factor	1.3900	1.3900	1.3900	1.3900	1.3900	1.3900
Heavy Vehicles Percentage [%]	19.00	8.00	9.00	8.00	8.00	10.00
Growth Factor	1.0570	1.0000	1.0000	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	10	31	61	0	0	9
Site-Generated Trips [veh/h]	17	32	27	27	24	14
Diverted Trips [veh/h]	7	-7	0	7	14	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	27	14	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	262	0	68
Total Hourly Volume [veh/h]	127	2293	1482	261	761	68
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	644	416	73	214	19
Total Analysis Volume [veh/h]	143	2576	1665	293	855	76
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	22.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Overlap	Permissive	Overlap
Signal Group	1	6	2	2	8	8
Auxiliary Signal Groups				2,8		1,8
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	6	6
Maximum Green [s]	16	94	74	74	28	28
Amber [s]	3.5	5.0	5.0	5.0	3.0	3.0
All red [s]	0.5	1.0	1.0	1.0	0.7	0.7
Split [s]	20	98	78	78	32	32
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	5	5	5
Pedestrian Clearance [s]	0	10	10	10	10	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	4.0	1.7	1.7
Minimum Recall	No	Yes	Yes	Yes	No	No
Maximum Recall	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	3.70	3.70	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	0.00	1.70	0.00
g_i, Effective Green Time [s]	14	92	74	108	28	46
g / C, Green / Cycle	0.11	0.71	0.57	0.83	0.22	0.35
(v / s)_i Volume / Saturation Flow Rate	0.09	0.76	0.50	0.19	0.26	0.05
s, saturation flow rate [veh/h]	1538	3389	3360	1513	3292	1487
c, Capacity [veh/h]	166	2400	1913	1260	716	526
d1, Uniform Delay [s]	57.08	18.99	12.25	0.36	50.91	28.63
k, delay calibration	0.24	0.50	0.50	0.50	0.16	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	23.73	41.75	5.74	0.43	92.29	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.33	1.16	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	1.07	0.87	0.23	1.19	0.14
d, Delay for Lane Group [s/veh]	80.81	60.74	17.99	0.79	143.20	28.76
Lane Group LOS	F	F	B	A	F	C
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.54	40.76	9.69	0.26	20.57	1.62
50th-Percentile Queue Length [ft/ln]	138.59	1019.06	242.29	6.61	514.24	40.54
95th-Percentile Queue Length [veh/ln]	9.40	54.59	14.80	0.48	30.72	2.92
95th-Percentile Queue Length [ft/ln]	235.12	1364.80	369.92	11.89	767.96	72.97

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	80.81	60.74	17.99	0.79	143.20	28.76
Movement LOS	F	F	B	A	F	C
d_A, Approach Delay [s/veh]	61.80		15.42		133.86	
Approach LOS	E		B		F	
d_I, Intersection Delay [s/veh]	57.57					
Intersection LOS	E					
Intersection V/C	1.069					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	0.00	56.31
l_p,int, Pedestrian LOS Score for Intersection	3.938	0.000	2.798
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1415	1108	435
d_b, Bicycle Delay [s]	5.55	12.94	39.78
l_b,int, Bicycle LOS Score for Intersection	3.803	3.391	1.560
Bicycle LOS	D	C	A

Sequence

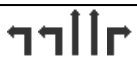
Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: OR 213 / Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	66.7
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.902

Intersection Setup

Name	OR 213			OR 213			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	2	0	1	2	0	0	2	0	1
Entry Pocket Length [ft]	530.00	100.00	580.00	600.00	100.00	525.00	500.00	100.00	100.00	160.00	100.00	465.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 213			OR 213			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	88	751	64	214	477	400	255	136	36	59	257	533
Base Volume Adjustment Factor	1.3700	1.3700	1.3700	1.3700	1.3700	1.3700	1.3700	1.3700	1.3700	1.3700	1.3700	1.3700
Heavy Vehicles Percentage [%]	10.00	8.00	3.00	5.00	12.00	7.00	13.00	10.00	22.00	2.00	2.00	4.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	23	6	18	9	42	12	19	0	2	20	6
Site-Generated Trips [veh/h]	0	26	0	11	22	8	10	0	0	0	0	13
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	27	0	0	14	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	50	0	0	315	0	0	0	0	0	396
Total Hourly Volume [veh/h]	128	1105	49	339	698	314	391	216	52	88	392	395
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	285	13	87	180	81	101	56	13	23	101	102
Total Analysis Volume [veh/h]	132	1139	51	349	720	324	403	223	54	91	404	407
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			1			0		
v_di, Inbound Pedestrian Volume crossing m	1			0			1			0		
v_co, Outbound Pedestrian Volume crossing	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	142
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	0
Maximum Green [s]	15	40	0	32	40	0	38	30	0	15	20	0
Amber [s]	4.0	5.0	0.0	4.0	5.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.5	2.0	0.0	1.5	2.0	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	21	47	0	38	47	0	44	36	0	21	26	0
Vehicle Extension [s]	2.3	4.7	0.0	2.3	4.7	0.0	2.3	2.3	0.0	2.3	2.3	0.0
Walk [s]	0	8	0	0	9	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	31	0	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.5	5.0	0.0	3.5	5.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	5.50	7.00	7.00	5.50	7.00	7.00	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	5.00	5.00	3.50	5.00	5.00	3.50	3.50	3.50	3.50	3.50	3.50
g_i, Effective Green Time [s]	11	40	40	14	43	43	17	32	32	5	20	20
g / C, Green / Cycle	0.09	0.35	0.35	0.12	0.38	0.38	0.15	0.28	0.28	0.04	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.08	0.34	0.03	0.10	0.22	0.22	0.13	0.08	0.08	0.03	0.11	0.26
s, saturation flow rate [veh/h]	1667	3389	1577	3375	3275	1506	3153	1750	1632	3459	3560	1543
c, Capacity [veh/h]	159	1177	548	422	1234	568	473	492	459	146	618	268
d1, Uniform Delay [s]	51.16	36.93	25.34	49.17	28.65	28.37	47.70	32.38	32.40	54.23	44.34	47.44
k, delay calibration	0.07	0.20	0.20	0.07	0.20	0.23	0.07	0.07	0.07	0.07	0.07	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.72	10.62	0.14	2.62	0.82	1.93	2.79	0.20	0.21	2.64	0.72	251.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.97	0.09	0.83	0.58	0.57	0.85	0.29	0.29	0.62	0.65	1.52
d, Delay for Lane Group [s/veh]	57.88	47.55	25.47	51.79	29.47	30.31	50.50	32.57	32.61	56.87	45.06	298.92
Lane Group LOS	E	D	C	D	C	C	D	C	C	E	D	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.03	17.12	0.97	5.03	7.98	7.30	5.74	3.11	2.93	1.34	5.36	26.25
50th-Percentile Queue Length [ft/ln]	100.65	428.04	24.15	125.85	199.61	182.42	143.51	77.81	73.18	33.44	134.07	656.31
95th-Percentile Queue Length [veh/ln]	7.25	23.91	1.74	8.71	12.62	11.73	9.67	5.60	5.27	2.41	9.16	41.08
95th-Percentile Queue Length [ft/ln]	181.17	597.69	43.47	217.83	315.46	293.17	241.75	140.06	131.73	60.20	229.02	1027.07

Movement, Approach, & Intersection Results

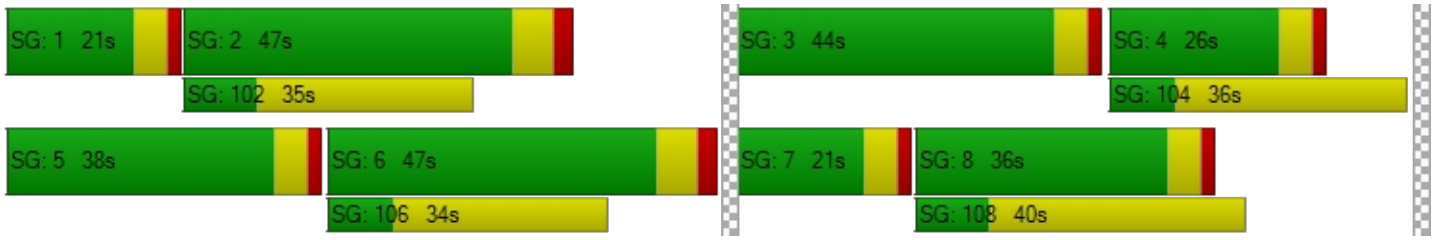
d_M, Delay for Movement [s/veh]	57.88	47.55	25.47	51.79	29.47	30.31	50.50	32.59	32.61	56.87	45.06	298.92
Movement LOS	E	D	C	D	C	C	D	C	C	E	D	F
d_A, Approach Delay [s/veh]	47.73			35.25			43.20			160.80		
Approach LOS	D			D			D			F		
d_I, Intersection Delay [s/veh]	66.70											
Intersection LOS	E											
Intersection V/C	0.902											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	13.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	4535.02	0.00	4528.63	0.00
d_p, Pedestrian Delay [s]	58.60	59.51	58.60	59.51
l_p,int, Pedestrian LOS Score for Intersection	2.908	3.628	2.825	3.499
Crosswalk LOS	C	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	563	563	430	289
d_b, Bicycle Delay [s]	36.63	36.65	43.78	52.01
l_b,int, Bicycle LOS Score for Intersection	2.692	2.969	2.121	2.630
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 23: OR 213 / Molalla Ave

Control Type:	Signalized	Delay (sec / veh):	26.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.586

Intersection Setup

Name	OR 213			OR 213			Molalla Ave			S Douglas Loop		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	650.00	100.00	100.00	525.00	100.00	355.00	100.00	100.00	100.00	275.00	100.00	275.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 213			OR 213			Molalla Ave			S Douglas Loop		
Base Volume Input [veh/h]	183	817	17	21	436	109	70	18	61	10	21	10
Base Volume Adjustment Factor	1.4800	1.4800	1.4800	1.4800	1.4800	1.4800	1.4800	1.4800	1.4800	1.4800	1.4800	1.4800
Heavy Vehicles Percentage [%]	2.00	7.00	6.00	33.00	12.00	4.00	10.00	33.00	3.00	20.00	24.00	50.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	23	29	0	0	11	0	0	0	7	0	0	0
Site-Generated Trips [veh/h]	0	26	0	0	22	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	27	0	0	14	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	13	0	0	85	0	0	51	0	0	8
Total Hourly Volume [veh/h]	309	1291	13	33	692	85	110	29	51	16	33	8
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	80	333	3	9	178	22	28	7	13	4	9	2
Total Analysis Volume [veh/h]	319	1331	13	34	713	88	113	30	53	16	34	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			1			0			1		
v_di, Inbound Pedestrian Volume crossing m	0			1			0			1		
v_co, Outbound Pedestrian Volume crossing	0			1			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	70.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	13.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	6
Maximum Green [s]	20	200	0	20	50	0	20	20	0	20	40	40
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	3.5	4.7	0.0	3.5	4.7	4.7
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.5	0.7	0.0	0.5	0.7	0.7
Split [s]	38	48	0	30	40	0	16	26	0	16	26	26
Vehicle Extension [s]	2.3	4.5	0.0	2.3	4.5	0.0	2.3	2.3	0.0	2.3	2.3	2.3
Walk [s]	0	9	0	0	10	0	0	14	0	0	11	11
Pedestrian Clearance [s]	0	23	0	0	27	0	0	28	0	0	30	30
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	4.0	0.0	2.0	4.0	0.0	2.0	3.4	0.0	2.0	3.4	3.4
Minimum Recall	No	Yes		No	Yes		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	5.40	5.40	4.00	5.40	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	3.40	3.40	2.00	3.40	0.00
g_i, Effective Green Time [s]	23	77	77	3	57	57	14	6	6	14	6	33
g / C, Green / Cycle	0.20	0.65	0.65	0.03	0.48	0.48	0.12	0.05	0.05	0.12	0.05	0.27
(v / s)_i Volume / Saturation Flow Rate	0.18	0.39	0.01	0.03	0.22	0.06	0.09	0.02	0.03	0.01	0.02	0.01
s, saturation flow rate [veh/h]	1781	3418	1538	1338	3275	1561	1326	1405	1577	1524	1540	975
c, Capacity [veh/h]	348	2208	994	38	1570	748	190	67	75	177	74	264
d1, Uniform Delay [s]	47.35	12.32	7.59	58.09	20.78	17.23	53.35	55.65	56.36	47.36	55.63	32.18
k, delay calibration	0.15	0.50	0.50	0.07	0.50	0.50	0.07	0.07	0.07	0.07	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.88	1.23	0.02	29.95	0.95	0.32	1.81	2.90	7.36	0.13	2.72	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.60	0.01	0.88	0.45	0.12	0.59	0.45	0.71	0.09	0.46	0.03
d, Delay for Lane Group [s/veh]	60.23	13.55	7.61	88.03	21.73	17.55	55.16	58.55	63.71	47.50	58.35	32.21
Lane Group LOS	E	B	A	F	C	B	E	E	E	D	E	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.11	8.88	0.11	1.31	6.29	1.31	3.48	0.95	1.75	0.44	1.07	0.18
50th-Percentile Queue Length [ft/ln]	252.70	221.91	2.72	32.73	157.22	32.77	86.97	23.64	43.72	10.99	26.67	4.41
95th-Percentile Queue Length [veh/ln]	15.32	13.76	0.20	2.36	10.40	2.36	6.26	1.70	3.15	0.79	1.92	0.32
95th-Percentile Queue Length [ft/ln]	383.05	344.06	4.90	58.91	260.04	58.99	156.54	42.55	78.69	19.78	48.01	7.95

Movement, Approach, & Intersection Results

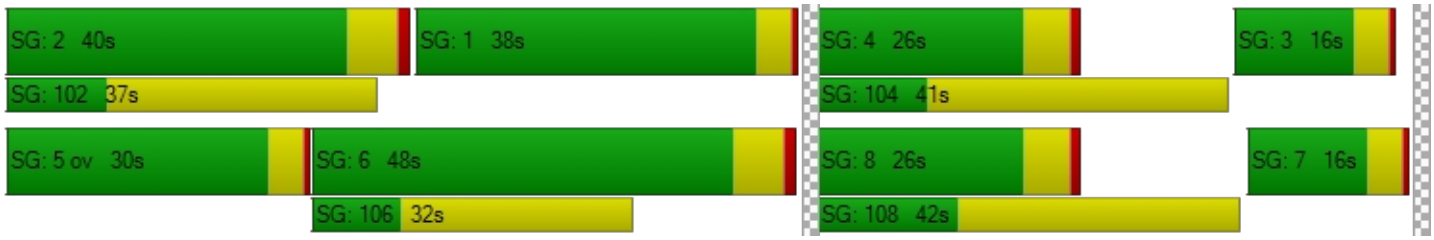
d_M, Delay for Movement [s/veh]	60.23	13.55	7.61	88.03	21.73	17.55	55.16	58.55	63.71	47.50	58.35	32.21
Movement LOS	E	B	A	F	C	B	E	E	E	D	E	C
d_A, Approach Delay [s/veh]	22.46			23.99			57.99			51.75		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	26.07											
Intersection LOS	C											
Intersection V/C	0.586											

Other Modes

g_Walk,mi, Effective Walk Time [s]	18.0	15.0	14.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	4635.96	3933.29	0.00
d_p, Pedestrian Delay [s]	43.35	45.94	46.82	47.70
l_p,int, Pedestrian LOS Score for Intersection	3.227	3.454	2.372	2.186
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	567	343	343
d_b, Bicycle Delay [s]	25.35	30.82	41.17	41.17
l_b,int, Bicycle LOS Score for Intersection	2.942	2.319	1.967	1.669
Bicycle LOS	C	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Molalla Ave / Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	26.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.321

Intersection Setup

Name	Molalla Ave			Molalla Ave			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	170.00	100.00	150.00	350.00	100.00	100.00	175.00	100.00	190.00	210.00	100.00	245.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			35.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Molalla Ave			Molalla Ave			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	61	184	37	165	122	25	22	133	55	25	257	210
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	7.00	4.00	0.00	4.00	2.00	8.00	5.00	9.00	7.00	20.00	4.00	4.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	22	6	0	14	8	4	1	8	8	0	45	4
Site-Generated Trips [veh/h]	0	0	0	10	0	0	0	0	0	0	0	8
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	45	0	0	163
Total Hourly Volume [veh/h]	113	280	55	270	190	41	34	207	45	37	428	162
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	78	15	75	53	11	9	58	13	10	119	45
Total Analysis Volume [veh/h]	126	311	61	300	211	46	38	230	50	41	476	180
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			1			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			1			1		
v_co, Outbound Pedestrian Volume crossing	1			2			2			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			2			2			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	10	0	6	10	0	4	6	0	6	6	0
Maximum Green [s]	30	40	0	30	40	0	20	25	0	20	25	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	3.5	4.0	0.0	3.5	4.0	0.0
All red [s]	2.0	2.0	0.0	2.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	16	40	0	16	40	0	12	22	0	12	22	0
Vehicle Extension [s]	2.3	4.6	0.0	2.3	4.2	0.0	2.3	2.5	0.0	2.3	2.5	0.0
Walk [s]	0	9	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	26	0	0	22	0	0	23	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	4.0	0.0	4.0	4.0	0.0	2.5	4.0	0.0	2.5	4.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	44	44	44	44	44	44	22	14	14	22	15	15
g / C, Green / Cycle	0.49	0.49	0.49	0.49	0.49	0.49	0.24	0.15	0.15	0.24	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.10	0.10	0.10	0.24	0.07	0.07	0.03	0.07	0.03	0.04	0.14	0.12
s, saturation flow rate [veh/h]	1219	1840	1736	1236	1870	1754	1089	3360	1523	1141	3503	1561
c, Capacity [veh/h]	665	900	849	560	920	863	265	506	229	331	579	258
d1, Uniform Delay [s]	12.81	13.13	13.15	23.04	12.52	12.54	27.22	34.94	33.65	26.71	36.36	35.51
k, delay calibration	0.07	0.50	0.50	0.50	0.50	0.50	0.07	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.08	0.53	0.58	3.65	0.33	0.35	0.15	0.48	0.35	0.12	2.24	2.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.19	0.21	0.21	0.54	0.14	0.15	0.14	0.45	0.22	0.12	0.82	0.70
d, Delay for Lane Group [s/veh]	12.90	13.66	13.73	26.68	12.85	12.89	27.38	35.41	34.00	26.83	38.61	38.05
Lane Group LOS	B	B	B	C	B	B	C	D	C	C	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.36	2.23	2.14	4.03	1.44	1.38	0.63	2.28	0.96	0.69	5.14	3.85
50th-Percentile Queue Length [ft/ln]	33.97	55.68	53.56	100.85	36.05	34.40	15.66	56.89	24.03	17.21	128.53	96.14
95th-Percentile Queue Length [veh/ln]	2.45	4.01	3.86	7.26	2.60	2.48	1.13	4.10	1.73	1.24	8.86	6.92
95th-Percentile Queue Length [ft/ln]	61.14	100.22	96.41	181.53	64.88	61.91	28.19	102.41	43.26	30.97	221.50	173.05

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.90	13.69	13.73	26.68	12.87	12.89	27.38	35.41	34.00	26.83	38.61	38.05
Movement LOS	B	B	B	C	B	B	C	D	C	C	D	D
d_A, Approach Delay [s/veh]	13.49			20.31			34.23			37.77		
Approach LOS	B			C			C			D		
d_I, Intersection Delay [s/veh]	26.69											
Intersection LOS	C											
Intersection V/C	0.321											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	13031.69	10475.07	3237.42	3486.44
d_p, Pedestrian Delay [s]	33.80	33.80	33.80	32.94
l_p,int, Pedestrian LOS Score for Intersection	2.473	2.593	2.775	3.278
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	756	756	356	356
d_b, Bicycle Delay [s]	17.42	17.42	30.42	30.42
l_b,int, Bicycle LOS Score for Intersection	1.970	2.019	1.859	2.269
Bicycle LOS	A	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: Maple Lane Rd / Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	18.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.692

Intersection Setup

Name	Maple Lane Rd			Maple Lane Rd			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	150.00	430.00	100.00	100.00	360.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Maple Lane Rd			Maple Lane Rd			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	54	12	7	26	13	266	129	209	43	5	516	34
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	6.00	0.00	0.00	12.00	0.00	3.00	8.00	5.00	7.00	0.00	4.00	6.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	12	0	0	0	43	0	0	28	4
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	11	0	0	13	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	198	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	18	11	51	19	198	192	366	64	7	810	55
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	5	3	14	5	53	52	98	17	2	218	15
Total Analysis Volume [veh/h]	86	19	12	55	20	213	206	394	69	8	871	59
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	0	3	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	4	10	0	4	10	0
Maximum Green [s]	0	20	0	0	20	20	35	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	4.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.5	0.5	0.5	0.0	0.5	0.5	0.0
Split [s]	0	25	0	0	25	25	40	55	0	25	55	0
Vehicle Extension [s]	0.0	2.5	0.0	0.0	2.5	2.5	2.5	5.2	0.0	2.3	5.2	0.0
Walk [s]	0	8	0	0	8	8	0	7	0	0	8	0
Pedestrian Clearance [s]	0	19	0	0	19	19	0	12	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	0.0	0.0	2.5	2.5	2.5	2.5	0.0	2.5	2.5	0.0
Minimum Recall		No			No	No	No	Yes		No	Yes	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	63	63	63	63	63	63	63	63	63	63	63
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	0.00	2.50	2.50	2.50	0.00	2.50	2.50
g_i, Effective Green Time [s]	5	5	6	6	20	10	33	33	38	24	24
g / C, Green / Cycle	0.08	0.08	0.10	0.10	0.32	0.16	0.52	0.52	0.61	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.05	0.02	0.03	0.01	0.14	0.12	0.13	0.13	0.01	0.26	0.26
s, saturation flow rate [veh/h]	1724	1779	1638	1900	1577	1695	1825	1732	797	1840	1794
c, Capacity [veh/h]	144	149	156	181	511	266	959	910	681	694	676
d1, Uniform Delay [s]	27.68	26.76	26.53	25.91	16.55	25.34	8.11	8.11	5.20	16.33	16.35
k, delay calibration	0.08	0.08	0.08	0.08	0.08	0.08	0.26	0.26	0.07	0.26	0.26
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.92	0.51	1.00	0.20	0.40	3.61	0.31	0.33	0.00	2.74	2.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.60	0.21	0.35	0.11	0.42	0.77	0.25	0.25	0.01	0.68	0.68
d, Delay for Lane Group [s/veh]	30.60	27.27	27.53	26.11	16.95	28.95	8.42	8.45	5.20	19.07	19.18
Lane Group LOS	C	C	C	C	B	C	A	A	A	B	B
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.32	0.44	0.75	0.26	2.13	2.97	1.48	1.42	0.03	5.40	5.30
50th-Percentile Queue Length [ft/ln]	32.92	10.98	18.69	6.50	53.18	74.30	37.11	35.52	0.77	135.00	132.56
95th-Percentile Queue Length [veh/ln]	2.37	0.79	1.35	0.47	3.83	5.35	2.67	2.56	0.06	9.21	9.08
95th-Percentile Queue Length [ft/ln]	59.25	19.77	33.65	11.70	95.73	133.75	66.80	63.94	1.39	230.28	226.97

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.60	27.27	27.27	27.53	26.11	16.95	28.95	8.43	8.45	5.20	19.12	19.18
Movement LOS	C	C	C	C	C	B	C	A	A	A	B	B
d_A, Approach Delay [s/veh]	29.72			19.61			14.75			19.00		
Approach LOS	C			B			B			B		
d_I, Intersection Delay [s/veh]	18.30											
Intersection LOS	B											
Intersection V/C	0.692											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.47	53.55	53.55	53.55
l_p,int, Pedestrian LOS Score for Intersection	2.022	2.680	2.780	2.635
Crosswalk LOS	B	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	315	315	777	777
d_b, Bicycle Delay [s]	46.12	46.12	24.31	24.32
l_b,int, Bicycle LOS Score for Intersection	1.753	2.362	2.112	2.333
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 26: Washington St / Site Access D

Control Type:	Two-way stop	Delay (sec / veh):	15.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.066

Intersection Setup

Name	Washington St		Washington St		Site Access D	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Washington St		Washington St		Site Access D	
Base Volume Input [veh/h]	188	0	0	221	0	0
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	5	0	0	5	0	0
Site-Generated Trips [veh/h]	78	21	20	66	18	17
Diverted Trips [veh/h]	0	0	13	0	0	13
Pass-by Trips [veh/h]	-2	2	2	-2	2	2
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	361	23	35	399	20	32
Peak Hour Factor	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	111	7	11	123	6	10
Total Analysis Volume [veh/h]	446	28	43	493	25	40
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.04	0.00	0.07	0.07
d_M, Delay for Movement [s/veh]	0.00	0.00	8.44	0.00	15.24	11.41
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.12	0.00	0.21	0.21
95th-Percentile Queue Length [ft/ln]	0.00	0.00	3.08	0.00	5.31	5.33
d_A, Approach Delay [s/veh]	0.00		0.68		12.88	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	1.12					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 27: Abernethy Rd / Site Access E

Control Type:	Two-way stop	Delay (sec / veh):	15.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.119

Intersection Setup

Name	Site Access E		Abernethy Rd		Abernethy Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	300.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Site Access E		Abernethy Rd		Abernethy Rd	
Base Volume Input [veh/h]	0	0	0	95	213	0
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	14	14	0
Site-Generated Trips [veh/h]	28	18	21	32	27	32
Diverted Trips [veh/h]	11	0	0	0	0	11
Pass-by Trips [veh/h]	2	2	2	-2	-2	2
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	52	106	0
Total Hourly Volume [veh/h]	41	20	23	238	462	45
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	6	7	72	139	14
Total Analysis Volume [veh/h]	49	24	28	287	557	54
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	Yes		
Number of Storage Spaces in Median	1	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.05	0.03	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	15.36	13.66	8.83	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.59	0.59	0.09	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	14.73	14.73	2.23	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	14.80		0.78		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.33					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 28: Abernethy Rd / Site Access F

Control Type:	Two-way stop	Delay (sec / veh):	15.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.159

Intersection Setup

Name	Site Access F		Abernethy Rd		Abernethy Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	300.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Site Access F		Abernethy Rd		Abernethy Rd	
Base Volume Input [veh/h]	0	0	0	100	213	0
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	14	14	0
Site-Generated Trips [veh/h]	41	27	32	28	32	48
Diverted Trips [veh/h]	17	0	0	11	11	17
Pass-by Trips [veh/h]	4	4	4	-4	-4	4
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	52	106	0
Total Hourly Volume [veh/h]	62	31	36	250	476	69
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	9	10	69	131	19
Total Analysis Volume [veh/h]	68	34	40	275	523	76
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	Yes		
Number of Storage Spaces in Median	1	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.16	0.06	0.04	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	15.00	11.92	8.84	0.00	0.00	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.56	0.20	0.13	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	14.00	4.89	3.20	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	13.97		1.12		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.75					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 29: Washington St/Site Access B

Control Type:	Two-way stop	Delay (sec / veh):	16.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.087

Intersection Setup

Name	Washington St		Washington St		Site Access B	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Washington St		Washington St		Site Access B	
Base Volume Input [veh/h]	188	0	0	221	0	0
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	65	24	23	67	21	19
Diverted Trips [veh/h]	29	0	16	29	0	16
Pass-by Trips [veh/h]	-3	3	4	-4	4	3
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	371	27	43	422	25	38
Peak Hour Factor	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	115	8	13	130	8	12
Total Analysis Volume [veh/h]	458	33	53	521	31	47
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.05	0.01	0.09	0.08
d_M, Delay for Movement [s/veh]	0.00	0.00	8.53	0.00	16.67	12.64
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.16	0.00	0.59	0.59
95th-Percentile Queue Length [ft/ln]	0.00	0.00	3.89	0.00	14.85	14.85
d_A, Approach Delay [s/veh]	0.00		0.79		14.24	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	1.37					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 30: Washington St/Site Access C

Control Type:	Two-way stop	Delay (sec / veh):	16.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.082

Intersection Setup

Name	Washington St		Washington St		Site Access C	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Washington St		Washington St		Site Access C	
Base Volume Input [veh/h]	188	0	0	221	0	0
Base Volume Adjustment Factor	1.4100	1.4100	1.4100	1.4100	1.4100	1.4100
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	70	24	23	65	21	19
Diverted Trips [veh/h]	13	0	16	13	0	16
Pass-by Trips [veh/h]	-3	3	3	-3	3	3
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	360	27	42	405	24	38
Peak Hour Factor	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	111	8	13	125	7	12
Total Analysis Volume [veh/h]	444	33	52	500	30	47
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.05	0.01	0.08	0.08
d_M, Delay for Movement [s/veh]	0.00	0.00	8.48	0.00	16.25	12.41
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.15	0.00	0.57	0.57
95th-Percentile Queue Length [ft/ln]	0.00	0.00	3.77	0.00	14.14	14.14
d_A, Approach Delay [s/veh]	0.00		0.80		13.91	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	1.37					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 199: I 205 SB-Ramp / OR 213

Control Type:	Two-way stop	Delay (sec / veh):	79.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.438

Intersection Setup

Name	OR 213		OR 213			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	OR 213		OR 213			
Base Volume Input [veh/h]	0	781	22	0	0	1067
Base Volume Adjustment Factor	1.0000	1.3900	1.3900	1.0000	1.0000	1.3900
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0570	1.0000
In-Process Volume [veh/h]	0	9	0	0	0	56
Site-Generated Trips [veh/h]	0	0	0	0	0	78
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	27	0	0	0	14
Total Hourly Volume [veh/h]	0	1122	33	0	0	1631
Peak Hour Factor	1.0000	0.9200	0.9200	1.0000	1.0000	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	305	9	0	0	443
Total Analysis Volume [veh/h]	0	1220	36	0	0	1773
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Stop	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.44	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	79.38	0.00	0.00	0.00
Movement LOS		A	F			A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	1.79	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	44.69	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		79.38		0.00	
Approach LOS	A		F		A	
d_I, Intersection Delay [s/veh]	0.94					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 1: OR 99E/ River Rd/ W Arlington St

Control Type:	Signalized	Delay (sec / veh):	15.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.773

Intersection Setup

Name	OR 99E			OR 99E			River Rd			W Arlington St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	185.00	100.00	275.00	250.00	100.00	100.00	550.00	100.00	100.00	100.00	100.00	160.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 99E			OR 99E			River Rd			W Arlington St		
Base Volume Input [veh/h]	114	1038	113	68	1257	4	6	45	205	145	40	93
Base Volume Adjustment Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
Heavy Vehicles Percentage [%]	0.00	3.00	4.00	3.00	3.00	0.00	17.00	2.00	2.00	3.00	0.00	1.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	64	0	0	46	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	62	0	0	58	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	12	0	0	18	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	69	0	0	0	0	0	126	0	0	57
Total Hourly Volume [veh/h]	140	1342	69	84	1580	5	7	55	126	178	49	57
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	353	18	22	416	1	2	14	33	47	13	15
Total Analysis Volume [veh/h]	147	1413	73	88	1663	5	7	58	133	187	52	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	7			2			7			1		
v_di, Inbound Pedestrian Volume crossing m	7			1			7			2		
v_co, Outbound Pedestrian Volume crossing	2			0			0			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			0			0			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			3			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	51.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	20	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	18	72	0	18	72	0	0	30	0	0	30	0
Vehicle Extension [s]	2.3	4.7	0.0	2.3	4.7	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	9	0	0	8	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	20	0	0	15	0	0	26	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.40	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.80	2.80	0.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	80	80	74	73	73	23	23	23	23
g / C, Green / Cycle	0.10	0.67	0.67	0.61	0.61	0.61	0.19	0.19	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.08	0.40	0.05	0.15	0.45	0.45	0.04	0.09	0.17	0.04
s, saturation flow rate [veh/h]	1810	3532	1526	578	1855	1853	1825	1555	1397	1595
c, Capacity [veh/h]	173	2367	1023	344	1125	1124	382	297	320	305
d1, Uniform Delay [s]	51.48	2.68	2.13	9.75	6.97	6.97	40.65	42.82	47.58	40.77
k, delay calibration	0.13	0.50	0.50	0.50	0.50	0.50	0.08	0.08	0.28	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.84	1.12	0.14	1.79	4.41	4.43	0.15	0.79	8.46	0.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.60	0.07	0.26	0.74	0.74	0.17	0.45	0.75	0.20
d, Delay for Lane Group [s/veh]	64.32	3.80	2.27	11.54	11.38	11.40	40.81	43.61	56.04	41.00
Lane Group LOS	E	A	A	B	B	B	D	D	E	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.81	2.47	0.23	0.58	6.44	6.44	1.64	3.56	7.70	1.52
50th-Percentile Queue Length [ft/ln]	120.24	61.85	5.77	14.40	161.04	161.12	40.94	88.99	192.62	38.01
95th-Percentile Queue Length [veh/ln]	8.41	4.45	0.42	1.04	10.60	10.61	2.95	6.41	12.26	2.74
95th-Percentile Queue Length [ft/ln]	210.16	111.33	10.39	25.93	265.09	265.21	73.70	160.17	306.43	68.42

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	64.32	3.80	2.27	11.54	11.39	11.40	40.81	40.81	43.61	56.04	56.04	41.00
Movement LOS	E	A	A	B	B	B	D	D	D	E	E	D
d_A, Approach Delay [s/veh]	9.18			11.40			42.69			53.02		
Approach LOS	A			B			D			D		
d_I, Intersection Delay [s/veh]	15.26											
Intersection LOS	B											
Intersection V/C	0.773											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	366.44	2478.51	0.00	1187.25
d_p, Pedestrian Delay [s]	47.70	48.60	48.60	47.70
l_p,int, Pedestrian LOS Score for Intersection	3.449	3.179	2.304	2.353
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1120	1120	433	433
d_b, Bicycle Delay [s]	11.63	11.63	36.82	36.82
l_b,int, Bicycle LOS Score for Intersection	2.964	3.008	2.094	2.147
Bicycle LOS	C	C	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: OR 99E / Dunes Dr

Control Type:	Signalized	Delay (sec / veh):	59.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.979

Intersection Setup

Name	OR 99E			OR 99E			Dunes Dr			Dunes Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	220.00	100.00	100.00	370.00	100.00	155.00	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 99E			OR 99E			Dunes Dr			Dunes Dr		
Base Volume Input [veh/h]	43	1146	146	107	1354	116	26	5	78	265	17	47
Base Volume Adjustment Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
Heavy Vehicles Percentage [%]	5.00	3.00	2.00	1.00	3.00	1.00	0.00	0.00	5.00	2.00	6.00	2.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	101	0	0	0	23	0	0	152	0	0	0
Site-Generated Trips [veh/h]	0	62	0	0	58	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	12	0	0	18	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	53	1504	179	131	1647	166	32	6	247	324	21	58
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	396	47	34	433	44	8	2	65	85	6	15
Total Analysis Volume [veh/h]	56	1583	188	138	1734	175	34	6	260	341	22	61
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			1			0			1		
v_di, Inbound Pedestrian Volume crossing m	0			1			1			1		
v_co, Outbound Pedestrian Volume crossing	2			0			0			3		
v_ci, Inbound Pedestrian Volume crossing mi	3			0			0			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	12.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	2	0	5	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	12	62	0	23	51	0	0	34	0	0	34	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	16	66	0	27	55	0	0	38	0	0	38	0
Vehicle Extension [s]	2.3	4.8	0.0	2.3	4.8	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	18	0	0	38	0	0	37	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.00	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.80	2.80	0.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	62	62	4	69	69	34	34	34	34
g / C, Green / Cycle	0.10	0.51	0.51	0.03	0.58	0.58	0.28	0.28	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.24	0.33	0.34	0.11	0.36	0.36	0.03	0.16	0.31	0.05
s, saturation flow rate [veh/h]	230	3532	1740	1223	3532	1770	1334	1619	1113	1600
c, Capacity [veh/h]	60	1813	893	72	2034	1019	363	459	200	453
d1, Uniform Delay [s]	58.07	12.82	12.91	56.61	8.14	8.18	36.75	36.88	54.73	32.51
k, delay calibration	0.50	0.33	0.50	0.50	0.50	0.50	0.08	0.08	0.50	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	98.26	1.21	3.82	459.86	1.46	2.94	0.08	0.86	338.65	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.65	0.66	1.92	0.62	0.63	0.09	0.58	1.71	0.18
d, Delay for Lane Group [s/veh]	156.33	14.03	16.72	516.47	9.60	11.11	36.83	37.74	393.38	32.65
Lane Group LOS	F	B	B	F	A	B	D	D	F	C
Critical Lane Group	Yes	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.26	6.76	7.45	11.33	5.06	5.53	0.81	6.87	24.92	1.88
50th-Percentile Queue Length [ft/ln]	81.62	168.91	186.26	283.28	126.53	138.37	20.35	171.71	622.95	46.92
95th-Percentile Queue Length [veh/ln]	5.88	11.02	11.93	18.95	8.75	9.39	1.47	11.17	41.51	3.38
95th-Percentile Queue Length [ft/ln]	146.92	275.48	298.17	473.80	218.77	234.83	36.63	279.16	1037.72	84.45

Movement, Approach, & Intersection Results

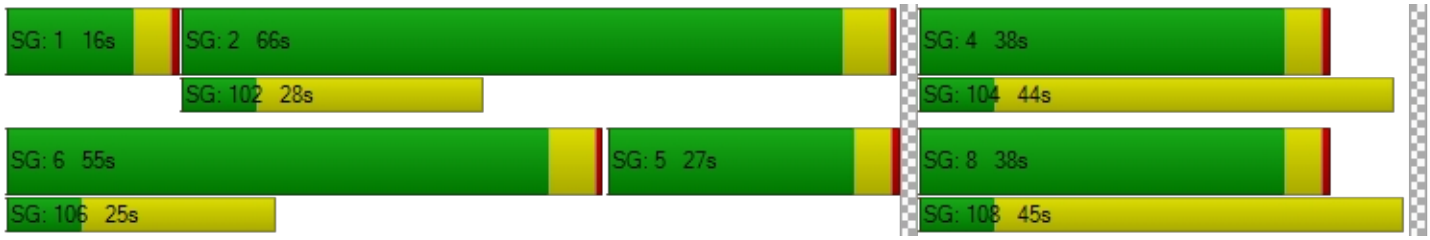
d_M, Delay for Movement [s/veh]	156.33	14.72	16.72	516.47	10.01	11.11	36.83	37.74	37.74	393.38	32.65	32.65
Movement LOS	F	B	B	F	B	B	D	D	D	F	C	C
d_A, Approach Delay [s/veh]	19.26			44.24			37.64			322.76		
Approach LOS	B			D			D			F		
d_I, Intersection Delay [s/veh]	59.57											
Intersection LOS	E											
Intersection V/C	0.979											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	1082.03	3516.59	0.00	232.19
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	3.866	3.348	2.183	2.244
Crosswalk LOS	D	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1020	837	567	567
d_b, Bicycle Delay [s]	14.41	20.30	30.82	30.82
l_b,int, Bicycle LOS Score for Intersection	2.564	2.685	2.055	2.259
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: OR 99E/I-205 SB Loop Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	54.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.968

Intersection Setup

Name	OR 99E		OR 99E		I-205 WB Loop Off-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	1
Entry Pocket Length [ft]	100.00	200.00	240.00	100.00	575.00	275.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	No		No		Yes	

Volumes

Name	OR 99E		OR 99E		I-205 WB Loop Off-Ramp	
Base Volume Input [veh/h]	1109	200	445	1267	792	353
Base Volume Adjustment Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
Heavy Vehicles Percentage [%]	3.00	10.00	5.00	3.00	5.00	3.00
Growth Factor	1.0000	1.0130	1.0130	1.0000	1.0130	1.0130
In-Process Volume [veh/h]	55	0	37	110	0	46
Site-Generated Trips [veh/h]	62	95	0	58	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	12	0	0	18	0	0
Right Turn on Red Volume [veh/h]	0	330	0	0	0	230
Total Hourly Volume [veh/h]	1415	0	560	1656	931	230
Peak Hour Factor	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	357	0	141	418	235	58
Total Analysis Volume [veh/h]	1429	0	566	1673	940	232
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	2		0		3	
v_ci, Inbound Pedestrian Volume crossing mi	3		0		2	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	106.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	6	6
Maximum Green [s]	40	0	36	40	20	20
Amber [s]	4.3	0.0	3.5	4.3	4.0	4.0
All red [s]	0.5	0.0	0.5	0.5	1.5	1.5
Split [s]	33	0	43	76	44	44
Vehicle Extension [s]	4.8	0.0	2.3	4.8	2.3	2.3
Walk [s]	8	0	0	0	0	0
Pedestrian Clearance [s]	29	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.8	0.0	2.0	2.8	3.5	3.5
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.80	4.80	4.00	4.80	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.80	2.80	2.00	2.80	3.50	0.00
g_i, Effective Green Time [s]	29	29	41	74	36	81
g / C, Green / Cycle	0.24	0.24	0.34	0.61	0.30	0.67
(v / s)_i Volume / Saturation Flow Rate	0.28	0.00	0.33	0.33	0.28	0.15
s, saturation flow rate [veh/h]	5053	1487	1738	5053	3375	1577
c, Capacity [veh/h]	1223	360	587	3097	1017	1060
d1, Uniform Delay [s]	40.62	0.00	32.29	5.43	40.60	7.56
k, delay calibration	0.50	0.50	0.39	0.50	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	84.88	0.00	25.07	0.68	2.66	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.17	0.00	0.96	0.54	0.92	0.22
d, Delay for Lane Group [s/veh]	125.51	0.00	57.35	6.11	43.26	7.63
Lane Group LOS	F	A	E	A	D	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	20.53	0.00	17.96	3.18	13.66	2.20
50th-Percentile Queue Length [ft/ln]	513.19	0.00	449.10	79.58	341.62	55.11
95th-Percentile Queue Length [veh/ln]	30.44	0.00	24.92	5.73	19.73	3.97
95th-Percentile Queue Length [ft/ln]	761.00	0.00	622.88	143.24	493.18	99.20

Movement, Approach, & Intersection Results

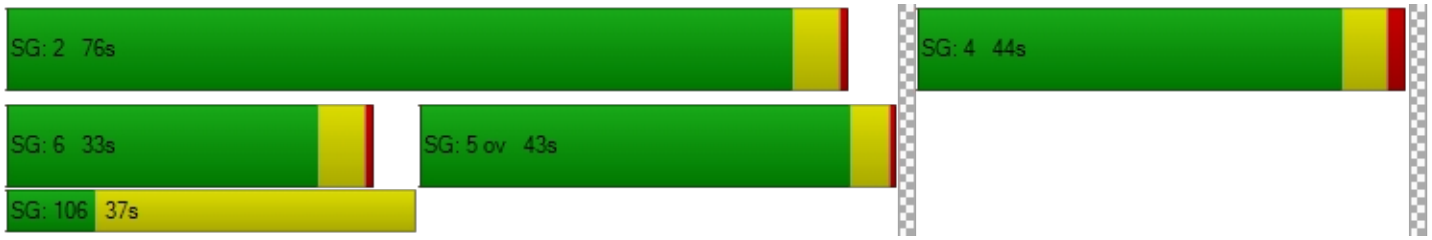
d_M, Delay for Movement [s/veh]	125.51	0.00	57.35	6.11	43.26	7.63
Movement LOS	F	A	E	A	D	A
d_A, Approach Delay [s/veh]	125.51		19.06		36.21	
Approach LOS	F		B		D	
d_I, Intersection Delay [s/veh]	54.64					
Intersection LOS	D					
Intersection V/C	0.968					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	1632.56
d_p, Pedestrian Delay [s]	0.00	0.00	48.60
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	3.031
Crosswalk LOS	F	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	470	1187	642
d_b, Bicycle Delay [s]	35.13	9.93	27.68
l_b,int, Bicycle LOS Score for Intersection	2.527	2.791	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: OR 99E/I-205 EB Loop Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	41.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.846

Intersection Setup

Name	OR 99E		OR 99E		I-205 EB Loop Off-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	185.00	500.00	100.00	100.00	130.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		Yes		Yes	
Crosswalk	No		No		Yes	

Volumes

Name	OR 99E		OR 99E		I-205 EB Loop Off-Ramp	
Base Volume Input [veh/h]	837	623	451	1620	125	477
Base Volume Adjustment Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
Heavy Vehicles Percentage [%]	4.00	5.00	4.00	5.00	10.00	3.00
Growth Factor	1.0000	1.0130	1.0130	1.0000	1.0130	1.0130
In-Process Volume [veh/h]	0	0	83	28	0	41
Site-Generated Trips [veh/h]	157	18	0	58	106	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	12	0	0	18	0	0
Right Turn on Red Volume [veh/h]	0	375	0	0	0	601
Total Hourly Volume [veh/h]	1140	375	613	1983	253	0
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	303	100	163	527	67	0
Total Analysis Volume [veh/h]	1213	399	652	2110	269	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	2		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		2	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		2		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	72.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	6	6	5	2	4	0
Auxiliary Signal Groups		4,6				
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	6	0
Maximum Green [s]	40	40	20	40	20	0
Amber [s]	4.3	4.3	3.5	4.3	4.0	0.0
All red [s]	0.5	0.5	0.5	0.5	1.5	0.0
Split [s]	60	60	40	100	20	0
Vehicle Extension [s]	4.8	4.8	3.0	4.8	2.3	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	16	16	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.8	2.8	2.0	2.8	3.5	0.0
Minimum Recall	Yes	Yes	No	Yes	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.80	5.50	4.00	4.80	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.80	0.00	2.00	2.80	3.50	3.50
g_i, Effective Green Time [s]	55	75	36	95	15	15
g / C, Green / Cycle	0.46	0.62	0.30	0.79	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.24	0.26	0.37	0.42	0.16	0.00
s, saturation flow rate [veh/h]	5012	1547	1752	4971	1667	1577
c, Capacity [veh/h]	2311	963	523	3943	202	191
d1, Uniform Delay [s]	15.62	4.55	36.09	0.71	52.72	0.00
k, delay calibration	0.50	0.50	0.50	0.50	0.35	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.86	1.32	125.94	0.52	172.04	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.20	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.41	1.25	0.54	1.33	0.00
d, Delay for Lane Group [s/veh]	16.48	5.86	162.04	1.24	224.76	0.00
Lane Group LOS	B	A	F	A	F	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.30	2.25	31.85	0.83	15.69	0.00
50th-Percentile Queue Length [ft/ln]	132.61	56.21	796.33	20.76	392.32	0.00
95th-Percentile Queue Length [veh/ln]	9.08	4.05	46.72	1.49	24.76	0.00
95th-Percentile Queue Length [ft/ln]	227.04	101.19	1168.09	37.37	619.10	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.48	5.86	162.04	1.24	224.76	0.00
Movement LOS	B	A	F	A	F	A
d_A, Approach Delay [s/veh]	13.85		39.19		224.76	
Approach LOS	B		D		F	
d_I, Intersection Delay [s/veh]	41.15					
Intersection LOS	D					
Intersection V/C	0.846					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	49.50
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	3.555
Crosswalk LOS	F	F	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	920	1587	242
d_b, Bicycle Delay [s]	17.50	2.57	46.38
I_b,int, Bicycle LOS Score for Intersection	2.652	3.079	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: OR 99E / 14th St

Control Type:	Signalized	Delay (sec / veh):	13.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.663

Intersection Setup

Name	OR 99E		OR 99E		14th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		14th St	
Base Volume Input [veh/h]	1042	45	316	1445	70	217
Base Volume Adjustment Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
Heavy Vehicles Percentage [%]	4.00	13.00	3.00	5.00	9.00	3.00
Growth Factor	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570
In-Process Volume [veh/h]	14	0	0	32	5	0
Site-Generated Trips [veh/h]	11	16	164	0	36	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	12	0	0	18	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	133
Total Hourly Volume [veh/h]	1246	71	552	1726	127	133
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	324	18	144	449	33	35
Total Analysis Volume [veh/h]	1298	74	575	1798	132	139
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1		0		0	
v_di, Inbound Pedestrian Volume crossing m	1		0		0	
v_co, Outbound Pedestrian Volume crossing	2		1		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		1		2	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		6		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	41.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	61	0	33	98	14	14
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	65	0	37	102	18	18
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	7	0	0	0	7	7
Pedestrian Clearance [s]	11	0	0	0	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	70	70	101	101	11	42
g / C, Green / Cycle	0.58	0.58	0.84	0.84	0.10	0.35
(v / s)_i Volume / Saturation Flow Rate	0.37	0.38	0.73	0.52	0.08	0.09
s, saturation flow rate [veh/h]	1840	1805	787	3475	1670	1577
c, Capacity [veh/h]	1069	1049	679	2912	159	556
d1, Uniform Delay [s]	7.93	8.01	27.97	0.00	53.32	27.60
k, delay calibration	0.50	0.50	0.50	0.50	0.15	0.21
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.96	3.18	12.46	0.99	13.64	0.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.22	1.22	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.64	0.65	0.85	0.62	0.83	0.25
d, Delay for Lane Group [s/veh]	10.89	11.20	40.43	0.99	66.96	28.04
Lane Group LOS	B	B	D	A	E	C
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.97	6.04	2.35	0.40	4.51	2.92
50th-Percentile Queue Length [ft/ln]	149.13	150.93	58.72	10.03	112.80	73.09
95th-Percentile Queue Length [veh/ln]	9.97	10.07	4.23	0.72	8.00	5.26
95th-Percentile Queue Length [ft/ln]	249.27	251.67	105.70	18.06	199.89	131.57

Movement, Approach, & Intersection Results

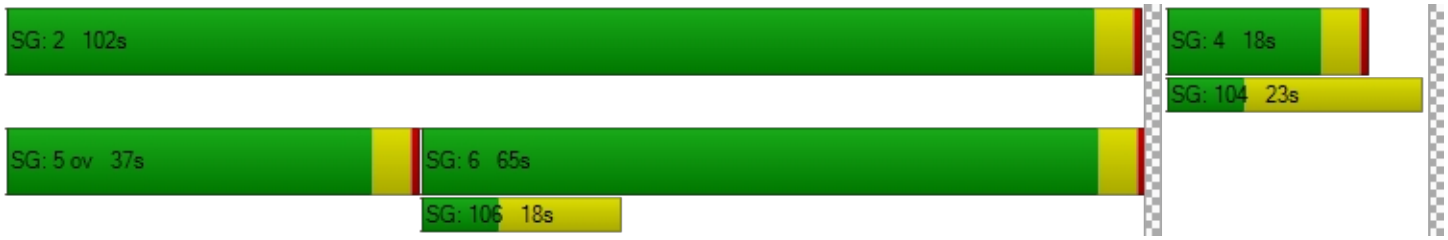
d_M, Delay for Movement [s/veh]	11.03	11.20	40.43	0.99	66.96	28.04
Movement LOS	B	B	D	A	E	C
d_A, Approach Delay [s/veh]	11.04		10.55		47.00	
Approach LOS	B		B		D	
d_I, Intersection Delay [s/veh]	13.18					
Intersection LOS	B					
Intersection V/C	0.663					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	3870.65	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	2.950	3.083	3.175
Crosswalk LOS	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1017	1633	233
d_b, Bicycle Delay [s]	14.50	2.02	46.82
l_b,int, Bicycle LOS Score for Intersection	2.692	3.517	1.560
Bicycle LOS	B	D	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: OR 99E / 12th St

Control Type:	Signalized	Delay (sec / veh):	2.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.552

Intersection Setup

Name	OR 99E		OR 99E		12th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	175.00	100.00	100.00	120.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		12th St	
Base Volume Input [veh/h]	968	21	152	1367	8	136
Base Volume Adjustment Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
Heavy Vehicles Percentage [%]	5.00	0.00	4.00	5.00	0.00	3.00
Growth Factor	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570
In-Process Volume [veh/h]	14	0	0	32	0	0
Site-Generated Trips [veh/h]	27	7	0	36	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	12	0	0	18	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	84
Total Hourly Volume [veh/h]	1176	32	186	1672	10	83
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	300	8	47	427	3	21
Total Analysis Volume [veh/h]	1200	33	190	1706	10	85
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1		0		0	
v_di, Inbound Pedestrian Volume crossing m	1		0		0	
v_co, Outbound Pedestrian Volume crossing	3		1		3	
v_ci, Inbound Pedestrian Volume crossing mi	3		1		3	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		3		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	25.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	80	0	16	100	12	12
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	84	0	20	104	16	16
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	9	0	0	0	8	8
Pedestrian Clearance [s]	11	0	0	0	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	96	96	104	104	8	16
g / C, Green / Cycle	0.80	0.80	0.87	0.87	0.06	0.13
(v / s)_i Volume / Saturation Flow Rate	0.34	0.34	0.33	0.49	0.01	0.05
s, saturation flow rate [veh/h]	1825	1807	572	3475	1792	1564
c, Capacity [veh/h]	1463	1449	516	3022	114	207
d1, Uniform Delay [s]	0.00	0.00	0.10	0.00	52.89	47.79
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.89	0.92	2.02	0.77	0.20	0.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.21	1.21	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.42	0.43	0.37	0.56	0.09	0.41
d, Delay for Lane Group [s/veh]	0.89	0.92	2.12	0.77	53.09	48.59
Lane Group LOS	A	A	A	A	D	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.36	0.37	0.29	0.32	0.29	2.39
50th-Percentile Queue Length [ft/ln]	9.08	9.23	7.24	8.07	7.28	59.73
95th-Percentile Queue Length [veh/ln]	0.65	0.66	0.52	0.58	0.52	4.30
95th-Percentile Queue Length [ft/ln]	16.34	16.61	13.02	14.53	13.10	107.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.91	0.92	2.12	0.77	53.09	48.59
Movement LOS	A	A	A	A	D	D
d_A, Approach Delay [s/veh]	0.91		0.91		49.06	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	2.32					
Intersection LOS	A					
Intersection V/C	0.552					

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	4084.53	0.00	577.81
d_p, Pedestrian Delay [s]	48.60	48.60	47.70
l_p,int, Pedestrian LOS Score for Intersection	2.863	2.950	2.447
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1333	1667	200
d_b, Bicycle Delay [s]	6.67	1.67	48.62
l_b,int, Bicycle LOS Score for Intersection	2.577	3.124	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: OR 99E / 10th St

Control Type:	Signalized	Delay (sec / veh):	3.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.462

Intersection Setup

Name	OR 99E		OR 99E		7th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	250.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		7th St	
Base Volume Input [veh/h]	753	22	276	1086	17	211
Base Volume Adjustment Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
Heavy Vehicles Percentage [%]	5.00	0.00	1.00	6.00	12.00	4.00
Growth Factor	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570
In-Process Volume [veh/h]	14	0	0	32	0	0
Site-Generated Trips [veh/h]	34	0	0	36	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	12	0	0	18	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	130
Total Hourly Volume [veh/h]	933	27	338	1346	21	129
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	240	7	87	347	5	33
Total Analysis Volume [veh/h]	962	28	348	1388	22	133
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		2		1	
v_di, Inbound Pedestrian Volume crossing m	0		1		2	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		2		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	78	0	18	100	12	12
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	82	0	22	104	16	16
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	7	0	0	0	7	7
Pedestrian Clearance [s]	11	0	0	0	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	92	92	98	98	10	20
g / C, Green / Cycle	0.77	0.77	0.82	0.82	0.08	0.17
(v / s)_i Volume / Saturation Flow Rate	0.27	0.27	0.48	0.40	0.01	0.09
s, saturation flow rate [veh/h]	1825	1807	724	3446	1638	1559
c, Capacity [veh/h]	1396	1382	605	2806	139	263
d1, Uniform Delay [s]	0.00	0.00	0.17	0.00	50.97	45.38
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.27
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.71	0.73	3.94	0.63	0.32	3.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.25	1.25	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.36	0.57	0.49	0.16	0.51
d, Delay for Lane Group [s/veh]	0.71	0.73	4.10	0.63	51.29	49.06
Lane Group LOS	A	A	A	A	D	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.27	0.28	0.66	0.24	0.63	3.88
50th-Percentile Queue Length [ft/ln]	6.85	6.96	16.55	6.10	15.73	97.09
95th-Percentile Queue Length [veh/ln]	0.49	0.50	1.19	0.44	1.13	6.99
95th-Percentile Queue Length [ft/ln]	12.34	12.53	29.80	10.98	28.31	174.76

Movement, Approach, & Intersection Results

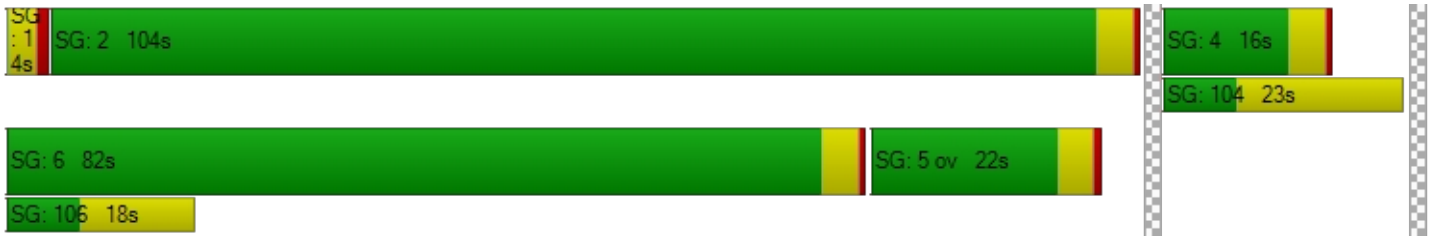
d_M, Delay for Movement [s/veh]	0.72	0.73	4.10	0.63	51.29	49.06
Movement LOS	A	A	A	A	D	D
d_A, Approach Delay [s/veh]	0.72		1.32		49.38	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	3.70					
Intersection LOS	A					
Intersection V/C	0.462					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	1896.86	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	2.730	2.891	2.788
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1300	1667	200
d_b, Bicycle Delay [s]	7.35	1.67	48.60
l_b,int, Bicycle LOS Score for Intersection	2.376	2.992	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Washington St / Clackamas River Dr

Control Type:	Roundabout	Delay (sec / veh):	6.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Washington St		Washington St		Clackamas River Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Washington St		Washington St		Clackamas River Dr	
Base Volume Input [veh/h]	306	260	177	153	114	85
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	5.00	17.00	2.00	5.00	15.00	12.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	0	5	0
Site-Generated Trips [veh/h]	15	80	0	14	47	0
Diverted Trips [veh/h]	0	372	-19	19	110	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	378	760	190	214	297	100
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	99	200	50	56	78	26
Total Analysis Volume [veh/h]	398	800	200	225	313	105
Pedestrian Volume [ped/h]	0		0		2	

Intersection Settings

Number of Conflicting Circulating Lanes	1		1		1	
Circulating Flow Rate [veh/h]	204		360		418	
Exiting Flow Rate [veh/h]	596		536		204	
Demand Flow Rate [veh/h]	378	760	190	214	297	100
Adjusted Demand Flow Rate [veh/h]	398	800	200	225	313	105

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	0.00	1380.00	1380.00
B (coefficient)	0.00102	0.00000	0.00102	0.00102
HV Adjustment Factor	0.89	0.85	0.97	0.88
Entry Flow Rate [veh/h]	449	0	441	478
Capacity of Entry and Bypass Lanes [veh/h]	1121	117000	956	902
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	995	100000	924	789
X, volume / capacity	0.40	0.01	0.46	0.53

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	B
95th-Percentile Queue Length [veh]	1.95	0.00	2.46	3.17
95th-Percentile Queue Length [ft]	48.78	0.00	61.57	79.18
Approach Delay [s/veh]	2.66		9.49	12.24
Approach LOS	A		A	B
Intersection Delay [s/veh]	6.05			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 9: Washington St/ Prairie Schooner Way

Control Type:	Signalized	Delay (sec / veh):	15.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.747

Intersection Setup

Name	Washington St		Washington St		Prairie Schooner Way	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	0	1	0
Entry Pocket Length [ft]	100.00	100.00	150.00	100.00	165.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	No		Yes		Yes	

Volumes

Name	Washington St		Washington St		Prairie Schooner Way	
Base Volume Input [veh/h]	319	125	59	210	312	254
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	12.00	4.00	5.00	7.00	12.00	7.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	9	0	5	0	0
Site-Generated Trips [veh/h]	95	50	0	61	75	0
Diverted Trips [veh/h]	372	0	0	129	243	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	150
Total Hourly Volume [veh/h]	844	207	70	443	687	150
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	218	53	18	114	177	39
Total Analysis Volume [veh/h]	870	213	72	457	708	155
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		1		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		1	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	93
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	2	0	1	6	8	8
Auxiliary Signal Groups						1,8
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	8	0	4	8	4	4
Maximum Green [s]	30	0	20	30	30	30
Amber [s]	4.0	0.0	3.5	4.0	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	35	0	24	35	34	34
Vehicle Extension [s]	4.2	0.0	2.3	5.2	2.5	2.5
Walk [s]	8	0	0	0	7	7
Pedestrian Clearance [s]	24	0	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	0.0	2.0	2.5	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	54	54	54	54	54	54
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	0.00	2.50	2.00	0.00
g_i, Effective Green Time [s]	23	23	31	31	15	23
g / C, Green / Cycle	0.42	0.42	0.57	0.57	0.28	0.42
(v / s)_i Volume / Saturation Flow Rate	0.31	0.34	0.10	0.13	0.22	0.10
s, saturation flow rate [veh/h]	1720	1607	744	3418	3181	1525
c, Capacity [veh/h]	724	676	467	1934	885	646
d1, Uniform Delay [s]	13.36	13.81	8.13	5.93	18.29	10.10
k, delay calibration	0.18	0.21	0.07	0.26	0.08	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.66	4.28	0.09	0.15	1.29	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.80	0.15	0.24	0.80	0.24
d, Delay for Lane Group [s/veh]	16.02	18.09	8.22	6.08	19.57	10.21
Lane Group LOS	B	B	A	A	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.18	5.60	0.29	1.01	3.82	1.03
50th-Percentile Queue Length [ft/ln]	129.51	140.10	7.21	25.26	95.43	25.71
95th-Percentile Queue Length [veh/ln]	8.91	9.49	0.52	1.82	6.87	1.85
95th-Percentile Queue Length [ft/ln]	222.83	237.16	12.98	45.47	171.78	46.28

Movement, Approach, & Intersection Results

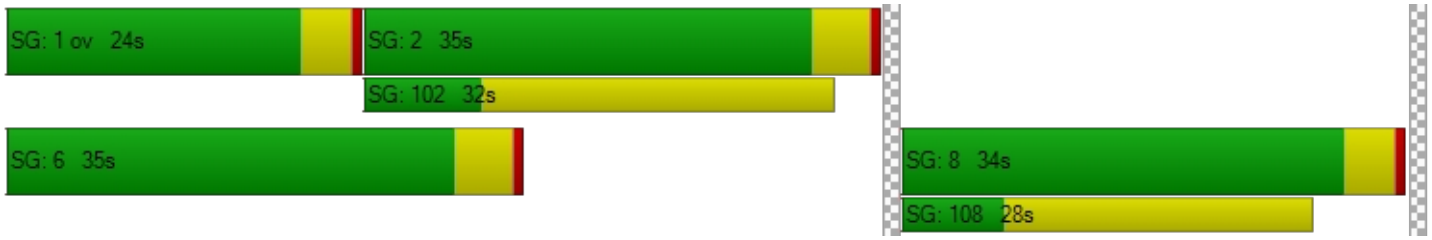
d_M, Delay for Movement [s/veh]	16.80	18.09	8.22	6.08	19.57	10.21
Movement LOS	B	B	A	A	B	B
d_A, Approach Delay [s/veh]	17.05		6.37		17.89	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	15.06					
Intersection LOS	B					
Intersection V/C	0.747					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	7606.62	2362.77
d_p, Pedestrian Delay [s]	0.00	36.15	35.27
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.633	2.813
Crosswalk LOS	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	656	656	645
d_b, Bicycle Delay [s]	21.00	21.00	21.34
l_b,int, Bicycle LOS Score for Intersection	2.453	1.996	1.560
Bicycle LOS	B	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 10: Washington St / Home Depot-Site Access A

Control Type:	Signalized	Delay (sec / veh):	12.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.694

Intersection Setup

Name	Washington St			Washington St			Home Depot Dwy			Home Depot Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	335.00	100.00	330.00	250.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	470.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	370.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			Home Depot Dwy			Home Depot Dwy		
Base Volume Input [veh/h]	11	163	90	208	279	34	43	4	12	94	1	60
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	36.00	5.00	2.00	6.00	10.00	56.00	56.00	50.00	33.00	2.00	2.00	10.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	9	0	0	5	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	103	43	40	96	0	0	0	0	46	0	43
Diverted Trips [veh/h]	0	260	0	112	260	0	0	0	0	0	0	112
Pass-by Trips [veh/h]	0	-18	18	18	-18	0	0	0	0	18	0	18
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	20	0	0	0	0	0	122
Total Hourly Volume [veh/h]	13	547	168	416	673	20	51	4	14	175	1	122
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	155	48	118	191	6	14	1	4	50	0	35
Total Analysis Volume [veh/h]	15	622	191	473	765	23	58	5	16	199	1	139
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			2			2			2		
v_di, Inbound Pedestrian Volume crossing m	2			2			2			1		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	134
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	10	0	4	10	0	0	8	0	0	6	0
Maximum Green [s]	30	60	0	30	60	0	0	30	0	0	20	0
Amber [s]	3.5	4.5	0.0	3.5	4.5	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	34	65	0	34	65	0	0	35	0	0	25	0
Vehicle Extension [s]	2.5	4.2	0.0	2.5	4.2	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	9	0	0	7	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	17	0	0	21	0	0	24	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	R
C, Cycle Length [s]	47	47	47	47	47	47	47	47	47
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	2.50	2.50	2.50
g_i, Effective Green Time [s]	30	16	16	30	25	25	8	8	8
g / C, Green / Cycle	0.63	0.34	0.34	0.63	0.52	0.52	0.17	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.03	0.23	0.23	0.44	0.23	0.03	0.09	0.13	0.09
s, saturation flow rate [veh/h]	592	1825	1676	1064	3332	898	909	1517	1487
c, Capacity [veh/h]	506	627	576	764	1737	468	287	412	256
d1, Uniform Delay [s]	3.80	13.34	13.36	6.93	7.08	5.59	17.77	18.69	18.00
k, delay calibration	0.17	0.17	0.17	0.22	0.17	0.17	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	1.94	2.13	1.64	0.27	0.07	0.38	0.66	1.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.03	0.67	0.68	0.62	0.44	0.05	0.27	0.49	0.54
d, Delay for Lane Group [s/veh]	3.84	15.28	15.49	8.56	7.35	5.66	18.15	19.35	19.33
Lane Group LOS	A	B	B	A	A	A	B	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.04	3.51	3.27	1.66	1.77	0.09	0.72	1.92	1.33
50th-Percentile Queue Length [ft/ln]	0.89	87.87	81.87	41.58	44.21	2.24	18.07	47.93	33.18
95th-Percentile Queue Length [veh/ln]	0.06	6.33	5.89	2.99	3.18	0.16	1.30	3.45	2.39
95th-Percentile Queue Length [ft/ln]	1.61	158.17	147.37	74.84	79.58	4.03	32.53	86.27	59.72

Movement, Approach, & Intersection Results

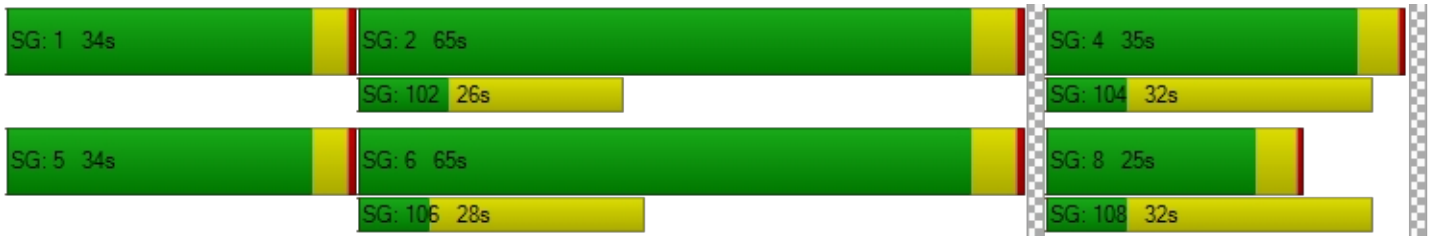
d_M, Delay for Movement [s/veh]	3.84	15.34	15.49	8.56	7.35	5.66	18.15	18.15	18.15	19.35	19.35	19.33
Movement LOS	A	B	B	A	A	A	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	15.17			7.77			18.15			19.34		
Approach LOS	B			A			B			B		
d_I, Intersection Delay [s/veh]	12.11											
Intersection LOS	B											
Intersection V/C	0.694											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	1158.17	0.00
d_p, Pedestrian Delay [s]	55.54	55.54	56.45	54.63
l_p,int, Pedestrian LOS Score for Intersection	2.954	2.943	2.016	2.758
Crosswalk LOS	C	C	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	896	896	455	306
d_b, Bicycle Delay [s]	20.43	20.43	39.97	48.07
l_b,int, Bicycle LOS Score for Intersection	2.243	2.616	1.690	2.320
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Washington St / Abernethy Rd

Control Type:	Signalized	Delay (sec / veh):	11.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.467

Intersection Setup

Name	Washington St			Washington St			17th St			17th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	115.00	100.00	225.00	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			30.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			17th St			17th St		
Base Volume Input [veh/h]	3	207	259	66	328	0	1	3	5	150	0	47
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	0.00	4.00	4.00	20.00	7.00	0.00	100.00	0.00	0.00	3.00	0.00	6.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	9	23	0	5	0	0	0	0	9	0	0
Site-Generated Trips [veh/h]	0	148	79	0	157	0	0	0	0	85	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	205	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	402	204	78	550	0	1	3	6	272	0	56
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	118	60	23	162	0	0	1	2	80	0	16
Total Analysis Volume [veh/h]	4	473	240	92	647	0	1	4	7	320	0	66
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			1			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	0	0	8	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	15	0	0	30	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	35	0	0	20	0	0	35	0
Vehicle Extension [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	16	0	0	8	0	0	13	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C
C, Cycle Length [s]	43	43	43	43	43	43	43	43
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	18	18	18	18	18	14	14	14
g / C, Green / Cycle	0.43	0.43	0.43	0.43	0.43	0.34	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.01	0.26	0.15	0.12	0.36	0.01	0.23	0.04
s, saturation flow rate [veh/h]	796	1840	1562	787	1795	1708	1392	1615
c, Capacity [veh/h]	224	787	668	322	768	668	570	545
d1, Uniform Delay [s]	18.56	9.38	8.23	15.64	10.89	9.41	12.21	9.74
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.08	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	0.28	0.12	0.18	1.00	0.00	0.64	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.02	0.60	0.36	0.29	0.84	0.02	0.56	0.12
d, Delay for Lane Group [s/veh]	18.57	9.65	8.35	15.82	11.89	9.41	12.85	9.78
Lane Group LOS	B	A	A	B	B	A	B	A
Critical Lane Group	No	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.03	2.38	1.06	0.71	4.13	0.06	2.08	0.33
50th-Percentile Queue Length [ft/ln]	0.81	59.53	26.40	17.67	103.23	1.58	51.92	8.27
95th-Percentile Queue Length [veh/ln]	0.06	4.29	1.90	1.27	7.43	0.11	3.74	0.60
95th-Percentile Queue Length [ft/ln]	1.46	107.15	47.52	31.80	185.81	2.85	93.45	14.88

Movement, Approach, & Intersection Results

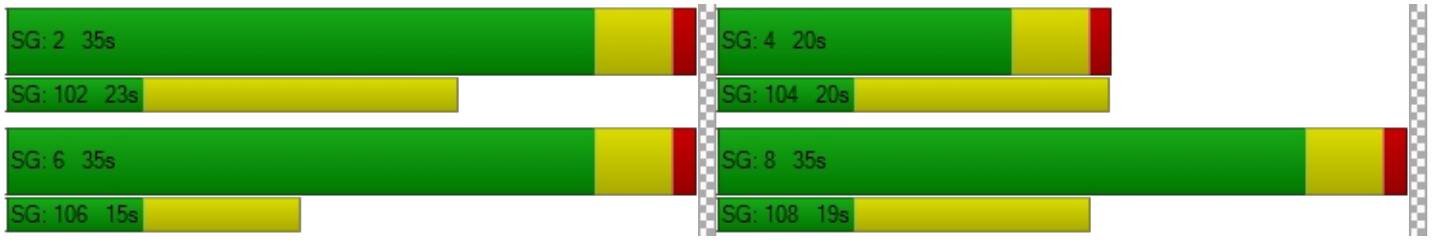
d_M, Delay for Movement [s/veh]	18.57	9.65	8.35	15.82	11.89	11.89	9.41	9.41	9.41	12.85	9.78	9.78
Movement LOS	B	A	A	B	B	B	A	A	A	B	A	A
d_A, Approach Delay [s/veh]	9.27			12.38			9.41			12.33		
Approach LOS	A			B			A			B		
d_I, Intersection Delay [s/veh]	11.15											
Intersection LOS	B											
Intersection V/C	0.467											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	5334.02	4202.01
d_p, Pedestrian Delay [s]	24.86	24.86	24.86	24.86
l_p,int, Pedestrian LOS Score for Intersection	3.403	2.343	1.713	2.409
Crosswalk LOS	C	B	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	857	857	429	857
d_b, Bicycle Delay [s]	11.43	11.43	21.61	11.43
l_b,int, Bicycle LOS Score for Intersection	3.081	2.779	1.579	2.197
Bicycle LOS	C	C	A	B

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: Washington St / 15th St

Control Type:	Signalized	Delay (sec / veh):	21.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.770

Intersection Setup

Name	Washington St			Washington St			15th St			15th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	260.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			15th St			15th St		
Base Volume Input [veh/h]	37	341	22	26	349	0	108	37	43	13	104	22
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	3.00	4.00	0.00	4.00	5.00	2.00	5.00	0.00	5.00	0.00	0.00	9.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	5	0	0	5	9	32	0	0	0	0	0
Site-Generated Trips [veh/h]	0	216	0	0	67	175	11	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	43	625	26	31	485	184	171	43	51	16	123	26
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	1.0000	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	176	7	9	136	46	48	12	14	4	35	7
Total Analysis Volume [veh/h]	48	702	29	35	545	184	192	48	57	18	138	29
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			1			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	35	0	0	35	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	14	45	0	14	45	0	0	31	0	0	31	0
Vehicle Extension [s]	2.3	4.1	0.0	2.3	4.1	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	9	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	59	52	59	52	23	23
g / C, Green / Cycle	0.65	0.58	0.65	0.58	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.06	0.40	0.04	0.42	0.24	0.10
s, saturation flow rate [veh/h]	807	1827	791	1747	1243	1831
c, Capacity [veh/h]	425	1062	433	1007	387	518
d1, Uniform Delay [s]	10.13	13.16	9.34	13.88	33.27	27.49
k, delay calibration	0.07	0.50	0.50	0.50	0.15	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.07	3.64	0.36	4.53	4.36	0.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.69	0.08	0.72	0.77	0.36
d, Delay for Lane Group [s/veh]	10.20	16.80	9.70	18.40	37.63	27.80
Lane Group LOS	B	B	A	B	D	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.30	10.34	0.25	10.94	6.63	3.26
50th-Percentile Queue Length [ft/ln]	7.41	258.52	6.31	273.46	165.66	81.44
95th-Percentile Queue Length [veh/ln]	0.53	15.61	0.45	16.36	10.85	5.86
95th-Percentile Queue Length [ft/ln]	13.34	390.36	11.36	409.06	271.20	146.58

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.20	16.80	16.80	9.70	18.40	18.40	37.63	37.63	37.63	27.80	27.80	27.80
Movement LOS	B	B	B	A	B	B	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	16.39			18.00			37.63			27.80		
Approach LOS	B			B			D			C		
d_I, Intersection Delay [s/veh]	21.16											
Intersection LOS	C											
Intersection V/C	0.770											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	7613.60	0.00	0.00	6801.87
d_p, Pedestrian Delay [s]	34.67	32.94	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.420	2.759	2.080	1.889
Crosswalk LOS	B	C	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	911	911	600	600
d_b, Bicycle Delay [s]	13.34	13.34	22.05	22.05
l_b,int, Bicycle LOS Score for Intersection	2.845	2.820	2.050	1.865
Bicycle LOS	C	C	B	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Washington St / 14th St

Control Type:	Signalized	Delay (sec / veh):	27.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.863

Intersection Setup

Name	Washington St			Washington St			14th St			14th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			14th St			14th St		
Base Volume Input [veh/h]	173	189	7	6	284	113	202	33	153	1	29	5
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	3.00	3.00	14.00	17.00	4.00	7.00	5.00	3.00	2.00	0.00	0.00	0.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	5	0	0	0	0	5	5	0	9	0	0	0
Site-Generated Trips [veh/h]	0	36	0	0	31	36	180	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	95	0	0	0
Total Hourly Volume [veh/h]	210	260	8	7	367	175	424	39	95	1	34	6
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	69	2	2	98	47	113	10	25	0	9	2
Total Analysis Volume [veh/h]	223	277	9	7	390	186	451	41	101	1	36	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			1		
v_di, Inbound Pedestrian Volume crossing m	1			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			1			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	75.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	35	0	0	35	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	14	38	0	14	38	0	0	38	0	0	38	0
Vehicle Extension [s]	2.3	4.1	0.0	2.3	4.1	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	49	45	49	37	33	33	33
g / C, Green / Cycle	0.55	0.50	0.55	0.42	0.36	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.22	0.16	0.01	0.33	0.35	0.06	0.02
s, saturation flow rate [veh/h]	1020	1845	995	1741	1421	1589	1860
c, Capacity [veh/h]	436	914	567	722	593	577	716
d1, Uniform Delay [s]	15.81	13.59	9.67	23.09	27.56	19.52	18.72
k, delay calibration	0.50	0.50	0.50	0.50	0.37	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.25	0.90	0.04	8.97	9.72	0.11	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.31	0.01	0.80	0.83	0.17	0.06
d, Delay for Lane Group [s/veh]	20.06	14.49	9.71	32.06	37.27	19.63	18.74
Lane Group LOS	C	B	A	C	D	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.66	3.52	0.07	12.10	11.56	1.45	0.59
50th-Percentile Queue Length [ft/ln]	66.53	87.91	1.67	302.48	288.99	36.27	14.76
95th-Percentile Queue Length [veh/ln]	4.79	6.33	0.12	17.80	17.14	2.61	1.06
95th-Percentile Queue Length [ft/ln]	119.76	158.23	3.01	445.09	428.39	65.28	26.56

Movement, Approach, & Intersection Results

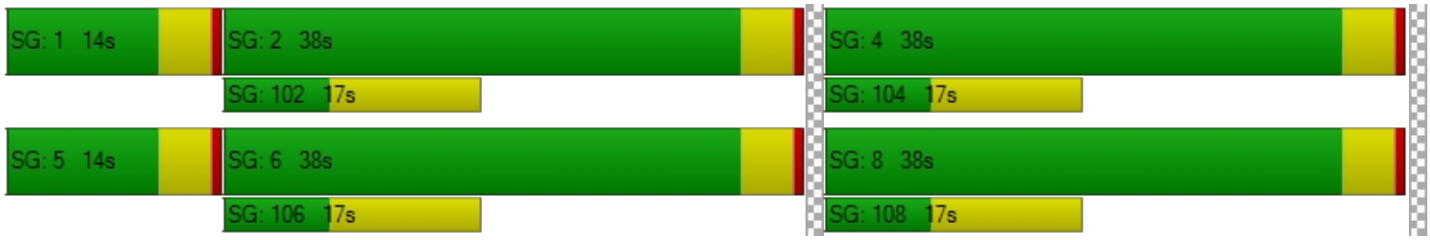
d_M, Delay for Movement [s/veh]	20.06	14.49	14.49	9.71	32.06	32.06	37.27	37.27	19.63	18.74	18.74	18.74
Movement LOS	C	B	B	A	C	C	D	D	B	B	B	B
d_A, Approach Delay [s/veh]	16.93			31.79			34.27			18.74		
Approach LOS	B			C			C			B		
d_I, Intersection Delay [s/veh]	27.94											
Intersection LOS	C											
Intersection V/C	0.863											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	7993.42
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.297	2.938	2.635	1.760
Crosswalk LOS	B	C	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	756	756	756	756
d_b, Bicycle Delay [s]	17.42	17.42	17.42	17.42
l_b,int, Bicycle LOS Score for Intersection	2.399	2.522	2.695	1.631
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Washington St / 12th St

Control Type:	Signalized	Delay (sec / veh):	10.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.658

Intersection Setup

Name	Washington St			Washington St			12th St			12th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			12th St			12th St		
Base Volume Input [veh/h]	78	343	5	19	410	9	24	39	102	5	19	8
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	5.00	3.00	0.00	11.00	3.00	0.00	8.00	0.00	1.00	0.00	5.00	12.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	5	0	0	9	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	29	0	0	31	0	7	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	92	440	6	22	525	11	36	47	120	6	22	10
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	120	2	6	143	3	10	13	33	2	6	3
Total Analysis Volume [veh/h]	100	478	7	24	571	12	39	51	130	7	24	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			1			0		
v_di, Inbound Pedestrian Volume crossing m	0			1			0			0		
v_co, Outbound Pedestrian Volume crossing	1			2			0			2		
v_ci, Inbound Pedestrian Volume crossing mi	0			2			1			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	98
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	15	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	19	55	0	19	55	0	0	19	0	0	24	0
Vehicle Extension [s]	2.3	5.2	0.0	2.3	5.2	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	12	0	0	12	0	0	12	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	40	40	40	40	40	40
L, Total Lost Time per Cycle [s]	4.80	4.80	4.80	4.80	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.80	0.00	2.80	2.00	2.00
g_i, Effective Green Time [s]	24	19	24	18	7	7
g / C, Green / Cycle	0.61	0.49	0.61	0.44	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.10	0.26	0.03	0.32	0.13	0.02
s, saturation flow rate [veh/h]	990	1850	942	1848	1676	1770
c, Capacity [veh/h]	665	901	687	818	389	404
d1, Uniform Delay [s]	4.69	7.12	3.73	9.05	15.81	14.13
k, delay calibration	0.07	0.26	0.26	0.26	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.06	1.18	0.05	2.72	0.96	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.15	0.54	0.03	0.71	0.57	0.10
d, Delay for Lane Group [s/veh]	4.76	8.31	3.78	11.77	16.77	14.21
Lane Group LOS	A	A	A	B	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.19	2.28	0.05	3.60	1.75	0.29
50th-Percentile Queue Length [ft/ln]	4.64	56.91	1.23	89.97	43.77	7.26
95th-Percentile Queue Length [veh/ln]	0.33	4.10	0.09	6.48	3.15	0.52
95th-Percentile Queue Length [ft/ln]	8.36	102.44	2.21	161.95	78.78	13.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	4.76	8.31	8.31	3.78	11.77	11.77	16.77	16.77	16.77	14.21	14.21	14.21
Movement LOS	A	A	A	A	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	7.70			11.46			16.77			14.21		
Approach LOS	A			B			B			B		
d_I, Intersection Delay [s/veh]	10.83											
Intersection LOS	B											
Intersection V/C	0.658											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	5376.09	1858.98	5760.66	0.00
d_p, Pedestrian Delay [s]	38.62	38.62	38.62	38.62
l_p,int, Pedestrian LOS Score for Intersection	2.304	2.307	1.933	1.787
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1024	1024	306	408
d_b, Bicycle Delay [s]	11.66	11.66	35.15	31.04
l_b,int, Bicycle LOS Score for Intersection	2.525	2.561	1.923	1.629
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: Washington St/7th St

Control Type:	Signalized	Delay (sec / veh):	17.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.761

Intersection Setup

Name	Washington St			Washington St			7th St			Molalla Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	270.00	45.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			7th St			Molalla Ave		
Base Volume Input [veh/h]	76	154	10	216	229	20	0	364	90	0	272	220
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.0000	1.1200	1.1200	1.0000	1.1200	1.1200
Heavy Vehicles Percentage [%]	1.00	3.00	0.00	2.00	4.00	0.00	2.00	1.00	0.00	2.00	0.00	3.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	5	0	0	9	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	29	0	0	31	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	54	0	0	130
Total Hourly Volume [veh/h]	90	216	12	256	311	23	0	431	53	0	322	130
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	1.0000	0.9200	0.9200	1.0000	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	59	3	70	85	6	0	117	14	0	88	35
Total Analysis Volume [veh/h]	98	235	13	278	338	25	0	468	58	0	350	141
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			3			4			1		
v_di, Inbound Pedestrian Volume crossing m	1			4			3			1		
v_co, Outbound Pedestrian Volume crossing	4			4			3			3		
v_ci, Inbound Pedestrian Volume crossing mi	3			3			4			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	142
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap
Signal Group	0	8	0	0	4	0	0	2	0	0	6	6
Auxiliary Signal Groups												4,6
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	10	0	0	10	10
Maximum Green [s]	0	40	0	0	40	0	0	50	0	0	50	50
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	3.5
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.5
Split [s]	0	44	0	0	44	0	0	54	0	0	54	54
Vehicle Extension [s]	0.0	2.5	0.0	0.0	2.5	0.0	0.0	4.7	0.0	0.0	4.7	4.7
Walk [s]	0	7	0	0	7	0	0	7	0	0	9	9
Pedestrian Clearance [s]	0	11	0	0	10	0	0	10	0	0	11	11
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
Minimum Recall		No			No			Yes			Yes	Yes
Maximum Recall		No			No			No			No	No
Pedestrian Recall		No			No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	51	51	51	51	51	51	51	51
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	9	9	13	13	17	17	17	34
g / C, Green / Cycle	0.18	0.18	0.26	0.26	0.33	0.33	0.33	0.66
(v / s)_i Volume / Saturation Flow Rate	0.05	0.13	0.16	0.20	0.25	0.04	0.18	0.09
s, saturation flow rate [veh/h]	1795	1838	1781	1815	1885	1605	1900	1572
c, Capacity [veh/h]	324	332	458	466	623	530	628	1045
d1, Uniform Delay [s]	18.36	20.06	16.91	17.83	15.41	12.02	14.20	3.19
k, delay calibration	0.08	0.08	0.08	0.08	0.20	0.20	0.20	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.39	2.52	0.97	2.13	3.42	0.17	1.45	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.30	0.75	0.61	0.78	0.75	0.11	0.56	0.13
d, Delay for Lane Group [s/veh]	18.74	22.58	17.88	19.96	18.83	12.19	15.65	3.23
Lane Group LOS	B	C	B	B	B	B	B	A
Critical Lane Group	No	Yes	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.97	2.83	2.67	3.79	4.90	0.44	3.12	0.31
50th-Percentile Queue Length [ft/ln]	24.34	70.72	66.81	94.68	122.41	11.02	78.04	7.71
95th-Percentile Queue Length [veh/ln]	1.75	5.09	4.81	6.82	8.53	0.79	5.62	0.56
95th-Percentile Queue Length [ft/ln]	43.80	127.29	120.26	170.42	213.13	19.83	140.48	13.88

Movement, Approach, & Intersection Results

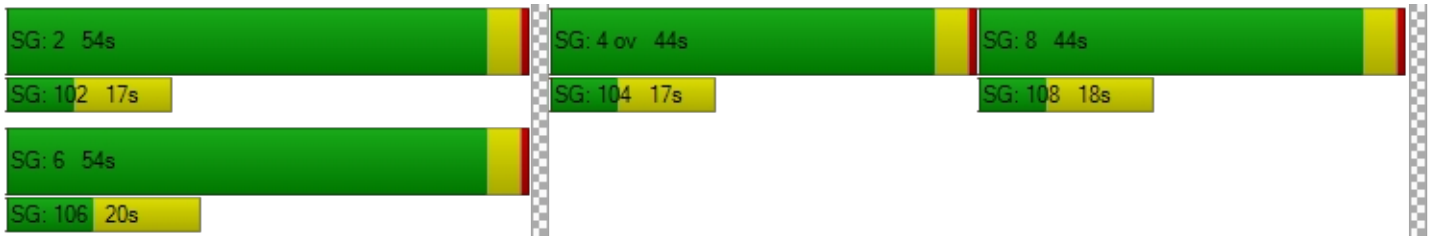
d_M, Delay for Movement [s/veh]	18.74	22.58	22.58	17.88	19.96	19.96	0.00	18.83	12.19	0.00	15.65	3.23
Movement LOS	B	C	C	B	B	B		B	B		B	A
d_A, Approach Delay [s/veh]	21.50			19.06			18.10			12.08		
Approach LOS	C			B			B			B		
d_I, Intersection Delay [s/veh]	17.52											
Intersection LOS	B											
Intersection V/C	0.761											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	652.49	526.18	764.07	2821.51
d_p, Pedestrian Delay [s]	60.43	58.60	60.43	60.43
l_p,int, Pedestrian LOS Score for Intersection	2.315	2.334	2.444	2.674
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	563	563	704	704
d_b, Bicycle Delay [s]	36.63	36.65	29.80	29.80
l_b,int, Bicycle LOS Score for Intersection	2.131	2.617	2.517	2.584
Bicycle LOS	B	B	B	B

Sequence

Ring 1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: S Redland Rd/Abernaty Rd

Control Type:	Signalized	Delay (sec / veh):	39.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.827

Intersection Setup

Name	S Redland Rd			S Redland Rd			17th St			Holocomb Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	125.00	100.00	100.00	330.00	100.00	250.00	120.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
Speed [mph]	30.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Redland Rd			S Redland Rd			17th St			Holocomb Blvd		
Base Volume Input [veh/h]	79	293	52	268	508	42	35	118	149	42	84	188
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	8.00	5.00	4.00	3.00	4.00	2.00	6.00	3.00	3.00	5.00	4.00	3.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	5	1	0	0	4	5	18	5	5	0	5	0
Site-Generated Trips [veh/h]	34	0	0	0	0	66	70	21	36	0	19	0
Diverted Trips [veh/h]	33	-33	0	0	0	88	143	0	0	0	22	-22
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	105	0	0	0	0	0	101
Total Hourly Volume [veh/h]	165	315	61	317	605	104	272	166	218	50	145	100
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	82	16	83	158	26	71	43	57	13	38	26
Total Analysis Volume [veh/h]	172	328	64	330	630	104	283	173	227	52	151	104
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	13.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	0
Maximum Green [s]	30	45	0	30	45	0	30	35	0	20	30	0
Amber [s]	3.5	4.7	0.0	3.5	4.7	0.0	3.5	4.0	0.0	3.5	4.7	0.0
All red [s]	0.5	0.7	0.0	0.5	0.7	0.0	0.5	0.5	0.0	0.5	0.7	0.0
Split [s]	34	51	0	34	51	0	34	40	0	24	36	0
Vehicle Extension [s]	2.3	4.5	0.0	2.3	4.5	0.0	2.3	2.3	0.0	2.3	2.3	0.0
Walk [s]	0	7	0	5	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	10	24	0	0	22	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.4	0.0	2.0	3.4	0.0	2.0	2.5	0.0	2.0	3.4	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C	R
C, Cycle Length [s]	92	92	92	92	92	92	92	92	92	92
L, Total Lost Time per Cycle [s]	4.00	5.40	4.00	5.40	5.40	4.00	4.50	4.00	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.40	2.00	3.40	3.40	2.00	2.50	2.00	3.40	3.40
g_i, Effective Green Time [s]	11	27	19	35	35	17	24	4	10	10
g / C, Green / Cycle	0.12	0.30	0.21	0.38	0.38	0.19	0.26	0.04	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.10	0.22	0.19	0.34	0.07	0.16	0.24	0.03	0.08	0.07
s, saturation flow rate [veh/h]	1695	1774	1767	1840	1589	1724	1686	1738	1840	1577
c, Capacity [veh/h]	207	527	368	705	609	321	443	67	194	166
d1, Uniform Delay [s]	39.71	29.39	35.67	26.79	18.85	36.70	32.98	44.14	40.36	39.66
k, delay calibration	0.07	0.19	0.10	0.28	0.19	0.07	0.14	0.07	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.25	3.58	7.34	10.03	0.23	5.07	8.78	11.27	4.11	2.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.74	0.90	0.89	0.17	0.88	0.90	0.78	0.78	0.62
d, Delay for Lane Group [s/veh]	44.96	32.97	43.01	36.82	19.08	41.77	41.76	55.41	44.46	42.01
Lane Group LOS	D	C	D	D	B	D	D	E	D	D
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.06	8.15	7.64	13.94	1.43	6.55	9.49	1.38	3.52	2.34
50th-Percentile Queue Length [ft/ln]	101.58	203.86	191.05	348.41	35.72	163.74	237.28	34.43	88.09	58.59
95th-Percentile Queue Length [veh/ln]	7.31	12.84	12.18	20.06	2.57	10.75	14.54	2.48	6.34	4.22
95th-Percentile Queue Length [ft/ln]	182.84	320.94	304.40	501.47	64.30	268.67	363.59	61.98	158.57	105.46

Movement, Approach, & Intersection Results

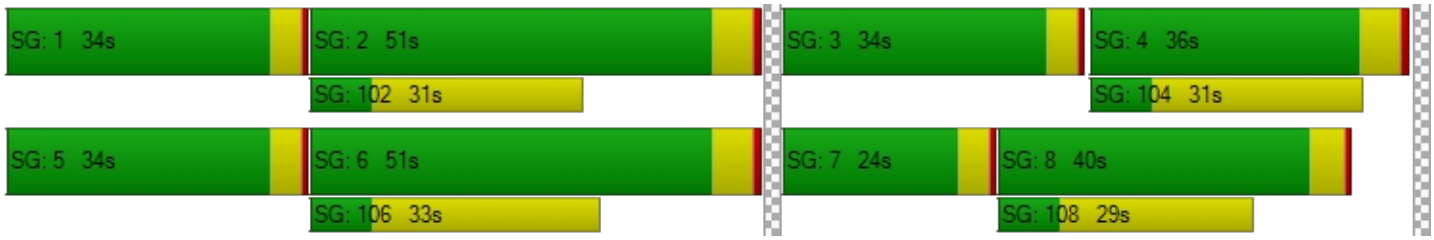
d_M, Delay for Movement [s/veh]	44.96	32.97	32.97	43.01	36.82	19.08	41.77	41.76	41.76	55.41	44.46	42.01
Movement LOS	D	C	C	D	D	B	D	D	D	E	D	D
d_A, Approach Delay [s/veh]	36.63			37.01			41.77			45.49		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	39.16											
Intersection LOS	D											
Intersection V/C	0.827											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	66.89	66.89	66.89	66.89
l_p,int, Pedestrian LOS Score for Intersection	2.445	2.991	2.453	2.538
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	588	588	458	395
d_b, Bicycle Delay [s]	38.61	38.61	46.07	49.92
l_b,int, Bicycle LOS Score for Intersection	2.490	3.488	2.687	2.233
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: S Anchor Way / S Redland Rd

Control Type:	Two-way stop	Delay (sec / veh):	129.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.925

Intersection Setup

Name	S Redland Rd		S Redland Rd		S Anchor Way	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	S Redland Rd		S Redland Rd		S Anchor Way	
Base Volume Input [veh/h]	28	287	553	127	112	43
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	0.00	8.00	5.00	0.00	0.00	0.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	6	9	0	0	0
Site-Generated Trips [veh/h]	0	24	26	10	10	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	33	369	689	160	142	51
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	100	187	43	39	14
Total Analysis Volume [veh/h]	36	401	749	174	154	55
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			Yes
Storage Area [veh]	0	0	1
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.00	0.01	0.00	0.93	0.15
d_M, Delay for Movement [s/veh]	10.05	0.00	0.00	0.00	129.60	117.70
Movement LOS	B	A	A	A	F	F
95th-Percentile Queue Length [veh/ln]	0.15	0.15	0.00	0.00	9.44	9.44
95th-Percentile Queue Length [ft/ln]	3.78	3.78	0.00	0.00	236.11	236.11
d_A, Approach Delay [s/veh]	0.83		0.00		126.47	
Approach LOS	A		A		F	
d_I, Intersection Delay [s/veh]	17.08					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 18: S Holly Ln / S Redland Rd

Control Type:	Two-way stop	Delay (sec / veh):	28.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.338

Intersection Setup

Name	S Holly Ln		S Redland Rd		S Redland Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	S Holly Ln		S Redland Rd		S Redland Rd	
Base Volume Input [veh/h]	56	15	453	111	15	247
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	2.00	0.00	6.00	5.00	0.00	9.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	9	0	0	6
Site-Generated Trips [veh/h]	0	0	26	0	0	24
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	67	18	571	131	18	323
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	5	160	37	5	91
Total Analysis Volume [veh/h]	75	20	642	147	20	363
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	Yes		
Storage Area [veh]	1	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.34	0.05	0.01	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	28.65	20.74	0.00	0.00	9.39	0.00
Movement LOS	D	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.57	1.57	0.00	0.00	0.07	0.07
95th-Percentile Queue Length [ft/ln]	39.16	39.16	0.00	0.00	1.83	1.83
d_A, Approach Delay [s/veh]	26.99		0.00		0.49	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	2.17					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 19: I 205 SB-Ramp / OR 213

Control Type:	Two-way stop	Delay (sec / veh):	383.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.370

Intersection Setup

Name	OR 213		Washington St		Washington Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	OR 213		Washington St		Washington Dr	
Base Volume Input [veh/h]	650	14	31	22	5	2077
Base Volume Adjustment Factor	1.1700	1.0000	1.0000	1.0000	1.0000	1.1000
Heavy Vehicles Percentage [%]	5.00	7.00	0.00	0.00	20.00	4.00
Growth Factor	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	5	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	196	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	17	0	0	0	0	0
Total Hourly Volume [veh/h]	974	20	33	23	5	2415
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	265	5	9	6	1	656
Total Analysis Volume [veh/h]	1059	22	36	25	5	2625
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.70	0.00	0.00	0.00	0.37	0.00
d_M, Delay for Movement [s/veh]	12.56	0.00	0.00	0.00	383.61	0.00
Movement LOS	B	A	A	A	F	
95th-Percentile Queue Length [veh/ln]	6.18	0.00	0.00	0.00	0.94	0.00
95th-Percentile Queue Length [ft/ln]	154.60	0.00	0.00	0.00	23.43	0.00
d_A, Approach Delay [s/veh]	12.30		0.00		383.61	
Approach LOS	B		A		F	
d_I, Intersection Delay [s/veh]	13.27					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 20: OR 213 / Clackamas River Dr

Control Type:	Signalized	Delay (sec / veh):	20.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.846

Intersection Setup

Name	OR 213			OR 213			Prairie Schooner Way			Clackamas River Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	450.00	100.00	100.00	415.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			Yes			Yes			Yes		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	OR 213			OR 213			Prairie Schooner Way			Clackamas River Dr		
Base Volume Input [veh/h]	0	1689	156	0	2677	565	0	0	186	0	0	408
Base Volume Adjustment Factor	1.0000	1.1700	1.1700	1.0000	1.1700	1.1700	1.0000	1.0000	1.1700	1.0000	1.0000	1.1700
Heavy Vehicles Percentage [%]	2.00	4.00	6.00	2.00	4.00	7.00	2.00	2.00	4.00	2.00	2.00	8.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	59	5	0	17	0	0	0	9	0	0	0
Site-Generated Trips [veh/h]	0	43	47	0	41	75	0	0	50	0	0	80
Diverted Trips [veh/h]	0	-49	110	0	61	243	0	0	0	0	0	353
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	17	0	0	24	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	355	0	0	1017	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	2046	0	0	3275	0	0	0	289	0	0	937
Peak Hour Factor	1.0000	0.9400	0.9400	1.0000	0.9400	0.9400	1.0000	1.0000	0.9400	1.0000	1.0000	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	544	0	0	871	0	0	0	77	0	0	249
Total Analysis Volume [veh/h]	0	2177	0	0	3484	0	0	0	307	0	0	997
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	0	1	0	0	5
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	0	4	0	0	4
Maximum Green [s]	0	86	0	0	96	0	0	0	26	0	0	86
Amber [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	0.0	3.5	0.0	0.0	3.5
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.5	0.0	0.0	0.5
Split [s]	0	44	0	0	44	0	0	0	30	0	0	84
Vehicle Extension [s]	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	2.3	0.0	0.0	2.3
Walk [s]	0	0	0	0	0	0	0	0	7	0	0	7
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	15	0	0	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0
Minimum Recall		Yes			Yes				No			No
Maximum Recall		No			No				No			No
Pedestrian Recall		No			No				No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	R	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	69	69	104	104	17	51
g / C, Green / Cycle	0.53	0.53	0.80	0.80	0.13	0.39
(v / s)_i Volume / Saturation Flow Rate	0.43	0.00	0.70	0.00	0.11	0.37
s, saturation flow rate [veh/h]	5012	1538	5012	1526	2768	2678
c, Capacity [veh/h]	2654	815	3988	1214	353	1054
d1, Uniform Delay [s]	14.80	0.00	8.91	0.00	55.70	38.10
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.99	0.00	2.97	0.00	4.20	3.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.00	0.87	0.00	0.87	0.95
d, Delay for Lane Group [s/veh]	17.79	0.00	11.87	0.00	59.90	41.55
Lane Group LOS	B	A	B	A	E	D
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	9.79	0.00	13.87	0.00	5.15	15.62
50th-Percentile Queue Length [ft/ln]	244.63	0.00	346.82	0.00	128.78	390.44
95th-Percentile Queue Length [veh/ln]	14.92	0.00	19.98	0.00	8.87	22.10
95th-Percentile Queue Length [ft/ln]	372.89	0.00	499.53	0.00	221.83	552.46

Movement, Approach, & Intersection Results

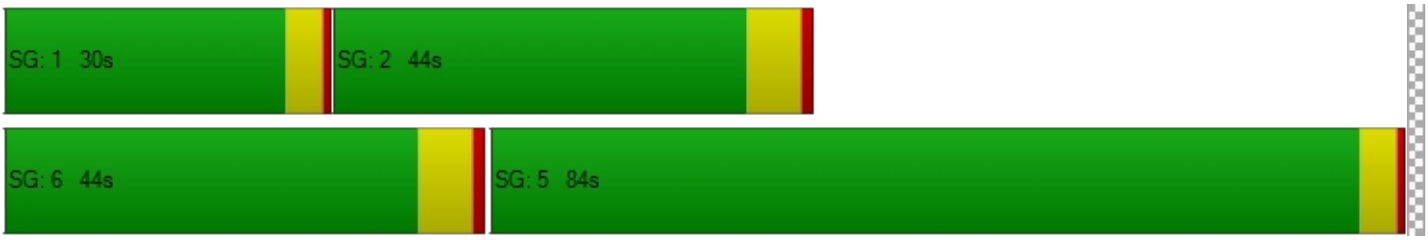
d_M, Delay for Movement [s/veh]	0.00	17.79	0.00	0.00	11.87	0.00	0.00	0.00	59.90	0.00	0.00	41.55
Movement LOS		B	A		B	A			E			D
d_A, Approach Delay [s/veh]	17.79			11.87			59.90			41.55		
Approach LOS	B			B			E			D		
d_I, Intersection Delay [s/veh]	20.09											
Intersection LOS	C											
Intersection V/C	0.846											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	38.0	38.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	32.55	32.55
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.451	2.377
Crosswalk LOS	F	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	585	585	400	1231
d_b, Bicycle Delay [s]	32.55	32.55	41.60	9.62
l_b,int, Bicycle LOS Score for Intersection	2.952	4.035	1.560	1.560
Bicycle LOS	C	D	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: OR 213 / S Redland Rd

Control Type:	Signalized	Delay (sec / veh):	70.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.122

Intersection Setup

Name	OR 213		OR 213		S Redland Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	350.00	100.00	100.00	100.00	335.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		40.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		Yes		Yes	
Crosswalk	Yes		No		Yes	

Volumes

Name	OR 213		OR 213		S Redland Rd	
Base Volume Input [veh/h]	117	1445	2130	704	385	92
Base Volume Adjustment Factor	1.1700	1.1700	1.1700	1.1700	1.1700	1.1700
Heavy Vehicles Percentage [%]	5.00	3.00	4.00	3.00	5.00	2.00
Growth Factor	1.0570	1.0000	1.0000	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	9	59	27	0	0	19
Site-Generated Trips [veh/h]	25	47	50	41	43	27
Diverted Trips [veh/h]	27	-27	0	61	88	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	17	24	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	487	0	80
Total Hourly Volume [veh/h]	206	1787	2593	486	607	80
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	461	668	125	156	21
Total Analysis Volume [veh/h]	212	1842	2673	501	626	82
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	0		1		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	22.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Overlap	Permissive	Overlap
Signal Group	1	6	2	2	8	8
Auxiliary Signal Groups				2,8		1,8
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	6	6
Maximum Green [s]	12	101	85	85	21	21
Amber [s]	3.5	5.0	5.0	5.0	3.0	3.0
All red [s]	0.5	1.0	1.0	1.0	0.7	0.7
Split [s]	16	105	89	89	25	25
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	5	5	5
Pedestrian Clearance [s]	0	10	10	10	10	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	4.0	1.7	1.7
Minimum Recall	No	Yes	Yes	Yes	No	No
Maximum Recall	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	3.70	3.70	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	0.00	1.70	0.00
g_i, Effective Green Time [s]	12	99	83	110	21	37
g / C, Green / Cycle	0.09	0.76	0.64	0.85	0.16	0.28
(v / s)_i Volume / Saturation Flow Rate	0.12	0.52	0.76	0.32	0.19	0.05
s, saturation flow rate [veh/h]	1738	3532	3503	1576	3375	1589
c, Capacity [veh/h]	160	2691	2238	1337	552	452
d1, Uniform Delay [s]	59.05	7.71	9.64	0.58	54.41	35.14
k, delay calibration	0.50	0.50	0.50	0.50	0.13	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	181.86	1.44	92.10	0.80	66.60	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.33	1.12	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.32	0.68	1.19	0.37	1.13	0.18
d, Delay for Lane Group [s/veh]	240.92	9.15	101.74	1.39	121.01	35.33
Lane Group LOS	F	A	F	A	F	D
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	13.18	9.37	34.26	0.57	13.98	1.97
50th-Percentile Queue Length [ft/ln]	329.48	234.20	856.51	14.30	349.40	49.26
95th-Percentile Queue Length [veh/ln]	21.06	14.39	50.29	1.03	21.33	3.55
95th-Percentile Queue Length [ft/ln]	526.51	359.69	1257.16	25.73	533.20	88.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	240.92	9.15	101.74	1.39	121.01	35.33
Movement LOS	F	A	F	A	F	D
d_A, Approach Delay [s/veh]	33.07		85.90		111.09	
Approach LOS	C		F		F	
d_I, Intersection Delay [s/veh]	70.62					
Intersection LOS	E					
Intersection V/C	1.122					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	0.00	56.31
I_p,int, Pedestrian LOS Score for Intersection	4.067	0.000	2.910
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1523	1277	328
d_b, Bicycle Delay [s]	3.70	8.50	45.44
I_b,int, Bicycle LOS Score for Intersection	3.254	4.580	1.560
Bicycle LOS	C	E	A

Sequence

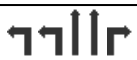
Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: OR 213/Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	77.0
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.924

Intersection Setup

Name	OR 213			OR 213			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	2	0	1	2	0	0	2	0	1
Entry Pocket Length [ft]	530.00	100.00	580.00	600.00	100.00	525.00	500.00	100.00	100.00	160.00	100.00	465.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 213			OR 213			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	85	641	155	680	1071	512	522	592	112	117	400	399
Base Volume Adjustment Factor	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300	1.1300
Heavy Vehicles Percentage [%]	2.00	4.00	1.00	4.00	5.00	3.00	3.00	1.00	4.00	0.00	2.00	3.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	9	1	5	28	13	41	18	0	6	19	18
Site-Generated Trips [veh/h]	0	39	0	21	41	15	14	0	0	0	0	19
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	17	0	0	24	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	93	0	0	320	0	0	0	0	0	257
Total Hourly Volume [veh/h]	101	789	93	838	1303	320	679	725	134	146	497	257
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	205	24	218	339	83	177	189	35	38	129	67
Total Analysis Volume [veh/h]	105	822	97	873	1357	333	707	755	140	152	518	268
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	7			0			7			0		
v_di, Inbound Pedestrian Volume crossing m	7			0			7			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			1			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	142
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	0
Maximum Green [s]	15	40	0	32	40	0	38	30	0	15	20	0
Amber [s]	4.0	5.0	0.0	4.0	5.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.5	2.0	0.0	1.5	2.0	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	21	47	0	38	47	0	44	36	0	21	26	0
Vehicle Extension [s]	2.3	4.7	0.0	2.3	4.7	0.0	2.3	2.3	0.0	2.3	2.3	0.0
Walk [s]	0	8	0	0	9	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	31	0	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.5	5.0	0.0	3.5	5.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	146	146	146	146	146	146	146	146	146	146	146	146
L, Total Lost Time per Cycle [s]	5.50	7.00	7.00	5.50	7.00	7.00	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	5.00	5.00	3.50	5.00	5.00	3.50	3.50	3.50	3.50	3.50	3.50
g_i, Effective Green Time [s]	10	38	38	32	59	59	32	44	44	8	20	20
g / C, Green / Cycle	0.07	0.26	0.26	0.22	0.41	0.41	0.22	0.30	0.30	0.06	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.06	0.23	0.06	0.26	0.39	0.21	0.21	0.24	0.25	0.04	0.15	0.17
s, saturation flow rate [veh/h]	1781	3503	1602	3403	3475	1577	3431	1885	1768	3514	3560	1577
c, Capacity [veh/h]	128	908	415	747	1415	642	764	570	535	202	489	216
d1, Uniform Delay [s]	66.74	52.25	42.57	56.88	42.04	32.48	55.45	46.74	47.22	67.65	62.88	62.88
k, delay calibration	0.07	0.20	0.20	0.09	0.28	0.31	0.07	0.50	0.50	0.07	0.07	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.86	6.61	0.53	78.70	10.65	1.87	3.47	11.09	13.43	3.44	33.97	140.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.91	0.23	1.17	0.96	0.52	0.92	0.80	0.82	0.75	1.06	1.24
d, Delay for Lane Group [s/veh]	74.61	58.86	43.10	135.58	52.69	34.35	58.92	57.83	60.66	71.09	96.85	203.34
Lane Group LOS	E	E	D	F	D	C	E	E	E	E	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.15	15.38	2.86	21.89	25.57	9.24	12.99	16.80	16.72	2.88	11.30	16.41
50th-Percentile Queue Length [ft/ln]	103.70	384.52	71.46	547.35	639.35	230.93	324.69	420.03	417.91	71.97	282.61	410.30
95th-Percentile Queue Length [veh/ln]	7.47	21.81	5.15	32.13	33.87	14.22	18.90	23.52	23.42	5.18	17.27	25.24
95th-Percentile Queue Length [ft/ln]	186.67	545.31	128.63	803.36	846.69	355.54	472.44	588.08	585.55	129.54	431.73	631.06

Movement, Approach, & Intersection Results

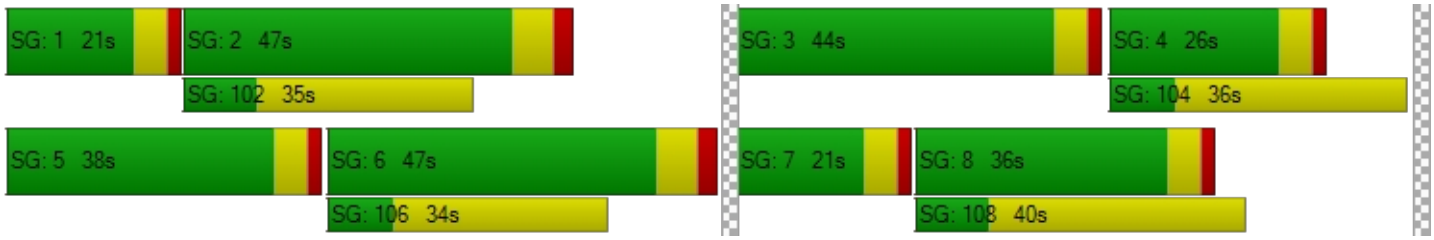
d_M, Delay for Movement [s/veh]	74.61	58.86	43.10	135.58	52.69	34.35	58.92	58.95	60.66	71.09	96.85	203.34
Movement LOS	E	E	D	F	D	C	E	E	E	E	F	F
d_A, Approach Delay [s/veh]	58.98			78.54			59.09			123.10		
Approach LOS	E			E			E			F		
d_I, Intersection Delay [s/veh]	77.01											
Intersection LOS	E											
Intersection V/C	0.924											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	13.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	543.21	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	58.60	59.51	58.60	59.51
l_p,int, Pedestrian LOS Score for Intersection	3.055	3.758	3.019	3.470
Crosswalk LOS	C	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	563	563	430	289
d_b, Bicycle Delay [s]	36.63	36.63	43.80	51.98
l_b,int, Bicycle LOS Score for Intersection	2.481	3.938	2.881	2.545
Bicycle LOS	B	D	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 23: OR 213 / Molalla Ave

Control Type:	Signalized	Delay (sec / veh):	37.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.832

Intersection Setup

Name	OR 213			OR 213			Molalla Ave			S Douglas Loop		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	650.00	100.00	100.00	525.00	100.00	355.00	100.00	100.00	100.00	275.00	100.00	275.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 213			OR 213			Molalla Ave			S Douglas Loop		
Base Volume Input [veh/h]	212	739	10	13	1071	197	129	16	334	19	20	19
Base Volume Adjustment Factor	1.1700	1.1700	1.1700	1.1700	1.1700	1.1700	1.1700	1.1700	1.1700	1.1700	1.1700	1.1700
Heavy Vehicles Percentage [%]	0.00	4.00	20.00	15.00	5.00	2.00	2.00	19.00	1.00	11.00	30.00	11.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	8	10	0	0	34	0	0	0	20	0	0	0
Site-Generated Trips [veh/h]	0	39	0	0	41	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	17	0	0	24	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	7	0	0	122	0	0	217	0	0	12
Total Hourly Volume [veh/h]	270	931	6	16	1352	121	160	20	216	23	24	11
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	253	2	4	367	33	43	5	59	6	7	3
Total Analysis Volume [veh/h]	293	1012	7	17	1470	132	174	22	235	25	26	12
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	4			2			4			1		
v_di, Inbound Pedestrian Volume crossing m	4			1			4			2		
v_co, Outbound Pedestrian Volume crossing	0			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	13.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	6
Maximum Green [s]	31	55	0	21	45	0	16	22	0	16	22	22
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	3.5	4.7	0.0	3.5	4.7	4.7
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.5	0.7	0.0	0.5	0.7	0.7
Split [s]	35	59	0	25	49	0	20	26	0	20	26	26
Vehicle Extension [s]	2.3	4.5	0.0	2.3	4.5	0.0	2.3	2.3	0.0	2.3	2.3	2.3
Walk [s]	0	9	0	0	10	0	0	14	0	0	11	11
Pedestrian Clearance [s]	0	23	0	0	27	0	0	28	0	0	30	30
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	4.0	0.0	2.0	4.0	0.0	2.0	3.4	0.0	2.0	3.4	3.4
Minimum Recall	No	Yes		No	Yes		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	5.40	5.40	4.00	5.40	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	3.40	3.40	2.00	3.40	0.00
g_i, Effective Green Time [s]	23	83	83	2	61	61	20	21	21	6	6	37
g / C, Green / Cycle	0.18	0.63	0.63	0.01	0.47	0.47	0.15	0.16	0.16	0.04	0.05	0.29
(v / s)_i Volume / Saturation Flow Rate	0.16	0.29	0.01	0.01	0.42	0.08	0.12	0.01	0.15	0.02	0.02	0.01
s, saturation flow rate [veh/h]	1810	3503	1359	1595	3475	1589	1417	1615	1578	1652	1450	1471
c, Capacity [veh/h]	319	2222	862	23	1640	750	251	256	250	72	72	424
d1, Uniform Delay [s]	52.60	12.22	8.74	63.84	31.40	19.75	55.06	46.67	53.94	60.36	59.78	33.16
k, delay calibration	0.19	0.50	0.50	0.07	0.50	0.50	0.07	0.07	0.29	0.07	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.18	0.68	0.02	25.26	8.07	0.51	2.11	0.09	30.85	1.73	1.85	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.46	0.01	0.75	0.90	0.18	0.69	0.09	0.94	0.35	0.36	0.03
d, Delay for Lane Group [s/veh]	68.78	12.90	8.75	89.10	39.47	20.27	57.16	46.76	84.79	62.09	61.63	33.17
Lane Group LOS	E	B	A	F	D	C	E	D	F	E	E	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	10.43	6.73	0.07	0.70	20.98	2.27	5.80	0.62	9.78	0.84	0.88	0.28
50th-Percentile Queue Length [ft/ln]	260.67	168.28	1.71	17.56	524.60	56.75	144.90	15.62	244.49	21.11	21.88	7.02
95th-Percentile Queue Length [veh/ln]	15.72	10.99	0.12	1.26	28.50	4.09	9.74	1.12	14.91	1.52	1.58	0.51
95th-Percentile Queue Length [ft/ln]	393.06	274.65	3.09	31.60	712.41	102.15	243.61	28.11	372.71	37.99	39.39	12.63

Movement, Approach, & Intersection Results

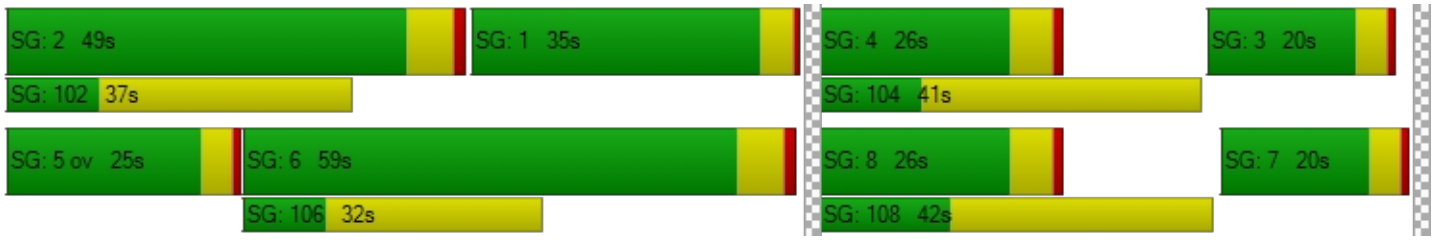
d_M, Delay for Movement [s/veh]	68.78	12.90	8.75	89.10	39.47	20.27	57.16	46.76	84.79	62.09	61.63	33.17
Movement LOS	E	B	A	F	D	C	E	D	F	E	E	C
d_A, Approach Delay [s/veh]	25.35			38.42			71.70			56.39		
Approach LOS	C			D			E			E		
d_I, Intersection Delay [s/veh]	37.93											
Intersection LOS	D											
Intersection V/C	0.832											

Other Modes

g_Walk,mi, Effective Walk Time [s]	18.0	15.0	14.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	1475.59	3148.61	0.00	10045.46
d_p, Pedestrian Delay [s]	48.25	50.87	51.75	52.65
l_p,int, Pedestrian LOS Score for Intersection	3.449	3.768	2.703	2.190
Crosswalk LOS	C	D	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	815	662	317	317
d_b, Bicycle Delay [s]	22.80	29.11	46.03	46.03
l_b,int, Bicycle LOS Score for Intersection	2.648	2.996	2.629	1.683
Bicycle LOS	B	C	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Molalla Ave / Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	40.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.598

Intersection Setup

Name	Molalla Ave			Molalla Ave			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	170.00	100.00	150.00	350.00	100.00	100.00	175.00	100.00	190.00	210.00	100.00	245.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			35.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Molalla Ave			Molalla Ave			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	127	251	45	480	304	16	24	342	150	86	302	293
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	4.00	1.00	2.00	2.00	1.00	0.00	0.00	2.00	3.00	6.00	3.00	1.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	7	5	0	7	8	1	5	50	20	0	12	14
Site-Generated Trips [veh/h]	0	0	0	14	0	0	0	0	0	0	0	15
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	99	0	0	188
Total Hourly Volume [veh/h]	157	302	53	590	367	20	34	455	99	101	369	188
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	79	14	155	97	5	9	120	26	27	97	49
Total Analysis Volume [veh/h]	165	318	56	621	386	21	36	479	104	106	388	198
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3			3			3			2		
v_di, Inbound Pedestrian Volume crossing m	3			2			3			3		
v_co, Outbound Pedestrian Volume crossing	7			2			3			7		
v_ci, Inbound Pedestrian Volume crossing mi	7			3			2			7		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	10	0	6	10	0	4	6	0	6	6	0
Maximum Green [s]	30	40	0	30	40	0	20	25	0	20	25	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	3.5	4.0	0.0	3.5	4.0	0.0
All red [s]	2.0	2.0	0.0	2.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	20	38	0	24	42	0	12	26	0	12	26	0
Vehicle Extension [s]	2.3	4.6	0.0	2.3	4.2	0.0	2.3	2.5	0.0	2.3	2.5	0.0
Walk [s]	0	9	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	26	0	0	22	0	0	23	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	4.0	0.0	4.0	4.0	0.0	2.5	4.0	0.0	2.5	4.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	36	36	36	46	46	46	28	17	17	28	21	21
g / C, Green / Cycle	0.36	0.36	0.36	0.46	0.46	0.46	0.28	0.17	0.17	0.28	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.13	0.10	0.10	0.43	0.11	0.11	0.03	0.13	0.07	0.09	0.11	0.12
s, saturation flow rate [veh/h]	1240	1885	1781	1450	1885	1850	1158	3560	1560	1154	3532	1591
c, Capacity [veh/h]	491	683	646	601	858	842	327	601	264	312	729	328
d1, Uniform Delay [s]	22.74	22.64	22.68	31.75	16.68	16.68	27.20	39.96	37.03	28.80	35.42	35.98
k, delay calibration	0.07	0.50	0.50	0.50	0.50	0.50	0.07	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.24	1.02	1.10	45.35	0.66	0.67	0.09	1.84	0.71	0.47	0.45	1.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.34	0.28	0.28	1.03	0.24	0.24	0.11	0.80	0.39	0.34	0.53	0.60
d, Delay for Lane Group [s/veh]	22.99	23.66	23.77	77.10	17.34	17.35	27.29	41.80	37.74	29.27	35.87	37.30
Lane Group LOS	C	C	C	F	B	B	C	D	D	C	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.74	3.35	3.22	18.49	2.93	2.88	0.63	5.69	2.28	1.98	4.22	4.45
50th-Percentile Queue Length [ft/ln]	68.38	83.63	80.58	462.20	73.16	71.92	15.79	142.21	56.98	49.60	105.57	111.28
95th-Percentile Queue Length [veh/ln]	4.92	6.02	5.80	26.15	5.27	5.18	1.14	9.60	4.10	3.57	7.59	7.91
95th-Percentile Queue Length [ft/ln]	123.09	150.53	145.04	653.71	131.69	129.46	28.43	239.99	102.56	89.29	189.83	197.78

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	22.99	23.70	23.77	77.10	17.34	17.35	27.29	41.80	37.74	29.27	35.87	37.30
Movement LOS	C	C	C	F	B	B	C	D	D	C	D	D
d_A, Approach Delay [s/veh]	23.49			53.44			40.27			35.27		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	40.63											
Intersection LOS	D											
Intersection V/C	0.598											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	1715.58	1736.10	2413.63	734.95
d_p, Pedestrian Delay [s]	38.72	38.72	38.72	37.85
l_p,int, Pedestrian LOS Score for Intersection	2.573	2.718	2.898	3.301
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	640	720	400	400
d_b, Bicycle Delay [s]	23.12	20.48	32.00	32.00
l_b,int, Bicycle LOS Score for Intersection	2.004	2.408	2.152	2.286
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: Maple Lane Rd / Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	22.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.752

Intersection Setup

Name	Maple Lane Rd			Maple Lane Rd			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	150.00	430.00	100.00	100.00	360.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Maple Lane Rd			Maple Lane Rd			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	226	92	46	58	59	303	393	706	108	15	411	48
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	1.00	0.00	2.00	2.00	2.00	1.00	2.00	4.00	2.00	0.00	3.00	2.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	0	0	0	0	24	0	0	43	11
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	21	0	0	19	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	179	0	0	0	0	0	0
Total Hourly Volume [veh/h]	267	109	55	69	70	179	465	881	128	18	548	68
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	70	28	14	18	18	47	121	229	33	5	143	18
Total Analysis Volume [veh/h]	278	114	57	72	73	186	484	918	133	19	571	71
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3			0			3			0		
v_di, Inbound Pedestrian Volume crossing m	3			0			3			0		
v_co, Outbound Pedestrian Volume crossing	4			0			0			4		
v_ci, Inbound Pedestrian Volume crossing mi	4			0			0			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	0	3	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	4	10	0	4	10	0
Maximum Green [s]	0	20	0	0	20	20	35	50	0	20	35	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	4.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.5	0.5	0.5	0.0	0.5	0.5	0.0
Split [s]	0	25	0	0	25	25	40	55	0	25	40	0
Vehicle Extension [s]	0.0	2.5	0.0	0.0	2.5	2.5	2.5	5.2	0.0	2.3	5.2	0.0
Walk [s]	0	8	0	0	8	8	0	7	0	0	8	0
Pedestrian Clearance [s]	0	19	0	0	19	19	0	12	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	0.0	0.0	2.5	2.5	2.5	2.5	0.0	2.5	2.5	0.0
Minimum Recall		No			No	No	No	Yes		No	Yes	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	77	77	77	77	77	77	77	77	77	77	77
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	0.00	0.00	2.50	2.50	0.00	2.50	2.50
g_i, Effective Green Time [s]	15	15	6	6	29	42	36	36	42	19	19
g / C, Green / Cycle	0.20	0.20	0.08	0.08	0.38	0.55	0.47	0.47	0.55	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.15	0.10	0.04	0.04	0.12	0.38	0.29	0.29	0.03	0.18	0.18
s, saturation flow rate [veh/h]	1795	1777	1781	1870	1602	1287	1840	1757	661	1855	1774
c, Capacity [veh/h]	351	348	139	146	610	720	872	833	385	459	439
d1, Uniform Delay [s]	29.35	27.45	33.94	33.89	16.62	12.75	14.94	15.04	9.74	26.35	26.40
k, delay calibration	0.10	0.08	0.08	0.08	0.08	0.28	0.26	0.26	0.07	0.26	0.26
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.88	0.80	2.19	1.95	0.21	2.80	1.64	1.79	0.03	4.76	5.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.49	0.52	0.50	0.30	0.67	0.61	0.62	0.05	0.71	0.72
d, Delay for Lane Group [s/veh]	33.23	28.25	36.13	35.84	16.83	15.55	16.58	16.83	9.77	31.11	31.53
Lane Group LOS	C	C	D	D	B	B	B	B	A	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.13	2.81	1.30	1.31	2.10	4.85	6.46	6.34	0.13	5.72	5.57
50th-Percentile Queue Length [ft/ln]	128.25	70.27	32.61	32.84	52.53	121.28	161.59	158.57	3.18	142.91	139.23
95th-Percentile Queue Length [veh/ln]	8.84	5.06	2.35	2.36	3.78	8.46	10.63	10.47	0.23	9.64	9.44
95th-Percentile Queue Length [ft/ln]	221.12	126.48	58.69	59.12	94.56	211.59	265.83	261.83	5.73	240.94	235.98

Movement, Approach, & Intersection Results

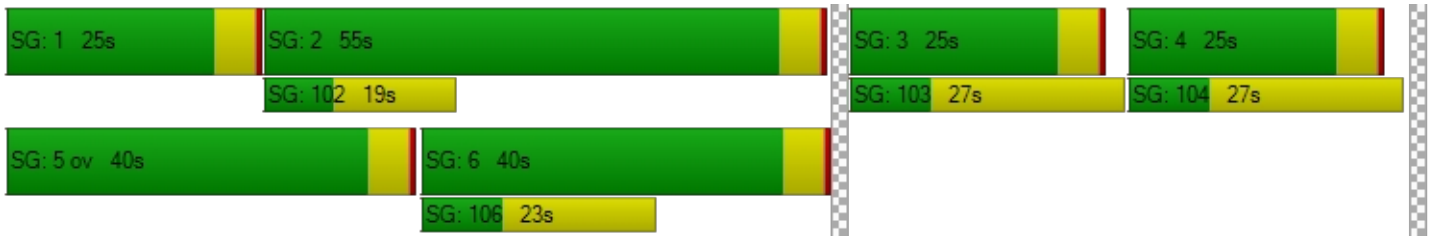
d_M, Delay for Movement [s/veh]	33.23	28.25	28.25	36.13	35.84	16.83	15.55	16.69	16.83	9.77	31.29	31.53
Movement LOS	C	C	C	D	D	B	B	B	B	A	C	C
d_A, Approach Delay [s/veh]	31.33			25.22			16.34			30.69		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	22.78											
Intersection LOS	C											
Intersection V/C	0.752											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	649.56	0.00	0.00	1083.17
d_p, Pedestrian Delay [s]	54.47	53.55	53.55	53.55
l_p,int, Pedestrian LOS Score for Intersection	2.154	2.974	2.942	2.705
Crosswalk LOS	B	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	315	315	777	546
d_b, Bicycle Delay [s]	46.14	46.12	24.31	34.36
l_b,int, Bicycle LOS Score for Intersection	2.300	2.401	2.826	2.105
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 26: Washington St / Site Access D

Control Type:	Two-way stop	Delay (sec / veh):	50.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.417

Intersection Setup

Name	Washington St		Washington St			
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Washington St		Washington St			
Base Volume Input [veh/h]	255	0	0	390	0	0
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	9	0	0	5	0	0
Site-Generated Trips [veh/h]	116	32	29	123	34	31
Diverted Trips [veh/h]	0	0	74	0	0	74
Pass-by Trips [veh/h]	-14	14	14	-14	14	14
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	413	46	117	576	48	119
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	117	13	33	164	14	34
Total Analysis Volume [veh/h]	469	52	133	655	55	135
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.13	0.01	0.42	0.23
d_M, Delay for Movement [s/veh]	0.00	0.00	8.95	0.00	50.49	13.18
Movement LOS	A	A	A	A	F	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.44	0.00	1.80	0.91
95th-Percentile Queue Length [ft/ln]	0.00	0.00	10.89	0.00	45.12	22.66
d_A, Approach Delay [s/veh]	0.00		1.51		23.98	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	3.83					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 27: Abernethy Rd / Site Access E

Control Type:	Two-way stop	Delay (sec / veh):	22.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.388

Intersection Setup

Name			17th St		17th St	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	300.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			17th St		17th St	
Base Volume Input [veh/h]	0	0	0	319	205	0
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	28	28	0
Site-Generated Trips [veh/h]	51	34	32	48	51	48
Diverted Trips [veh/h]	57	0	0	0	0	57
Pass-by Trips [veh/h]	13	14	13	-13	-14	14
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	121	48	45	440	308	119
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	14	13	129	91	35
Total Analysis Volume [veh/h]	142	56	53	518	362	140
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	Yes		
Number of Storage Spaces in Median	1	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.39	0.09	0.05	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	22.51	18.46	8.57	0.00	0.00	0.00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	2.51	2.51	0.16	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	62.74	62.74	3.93	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	21.37		0.80		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	3.69					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 28: Abernethy Rd / Site Access F

Control Type:	Two-way stop	Delay (sec / veh):	24.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.518

Intersection Setup

Name			17th St		17th St	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	300.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			17th St		17th St	
Base Volume Input [veh/h]	0	0	0	311	205	0
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	28	28	0
Site-Generated Trips [veh/h]	76	51	48	51	48	71
Diverted Trips [veh/h]	86	0	0	57	57	86
Pass-by Trips [veh/h]	20	20	20	-20	-20	20
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	182	71	68	484	356	177
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	18	18	126	93	46
Total Analysis Volume [veh/h]	190	74	71	504	371	184
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	Yes		
Number of Storage Spaces in Median	1	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.52	0.11	0.07	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	24.88	10.99	8.81	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	2.85	0.37	0.23	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	71.35	9.19	5.63	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	20.99		1.09		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	4.42					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 29: Washington St / Site Access B

Control Type:	Two-way stop	Delay (sec / veh):	47.4
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.338

Intersection Setup

Name	Washington St		Washington St			
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Washington St		Washington St			
Base Volume Input [veh/h]	260	0	0	385	0	0
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	110	36	34	109	39	36
Diverted Trips [veh/h]	167	0	93	167	0	93
Pass-by Trips [veh/h]	-15	15	15	-15	15	15
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	570	51	142	717	54	144
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	162	14	40	204	15	41
Total Analysis Volume [veh/h]	648	58	161	815	61	164
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.18	0.01	0.34	0.36
d_M, Delay for Movement [s/veh]	0.00	0.00	9.92	0.00	47.35	35.37
Movement LOS	A	A	A	A	E	E
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.66	0.00	4.96	4.96
95th-Percentile Queue Length [ft/ln]	0.00	0.00	16.40	0.00	123.99	123.99
d_A, Approach Delay [s/veh]	0.00		1.64		38.62	
Approach LOS	A		A		E	
d_I, Intersection Delay [s/veh]	5.39					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 30: Washington St / Site Access C

Control Type:	Two-way stop	Delay (sec / veh):	35.4
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.288

Intersection Setup

Name	Washington St		Washington St			
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Washington St		Washington St			
Base Volume Input [veh/h]	255	0	0	385	0	0
Base Volume Adjustment Factor	1.1200	1.1200	1.1200	1.1200	1.1200	1.1200
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	110	36	34	114	39	36
Diverted Trips [veh/h]	74	0	93	74	0	93
Pass-by Trips [veh/h]	-15	15	15	-15	15	15
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	471	51	142	629	54	144
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	134	14	40	179	15	41
Total Analysis Volume [veh/h]	535	58	161	715	61	164
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.16	0.01	0.29	0.31
d_M, Delay for Movement [s/veh]	0.00	0.00	9.38	0.00	35.43	25.29
Movement LOS	A	A	A	A	E	D
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.58	0.00	3.75	3.75
95th-Percentile Queue Length [ft/ln]	0.00	0.00	14.61	0.00	93.87	93.87
d_A, Approach Delay [s/veh]	0.00		1.72		28.04	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	4.62					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 199: I 205 SB-Ramp / OR 213

Control Type:	Two-way stop	Delay (sec / veh):	1,046.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.307

Intersection Setup

Name	OR 213		OR 213			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	OR 213		OR 213			
Base Volume Input [veh/h]	0	664	31	0	0	2077
Base Volume Adjustment Factor	1.0000	1.1700	1.1700	1.0000	1.0000	1.1700
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0570	1.0000
In-Process Volume [veh/h]	0	5	0	0	0	17
Site-Generated Trips [veh/h]	0	0	0	0	0	116
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	17	0	0	0	24
Total Hourly Volume [veh/h]	0	799	38	0	0	2587
Peak Hour Factor	1.0000	0.9200	0.9200	1.0000	1.0000	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	217	10	0	0	703
Total Analysis Volume [veh/h]	0	868	41	0	0	2812
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Stop	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	2.31	0.00	0.00	0.03
d_M, Delay for Movement [s/veh]	0.00	0.00	1046.68	0.00	0.00	0.00
Movement LOS		A	F			A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	5.63	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	140.83	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		1046.68		0.00	
Approach LOS	A		F		A	
d_I, Intersection Delay [s/veh]	11.53					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 1: OR 99E/ River Rd/ W Arlington St

Control Type:	Signalized	Delay (sec / veh):	12.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.627

Intersection Setup

Name				OR 99E			River Rd			W Arlington St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	185.00	100.00	275.00	250.00	100.00	100.00	550.00	100.00	100.00	100.00	100.00	160.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				OR 99E			River Rd			W Arlington St		
Base Volume Input [veh/h]	135	1079	103	81	1050	12	6	41	177	131	28	98
Base Volume Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
Heavy Vehicles Percentage [%]	4.00	3.00	6.00	1.00	4.00	0.00	0.00	7.00	2.00	3.00	4.00	5.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	36	0	0	26	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	72	0	0	82	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	16	0	0	14	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	54
Total Hourly Volume [veh/h]	147	1235	112	88	1204	13	6	44	192	143	31	53
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	318	29	23	310	3	2	11	49	37	8	14
Total Analysis Volume [veh/h]	152	1273	115	91	1241	13	6	45	198	147	32	55
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		7			2			7			1	
v_di, Inbound Pedestrian Volume crossing m		7			1			7			2	
v_co, Outbound Pedestrian Volume crossing		3			2			2			3	
v_ci, Inbound Pedestrian Volume crossing mi		3			2			2			3	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		3			2			4			1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	42.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	20	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	18	52	0	18	52	0	0	30	0	0	30	0
Vehicle Extension [s]	2.3	4.7	0.0	2.3	4.7	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	9	0	0	8	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	20	0	0	15	0	0	26	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	C	R	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.40	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.80	2.80	0.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	66	66	60	59	59	18	18	18	18
g / C, Green / Cycle	0.10	0.66	0.66	0.60	0.59	0.59	0.18	0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.09	0.36	0.08	0.13	0.34	0.34	0.03	0.13	0.12	0.04
s, saturation flow rate [veh/h]	1752	3532	1498	678	1840	1832	1773	1526	1446	1523
c, Capacity [veh/h]	182	2315	982	389	1085	1080	357	273	324	272
d1, Uniform Delay [s]	42.25	2.72	2.23	9.39	5.82	5.83	34.70	38.52	38.13	34.96
k, delay calibration	0.07	0.50	0.50	0.50	0.50	0.50	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.92	0.95	0.24	1.41	2.25	2.27	0.13	2.74	1.09	0.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.55	0.12	0.23	0.58	0.58	0.14	0.73	0.55	0.20
d, Delay for Lane Group [s/veh]	49.18	3.66	2.48	10.80	8.08	8.10	34.84	41.26	39.22	35.23
Lane Group LOS	D	A	A	B	A	A	C	D	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.86	2.08	0.35	0.52	3.89	3.88	1.06	4.71	4.15	1.16
50th-Percentile Queue Length [ft/ln]	96.48	52.12	8.84	13.05	97.20	97.01	26.48	117.86	103.74	28.91
95th-Percentile Queue Length [veh/ln]	6.95	3.75	0.64	0.94	7.00	6.98	1.91	8.28	7.47	2.08
95th-Percentile Queue Length [ft/ln]	173.66	93.81	15.91	23.48	174.96	174.62	47.67	206.88	186.73	52.04

Movement, Approach, & Intersection Results

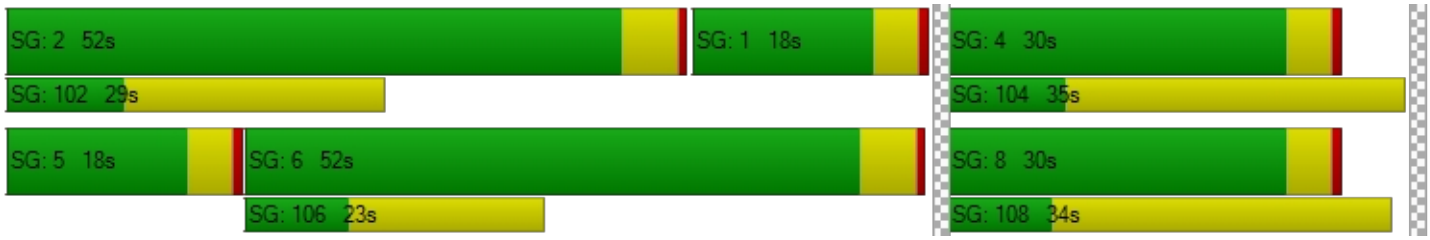
d_M, Delay for Movement [s/veh]	49.18	3.66	2.48	10.80	8.09	8.10	34.84	34.84	41.26	39.22	39.22	35.23
Movement LOS	D	A	A	B	A	A	C	C	D	D	D	D
d_A, Approach Delay [s/veh]	8.07			8.27			39.94			38.28		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	12.60											
Intersection LOS	B											
Intersection V/C	0.627											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	3076.24	2227.14	900.27
d_p, Pedestrian Delay [s]	37.85	38.72	38.72	37.85
l_p,int, Pedestrian LOS Score for Intersection	3.173	3.023	2.089	2.306
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	944	944	520	520
d_b, Bicycle Delay [s]	13.96	13.95	27.43	27.39
l_b,int, Bicycle LOS Score for Intersection	2.830	2.669	1.970	2.035
Bicycle LOS	C	B	A	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: OR 99E/Dunes Dr

Control Type:	Signalized	Delay (sec / veh):	53.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.224

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	220.00	100.00	100.00	370.00	100.00	155.00	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	73	1088	279	138	1096	129	39	12	73	357	17	114
Base Volume Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
Heavy Vehicles Percentage [%]	8.00	3.00	1.00	0.00	4.00	4.00	8.00	0.00	11.00	0.00	0.00	1.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	56	0	0	0	13	0	0	84	0	0	0
Site-Generated Trips [veh/h]	0	72	0	0	82	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	16	0	0	14	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	79	1265	303	150	1225	154	42	13	163	389	19	124
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	326	78	39	316	40	11	3	42	100	5	32
Total Analysis Volume [veh/h]	81	1304	312	155	1263	159	43	13	168	401	20	128
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			2			0			1		
v_di, Inbound Pedestrian Volume crossing m	0			1			0			2		
v_co, Outbound Pedestrian Volume crossing	1			0			0			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			2			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	17.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	2	0	5	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	20	40	0	20	40	0	0	20	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	16	50	0	21	45	0	0	34	0	0	34	0
Vehicle Extension [s]	2.3	4.8	0.0	2.3	4.8	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	18	0	0	38	0	0	37	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.00	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.80	2.80	2.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	45	45	17	32	32	38	38	38	38
g / C, Green / Cycle	0.04	0.45	0.45	0.17	0.32	0.32	0.38	0.38	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.06	0.31	0.31	0.49	0.27	0.27	0.04	0.11	0.33	0.09
s, saturation flow rate [veh/h]	1326	3532	1674	318	3503	1722	1178	1633	1222	1645
c, Capacity [veh/h]	86	1603	760	72	1120	550	421	624	414	629
d1, Uniform Delay [s]	46.67	14.90	14.94	47.17	26.52	26.62	25.71	21.45	38.06	20.96
k, delay calibration	0.50	0.50	0.50	0.50	0.17	0.50	0.08	0.08	0.34	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	83.43	2.38	5.00	561.65	2.90	15.71	0.08	0.19	29.54	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	0.68	0.69	2.15	0.85	0.86	0.10	0.29	0.97	0.24
d, Delay for Lane Group [s/veh]	130.10	17.28	19.94	608.82	29.42	42.33	25.79	21.64	67.60	21.10
Lane Group LOS	F	B	B	F	C	D	C	C	E	C
Critical Lane Group	No	No	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.99	7.21	7.44	12.96	9.48	11.40	0.76	2.98	13.47	2.38
50th-Percentile Queue Length [ft/ln]	99.74	180.16	185.90	323.97	237.09	285.12	19.05	74.47	336.79	59.46
95th-Percentile Queue Length [veh/ln]	7.18	11.61	11.91	23.25	14.53	16.94	1.37	5.36	19.49	4.28
95th-Percentile Queue Length [ft/ln]	179.53	290.22	297.70	581.37	363.35	423.59	34.29	134.05	487.28	107.03

Movement, Approach, & Intersection Results

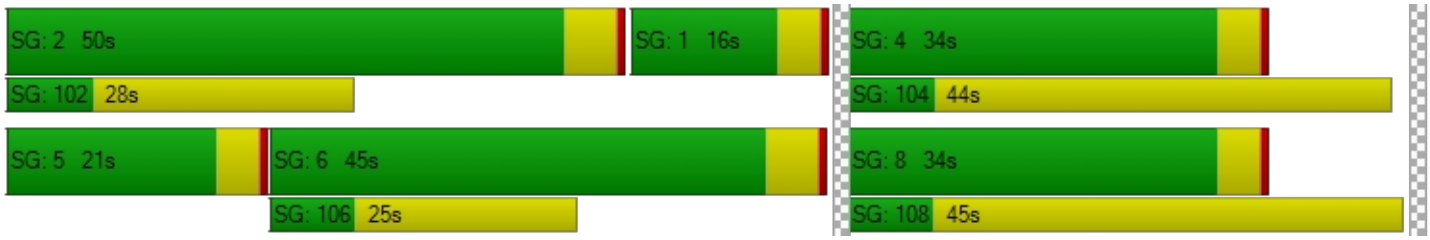
d_M, Delay for Movement [s/veh]	130.10	17.71	19.94	608.82	32.61	42.33	25.79	21.64	21.64	67.60	21.10	21.10
Movement LOS	F	B	B	F	C	D	C	C	C	E	C	C
d_A, Approach Delay [s/veh]	23.48			90.23			22.44			55.06		
Approach LOS	C			F			C			E		
d_I, Intersection Delay [s/veh]	53.72											
Intersection LOS	D											
Intersection V/C	1.224											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	2589.53	0.00	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	39.61	39.61
l_p,int, Pedestrian LOS Score for Intersection	3.661	3.085	2.179	2.444
Crosswalk LOS	D	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	904	804	600	600
d_b, Bicycle Delay [s]	15.02	17.90	24.50	24.50
l_b,int, Bicycle LOS Score for Intersection	2.493	2.427	1.929	2.465
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: OR 99E/I-205 SB Loop Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	20.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.776

Intersection Setup

Name	OR 99E					
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	1
Entry Pocket Length [ft]	100.00	200.00	240.00	100.00	575.00	275.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	No		No		Yes	

Volumes

Name	OR 99E					
Base Volume Input [veh/h]	1122	180	448	1086	467	443
Base Volume Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
Heavy Vehicles Percentage [%]	3.00	5.00	3.00	3.00	4.00	2.00
Growth Factor	1.0000	1.0130	1.0130	1.0000	1.0130	1.0130
In-Process Volume [veh/h]	31	0	20	61	0	26
Site-Generated Trips [veh/h]	72	132	0	82	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	16	0	0	14	0	0
Right Turn on Red Volume [veh/h]	0	319	0	0	0	244
Total Hourly Volume [veh/h]	1275	0	487	1276	487	244
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	332	0	127	332	127	64
Total Analysis Volume [veh/h]	1328	0	507	1329	507	254
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	11.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	6	6
Maximum Green [s]	40	0	36	40	20	20
Amber [s]	4.3	0.0	3.5	4.3	4.0	4.0
All red [s]	0.5	0.0	0.5	0.5	1.5	1.5
Split [s]	34	0	38	72	28	28
Vehicle Extension [s]	4.8	0.0	2.3	4.8	2.3	2.3
Walk [s]	8	0	0	0	0	0
Pedestrian Clearance [s]	29	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.8	0.0	2.0	2.8	3.5	3.5
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.80	4.80	4.00	4.80	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.80	2.80	2.00	2.80	3.50	0.00
g_i, Effective Green Time [s]	38	38	30	72	18	52
g / C, Green / Cycle	0.38	0.38	0.30	0.72	0.18	0.52
(v / s)_i Volume / Saturation Flow Rate	0.26	0.00	0.29	0.26	0.15	0.16
s, saturation flow rate [veh/h]	5053	1551	1767	5053	3403	1589
c, Capacity [veh/h]	1901	584	539	3644	598	828
d1, Uniform Delay [s]	20.58	0.00	28.81	0.57	39.92	13.67
k, delay calibration	0.50	0.50	0.27	0.50	0.07	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.16	0.00	17.43	0.28	2.13	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.00	0.94	0.36	0.85	0.31
d, Delay for Lane Group [s/veh]	22.74	0.00	46.24	0.85	42.06	13.88
Lane Group LOS	C	A	D	A	D	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.78	0.00	12.49	0.37	6.14	3.20
50th-Percentile Queue Length [ft/ln]	169.48	0.00	312.36	9.34	153.50	80.08
95th-Percentile Queue Length [veh/ln]	11.05	0.00	18.29	0.67	10.20	5.77
95th-Percentile Queue Length [ft/ln]	276.23	0.00	457.29	16.82	255.09	144.15

Movement, Approach, & Intersection Results

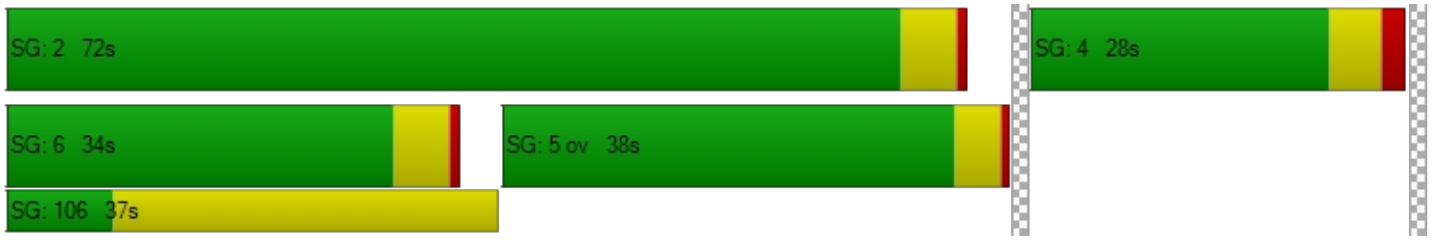
d_M, Delay for Movement [s/veh]	22.74	0.00	46.24	0.85	42.06	13.88
Movement LOS	C	A	D	A	D	B
d_A, Approach Delay [s/veh]	22.74		13.38		32.65	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	20.28					
Intersection LOS	C					
Intersection V/C	0.776					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	4901.87
d_p, Pedestrian Delay [s]	0.00	0.00	38.72
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.928
Crosswalk LOS	F	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	584	1344	450
d_b, Bicycle Delay [s]	25.08	5.38	30.03
I_b,int, Bicycle LOS Score for Intersection	2.465	2.569	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: OR 99E/I-205 EB Loop Off-Ramp

Control Type:	Signalized	Delay (sec / veh):	19.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.766

Intersection Setup

Name	OR 99E		OR 99E		I-205 EB Loop Off-Ramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	185.00	500.00	100.00	100.00	130.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		Yes		Yes	
Crosswalk	No		No		Yes	

Volumes

Name	OR 99E		OR 99E		I-205 EB Loop Off-Ramp	
Base Volume Input [veh/h]	864	577	460	1108	94	447
Base Volume Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
Heavy Vehicles Percentage [%]	3.00	4.00	4.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0130	1.0130	1.0000	1.0130	1.0130
In-Process Volume [veh/h]	5	0	46	15	0	23
Site-Generated Trips [veh/h]	204	0	0	82	151	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	16	0	0	14	0	0
Right Turn on Red Volume [veh/h]	0	301	0	0	0	489
Total Hourly Volume [veh/h]	1115	301	526	1252	249	0
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	290	78	137	326	65	0
Total Analysis Volume [veh/h]	1161	314	548	1304	259	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	99.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	6	6	5	2	4	0
Auxiliary Signal Groups		4,6				
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	10	4	10	6	0
Maximum Green [s]	36	36	34	70	22	0
Amber [s]	4.3	4.3	3.5	4.3	4.0	0.0
All red [s]	0.5	0.5	0.5	0.5	1.5	0.0
Split [s]	36	36	38	74	26	0
Vehicle Extension [s]	4.8	4.8	3.0	4.8	2.3	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	16	16	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.8	2.8	2.0	2.8	3.5	0.0
Minimum Recall	Yes	Yes	No	Yes	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.80	4.80	4.00	4.80	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.80	0.00	2.00	2.80	3.50	3.50
g_i, Effective Green Time [s]	36	59	33	73	17	17
g / C, Green / Cycle	0.36	0.59	0.33	0.73	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.23	0.20	0.31	0.26	0.15	0.00
s, saturation flow rate [veh/h]	5053	1540	1752	5053	1767	1577
c, Capacity [veh/h]	1824	902	573	3679	299	267
d1, Uniform Delay [s]	21.07	5.23	27.56	0.42	40.52	0.00
k, delay calibration	0.50	0.33	0.40	0.50	0.13	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.71	0.70	24.39	0.27	8.98	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.64	0.35	0.96	0.35	0.87	0.00
d, Delay for Lane Group [s/veh]	22.77	5.93	51.95	0.68	49.51	0.00
Lane Group LOS	C	A	D	A	D	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.84	1.70	14.45	0.29	6.89	0.00
50th-Percentile Queue Length [ft/ln]	146.10	42.44	361.29	7.23	172.18	0.00
95th-Percentile Queue Length [veh/ln]	9.81	3.06	20.69	0.52	11.19	0.00
95th-Percentile Queue Length [ft/ln]	245.21	76.39	517.15	13.01	279.78	0.00

Movement, Approach, & Intersection Results

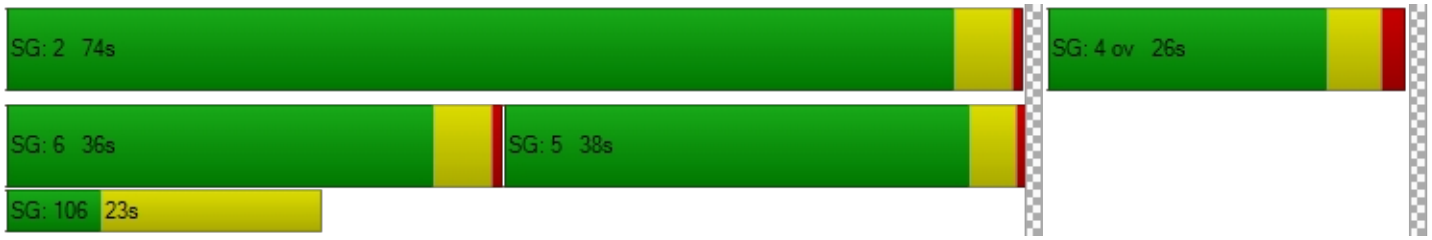
d_M, Delay for Movement [s/veh]	22.77	5.93	51.95	0.68	49.51	0.00
Movement LOS	C	A	D	A	D	A
d_A, Approach Delay [s/veh]	19.19		15.85		49.51	
Approach LOS	B		B		D	
d_I, Intersection Delay [s/veh]	19.66					
Intersection LOS	B					
Intersection V/C	0.766					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	335.09
d_p, Pedestrian Delay [s]	0.00	0.00	39.61
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	3.262
Crosswalk LOS	F	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	624	1384	410
d_b, Bicycle Delay [s]	23.68	4.74	31.60
l_b,int, Bicycle LOS Score for Intersection	2.536	2.578	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: OR 99E / 14th St

Control Type:	Signalized	Delay (sec / veh):	10.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.524

Intersection Setup

Name	OR 99E		OR 99E		14th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		14th St	
Base Volume Input [veh/h]	978	44	306	901	58	234
Base Volume Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
Heavy Vehicles Percentage [%]	4.00	5.00	2.00	4.00	9.00	1.00
Growth Factor	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570
In-Process Volume [veh/h]	8	0	0	18	3	0
Site-Generated Trips [veh/h]	14	9	233	0	18	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	16	0	0	14	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	128
Total Hourly Volume [veh/h]	1045	57	566	960	84	127
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	272	15	147	250	22	33
Total Analysis Volume [veh/h]	1089	59	590	1000	88	132
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2		3		2	
v_di, Inbound Pedestrian Volume crossing m	2		2		3	
v_co, Outbound Pedestrian Volume crossing	0		2		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		2		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	2		9		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	75.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	52	0	24	80	12	12
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	56	0	28	84	16	16
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	7	0	0	0	7	7
Pedestrian Clearance [s]	11	0	0	0	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	62	62	84	84	8	30
g / C, Green / Cycle	0.62	0.62	0.84	0.84	0.08	0.30
(v / s)_i Volume / Saturation Flow Rate	0.31	0.32	0.75	0.29	0.05	0.08
s, saturation flow rate [veh/h]	1840	1804	786	3503	1657	1599
c, Capacity [veh/h]	1148	1126	718	2929	139	473
d1, Uniform Delay [s]	3.91	3.93	16.56	0.00	44.31	27.02
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.56	1.65	10.28	0.32	2.88	0.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.50	0.51	0.82	0.34	0.63	0.28
d, Delay for Lane Group [s/veh]	5.46	5.58	26.83	0.32	47.19	27.44
Lane Group LOS	A	A	C	A	D	C
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.73	2.76	2.05	0.13	2.21	2.46
50th-Percentile Queue Length [ft/ln]	68.30	68.97	51.21	3.24	55.20	61.42
95th-Percentile Queue Length [veh/ln]	4.92	4.97	3.69	0.23	3.97	4.42
95th-Percentile Queue Length [ft/ln]	122.94	124.14	92.18	5.83	99.35	110.56

Movement, Approach, & Intersection Results

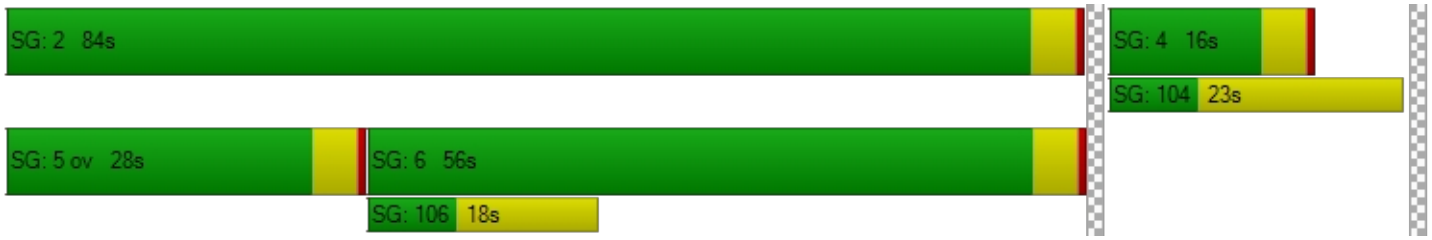
d_M, Delay for Movement [s/veh]	5.52	5.58	26.83	0.32	47.19	27.44
Movement LOS	A	A	C	A	D	C
d_A, Approach Delay [s/veh]	5.52		10.16		35.34	
Approach LOS	A		B		D	
d_I, Intersection Delay [s/veh]	10.23					
Intersection LOS	B					
Intersection V/C	0.524					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	2321.78	1452.24	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	39.61
l_p,int, Pedestrian LOS Score for Intersection	2.681	2.878	3.208
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1040	1600	240
d_b, Bicycle Delay [s]	11.53	2.01	38.72
l_b,int, Bicycle LOS Score for Intersection	2.507	2.871	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: OR 99E / 12th St

Control Type:	Signalized	Delay (sec / veh):	2.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.417

Intersection Setup

Name	OR 99E		OR 99E		12th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	175.00	100.00	100.00	120.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		12th St	
Base Volume Input [veh/h]	916	17	102	861	6	125
Base Volume Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
Heavy Vehicles Percentage [%]	4.00	0.00	1.00	4.00	0.00	2.00
Growth Factor	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570
In-Process Volume [veh/h]	8	0	0	18	0	0
Site-Generated Trips [veh/h]	24	24	0	18	24	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	16	0	0	14	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	68
Total Hourly Volume [veh/h]	991	43	111	937	30	68
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	266	12	30	252	8	18
Total Analysis Volume [veh/h]	1066	46	119	1008	32	73
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1		1		1	
v_di, Inbound Pedestrian Volume crossing m	1		1		1	
v_co, Outbound Pedestrian Volume crossing	1		1		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		1		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	4		12		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	51.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	80	0	16	80	12	12
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	64	0	20	84	16	16
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	9	0	0	0	8	8
Pedestrian Clearance [s]	11	0	0	0	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	78	78	86	86	6	14
g / C, Green / Cycle	0.78	0.78	0.86	0.86	0.06	0.14
(v / s)_i Volume / Saturation Flow Rate	0.30	0.31	0.18	0.29	0.02	0.05
s, saturation flow rate [veh/h]	1840	1809	660	3503	1791	1573
c, Capacity [veh/h]	1436	1412	590	3015	107	221
d1, Uniform Delay [s]	0.00	0.00	0.06	0.00	45.16	38.89
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.79	0.83	0.77	0.30	0.95	0.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.39	0.39	0.20	0.33	0.30	0.33
d, Delay for Lane Group [s/veh]	0.79	0.83	0.83	0.30	46.10	39.42
Lane Group LOS	A	A	A	A	D	D
Critical Lane Group	No	Yes	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.32	0.32	0.13	0.13	0.79	1.65
50th-Percentile Queue Length [ft/ln]	7.88	8.10	3.15	3.14	19.67	41.14
95th-Percentile Queue Length [veh/ln]	0.57	0.58	0.23	0.23	1.42	2.96
95th-Percentile Queue Length [ft/ln]	14.18	14.57	5.67	5.64	35.41	74.05

Movement, Approach, & Intersection Results

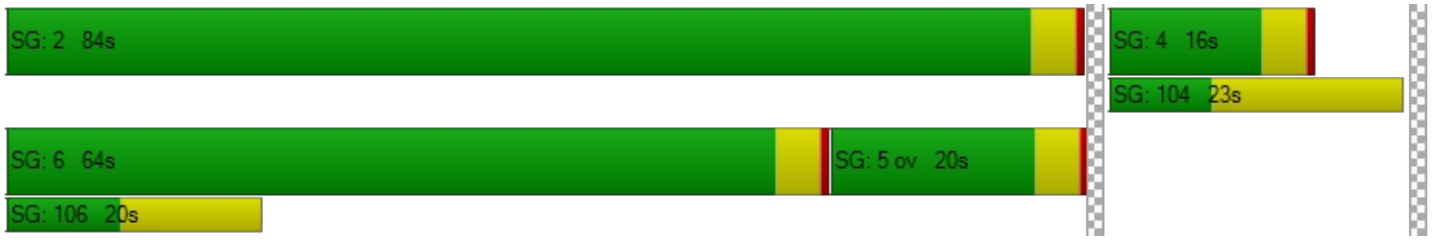
d_M, Delay for Movement [s/veh]	0.81	0.83	0.83	0.30	46.10	39.42
Movement LOS	A	A	A	A	D	D
d_A, Approach Delay [s/veh]	0.81		0.36		41.46	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	2.41					
Intersection LOS	A					
Intersection V/C	0.417					

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	4901.87	4521.01	3201.08
d_p, Pedestrian Delay [s]	38.72	38.72	37.85
l_p,int, Pedestrian LOS Score for Intersection	2.660	2.759	2.300
Crosswalk LOS	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1200	1600	240
d_b, Bicycle Delay [s]	8.02	2.01	38.74
l_b,int, Bicycle LOS Score for Intersection	2.477	2.489	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: OR 99E / 10th St

Control Type:	Signalized	Delay (sec / veh):	3.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.362

Intersection Setup

Name	OR 99E		OR 99E		7th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	250.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	OR 99E		OR 99E		7th St	
Base Volume Input [veh/h]	657	35	236	611	12	255
Base Volume Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
Heavy Vehicles Percentage [%]	5.00	0.00	0.00	4.00	8.00	1.00
Growth Factor	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570
In-Process Volume [veh/h]	8	0	0	18	0	0
Site-Generated Trips [veh/h]	48	0	0	42	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	16	0	0	14	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	139
Total Hourly Volume [veh/h]	749	38	257	703	13	139
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	201	10	69	189	3	37
Total Analysis Volume [veh/h]	805	41	276	756	14	149
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	4		1		1	
v_di, Inbound Pedestrian Volume crossing m	3		1		1	
v_co, Outbound Pedestrian Volume crossing	0		3		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		4		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		6		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	53.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	6	0	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lag	-	Lead	-
Minimum Green [s]	10	0	4	10	4	4
Maximum Green [s]	64	0	16	80	12	12
Amber [s]	3.5	0.0	3.5	3.5	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	64	0	20	84	16	16
Vehicle Extension [s]	6.1	0.0	2.3	6.1	2.3	2.3
Walk [s]	7	0	0	0	7	7
Pedestrian Clearance [s]	11	0	0	0	16	16
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	74	74	83	83	9	18
g / C, Green / Cycle	0.74	0.74	0.83	0.83	0.09	0.18
(v / s)_i Volume / Saturation Flow Rate	0.23	0.24	0.34	0.22	0.01	0.09
s, saturation flow rate [veh/h]	1825	1790	817	3503	1657	1586
c, Capacity [veh/h]	1341	1315	686	2896	155	295
d1, Uniform Delay [s]	0.28	0.28	0.18	0.00	41.47	36.61
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.21
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.62	0.65	1.76	0.22	0.15	2.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.32	0.40	0.26	0.09	0.51
d, Delay for Lane Group [s/veh]	0.90	0.93	1.94	0.22	41.63	39.26
Lane Group LOS	A	A	A	A	D	D
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.37	0.38	0.33	0.09	0.32	3.47
50th-Percentile Queue Length [ft/ln]	9.28	9.45	8.37	2.21	8.05	86.64
95th-Percentile Queue Length [veh/ln]	0.67	0.68	0.60	0.16	0.58	6.24
95th-Percentile Queue Length [ft/ln]	16.71	17.00	15.06	3.97	14.48	155.95

Movement, Approach, & Intersection Results

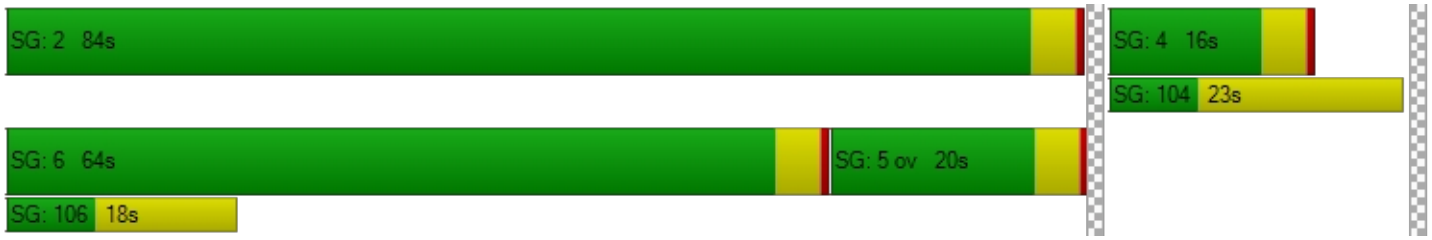
d_M, Delay for Movement [s/veh]	0.91	0.93	1.94	0.22	41.63	39.26
Movement LOS	A	A	A	A	D	D
d_A, Approach Delay [s/veh]	0.91		0.68		39.47	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	3.87					
Intersection LOS	A					
Intersection V/C	0.362					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	1282.52	3498.85	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	39.61
l_p,int, Pedestrian LOS Score for Intersection	2.530	2.719	2.683
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1200	1600	240
d_b, Bicycle Delay [s]	8.00	2.01	38.74
l_b,int, Bicycle LOS Score for Intersection	2.258	2.411	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Washington St / Clackamas River Dr

Control Type:	Roundabout	Delay (sec / veh):	5.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Washington St		Washington St		Clackamas River Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Washington St		Washington St		Clackamas River Dr	
Base Volume Input [veh/h]	228	364	174	121	150	77
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	5.00	12.00	5.00	6.00	7.00	5.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	0	3	0
Site-Generated Trips [veh/h]	18	92	0	21	68	0
Diverted Trips [veh/h]	0	439	-29	29	161	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	261	920	157	179	393	82
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	258	44	50	110	23
Total Analysis Volume [veh/h]	293	1034	176	201	442	92
Pedestrian Volume [ped/h]	0		0		1	

Intersection Settings

Number of Conflicting Circulating Lanes	1		1		1	
Circulating Flow Rate [veh/h]	185		473		308	
Exiting Flow Rate [veh/h]	686		404		185	
Demand Flow Rate [veh/h]	261	920	157	179	393	82
Adjusted Demand Flow Rate [veh/h]	293	1034	176	201	442	92

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	0.00	1380.00	1380.00
B (coefficient)	0.00102	0.00000	0.00102	0.00102
HV Adjustment Factor	0.91	0.89	0.95	0.94
Entry Flow Rate [veh/h]	324	0	398	570
Capacity of Entry and Bypass Lanes [veh/h]	1143	112001	852	1009
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1036	100000	808	946
X, volume / capacity	0.28	0.01	0.47	0.56

Movement, Approach, & Intersection Results

Lane LOS	A	A	B	B
95th-Percentile Queue Length [veh]	1.17	0.00	2.51	3.64
95th-Percentile Queue Length [ft]	29.23	0.00	62.79	90.94
Approach Delay [s/veh]	1.38		10.64	11.46
Approach LOS	A		B	B
Intersection Delay [s/veh]	5.35			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 9: Washington St/ Prairie Schooner Way

Control Type:	Signalized	Delay (sec / veh):	22.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.856

Intersection Setup

Name	Washington St		Washington St		Prairie Schooner Way	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	0	1	0
Entry Pocket Length [ft]	100.00	100.00	150.00	100.00	165.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		No		Yes	
Crosswalk	No		Yes		Yes	

Volumes

Name	Washington St		Washington St		Prairie Schooner Way	
Base Volume Input [veh/h]	403	164	47	228	410	178
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	14.00	8.00	2.00	7.00	11.00	6.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	5	0	3	0	0
Site-Generated Trips [veh/h]	110	59	0	89	107	0
Diverted Trips [veh/h]	439	0	0	190	249	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	95
Total Hourly Volume [veh/h]	979	239	50	525	794	95
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	263	64	13	141	213	26
Total Analysis Volume [veh/h]	1053	257	54	565	854	102
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	93
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Overlap
Signal Group	2	0	1	6	8	8
Auxiliary Signal Groups						1,8
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	8	0	4	8	4	4
Maximum Green [s]	30	0	20	30	30	30
Amber [s]	4.0	0.0	3.5	4.0	3.5	3.5
All red [s]	0.5	0.0	0.5	0.5	0.5	0.5
Split [s]	35	0	24	35	34	34
Vehicle Extension [s]	4.2	0.0	2.3	5.2	2.5	2.5
Walk [s]	8	0	0	0	7	7
Pedestrian Clearance [s]	24	0	0	0	21	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	0.0	2.0	2.5	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	R
C, Cycle Length [s]	65	65	65	65	65	65
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	0.00	2.50	2.00	0.00
g_i, Effective Green Time [s]	29	29	36	36	20	27
g / C, Green / Cycle	0.45	0.45	0.56	0.56	0.31	0.42
(v / s)_i Volume / Saturation Flow Rate	0.39	0.42	0.09	0.17	0.27	0.07
s, saturation flow rate [veh/h]	1690	1572	610	3418	3209	1523
c, Capacity [veh/h]	759	706	338	1907	1001	640
d1, Uniform Delay [s]	16.17	16.98	12.51	7.65	21.08	11.75
k, delay calibration	0.35	0.39	0.07	0.26	0.08	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.12	16.80	0.13	0.20	1.64	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.93	0.16	0.30	0.85	0.16
d, Delay for Lane Group [s/veh]	25.30	33.77	12.64	7.85	22.71	11.82
Lane Group LOS	C	C	B	A	C	B
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.50	11.25	0.30	1.79	5.80	0.84
50th-Percentile Queue Length [ft/ln]	237.47	281.19	7.44	44.64	145.04	21.11
95th-Percentile Queue Length [veh/ln]	14.55	16.75	0.54	3.21	9.75	1.52
95th-Percentile Queue Length [ft/ln]	363.83	418.70	13.39	80.36	243.79	38.00

Movement, Approach, & Intersection Results

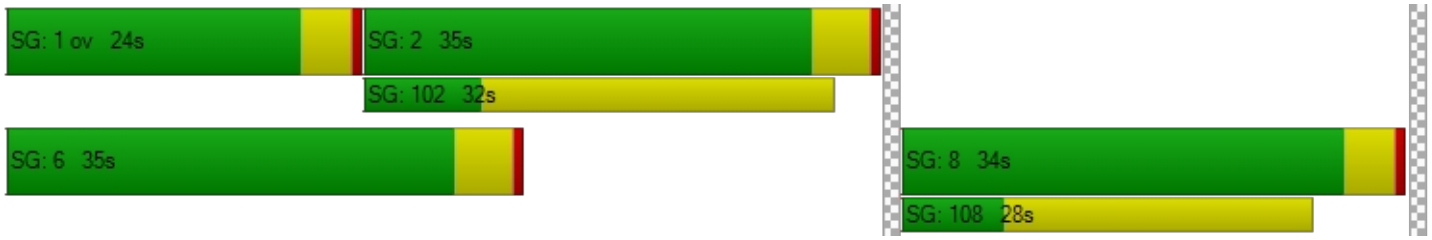
d_M, Delay for Movement [s/veh]	28.50	33.77	12.64	7.85	22.71	11.82
Movement LOS	C	C	B	A	C	B
d_A, Approach Delay [s/veh]	29.53		8.27		21.55	
Approach LOS	C		A		C	
d_I, Intersection Delay [s/veh]	22.33					
Intersection LOS	C					
Intersection V/C	0.856					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	36.15	35.27
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.665	2.738
Crosswalk LOS	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	656	656	645
d_b, Bicycle Delay [s]	21.01	21.00	21.35
l_b,int, Bicycle LOS Score for Intersection	2.640	2.070	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 10: Washington St / Home Depot-Site Access A

Control Type:	Signalized	Delay (sec / veh):	20.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.778

Intersection Setup

Name	Washington St			Washington St			Home Depot Dwy			Home Depot Dwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	335.00	100.00	330.00	250.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	470.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	370.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			Home Depot Dwy			Home Depot Dwy		
Base Volume Input [veh/h]	39	147	185	340	214	97	82	22	32	181	2	148
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	28.00	7.00	2.00	3.00	8.00	34.00	39.00	32.00	22.00	3.00	3.00	7.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	5	0	0	3	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	119	61	57	138	0	0	0	0	54	0	49
Diverted Trips [veh/h]	0	308	0	131	308	0	0	0	0	0	0	131
Pass-by Trips [veh/h]	0	-17	17	17	-17	0	0	0	0	17	0	17
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	138	0	0	52	0	0	0	0	0	177
Total Hourly Volume [veh/h]	41	571	138	568	660	52	88	23	34	264	2	177
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	150	36	149	174	14	23	6	9	69	1	47
Total Analysis Volume [veh/h]	43	601	145	598	695	55	93	24	36	278	2	186
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			1			1			0		
v_di, Inbound Pedestrian Volume crossing m	0			1			1			0		
v_co, Outbound Pedestrian Volume crossing	0			1			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	124
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	0	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lag	-	-
Minimum Green [s]	6	10	0	4	10	0	0	8	0	6	6	6
Maximum Green [s]	45	45	0	25	45	0	0	25	0	20	20	20
Amber [s]	3.5	4.5	0.0	3.5	4.5	0.0	0.0	4.0	0.0	4.0	4.0	4.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.5	0.5	0.5
Split [s]	49	50	0	29	50	0	0	30	0	25	25	25
Vehicle Extension [s]	2.5	4.2	0.0	2.5	4.2	0.0	0.0	2.5	0.0	2.5	2.5	2.5
Walk [s]	0	9	0	0	7	0	0	8	0	8	8	8
Pedestrian Clearance [s]	0	17	0	0	21	0	0	24	0	24	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	2.5	0.0	2.5	2.5	2.5
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	C	C	R
C, Cycle Length [s]	66	66	66	66	66	66	66	66	66
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	2.50	2.50	2.50
g_i, Effective Green Time [s]	40	19	19	40	32	32	17	17	17
g / C, Green / Cycle	0.60	0.29	0.29	0.60	0.49	0.49	0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.06	0.21	0.22	0.76	0.21	0.05	0.15	0.22	0.12
s, saturation flow rate [veh/h]	702	1795	1660	791	3389	1180	1054	1264	1524
c, Capacity [veh/h]	497	522	483	693	1662	579	357	431	389
d1, Uniform Delay [s]	6.02	21.13	21.20	10.87	10.78	8.99	21.20	23.73	20.86
k, delay calibration	0.17	0.17	0.17	0.50	0.17	0.17	0.08	0.11	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.11	3.12	3.51	13.46	0.26	0.11	0.61	1.63	0.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.74	0.75	0.86	0.42	0.10	0.43	0.65	0.48
d, Delay for Lane Group [s/veh]	6.14	24.25	24.71	24.33	11.04	9.09	21.81	25.36	21.54
Lane Group LOS	A	C	C	C	B	A	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.21	5.40	5.12	6.58	2.88	0.39	1.97	4.09	2.35
50th-Percentile Queue Length [ft/ln]	5.29	135.09	128.03	164.62	71.89	9.72	49.32	102.30	58.76
95th-Percentile Queue Length [veh/ln]	0.38	9.22	8.83	10.79	5.18	0.70	3.55	7.37	4.23
95th-Percentile Queue Length [ft/ln]	9.53	230.40	220.81	269.84	129.41	17.50	88.77	184.13	105.77

Movement, Approach, & Intersection Results

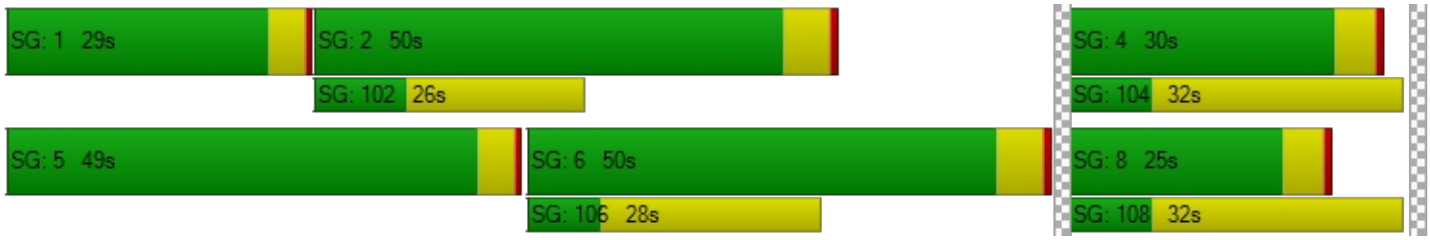
d_M, Delay for Movement [s/veh]	6.14	24.41	24.71	24.33	11.04	9.09	21.81	21.81	21.81	25.36	25.36	21.54
Movement LOS	A	C	C	C	B	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	23.47			16.85			21.81			23.83		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	20.20											
Intersection LOS	C											
Intersection V/C	0.778											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	4684.26	1815.67	0.00
d_p, Pedestrian Delay [s]	50.58	50.58	51.49	49.68
l_p,int, Pedestrian LOS Score for Intersection	3.284	3.157	2.087	3.034
Crosswalk LOS	C	C	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	726	726	411	331
d_b, Bicycle Delay [s]	25.18	25.17	39.12	43.19
l_b,int, Bicycle LOS Score for Intersection	2.324	2.715	1.812	2.621
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Washington St / Abernethy Rd

Control Type:	Signalized	Delay (sec / veh):	11.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.480

Intersection Setup

Name	Washington St			Washington St			17th St			Abernethy Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	115.00	100.00	225.00	100.00	100.00	100.00	100.00	100.00	100.00	300.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			30.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			17th St			Abernethy Rd		
Base Volume Input [veh/h]	2	299	212	39	386	1	0	1	2	189	1	79
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	0.00	6.00	5.00	8.00	6.00	0.00	0.00	0.00	0.00	3.00	0.00	6.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	5	13	0	3	0	0	0	0	5	0	0
Site-Generated Trips [veh/h]	0	209	113	0	183	0	0	0	0	99	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	176	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	533	176	41	598	1	0	1	2	306	1	85
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	143	47	11	161	0	0	0	1	82	0	23
Total Analysis Volume [veh/h]	2	573	189	44	643	1	0	1	2	329	1	91
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			1			0		
v_di, Inbound Pedestrian Volume crossing m	1			0			1			0		
v_co, Outbound Pedestrian Volume crossing	1			1			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	8	0	0	8	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	15	0	0	30	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	35	0	0	20	0	0	35	0
Vehicle Extension [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	16	0	0	8	0	0	13	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C
C, Cycle Length [s]	43	43	43	43	43	43	43	43
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	18	18	18	18	18	15	15	15
g / C, Green / Cycle	0.42	0.42	0.42	0.42	0.42	0.34	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.00	0.32	0.12	0.06	0.36	0.00	0.24	0.06
s, saturation flow rate [veh/h]	798	1810	1513	798	1809	1697	1398	1618
c, Capacity [veh/h]	221	766	640	263	766	667	584	556
d1, Uniform Delay [s]	18.71	10.44	8.12	17.61	11.08	9.25	12.15	9.79
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.10	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	0.56	0.09	0.11	0.98	0.00	0.76	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.75	0.30	0.17	0.84	0.00	0.56	0.17
d, Delay for Lane Group [s/veh]	18.72	11.00	8.22	17.72	12.06	9.25	12.91	9.85
Lane Group LOS	B	B	A	B	B	A	B	A
Critical Lane Group	No	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.02	3.27	0.82	0.36	4.19	0.02	2.16	0.47
50th-Percentile Queue Length [ft/ln]	0.41	81.67	20.62	9.05	104.76	0.39	54.07	11.69
95th-Percentile Queue Length [veh/ln]	0.03	5.88	1.48	0.65	7.54	0.03	3.89	0.84
95th-Percentile Queue Length [ft/ln]	0.74	147.01	37.12	16.30	188.56	0.71	97.32	21.05

Movement, Approach, & Intersection Results

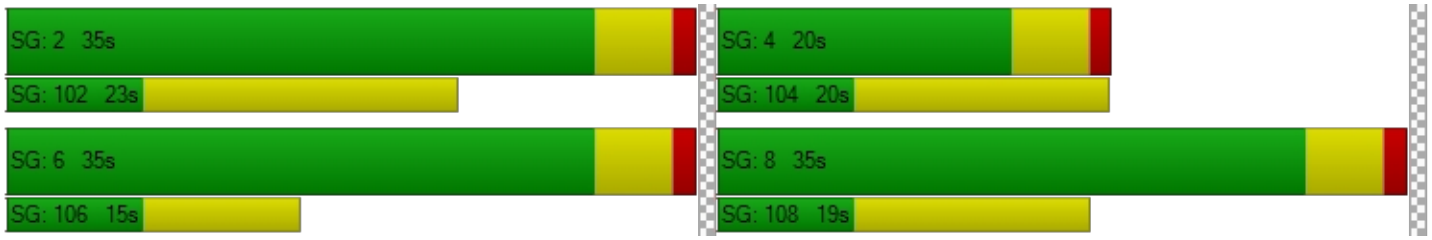
d_M, Delay for Movement [s/veh]	18.72	11.00	8.22	17.72	12.06	12.06	9.25	9.25	9.25	12.91	9.85	9.85
Movement LOS	B	B	A	B	B	B	A	A	A	B	A	A
d_A, Approach Delay [s/veh]	10.33			12.42			9.25			12.24		
Approach LOS	B			B			A			B		
d_I, Intersection Delay [s/veh]	11.53											
Intersection LOS	B											
Intersection V/C	0.480											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	3289.68	0.00	5349.92	3275.20
d_p, Pedestrian Delay [s]	24.86	24.86	24.86	24.86
l_p,int, Pedestrian LOS Score for Intersection	3.380	2.366	1.707	2.304
Crosswalk LOS	C	B	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	857	857	429	857
d_b, Bicycle Delay [s]	11.45	11.43	21.61	11.43
l_b,int, Bicycle LOS Score for Intersection	3.111	2.695	1.565	2.254
Bicycle LOS	C	B	A	B

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: Washington St / 15th St

Control Type:	Signalized	Delay (sec / veh):	12.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.806

Intersection Setup

Name	Washington St			Washington St			15th St			15th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	260.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			15th St			15th St		
Base Volume Input [veh/h]	33	389	32	29	375	0	101	27	38	14	75	30
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0000	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	3.00	5.00	0.00	0.00	3.00	2.00	4.00	0.00	3.00	0.00	0.00	0.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	3	0	0	3	5	18	0	0	0	0	0
Site-Generated Trips [veh/h]	0	308	0	0	78	204	14	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	35	726	34	31	482	209	140	29	40	15	80	32
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	189	9	8	126	52	36	8	10	4	21	8
Total Analysis Volume [veh/h]	36	756	35	32	502	209	146	30	42	16	83	33
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			2			0			2		
v_di, Inbound Pedestrian Volume crossing m	0			2			1			2		
v_co, Outbound Pedestrian Volume crossing	3			1			2			4		
v_ci, Inbound Pedestrian Volume crossing mi	4			2			1			3		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			0			3			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	35	0	0	35	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	19	54	0	19	54	0	0	39	0	0	39	0
Vehicle Extension [s]	2.3	4.1	0.0	2.3	4.1	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	9	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	44	44	44	44	44	44
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	28	23	28	23	8	8
g / C, Green / Cycle	0.64	0.52	0.64	0.52	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.04	0.44	0.04	0.40	0.14	0.07
s, saturation flow rate [veh/h]	857	1808	826	1762	1540	1851
c, Capacity [veh/h]	561	950	522	920	403	413
d1, Uniform Delay [s]	5.24	8.87	5.96	8.47	17.44	16.29
k, delay calibration	0.07	0.16	0.16	0.16	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.03	2.90	0.07	2.08	0.84	0.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.83	0.06	0.77	0.54	0.32
d, Delay for Lane Group [s/veh]	5.27	11.77	6.04	10.55	18.28	16.62
Lane Group LOS	A	B	A	B	B	B
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.06	4.90	0.06	4.08	1.92	1.07
50th-Percentile Queue Length [ft/ln]	1.46	122.54	1.45	102.02	47.92	26.71
95th-Percentile Queue Length [veh/ln]	0.11	8.53	0.10	7.35	3.45	1.92
95th-Percentile Queue Length [ft/ln]	2.63	213.32	2.62	183.63	86.26	48.09

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	5.27	11.77	11.77	6.04	10.55	10.55	18.28	18.28	18.28	16.62	16.62	16.62
Movement LOS	A	B	B	A	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	11.49			10.35			18.28			16.62		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	12.17											
Intersection LOS	B											
Intersection V/C	0.806											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	6171.11	1167.78	0.00	720.36
d_p, Pedestrian Delay [s]	45.54	43.75	45.54	45.54
l_p,int, Pedestrian LOS Score for Intersection	2.424	2.702	2.021	1.863
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	893	893	625	625
d_b, Bicycle Delay [s]	17.19	17.16	26.51	26.47
l_b,int, Bicycle LOS Score for Intersection	2.924	2.786	1.919	1.777
Bicycle LOS	C	C	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Washington St / 14th St

Control Type:	Signalized	Delay (sec / veh):	21.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.883

Intersection Setup

Name	Washington St			Washington St			14th St			14th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	280.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			14th St			14th St		
Base Volume Input [veh/h]	177	229	5	11	274	145	222	28	100	5	28	3
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	2.00	6.00	0.00	0.00	4.00	5.00	5.00	0.00	3.00	0.00	0.00	0.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	3	0	0	0	0	3	3	0	5	0	0	0
Site-Generated Trips [veh/h]	0	65	0	0	60	18	242	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	56	0	0	0
Total Hourly Volume [veh/h]	192	309	5	12	353	175	482	30	56	5	30	3
Peak Hour Factor	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	78	1	3	89	44	122	8	14	1	8	1
Total Analysis Volume [veh/h]	194	312	5	12	357	177	487	30	57	5	30	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			2			3			3		
v_di, Inbound Pedestrian Volume crossing m	3			3			2			2		
v_co, Outbound Pedestrian Volume crossing	2			4			2			4		
v_ci, Inbound Pedestrian Volume crossing mi	2			4			2			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			3			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	112
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	35	0	0	35	0
Amber [s]	3.5	3.5	0.0	3.5	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	19	54	0	19	54	0	0	39	0	0	39	0
Vehicle Extension [s]	2.3	4.1	0.0	2.3	4.1	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C
C, Cycle Length [s]	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	35	30	35	25	27	27	27
g / C, Green / Cycle	0.50	0.43	0.50	0.36	0.38	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.18	0.18	0.01	0.31	0.36	0.04	0.02
s, saturation flow rate [veh/h]	1084	1805	1138	1736	1448	1533	1859
c, Capacity [veh/h]	450	784	598	619	654	586	769
d1, Uniform Delay [s]	13.42	13.62	9.22	21.00	20.47	13.89	13.67
k, delay calibration	0.27	0.16	0.16	0.16	0.23	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.65	0.50	0.02	5.35	4.56	0.05	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.40	0.02	0.86	0.79	0.10	0.05
d, Delay for Lane Group [s/veh]	15.07	14.12	9.24	26.35	25.03	13.95	13.69
Lane Group LOS	B	B	A	C	C	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.68	3.23	0.09	8.53	8.31	0.56	0.37
50th-Percentile Queue Length [ft/ln]	42.07	80.81	2.20	213.31	207.66	14.07	9.19
95th-Percentile Queue Length [veh/ln]	3.03	5.82	0.16	13.32	13.03	1.01	0.66
95th-Percentile Queue Length [ft/ln]	75.72	145.46	3.96	333.07	325.83	25.32	16.54

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.07	14.12	14.12	9.24	26.35	26.35	25.03	25.03	13.95	13.69	13.69	13.69
Movement LOS	B	B	B	A	C	C	C	C	B	B	B	B
d_A, Approach Delay [s/veh]	14.48			25.97			23.93			13.69		
Approach LOS	B			C			C			B		
d_I, Intersection Delay [s/veh]	21.47											
Intersection LOS	C											
Intersection V/C	0.883											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	1518.21	0.00	315.11	1280.31
d_p, Pedestrian Delay [s]	45.54	45.54	45.54	45.54
l_p,int, Pedestrian LOS Score for Intersection	2.278	3.008	2.537	1.768
Crosswalk LOS	B	C	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	893	893	625	625
d_b, Bicycle Delay [s]	17.16	17.16	26.51	26.48
l_b,int, Bicycle LOS Score for Intersection	2.403	2.461	2.599	1.622
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Washington St / 12th St

Control Type:	Signalized	Delay (sec / veh):	9.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.564

Intersection Setup

Name	Washington St			Washington St			12th St			12th St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			12th St			12th St		
Base Volume Input [veh/h]	69	395	2	13	357	13	12	19	69	6	20	9
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	3.00	4.00	0.00	0.00	3.00	8.00	17.00	0.00	1.00	0.00	0.00	0.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	3	0	0	5	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	41	0	0	36	24	24	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	74	466	2	14	423	38	37	20	74	6	21	10
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	124	1	4	113	10	10	5	20	2	6	3
Total Analysis Volume [veh/h]	79	496	2	15	450	40	39	21	79	6	22	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			1			1			1		
v_di, Inbound Pedestrian Volume crossing m	1			1			1			1		
v_co, Outbound Pedestrian Volume crossing	0			1			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	98
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	15	50	0	15	50	0	0	15	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	19	55	0	19	55	0	0	19	0	0	24	0
Vehicle Extension [s]	2.3	5.2	0.0	2.3	5.2	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	12	0	0	12	0	0	12	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	32	32	32	32	32	32
L, Total Lost Time per Cycle [s]	4.80	4.80	4.80	4.80	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.80	0.00	2.80	2.00	2.00
g_i, Effective Green Time [s]	19	15	19	13	4	4
g / C, Green / Cycle	0.59	0.46	0.59	0.41	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.07	0.27	0.01	0.27	0.08	0.02
s, saturation flow rate [veh/h]	1082	1839	1031	1828	1726	1851
c, Capacity [veh/h]	783	839	766	747	372	375
d1, Uniform Delay [s]	3.59	6.58	3.32	7.76	13.21	12.45
k, delay calibration	0.07	0.26	0.26	0.26	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.03	1.59	0.02	2.31	0.46	0.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.10	0.59	0.02	0.66	0.37	0.10
d, Delay for Lane Group [s/veh]	3.63	8.17	3.35	10.07	13.67	12.54
Lane Group LOS	A	A	A	B	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.09	1.90	0.02	2.26	0.82	0.21
50th-Percentile Queue Length [ft/ln]	2.22	47.43	0.50	56.58	20.53	5.35
95th-Percentile Queue Length [veh/ln]	0.16	3.41	0.04	4.07	1.48	0.39
95th-Percentile Queue Length [ft/ln]	3.99	85.37	0.90	101.85	36.95	9.63

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3.63	8.17	8.17	3.35	10.07	10.07	13.67	13.67	13.67	12.54	12.54	12.54
Movement LOS	A	A	A	A	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	7.55			9.87			13.67			12.54		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	9.31											
Intersection LOS	A											
Intersection V/C	0.564											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	3719.75	2628.72	3699.48
d_p, Pedestrian Delay [s]	38.62	38.62	38.62	38.62
l_p,int, Pedestrian LOS Score for Intersection	2.254	2.284	1.885	1.761
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1024	1024	306	408
d_b, Bicycle Delay [s]	11.66	11.66	35.15	31.04
l_b,int, Bicycle LOS Score for Intersection	2.512	2.393	1.789	1.624
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: Washington St/7th St

Control Type:	Signalized	Delay (sec / veh):	14.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.669

Intersection Setup

Name	Washington St			Washington St			7th St			Molalla Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	270.00	45.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Washington St			Washington St			7th St			Molalla Ave		
Base Volume Input [veh/h]	77	175	10	188	156	22	0	347	62	0	310	221
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0000	1.0100	1.0100	1.0000	1.0100	1.0100
Heavy Vehicles Percentage [%]	1.00	5.00	10.00	3.00	2.00	9.00	2.00	0.00	2.00	2.00	0.00	2.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	3	0	0	5	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	41	0	0	36	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	34	0	0	118
Total Hourly Volume [veh/h]	82	231	11	201	208	23	0	370	33	0	331	118
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	1.0000	0.9700	0.9700	1.0000	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	60	3	52	54	6	0	95	9	0	85	30
Total Analysis Volume [veh/h]	85	238	11	207	214	24	0	381	34	0	341	122
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3			2			3			4		
v_di, Inbound Pedestrian Volume crossing m	4			3			2			3		
v_co, Outbound Pedestrian Volume crossing	5			4			5			3		
v_ci, Inbound Pedestrian Volume crossing mi	5			3			5			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			1			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	142
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap
Signal Group	0	8	0	0	4	0	0	2	0	0	6	6
Auxiliary Signal Groups												4,6
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	10	0	0	10	10
Maximum Green [s]	0	40	0	0	40	0	0	50	0	0	50	50
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.5	3.5
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.5
Split [s]	0	44	0	0	44	0	0	54	0	0	54	54
Vehicle Extension [s]	0.0	2.5	0.0	0.0	2.5	0.0	0.0	4.7	0.0	0.0	4.7	4.7
Walk [s]	0	7	0	0	7	0	0	7	0	0	9	9
Pedestrian Clearance [s]	0	11	0	0	10	0	0	10	0	0	11	11
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
Minimum Recall		No			No			Yes			Yes	Yes
Maximum Recall		No			No			No			No	No
Pedestrian Recall		No			No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	40	40	40	40	40	40	40	40
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	8	8	8	8	12	12	12	24
g / C, Green / Cycle	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.60
(v / s)_i Volume / Saturation Flow Rate	0.05	0.14	0.12	0.13	0.20	0.02	0.18	0.08
s, saturation flow rate [veh/h]	1795	1810	1767	1836	1900	1554	1900	1565
c, Capacity [veh/h]	357	360	359	373	568	465	568	940
d1, Uniform Delay [s]	13.52	14.93	14.43	14.64	12.33	10.08	12.02	3.45
k, delay calibration	0.08	0.08	0.08	0.08	0.20	0.20	0.20	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.25	1.78	1.09	1.36	2.56	0.12	1.90	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.24	0.69	0.58	0.64	0.67	0.07	0.60	0.13
d, Delay for Lane Group [s/veh]	13.77	16.71	15.52	16.00	14.89	10.20	13.92	3.49
Lane Group LOS	B	B	B	B	B	B	B	A
Critical Lane Group	No	Yes	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.58	1.98	1.51	1.77	2.85	0.19	2.34	0.22
50th-Percentile Queue Length [ft/ln]	14.54	49.46	37.67	44.28	71.16	4.85	58.40	5.38
95th-Percentile Queue Length [veh/ln]	1.05	3.56	2.71	3.19	5.12	0.35	4.20	0.39
95th-Percentile Queue Length [ft/ln]	26.17	89.03	67.81	79.70	128.09	8.73	105.12	9.69

Movement, Approach, & Intersection Results

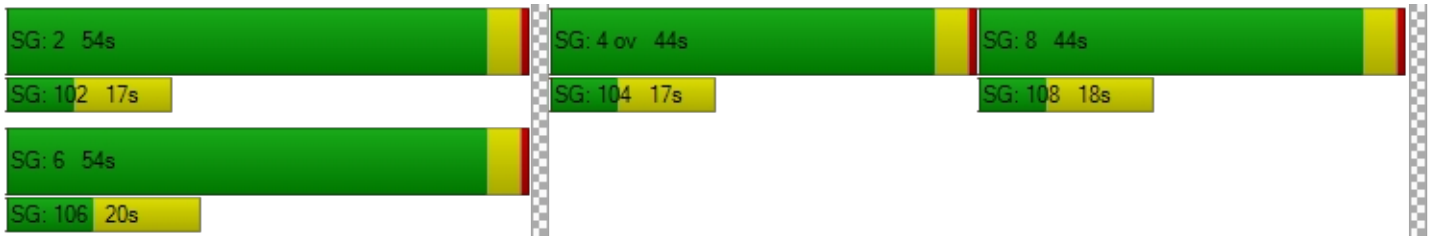
d_M, Delay for Movement [s/veh]	13.77	16.71	16.71	15.52	16.00	16.00	0.00	14.89	10.20	0.00	13.92	3.49
Movement LOS	B	B	B	B	B	B		B	B		B	A
d_A, Approach Delay [s/veh]	15.96			15.78			14.51			11.17		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	14.21											
Intersection LOS	B											
Intersection V/C	0.669											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	513.01	590.42	1075.18	811.40
d_p, Pedestrian Delay [s]	60.43	58.60	60.43	60.43
l_p,int, Pedestrian LOS Score for Intersection	2.278	2.261	2.384	2.608
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	563	563	704	704
d_b, Bicycle Delay [s]	36.63	36.63	29.82	29.82
l_b,int, Bicycle LOS Score for Intersection	2.111	2.294	2.300	2.518
Bicycle LOS	B	B	B	B

Sequence

Ring 1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: S Redland Rd/Abernaty Rd

Control Type:	Signalized	Delay (sec / veh):	34.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.778

Intersection Setup

Name	S Redland Rd			S Redland Rd			Abernethy Rd			Holocomb Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	125.00	100.00	100.00	330.00	100.00	250.00	120.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	2	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	140.00	0.00	0.00	0.00
Speed [mph]	30.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Redland Rd			S Redland Rd			Abernethy Rd			Holocomb Blvd		
Base Volume Input [veh/h]	120	355	37	187	397	62	21	93	131	39	87	210
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0000	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	3.00	4.00	11.00	5.00	3.00	2.00	10.00	6.00	6.00	8.00	3.00	4.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	3	0	0	0	0	3	10	3	3	0	3	0
Site-Generated Trips [veh/h]	48	0	0	0	0	94	81	24	42	0	27	0
Diverted Trips [veh/h]	50	-50	0	0	0	103	185	0	0	0	32	-32
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	133	0	0	0	0	0	96
Total Hourly Volume [veh/h]	229	329	39	200	424	133	298	126	185	41	155	96
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	61	88	10	53	113	35	79	34	49	11	41	26
Total Analysis Volume [veh/h]	244	350	41	213	451	141	317	134	197	44	165	102
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			1			0		
v_di, Inbound Pedestrian Volume crossing m	1			0			1			0		
v_co, Outbound Pedestrian Volume crossing	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			2			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	13.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	0
Maximum Green [s]	30	45	0	30	45	0	30	35	0	20	30	0
Amber [s]	3.5	4.7	0.0	3.5	4.7	0.0	3.5	4.0	0.0	3.5	4.7	0.0
All red [s]	0.5	0.7	0.0	0.5	0.7	0.0	0.5	0.5	0.0	0.5	0.7	0.0
Split [s]	34	51	0	34	51	0	34	40	0	24	36	0
Vehicle Extension [s]	2.3	4.5	0.0	2.3	4.5	0.0	2.3	2.3	0.0	2.3	2.3	0.0
Walk [s]	0	7	0	5	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	10	24	0	0	22	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.4	0.0	2.0	3.4	0.0	2.0	2.5	0.0	2.0	3.4	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C	R
C, Cycle Length [s]	86	86	86	86	86	86	86	86	86	86
L, Total Lost Time per Cycle [s]	4.00	5.40	4.00	5.40	5.40	4.00	4.50	4.00	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.40	2.00	3.40	3.40	2.00	2.50	2.00	3.40	3.40
g_i, Effective Green Time [s]	14	26	12	25	25	18	26	3	10	10
g / C, Green / Cycle	0.16	0.31	0.15	0.29	0.29	0.21	0.31	0.03	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.14	0.22	0.12	0.24	0.09	0.19	0.21	0.03	0.09	0.07
s, saturation flow rate [veh/h]	1767	1807	1738	1855	1588	1667	1611	1695	1855	1564
c, Capacity [veh/h]	286	556	253	541	463	356	493	55	212	179
d1, Uniform Delay [s]	35.09	26.32	35.80	28.53	23.70	32.85	26.08	41.36	37.06	36.12
k, delay calibration	0.07	0.19	0.07	0.19	0.19	0.08	0.07	0.07	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.54	2.79	4.66	5.74	0.63	5.57	0.98	14.77	3.78	1.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.70	0.84	0.83	0.30	0.89	0.67	0.80	0.78	0.57
d, Delay for Lane Group [s/veh]	39.63	29.11	40.46	34.27	24.32	38.42	27.06	56.13	40.84	37.87
Lane Group LOS	D	C	D	C	C	D	C	E	D	D
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.20	7.23	4.46	8.94	2.18	6.76	5.83	1.14	3.52	2.08
50th-Percentile Queue Length [ft/ln]	130.06	180.71	111.57	223.44	54.45	169.03	145.64	28.44	88.12	51.91
95th-Percentile Queue Length [veh/ln]	8.94	11.64	7.93	13.84	3.92	11.03	9.78	2.05	6.34	3.74
95th-Percentile Queue Length [ft/ln]	223.58	290.94	198.18	346.01	98.00	275.64	244.59	51.19	158.62	93.43

Movement, Approach, & Intersection Results

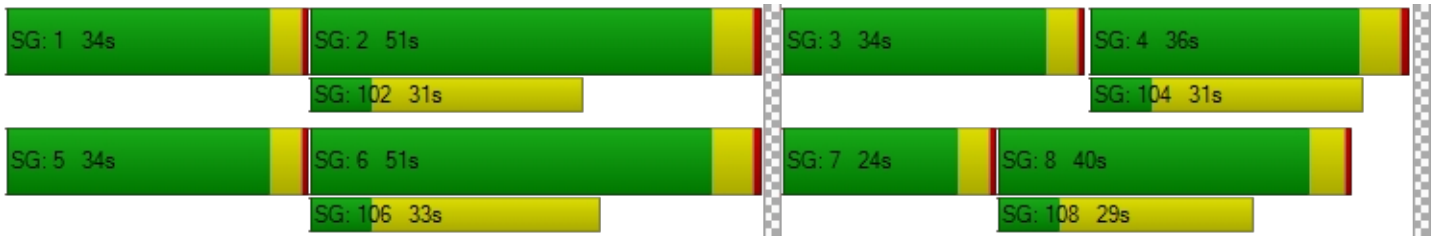
d_M, Delay for Movement [s/veh]	39.63	29.11	29.11	40.46	34.27	24.32	38.42	27.06	27.06	56.13	40.84	37.87
Movement LOS	D	C	C	D	C	C	D	C	C	E	D	D
d_A, Approach Delay [s/veh]	33.15			34.16			32.62			42.03		
Approach LOS	C			C			C			D		
d_I, Intersection Delay [s/veh]	34.50											
Intersection LOS	C											
Intersection V/C	0.778											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	66.89	66.89	66.89	66.89
l_p,int, Pedestrian LOS Score for Intersection	2.397	2.984	2.585	2.487
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	588	588	458	395
d_b, Bicycle Delay [s]	38.61	38.61	46.11	49.92
l_b,int, Bicycle LOS Score for Intersection	2.607	3.107	2.629	2.231
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: S Anchor Way / S Redland Rd

Control Type:	Two-way stop	Delay (sec / veh):	39.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.460

Intersection Setup

Name	S Redland Rd		S Redland Rd		S Anchor Way	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	S Redland Rd		S Redland Rd		S Anchor Way	
Base Volume Input [veh/h]	16	438	473	73	55	23
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	0.00	3.00	4.00	1.00	7.00	0.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	3	3	0	0	0
Site-Generated Trips [veh/h]	0	34	30	12	14	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	504	538	90	73	24
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	142	151	25	21	7
Total Analysis Volume [veh/h]	19	566	604	101	82	27
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			Yes
Storage Area [veh]	0	0	1
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.01	0.00	0.46	0.06
d_M, Delay for Movement [s/veh]	9.08	0.00	0.00	0.00	39.53	27.01
Movement LOS	A	A	A	A	E	D
95th-Percentile Queue Length [veh/ln]	0.06	0.06	0.00	0.00	2.43	2.43
95th-Percentile Queue Length [ft/ln]	1.61	1.61	0.00	0.00	60.81	60.81
d_A, Approach Delay [s/veh]	0.29		0.00		36.43	
Approach LOS	A		A		E	
d_I, Intersection Delay [s/veh]	2.96					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 18: S Holly Ln / S Redland Rd

Control Type:	Two-way stop	Delay (sec / veh):	25.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.257

Intersection Setup

Name	S Holly Ln		S Redland Rd		S Redland Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	S Holly Ln		S Redland Rd		S Redland Rd	
Base Volume Input [veh/h]	45	26	422	64	15	404
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	7.00	8.00	5.00	3.00	0.00	3.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	3	0	0	3
Site-Generated Trips [veh/h]	0	0	30	0	0	34
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	48	27	483	69	16	468
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	8	136	19	4	131
Total Analysis Volume [veh/h]	54	30	543	78	18	526
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	Yes		
Storage Area [veh]	1	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.26	0.06	0.01	0.00	0.02	0.01
d_M, Delay for Movement [s/veh]	25.87	15.93	0.00	0.00	8.78	0.00
Movement LOS	D	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.00	1.00	0.00	0.00	0.06	0.06
95th-Percentile Queue Length [ft/ln]	25.08	25.08	0.00	0.00	1.42	1.42
d_A, Approach Delay [s/veh]	22.32		0.00		0.29	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.63					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 19: I 205 SB-Ramp / OR 213

Control Type:	Two-way stop	Delay (sec / veh):	288.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.337

Intersection Setup

Name	OR 213		Washington St		Washington Dr	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	OR 213		Washington St		Washington Dr	
Base Volume Input [veh/h]	756	21	17	10	6	1572
Base Volume Adjustment Factor	1.0400	1.0000	1.0000	1.0000	1.0000	1.0400
Heavy Vehicles Percentage [%]	5.00	5.00	6.00	10.00	0.00	5.00
Growth Factor	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	3	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	199	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	21	0	0	0	0	0
Total Hourly Volume [veh/h]	1006	25	18	11	6	1728
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	262	7	5	3	2	450
Total Analysis Volume [veh/h]	1048	26	19	11	6	1800
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.67	0.00	0.00	0.00	0.34	0.00
d_M, Delay for Movement [s/veh]	11.84	0.00	0.00	0.00	288.35	0.00
Movement LOS	B	A	A	A	F	
95th-Percentile Queue Length [veh/ln]	5.61	0.00	0.00	0.00	0.93	0.00
95th-Percentile Queue Length [ft/ln]	140.24	0.00	0.00	0.00	23.36	0.00
d_A, Approach Delay [s/veh]	11.56		0.00		288.35	
Approach LOS	B		A		F	
d_I, Intersection Delay [s/veh]	12.74					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 20: OR 213 / Clackamas River Dr

Control Type:	Signalized	Delay (sec / veh):	17.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.846

Intersection Setup

Name	OR 213			OR 213			Prairie Schooner Way			Clackamas River Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	450.00	100.00	100.00	415.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			Yes			Yes			Yes		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	OR 213			OR 213			Prairie Schooner Way			Clackamas River Dr		
Base Volume Input [veh/h]	0	1813	216	0	1879	600	0	0	216	0	0	519
Base Volume Adjustment Factor	1.0000	1.0400	1.0400	1.0000	1.0400	1.0400	1.0000	1.0000	1.0400	1.0000	1.0000	1.0400
Heavy Vehicles Percentage [%]	2.00	3.00	6.00	2.00	4.00	8.00	2.00	2.00	6.00	2.00	2.00	11.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	3	0	0	0	0	0	0	5	0	0	0
Site-Generated Trips [veh/h]	0	50	68	0	58	107	0	0	59	0	0	92
Diverted Trips [veh/h]	0	-98	161	0	63	249	0	0	0	0	0	410
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	21	0	0	20	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	467	0	0	1016	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1862	0	0	2095	0	0	0	302	0	0	1073
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800	1.0000	1.0000	0.9800	1.0000	1.0000	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	475	0	0	534	0	0	0	77	0	0	274
Total Analysis Volume [veh/h]	0	1900	0	0	2138	0	0	0	308	0	0	1095
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	0	1	0	0	5
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	0	4	0	0	4
Maximum Green [s]	0	76	0	0	76	0	0	0	26	0	0	26
Amber [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	0.0	3.5	0.0	0.0	3.5
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.5	0.0	0.0	0.5
Split [s]	0	44	0	0	44	0	0	0	30	0	0	74
Vehicle Extension [s]	0.0	4.8	0.0	0.0	4.8	0.0	0.0	0.0	2.3	0.0	0.0	2.3
Walk [s]	0	0	0	0	0	0	0	0	7	0	0	7
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	15	0	0	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No				No			No
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0
Minimum Recall		Yes			Yes				No			No
Maximum Recall		No			No				No			No
Pedestrian Recall		No			No				No			No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	R	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	2.00	2.00
g_i, Effective Green Time [s]	45	45	77	77	13	45
g / C, Green / Cycle	0.45	0.45	0.77	0.77	0.13	0.45
(v / s)_i Volume / Saturation Flow Rate	0.38	0.00	0.43	0.00	0.11	0.42
s, saturation flow rate [veh/h]	5053	1538	5012	1513	2723	2610
c, Capacity [veh/h]	2287	696	3833	1157	368	1168
d1, Uniform Delay [s]	16.79	0.00	4.83	0.00	42.20	26.33
k, delay calibration	0.50	0.50	0.50	0.50	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.68	0.00	0.59	0.00	3.16	2.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.00	0.56	0.00	0.84	0.94
d, Delay for Lane Group [s/veh]	20.47	0.00	5.42	0.00	45.36	29.11
Lane Group LOS	C	A	A	A	D	C
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.97	0.00	3.32	0.00	3.84	12.21
50th-Percentile Queue Length [ft/ln]	199.37	0.00	83.03	0.00	95.90	305.25
95th-Percentile Queue Length [veh/ln]	12.61	0.00	5.98	0.00	6.90	17.94
95th-Percentile Queue Length [ft/ln]	315.16	0.00	149.45	0.00	172.61	448.52

Movement, Approach, & Intersection Results

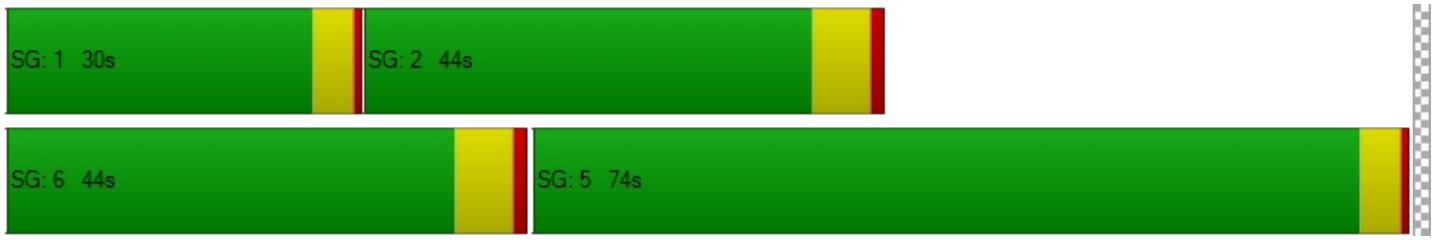
d_M, Delay for Movement [s/veh]	0.00	20.47	0.00	0.00	5.42	0.00	0.00	0.00	45.36	0.00	0.00	29.11
Movement LOS		C	A		A	A			D			C
d_A, Approach Delay [s/veh]	20.47			5.42			45.36			29.11		
Approach LOS	C			A			D			C		
d_I, Intersection Delay [s/veh]	17.70											
Intersection LOS	B											
Intersection V/C	0.846											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	38.0	38.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	29204.85	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	19.22	19.22
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.430	2.424
Crosswalk LOS	F	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	760	760	520	1400
d_b, Bicycle Delay [s]	19.22	19.22	27.38	4.50
l_b,int, Bicycle LOS Score for Intersection	2.861	3.294	1.560	1.560
Bicycle LOS	C	C	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: OR 213 / S Redland Rd

Control Type:	Signalized	Delay (sec / veh):	26.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.866

Intersection Setup

Name	OR 213		OR 213		S Redland Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	350.00	100.00	100.00	100.00	335.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00		55.00		40.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		Yes		Yes	
Crosswalk	Yes		No		Yes	

Volumes

Name	OR 213		OR 213		S Redland Rd	
Base Volume Input [veh/h]	107	1585	1539	547	479	113
Base Volume Adjustment Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
Heavy Vehicles Percentage [%]	3.00	3.00	4.00	4.00	3.00	4.00
Growth Factor	1.0570	1.0000	1.0000	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	3	3	5	0	0	10
Site-Generated Trips [veh/h]	36	68	59	58	50	32
Diverted Trips [veh/h]	40	-40	0	63	103	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	21	20	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	361	0	84
Total Hourly Volume [veh/h]	196	1700	1685	361	679	83
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	438	434	93	175	21
Total Analysis Volume [veh/h]	202	1753	1737	372	700	86
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	22.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Overlap	Permissive	Overlap
Signal Group	1	6	2	2	8	8
Auxiliary Signal Groups				2,8		1,8
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	6	6
Maximum Green [s]	16	88	68	68	24	24
Amber [s]	3.5	5.0	5.0	5.0	3.0	3.0
All red [s]	0.5	1.0	1.0	1.0	0.7	0.7
Split [s]	20	72	52	52	28	28
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	5	5	5
Pedestrian Clearance [s]	0	10	10	10	10	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	4.0	4.0	4.0	1.7	1.7
Minimum Recall	No	Yes	Yes	Yes	No	No
Maximum Recall	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	3.70	3.70	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	0.00	1.70	0.00
g_i, Effective Green Time [s]	13	67	50	79	23	40
g / C, Green / Cycle	0.13	0.67	0.50	0.79	0.23	0.40
(v / s)_i Volume / Saturation Flow Rate	0.11	0.50	0.50	0.24	0.20	0.05
s, saturation flow rate [veh/h]	1767	3532	3503	1564	3431	1564
c, Capacity [veh/h]	238	2378	1747	1233	789	628
d1, Uniform Delay [s]	42.41	10.63	16.66	0.15	37.38	19.01
k, delay calibration	0.22	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.96	2.08	20.19	0.63	3.62	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.33	1.25	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.74	0.99	0.30	0.89	0.14
d, Delay for Lane Group [s/veh]	57.37	12.71	36.85	0.78	41.00	19.11
Lane Group LOS	E	B	D	A	D	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.57	9.49	14.97	0.26	8.36	1.23
50th-Percentile Queue Length [ft/ln]	139.18	237.27	374.22	6.49	208.93	30.78
95th-Percentile Queue Length [veh/ln]	9.44	14.54	21.31	0.47	13.10	2.22
95th-Percentile Queue Length [ft/ln]	235.92	363.58	532.84	11.69	327.46	55.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.37	12.71	36.85	0.78	41.00	19.11
Movement LOS	E	B	D	A	D	B
d_A, Approach Delay [s/veh]	17.33		30.49		38.60	
Approach LOS	B		C		D	
d_I, Intersection Delay [s/veh]	26.50					
Intersection LOS	C					
Intersection V/C	0.866					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	0.00	41.41
l_p,int, Pedestrian LOS Score for Intersection	3.687	0.000	2.844
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1320	920	486
d_b, Bicycle Delay [s]	5.78	14.58	28.65
l_b,int, Bicycle LOS Score for Intersection	3.172	3.597	1.560
Bicycle LOS	C	D	A

Sequence

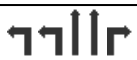
Ring 1	2	1	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: OR 213/Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	51.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.801

Intersection Setup

Name	OR 213			OR 213			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	2	0	1	2	0	0	2	0	1
Entry Pocket Length [ft]	530.00	100.00	580.00	600.00	100.00	525.00	500.00	100.00	100.00	160.00	100.00	465.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 213			OR 213			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	130	725	173	417	695	532	474	564	159	177	459	509
Base Volume Adjustment Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
Heavy Vehicles Percentage [%]	3.00	3.00	1.00	5.00	6.00	3.00	3.00	2.00	2.00	1.00	2.00	3.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	5	0	0	15	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	55	0	24	48	18	22	0	0	0	0	27
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	21	0	0	20	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	95	0	0	302	0	0	0	0	0	293
Total Hourly Volume [veh/h]	143	835	95	483	806	301	543	620	174	194	504	293
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	213	24	123	206	77	139	158	44	49	129	75
Total Analysis Volume [veh/h]	146	852	97	493	822	307	554	633	178	198	514	299
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			1			1			0		
v_di, Inbound Pedestrian Volume crossing m	1			0			2			1		
v_co, Outbound Pedestrian Volume crossing	0			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			2			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	142
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	0
Maximum Green [s]	15	40	0	32	40	0	38	30	0	15	20	0
Amber [s]	4.0	5.0	0.0	4.0	5.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	1.5	2.0	0.0	1.5	2.0	0.0	1.5	1.5	0.0	1.5	1.5	0.0
Split [s]	21	47	0	38	47	0	44	36	0	21	26	0
Vehicle Extension [s]	2.3	4.7	0.0	2.3	4.7	0.0	2.3	2.3	0.0	2.3	2.3	0.0
Walk [s]	0	8	0	0	9	0	0	9	0	0	8	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	31	0	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.5	5.0	0.0	3.5	5.0	0.0	3.5	3.5	0.0	3.5	3.5	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	119	119	119	119	119	119	119	119	119	119	119	119
L, Total Lost Time per Cycle [s]	5.50	7.00	7.00	5.50	7.00	7.00	5.50	5.50	5.50	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	5.00	5.00	3.50	5.00	5.00	3.50	3.50	3.50	3.50	3.50	3.50
g_i, Effective Green Time [s]	12	34	34	20	42	42	22	33	33	9	20	20
g / C, Green / Cycle	0.10	0.29	0.29	0.17	0.35	0.35	0.18	0.28	0.28	0.07	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.08	0.24	0.06	0.15	0.24	0.19	0.16	0.22	0.23	0.06	0.14	0.19
s, saturation flow rate [veh/h]	1767	3532	1602	3375	3446	1577	3431	1870	1717	3486	3560	1556
c, Capacity [veh/h]	174	1008	458	564	1221	559	629	517	475	259	596	261
d1, Uniform Delay [s]	52.93	40.18	32.45	48.52	32.70	30.92	47.51	40.29	40.53	54.26	48.38	49.59
k, delay calibration	0.10	0.20	0.20	0.07	0.20	0.21	0.07	0.32	0.34	0.07	0.07	0.48
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.22	3.72	0.43	2.80	1.22	1.65	2.67	8.75	10.79	2.90	2.40	100.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.84	0.21	0.87	0.67	0.55	0.88	0.81	0.83	0.76	0.86	1.15
d, Delay for Lane Group [s/veh]	62.15	43.90	32.87	51.32	33.92	32.57	50.18	49.04	51.32	57.15	50.78	150.15
Lane Group LOS	E	D	C	D	C	C	D	D	D	E	D	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.74	12.19	2.20	7.35	10.20	7.31	8.14	12.50	12.03	3.00	7.54	14.91
50th-Percentile Queue Length [ft/ln]	118.50	304.75	55.00	183.82	254.92	182.82	203.62	312.61	300.67	74.91	188.60	372.71
95th-Percentile Queue Length [veh/ln]	8.31	17.92	3.96	11.80	15.43	11.75	12.83	18.30	17.71	5.39	12.05	22.67
95th-Percentile Queue Length [ft/ln]	207.76	447.90	99.01	294.99	385.85	293.70	320.63	457.59	442.86	134.83	301.21	566.77

Movement, Approach, & Intersection Results

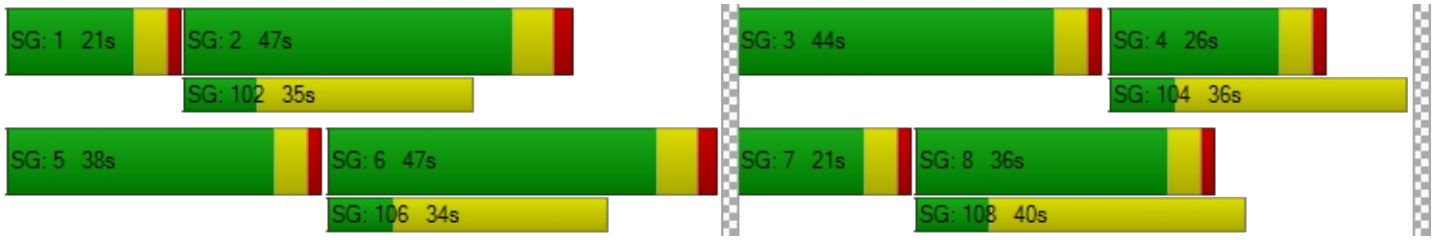
d_M, Delay for Movement [s/veh]	62.15	43.90	32.87	51.32	33.92	32.57	50.18	49.81	51.32	57.15	50.78	150.15
Movement LOS	E	D	C	D	C	C	D	D	D	E	D	F
d_A, Approach Delay [s/veh]	45.35			38.95			50.16			81.41		
Approach LOS	D			D			D			F		
d_I, Intersection Delay [s/veh]	51.76											
Intersection LOS	D											
Intersection V/C	0.801											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	13.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	2327.49	4996.34	0.00	8266.00
d_p, Pedestrian Delay [s]	58.60	59.51	58.60	59.51
l_p,int, Pedestrian LOS Score for Intersection	2.997	3.591	2.973	3.458
Crosswalk LOS	C	D	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	563	563	430	289
d_b, Bicycle Delay [s]	36.63	36.63	43.82	52.01
l_b,int, Bicycle LOS Score for Intersection	2.541	3.147	2.686	2.635
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 23: OR 213 / Molalla Ave

Control Type:	Signalized	Delay (sec / veh):	26.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.719

Intersection Setup

Name	OR 213			OR 213			Molalla Ave			S Douglas Loop		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	650.00	100.00	100.00	525.00	100.00	355.00	100.00	100.00	100.00	275.00	100.00	275.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 213			OR 213			Molalla Ave			S Douglas Loop		
Base Volume Input [veh/h]	286	888	9	3	840	189	136	13	308	17	15	8
Base Volume Adjustment Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
Heavy Vehicles Percentage [%]	1.00	3.00	0.00	33.00	5.00	2.00	0.00	31.00	0.00	0.00	27.00	12.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	5	0	0	15	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	55	0	0	48	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	21	0	0	20	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	5	0	0	104	0	0	169	0	0	4
Total Hourly Volume [veh/h]	314	1005	5	3	957	104	149	15	169	19	17	4
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	85	273	1	1	260	28	40	4	46	5	5	1
Total Analysis Volume [veh/h]	341	1092	5	3	1040	113	162	16	184	21	18	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			5			0			5		
v_di, Inbound Pedestrian Volume crossing m	0			5			0			5		
v_co, Outbound Pedestrian Volume crossing	1			0			0			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	35.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	13.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	0	4	10	0	4	6	0	4	6	6
Maximum Green [s]	26	31	0	11	16	0	16	16	0	16	16	16
Amber [s]	3.5	5.0	0.0	3.5	5.0	0.0	3.5	4.7	0.0	3.5	4.7	4.7
All red [s]	0.5	1.0	0.0	0.5	1.0	0.0	0.5	0.7	0.0	0.5	0.7	0.7
Split [s]	30	35	0	15	20	0	20	20	0	20	20	20
Vehicle Extension [s]	2.3	4.5	0.0	2.3	4.5	0.0	2.3	2.3	0.0	2.3	2.3	2.3
Walk [s]	0	9	0	0	10	0	0	14	0	0	5	5
Pedestrian Clearance [s]	0	23	0	0	27	0	0	28	0	0	10	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	4.0	0.0	2.0	4.0	0.0	2.0	3.4	0.0	2.0	3.4	3.4
Minimum Recall	No	Yes		No	Yes		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	6.00	6.00	4.00	6.00	6.00	4.00	5.40	5.40	4.00	5.40	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	4.00	4.00	2.00	4.00	4.00	2.00	3.40	3.40	2.00	3.40	0.00
g_i, Effective Green Time [s]	19	52	52	0	34	34	14	12	12	6	4	28
g / C, Green / Cycle	0.21	0.58	0.58	0.00	0.37	0.37	0.15	0.14	0.14	0.06	0.04	0.31
(v / s)_i Volume / Saturation Flow Rate	0.19	0.31	0.00	0.00	0.30	0.07	0.11	0.01	0.11	0.01	0.01	0.00
s, saturation flow rate [veh/h]	1795	3532	1578	1338	3475	1589	1440	1435	1615	1810	1495	1449
c, Capacity [veh/h]	378	2058	919	5	1305	597	267	195	219	113	67	443
d1, Uniform Delay [s]	34.61	11.34	7.86	44.79	25.04	18.89	38.40	33.99	37.93	40.02	41.54	21.73
k, delay calibration	0.16	0.50	0.50	0.07	0.50	0.50	0.07	0.07	0.07	0.07	0.07	0.07
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.26	0.98	0.01	67.14	5.13	0.70	1.36	0.11	5.27	0.48	1.28	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.53	0.01	0.65	0.80	0.19	0.61	0.08	0.84	0.19	0.27	0.01
d, Delay for Lane Group [s/veh]	45.87	12.32	7.87	111.93	30.17	19.59	39.76	34.10	43.20	40.50	42.82	21.73
Lane Group LOS	D	B	A	F	C	B	D	C	D	D	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.80	5.36	0.03	0.15	9.55	1.53	3.58	0.31	4.26	0.46	0.41	0.06
50th-Percentile Queue Length [ft/ln]	194.94	134.05	0.87	3.72	238.66	38.23	89.56	7.81	106.40	11.40	10.26	1.49
95th-Percentile Queue Length [veh/ln]	12.38	9.16	0.06	0.27	14.61	2.75	6.45	0.56	7.64	0.82	0.74	0.11
95th-Percentile Queue Length [ft/ln]	309.43	228.99	1.57	6.70	365.34	68.81	161.20	14.06	190.98	20.52	18.48	2.68

Movement, Approach, & Intersection Results

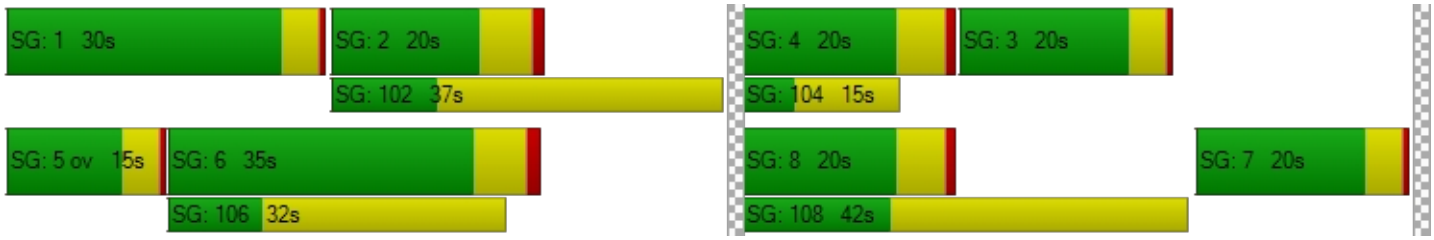
d_M, Delay for Movement [s/veh]	45.87	12.32	7.87	111.93	30.17	19.59	39.76	34.10	43.20	40.50	42.82	21.73
Movement LOS	D	B	A	F	C	B	D	C	D	D	D	C
d_A, Approach Delay [s/veh]	20.26			29.35			41.26			39.73		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	26.58											
Intersection LOS	C											
Intersection V/C	0.719											

Other Modes

g_Walk,mi, Effective Walk Time [s]	18.0	9.0	14.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	810.02	0.00	4876.73
d_p, Pedestrian Delay [s]	28.80	36.45	32.09	32.94
l_p,int, Pedestrian LOS Score for Intersection	3.303	3.584	2.593	2.150
Crosswalk LOS	C	D	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	644	311	324	324
d_b, Bicycle Delay [s]	20.68	32.09	31.58	31.58
l_b,int, Bicycle LOS Score for Intersection	2.750	2.599	2.436	1.637
Bicycle LOS	C	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 24: Molalla Ave / Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	32.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.423

Intersection Setup

Name	Molalla Ave			Molalla Ave			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	170.00	100.00	150.00	350.00	100.00	100.00	175.00	100.00	190.00	210.00	100.00	245.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			35.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Molalla Ave			Molalla Ave			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	152	257	65	486	287	18	27	286	128	74	305	240
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	4.00	2.00	3.00	2.00	1.00	0.00	4.00	1.00	4.00	0.00	2.00	2.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	22	0	0	0	0	0	0	0	18
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	68	0	0	137
Total Hourly Volume [veh/h]	163	275	70	541	307	19	29	305	68	79	326	137
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	72	18	141	80	5	8	79	18	21	85	36
Total Analysis Volume [veh/h]	170	286	73	564	320	20	30	318	71	82	340	143
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			4			1			3		
v_di, Inbound Pedestrian Volume crossing m	1			3			2			4		
v_co, Outbound Pedestrian Volume crossing	7			3			4			7		
v_ci, Inbound Pedestrian Volume crossing mi	7			4			3			7		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			1			1			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	10	0	4	10	0	4	5	0	4	5	0
Maximum Green [s]	30	40	0	30	40	0	20	25	0	20	25	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	3.5	4.0	0.0	3.5	4.0	0.0
All red [s]	2.0	2.0	0.0	2.0	2.0	0.0	1.0	2.0	0.0	1.0	2.0	0.0
Split [s]	20	42	0	20	42	0	14	24	0	14	24	0
Vehicle Extension [s]	2.3	4.6	0.0	2.3	4.2	0.0	2.3	2.5	0.0	2.3	2.5	0.0
Walk [s]	0	9	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	26	0	0	22	0	0	23	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	4.0	0.0	4.0	4.0	0.0	2.5	4.0	0.0	2.5	4.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	46	46	46	53	53	53	22	12	12	22	15	15
g / C, Green / Cycle	0.46	0.46	0.46	0.52	0.52	0.52	0.22	0.12	0.12	0.22	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.14	0.10	0.10	0.42	0.09	0.09	0.03	0.09	0.05	0.06	0.10	0.09
s, saturation flow rate [veh/h]	1212	1870	1724	1341	1885	1842	1186	3589	1531	1338	3560	1567
c, Capacity [veh/h]	613	866	799	650	987	964	272	430	184	308	528	232
d1, Uniform Delay [s]	16.16	16.01	16.05	27.74	12.51	12.51	31.68	42.56	40.63	32.56	40.16	39.91
k, delay calibration	0.07	0.50	0.50	0.50	0.50	0.50	0.07	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.15	0.56	0.63	14.56	0.38	0.39	0.11	1.87	0.99	0.34	0.98	1.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, 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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.21	0.22	0.87	0.17	0.17	0.11	0.74	0.39	0.27	0.64	0.62
d, Delay for Lane Group [s/veh]	16.31	16.57	16.68	42.31	12.89	12.90	31.79	44.42	41.62	32.90	41.14	41.88
Lane Group LOS	B	B	B	D	B	B	C	D	D	C	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.29	2.60	2.47	10.96	2.01	1.98	0.58	3.84	1.64	1.65	3.98	3.39
50th-Percentile Queue Length [ft/ln]	57.22	64.94	61.80	274.12	50.34	49.38	14.46	95.98	40.99	41.32	99.51	84.86
95th-Percentile Queue Length [veh/ln]	4.12	4.68	4.45	16.40	3.62	3.56	1.04	6.91	2.95	2.98	7.16	6.11
95th-Percentile Queue Length [ft/ln]	103.00	116.90	111.25	409.88	90.60	88.88	26.02	172.76	73.78	74.38	179.12	152.75

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.31	16.61	16.68	42.31	12.90	12.90	31.79	44.42	41.62	32.90	41.14	41.88
Movement LOS	B	B	B	D	B	B	C	D	D	C	D	D
d_A, Approach Delay [s/veh]	16.52			31.25			43.04			40.13		
Approach LOS	B			C			D			D		
d_I, Intersection Delay [s/veh]	32.15											
Intersection LOS	C											
Intersection V/C	0.423											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	3704.87	1402.74	1678.64	571.03
d_p, Pedestrian Delay [s]	38.72	38.72	38.72	37.85
l_p,int, Pedestrian LOS Score for Intersection	2.529	2.652	2.830	3.337
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	720	720	360	360
d_b, Bicycle Delay [s]	20.49	20.49	33.64	33.62
l_b,int, Bicycle LOS Score for Intersection	1.996	2.305	1.961	2.139
Bicycle LOS	A	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: Maple Lane Rd / Beavercreek Rd

Control Type:	Signalized	Delay (sec / veh):	21.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.722

Intersection Setup

Name	Maple Lane Rd			Maple Lane Rd			Beavercreek Rd			Beavercreek Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	150.00	430.00	100.00	100.00	360.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Maple Lane Rd			Maple Lane Rd			Beavercreek Rd			Beavercreek Rd		
Base Volume Input [veh/h]	252	76	36	40	62	317	291	490	132	19	572	32
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	1.00	0.00	0.00	5.00	0.00	2.00	4.00	5.00	2.00	0.00	3.00	3.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	24	0	0	27	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	169	0	0	0	0	0	0
Total Hourly Volume [veh/h]	270	81	38	42	67	169	311	547	141	20	638	34
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	22	10	11	18	45	84	147	38	5	172	9
Total Analysis Volume [veh/h]	290	87	41	45	72	182	334	588	152	22	686	37
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			1			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			1		
v_co, Outbound Pedestrian Volume crossing	1			1			2			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			2			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	165
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	0	3	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	4	10	0	4	10	0
Maximum Green [s]	0	30	0	0	30	30	35	50	0	20	50	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	4.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.5	0.5	0.5	0.0	0.5	0.5	0.0
Split [s]	0	35	0	0	35	35	40	55	0	25	55	0
Vehicle Extension [s]	0.0	2.5	0.0	0.0	2.5	2.5	2.5	5.2	0.0	2.3	5.2	0.0
Walk [s]	0	8	0	0	8	8	0	7	0	0	8	0
Pedestrian Clearance [s]	0	19	0	0	19	19	0	12	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	0.0	0.0	2.5	2.5	2.5	2.5	0.0	2.5	2.5	0.0
Minimum Recall		No			No	No	No	Yes		No	Yes	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	72	72	72	72	72	72	72	72	72	72	72
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	0.00	0.00	2.50	2.50	0.00	2.50	2.50
g_i, Effective Green Time [s]	14	14	7	7	24	38	32	32	38	20	20
g / C, Green / Cycle	0.20	0.20	0.09	0.09	0.33	0.52	0.44	0.44	0.52	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.16	0.07	0.03	0.04	0.12	0.29	0.21	0.21	0.05	0.20	0.20
s, saturation flow rate [veh/h]	1795	1795	1738	1900	1580	1136	1825	1697	429	1855	1821
c, Capacity [veh/h]	355	355	160	174	522	617	805	749	412	527	518
d1, Uniform Delay [s]	27.71	25.02	30.57	30.95	18.25	12.18	14.27	14.27	9.94	23.02	23.02
k, delay calibration	0.08	0.08	0.08	0.08	0.08	0.26	0.26	0.26	0.07	0.26	0.26
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.48	0.46	0.71	1.16	0.30	1.74	1.03	1.11	0.03	3.80	3.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.36	0.28	0.41	0.35	0.54	0.48	0.48	0.05	0.69	0.69
d, Delay for Lane Group [s/veh]	31.19	25.48	31.28	32.11	18.54	13.92	15.30	15.38	9.97	26.81	26.90
Lane Group LOS	C	C	C	C	B	B	B	B	A	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.98	1.89	0.72	1.17	2.11	2.95	4.15	3.88	0.15	5.65	5.57
50th-Percentile Queue Length [ft/ln]	124.53	47.33	17.93	29.17	52.74	73.83	103.78	97.02	3.68	141.22	139.15
95th-Percentile Queue Length [veh/ln]	8.64	3.41	1.29	2.10	3.80	5.32	7.47	6.99	0.26	9.55	9.44
95th-Percentile Queue Length [ft/ln]	216.04	85.20	32.27	52.51	94.92	132.89	186.81	174.64	6.62	238.67	235.88

Movement, Approach, & Intersection Results

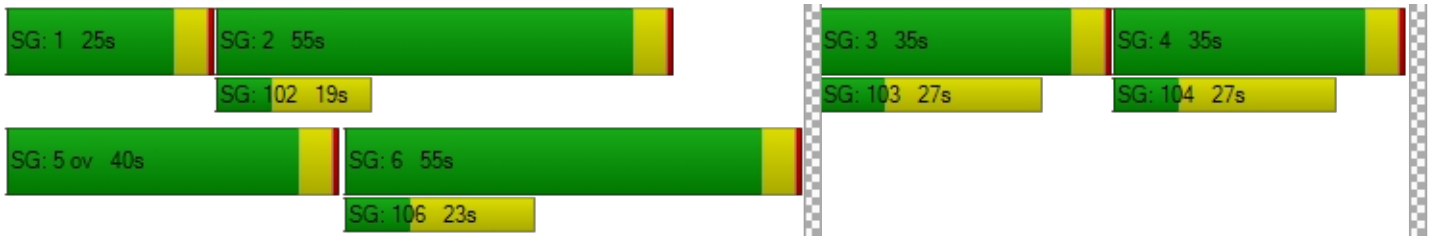
d_M, Delay for Movement [s/veh]	31.19	25.48	25.48	31.28	32.11	18.54	13.92	15.33	15.38	9.97	26.86	26.90
Movement LOS	C	C	C	C	C	B	B	B	B	A	C	C
d_A, Approach Delay [s/veh]	29.44			23.72			14.90			26.36		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	21.70											
Intersection LOS	C											
Intersection V/C	0.722											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	4088.93	1379.87	2303.16
d_p, Pedestrian Delay [s]	71.87	70.94	70.94	70.94
l_p,int, Pedestrian LOS Score for Intersection	2.163	2.849	2.874	2.651
Crosswalk LOS	B	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	370	370	612	612
d_b, Bicycle Delay [s]	54.82	54.85	39.73	39.73
l_b,int, Bicycle LOS Score for Intersection	2.249	2.332	2.446	2.174
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 26: Washington St/Site Access D

Control Type:	Two-way stop	Delay (sec / veh):	25.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.235

Intersection Setup

Name	Washington St		Washington St		Site Access D	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Washington St		Washington St		Site Access D	
Base Volume Input [veh/h]	378	0	0	427	0	0
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	5	0	0	3	0	0
Site-Generated Trips [veh/h]	164	45	42	144	39	36
Diverted Trips [veh/h]	0	0	88	0	0	88
Pass-by Trips [veh/h]	-12	12	12	-12	12	12
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	561	57	142	591	51	136
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	148	15	37	156	13	36
Total Analysis Volume [veh/h]	591	60	149	622	54	143
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.16	0.01	0.23	0.29
d_M, Delay for Movement [s/veh]	0.00	0.00	9.58	0.00	25.39	15.43
Movement LOS	A	A	A	A	D	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.57	0.00	0.88	1.21
95th-Percentile Queue Length [ft/ln]	0.00	0.00	14.13	0.00	22.12	30.29
d_A, Approach Delay [s/veh]	0.00		1.85		18.16	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	3.09					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 27: Abernethy Rd / Site Access E

Control Type:	Two-way stop	Delay (sec / veh):	21.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.391

Intersection Setup

Name	Site Access E		Abernethy Rd		Abernethy Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	300.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Site Access E		Abernethy Rd		Abernethy Rd	
Base Volume Input [veh/h]	0	0	0	252	272	0
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	15	15	0
Site-Generated Trips [veh/h]	59	39	45	68	59	68
Diverted Trips [veh/h]	74	0	0	0	0	74
Pass-by Trips [veh/h]	12	12	12	-12	-12	12
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	145	51	57	341	353	154
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	14	15	92	95	41
Total Analysis Volume [veh/h]	156	55	61	367	380	166
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	Yes		
Number of Storage Spaces in Median	1	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.39	0.09	0.06	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	21.45	18.44	8.74	0.00	0.00	0.00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	2.56	2.56	0.19	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	64.09	64.09	4.75	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	20.66		1.25		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	4.13					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 28: Abernethy Rd / Site Access F

Control Type:	Two-way stop	Delay (sec / veh):	33.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.663

Intersection Setup

Name	Site Access F		Abernethy Rd		Abernethy Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	300.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Site Access F		Abernethy Rd		Abernethy Rd	
Base Volume Input [veh/h]	0	0	0	252	271	0
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	15	15	0
Site-Generated Trips [veh/h]	88	59	68	59	68	101
Diverted Trips [veh/h]	111	0	0	74	74	111
Pass-by Trips [veh/h]	19	19	19	-19	-19	19
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	218	78	87	399	428	231
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	21	23	106	114	61
Total Analysis Volume [veh/h]	232	83	93	424	455	246
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	Yes		
Number of Storage Spaces in Median	1	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.66	0.14	0.10	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	33.42	11.89	9.48	0.00	0.00	0.00
Movement LOS	D	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	4.52	0.47	0.35	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	113.08	11.84	8.66	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	27.75		1.71		0.00	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	6.28					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 29: Washington St/Site Access B

Control Type:	Two-way stop	Delay (sec / veh):	74.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.404

Intersection Setup

Name	Washington St		Washington St		Site Access B	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Washington St		Washington St		Site Access B	
Base Volume Input [veh/h]	378	0	0	427	0	0
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	139	52	48	144	45	42
Diverted Trips [veh/h]	198	0	110	198	0	110
Pass-by Trips [veh/h]	-15	15	15	-15	15	15
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	726	67	173	783	60	167
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	191	18	46	206	16	44
Total Analysis Volume [veh/h]	764	71	182	824	63	176
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.23	0.01	0.40	0.46
d_M, Delay for Movement [s/veh]	0.00	0.00	10.83	0.00	74.25	60.51
Movement LOS	A	A	B	A	F	F
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.88	0.00	7.36	7.36
95th-Percentile Queue Length [ft/ln]	0.00	0.00	21.89	0.00	183.88	183.88
d_A, Approach Delay [s/veh]	0.00		1.96		64.13	
Approach LOS	A		A		F	
d_I, Intersection Delay [s/veh]	8.32					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 30: Washington St/Site Access C

Control Type:	Two-way stop	Delay (sec / veh):	49.1
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.334

Intersection Setup

Name	Washington St		Washington St		Site Access C	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Washington St		Washington St		Site Access C	
Base Volume Input [veh/h]	378	0	0	427	0	0
Base Volume Adjustment Factor	1.0100	1.0100	1.0100	1.0100	1.0100	1.0100
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	149	52	48	141	45	42
Diverted Trips [veh/h]	88	0	110	88	0	110
Pass-by Trips [veh/h]	-14	14	14	-14	14	14
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	627	66	172	671	59	166
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	165	17	45	177	16	44
Total Analysis Volume [veh/h]	660	69	181	706	62	175
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.21	0.01	0.33	0.40
d_M, Delay for Movement [s/veh]	0.00	0.00	10.19	0.00	49.12	37.90
Movement LOS	A	A	B	A	E	E
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.78	0.00	5.41	5.41
95th-Percentile Queue Length [ft/ln]	0.00	0.00	19.39	0.00	135.28	135.28
d_A, Approach Delay [s/veh]	0.00		2.08		40.83	
Approach LOS	A		A		E	
d_I, Intersection Delay [s/veh]	6.22					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 199: I 205 SB-Ramp / OR 213

Control Type:	Two-way stop	Delay (sec / veh):	77.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.291

Intersection Setup

Name	OR 213		OR 213			
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	OR 213		OR 213			
Base Volume Input [veh/h]	0	777	17	0	0	1572
Base Volume Adjustment Factor	1.0000	1.0400	1.0400	1.0000	1.0000	1.0400
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0570	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	165
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	21	0	0	0	20
Total Hourly Volume [veh/h]	0	829	19	0	0	1820
Peak Hour Factor	1.0000	0.9600	0.9600	1.0000	1.0000	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	216	5	0	0	474
Total Analysis Volume [veh/h]	0	864	20	0	0	1896
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Stop	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.29	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	77.48	0.00	0.00	0.00
Movement LOS		A	F			A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	1.05	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	26.22	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		77.48		0.00	
Approach LOS	A		F		A	
d_I, Intersection Delay [s/veh]	0.56					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 2: OR 99E / Dunes Dr

Control Type:	Signalized	Delay (sec / veh):	23.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.675

Intersection Setup

Name	OR 99E			OR 99E			Dunes Dr			Dunes Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	220.00	100.00	100.00	370.00	100.00	155.00	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 99E			OR 99E			Dunes Dr			Dunes Dr		
Base Volume Input [veh/h]	46	911	71	37	733	53	16	3	35	107	3	35
Base Volume Adjustment Factor	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
Heavy Vehicles Percentage [%]	9.00	7.00	7.00	5.00	8.00	9.00	0.00	0.00	0.00	7.00	0.00	6.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	129	0	0	0	28	0	0	55	0	0	0
Site-Generated Trips [veh/h]	0	33	0	0	39	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	18	0	0	12	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	1547	113	59	1151	113	25	5	111	170	5	56
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	450	33	17	335	33	7	1	32	49	1	16
Total Analysis Volume [veh/h]	85	1799	131	69	1338	131	29	6	129	198	6	65
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			3			0			2		
v_di, Inbound Pedestrian Volume crossing m	0			2			0			3		
v_co, Outbound Pedestrian Volume crossing	0			0			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	2	0	5	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	20	40	0	20	40	0	0	20	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	16	58	0	20	54	0	0	16	0	0	16	0
Vehicle Extension [s]	2.3	4.8	0.0	2.3	4.8	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	18	0	0	38	0	0	37	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.00	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.80	2.80	2.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	59	59	5	61	61	12	12	12	12
g / C, Green / Cycle	0.06	0.66	0.66	0.05	0.67	0.67	0.13	0.13	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.05	0.37	0.38	0.04	0.29	0.29	0.02	0.08	0.16	0.04
s, saturation flow rate [veh/h]	1681	3418	1725	1738	3389	1699	1340	1626	1204	1619
c, Capacity [veh/h]	109	2253	1137	90	2277	1142	179	218	122	217
d1, Uniform Delay [s]	40.52	2.35	2.36	41.36	1.77	1.77	39.47	36.81	44.47	35.31
k, delay calibration	0.07	0.50	0.50	0.07	0.50	0.50	0.08	0.08	0.23	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.34	1.04	2.10	7.98	0.59	1.18	0.31	2.13	296.55	0.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.57	0.57	0.77	0.43	0.43	0.16	0.62	1.62	0.33
d, Delay for Lane Group [s/veh]	47.85	3.39	4.46	49.34	2.36	2.95	39.79	38.95	341.02	35.95
Lane Group LOS	D	A	A	D	A	A	D	D	F	D
Critical Lane Group	Yes	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.97	1.67	2.03	1.64	1.01	1.20	0.62	2.93	12.78	1.45
50th-Percentile Queue Length [ft/ln]	49.36	41.68	50.83	40.92	25.18	29.93	15.59	73.17	319.46	36.25
95th-Percentile Queue Length [veh/ln]	3.55	3.00	3.66	2.95	1.81	2.15	1.12	5.27	21.81	2.61
95th-Percentile Queue Length [ft/ln]	88.84	75.02	91.49	73.66	45.32	53.87	28.06	131.70	545.15	65.25

Movement, Approach, & Intersection Results

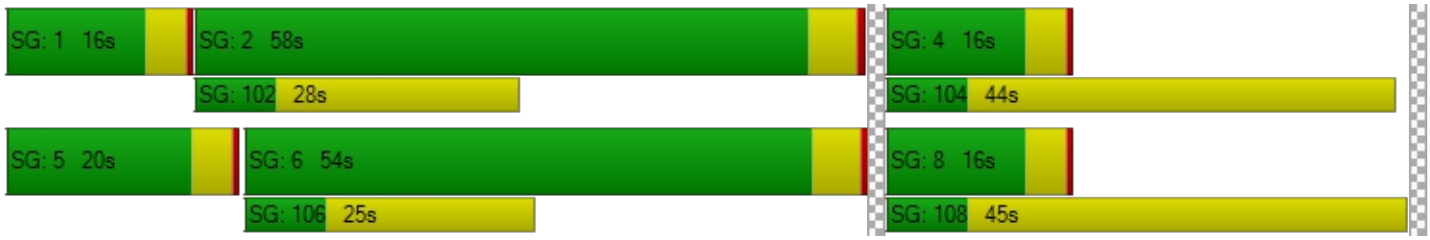
d_M, Delay for Movement [s/veh]	47.85	3.70	4.46	49.34	2.52	2.95	39.79	38.95	38.95	341.02	35.95	35.95
Movement LOS	D	A	A	D	A	A	D	D	D	F	D	D
d_A, Approach Delay [s/veh]	5.61			4.66			39.09			260.50		
Approach LOS	A			A			D			F		
d_I, Intersection Delay [s/veh]	23.82											
Intersection LOS	C											
Intersection V/C	0.675											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	1951.84	6285.37	6285.37
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	3.558	3.272	2.044	2.068
Crosswalk LOS	D	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1182	1093	267	267
d_b, Bicycle Delay [s]	7.53	9.25	33.80	33.80
l_b,int, Bicycle LOS Score for Intersection	2.668	2.406	1.830	2.003
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: OR 99E / Dunes Dr

Control Type:	Signalized	Delay (sec / veh):	44.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.818

Intersection Setup

Name	OR 99E			OR 99E			Dunes Dr			Dunes Dr		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	220.00	100.00	100.00	370.00	100.00	155.00	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	OR 99E			OR 99E			Dunes Dr			Dunes Dr		
Base Volume Input [veh/h]	43	1146	146	107	1354	116	26	5	78	265	17	47
Base Volume Adjustment Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
Heavy Vehicles Percentage [%]	5.00	3.00	2.00	1.00	3.00	1.00	0.00	0.00	5.00	2.00	6.00	2.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	101	0	0	0	23	0	0	152	0	0	0
Site-Generated Trips [veh/h]	0	62	0	0	58	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	12	0	0	18	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	53	1504	179	131	1647	166	32	6	247	324	21	58
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	396	47	34	433	44	8	2	65	85	6	15
Total Analysis Volume [veh/h]	56	1583	188	138	1734	175	34	6	260	341	22	61
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			1			0			1		
v_di, Inbound Pedestrian Volume crossing m	0			1			1			1		
v_co, Outbound Pedestrian Volume crossing	2			0			0			3		
v_ci, Inbound Pedestrian Volume crossing mi	3			0			0			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	12.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	2	0	5	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	12	62	0	23	51	0	0	34	0	0	34	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	16	66	0	27	55	0	0	38	0	0	38	0
Vehicle Extension [s]	2.3	4.8	0.0	2.3	4.8	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	18	0	0	38	0	0	37	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.00	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.80	2.80	0.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	68	68	9	64	64	34	34	34	34
g / C, Green / Cycle	0.04	0.57	0.57	0.08	0.53	0.53	0.28	0.28	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.03	0.33	0.34	0.10	0.36	0.36	0.03	0.16	0.31	0.05
s, saturation flow rate [veh/h]	1738	3532	1740	1359	3532	1770	1334	1619	1113	1600
c, Capacity [veh/h]	72	2009	990	194	1884	944	363	459	200	453
d1, Uniform Delay [s]	56.16	8.37	8.42	54.16	11.53	11.58	36.75	36.88	54.72	32.50
k, delay calibration	0.07	0.50	0.50	0.07	0.50	0.50	0.08	0.12	0.50	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.59	1.27	2.64	2.95	1.94	3.92	0.08	1.29	338.39	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.59	0.60	0.71	0.67	0.68	0.09	0.58	1.71	0.18
d, Delay for Lane Group [s/veh]	66.75	9.64	11.06	57.11	13.48	15.50	36.83	38.17	393.11	32.65
Lane Group LOS	E	A	B	E	B	B	D	D	F	C
Critical Lane Group	No	No	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.84	4.85	5.22	4.14	6.76	7.39	0.81	6.92	24.91	1.88
50th-Percentile Queue Length [ft/ln]	46.07	121.26	130.62	103.61	169.11	184.67	20.35	173.07	622.80	46.91
95th-Percentile Queue Length [veh/ln]	3.32	8.46	8.97	7.46	11.03	11.84	1.47	11.24	41.50	3.38
95th-Percentile Queue Length [ft/ln]	82.93	211.56	224.34	186.49	275.75	296.11	36.63	280.95	1037.42	84.45

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.75	10.00	11.06	57.11	14.02	15.50	36.83	38.17	38.17	393.11	32.65	32.65
Movement LOS	E	B	B	E	B	B	D	D	D	F	C	C
d_A, Approach Delay [s/veh]	11.85			17.05			38.02			322.55		
Approach LOS	B			B			D			F		
d_I, Intersection Delay [s/veh]	44.52											
Intersection LOS	D											
Intersection V/C	0.818											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	1082.03	3516.59	0.00	497.51
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
l_p,int, Pedestrian LOS Score for Intersection	3.866	3.348	2.104	2.164
Crosswalk LOS	D	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1020	837	567	567
d_b, Bicycle Delay [s]	14.41	20.30	30.82	30.82
l_b,int, Bicycle LOS Score for Intersection	2.564	2.685	2.055	2.259
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: OR 99E/Dunes Dr

Control Type:	Signalized	Delay (sec / veh):	36.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.772

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	220.00	100.00	100.00	370.00	100.00	155.00	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	73	1088	279	138	1096	129	39	12	73	357	17	114
Base Volume Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300
Heavy Vehicles Percentage [%]	8.00	3.00	1.00	0.00	4.00	4.00	8.00	0.00	11.00	0.00	0.00	1.00
Growth Factor	1.0570	1.0000	1.0570	1.0570	1.0000	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570	1.0570
In-Process Volume [veh/h]	0	56	0	0	0	13	0	0	84	0	0	0
Site-Generated Trips [veh/h]	0	72	0	0	82	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	16	0	0	14	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	79	1265	303	150	1225	154	42	13	163	389	19	124
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	326	78	39	316	40	11	3	42	100	5	32
Total Analysis Volume [veh/h]	81	1304	312	155	1263	159	43	13	168	401	20	128
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			2			0			1		
v_di, Inbound Pedestrian Volume crossing m	0			1			0			2		
v_co, Outbound Pedestrian Volume crossing	1			0			0			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			2			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	17.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	2	0	5	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	6	0
Maximum Green [s]	20	40	0	20	40	0	0	20	0	0	20	0
Amber [s]	3.5	4.3	0.0	3.5	4.3	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Split [s]	16	50	0	21	45	0	0	34	0	0	34	0
Vehicle Extension [s]	2.3	4.8	0.0	2.3	4.8	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	18	0	0	38	0	0	37	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.8	0.0	2.0	2.8	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.00	4.80	4.80	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.80	2.80	0.00	2.80	2.80	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	51	51	10	47	47	30	30	30	30
g / C, Green / Cycle	0.06	0.51	0.51	0.10	0.47	0.47	0.30	0.30	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.05	0.31	0.31	0.11	0.27	0.27	0.04	0.11	0.33	0.09
s, saturation flow rate [veh/h]	1695	3532	1675	1435	3503	1722	1177	1633	1222	1644
c, Capacity [veh/h]	102	1809	858	254	1650	811	317	489	304	492
d1, Uniform Delay [s]	45.34	10.40	10.42	42.54	12.78	12.82	32.53	27.59	42.73	26.96
k, delay calibration	0.07	0.50	0.50	0.07	0.50	0.50	0.08	0.08	0.50	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.06	1.51	3.20	1.46	1.47	3.03	0.14	0.35	164.25	0.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.61	0.61	0.61	0.58	0.58	0.14	0.37	1.32	0.30
d, Delay for Lane Group [s/veh]	53.39	11.91	13.61	44.00	14.25	15.84	32.67	27.94	206.99	27.21
Lane Group LOS	D	B	B	D	B	B	C	C	F	C
Critical Lane Group	Yes	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.16	5.14	5.30	3.69	5.20	5.52	0.88	3.47	21.53	2.77
50th-Percentile Queue Length [ft/ln]	53.99	128.43	132.44	92.37	130.11	137.99	21.88	86.63	538.26	69.13
95th-Percentile Queue Length [veh/ln]	3.89	8.85	9.07	6.65	8.95	9.37	1.58	6.24	33.74	4.98
95th-Percentile Queue Length [ft/ln]	97.19	221.36	226.81	166.27	223.65	234.32	39.38	155.93	843.38	124.44

Movement, Approach, & Intersection Results

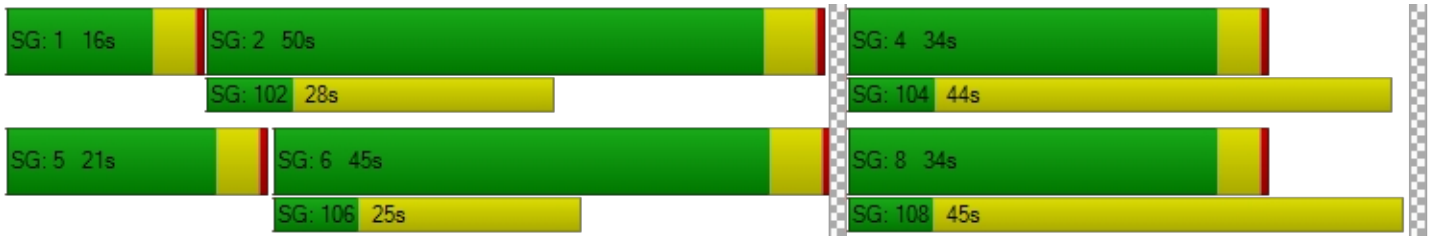
d_M, Delay for Movement [s/veh]	53.39	12.18	13.61	44.00	14.64	15.84	32.67	27.94	27.94	206.99	27.21	27.21
Movement LOS	D	B	B	D	B	B	C	C	C	F	C	C
d_A, Approach Delay [s/veh]	14.41			17.65			28.84			158.52		
Approach LOS	B			B			C			F		
d_I, Intersection Delay [s/veh]	36.02											
Intersection LOS	D											
Intersection V/C	0.772											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	2589.53	0.00	317.43
d_p, Pedestrian Delay [s]	39.61	39.61	39.61	39.61
l_p,int, Pedestrian LOS Score for Intersection	3.661	3.085	2.076	2.230
Crosswalk LOS	D	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	904	804	600	600
d_b, Bicycle Delay [s]	15.02	17.90	24.50	24.50
l_b,int, Bicycle LOS Score for Intersection	2.493	2.427	1.929	2.465
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



This document is intended to supplement the land use narrative of the North End Master Plan GDP submittal. It includes the applicant's response to the applicable goals and policies of the Oregon City Comprehensive Plan. The Oregon City Comprehensive Plan is implemented through the Oregon City Municipal Code and associated policy documents such as the Oregon City Transportation System Plan and various facilities plans that are adopted and incorporated by reference into the City's Development Code.

SECTION 1: CITIZEN INVOLVEMENT

Goal 1.1 Citizen Involvement Program

Implement a Citizen Involvement Program that will provide an active and systematic process for citizen participation in all phases of the land-use decision making process to enable citizens to consider and act upon a broad range of issues affecting the livability, community sustainability, and quality of neighborhoods and the community as a whole.

Policy 1.1.1

Utilize neighborhood associations as the vehicle for neighborhood-based input to meet the requirements of the Land Conservation and Development Commission (LCDC) Statewide Planning Goal 1, Citizen Involvement. The Citizen Involvement Committee (CIC) shall serve as the officially recognized citizen committee needed to meet LCDC Statewide Planning Goal 1.

Response: The project was presented to the Oregon City Citizen Involvement Committee on February 1, 2021. The team went over the project and overall design objectives that had been considered as the project was developed and answered questions from the attendees.

Goal 1.4 Community Involvement

Provide complete information for individuals, groups, and communities to participate in public policy planning and implementation of policies.

Policy 1.4.1

Notify citizens about community involvement opportunities when they occur.

Response: The City's public hearing process meets the requirements of this Goal for citizen involvement in the land use process. Notice of the proposal will be provided to all property owners within the notice area (300 feet) and adjacent city-recognized neighborhood associations, published on the City's website, and will also be posted on the subject property, giving interested citizens an opportunity to be involved in the process. The developer has also spent the last year reaching out to local civic groups to discuss the project. A public hearing to consider the request will be held by the Planning Commission who will make a decision on the proposal following an open public record period and hearing. Through the notice and public hearing process, all interested parties are afforded the opportunity to review the application, comment on the proposal, and participate in the decision. This process meets the requirements of this Goal for citizen involvement in the land use planning process. In accordance with the findings presented above, the proposal is consistent with Goal 1.

SECTION 2: LAND USE

Goal 2.1 Efficient Use of Land

Ensure that property planned for residential, commercial, office, and industrial uses is used efficiently and that land is developed following principles of sustainable development.

Policy 2.1.1
Create incentives for new development to use land more efficiently, such as by having minimum floor area ratios and maximums for parking and setbacks.
Policy 2.1.2
Encourage the vertical and horizontal mixing of different land-use types in selected areas of the city where compatible uses can be designed to reduce the overall need for parking, create vibrant urban areas, reduce reliance on private automobiles, create more business opportunities and achieve better places to live.

Policy 2.1.3
Encourage sub-area master planning for larger developments or parcels, including re-development, where it may be feasible to develop more mixed uses, or campus-style industrial parks, with shared parking and landscaping areas. Allow developments to vary from prescriptive standards if planned and approved under this provision.
Policy 2.1.4
Use redevelopment programs such as urban renewal to help redevelop underutilized commercial and industrial land.

Response: The North End Master Plan is located within the Mixed-Use Downtown Zoning District which has established minimum floor area ratios, and maximums for parking and setbacks. The minimum floor area is exceeded by the master plan. The proposed parking is between the established minimum and maximum parking standards. The maximum setbacks are met on all frontages except for Abernethy Road. Buildings located along the Abernethy Road frontage are setback outside of the floodplain and a modification to this standard has been requested as allowed by the provisions in the Oregon City Code section 17.65.070.

The Mixed-Use District allows for the vertical and horizontal mixing of different land uses as evidenced by the programming within the proposed master plan. The General Development Plan provides a healthy mix of uses including both commercial and residential.

Approval of the proposed master plan would allow for the development of approximately 65 acres at the north end of Downtown Oregon City. The site is the former home of the Rossman Landfill and redevelopment of the site presents a number of issues that make it difficult to develop as a normal greenfield site would. Developments within the master plan are able to benefit from shared parking and landscaped areas. Finally, the master plan allows the development to vary from prescriptive standards when approved by the Oregon City Planning Commission.

The City has an urban renewal program that the development of this property could benefit from given the challenges associated with redeveloping a former land fill that is located within the Oregon City Downtown and envisioned under the Metro Functional Plan as a regional center intended to serve the region.

Goal 2.2 Downtown Oregon City
Develop the Downtown area, which includes the Historic Downtown Area, the "north end" of the Downtown, Clackamette Cove, and the End of the Oregon Trail area, as a quality place for shopping,

living, working, cultural and recreational activities, and social interaction. Provide walkways for pedestrian and bicycle traffic, preserve views of Willamette Falls and the Willamette River, and preserve the natural amenities of the area.

Policy 2.2.4
Target public infrastructure investments and create public/private partnerships to leverage maximum benefits from public investment and to help ensure that the Regional Center develops to its maximum capacity and realizes its full potential.
Policy 2.2.5
Encourage the development of a strong and healthy Historic Downtown retail, office, cultural, and residential center.
Policy 2.2.9
Improve connectivity for vehicles, bicycles, and pedestrians within the Oregon City Downtown community and waterfront master plan areas and improve links between residential areas and the community beyond.

Response: Over the past year, Summit Development Group has worked in a very concerted manner to develop relationships with key stakeholders in the community and at the City to partner on the redevelopment of the former Rossman Landfill site at the north end of Downtown. The North End Master Plan, is a vision to redevelop the site with a mix of commercial, service, entertainment, residential, and retail uses as depicted in the General Development Plan. The plan envisions a transformation of the former landfill to a lively, integrated mixed-use development that will not only complement the downtown, but serve as a primary gateway to the north end of the Oregon City Downtown.

The master plan features tree-lined streets, landscaped open spaces, offices and residences overlooking public plazas and open spaces, and will feature a wide variety of shopping, dining, and entertainment experiences. When completed, the plan will have contributed to the expansion of infrastructure within the area by way of actual construction as well as contributions to the overall network of the existing infrastructure including sewer, water, storm, sidewalks, streets, plazas and open spaces, bikeways, street trees. Construction of the project will include completion of several of the projects currently listed within the Oregon City Transportation system Plan (TSP). Many of them are needed but not funded. Finally, the develop will contribute to the overall improvements of the larger public systems through systems development charges.

The project will complement and strengthen the downtown by providing a compact design on the west edge of the development that provides appropriate architecture, massing, and encourages a walkable environment with a downtown streetscape while maintaining a relationship to the rest of historic downtown. The east edge of the site is provided with a mix of small retail spaces integrated into larger anchor retail pads that will allow the development to balance the need for growth and economic opportunity, without compromising the comfortable, small-town roots of downtown Oregon City. For future residents and tenants, The North End master plan provides a place where they can live, work and be a part of Oregon City.

Goal 2.4 Neighborhood Livability
Provide a sense of place and identity for residents and visitors by protecting and maintaining neighborhoods as the basic unit of community life in Oregon City while implementing the goals and policies of the other sections of the Comprehensive Plan.

Policy 2.4.2
Strive to establish facilities and land uses in every neighborhood that help give vibrancy, a sense of place, and a feeling of uniqueness; such as activity centers and points of interest.
Policy 2.4.3
Promote connectivity between neighborhoods and neighborhood commercial centers through a variety of transportation modes.

Response: When fully completed, the North End Master Plan will be a complete neighborhood at the North End of Downtown Oregon City. People who live within the master plan will have all of the goods and services that downtown Oregon City has to offer. There are plazas, active open spaces and multi-modal trails to connect the master plan with the residents and visitors in Historic Downtown Oregon City. The development of the site will attract more people into downtown from the region and contribute to the vibrancy of the downtown.

Goal 2.5 Retail and Neighborhood Commercial
Encourage the provision of appropriately scaled services to neighborhoods.

Policy 2.5.4
Encourage the development of successful commercial areas organized as centers surrounded by higher density housing and office uses, rather than as commercial strips adjacent to low-density housing.
Policy 2.5.5
Encourage commercial and industrial development that enhances livability of neighborhoods through the design of attractive LEEDTM-certified buildings and environmentally responsible landscaping that uses native vegetation wherever possible, and by ensuring that development is screened and buffered from adjoining residential neighborhoods and access is provided by a variety of transportation modes.

Response: The North End Master Plan will be a complete community with a mix of uses including retail and service-oriented businesses, residences, restaurants, open spaces, and entertainment that will be appropriately scaled services to the neighborhoods and downtown.

Goal 2.7 Oregon City Comprehensive Plan Land-Use Map
Maintain the Oregon City Comprehensive Plan Land-Use Map as the official long-range planning guide for land-use development of the city by type, density and location.

Policy 2.7.2
Use the following 11 land-use classifications on the Oregon City Comprehensive Plan Land-Use Map to determine the zoning classifications that may be applied to parcels:
- *Low Density Residential (LR)*
- *Medium Density Residential (MR)*
- *High Density Residential (HR)*
- *Commercial (C)*
- *Mixed Use Corridor (MUC)*
- *Mixed Use Employment (MUE)*
- *Mixed Use Downtown (MUD)*
- *Industrial (I)*
- *Public and Quasi-Public (QP)*
- *Parks (P)*

• *Future Urban Holding (FUH)*

Response: The proposed master plan is designated as Mixed-Use Downtown (MUD) on the Oregon City Comprehensive Plan Map. The proposed General Development Plan is consistent with the applicable provisions of the Oregon City Development Codes that are intended to implement that designation with few exceptions. In those cases, modifications are being requested as allowed.

SECTION 5: OPEN SPACES, SCENIC AND HISTORIC AREAS, AND NATURAL RESOURCES

Goal 5.1 Open Space
Establish an open space system that conserves fish and wildlife habitat and provides recreational opportunities, scenic vistas, access to nature and other community benefits.

Policy 5.1.1
Conserve open space along creeks, urban drainage ways, steep hillsides, and throughout Newell Creek Canyon.
Policy 5.1.2
Manage open space areas for their value in linking citizens and visitors with the natural environment, providing solace, exercise, scenic views and outdoor education. Built features in open space sites should harmonize with natural surroundings.

Response: The North End Master Plan will include a comprehensive open space system that includes setting aside the Abernethy Creek riparian corridor that runs along the eastern edge of the site. The creek and its associated buffers have been delineated and are not proposed to be developed with the master plan.

Goal 5.2 Scenic Views and Scenic Sites
Protect the scenic qualities of Oregon City and scenic views of the surrounding landscape.

Policy 5.2.1
Identify and protect significant views of local and distant features such as Mt. Hood, the Cascade Mountains, the Clackamas River Valley, the Willamette River, Willamette Falls, the Tualatin Mountains, Newell Creek Canyon, and the skyline of the city of Portland, as viewed from within the city.
Policy 5.2.2
Maximize the visual compatibility and minimize the visual distraction of new structures or development within important viewsheds by establishing standards for landscaping, placement, height, mass, color, and window reflectivity.

Response: The proposed master plan does not impact any formally identified view corridors or view sheds. All proposed development is proposed to be consistent with the height requirements of the Mixed-Use Downtown (MUD) zoning designation.

Goal 5.4 Natural Resources
Identify and seek strategies to conserve and restore Oregon City's natural resources, including air, surface and subsurface water, geologic features, soils, vegetation, and fish and wildlife, in order to sustain quality of life for current and future citizens and visitors, and the long-term viability of the ecological systems.

Policy 5.4.1
Conserve and restore ecological structure, processes and functions within the city to closely approximate natural ecosystem structure, processes, and functions.
Policy 5.4.5
Ensure that riparian corridors along streams and rivers are conserved and restored to provide maximum ecological value to aquatic and terrestrial species. This could include an aggressive tree and vegetation planting program to stabilize slopes, reduce erosion, and mitigate against invasive species and stream impacts where appropriate.
Policy 5.4.8
Conserve natural resources that have significant functions and values related to flood protection, sediment and erosion control, water quality, groundwater recharge and discharge, education, vegetation and fish, and wildlife habitat.
Policy 5.4.9
Protect and enhance riparian corridors along streams in Oregon City to increase shade, reduce streambank erosion and intrusion of sediments, and provide habitat for a variety of plants, animals, and fish.
Policy 5.4.10
Encourage and promote the restoration of the hydrologic and ecological character and function of streams and wetlands that have been degraded by channeling or eliminated from the landscape by routing into culverts.
Policy 5.4.11
Maintain and enhance the function and quality of natural wetlands and create, where appropriate, wetlands or swales to moderate the quantity and velocity of water runoff entering streams during storm events and to reduce the amount of pollutants carried into streams.

Response: The proposed development would occur on the former Rossman Landfill and is directly adjacent to Abernethy Creek. The proposed development conserves the creek and its associated buffers. If there are subsequent decisions to impact the buffers as part of a detailed development plan, the City can impose appropriate mitigation and the developer will be expected to comply with those requirements. It may be necessary to remove invasive plants and replant with native species as the property is developed, but any and all work within the corridor will be permitted through the appropriate agency.

Policy 5.4.12
Use a watershed-scale assessment when reviewing and planning for the potential effects from development, whether private or public, on water quality and quantity entering streams.
Policy 5.4.16
Protect surfacewater quality by:
- *providing a vegetated corridor to separate protected water features from development*
- *maintaining or reducing stream temperatures with vegetative shading*
- *minimizing erosion and nutrient and pollutant loading into water*
- *providing infiltration and natural water purification by percolation through soil and vegetation*

Response: The master plan developer will construct an on-site storm drainage system that includes a combination of low impact bio-retention facilities and mechanical structures to treat stormwater prior to discharge. The stormwater will be treated and conveyed to the appropriate drainage basin. The entire storm system will be designed to be consistent with the Oregon City design and construction standards.

Policy 5.4.18
Encourage use of native and hardy plants such as trees, shrubs and groundcovers to maintain ecological function and reduce maintenance costs and chemical use.

Response: The master plan includes landscape design that is consistent with the Oregon City Municipal Code landscape standards and includes design guidelines that promote the use of native and hardy plants within the on-site landscape areas.

SECTION 6: QUALITY OF AIR, WATER, AND LAND RESOURCES

Goal 6.1 Air Quality
Promote the conservation, protection and improvement of the quality of the air in Oregon City.

Policy 6.1.1
Promote land-use patterns that reduce the need for distance travel by singleoccupancy vehicles and increase opportunities for walking, biking and/or transit to destinations such as places of employment, shopping and education.
Policy 6.1.2
Ensure that development practices comply with or exceed regional, state, and federal standards for air quality.
Policy 6.1.4
Encourage the maintenance and improvement of the city's tree canopy to improve air quality.

Response: The proposed master plan is provided with a transportation system that can be utilized by all modes of transportation including bicycling and walking. Post-construction emissions would come from personal vehicles traveling to the Downtown from the region and the buildings within the development. Within the Metro area, all of these vehicles are required to meet strict emissions standards. All future building construction within the master plan will be subject to the State and local energy codes.

Additionally, the master plan includes approximately 540 housing units and will allow for a variety of uses that will create opportunities for those residents and citizens within close proximity to the development to eat, shop, recreate, and obtain all of the personal services that downtown Oregon City has to offer within walking and biking distance. The site is also in close proximity to transit as well as the Amtrak Station. Finally, over 500 new trees will be planted within the development when it is fully constructed.

Goal 6.2 Water Quality
Control erosion and sedimentation associated with construction and development activities to protect water quality.

Policy 6.2.1
Prevent erosion and restrict the discharge of sediments into surface- and groundwater by requiring erosion prevention measures and sediment control practices.
Policy 6.2.2
Where feasible, use open, naturally vegetated drainage ways to reduce stormwater and improve water quality.

Response: Future construction activities will be subject to state and local erosion control standards. As stated previously, the master plan developer will construct an on-site storm drainage system that includes a combination of low impact bio-retention facilities and mechanical structures to treat stormwater prior to discharge. The stormwater will be treated and conveyed to the appropriate drainage basin. The entire storm system will be designed to be consistent with the Oregon City design and construction standards.

Goal 6.3 Nightlighting
Protect the night skies above Oregon City and facilities that utilize the night sky, such as the Haggart Astronomical Observatory, while providing for nightlighting at appropriate levels to ensure safety for residents, businesses, and users of transportation facilities, to reduce light trespass onto neighboring properties, to conserve energy, and to reduce light pollution via use of night-friendly lighting.

Policy 6.3.1
Minimize light pollution and reduce glare from reaching the sky and trespassing onto adjacent properties.
Policy 6.3.2
Encourage new developments to provide even and energy-efficient lighting that ensures safety and discourages vandalism. Encourage existing developments to retrofit when feasible.

Response: Proposed development within the master plan area will meet the lighting standards adopted by Oregon City as well as the Oregon Energy Codes.

Goal 6.4 Noise
Prevent excessive noise that may jeopardize the health, welfare, and safety of the citizens or degrade the quality of life.

Policy 6.4.1
Provide for noise abatement features such as sound-walls, soil berms, vegetation, and setbacks, to buffer neighborhoods from vehicular noise and industrial uses.
Policy 6.4.2
Encourage land-use patterns along high-traffic corridors that minimize noise impacts from motorized traffic through building location, design, size and scale.

Response: The master plan is located at the north end of downtown Oregon City and allows the same uses that are permitted within the zoning code. There are no expected uses that will create excessive noise beyond the uses that are already permitted within the area.

SECTION 7: NATURAL HAZARDS

Goal 7.1 Natural Hazards
Protect life and reduce property loss from the destruction associated with natural hazards.
Policy 7.1.1
Limit loss of life and damage to property from natural hazards by regulating or prohibiting development in areas of known or potential hazards.
Policy 7.1.3
Reduce risk to residents and businesses by maintaining accurate information on the existence and potential of hazards.

Policy 7.1.5
Minimize the risk of loss of life and damage to property from flooding by limiting development in the 100-year floodplain and by ensuring that accepted methods of flood proofing are used.
Policy 7.1.6
Encourage the use of land and design of structures that are relatively unaffected by the periodic effects of flooding, such as parking and other uses not normally occupied by humans.
Policy 7.1.7
Prohibit uses in areas subject to flooding that would exacerbate or contribute to hazards posed by flooding by introducing hazardous materials, filling or obstructing floodways, modifying drainage channels, and other detrimental actions.
Policy 7.1.8
Provide standards in City Codes for planning, reviewing, and approving development in areas of potential landslides that will prevent or minimize potential landslides while allowing appropriate development.
Policy 7.1.9
Locate, design, and construct structures in conformance with current building codes and standards for seismic-resistant design.

Response: The proposed master plan includes areas that are located within the floodplain and geologic hazard areas. The site will be balanced so that there is no increase in flooding beyond what occurs today. The GDP intentionally proposes to site circulation and parking area within the 100-year floodplain to minimize the potential hazards associated with habitable spaces. Further, the site has been evaluated by NV5 (formerly Geo-Design) and future construction within the development areas will be subject to the standards within the Oregon City development code as well as the recommendations of the geo-technical engineer. Finally, all future development would be subject to the applicable building codes that are in effect at the time they are proposed and constructed.

SECTION 8: PARKS AND RECREATION

Goal 8.1 Developing Oregon City's Park and Recreation System
Maintain and enhance the existing park and recreation system while planning for future expansion to meet residential growth.

Policy 8.1.1
Provide an active neighborhood park-type facility and community park-type facility within a reasonable distance from residences, as defined by the Oregon City Park and Recreation Master Plan, to residents of Oregon City.
Policy 8.1.5
Identify and construct a network of off-street trails throughout the city for walking and jogging.
Policy 8.1.6
Policy 8.1.9
Emphasize retaining natural conditions and the natural environment in proposed passive recreation areas.

Response: The proposed master plan includes a system of parks and plazas strategically located throughout the master plan and connected through a circuitous pedestrian and bike system. Parks and plazas are both passive and active. The proposed development includes two pedestrian shared use connections that are identified in the Oregon City TSP.

SECTION 9: ECONOMIC DEVELOPMENT

Goal 9.1 Improve Oregon City's Economic Health
Provide a vital, diversified, innovative economy including an adequate supply of goods and services and employment opportunities to work toward an economically reasonable, ecologically sound and socially equitable economy.

Policy 9.1.1
Attract high-quality commercial and industrial development that provides stable, high-paying jobs in safe and healthy work environments, that contributes to a broad and sufficient tax base, and that does not compromise the quality of the environment.

Response: When fully developed, the North End Master Plan will provide a mix of high-quality commercial and service uses within a development intended to complement the mix of uses in downtown. It will provide residents of the development and citizens within the area to access whatever services and products they need to live, work, and recreate within Oregon City.

Goal 9.5 Retail Service
Allow a variety of retail outlets and shopping areas to meet the needs of the community and nearby rural areas.

Response: In addition to being located at the north end of downtown Oregon City, the North End Master Plan is part of a designated regional center under the Metro 2040 Functional Plan. The site is large and provides for a mix of service, entertainment, and retail uses that can assist the City in realizing the intent of this goal. With good access and transportation facilities, the downtown area will serve nearby rural areas as well as the community itself.

Goal 9.6 Tourism
Promote Oregon City as a destination for tourism.

Policy 9.6.1
Protect historic, recreational, and natural resources as the basis for tourism, such as the Historic Downtown Area.
Policy 9.6.2
Ensure land uses and transportation connections that support tourism as an important aspect of the City's economic development strategy. This could include connections to the End of the Oregon Trail Interpretive Center and the train depot.
Policy 9.6.3
Provide land uses in the Downtown Historic Area, 7th Street corridor, and the End of the Oregon Trail Interpretive Center that support tourism and visitor services.
Policy 9.6.6
Encourage private development of hotel, bed and breakfast, restaurant facilities and other visitor services.

Response: The North End Master Plan is located at the north end of downtown Oregon City and will likely attract a lot of visitors to the area. It connects directly to the End of the Oregon Trail Interpretive Center and provides street improvements along Washington Street and Abernethy that will connect the development with the rest of downtown. The proposed development includes service, retail,

restaurants, entertainment, and housing that will draw a lot of additional attention to the downtown area.

Goal 9.8 Transportation System
Recognize the importance of the land use-transportation link and encourage businesses to locate in areas already served by the type of transportation system they need.

Policy 9.8.1
Through coordination with TriMet and local employers, encourage and promote the use of mass transit to travel between residential areas and employment areas.
Policy 9.8.6
Encourage the provision of multi-modal transportation to support major existing employers.
Policy 9.8.7
Assess methods to integrate the pedestrian, bicycle and elevator transportation modes into the mass transit system.

Response: The proposed master plan is within downtown and is in close proximity to a variety of transportation services for all modes of transportation. The development provides for multi-modal transportation within the development including cycling, pedestrians, and automobiles. It is at the confluence of several major transportation facilities and over the course of its development will provide transportation improvements that supplement and improve the existing system consistent with the TSP.

SECTION 10: HOUSING

Goal 10.1 Diverse Housing Opportunities
Provide for the planning, development and preservation of a variety of housing types and lot sizes.

Policy 10.1.7
Use a combination of incentives and development standards to promote and encourage well-designed single-family subdivisions and multi-family developments that result in neighborhood livability and stability.

Response: The proposed master plan will provide approximately 540 new residential housing units within a multi-family housing type that will increase the supply of housing near downtown. There will not likely be individual lots associated with these homes, but they will have access to shared open spaces, plazas, and both passive and active recreational opportunities.

SECTION 11: PUBLIC FACILITIES

Goal 11.1 Provision of Public Facilities
Serve the health, safety, education, welfare, and recreational needs of all Oregon City residents through the planning and provision of adequate public facilities.

Policy 11.1.3
Confine urban public facilities and services to the city limits except where allowed for safety and health reasons in accordance with state land-use planning goals and regulations. Facilities that serve the public will be centrally located and accessible, preferably by multiple modes of transportation.
Policy 11.1.4

Support development on underdeveloped or vacant buildable land within the city where public facilities and services are available or can be provided and where land-use compatibility can be found relative to the environment, zoning, and Comprehensive Plan goals.
Policy 11.1.5
Design the extension or improvement of any major public facility and service to an area to complement other public facilities and services at uniform levels.
Policy 11.1.6
Enhance efficient use of existing public facilities and services by encouraging development at maximum levels permitted in the Comprehensive Plan, implementing minimum residential densities, and adopting an Accessory Dwelling Unit Ordinance to infill vacant land.

Response: The proposed master plan is an underdeveloped property in close proximity to downtown Oregon City. The site is located within the UGB and the City limits. Public services are located adjacent to the master plan site and will be extended into the site with the first phase. In addition, development of the site will contribute to the overall public infrastructure system through direct improvements or indirectly through systems development charges associated with development in the master plan area.

Goal 11.2 Wastewater
Seek the most efficient and economic means available for constructing, operating, and maintaining the City's wastewater collection system while protecting the environment and meeting state and federal standards for sanitary sewer systems.

Policy 11.2.2
Plan, operate and maintain the wastewater collection system for all current and anticipated city residents within the existing Urban Growth Boundary. Plan strategically for future expansion areas.
Policy 11.2.5
Implement the City's wastewater policies through the City of Oregon City Sanitary Sewer Master Plan.

Response: The North End Master Plan is located within the existing UGB and will be served by the extension and improvement of existing sanitary sewer located adjacent to the site. The development will contribute to the improvement and maintenance of the overall wastewater system through payment of systems development charges.

Goal 11.3 Water Distribution
Seek the most efficient and economic means available for constructing, operating, and maintaining the City's water distribution system while protecting the environment and meeting state and federal standards for potable water systems.

Policy 11.3.1
Plan, operate and maintain the water distribution system for all current and anticipated city residents within its existing Urban Growth Boundary and plan strategically for future expansion areas.
Policy 11.3.2

Response: The North End Master Plan is located within the existing UGB and will be served by the extension and improvement of existing water distribution lines located adjacent to the site. The development will contribute to the improvement and maintenance of the overall water system through payment of systems development charges.

Goal 11.4 Stormwater Management
Seek the most efficient and economical means available for constructing, operating, and maintaining the City's stormwater management system while protecting the environment and meeting regional, state, and federal standards for protection and restoration of water resources and fish and wildlife habitat.

Policy 11.4.1
Plan, operate, and maintain the stormwater management system for all current and anticipated city residents within Oregon City's existing Urban Growth Boundary and plan strategically for future expansion areas.
Policy 11.4.2
Adopt "green streets" standards to reduce the amount of impervious surface and increase the use of bioswales for stormwater retention where practicable.
Policy 11.4.3
Ensure parking lot designs that mitigate stormwater impacts. Take measures to reduce waterflow and increase water absorption through the use of bioswales, vegetated landscaped islands with curb cuts to allow water inflow, and tree planting.
Policy 11.4.4
Maintain existing drainageways in a natural state for maximum water quality, water resource preservation, and aesthetic benefits.
Policy 11.4.5
Design stormwater facilities to discharge surfacewater at pre-development rates and enhance stormwater quality in accordance with criteria in City of Oregon City Public Works Stormwater and Grading Design Standards.

Response: The North End Master Plan is located within the existing UGB and will be served by the extension and improvement of existing storm facilities located adjacent to the site. Stormwater will be treated through a combination of mechanical treatment systems and low impact development facilities. The development will contribute to the improvement and maintenance of the overall wastewater system through payment of systems development charges.

Goal 11.6 Transportation Infrastructure
Optimize the City's investment in transportation infrastructure.

Policy 11.6.1
Make investments to accommodate multi-modal traffic as much as possible to include bike lanes, bus turnouts and shelters, sidewalks, etc., especially on major and minor arterial roads, and in regional and employment centers.

Response: The North End Master Plan area is adjacent to an existing system of public streets and will provide improvements to increase multi-modal access to the site and downtown. Further, the development will contribute directly to the system by construction improvements identified within the Oregon City TSP as well as indirectly through the payment of systems development charges.

Goal 11.7 Private Utility Operations
Coordinate with utilities that provide electric, gas, telephone and television cable systems, and high-speed internet connection to Oregon City residents to ensure adequate service levels.
Policy 11.7.1

Require local service lines in new subdivisions be placed underground.
Policy 11.7.2
Coordinate with private utility providers to install infrastructure during street construction and maintenance to reduce the need to repeatedly cut into newly paved streets.
Policy 11.7.3
Adopt lighting practices in streets and other public facilities, and encourage them in private development, that reduce glare, light pollution, light trespass, and energy use, while maintaining even lighting ensuring good visibility and safety for the public.

Response: All new private utilities will be placed underground and will be placed consistent with the franchise utilities standards. Lighting will be designed in accordance with City standards that are intended to implement these policies.

SECTION 12: TRANSPORTATION

Goal 12.1 Land Use-Transportation Connection
Ensure that the mutually supportive nature of land use and transportation is recognized in planning for the future of Oregon City.

Policy 12.1.1
Maintain and enhance citywide transportation functionality by emphasizing multi-modal travel options for all types of land uses.
Policy 12.1.3
Support mixed uses with higher residential densities in transportation corridors and include a consideration of financial and regulatory incentives to upgrade existing buildings and transportation systems.
Policy 12.1.4
Provide walkable neighborhoods. They are desirable places to live, work, learn and play, and therefore a key component of smart growth.

Response: The North End Master Plan fronts three public streets, Washington Street, Abernethy Road, and Redland Road. Frontage improvements, including bicycle and pedestrian improvements have been coordinated with the Oregon City Engineering Division and are consistent with the requirements of the Oregon City TSP. The proposed GDP proposes to construct seven projects identified within the TSP that are intended to improve multi-modal travel options within the City. Required right-of-way and easements will be dedicated or provided with all of the proposed transportation improvements. The master plan is a walkable neighborhood that is connected to the community through direct connections to the existing transportation systems.

Goal 12.3 Multi-Modal Travel Options
Develop and maintain a transportation system that provides and encourages a variety of multi-modal travel options to meet the mobility needs of all Oregon City residents.
Policy 12.3.1
Provide an interconnected and accessible street system that minimizes vehiclemiles-traveled and inappropriate neighborhood cut-through traffic.4
Policy 12.3.2
Provide an interconnected and accessible pedestrian system that links residential areas with major pedestrian generators such as employment centers, public facilities, and recreational areas.

Policy 12.3.3
Provide a well-defined and accessible bicycle network that links residential areas, major bicycle generators, employment centers, recreational areas, and the arterial and collector roadway network.
Policy 12.3.4
Ensure the adequacy of pedestrian and bicycle connections to local, county, and regional trails.

Response: As stated previously, the proposed GDP proposes to construct seven projects identified within the TSP that are intended to improve multi-modal travel options within the City. Internal and adjacent to the site, there will be a mix of trails, sidewalks, streets, and bike lanes that provide good internal and efficient circulation routes that also connect to the existing public street system.

Goal 12.8 Implementation/Funding
Identify and implement needed transportation system improvements using available funding.

Policy 12.8.3
Provide incentives for private sector contributions to multi-modal transportation links and facilities, for example, establishing new standards in the zoning code.

Response: The cost of providing the transportation improvements associated with such a large site will require assistance and partnerships. The developer is pursuing access to a combination of public and private funding to ensure that all of the needed transportation system improvements are feasible. In addition to direct improvements paid for by the development, the developers within the master plan area will be contributing indirectly to the improvements of the overall transportation system through systems development charges.

SECTION 13: ENERGY CONSERVATION

Goal 13.1 Energy Sources
Conserve energy in all forms through efficient land-use patterns, public transportation, building siting and construction standards, and city programs, facilities, and activities.

Policy 13.1.2
Encourage siting and construction of new development to take advantage of solar energy, minimize energy usage, and maximize opportunities for public transit.

Response: Future development within the North End Master Plan will be required to meet applicable building codes for energy conservation. The site is located in close proximity to public transit and has been designed to be efficient and walkable.

Goal 13.2 Energy Conservation
Plan public and private development to conserve energy.

Policy 13.2.1
Promote mixed-use development, increased densities near activity centers, and home-based occupations (where appropriate).
Policy 13.2.5
Construct bikeways and sidewalks, and require connectivity of these facilities to reduce the use of petroleum-fueled transportation.

Response: The proposed master plan is a mixed use and walkable development that allows future residents within the development to live, work, and recreate within the area and downtown. The construction of bike lanes and sidewalks are a large part of the internal connectivity.

FILE NUMBER: GLUA 21-000016 (MAS 21-02, CU 21-01, FP 21-03, GEO 21-030)

Staff Report Public Comments

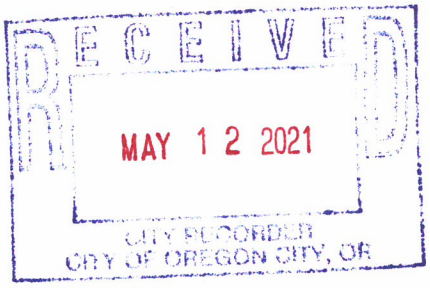
1. Jane Troxler,
2. Wes Rogers, Oregon City School District,
3. Chris Long, Oregon City Building Division
4. The Confederated Tribes of the Umatilla Indian Reservation (CTUIR)
5. Bob Swartz, Oregon Department of Environmental Quality (DEQ),
6. Emma Fleming
7. DeMaris Beyl
8. Skip Rotticci
9. Joanne Gordon
10. Tonia Lordy
11. Dave Frazier
12. Renate Mengelberg
13. Karen Morey
14. Richard Ponting
15. List of supporters submitted by Summit Development
16. Nick Veroske
17. Marilyn Morrissey
18. Dan Fowler
19. Richard Ponting
20. Bob Swartz, Oregon Department of Environmental Quality (DEQ), additional comment*
21. Richard Placentini*
22. Richard Ponting, additional comment*

* added 6.24.21

May 10, 2021

City of Oregon City
P.O. Box 3040
Oregon City, OR 97045

Attn: Christina Robertson-Gardiner



Re: Rossman Landfill Development Proposal
Project ID:
GLUA 21-000016 (MAS 21-02 CU 21-01 FP 21-03, GEO 21-030) The North End Master Plan

ITEMS OF CONCERN

Traffic:
Noted that traffic was checked in December 2020 on Washington/Abernathy. At that time, many people were still working from home due to the virus.

However, currently traffic is backed up on Washington Street from 14th back to Prairie Schooner Way during the hours of 1:00pm to 6:00pm Monday thru Friday. Traffic at the intersection of Redland/Holcomb/Abernathy is backed up during the early morning hours and late afternoon during the week.

Businesses and buildings removed?
Golf driving range will be dissolved.

What about the county and Sheriff's parking on north side of Abernathy, the appliance parts house, old OJ's antique store, 2 homes on the south side of the Interpretive Center.

Funds:
Is the City of Oregon City funding any of this project?

The design is wonderful but all I foresee is a lot of people and traffic.

I personally would like to see the 62 acres turned into a park/walking paths. Perhaps a small deli/ice cream shop/coffee shop.

I have been a citizen of Clackamas County – Oregon City address - for almost 46 years. Change is sometimes good, but so is seeing the old Oregon City stay the same with its history!!

Please send me an email (djtroxler1@outlook.com) reply that my letter has been accepted.

Thank you,

Jan Troxler.

cc: City Commissions

OREGON CITY

Community Development – Planning

695 Warner Parrott Road | Oregon City OR 97045
Ph (503) 722-3789 | Fax (503) 722-3880

LAND USE TRANSMITTAL

DISTRIBUTION OF APPLICATION

- X Building Official
- Development Services
- Public Works Operations
- City Engineer
- Public Works Director
- Parks Manager
- Community Services Director
- Police
- Economic Development Manager
- Traffic Engineer
- Natural Resource Committee
- City Manager's Office

NOTICE OF THE APPLICATION MAILED TO

- All Properties within 300 feet
- Oregon City Neighborhood Associations
- Clackamas County Transportation
- Clackamas County Planning
- Clackamas Fire District #1
- ODOT – Division Review
- Oregon City School District
- Tri-Met
- Metro
- PGE
- South Fork Water Board
- Hamlet of Beavercreek
- Holcomb Outlook CPO
- Central Point / Leland Road / New Era CPO
- Other – See Email List

COMMENTS DUE BY: June 18, 2021 (4pm)
HEARING DATE: June 28, 2021 Planning Commission (7PM)
HEARING BODY: _ ___Staff Review; __x___PC; _____HRB; _____CC
FILE # & TYPE: GLUA-21-00016/The North End Master Plan CU-21-00001, GEO-21-00003, FP-21-00003, MAS-21-00002
PROJECT FILE: https://www.orcity.org/planning/project/glua-21-000016-mas-21-02-cu-21-01-fp-21-03-geo-21-030-north-end-master-plan
PLANNER: Christina Robertson-Gardiner, Senior Planner, 503-496-1564, crobertson@orcity.org
APPLICANT:

Summit Development Group Attn: Seth Henderson
13221 SW 68th Parkway, Suite 401
Tigard, OR 97223

HHPR, Inc. Attn: Brad Kilby, AICP
205 SE Spokane Street, Suite 200
Portland, OR 97202

OWNER: c/o Brad Miller | Brix Law LLP 75 SE Yamhill St, Suite 202, Portland, Oregon 97214
REQUEST: Summit Development Group is seeking approval of a mixed-use development Master Plan at the north end of the Oregon City Downtown. The plan envisions a 20-year road map to redevelop the former Rossman Landfill. No concurrent development applications are being proposed with this application. If the Master Plan is approved, future development applications will be reviewed through the separate Detailed Development Plan review process found in OCMC 17.65 Master Plans and Planned Unit Developments
LOCATION: 1105 Abernethy Road| Oregon City, OR 97045

This application material is referred to you for your information, study and official comments. Your recommendations and suggestions will be used to guide the Planning staff when reviewing this proposal. If you wish to have your comments considered and incorporated into the staff report, please return this form to facilitate the processing of this application and insure prompt consideration of your recommendations. Please check the appropriate spaces below and provide additional comments as needed.

The proposal does not conflict with our interests: [X]
The proposal conflicts with our interests for the reasons attached: [ ]
The proposal would not conflict our interests if the changes noted are included: [ ]

Comments:

OREGON CITY

Community Development – Planning

695 Warner Parrott Road | Oregon City OR 97045
Ph (503) 722-3789 | Fax (503) 722-3880

LAND USE TRANSMITTAL

DISTRIBUTION OF APPLICATION

- Building Official
- Development Services
- Public Works Operations
- City Engineer
- Public Works Director
- Parks Manager
- Community Services Director
- Police
- Economic Development Manager
- Traffic Engineer
- Natural Resource Committee
- City Manager's Office

NOTICE OF THE APPLICATION MAILED TO

- All Properties within 300 feet
- Oregon City Neighborhood Associations
- Clackamas County Transportation
- Clackamas County Planning
- Clackamas Fire District #1
- ODOT – Division Review
- Oregon City School District
- Tri-Met
- Metro
- PGE
- South Fork Water Board
- Hamlet of Beavercreek
- Holcomb Outlook CPO
- Central Point / Leland Road / New Era CPO
- Other – See Email List

COMMENTS DUE BY:	May 24, 2021 (4PM)
HEARING DATE:	No hearing date for the Type II Decision
HEARING BODY:	_x_Staff Review; _____PC; _____HRB; _____CC
FILE # & TYPE:	GLUA-21-00020: SP-21-00056 Maple Lane Multi-Family
PROJECT FILE:	https://www.orcity.org/planning/project/glua-21-00020-sp-21-00056-maple-lane-multi-family
PLANNER:	Christina Robertson-Gardiner, Senior Planner, 503-496-1564, crobertson@orcity.org
APPLICANT:	Community Development Partners/ Harper Houf Peterson Righellis, Inc.
OWNER:	Historic Properties, LLC
REQUEST:	The applicant is proposing to build 171 multi-family units ranging from one to four-bedroom. In addition to the residential development, the site will include a community building, parking, open space, play area, and a community garden. Parking, stormwater, and utilities will also be developed to serve the site
LOCATION:	14250 South Maple Lane Road (32E04C01400, 32E04C01500,32E04C01600, 2E04CD06000)

This application material is referred to you for your information, study and official comments. If extra copies are required, please contact the Planning Department. Your recommendations and suggestions will be used to guide the Planning staff when reviewing this proposal. If you wish to have your comments considered and incorporated into the staff report, please return the attached copy of this form to facilitate the processing of this application and insure prompt consideration of your recommendations. Please check the appropriate spaces below.

___	The proposal does not conflict with our interests.
___	The proposal conflicts with our interests for the reasons attached.
___	The proposal would not conflict our interests if the changes noted are included.

Wes Rogers

Digitally signed by Wes Rogers
DN: cn=Wes Rogers,

2.or

Date: 2021.05.10 17:20:52 -07'00'

From: Kristen Tiede
To: Christina Robertson-Gardiner
Cc: Jennifer Karson Engum; Teara Farrow Ferman
Subject: RE: GLUA-21-00016/The North End Master Plan CU-21-00001, GEO-21-00003, Transmittal
Date: Tuesday, May 11, 2021 1:18:41 PM
Attachments: image002.png

Hello Ms. Robertson-Gardiner,

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Cultural Resources Protection Program (CRPP) has reviewed the documents for GLUA-21-00016. The proposed project area is within a Cayuse 5 Area of Concern for the CTUIR. The General Development Plan Application states: "The proposed GDP protects any inventoried Goal 5 natural, historic or cultural resources within the proposed development boundary consistent with the provisions of applicable overlay districts." How up to date is Oregon City's Goal 5 Inventory? If the Goal 5 Inventory is not up to date, the CRPP recommends consulting with the State Historic Preservation Office (SHPO). Additionally, the CRPP recommends conducting a pedestrian survey with subsurface testing in areas where development will impact native sediments below the fill and trash layers of the old landfill. Please let me know if you have any questions or concerns.

Thank you,

Kristen Tiede
Archaeologist
Cultural Resources Protection Program
Confederated Tribes of the Umatilla Indian Reservation
46411 Timíne Way, Pendleton, OR 97801
Direct Line/Fax: (541) 429-7206
Main Office: (541) 276-3447
KristenTiede@ctuir.org



From: Christina Robertson-Gardiner [mailto:crobertson@orcity.org]
Sent: Tuesday, May 4, 2021 3:27 PM
To: Teara Farrow Ferman <TearaFarrowFerman@ctuir.org>
Subject: FW: GLUA-21-00016/The North End Master Plan CU-21-00001, GEO-21-00003, Transmittal

EXTERNAL EMAIL: Please use caution when clicking links or opening attachments.

Teara,

Forwarding on this transmittal for the Landfill application for your reference and comment, if applicable.

Let me know if you have any questions.

Christina

From: Christina Robertson-Gardiner
Sent: Friday, April 30, 2021 10:58 AM
Subject: GLUA-21-00016/The North End Master Plan CU-21-00001, GEO-21-00003, Transmittal

Let me know if you have any questions.

Christina

What's your Vision for Oregon City?
Christina Robertson-Gardiner, AICP, Senior Planner (she/her)
695 Warner Parrott Rd, Oregon City, OR 97045
crobertson@orcity.org
503) 496-1564 Direct
(503) 722-3789 Main

Interactive Maps and Apps
Online Submittal of Land Use Applications
COVID-19 (Coronavirus) Information

*The City of Oregon City is open for business and continues to offer services and programs online and virtually. Some City facilities are open to the public, find current openings **here;** we encourage visitors to wear a mask, practice physical distancing, and reschedule in-person visits if they are feeling unwell. The City has installed additional shielding and is providing hand sanitizer as well as occupancy limits to ensure our staff and visitors have a safe, no-touch experience. Our goal is to be responsive to our community throughout this pandemic; we appreciate your understanding and cooperation.*

PUBLIC RECORDS LAW DISCLOSURE: This e-mail is subject to the State Retention Schedule and may be made available to the public.

The opinions expressed by the author are his or her own and are not necessarily those of the Confederated Tribes of the Umatilla Indian Reservation. The information, contents and attachments in this email are Confidential and Private.

From: SCHWARZ Bob * DEQ
To: Christina Robertson-Gardiner
Cc: SCHWARZ Bob * DEQ
Subject: RE: GLUA-21-00016/The North End Master Plan CU-21-00001, GEO-21-00003, Transmittal
Date: Thursday, June 10, 2021 6:35:49 AM

Christina,
The following statement provides DEQ's position regarding the proposed development on Rossman's Landfill. I would be happy to provide input regarding the condition of approval that you are drafting.
Bob
Cell: 971-254-7493

DEQ STATEMENT

The Oregon Department of Environmental Quality regulates the closed Rossman's Landfill through a DEQ solid waste closure permit. The landfill has been closed for 38 years. The landfill is capped with a compacted soil cover. Post-closure activities include groundwater and landfill gas monitoring.

DEQ supports redevelopment of closed landfills and intends to enter into a Prospective Purchaser Agreement with two parties planning to purchase portions of the site for development. The property proposed for acquisition is approximately 77 acres and includes two parcels. Summit OC LLC intends to purchase "Parcel I," (Tax Lot 902) covering approximately 62 acres. OCLD LLC intends to purchase "Parcel II" (Tax Lot 1200), which is approximately15 acres. Details regarding the proposed Prospective Purchaser Agreement can be found here:

https://www.deq.state.or.us/Webdocs/Forms/Output/FPController.ashx?SourceIdType=11&SourceId=674&Screen=Load

DEQ will work with the businesses who purchase lots on top of the closed landfill to ensure that development occurs in a safe manner that protects occupants from landfill gas or other environmental concerns associated with a closed landfill.

From: Christina Robertson-Gardiner <crobertson@orcity.org>
Sent: Tuesday, June 8, 2021 11:31 AM
To: SCHWARZ Bob * DEQ <bob.schwarz@deq.state.or.us>
Cc: Sang Pau <spau@orcity.org>
Subject: FW: GLUA-21-00016/The North End Master Plan CU-21-00001, GEO-21-00003, Transmittal

Hi Bob-

Per my voice mail,

We are currently working on the staff report for the landfill master plan. The proposal is for a Master Plan approval that will guide later development applications for individual buildings. I was hoping to work with you to write a general condition of approval that would direct the applicant to continue to work with DEQ to obtain all applicable permits for development on the site. A comment email for the record from DEQ is also helpful, as many ask if the applicant is working with DEQ and a quick email to the record often resolves that question.

Let me know if you want to chat over the phone.

Thanks!

Christina



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PUBLIC RECORDS LAW DISCLOSURE: This email is subject to the State Retention Schedule and may be made available to the public.

From: Christina Robertson-Gardiner
Sent: Friday, April 30, 2021 10:58 AM
Subject: GLUA-21-00016/The North End Master Plan CU-21-00001, GEO-21-00003, Transmittal

Let me know if you have any questions.

Christina



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PUBLIC RECORDS LAW DISCLOSURE: This e-mail is subject to the State Retention Schedule and may be made available to the public.

From: emito
To: Christina Robertson-Gardiner
Cc: Rachel Lyles Smith; Rocky Smith, Jr.; Denyse McGriff; Frank O"Donnell; Adam Marl
Subject: North End Development
Date: Thursday, June 17, 2021 8:13:06 AM

Dear Oregon City Commissioners,

I am hopeful and excited for this development proposal. I am a 23 year old CNA 2, at Providence St.Vincet, and have been a resident of Oregon City my entire life. Throughout the years I have been able to watch our City grow and change. It has blossomed from a mill town with almost every downtown store front for lease to a flourishing community with wonderful restaurants and activities. Half the time a person cannot even find parking! Not only has our downtown done well, but other parts of Oregon City have become fun to visit and there are many options for places people can go.

This has not only helped helped our little economy, but lead me to love my town more. If we were to go anywhere when I was little, we had to drive out to the neighboring cities. There you could find good food and places to explore. Now I can be close to home and put money back into my community. It would also help use a piece of land that has been idle for years and is such a waste.

I remember when I was little, in the age range of 8-12, this plan had already been proposed. The idea of having more to explore and a fun place to visit besides Home Depot was exhilarating as a child. Especially with this location being closer to the Barton to Carver river float, it made me think it would be the perfect place to have the people enjoying that location/activity to stop by and refresh. When this idea was dismissed it made me very downcast and disappointed. Maybe it had been for the best so that the idea would mesh more perfectly with the now flourishing and refined downtown Oregon City. As an adult I can only imagine the fun that could be had once it is developed.

Additionally, this would help with our housing. If the apartments proposed to be above the businesses are affordable, this would help tremendously. With how many people have move to our city, it is hard to find good and affordable housing. I am very blessed to live with my parents still, but this could give my Fiancé and I (who will be married next June) an affordable place to stay near home.

The only thing I could think be be of an issue with this (other than possible financial difficulty), would be the need for parking. I may have missed that part within the plan, but would a parking structure or some sort of additional parking be added? If so this would help with the already tricky parking situation. If this plan is denied I will once again be greatly disappointed and will hope in another roughly 12 years that I can be excited about an idea I've know of since a child. It coming to fruition would mean so much.

Thank you for reading and hearing me out. Please consider that this would be very beneficial for the community and that the residents who have been here for their whole lives/many years are anticipating this exciting project. Take care and be safe!

Sincerely,
Emma Fleming

From: Demaris Beyl
To: Christina Robertson-Gardiner; Rachel Lyles Smith; Rocky Smith, Jr.; Denyse McGriff
Subject: Summit Development
Date: Wednesday, June 16, 2021 10:07:01 PM

I support the North End Summit Development Plan. There is a demand for housing and retail at the north end of Oregon City.

This project will boost the economy of Oregon City. It will generate construction and after construction.

Also this project could promote other development in the vicinity. Additional property taxes would benefit the city and schools.

DeMaris BEYL
15057 S Brunner Road
Oregon City, Oregon
97045
Sent from my iPhone

From: Rotticci, Skip
To: Christina Robertson-Gardiner; Rachel Lyles Smith; Rocky Smith, Jr.; Denyse McGriff; Frank O"Donnell; Adam Marl
Subject: North End Project
Date: Monday, June 14, 2021 12:58:21 PM

Oregon City Planning Commission,
Please accept this note in support of the North End mixed use development project. The North End will bring an exciting mix of uses to an area that has for far too long been nothing more than a blighted landscape along Interstate 205. In addition, it will add vitality to neighboring properties such as the Clackamette Cove area that have been sitting fallow for far too long as well. The North End planned development that will include retail, commercial, residential, and job growth components will serve as an exciting place for people to live, work, play, and learn!
Thank you,

Skip Rotticci
(503) 314-0527

From: drgordon naturalhw.com
To: Christina Robertson-Gardiner
Cc: Denyse McGriff; Rachel Lyles Smith; Rocky Smith, Jr.; Frank O"Donnell; Adam Marl
Subject: In favor of North End Development
Date: Monday, June 14, 2021 12:41:17 PM

- I am in favor of the North end project!

  In the last ten years Oregon City was the 11th fastest growing city in Oregon by population. The demand for housing, retail and entertainment is ever increasing.

- Our entire region will benefit from a vibrant north end neighborhood, complementing and strengthening connections to other local communities.

- Oregon City has an opportunity to be leaders in taking a degraded area, raising it to today's environmental standards and turning it into an energetic economy that will meet the needs of this evolving community.

- The new economic activity during construction and after will result in new revenue and provide significant additional dollars for city services. During construction, it is estimated that over 3,000 jobs will be created. After completion, it is estimated that 988 new jobs will be available.

- The retail and entertainment facilities will attract additional people and the property taxes collected will benefit schools and provide new revenue streams to the city.

- Tourists and people from outside the region will visit, and the area's businesses as a whole will benefit from their longer time spent here.

Joanne Gordon, ND
Hormones & Regenerative Medicine
drgordon@naturalhw.com
(503) 722-7776

From: DAVE FRAZIER
To: Christina Robertson-Gardiner
Subject: North End Development
Date: Monday, June 14, 2021 11:18:21 AM

To Whom it may concern,
I am strongly in favor of the North End Development plan. As an Oregon City resident for nearly 30 years, I've observed discussions of use for this land come and go. Now, it appears there may be a viable option.
Naysayers (and they are very loud) will proclaim THE TRAFFIC WILL BE HORRIBLE. I find that argument interesting, because I imagine before these naysayer's homes were built, previous residents were saying THE TRAFFIC WILL BE HORRIBLE, and it goes on and on.
I witnessed just such a scenario in the early 2000s. We were friends with a couple who purchased a new home in a development off Pease Road. When proposals were made to add another housing development across the street, these people were very unhappy. "What about all the dirt and dust? We like that open field." I couldn't believe my ears. I imagine previous homeowner's said the same thing as this couple's housing development was being built.
Evidently, all growth should have stopped once they were residents. It's as if some are saying, "We're here, so close the gates!" Is the solution then to completely stop all growth so the current residents don't have to put up with anything new? I think that's ridiculous and very short-sighted.
At some point, we have to move on and think beyond our selfish desires, to get beyond the "not in my backyard" mentality and think long-term.
I hope the project wins approval and can proceed.
Thank you,
Dave Frazier

From: Renate Mengelberg
To: Christina Robertson-Gardiner
Subject: North End Masterplan Project Support letter for the Oregon City Planning Commission
Date: Friday, June 18, 2021 7:23:25 AM

Renate Mengelberg
2263 Gilman Drive, Oregon City Oregon, 97045
Cell: 503-504-5882 Email: Renatemengelberg@yahoo.com

June 18, 2021

To: Oregon City Planning Commission
Attn: Christina Robertson Gardiner via crobertson@orcity.org
RE: The North End Masterplan Project ID GLUA 21-000016 (MAS 21-02, CU 21-03, GEO 21-030)

Dear Planning Commission Members;

I enthusiastically support the Summit Development proposal for a mixed-use development on the former Rossman Landfill site. This significant project will meet many of Oregon City's needs and develop a significantly underdeveloped and contaminated site. I encourage you to approve this project for the following reasons:

Zoning: The applicant is proposing only outright permitted uses with NO variances. The mixed-use downtown zoning and masterplan requirement for this area add significant complexity. The Summit team has taken the time to thoroughly understand the city's requirements and meet them.

Uses: The wide range of uses proposed here maximize the potential of this large, visible and strategically located site. These include badly needed multifamily housing, small- and large-scale retail development, entertainment options, office space, a mixed used market street and significant onsite parking.

Traffic: Any large-scale development will generate significant new traffic. This team has really thought this through. They propose improvements to Washington and Abernethy Street and well-planned internal circulation that connects to the community. This site is well served from many directions with close-by Highway 213, Abernethy Road, Washington Street, two TriMet bus lines, and even Amtrak Rail. The jug handle project at I-205/HWY 213 was built to handle a large mixed-employment development like this. The housing / retail mix proposed will generate trips at different times of day and days of week, helping to even out traffic flow. The development will serve Oregon City residents from the south using surface streets as well as from the surrounding areas via HWY 213. I have every confidence in the city traffic engineers and the developer's ability to identify effective mitigation strategies to address major concerns.

Environmental Impact: This site has been very challenging and expensive to develop because of decades long landfill contamination issues. The development team is well versed in these challenges. They have a sophisticated, knowledgeable approach developed in conjunction with the Oregon Department of Environmental Quality. Having the full site developed by a capable knowledgeable

developer vs. piecemeal is the most efficient and effective way to safely address contamination on the property. The team has been creative in finding solutions and identifying some potential funding to help address the many challenges.

Economic Advantages: This development will bring approximately $300 million in assessed value, as well as significant jobs and attractions to our city. The 550+ multifamily housing units will generate ongoing customers, diners and tourists to support our downtown and other local businesses. The developer has reached out to community and business leaders to understand Oregon City's needs and wants and are working to find the right tenant mix to meet them.

For these reasons and more, I urge your support of this compelling project.

Respectfully;

Renate Mengelberg
engaged in the community as a former:
Oregon City Planning Commissioner
Oregon City Commissioner
Oregon City Urban Renewal Agency Member
Clackamas County Brownfields Coordinator

I encourage you to learn more about the exciting opportunity before us today: a vibrant North End neighborhood at the location of the old Rossman landfill.

All cities evolve. The north end, bounded by Washington Street and Abernethy Road, started out as a wooded flat with wetlands near a Native American village. When the first tired, starving emigrants passed over the Oregon Trail, it was a place to rest themselves and their stock, get fresh meals and feed for the animals before moving on to their Donation Land Claim.

It soon evolved to small family farms and orchards and a large dairy. By the 1920s the city was trying to find space for sports fields, and although the north end was still outside the city limits, the dairy was purchased and renamed Kelly Field, in memory of Walter “Bud” Kelly, who died of influenza while serving his country in World War I.

A circular track, bleachers, and sports fields were developed, hosting visiting circuses, rodeos, the early Territorial Day parades, horse races, and other entertainment for the citizens of Oregon City.

But time takes it toll. By the 1960s the area had a need for solid waste disposal and a portion of the property was made available after a nearby space became inadequate. In the 1990s a piece of the property was developed as the End of the Oregon Trail Interpretive Center to celebrate the property’s history but the majority of the old garbage dump was left vacant.

We now have a proposal to develop a vibrant mixed-use community at our north end. This development brings back many of the historic features of this property: jobs, recreation, nature, dining, and retail.

I strongly recommend development of this plan as a positive addition to our city, an improvement of one of our northern entry points, and a project sensitive to the history of this property.

Karin Morey, Local Historian

From: Richard Ponting
To: Christina Robertson-Gardiner
Subject: I support
Date: Friday, June 18, 2021 5:15:40 PM

I support development by Home Depot if traffic aid appropriately managed
Richard Ponting
Sent from my iPhone

From: Summit Development
To: Christina Robertson-Gardiner
Cc: Rachel Lyles Smith; Rocky Smith, Jr.; Denyse McGriff; Frank O"Donnell; Adam Marl
Subject: Written Testimony in Support of the North End Development
Date: Friday, June 18, 2021 4:34:04 PM

Please find below the names of community supporters of the Rossman Landfill development at the North End. Those people listed live and/or work and play in Oregon City.

Please include these names of supporters in the staff report for the public hearing on June 28th.

Thank you.

FIRST NAME	LAST NAME
Kevin	Adatto
Jeff	Akin
Anthony	Albrecht
John	Anderson
Kim	Anderson
Maurice	Aubrey
Matt	Baker
Justin	Baldwin
Katie	Ball
Kenneth	Ball
Janice	Bangs
April	Beaudin
Patrick	Becker
Dale	Bernards
David	Betensky
Karen	Betensky
DeMaris	Beyl
Karen	Birmingham
Travis	Blunt
Cynthia	Boettcher
Cynthia	Boettcher
Douglas	Boettcher
David	Bon
Elllie	Bossen
Anastasia	Boudoures
Jackie	Bouey
Ben	Bracelin
Errol	Bradley
Sara	Brennan

Jennifer	Brown
Nicole	Bryant
Cary	Bubenik
Nate	Buddress
Jenna	Bufkin
Brooke	Bullock
Julie	Bullock
Allie	Burgess
Andy	Busch
Nancy	Busch
Teresa	Busch
Thomas	Busch
Wade	Byeers
Chris	Callipari
Kirk	Cameron
Brent	Carter
Kenneth	Cassidy
Jim	Charriere
DeAnna	Cody
Tracie	Conner
Karen	Corken
Marty	Cronin
Michael	Culkins
Ian	Dailey
Jana	Daisy-Ensign
Emily	Dale
Matthew	Dehning
Dean	DeSantis
Don	Devlaeminck
Nick	Dierckman
Richard	Dillon
Paul	Dingman
Shauna	Dingman
Gene	Dockery
Same	Drevo
Melisaa	Dunham
Laura	E Izzett
Mike	Eckard
Andrew	Eckley
Tim	Ensign
Tyler	Erma
Brandy	Faist
Kellie	Fine

Alistair	Firmin
Kate	Firmin
Mark	Fitz
Emma	Fleming
Mark	Foley
Dan	Fowler
Elizabeth	Fowler
Terea	Fowler
Marty	Francis
Linda	Frank
Scott	Frank
Elaine	Franklin
Dave	Frazier
Josh	Gaines
Andrew	Gianopoulos
Bethany	Gibbs
Craig	Gillespie
Tiffany	Gillsespie
Marshall	Glickman
Joanne	Gordon
Whitney	Gray
Barclay	Grayson
David	Green
David	Green
Monica	Green
David	Gregg
Stephen	Gregg
Kimberly	Grenfell
Ivanka	Grepo
William	Gifford
Sharaya	Haha
Trevor	Harding
Jonathan	Harnish
Justin	Harnish
Pamela	Hayden
Heidi	Hendrick
Sherrie	Henson
Lisa	Herman
Jerry	Herrmann
Andrew	Hietschold
Lloyd	Hill
Teresa	Hoffman
Aaron	Holm

Jessica	Hopkins-Hubbard
Wendy	Hosford
Laura	Houghton
Dave	Howell
Evan	Howells
Richard	Howells
Frank	Hubbard
Kerry	Hughes
Margorie	Hughes
Michael	Hughes
Shannon	Hughes
William	Hunt
Colby	Hyde
Nancy	Ide
Sheri	Imes
Donna	Isaacs
Jennifer	Isom
Terry	Isom
Ben	James
Mike	Jarrett
Jenny	Jenkins
Mari	Jenkins
Robert	Jepsen
Jeff	Jetton
Andrw	Johnson
Conrad	Johnson
Hailey	Johnson
Darlene	Judkins
Dawn	Kassebaum
Rose	Kassebaum
Karen	Kellogg
Betty	Kemmerich
Betty	Kemmerich
Sarina	Kemmerich
Lisa	Kilders
Shelly	Kintzinger
David	Kirby
Mary	Kitzerow
Jason	Kramer
Jon	Kraxberger
Marian	Kraxberger
Erik	Krieger
Bill	Krusee

Robert	La Salle
Linda	Lagraff
Ed	LaPlante
Camian	Larson
Julie	Lebsack
Debra	Leedy
Bob	LeFeber
Samuel	LeFeber
Zachary	Lillie
Susan	Liston
James	Loeffler
Julie	Long
Ben	Looney
Michael	Lowes
Sabrina	Lucowicz
Jeremy	Luedtke
Alex	MacLean
Alissa	Mahar
Kellie	Maks
Steve	Marcy
Alex	Martinac
Shannon	Martinac
Emily	Masock
Kurt	May
Mike	McBride
WC	McCormick
Patricia	Mecum
Renate	Mengelberg
Trevor	Menne
Robert	Mesher
Derek	Metson
Donald	Milbradt
Greg	Mirecki
Robert	Moir
Karin	Morey
Marilyn	Morrissey
Teri	Myers
Paul	Navarro
Tiffany	Nelson
Brianna	Nofziger
Dawn	O'Brien
Sara	OBrien
Rick	Ohlson

Jeff	Olson
Lynda	Orzen
Don	Ossey
Carla	Owings
Rachel	Pandzik
Arthur	Pascuzzi
Alkesh	Patel
Andria	Pearson
Myra	Pfenning
Carissa	Ponting
Richard	Ponting
Kassandra	Preysz
Brad	Rafish
Kathy	Rafish
Don	Ramsey
Cherisse	Reilly
Julieanne	Reincke
Brian	Remsburg
Guinn	Rice
Laurie	Richmond
Trevor	Ritchie
Lauren	Robinson
Karry	Rogers
John	Rosensteel
Paula	Rossman
Robert	Rotticci
Michael	Rudis
Mike	Sager
Tim	Salyers
Bradley	Sander
Debi	Sapolin
Michael	Sause
Dani	Scheese
Josh	Schlesinger
Nancy	Schlesinger
Chad	Schmidt
Leslee	Schonert
Courtney	Selby
Dana	Serres
Patti	Serres
Erica	Seward
Brian	Shaw
Michele	Sherer

Tatum	Sherer
Brian	Slack
Don	Slack
Rachel	Smith
Vicki	Smith
Dana	Sparks
Terry	Sprague
Kimasia	Spratt
Stephen	Spratt
Chuck	Stahl
Eren	Starr
Amanda	Steele
Charles	Steltenpohl
Colby	Stephens
Richard	Sternberg
Travis	Stone
Chris	Storey
Hunter	Stroh
Anselm	Sura
Steve	Sutherland
Ryan	Thamm
David	Tkach
Eric	Torgeson
Anita	Uhl
Nick	Veroske
Michael	Villamor
Eve	Wallin
Tara	Weigel
Ben	Weldon
Daniel	Weldon
Lloyd	West
Cindy	White
Jerome	Wilks
Anthony	Wilson
Meghan	Wilson
Katie	Windsor
Alec	Winsor
Heather	Woodruff
Connelly	Woody
Tim	Wuest
Dana	Yates
Gail	Yazzolino
Richard	Yazzolino

Jacob	Zahniser
Kent	Ziegler
Susan	Ziegler
Jaime	Zornado

Nicholas R. Veroske
3870 NW Banff Drive
Portland, OR 97229-8222
Tel: 503-617-7662
Cell/Text: 503-577-6903
Email: nick@willamette-equities.com

June 18, 2021

To: Oregon City Planning Commission
Attn: Christina Robertson-Gardner via crobertson@orcity.org

Re: Project ID: GLUA 21-000016 (MAS 21-02 CU 21-01 FP 21-03, GEO 21-030)
The North End Master Plan

Dear Planning Commission Members:

Please approve this project.

You are the first step in the transformation of the Rossman Landfill from environmental wasteland and economic blight into an economic powerhouse for the Oregon City North End. The project envisioned by Summit Development offers a solution to the environmental problems that have plagued the water aquifer under and rivers near the landfill for years and will create economic opportunities that will benefit the region for many years to come. Summit Development has expressed a true desire to connect the North End with Downtown. The housing component alone with 550+ units, will create in excess of 1,000 new customers for Downtown Oregon City businesses just a few minutes away and for the End of the Oregon Trail Interpretive Center right next door. The likely assessed value upon completion will be over $300 million, creating property tax revenue in excess of $5 million annually, an incredible benefit for Oregon City's schools, police, fire and other districts.

As the benefits of this project are great, the risks of losing the project are perhaps even greater. Consider that the land has sat vacant, leaching landfill contaminants into the water systems, generating no economic benefit and paying only $30,000 in property taxes since Fred Bruning left Oregon City and took Cabela's to Tualatin after being denied The Rivers center in 2012. The question, "Can Oregon City get the big projects done?" became an issue in seeking state funding for the Willamette Falls Riverwalk. Please send this message to the State, to Metro and to the investment community: "Yes, Oregon City can get the big projects done!"

Thank you.



Nick Veroske

Oregon City Business and Property Owner since 2006
Willamette Equities, Inc., President and CEO
Premier Community Bank, Board of Directors (Retired)
YMCA of Columbia-Willamette, Board of Trustees
Oregon City Business Alliance, Board of Directors, Founding Member

From: Marilyn Morrissey
To: Christina Robertson-Gardiner
Cc: Rachel Lyles Smith; Rachel Lyles Smith; Rocky Smith, Jr.; Denyse McGriff; Frank O"Donnell; Adam Marl
Subject: North End Development
Date: Friday, June 18, 2021 12:20:23 PM

Dear Oregon City Commission

I live in Washington County and over the last 30 years have seen small towns go from cherry stands to
thriving communities. For example Sherwood Oregon where an entry level homes are now close to $550,000.
There has been development in these places but not necessarily as well planned as the North End plan has been.

I have worked in Oregon City for over 20 years. A lot of good changes have happened and I keep waiting to
see the potential bloom here.

Our location has so much to offer-multiple rivers, huge water falls, industry
and amazing history. So much more than other places.

In my opinion, development of the north end will bring prosperity, higher real estate valuations and tax revenues
to Oregon City and the County.

I hope this opportunity is not passed up.

Best regards,

Marilyn Morrissey CPA, CFP
Wealth Management Consultant
MORRISSEY FINANCIAL
Direct 503 657.1526
Fax 503.657.3472
720 Center Street, Oregon City, OR 97045

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Investment Advisory Services offered through Avantax Advisory Services[sm]

From: SCHWARZ Bob * DEQ
To: Christina Robertson-Gardiner
Cc: CHAPMAN Cheyenne * DEQ; SCHWARZ Bob * DEQ; Bowler, Carson; Eric Aronson
Subject: RE: GLUA-21-00016/The North End Master Plan CU-21-00001, GEO-21-00003, Transmittal
Date: Wednesday, June 23, 2021 12:58:31 PM

Christina,
Following is our revised statement.
Bob

DEQ STATEMENT

DEQ intends to enter into a Prospective Purchaser Agreement with OCLD Summit LLC to support development of the closed Rossman's Landfill. The property proposed for acquisition is approximately 77 acres and includes two parcels. An entity or entities affiliated with OCLD Summit LLC intends to purchase "Parcel I, (Tax Lot 902) which is approximately 62 acres. OCLD Summit LLC intends to purchase "Parcel II" (Tax Lot 1200) which is approximately15 acres.

Development of the property will require a landfill gas management system and other improvements. All development related activities will be overseen by DEQ's Environmental Cleanup program and paid for by the purchaser and /or the affiliated entities. As part of the PPA, the purchaser/s agree to carry out a detailed Scope of Work and comply with an Easement and Equitable Servitudes that will be recorded on each Parcel to ensure that development is protective of public health and the environment.

In addition, Rossman's Landfill, which has been closed for 38 years, is regulated under a solid waste closure permit which will continue in effect. All permit related requirements (primarily related to groundwater monitoring, methane monitoring and methane extraction) will be overseen by DEQ's Materials Management/Solid Waste program and will be pre-paid by purchaser deposits totaling the approximate net present value of $1,293,500 at the time of acquisition, which funds will be placed into a Trust to cover anticipated permit costs 2026 through 2056. (Funds from previous sale of another parcel of the landfill were pre-paid by a different purchaser with a deposit of $803,000 into a Trust Fund to cover anticipated permit costs from 2016 through 2026.)

By entering the Prospective Purchaser Agreement, purchaser and affiliated entities agree to fulfill all obligations of the PPA, including the Scope of Work, Easement and Equitable Servitudes and related documents. In addition, activities under the PPA must be performed in accordance with all applicable federal, state, and local laws. Details regarding the proposed Prospective Purchaser Agreement can be found here:

https://www.deq.state.or.us/Webdocs/Forms/Output/FPController.ashx?SourceId=674&SourceIdType=11

From: Christina Robertson-Gardiner <crobertson@orcity.org>
Sent: Tuesday, June 22, 2021 9:39 AM
To: SCHWARZ Bob * DEQ <bob.schwarz@deq.state.or.us>
Cc: CHAPMAN Cheyenne * DEQ <cheyenne.chapman@deq.state.or.us>
Subject: RE: GLUA-21-00016/The North End Master Plan CU-21-00001, GEO-21-00003, Transmittal

Hi Bob,

You can send me a revised memo to add to the file by Monday 6.28.21 (12:00PM). Please let me know if you want to remove the previous memo and replace it, or just supplement it.



What's your Vision for Oregon City?

Christina Robertson-Gardiner, AICP, Senior Planner (she/her)
695 Warner Parrott Rd, Oregon City, OR 97045
crobertson@orcity.org
503) 496-1564 Direct
(503) 722-3789 Main

Interactive Maps and Apps
On-Line Submittal of Land Use Applications
COVID-19 (Coronavirus) Information

*The City of Oregon City is open for business and continues to offer services and programs online and virtually. Some City facilities are open to the public, find current openings **here,** we encourage visitors to wear a mask, practice physical distancing, and reschedule in-person visits if you are feeling unwell. The City has installed additional shielding and is providing hand sanitizer as well as occupancy limits to ensure our staff and visitors have a safe, no touch experience. Our goal is to be responsive to our community throughout this pandemic; we appreciate your understanding and cooperation.*

PUBLIC RECORDS LAW DISCLOSURE: This e-mail is subject to the State Retention Schedule and may be made available to the public.

From: SCHWARZ Bob * DEQ <bob.schwarz@deq.state.or.us>
Sent: Tuesday, June 22, 2021 7:02 AM
To: Christina Robertson-Gardiner <crobertson@orcity.org>
Cc: CHAPMAN Cheyenne * DEQ <cheyenne.chapman@deq.state.or.us>
Subject: RE: GLUA-21-00016/The North End Master Plan CU-21-00001, GEO-21-00003, Transmittal

Hi Christina,
I may have responded to you before providing sufficient time to give people here a chance to review the statement I sent you. Is it too late to revise it?
Bob

From: Christina Robertson-Gardiner <crobertson@orcity.org>
Sent: Thursday, June 10, 2021 9:01 AM
To: SCHWARZ Bob * DEQ <bob.schwarz@deq.state.or.us>
Cc: Sang Pau <spau@orcity.org>
Subject: RE: GLUA-21-00016/The North End Master Plan CU-21-00001, GEO-21-00003, Transmittal

Thanks Bob- I will add this to the land-use file

What's your Vision for Oregon City?
Christina Robertson-Gardiner, AICP, Senior Planner (she/her)
695 Warner Parrott Rd, Oregon City, OR 97045
crobertson@orcity.org
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From: SCHWARZ Bob * DEQ <bob.schwarz@deq.state.or.us>
Sent: Thursday, June 10, 2021 6:36 AM
To: Christina Robertson-Gardiner <crobertson@orcity.org>
Cc: SCHWARZ Bob * DEQ <bob.schwarz@deq.state.or.us>
Subject: RE: GLUA-21-00016/The North End Master Plan CU-21-00001, GEO-21-00003, Transmittal

Christina,
The following statement provides DEQ's position regarding the proposed development on Rossman's Landfill. I would be happy to provide input regarding the condition of approval that you are drafting.
Bob
Cell: 971-254-7493

DEQ STATEMENT

The Oregon Department of Environmental Quality regulates the closed Rossman's Landfill through a DEQ solid waste closure permit. The landfill has been closed for 38 years. The landfill is capped with a compacted soil cover. Post-closure activities include groundwater and landfill gas monitoring.

DEQ supports redevelopment of closed landfills and intends to enter into a Prospective Purchaser Agreement with two parties planning to purchase portions of the site for development. The property

proposed for acquisition is approximately 77 acres and includes two parcels. Summit OC LLC intends to purchase “Parcel I,” (Tax Lot 902) covering approximately 62 acres. OCLD LLC intends to purchase “Parcel II” (Tax Lot 1200), which is approximately15 acres. Details regarding the proposed Prospective Purchaser Agreement can be found here:

https://www.deq.state.or.us/Webdocs/Forms/Output/FPController.ashx?SourceIdType=11&SourceId=674&Screen=Load

DEQ will work with the businesses who purchase lots on top of the closed landfill to ensure that development occurs in a safe manner that protects occupants from landfill gas or other environmental concerns associated with a closed landfill.

From: Christina Robertson-Gardiner <crobertson@orcity.org>
Sent: Tuesday, June 8, 2021 11:31 AM
To: SCHWARZ Bob * DEQ <bob.schwarz@deq.state.or.us>
Cc: Sang Pau <spau@orcity.org>
Subject: FW: GLUA-21-00016/The North End Master Plan CU-21-00001, GEO-21-00003, Transmittal

Hi Bob-

Per my voice mail,

We are currently working on the staff report for the landfill master plan. The proposal is for a Master Plan approval that will guide later development applications for individual buildings. I was hoping to work with you to write a general condition of approval that would direct the applicant to continue to work with DEQ to obtain all applicable permits for development on the site. A comment email for the record from DEQ is also helpful, as many ask if the applicant is working with DEQ and a quick email to the record often resolves that question.

Let me know if you want to chat over the phone.

Thanks!

Christina

What’s your Vision for Oregon City?
Christina Robertson-Gardiner, AICP, Senior Planner (she/her)
695 Warner Parrott Rd, Oregon City, OR 97045
crobertson@orcity.org
503) 496-1564 Direct
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PUBLIC RECORDS LAW DISCLOSURE: This email is subject to the State Retention Schedule and may be made available to the public.

From: Christina Robertson-Gardiner
Sent: Friday, April 30, 2021 10:58 AM
Subject: GLUA-21-00016/The North End Master Plan CU-21-00001, GEO-21-00003, Transmittal

Let me know if you have any questions.

Christina

What's your Vision for Oregon City?
Christina Robertson-Gardiner, AICP, Senior Planner (she/her)
695 Warner Parrott Rd, Oregon City, OR 97045
crobertson@orcity.org
503) 496-1564 Direct
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PUBLIC RECORDS LAW DISCLOSURE: This e-mail is subject to the State Retention Schedule and may be made available to the public.

From: Richard Piacentini
To: Christina Robertson-Gardiner
Subject: The North End Master Plan - June 28, 2021 Planning Commission Agenda
Date: Tuesday, June 22, 2021 11:45:20 AM

Hi Christina

Thank you for calling me today.

As we discussed, we own the commercial property located at the intersection of Redland, Holcomb and Abernathy roads in Oregon City. The building addresses are 13541 to 13559 Redland Road South, with Plaid Pantry and Pioneer Take and Bake Pizza operating there.

Our concerns with The North End Master Plan are related mostly to the traffic impacts to the intersection of Redland, Holcomb and Abernathy roads and the intersection of Redland Road and Hwy 213, and how increased traffic and future improvements to the intersections would impact ingress and egress from our property.

Please add me to the contact list for this project as an interested party so that I will receive information as the plans for these intersections progresses.

Thanks,
Richard

From: Richard Ponting
To: Christina Robertson-Gardiner
Subject: Re: I support
Date: Monday, June 21, 2021 3:26:13 PM

One more thing. Oregon City will grow and it's up to us to manage that growth. Thoughtful development increases both quality of life and opportunity. With the proposed development by Willamette Falls and this on the North End, this becomes more about managing growth. So considering traffic and housing goes hand in hand with supporting growth. With the food carts, traffic had dramatically increased on Washington Street. Thank you for your consideration.

Sent from my iPhone

> On Jun 21, 2021, at 7:38 AM, Christina Robertson-Gardiner <crobertson@orcity.org> wrote:
>
> Thank you for your comments. I have added them to the file and the staff report.
>
> A copy of the Planning Commission Notice of Decision will be mailed to you once it is released.
>
> Meeting agendas are uploaded 7-days before the scheduled meeting and can also be found at https://www.orcity.org/meetings. Planning Commission meetings are streamed live at https://www.youtube.com/CityofOregonCity
>
> The public record will remain open until the Planning Commission closes the public hearing. The June 28, 2021 meeting will be held online via Zoom; On or after June 21, 2021, please contact planning@orcity.org for a copy of the zoom link if you would also like to participate orally in the hearing.
>
> What's your Vision for Oregon City?
> Christina Robertson-Gardiner, AICP, Senior Planner (she/her)
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> COVID-19 (Coronavirus) Information
>
> The City of Oregon City is open for business and continues to offer services and programs online and virtually. Some City facilities are open to the public, find current openings here, we encourage visitors to wear a mask, practice physical distancing, and reschedule in-person visits if you are feeling unwell. The City has installed additional shielding and is providing hand sanitizer as well as occupancy limits to ensure our staff and visitors have a safe, no touch experience. Our goal is to be responsive to our community throughout this pandemic; we appreciate your understanding and cooperation.
> PUBLIC RECORDS LAW DISCLOSURE: This e-mail is subject to the

> State Retention Schedule and may be made available to the public.
>
>
>
> -----Original Message-----
> From: Richard Ponting <rponting@comcast.net>
> Sent: Friday, June 18, 2021 5:16 PM
> To: Christina Robertson-Gardiner <crobertson@orcity.org>
> Subject: I support
>
> I support development by Home Depot if traffic aid appropriately managed Richard Ponting
Sent from my iPhone
>

REPLINGER & ASSOCIATES LLC
TRANSPORTATION ENGINEERING

June 17, 2021

Ms. Christina Robertson-Gardiner
City of Oregon City
PO Box 3040
Oregon City, OR 97045

SUBJECT: REVIEW OF TRAFFIC IMPACT STUDY – THE NORTH END MASTER PLAN – GLUA 21-000016 (MAS 21-02, CU 21-01, FP 21-03, GEO 21-030)

Dear Ms. Robertson-Gardiner:

In response to your request, I have reviewed the materials submitted in support of the proposed master plan for The North End Development. The relevant materials consisted of the Traffic Impact Analysis Report (TIA), dated March 23, 2021. The TIA was prepared under the direction of Brian J. Dunn, PE of Kittelson & Associates.

The TIA supports the master plan for the site west of the Home Depot, south of Washington Street and north of Abernethy Road. The development will include a mix of uses including retail and residential. A key feature is a collector-level street connecting Washington Street and Abernethy Road. Four other site access points are proposed.

The TIA identifies the impacts of full development of the site predicated on build-out in 2025 and appears to demonstrate the full development can be constructed if identified mitigation measures are completed. Each phase in the development will be reviewed for compliance with transportation performance measures during detailed development plan review.

Additional transportation analyses and updated traffic data may be required during detailed development plan review as specified in the conditions of approval. Later phases of the development may be delayed if mitigation measure cannot be implemented to meet existing transportation performance standards.

The TIA provides a basis upon which the master plan can be evaluated and can serve as the basis for additional analysis.

Comments

1. ***Study Area.*** The study addresses the appropriate intersections. The engineer evaluated traffic patterns and traffic volumes and evaluated thirty locations. The key intersections were:

    1. OR 99E / River Rd.-Arlington St.
    2. OR 99E / Dunes Dr.
    3. OR 99E / I-205 SB Ramp
    4. OR 99 E / I-205 NB Ramp
    5. OR 99E / 14th St.
    6. OR 99E / 12th St.
    7. OR 99E / 10th St.
    8. Washington St. / Clackamas River Dr.
    9. Washington St. / Prairie Schooner Wy.
    10. Washington St. / Home Depot-Site Access A
    11. Washington St. / Abernethy Rd.
    12. Washington St. / 15th St.
    13. Washington St. / 14th St.
    14. Washington St. / 12th St.
    15. Washington St. / 7th St.
    16. Redland Rd./ Abernethy Rd.-Holcomb Blvd.
    17. Redland Rd. / Anchor Wy.
    18. Redland Rd. / Holly Ln.
    19. OR 213 / I-205 SB Loop Off-Ramp
    20. OR 213 / Clackamas River Dr.
    21. OR 213 / Redland Rd.
    22. OR 213 / Beavercreek Rd.
    23. OR 213 / Molalla Ave.
    24. Beavercreek Rd. / Molalla Ave.
    25. Beavercreek Rd. / Maplelane Rd.
    26. Washington St. / Site Access D (proposed)
    27. Abernethy Rd. / Site Access E (proposed)
    28. Abernethy Rd. / Site Access F (proposed)
    29. Washington St. / Site Access B (proposed)
    30. Washington St. / Site Access C (proposed)

    These intersections were identified for the study in consultation with city staff and the Oregon Department of Transportation (ODOT). The study area is appropriate.

2. ***Traffic Counts.*** Traffic counts were conducted in December 2020. Due to the COVID-19 pandemic, the engineer used adjustment factors to adjust the counts to estimate the likely traffic volumes that would have been expected during normal times. Different adjustment factors were applied during the AM peak, PM peak and mid-day Saturday time periods. The adjustments were well explained and appear reasonable. For subsequent analyses, the applicant may choose to obtain additional counts.

3. ***Trip Generation.*** The TIA presents information on trip generation for the proposed development. Early in the process, the applicant's engineer shared his proposed approach to trip generation, pass-by trips and related issues with me and with ODOT staff. The approach described in the TIA is consistent with those discussions. The TIA uses four land use categories from the Institute of Transportation Engineers' *Trip Generation Manual – 10th Edition*: land use category 221 – multi-family housing (524 dwelling units); 934 - fast food restaurant with drive-through (3830 sf); 820 - shopping center (500,000 sf); and 813 – free-standing, discount superstore (138,000 sf). For these land uses, the engineer used appropriate rates from ITE's *Trip Generation Manual.* As discussed in the TIA, the engineer separately accounted for a fast-food restaurant and for the large, free-standing superstore even though these are typically components of a shopping center. The engineer points out that using separate calculations results in a higher trip generation than would treating it all as a shopping center.

   The engineer appropriately accounted for internal trips and for pass-by and diverted link trips. Due to the unique characteristics of the site, including the close proximity to regional facilities, the engineer made special efforts to account for pass-by trips (those drawn from streets that abut the site) and diverted-link trips (drawn from non-adjacent streets). The engineer provided a good explanation of how the development would draw traffic from both the adjacent streets (e.g. Washington and Abernethy) and from the nearby, but non-adjacent, regional facilities (e.g. OR 213 and I-205). The presence of a residential component in the development contributes to internal trips that do not leave the site and do not affect the street network. The trip generation and the treatment of internal trips and pass-by trips appear appropriate.

   The trip generation calculations should be reviewed and, if necessary, revised if the detailed development plan for individual phases differs significantly from the assumptions in this TIA.

4. ***Trip Distribution.*** The engineer's trip distribution shows traffic using a variety of routes and distribution to major regional facilities as follows:

   - 24% of trips to/from I-205 (North);
   - 12% of trips to/from OR 99E (North via McLoughlin Blvd.);
   - 22% of trips to/from I-205 (South);
   - 7% of trips to/from OR 99E (South to Canby);
   - 6% of trips to/from central Oregon City (West via Washington St.);
   - 3% of trips to/from Clackamas River Dr. (Northeast);
   - 2% of trips to/from Anchor Wy. (South via Redland Rd.);
   - 3% of trips to/from Beavercreek Rd. (West of OR 213);
   - 4% of trips to/from Beavercreek Rd. (East of OR 213);
   - 8% of trips to/from OR 213 (South of Beavercreek Rd.);
   - 5% of trips to/from Redland Rd. (towards Holly Ln.); and,
   - 4% of trips to/from Holcomb Blvd.

   The trip distribution seems reasonable.

5. ***Traffic Growth.*** The engineer calculated 2025 traffic volumes using several factors. The TIA specifically accounts for traffic from four approved developments: The Cove Master Plan (Phase 2); Red Soils Master Plan (Final Phase 2); North Beavercreek Industrial Project and the Oregon City Operations Center. To account for regional growth the TIA used historical ODOT traffic count data for the state highways. For city streets, the TIA used an annual increase based on Oregon City data. It is worth noting that the proposed development is a permitted use under the current zoning and is consistent with assumptions about commercial development of the zone that were used in the Transportation System Plan. Some of the anticipated traffic growth on adjacent and nearby facilities (e.g. OR213 and Washington Street) can be attributed to the TSP's assumptions about commercial development on this site. Traffic growth increases were calculated and applied appropriately to develop background 2025 traffic volumes for all three time periods: AM peak, PM peak, and mid-day Saturday peak.

6. ***Analysis.*** Traffic volumes were calculated for the intersections described in #1, above. At each location, the level of service (LOS), delay calculations, and the volume-to-capacity ratio (v/c) were provided to assess operations relative to the ODOT and city's operational standards. The analysis was undertaken for the AM peak hour, PM peak hour, and mid-day Saturday peak hour. The analysis provided

information on existing conditions, 2025 background conditions, and year 2025 traffic conditions with the proposed development.

Existing Conditions.

According to the TIA, three intersections currently experience over-saturated conditions (i.e. a v/c exceeding 1.00). All three within the regional center, which allows a v/c of 1.10 during the highest hour. This means that the intersections currently meet the applicable performance standards under existing conditions. Each of these three are discussed in turn.

The first is the intersection of OR99E and Dunes Drive, which is calculated to operate at v/c of 1.04 during the mid-day Saturday peak period with current traffic volumes. The engineer shows that signal timing changes could significantly reduce the v/c allowing the intersection to operate at a v/c less than 1.0. Although this mitigation would improve intersection functionality, at 1.04 v/c in its current condition, it satisfies the operational standard applicable in the regional center.

The second intersection where operational issues were identified is the I-205 southbound off ramp at OR213 where it meets Washington Drive. Although the overall intersection operates acceptably (and meets standards), two individual movements are of concern and experience v/c in excess of 1.00. The low-volume, left-turn movement from this ramp is one of two stop-controlled movements at this intersection that suffers long delays. This is a known problem that has previously been identified. The other stop-controlled movement (southbound Washington Drive) has insufficient queue storage for the 95th percentile queue and may cause blockages that interfere with other movements. The engineer suggests improved signage as a possible mitigation measure to reduce blockages. The proposed development does not add any traffic to the problematic movements at the intersection and the development's impact on the operational issues is de minimus.

The third intersection calculated to have an intersection v/c in excess of 1.00 under current conditions is OR213 at Redland. The v/c is calculated to be 1.01 during the AM peak hour and 1.00 during the PM peak hour. Due to its status as an intersection within the regional center, this meets applicable performance standards.

2025 Background Conditions.

Due to regional traffic growth and in-process developments, the performance of most intersections is predicted to deteriorate under background 2025 conditions when compared against current conditions.

The intersection of OR99E and Dunes Drive is predicted to fail to meet performance standards with background traffic growth. The predicted v/c during the mid-day Saturday peak period is 1.17. This exceeds the 1.10 peak hour standard applicable to intersections within the regional center. As noted above, the engineer has developed an alternative signal timing plan that could allow the intersection to operate better if allowed and implemented by ODOT.

Under background 2025 traffic, the performance of the intersection of OR213/Redland Road deteriorates and is calculated to be 1.05 during the AM peak hour and 1.03 during the PM peak hour. Both meet the 1.10 standard applicable within the regional center.

Projected 2025 Background Conditions Plus Development Traffic.

Adding traffic from the proposed development to the 2025 background traffic causes additional deterioration in the performance. The TIA shows intersections that will not meet applicable performance standards or that are predicted to experience other operational problems.

With the development, the intersection of OR99E and Dunes Drive is predicted to operate with a v/c of 1.22 during the Saturday, mid-day peak period. The signal timing plan discussed above would allow this to meet operational standards, including traffic from the proposed development, if allowed and implemented by ODOT.

With the development, the performance of the intersection of OR213/Redland Road deteriorates further. It is calculated to have a v/c of 1.07 during the AM peak hour and 1.12 during the PM peak hour. For the PM peak hour, the intersection will not meet the 1.10 standard applicable within the regional center.

It is also worth noting that the applicable performance standard within the regional center is a v/c of 1.10 during the highest hour of the peak and 0.99 during the second highest hour of the peak. This TIA does not examine the second highest hour; the

subsequent analyses for the detailed development plan will need to address the second highest hour if the v/c exceeds 1.00 during the highest hour by more than a few hundredths. There is no need, however, to address the second highest hour for this application.

The TIA also identifies other operational issues associated with queue storage at two intersections: OR213/Redland Road and Redland Road/Abernethy Road/Holcomb Road. At the OR213/Redland Road intersection, the 95th percentile queues for the eastbound approach are predicted to exceed available storage lengths. At the intersection of Redland Road/Abernethy Road/Holcomb Road, the queue storage is predicted to be exceeded for the left-turn lane on the northbound approach of Redland Road and within the westbound right-turn lane on Holcomb Boulevard.

The operational issues (both v/c and queue storage) will need to be addressed in the transportation analyses prepared in support of the detailed development plans. Mitigation measures that allow the development to show compliance with applicable performance standards (i.e. v/c in both the peak hour and second highest hour) and that solve queue storage issues will be made conditions of approval for the applicable phases of the development.

The TIA provides some discussion of mitigation measures that have potential to improve operations of the identified intersections. Implementation of the Jughandle Phase 2 (TSP Project D79) would significantly improve operations of OR213/Redland Road and allow this intersection to meet operational standards and accommodate regional growth consistent with the TSP, including development of this site. The TIA also discusses some options for improving operations of Holcomb/Redland/Abernethy. These options include additional lanes, extending queue storage, and signal timing changes. If the analyses performed in support of detailed development plans indicates such mitigation measures are required to meet operational standards, such mitigation measures will be made conditions of approval for the applicable phases of development.

7. ***Crash Information.*** The TIA provides detailed crash information for the five-year period from 2014 through 2018. Eleven of the 25 intersections experienced an observed crash rate that exceeds the critical crash rate by intersection type. Of these 11, seven were on the ODOT system and four were at local street intersections.

The TIA provides a comprehensive discussion of the intersections including crash types and causes. The TIA paid special attention to severe crashes. Six intersections were the sites of fatal or serious injury crashes. The two fatal crashes involved pedestrians. In one case the pedestrian disregarded the traffic signal; in the other the motorist failed to yield to the pedestrian. Three serious injury crashes at three separate intersections involved left-turning motorists failing to yield and turning in front of on-coming traffic. Two more serious injury cases were attributed to motorists disregarding traffic signals. Another involved a motorist turning left into the wrong lane.

The TIA points out that ODOT and Clackamas County are actively pursuing systemic actions to achieve vision zero goals. According to the TIA, "the County has a Drive to Zero Transportation Safety Action Plan and ODOT has a Safety Priority Index System. These analytical approaches guide decisions for prioritizing investments that seek to provide safety benefits to the use of transportation facilities."

There is no reason to suggest that the development will cause crashes to increase disproportionately or cause changes to crash rates. The engineer does not recommend mitigation measures for safety issues specific to the development.

8. ***Turn Lanes at Site Entrance(s).*** The TIA provides basic information about the assumed configuration at the site access points. The presence of continuous center turn lanes on Washington Street and Abernethy satisfy the need for left-turn lanes serving the site. The TIA describes the configuration of each site access point; some provide for a single exiting lane while some provide for separate left-turn and right-turn lanes. The site access configuration appears appropriate, but these assumptions should be reviewed and confirmed with the transportation analyses performed in support of the detailed development plans for each phase of the development.

9. ***Pedestrian and Bicycle Facilities.*** The TIA describes pedestrian and bicycle facilities in the area. The details of the provision of bicycle and pedestrian facilities should be provided in connection with frontage improvements along any adjacent street and internal streets with the detailed development plans for each phase. Particular attention should be paid to bicycle and pedestrian facilities on or adjacent to Abernethy Road.

10. ***Transit Facilities.*** The TIA provides a summary of the transit service offered by TriMet in the area. This includes TriMet line 79, which provides service on

Washington Street, and TriMet line 154, which provides service on Abernethy Road. Both have infrequent service.

11. ***Site Circulation and Access.*** The TIA provides a good overview of the site plan and circulation including the establishment of a collector-level road through the site connecting Washington Street and Abernethy Road. The overall development pattern, including local streets and parking lots, and the proposed location of conditional uses appears reasonable. Subsequent analyses performed in support of the detailed development plans for each phase will need to expand upon the on-site circulation and site access. Among other things, the analyses will need to address issues that could affect the public street system, including, but not limited to, adequacy of queue storage for drive-through service windows, maneuvering of trucks at loading areas, and maneuvering in parking lots.

12. ***Intersection Spacing.*** Intersection spacing for new access points appears to be appropriate. The TIA indicates the spacing between the proposed access locations and adjacent intersections easily meets the minimum requirements. This should be reviewed and verified in connection with the detailed development plan for each phase.

13. ***Sight Distance.*** The engineer will need to measure sight distance and verify that it meets applicable standards as part of the analysis for each phase.

14. ***Consistency with the Transportation System Plan (TSP).*** The TIA indicates site frontage meets applicable standards or will be improved in connection with the project. This will need to be verified with the detailed development plan for each phase.

Conclusions

I find that the TIA provides an adequate basis upon which to assess the impacts of the proposed master plan. It will serve as a basis for subsequent analyses undertaken in support of detailed development plans for individual phases of the development.

The TIA does not, however, provide for mitigation that allows the applicant to show that the system is adequate to accommodate the development, although appropriate mitigation appears feasible. The applicant will need to undertake additional analysis in connection with the detailed development plan for each phase that demonstrates adequacy of the transportation system to accommodate each phase. This will require

commitment to mitigation measures allowing applicable performance measures, including v/c and queue storage, will be met.

Recommendations

It is important to note that the TIA is based on the assumption that full development will occur by 2025. If development is extended beyond that date, new analyses will be required with new background traffic associated with the new completion year.

With regard to the proposed master plan, I recommend the following conditions of approval:

A. The applicant will be required to provide supplemental transportation analyses for each phase of the development that demonstrate the ability of the transportation system to accommodate that phase of the development. In connection with the first detailed development plan submitted by the applicant, the applicant shall obtain new AM peak, PM peak, and mid-day Saturday traffic counts and conduct new operational analyses for the following intersections:

    - OR99E/Dunes Drive
    - Washington Street/Home Depot – Site Access A
    - OR213/Redland Road
    - Redland Road/Holcomb Boulevard/Abernethy Road

    Absent meaningful evidence to the contrary, the new counts and new analyses submitted in support of the detailed development will be presumed to supersede the traffic volume estimates and analyses submitted in the March 2021 TIA.

    The following are a non-comprehensive set of issues that should be addressed in additional analyses:

    Intersection v/c and queuing must meet applicable standards with each phase. Partial development (some phases of the development) may be permissible without mitigation depending on background traffic and the status of adopted alternative mobility targets.

    Where the applicant is relying on the regional center's two-tiered v/c standard (i.e. 1.10 during the peak hour and 0.99 during the second hour), the applicant

will need to provide evidence that both are met. (This is particularly applicable to OR213/Redland Road and OR99E/Dunes Drive, both of which are predicted to exceed 1.10 during a peak hour.)

A phase or combination of phases that causes traffic volumes at any access point to exceed volumes in this TIA, additional analyses will be required.

The applicant will need to demonstrate the adequacy of queue storage or undertake appropriate mitigation to resolve queue storage issues at the intersection of Abernethy Road/Holcomb Boulevard/Redland Road in connection with each phase.

The applicant will need to demonstrate that the intersection of OR213/Redland Road meets applicable v/c standards and provides adequate queue storage in connection with each phase.

The applicant will need to demonstrate that the intersection of OR99E/Dunes Drive meets applicable v/c standards in connection with each phase. Applicant is encouraged to explore the potential for signal timing changes with ODOT or develop other mitigation measures with ODOT.

B. With each detailed development plan, the applicant will be required to address sight distance requirements in connection with the establishment of any new access to Washington Street or Abernethy Road, including those described in this TIA.

C. With each detailed development plan, the applicant will be required to address on-site circulation issues. These include, but are not limited to, adequacy of queue storage for drive-through service windows, maneuvering of trucks at loading areas, and maneuvering in parking lots.

D. With each detailed development plan, the applicant will work with TriMet to provide appropriate sidewalks and bus stop features on or adjacent to the site.

E. With each detailed development plan, the applicant will be required to update the predicted traffic using the intersection of OR213/Beavercreek Road. The applicant should use the updated value of $380 per peak hour trip rather than the obsolete value of $219 as used in this TIA. The developer shall participate in funding of this project according to the established formula.

F. If traffic signal warrants are met and cause the installation of a traffic signal at any of the site access points on Washington Street or Abernethy Road, the applicant will bear the full cost of signal design and installation.

G. The applicant shall participate in the funding of improvements for the intersection of OR213/Redland Road (TSP Project D79) in proportion to the development's traffic volume as a percentage of the predicted 2035 traffic volume at the intersection calculated in the TSP. The 2017 TSDC Project List shows a project cost of $10,105,000. Participation shall apply to each phase of the development.

H. The applicant's final share of project costs may be modified as necessary when the detailed development plan is approved to reflect any a modification of the development's trip generation or a change in project costs resulting from revisions to project costs associated with updates to the City's Transportation System Plan or Capital Improvement Program.

If you have any questions or need any further information concerning this review, please contact me at replinger-associates@comcast.net.

Sincerely,



John Replinger, PE
Principal

Oregon City\2021\GLUA21-16v2

Oregon
Kate Brown, Governor

Department of Transportation
Region 1 Headquarters
123 NW Flanders Street
Portland, Oregon 97209
(503) 731.8200
FAX (503) 731.8259

June 18, 2021 ODOT #10597

ODOT Response

Project Name: North End Master Plan	**Applicant:** Seth Henderson, Summit Development Group
Jurisdiction: City of Oregon City	**Jurisdiction Case #:** GLUA 21-000016 (MAS 21-02 CU 21-01 (MAS 21-02 CU 21-01 FP 21-03, GEO 21-030)
Site Address: 1107 Abernethy Road, Oregon City, OR	**Legal Description:** 02S 02E 29 **Tax Lot(s):** 00902
State Highway: I 205, OR 213	**Mileposts:** 10.18; 0.48

The site of this proposed land use action is adjacent to OR 213 and is in the vicinity of I-205 and OR 99E. ODOT has permitting authority for these facilities and an interest in ensuring that this proposed land use is compatible with their safe and efficient operation. **Please direct the applicant to the District Contact indicated below to determine permit requirements and obtain application information.**

COMMENTS/FINDINGS

ODOT has reviewed the submitted application materials for the North End Master Plan development. The proposal includes a plan to redevelop the former Rossman Landfill over the next 20 years with a mix of commercial, service, entertainment, residential, and retail uses. The 62-acre property is currently zoned Mixed-Use Downtown and is bound by Abernethy Road to the south, Redland Road and OR 213 to the east, a Home Depot store to the northeast, and Washington Street to the northwest.

ODOT reviewed the Traffic Impact Analysis (TIA) prepared by Kittelson & Associates and dated March 23, 2021. Our response to the TIA is summarized in the following comments:

Safety
As indicated in the TIA, safety is a major concern within the vicinity of the proposed development and the study area. According to Table 4 of the TIA, 11 intersections within the study area exhibit a high rate of crashes that exceed critical crash rate by intersection type and/or observed crash rate exceeding the 90th percentile rate. Of the 11 listed intersections with high crash rates, 7 intersections are on ODOT facilities (OR 99E, OR 213, and I-205) that are listed in ODOT's 90th percentile statewide SPIS list. Furthermore, the report indicates that "57% of total reported crashes over the last 5 years resulted in an injury" including fatalities and/or serious injuries. ODOT recommends a detailed evaluation of each intersection to identify safety remedies in order to minimize crashes and for the applicant to contribute a proportional share towards identified improvements.

Year 2025 Background Traffic Volumes
Annual growth rates are typically taken from the local Transportation System Plan (TSP). The TSP growth rate was anticipated to be much higher than is shown in Table 7 of the TIA (0.27% for OR 99E, 0.31% for OR 213, 0.26% for I-205, and 1.15% for local streets). The TSP growth rate was closer to 2.0%.

Site Trip Generation
The methodology to determine trip generation appears to significantly underestimate the number of trips the proposed development will generate. Table 8 of the report proposes to use the Shopping Center land use (ITE 820) for all the potential new commercial and retail uses (grocery store, cinema, fast food and sit-down restaurants, and small retail outfits). In addition, the trip generation is further discounted with internal, pass-by, and diverted trips which reduces the overall trip generation for the Master Plan (50% of the diverted trips were applied to ODOT facilities in the study area). The overall trip generation is proposed to be reduced to less than a third of its overall net rates. The low trip generation estimate will likely reduce the developer's proportional share contribution to TSP projects in the study area.

Queuing Impact Assessment
The TIA does not include queuing analysis for "exempt" study intersections such as OR99/I-205 or OR213/I-205, etc. These intersections are exempt from evaluation capacity, but not from safety. Safety is of particular concern at interchanges where increased queueing is anticipated to create safety issues.

Intersection #21: OR213/Redland Road
The TIA indicates that the OR 213/Redland Road intersection will exhibit queueing and capacity deficiencies. The report refers to TSP project #D79, which includes the addition of a third southbound through-lane on OR213 (Redland Jughandle Phase 2) that will most likely address the deficiencies. The report does not evaluate how the intersection will operate with this TSP project and the trip contribution from the proposed Master Plan. Furthermore, the report does not evaluate the developer's proportional contribution to the TSP project at this intersection or any other TSP projects at study area intersections.

Please send a copy of the Staff Report and/or Notice of Decision including conditions of approval to:

ODOT Region 1 Planning
Development Review
123 NW Flanders St
Portland, OR 97209

ODOT_R1_DevRev@odot.state.or.us

Development Review Planner: Kate Hawkins	503.731.3049 kate.w.hawkins@odot.state.or.us
Traffic Contact: Avi Tayar, P.E.	503.731.8221 abraham.tayar@odot.state.or.us
District Contact:	d2bup@odot.state.or.us

CLACKAMAS COUNTY

DAN JOHNSON
DIRECTOR

DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
DEVELOPMENT SERVICES BUILDING
150 BEAVERCREEK ROAD OREGON CITY, OR 97045

MEMORANDUM

TO: City of Oregon City, Planning Division
FROM: Kenneth Kent, Clackamas County Engineering, Senior Planner
DATE: June 21, 2021
RE: GLUA-21-000016 Mixed Use North End Master Plan
22E29 00902

This office has the following comments pertaining to this proposal:

1. The proposed North End Master Plan site has frontage on Abernathy Road, as well as the Abernathy Road/Redland Road/Holcomb Boulevard intersection, which currently fall under the jurisdiction of Clackamas County.

2. The Traffic Impact Analysis by Kittelson & Associates, dated March 23, 2021, indicates that at buildout of the master plan, several intersections, including the Abernathy Road/Redland Road, Holcomb Boulevard intersection will exceed capacity. At the time each phase of the master plan is proposed through the City's Detailed Development Plan process, traffic analysis will be required to verify adequate capacity is available or mitigation measures will be implemented to meet capacity standards.

3. Abernathy Road is a minor arterial roadway that is currently constructed to a 3-lane section and appears to be located within a 60-foot wide public right-of-way. The minimum right-of-way for a 3-lane section is 80 feet. At the time of development, dedication of approximately 10 feet of public right-of-way will be required to provide a 40-foot one half right-of-way along the entire Abernathy Road site frontage.

4. At the time of development, frontage improvements will be required along the Abernathy Road site frontage to minor arterial roadway standards for a 3-lane section. Prior to commencement of site work, a Development Permit will be required from Clackamas County Engineering for all work performed in the Abernathy Road right-of-way. All access and frontage improvement will be required in compliance with the Clackamas County Roadway Standards.

OREGON CITY

Community Development

698 Warner Parrott Road | Oregon City OR 97045
Ph (503) 722-3789 | Fax (503) 722-3880

Natural Resource Overlay District (NROD)

Application for Exemption from NROD Review

Staff use:

File Number: NROD-20-22 Reviewed By: Juliana Zamilpa Date: 1.22.2021

Decision: ✓ Approved __ Denied

Soil cap is considered impervious surface, top soil serves to prevent erosion of soil cap (clay/silt layer) and is not viable NROD area/cannot accommodate vegetated corridor plant growth.

Site Address or Clackamas County Map and Tax Lot: 22E29 1200

Applicant Name/Company: Summit Development Group Phone Number: 503-720-3601

Email Address: shenderson@sdgpdx.com

The following uses are allowed within the NROD and do not require the issuance of an NROD permit. Indicate which exemption your project falls under:

___ Stream, wetland, riparian, and upland restoration or enhancement projects as authorized by the City.
___ Farming practices as defined in ORS 215.203 and farm uses, excluding buildings and structures, as defined in ORS 215.203.
___ Utility service using a single utility pole.
___ 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.
____ 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.
____ 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.

____ 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 3,500 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.

____ 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.

____ Routine repair and maintenance of existing structures, roadways, driveways and utilities.

DV XX Replacement, additions, alterations and rehabilitation of existing structures, roadways, utilities, etc., where the ground level impervious surface area is not increased.

____ Measures approved by the City of Oregon City to remove or abate nuisances or hazardous conditions.

____ 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 Section (L) shall be replaced with a new tree of at least ½-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.

____ 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.

____ 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.

____ 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.

____ 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.

Describe how your project meets one of the items in the list above.

Please see attached Application Narrative.

Attach a map showing the location of the proposed work.

Attach any other documentation, such as photos, plans, or reports needed to demonstrate compliance with the code.

OREGON CITY

Community Development

698 Warner Parrott Road | Oregon City OR 97045
Ph (503) 722-3789 | Fax (503) 722-3880

Natural Resource Overlay District (NROD)

Application for Exemption from NROD Review

Staff use:

File Number: NROD-21-00004 Reviewed By: Liliana Zamilpa Date: 4.29.2021

Decision: ✓ Approved __ Denied

Areas 1, 4, and 5 are exempt from further NROD review pursuant with OCMC 17.49.080.J

Site Address or Clackamas County Map and Tax Lot: 22E29 1200

Applicant Name/Company: Summit Development Group Phone Number: 503.702.3601

Email Address: shenderson@sdgpdx.com

The following uses are allowed within the NROD and do not require the issuance of an NROD permit. Indicate which exemption your project falls under:

___ Stream, wetland, riparian, and upland restoration or enhancement projects as authorized by the City.
___ Farming practices as defined in ORS 215.203 and farm uses, excluding buildings and structures, as defined in ORS 215.203.
___ Utility service using a single utility pole.
___ 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.
____ 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.
____ 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.

____ 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 3,500 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.

____ 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.

____ Routine repair and maintenance of existing structures, roadways, driveways and utilities.

__X__ Replacement, additions, alterations and rehabilitation of existing structures, roadways, utilities, etc., where the ground level impervious surface area is not increased.

____ Measures approved by the City of Oregon City to remove or abate nuisances or hazardous conditions.

____ 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 Section (L) shall be replaced with a new tree of at least ½-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.

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2. No existing native vegetation is disturbed or removed; and
3. All work occurs outside of wetlands and the top-of-bank of streams.

____ 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.

____ 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.

____ 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.

Describe how your project meets one of the items in the list above.

See attached Application Narrative addressing OCMC 17.49.080(J).

Attach a map showing the location of the proposed work.

Attach any other documentation, such as photos, plans, or reports needed to demonstrate compliance with the code.

BEFORE THE PLANNING DIRECTOR FOR THE CITY OF OREGON CITY

In the Matter of a Type I Application (the "Application") by Summit Development Group, LLC ("Summit") under Oregon City Municipal Code (the "OCMC") 17.49.080(J) to allow the replacement of three areas with existing impervious structures where the ground level impervious surface is not increased so that a Natural Resource District ("NROD") Permit under OCMC 17.49.040 is not required and processed as a Type I Procedure under OCMC 17.50.030, Table 17.50.030 (providing that a Natural Resource Overlay District Exemption is processed as a Type I permit).	**APPLICANT'S FINDINGS OF FACT AND CONCLUSIONS OF LAW SUPPORTING APPROVAL OF A TYPE I NROD EXEMPTION**

1. Introduction and Summary of Justification for the NROD Permit Exemption and Verification.

This Type I Application requests that the Planning Director find that three areas ("Areas 1, 4 and 5") within the sixty-two (62) acre Property (the "Property") identified in **Exhibit 1**, located in the Mixed Use Downtown ("MUD") district, and subject to the NROD Overlay District, are exempt from the NROD permit requirement in OCMC 17.49.040 under OCMC 17.49.080(J) providing that the replacement of existing impervious structures is allowed where the impervious surface area is not increased. As shown on **Exhibit 1**, Areas 1, 4 and 5 may be exempted from the NROD Overlay District because they contain part of Washington street (Area 1) and Abernethy Road (Areas 4 and 5) which are existing impervious surface areas.

2. Type I Process.

The Type I process does not require an interpretation, or the exercise of policy, or legal judgment in evaluating the approval criteria. OCMC Table 17.50.030, note a. The Director does not provide notice of the Type I application or the Type I decision to persons other than the Applicant and no appeal is provided for a Type I decision.

As explained below, the Director can find that this Application is correctly processed through the Type I process because it is clear and objective that the three Washington Street and Abernethy Street Improvements (the "Improvements") are impervious surfaces. The three areas are precisely identified in **Exhibit 1** and the criteria for an exemption under OCMC 17.49.080(J) are satisfied because the replacement impervious structure will not exceed the area of the existing impervious structures on the Site.

3. <u>Evidence Demonstrating that the NROD Permit Exemption OCMC 17.49.080(J) for Areas 1, 4 and 5 can be Approved</u>.

A. The Improvements on the Site are impervious structures.

Exhibit 1 shows the Improvements on the three Areas that are impervious because they impede or prevent water from infiltrating into the ground, consistent with the definition of "Impervious Surface" in OCMC 17.04.586 and "Structure" in OCMC 17.04.1215. This Type I Application is solely for the purpose of replacing only the existing impervious surfaces on the three Areas, consistent with the exemption from NROD permits required by OCMC 17.49.040 in OCMC 17.49.080(J).

B. The location of the Improvements are known and verifiable without the need for interpretation or the exercise of policy or legal judgment.

The location and edge of the Improvements are known, verifiable and identified by their location on **Exhibit 1**.

4. <u>Conclusion</u>.

For the reasons contained in this application, the Planning Director can find that the NROD permit exemptions under OCMC 17.49.080(J) and can be approved under the Type I process.

EXHIBITS

Exhibit 1 Map showing Areas 1, 4 and 5

P:\SDV (Summit Development Group)\SDV-08 (22E29 TL902)\SDV08-DWGS\Exhibits\21-0324_NROD Removals 2\ 21-0324_NROD Removals Exhibit.dwg

AREA 1 - EXISTING ROAD IMPROVEMENTS
APPROXIMATE GIS LOCATION OF
NROD BOUNDARY PER CITY OF OREGON
PROVIDED GIS (TO BE REMOVED)

WASHINGTON ST

AREA 2 - ROADSIDE DITCH
APPROXIMATE GIS LOCATION OF
NROD BOUNDARY PER CITY OF OREGON
PROVIDED GIS (TO BE REMOVED)

APPROXIMATE GIS LOCATION OF
NROD BOUNDARY PER CITY OF OREGON
PROVIDED GIS (TO REMAIN)

PROPERTY LINE (TYP)

APPROXIMATE EXTENT OF SOIL CAP INCLUDING SIDE SLOPE PER FINDINGS IN EXHIBIT TWO, ARONSON LETTER DATED 12/17/20 OR APPROXIMATE LIMIT OF REFUSE PER CLOSURE FEASIBILITY STUDY (CH2M HILL, 1992)

PROPERTY LINE (TYP)

HIGHWAY 213

APPROXIMATE LOCATION OF LEACHATE COLLECTION SUMP PER COMPASS SURVEY DATED JAN 2020

REDLAND ROAD

PROPERTY LINE (TYP)

APPROXIMATE LOCATION OF LEACHATE CONVEYANCE LINE PER COMPASS SURVEY DATED JAN 2020

APPROXIMATE GIS LOCATION OF
NROD BOUNDARY PER CITY OF
OREGON PROVIDED GIS
(TO REMAIN)

AREA 3 - ROADSIDE DITCH
APPROXIMATE GIS LOCATION OF
NROD BOUNDARY PER CITY OF OREGON
PROVIDED GIS (TO BE REMOVED)

AREA 5 - EXISTING ROAD IMPROVEMENTS
APPROXIMATE GIS LOCATION OF
NROD BOUNDARY PER CITY OF OREGON
PROVIDED GIS (TO BE REMOVED)

ABERNETHY ROAD

AREA 4 - EXISTING ROAD IMPROVEMENTS
APPROXIMATE GIS LOCATION OF
NROD BOUNDARY PER CITY OF OREGON
PROVIDED GIS (TO BE REMOVED)

APPROXIMATE GIS LOCATION OF
NROD BOUNDARY PER CITY OF OREGON
PROVIDED GIS (TO REMAIN)

PROPERTY LINE (TYP)

NOTE: TOPOGRAPHY AND BOUNDARY SHOWN PER COMPASS SURVEY DATED JAN 2020

N

0 50 100 200
SCALE: 1" = 100'

DATE	NO.	DESCRIPTION

R E V I S I O N S

DESIGNED: HHPR
DRAWN: HHPR
CHECKED: HHPR
DATE: 03/24/2021

HHPR Harper Houf Peterson Righellis Inc.
ENGINEERS•PLANNERS
LANDSCAPE ARCHITECTS•SURVEYORS
205 SE Spokane Street, Suite 200, Portland, OR 97202
phone: 503.221.1131 www.hhpr.com fax: 503.221.1171

APPROXIMATE NROD REMOVAL EXHIBIT

OC MIXED USE/ENTERTAINMENT CENTER

OREGON CITY, OREGON

City of Oregon City

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

Meeting Minutes - Draft

Planning Commission

Commission Chambers

Monday, November 23, 2020 **7:00 PM**

1. Convene Regular Meeting and Roll Call

Chair Mitchell called the meeting to order at 7:00 PM.

Present: 7 - Chair Mike Mitchell, Commissioner Christopher Staggs, Commissioner Dirk Schlagenhaufer, Commissioner Gregory Stoll, Commissioner Patti Gage, Commissioner Vern Johnson, and Commissioner Tom Geil

Absent: 0 - None

Staffers: 2 - Community Development Director Laura Terway and Assistant Planner Diliana Vassileva

2. Public Comment – *None*

3. Public Hearing

Request for Continuance to Dec. 14, 2020: GLUA-20-00020: CU-20-00002 / SP-20-00043 - 182 Warner Parrott Road - Proposed 30-Bed Residential / Memory Care Facility

Chair Mitchell opened the public hearing.

Jerry Yarberry, resident of Oregon City, urged the Commission to drive through the neighborhood, look at the traffic flow on Warner Parrott, and look at the driveways next to the proposal. The proposed use would adversely affect the neighboring properties and would alter the character of the surrounding area. This was a commercial building that did not fit in the neighborhood.

William Gifford, resident of Oregon City, said the applicant had made a significant investment and made modifications to the plans. Further delaying the application was unfortunate. He did not think this would make a significant impact on the neighborhood. It was not out of place considering the other facilities that were around the corner. The applicant was trying to ameliorate the neighbor's concerns which he thought were unfounded. What the applicant was asking for was not outside of code and the conditions of approval were acceptable. He thought it needed to proceed.

Michelle Winters, resident of Oregon City, said there was one adult care home around the corner that was very small and one level.

Marilyn Fergus, resident of Oregon City, said Mr. Gifford did not live in the neighborhood. The applicant said they would have overflow parking at the Methodist church, which was one block west and two blocks south on South End Road where there were no sidewalks and was uphill. People could only park on the south side of the street because on the north side there was a bike lane.

A motion was made by Commissioner Geil, seconded by Commissioner Schlagenhaufer, to continue the hearing to December 14, 2020. The motion carried by the following vote:

Aye: 7 - Chair Mike Mitchel, Commissioner Dirk Schlagenhaufer, Commissioner Vern Johnson, Commissioner Gregory Stoll, Commissioner Patti Gage, Commissioner Christopher Staggs, and Commissioner Tom Geil

4. General Business

Update to the Guidelines for Transportation Impact Analyses

Laura Terway, Community Development Director, gave a background on the traffic impact analyses required for land use applications and how staff was proposing to update the 2005 guidelines. She then reviewed the proposed revisions which would go to the City Commission in December.

John Replinger, Traffic Engineer, discussed the disconnect that often happened between what citizens expected and the code which accepted a higher level of congestion due to the cost of improvements. It was always a balancing act.

There was discussion regarding creating an emergency exit plan out of the City in case of a disaster, the difference between mobility and accessibility, the opportunity for applicants to submit alternative data, whether internal conversions needed a traffic analysis, and increased traffic as an impact of HB 2001.

5. Communications

Ms. Terway discussed the upcoming severely rent burdened community conversation, volunteer opportunity to work on the Transportation Demand Management Plan, and Planning Commission recommendations for the upcoming biennium budget.

6. Adjournment

Chair Mitchell adjourned the meeting at 8:06 PM.

City of Oregon City

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

Meeting Minutes - Draft

Planning Commission

Commission Chambers

Monday, October 26, 2020 **7:00 PM**

1. Convene Regular Meeting and Roll Call

Chair Mitchell called the meeting to order at 7:00 PM.

Present: 6 - Chair Mike Mitchell, Commissioner Christopher Staggs, Commissioner Dirk Schlagenhaufer, Commissioner Gregory Stoll, Commissioner Patti Gage, and Commissioner Vern Johnson

Absent: 1 - Commissioner Tom Geil

Staffers: 3 - Community Development Director Laura Terway, Senior Planner Pete Walter, and City Attorney Carrie Richter

2. Public Comment – *None*

3. Public Hearing

GLUA 20-00033 LEG-20-00001 Public Works Code Amendments. Request for a continuance to November 9, 2020: Proposed code revisions to the Geologic Hazards Overlay District and other ancillary Public Works related development code & standards such as refinements to Public Utility Easements (PUE), requirements for undergrounding utilities, sanitary sewer standards, and the adoption of policies relating to sidewalk obstructions and undergrounding of utilities.

A motion was made by Commissioner Stoll, seconded by Commissioner Gage, to continue the hearing to November 9, 2020. The motion carried by the following vote:

Aye: 6 - Chair Mike Mitchel, Commissioner Dirk Schlagenhaufer, Commissioner Vern Johnson, Commissioner Gregory Stoll, Commissioner Patti Gage, and Commissioner Christopher Staggs

GLUA-20-00020: CU-20-00002 / SP-20-00043 - 182 Warner Parrott Road - Proposed 30-Bed Residential / Memory Care

Facility

Chair Mitchel opened the public hearing and read the hearing statement. He asked if any Commissioner had conflicts of interest, ex parte contacts, bias, or any other statements to declare including a visit to the site.

Commissioner Gage had been by the site.

Commissioner Johnson drove by the site regularly.

Commissioner Schlagenhaufer was familiar with the site.

Commissioner Staggs knew where the property was.

Chair Mitchell visited the site.

Pete Walter, Senior Planner, presented the staff report. This was a request for a conditional use and site plan and design review for expansion of an assisted living facility with memory care at 182 Warner Parrott Road. He described the existing conditions on the lot. The proposal would expand the existing 5 room adult care home into a 30 bed residential care facility. He showed the renderings and gave a summary of the revisions done in response to public comment. There was a requested modification to the siting of the structure. The applicant had proposed three pedestrian elements in the front of the building as mitigation for the increased setback. He discussed the approval criteria and revised conditions of approval. Staff recommended approval.

There was discussion regarding the utility easement, site lighting, landscaping, parking, assisted living vs. residential care facility, setback standards, maximum height, and when the review of state licensing should be provided.

Edward Radulescu, representing the applicant, explained there would be lighting in the pedestrian seating area and entrance pathway. There would also be a couple of secured courtyard areas for outdoor recreational space. This was going to be a residential care facility catered to the elderly who needed 24 hour care and a memory endorsement for those with dementia or Alzheimer's. In the redesign, the height of the building was reduced so it matched the height of the existing building. He explained the setbacks of the existing building and review process for the licensing. They wanted to make sure all of the land use requirements were met before final approval of the licensing with DHS and before the building permits and approvals. They did not anticipate any revisions to the exterior or footprint of the building resulting from DHS.

There was discussion regarding use of the outdoor areas and pedestrian walkways.

Petronella Donavan, applicant, explained how they currently used the outdoor spaces.

Jerry Yarberry, resident of Oregon City, said six neighboring properties would be affected by this application and eight neighbors had submitted written comments opposing the application. The reasons were that it did not fit the nature of the neighborhood and privacy concerns. He thought going from 5 beds to 30 was too much and would alter the character of the neighborhood. He requested the hearing be continued due to the new information submitted tonight. He would also like clarification on where the garbage refuse building would be located.

Marilynn Fergus, resident of Oregon City, requested a continuance for time to look through all of the material. She wanted to make sure 30 beds were being proposed, not 33. Her main concern was the increased traffic and congestion. It would alter the character of the surrounding neighborhood.

Amy Wilhite, resident of Oregon City, also asked for a continuance. She did not think the application met the criteria for conditional use, especially regarding impeding the residential use, significant traffic impact, site impediment, and altering the character of the neighborhood.

Michelle and John Winters, residents of Oregon City, said the new building would have windows looking down into their backyard, would block the sun, and the garbage enclosure would be close to the property line. It would take away their privacy and hurt their resale value. They thought overflow parking would go on their street. They requested a continuance.

Gary Spanovich, resident of Oregon City, prepared the traffic letter for this application. The traffic impact was Level of Service A before the development and Level of Service A after the development. It met the City's code. He explained how overall not much increased traffic would be generated.

Mr. Radulescu explained staffing would be one worker per every seven to ten residents and it was a 30 bed facility. They would have visitor and staff parking and rideshare and transit options would be offered to employees. They had increased the parking to the maximum allowed by the code. The driveway and parking area had been designed to meet fire truck access. There would be a ten foot setback from the sidewalk to accommodate the public utility easement. The garbage would be fully enclosed by a minimum of six foot high walls and it would be surrounded by landscaping. It would be five feet from the property line. The neighbor's tree by the detached garage would not need to be cut down. The detached garage would be removed and the smaller structure would be built there.

Mr. Yarberry said it was currently difficult to get onto Warner Parrott and adding anymore cars would make it that much more difficult. Mr. Spanovich had looked at the accident data over a three year period and it did not show an issue there. They did look at site distance and it met the standards.

Carrie Richter, City Attorney, clarified the Commission had to grant the request for continuance.

Ms. Fergus said fire trucks could pull in to the driveway, but they often did not. She agreed it was not easy to get out onto Warner Parrott due to site impediments.

There was discussion regarding meeting Clackamas Fire requirements, no criteria for viewing into a neighbor's backyard, garbage enclosure would need to be vented, nothing in the code to protect against blocking light to a garden, need for more detailed drawings of the application, whether the application altered the character of the surrounding area and use of the property, conflict in the code regarding setbacks and using the 20 foot residential setback instead, and setting a precedent.

A motion was made by Commissioner Staggs, seconded by Commissioner Stoll, to continue the hearing to November 9, 2020. The motion carried by the following vote:

Aye: 6 - Chair Mike Mitchel, Commissioner Dirk Schlagenhaufer, Commissioner Vern Johnson, Commissioner Gregory Stoll, Commissioner Patti Gage, and Commissioner Christopher Staggs

Determine if the Planning Commission will Provide Policy Advice and/or Project Requests to the City Commission for the Next Biennium Budget

Laura Terway, Community Development Director, reviewed the list of projects staff had for the next biennium budget. She asked if the Planning Commission wanted to provide recommendations for the City Commission to consider.

There was discussion regarding items to include in the recommendations. This would be on the next agenda for more discussion.

4. Communications

Ms. Terway said there would be another OC 2040 PAC meeting on Wednesday. The City Commission would be discussing the new Tree Removal Policy and Construction Excise Tax in November. The Natural Resources Committee was working on an overlay district to protect upland habitat in the Thimble Creek Concept Plan area.

5. Adjournment

Chair Mitchell adjourned the meeting at 9:27 PM.