



**Planning & Community Dev.**  
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**AGENDA**  
**Molalla Planning Commission**  
**6:30 PM, July 6, 2022**

**Meeting Location: Molalla Civic Center**  
**315 Kennel Avenue.**  
**Molalla, OR 97038**

The Planning Commission Meeting will begin at 6:30pm. The Planning Commission has adopted Public Participation Rules. Copies of these rules and public comment cards are available at the entry desk. Public comment cards must be turned in prior to the start of the Commission meeting. The City will endeavor to provide a qualified bilingual interpreter, at no cost, if requested at least 48 hours prior to the meeting. To obtain services call the City Recorder at (503) 829-6855.

**I. CALL TO ORDER**

**II. FLAG SALUTE AND ROLL CALL**

**III. PUBLIC COMMENT** – Limited to 3 minutes per person

**IV. MINUTES:**

- June 1, 2022, Planning Commission Meeting

**V. QUASI-JUDICIAL HEARING:**

- SDR04-2022 – 710 W Main ST – New Fueling Station and Convenience Store

**VI. REPORTS AND ANNOUNCEMENTS**

- Planners Report – submitted to commissioners digitally

**VII. ADJOURNMENT**



**Molalla Planning Commission  
MINUTES  
Molalla Civic Center  
315 Kennel Ave.  
Molalla, OR97038  
June 1, 2022**

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The June 1, 2002, meeting of the Molalla Planning Commission was called to order by Chair Rae Botsford at 6:45 pm.

**COMMISSIONER ATTENDANCE:**

Chair Rae Lynn Botsford – P  
Commissioner Rick Deaton – P  
Commissioner Doug Eaglebear – A  
Commissioner Jennifer Satter – P (6:48)  
Commissioner Jacob Giberson – A  
Commissioner Connie Sharp – A  
Commissioner Clint Ancell – P

**STAFF IN ATTENDANCE:**

Mac Corthell, Planning Director - A  
Dan Zinder, Associate Planner - P  
Ronda Lee, Support Specialist - P

**AGENDA:**

- I. CALL TO ORDER**
- II. FLAG SALUTE AND ROLL CALL**
- III. PUBLIC COMMENT – Limited to 3 minutes per person**  
  
No Public Comment
- IV. MINUTES:**
  - May 4, 2022, Planning Commission Meeting  
  
Planning Commission approves minutes 3-0
- V. DISCUSSION ITEMS:**

Housing Needs Analysis (HNA) and HPS Strategies Project Update and discussion of housing production strategies – presented by Senior Planner Zinder

**VI. REPORTS AND ANNOUNCEMENTS:**

- None

**VII. ADJOURNMENT**

Meeting adjourned at 7:29 pm

**PLANNING COMMISSION MEETING CAN BE VIEWED IN ITS ENTIRIETY HERE:**

<https://www.youtube.com/watch?v=PlhugK31iYw>

\_\_\_\_\_  
Chair, Rae Lynn Botsford

\_\_\_\_\_  
Date

ATTEST: \_\_\_\_\_  
Mac Corthell, Planning Director



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## CITY OF MOLALLA STAFF REPORT

# Consolidated Review for SDR04-2022 and CUP02-2022 – New Fueling Station and Convenience Store

<b>Date:</b>	June 29, 2022 for the July 6, 2022 Planning Commission Meeting
<b>File No.:</b>	Consolidated Review for SDR04-2022 and CUP02-2022
<b>Proposal:</b>	Construction of a New Fueling Station and Convenience Store
<b>Address:</b>	710 W Main ST (OR-211)
<b>Tax Lot:</b>	Taxlots 300 and 390 of Clackamas County Taxmap 52E08C
<b>Applicant:</b>	AKS Engineering and Forestry on behalf of Molalla Petroleum – Zach Pelz 3700 River RD N, STE 1 Keizer, Oregon 97303
<b>Property Owners:</b>	Donald Gary Bunnell and Marie Anne Bunnell, and successors, as Trustees of the Bunnell Family Trust 8751 Redcliff Place Riverside CA, 92508
<b>Applicable Standards:</b>	<b>Applicable Standards: Molalla Municipal Code, Title 17, Development Code</b>

### **Division II, Zoning Regulations**

*Section 17-2.2.030 Allowed Uses*

*Section 17-2.2.040 Lot and Development Standards*

### **Division III, Community Design Standards**

*Section 17-3.2.040 Non-Residential Buildings*

*Section 17-3.2.050 Civic Space and Pedestrian Amenities*

*Chapter 17-3.3 Access and Circulation*

*Chapter 17-3.4 Landscaping, Fences and Walls, Outdoor Lighting*

*Chapter 17-3.5 Parking and Loading*

*Chapter 17-3.6 Public Facilities*



**Division IV, Application Review Procedures and Approval Standards**

*Section 17-4.1.040 Type III Procedure (Quasi-Judicial Review – Public Hearing)*

*Section 17-4.2.050 Approval Standards (Site Design Review)*

*Section 17-4.4.040 Criteria, Standards, and Conditions of Approval (Conditional Use)*

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EXHIBIT B: Findings of Fact for CUP02-2022

EXHIBIT C: Consolidated Application Package SDR04-2022, AND  
CUP02-2022

EXHIBIT D: Loading Comments For SDR04-2022 Submitted By  
Applicant – 6/28/2022

EXHIBIT E: Molalla Public Works Comments

EXHIBIT F: Molalla Fire Department Comments

EXHIBIT G: Oregon Department of Transportation Comments

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## I. EXECUTIVE SUMMARY

### **Proposal:**

The Applicants seek land use approval for the construction of a new fueling station and 4,165 SF convenience store on two tax parcels totaling 0.87 acres. A 4' right-of-way dedication of approximately 700 SF (0.016 ac) is proposed to meet Molalla Transportation Systems Plan and ODOT cross section requirements along the northern portion of the property. The applicant proposes vehicle access to the site from a new shared private drive from OR-211 that extend along the western portion of the property and eastern portion of the adjacent property (720 W Main ST). This access connects the property to the private drive network through Cascade Center.

Additionally, the Applicant proposes required pedestrian frontage improvements adjacent to the property along OR-211. Per Molalla Municipal Code (MMC) 17-2.2.030 H a Conditional Use Permit is required in conjunction with the Site Design Review because the proposed use includes an outdoor/unenclosed use (fueling station). No change to the existing C-2 zoning designation is proposed as part of these applications.

### **Site Description:**

The subject site is located on a 0.87 acre parcel of General Commercial (C-2) zoned land on the south side of OR-211 between S Leroy Ave and Ridings Ave. The parcel is directly east of the Cascade Center subdivision. There is an existing single-family home on the parcel, with two existing accesses. There are nineteen mixed deciduous and coniferous trees on the property between 6" and 36" DBH. The property has a slight slope from northeast to southwest.

### **Surrounding Zoning and Land Uses:**

The subject parcel is surrounded by central commercially zoned (C-1) land. Surrounding uses include the retail complex "Cascade Center" to the west, a self-storage facility to the east and southeast, and assorted commercial retail and service uses to the north. Several single-family homes are located on commercially zoned parcels to the northeast.

### **Public Agency Responses:**

Staff circulated notice of the project to the City's Public Works Director, Fire Marshal, and Oregon Department of Transportation on June 3, 2022. The City has included responses from these agencies as Exhibits D, E, and F respectively, and integrated their comments into the proposed findings and conditions of this decision.

### **Public Notice and Comments:**

Per MMC 17-4.1.040, notice of the public hearing was sent to all property owners within 300 feet of the subject properties and to a group of interested parties on June 6, 2022. Notice was published in the Molalla Pioneer on June 7, 2022. Signage containing public notice information was posted on the property on June 10, 2022.

As of June 28, 2022 Staff had received no written public comment on the application.

## I. Recommendation

Based on the application materials and findings demonstrating present or conditioned compliance with the applicable standards, staff recommends approval of Site Design Review SDR04-2022 and Conditional Use Permit CUP02-2022 subject to the conditions of approval that follow this recommendation. This approval is based on the Applicant's written narrative, site plans, and supplemental application materials. Any modifications to the approved plans other than those required by the conditions of this decision will require a new land use application and approval.

## II. Conditions of Approval

### 1. Building Permits, Engineering Plan Approvals, and Certificate of Occupancy Required:

- a. Per Molalla Municipal Code (hereinafter MMC) 17-4.2.070 and the State of Oregon Structural Specialty Code, upon approval of this Site Design Review, the applicant must submit for building permit authorization from Molalla Planning Staff and Engineering Plan Review from Molalla Public Works. Per MMC 17-4.2.070, this site design review has an approval period of 1-year from the date of approval. As a condition of approval, the Applicant/owner shall submit for both Building Permit Authorization for all proposed improvements through the City of Molalla Planning Department and Civil Plan Review through the City of Molalla Public Works Department within the 1-year approval period. Extension requests for the 1-year period are subject to the Code provisions of MMC 17-4.2.070, B.
- b. Per MMC 17-4.9.020 and the State of Oregon Structural Specialty Code, upon approval of this Site Design Review (change of use), the applicant must obtain a Certificate of Occupancy from the Clackamas County Building Official. As a condition of approval, the Applicant/owner shall obtain a Certificate of Occupancy through the Clackamas County Building Official for all onsite occupants prior to operation of the new, proposed use/occupancy.

Note: City approval is required for all Certificates of Occupancy.

### 2. Conditions Requiring Resolution Prior To Receiving Building Permit Authorization From The Molalla Planning Department:

- a. The Applicant shall submit plans with building permit authorization showing canopy coverage along at least 75% of the northern and southern facades where walkways

are proposed adjacent to the building. Additional canopies shall comply with applicable building codes and shall be designed to be visually compatible with the architecture of a building. Proposed shadow boxes on the southern facade may be reduced in height to accommodate canopy requirement.

- b. Of the trees proposed for removal, the Applicant shall provide a report from a certified arborist prior to building or grading permit for mature trees numbered 12849, 12857, 12858, and 12859 to determine viability for survival within the proposed development or state an intention to keep these trees. These trees are sited outside of the development envelope, are not invasive, and retention would provide an aesthetic benefit. If the arborists report determines that they would have a substantial chance for survival after buildout, the Applicant shall retain these trees. In that instance, the Applicant may modify location of proposed trees in their vicinity to ensure their survival. If the trees are determined unlikely to survive they may be removed. (MMC 17-3.4.030, C, 9)
- c. The Applicant shall submit a revised lighting photometrics plan meeting standards and that incorporates the entire fueling station and associated drive aisles.
- d. All walkways connecting to primary building entrances shall be designed consistent with ADA requirements.
- e. Separate engineering drawings reflecting the installation of public utilities will be required. Civil plans must be accepted prior to building permit authorization by the City. All public improvements shall be completed and accepted by the Public Works Department prior to issuance of any occupancy (MMC 17-3.6.080). No construction of, or connection to, any existing or proposed public utility/improvements will be permitted until all plans are approved by Staff, all fees have been paid, all necessary permits, bonding, right-of-way and easements have been obtained and approved by staff.

For commercial and industrial development projects, no building permit may be issued until all required public facility improvements are in place and approved by the City Engineer, or otherwise bonded, in conformance with the provision of the Code and the Public Works Design Standards in accordance with MMC 17-3.6 Public Facilities. All public facilities shall be completed and accepted by the Public Works Department prior to issuance of final occupancy. Staff reserves the right to require revisions/modifications to the public improvement construction plans and completed street improvements if additional modifications or expansion of the sight distance onto adjacent streets is required (MMC 17-3.6.080).

- I. Plans submitted for review shall meet the requirements described in Section 1 of the Molalla Standard Specifications for Public Works Construction (MMC 17-3.6.080).
- II. All public improvement designs shall meet the requirements of the Molalla Standard Specifications for Public Works Construction as amended by the Public Works Director (MMC 17-3.6.080).
- III. All public utility/improvement plans submitted for review shall be based upon a 22"x 34" format and shall be prepared in accordance with the City of Molalla Public Work's Standards (MMC 17-3.6.080).
- IV. The Applicant shall submit a revised truck turning template plan with civil review plans showing truck turning radii for the largest proposed vehicle to enter the site to ensure the proposed approaches can accommodate that vehicle. This plan shall show turning motions from the appropriate lanes from the ROW in OR-211.
- V. Onsite private storm system shall comply with plumbing code requirements. The detention and flow control facilities shall be reviewed, permitted, and inspected by Molalla Public Works. The onsite storm conveyance system shall be reviewed and inspected by Clackamas County Building under a plumbing permit, in accordance with MMC 13.13 Surface Water Management.
- VI. All driveway approaches shall be designed and constructed consistent with the current version of the Molalla Public Works Design Standards, Molalla Transportation Systems Plan, and ODOT standards.
- VII. Applicant shall relocate existing east access to Cascade Center from the west side of adjacent property (between taxlots 52E08C 04900 and 52E08C 05000) and take access from a new shared connection off OR-211 (W Main Street) between the subject site and taxlot 52E08C 05000 to the west, minimizing the number of driveways taking access directly from OR-211. Driveway access shall extend to the southern edge of the parcel and connect to adjacent east-west access drive within Cascade Center.
- VIII. On ODOT rights of way, applicant will be required to donate sufficient right-of-way along variable width improvements and construct curb, sidewalk, and bike lanes as necessary to be consistent with Molalla TSP, ODOT and ADA standards. ODOT requires donations of right-of-way to follow the requirements of Chapter 5.322. Developer Mitigation Donation in the ODOT Right-of-Way Manual.

- IX. Applicant shall be required to design and install roadway lighting on OR-211. Location and number shall be determined during civil plan review.
- X. Applicant proposes to connect to existing 6-inch sanitary lateral located on the property. Applicant will be required to construct a public sanitary sewer cleanout meeting Molalla Standard Specifications for Public Works Construction.
- XI. Should Fire Department regulations require additional fire flow that results in looping the water line through the site, then applicants engineer shall coordinate with Public Works for the extension of a public water line, and dedication of easements.
- XII. Onsite private storm system shall comply with plumbing code requirements. The detention and flow control facilities shall be reviewed, permitted, and inspected by Public Works. The onsite storm conveyance system shall be reviewed and inspected by Clackamas County Building under a plumbing permit, in Accordance with MMC 13.13 Surface Water Management. Applicant shall record a private stormwater easement with Cascade Center. Staff advises confirming with ODOT whether discharge to Cascade Center stormwater facilities will result in additional State permitting.
- XIII. Curb, sidewalk, and bike lanes shall be constructed as necessary to be consistent with Molalla Transportation System Plan, ODOT and ADA standards (MMC 17-3.6.020).
- XIV. Access to public streets shall be limited to the location identified on the application materials or as required by ODOT. All accesses shall be constructed in such a manner as to eliminate turning conflicts. The proposed width for access shall meet ODOT requirements (MMC 17-3.6.020).
- XV. Roadway lighting is required on all new development. Applicant shall be required to install roadway lighting. Location and number shall be determined during design review (MMC 17-3.6.020).
- XVI. All utilities will be stubbed out to the far end of each street for future extension. The project shall utilize existing water, sewer, and storm water 'stub-outs' wherever possible. Water for domestic and fire protection shall be looped through the proposed site. Any 'stub-outs' determined to be not needed for the proposed development or any future development of the subject property shall be abandoned in accordance with the Molalla Standard Specifications for Public Works Construction.



- XVII. All utilities to the project shall be served underground services. No overhead crossings of public right of way shall be approved by the city (MMC 17-3.6.060).
- XVIII. All survey monuments on the subject site or that may be subject to disturbance within the construction area, or the construction of any off-site improvements shall be adequately referenced and protected prior to commencement of any construction activity. If the survey monuments are disturbed, moved, relocated, or destroyed as a result of any construction, the project shall, at its cost, retain the services of a registered professional land surveyor in the State of Oregon to restore the monument to its original condition and file the necessary surveys as required by Oregon State law. A copy of any recorded survey shall be submitted to Staff (MMC 17-3.6.080).
- XIX. The applicant shall contact the Oregon Water Resources Department and inform them of any existing wells located on the subject site. Any existing well shall be limited to irrigation purposes only. Proper separation, in conformance with applicable State standards, shall be maintained between irrigation systems, public water systems, and public sanitary systems. Should the project abandon any existing wells, they shall be properly abandoned in conformance with State standards and supply the City with a copy of the final document (MMC 17-3.6.080).
- XX. General Erosion Control – The applicant shall install, operate, and maintain adequate erosion control measures in conformance with the standards adopted by the City of Molalla and DEQ during the construction of any public/private utility and building improvements until such time as approved permanent vegetative materials have been installed. Applicant or Applicant’s Contractor shall be responsible for all erosion control requirements under the 1200-C permit and shall coordinate directly with DEQ for questions related to 1200-C permit compliance (MMC 17-3.6.080).

### 3. Conditions To Be Met Prior To Construction

- a. Temporary driveways providing access to a construction site or staging area shall be paved or graveled to prevent tracking of mud onto adjacent paved streets (MMC 17-3.3.030 D 20).
- b. The Applicant shall obtain an approach permit from ODOT.

- c. An ODOT Miscellaneous Permit must be obtained for all work in the highway right of way. When the total value of improvements within the ODOT right of way is estimated to be \$100,000 or more, an agreement with ODOT is required to address the transfer of ownership of the improvement to ODOT. An Intergovernmental Agreement (IGA) is required for agreements involving local governments and a Cooperative Improvement Agreement (CIA) is required for private sector agreements. The agreement shall address the work standards that must be followed, maintenance responsibilities, and compliance with ORS 276.071, which includes State of Oregon prevailing wage requirements.

#### 4. Conditions To Be Met Prior To Occupancy:

- a. All landscaping, parking, lighting, and other improvements shall be installed and approved by the Planning Official prior to occupancy (MMC 17-3.5.020 B).
- b. The Applicant shall record cross access easements and maintenance agreements between the subject parcel and Cascade Center parcels west of S Leroy Ave for utilization of the proposed access to OR-211 and the private drive networks to the west.
- c. The Applicant shall record cross access easements between the subject parcels and parcels to the east to facilitate future development.
- d. Applicant will be required to dedicate a 10-foot-wide public utility easement (PUE) fronting the public right-of-way if one does not exist and provide a copy of the recorded dedication prior to occupancy. No structures are allowed to encroach into the easement. Applicant shall be required to submit a legal description and exhibit map for review and sign City easements. Once completed, applicant will be required to record easements with the County Recorder's Office and return the original document to the City prior to final occupancy. If an existing PUE exists, applicant shall provide proof of the existing dedication.
- e. Applicant shall obtain all applicable State and Federal permitting associated with the fueling station use, as applicable. Failure to obtain applicable permitting may result in the revocation of this permit.

## 5. Ongoing Conditions:

- a. All contractors and subcontractors performing work on this property shall obtain and maintain a valid, current business license with the City of Molalla.
- b. Access to public streets shall be limited to the location identified on the application materials or as required by ODOT. All accesses shall be constructed in such a manner as to eliminate turning conflicts. The proposed width for access shall meet ODOT requirements.
- c. All primary building entrances shall open to the sidewalk and shall conform to Americans with Disabilities Act (ADA) requirements, as applicable (MMC 17-3.2.040 D). All approaches and driveways shall meet ADA accessibility requirements where they coincide with an accessible route (MMC 17-3.3.030 D 15). Parking shall be provided consistent with ADA requirements (MMC 17-3.5.030 H).
- d. No visual obstructions shall be placed in vision clearance areas (MMC 17-3.3.030 G).
- e. No proposed fencing shall be made of prohibited materials, as detailed in MMC 17-3.4
- f. All landscaping shall be maintained in good condition, or otherwise replaced by the property owner (MMC 17-3.4.030 G).
- g. Fences and walls shall be maintained in good condition, or otherwise replaced by the property owner (MMC 17-3.4.040 F).
- h. As an ongoing condition of approval, all outdoor lighting shall be maintained in good condition, or otherwise replaced by the property owner (MMC 17-3.4.050 C).

**Exhibit B:**

*City Staff's Findings of Fact for SDR04-2022*

Per MMC 17-4.2.050, an application for Site Design Review shall be approved if the proposal meets all of the following criteria. The Planning Official, in approving the application, may impose reasonable conditions of approval, consistent with the applicable criteria;

**A. The application is complete, in accordance with Section 17-4.2.040;**

**Findings:** The City received the Applicant's proposal on April 12, 2022 and deemed it complete in accordance with Section 17-4.2.040 on June 2, 2022.

**B. The application complies with all of the applicable provisions of the underlying Zoning District (Division II), including, but not limited to, building and yard setbacks, lot area and dimensions, density and floor area, lot coverage, building height, building orientation, architecture, and other applicable standards;**

### **17-2.2.030 Allowed Uses**

**Findings:** The Applicant proposes new uses of a fueling station and retail convenience store. The convenience store meets the "Commercial Retail Sales and Services" use category and the fueling station meets the "Automotive Repair and Service (including fueling stations)" use category. Both uses are allowed outright in the C-2 General Commercial zone. Because the fueling station is an unenclosed use a Conditional Use Permit is required in conjunction with the Site Design Review per MMC 17-2.2.030 H. The Applicant submitted a Conditional Use Permit in concurrence with this application. The Standard is met.

### **17-2.2.040 Lot and Development Standards**

**Findings:**

**Minimum Lot Area** – There is no minimum lot size in commercial zones. The proposed lots are of adequate size to accommodate commercial development. This standard is met.

**Minimum Lot Width and Depth** – There is no minimum lot width or depth in commercial zones. The proposed lots are of adequate size to accommodate commercial development. This standard is met.

**Building and Structure Height** – Maximum building height in the C-2 zone is 55ft. The maximum height of the proposed structure is 23ft. This standard is met.

**Maximum Lot Coverage** - Maximum foundation plane coverage in the C-2 zone is 100%. The proposed uses cover 11% of the subject parcel. This standard is met.

**Minimum Landscape Area % (includes required parking lot, landscaping, and required screening)**  
Minimum landscaped area in the C-2 zone is 5%. The proposed site plan provides a total 5,420 square feet accounting for 14% of Parcel 1. This standard is met.

#### **Minimum Setbacks - 6**

**Front Setback Requirement: 0ft** – This standard is met.

**Garage Setback Requirement: 20ft** – No garages are proposed. This standard does not apply.

**Alley: 3ft** - This property does not abut an alley. This standard does not apply.

**Adjacent to R Districts: 10ft** – This proposal is not adjacent to any residential districts. This standard does not apply.

**Build to Line: 0ft** – The site abuts the OR-211 right-of-way. The primary entrance of the proposed convenience store is connected to the public right-of-way via a pedestrian pathway along the west side of the proposed walkway. Additionally, a required Public Utility Easement prohibits building within 10ft of the ROW line. Build-to-line criteria are therefore met under exceptions c and f (MMC 17-3.2.040 B 1).

### **C. The proposal includes required upgrades, if any, to existing development that does not comply with the applicable zoning district standards, pursuant to Chapter 17-1.4 Nonconforming Situations;**

The existing single-family home and use on the site is proposed to be removed. The proposal will bring all onsite improvements to City Standards. Offsite improvements will bring frontages along the subject site to ODOT and City standards. Existing development patterns do not facilitate any available access placement that meets ODOT spacing standards. Given that the parcel had an existing, non-conforming access and is entitled an access, ODOT and City Staff worked with the Applicant to determine the optimal access placement given existing constraints. The proposed location along the western portion of the subject parcel and eastern portion of the adjacent parcel, was determined the best access location by the City and ODOT.

## D. The proposal complies with all the Development and Design Standards of Division III, as applicable:

**Findings:** Applicable Standards under Division III. Community Design Standards for this project include:

- Section 17-3.2.040 Non-Residential Buildings
- Section 17-3.2.060 Drive-Up and Drive-Through Uses and Facilities
- Chapter 17-3.3 Access and Circulation
- Chapter 17-3.4 Landscaping, Fences and Walls, Outdoor Lighting
- Chapter 17-3.5 Parking and Loading
- Chapter 17-3.6 Public Facilities

### 17-3.2.040 Non-Residential Buildings

A. **Purpose and Applicability.** The following requirements apply to non-residential development, including individual buildings and developments with multiple buildings such as shopping centers, office complexes, mixed-use developments, and institutional campuses. The standards are intended to create and maintain a built environment that is conducive to pedestrian accessibility, reducing dependency on the automobile for short trips, while providing civic space for employees and customers, supporting natural surveillance of public spaces, and creating human-scale design. The standards require buildings placed close to streets, with storefront windows (where applicable), with large building walls divided into smaller planes, and with architectural detailing.

**Findings:** This section applies to the proposed commercial development.

- B. **Building Orientation.** The following standards apply to new buildings and building additions that are subject to Site Design Review. The Planning Official may approve adjustments to the standards as part of a Site Design Review approval, pursuant to Chapters 17-4.2 and 17-4.7, respectively.
1. Buildings subject to this section shall conform to the applicable build-to line standard in Table 17-2.2.040.E, as generally illustrated in Figure 17-3.2-6. The standard is met when at least 50 percent of the abutting street frontage has a building placed no farther from at least one street property line than the build-to line in Table 17-2.2.040.E; except in the Central Commercial C-1 zone, at least 80 percent of the abutting street frontage shall have a building placed no farther from at least one street property line than the required build-to-line. The Planning Official, through Site Design Review, may waive the build to line standard where it finds that one or more of the conditions in subdivisions a through g occurs.

- a. A proposed building is adjacent to a single-family dwelling, and an increased setback promotes compatibility with the adjacent dwelling.
- b. The standards of the roadway authority preclude development at the build-to line.
- c. The applicant proposes extending an adjacent sidewalk or plaza for public use, or some other pedestrian amenity is proposed to be placed between the building and public right-of-way, pursuant to Section 17-3.2.050 and subject to Site Design Review approval.
- d. The build-to line may be increased to provide a private open space (e.g., landscaped forecourt), pursuant to Section 17-3.2.050, between a residential use in a mixed-use development (e.g., live-work building with ground floor residence) and a front or street property line.
- e. A significant tree or other environmental feature precludes strict adherence to the standard and will be retained and incorporated in the design of the project.
- f. A public utility easement or similar restricting legal condition that is outside the applicant's control makes conformance with the build-to line impracticable. In this case, the building shall instead be placed as close to the street as possible given the legal constraint, and pedestrian amenities (e.g., plaza, courtyard, landscaping, outdoor seating area, etc.) shall be provided within the street setback in said location pursuant to Section 17-3.2.050.
- g. An existing building that was lawfully created but does not conform to the above standard is proposed to be expanded and compliance with this standard is not practicable.

**Findings:** The site abuts the OR-211 right-of-way. The primary entrance of the proposed convenience store is connected to the public right-of-way via a pedestrian pathway along the west side of the proposed walkway. Additionally, a required Public Utility Easement prohibits building within 10ft of the ROW line. Build-to-line criteria are therefore met under exceptions c and f.

2. Except as provided in subsections C.5 and 6, all buildings shall have at least one primary entrance (i.e., tenant entrance, lobby entrance, breezeway entrance, or courtyard entrance) facing an abutting street (i.e., within 45 degrees of the street property line); or if the building entrance must be turned more than 45 degrees from the street (i.e., front door is on a side or rear elevation) due to the configuration of the site or similar constraints, a pedestrian walkway must connect the primary entrance to the sidewalk in conformance with Section 17-3.3.040.

**Findings:** The proposed building has a primary entrance on the northern façade, facing OR-211. This standard is met.

3. Off-street parking, trash storage facilities, and ground-level utilities (e.g., utility vaults), and similar obstructions shall not be placed between building entrances and



the street(s) to which they are oriented. To the extent practicable, such facilities shall be oriented internally to the block and accessed by alleys or driveways.

**Findings:** The Applicant's submitted proposal does not include any parking, trash or utilities between the building or building entrance and street. Proposed parking is located behind the convenience store and between the fueling station and convenience store. Trash facilities are sited south of the convenience store. This standard is met.

4. Off-street parking shall be oriented internally to the site to the extent practicable, and shall meet the Access and Circulation requirements of Chapter 17-3.3, the Landscape and Screening requirements of Chapter 17-3.4, and the Parking and Loading requirements of Chapter 17-3.5.

**Findings:** The Applicant's submitted application shows parking located internally between the fueling station and convenience store. The primary entrance is accessed by both vehicular and pedestrian circulation systems along the access on the western side of the site. This standard is met. Standards pertaining to further chapters will be evaluated in Staff responses to those Chapters respectively.

5. Where a development contains multiple buildings and there is insufficient street frontage to meet the above building orientation standards for all buildings on the subject site, a building's primary entrance may orient to plaza, courtyard, or similar pedestrian space containing pedestrian amenities and meeting the requirements under Section 17-3.2.050, subject to Site Design Review approval. When oriented this way, the primary entrance(s), plaza, or courtyard shall be connected to the street by a pedestrian walkway conforming to Section 17-3.3.040.

**Findings:** The proposal is for a single building. This standard does not apply.

- C. **Large-Format Developments.** Plans for new developments, or any phase thereof, with a total floor plate area (ground floor area of all buildings) greater than 35,000 square feet, shall meet all of the following standards in subsections C.1 through 9, as generally illustrated in Figure 17-3.2-7. The Planning Official may approve adjustments to the standards as part of a Site Design Review approval, pursuant to Chapters 17-4.2 and 17-4.7, respectively.

**Findings:** The proposed development does not include a total floor plate area greater than 35,000 square feet. These standards do not apply.

- D. **Primary Entrances and Windows.** The following standards, as generally illustrated in Figures 17-3.2-8 and 17.3.2-9, apply to new buildings and building additions that are subject to Site Design Review. The Planning Official may approve adjustments to the

standards as part of a Site Design Review approval, pursuant to Chapters 17-4.2 and 17-4.7, respectively.

1. **All Elevations of Building.** Architectural designs shall address all elevations of a building. Building forms, detailing, materials, textures, and color shall contribute to a unified design with architectural integrity. Materials used on the front façade must turn the building corners and include at least a portion of the side elevations, consistent with the overall composition and design integrity of the building.

**Findings:** The Applicant's submitted architectural plans show all elevations of the proposed building and show a cohesive design. Materials from the western, street facing, façade turn the corner to side elevations and extend through those elevations. This standard is met.

2. **Pedestrian Entrances.** Ground level entrances oriented to a street shall be at least partly transparent for natural surveillance and to encourage an inviting and successful business environment. This standard may be met by providing a door with a window or windows, a transom window above the door, or sidelights beside the door. Where ATMs or other kiosks are proposed on any street-facing elevation, they shall be visible from the street for security and have a canopy, awning, or other weather protection shelter.

**Findings:** The Applicant's submitted architectural plans show ground level entrances with at least partial transparency. This standard is met.

3. **Corner Entrances.** Buildings on corner lots are encouraged to have corner entrances. Where a corner entrance is not provided, the building plan shall provide an architectural element or detailing (e.g., tower, beveled corner, art, special trim, etc.) that accentuates the corner location.

**Findings:** The Applicant's proposal is not for a corner lot. This standard does not apply.

4. **Street Level Entrances.** All primary building entrances shall open to the sidewalk and shall conform to Americans with Disabilities Act (ADA) requirements, as applicable. Primary entrances above or below grade may be allowed where ADA accessibility is provided.

**Findings:** This standard is met subject to a condition of approval. Proposed building entrances open to the proposed pedestrian walkway, a required. As a condition of approval all primary building entrances shall open to the sidewalk and shall conform to Americans with Disabilities Act (ADA) requirements, as applicable.

5. **Windows—General.** Except as approved for parking structures or accessory structures, the front/street-facing elevations of buildings shall provide display windows, windowed doors, and where applicable, transom windows to express a storefront character.

**Findings:** Windows and transparent entrances are provided on the street facing façade. This standard is met.

6. **Storefront Windows.** Storefront windows shall consist of framed picture or bay windows, which may be recessed. Framing shall consist of trim detailing such as piers or pilasters (sides), lintels or hoods (tops), and kick plates or bulkheads (base)—or similar detailing—consistent with a storefront character. The ground floor, street-facing elevation(s) of all buildings shall comprise at least 60 percent transparent windows, measured as a section extending the width of the street-facing elevation between the building base (or 30 inches above the sidewalk grade, whichever is less) and a plane 72 inches above the sidewalk grade.

**Findings:** The Applicant's submitted application shows framed picture glazed windows that account for 62% of the frontage between 30" and 72" from grade. This standard is met.

7. **Defined Upper Story(ies).** Building elevations shall contain detailing that visually defines street level building spaces (storefronts) from upper stories. The distinction between street level and upper floors shall be established, for example, through the use of awnings, canopies, belt course, or similar detailing, materials, or fenestration. Upper floors may have less window area than ground floors, but shall follow the vertical lines of the lower level piers and the horizontal definition of spandrels and any cornices. Upper floor window orientation shall primarily be vertical, or have a width that is no greater than height. Paired or grouped windows that, together, are wider than they are tall, shall be visually divided to express the vertical orientation of individual windows.

**Findings:** The Applicant's submitted architectural plans are for a one-story building. This standard does not apply.

8. **Buildings Not Adjacent to a Street.** Buildings that are not adjacent to a street or a shopping street, such as those that are setback behind another building and those that are oriented to a civic space (e.g., internal plaza or court), shall meet the 60 percent transparency standard on all elevations abutting civic space(s) and on elevations containing a primary entrance.

**Findings:** The proposed building is adjacent to a street and meets the 60% transparency requirement. This standard does not apply.

9. **Side and Rear Elevation Windows.** All side and rear elevations, except for zero lot line or common wall elevations, where windows are not required, shall provide not less than 30 percent transparency.

**Findings:** The Applicant has not proposed windows on non-street facing elevations and has requested an exception, addressed in response to MMC 17.3.2.040.D.12 below.

10. **Window Trim.** At a minimum, windows shall contain trim, reveals, recesses, or similar detailing of not less than four inches in width or depth as applicable. The use of decorative detailing and ornamentation around windows (e.g., corbels, medallions, pediments, or similar features) is encouraged.

**Findings:** The Applicant's submitted application proposes trim detailing consistent with the building design and the shadow boxes on the side and rear facades will include trim detailing consistent with this requirement. This standard is met.

11. **Projecting Windows, Display Cases.** Windows and display cases shall not break the front plane of the building (e.g., projecting display boxes are discouraged). For durability and aesthetic reasons, display cases, when provided, shall be flush with the building façade (not affixed to the exterior) and integrated into the building design with trim or other detailing. Window flower boxes are allowed, provided they do not encroach into the pedestrian through-zone.

**Findings:** The Applicant has not proposed any projecting windows or display cases. This standard does not apply.

12. **Window Exceptions.** The Planning Official may approve an exception to the above standards where existing topography makes compliance impractical. Where it is not practicable to use glass, windows for parking garages or similar structures, the building design must incorporate openings or other detailing that resembles window patterns (rhythm and scale).

**Findings:** The Applicant has not proposed windows on the western, eastern, and southern facades of the proposed building stating that these interior walls will be "lined with storage, coolers, bathrooms, utilities, and kitchens that make compliance with the transparency standards impractical." The Applicant has proposed shadow boxes instead that provide similar detailing to exterior window designs."

Staff recommends approval of the Applicant's proposed exception to window coverage.

- E. **Articulation and Detailing.** The following standards apply to new buildings and building additions that are subject to Site Design Review. The Planning Official may approve adjustments to the standards as part of a Site Design Review approval, pursuant to Chapters 17-4.2 and 17-4.7, respectively.

1. **Articulation.** All building elevations that orient to a street or civic space shall have breaks in the wall plane (articulation) of not less than one break for every 30 feet of building length or width, as applicable, pursuant to the following standards, which are generally illustrated in Figures 17-3.2-10, 17-3.2-11, and 17-3.2-12.
  - a. A “break” for the purposes of this subsection is a change in wall plane of not less than 24 inches in depth. Breaks may include, but are not limited to, an offset, recess, window reveal, pilaster, frieze, pediment, cornice, parapet, gable, dormer, eave, coursing, canopy, awning, column, building base, balcony, permanent awning or canopy, marquee, or similar architectural feature.
  - b. The Planning Official through Site Design Review may approve detailing that does not meet the 24-inch break-in-wall-plane standard where it finds that proposed detailing is more consistent with the architecture of historically significant or historic-contributing buildings existing in the vicinity.
  - c. Changes in paint color and features that are not designed as permanent architectural elements, such as display cabinets, window boxes, retractable and similar mounted awnings or canopies, and other similar features, do not meet the 24-inch break-in-wall-plane standard.
  - d. Building elevations that do not orient to a street or civic space need not comply with the 24-inch break-in-wall-plane standard but should complement the overall building design.

**Findings:** The Applicant’s submitted architectural plans show canopies and pillars on the north facing façade that provide the required depth for breaks. Other facades are not street facing and these standards do not apply to them. These standards are met.

2. **Change in Materials.** Elevations should incorporate changes in material that define a building’s base, middle, and top, as applicable, and create visual interest and relief. Side and rear elevations that do not face a street, public parking area, pedestrian access way, or plaza may utilize changes in texture and/or color of materials, provided that the design is consistent with the overall composition of the building.

**Findings:** The Applicant’s submitted architectural plans use change of materials from stonewall base to metal siding to a short but distinct black top. These materials extend around the building, excepting where windows are utilized to define the bottom portion of the building along the street facing northern frontage. This standard is met.

3. **Horizontal Lines.** New buildings and exterior remodels shall generally follow the prominent horizontal lines existing on adjacent buildings at similar levels along the street frontage. Examples of such horizontal lines include, but are not limited to: the base below a series of storefront windows, an awning or canopy line, a belt course between building stories, a cornice, or a parapet line. Where existing adjacent

buildings do not meet the City's current building design standards, a new building may establish new horizontal lines.

**Findings:** The Applicant's submitted architectural plans show horizontal lines through the window and canopy profiles on the north facing frontage and by change of materials along the western, eastern, and southern frontage. This standard is met.

4. **Ground Floor and Upper Floor Division.** A clear visual division shall be maintained between the ground level floor and upper floors, for example, through the use of a belt course, transom, awning, canopy, or similar division.

**Findings:** The Applicant's proposal is for a single-story building. This standard does not apply.

5. **Vertical Rhythms.** New construction or front elevation remodels shall reflect a vertical orientation, either through breaks in volume or the use of surface details

**Findings:** The Applicant's submitted application shows vertical rhythms in the shadow boxes, pillars, window detailing (north façade), and sign face on the northern facade. This standard is met.

F. **Pedestrian Shelters.** The following standards apply to new buildings and building additions that are subject to Site Design Review. The Planning Official may approve adjustments to the standards as part of a Site Design Review approval, pursuant to Chapters 17-4.2 and 17-4.7, respectively.

1. **Minimum Pedestrian Shelter Coverage.** Permanent awnings, canopies, recesses, or similar pedestrian shelters shall be provided along at least 75 percent of the ground floor elevation(s) of a building where the building abuts a sidewalk, civic space, or pedestrian access way. Pedestrian shelters used to meet the above standard shall extend at least five feet over the pedestrian area; except that the Planning Official, through Site Design Review, may reduce the above standards where it finds that existing right-of-way dimensions, easements, or building code requirements preclude standard shelters. In addition, the above standards do not apply where a building has a ground floor dwelling, as in a mixed-use development or live-work building, and the dwelling has a covered entrance. The Planning Official shall waive the above standards if the pedestrian shelter would extend into the right-of-way and the roadway authority does not allow encroachments in the right-of-way.

**Findings:** This standard is met subject to a condition of approval. The Applicant's submitted architectural plans show two application shows proposed pedestrian walkways abutting the northern and southern frontages of the proposed building. The northern façade has 67% canopy coverage and the rear façade has less than 10% canopy coverage.

As a condition of approval, the Applicant shall submit plans with building permit authorization showing canopy coverage along at least 75% of the northern and southern facades where walkways are proposed adjacent to the building. Additional canopies shall comply with applicable building codes and shall be designed to be visually compatible with the architecture of a building. Proposed shadow boxes on the southern facade may be reduced in height to accommodate canopy requirement.

2. **Pedestrian Shelter Design.** Pedestrian shelters shall comply with applicable building codes, and shall be designed to be visually compatible with the architecture of a building. If mezzanine or transom windows exist, the shelter shall be below such windows where practical. Where applicable, pedestrian shelters shall be designed to accommodate pedestrian signage (e.g., blade signs), while maintaining required vertical clearance.

**Findings:** Staff finds that the Applicant's proposed pedestrian shelters are designed in visual concert with the design of the building. This standard is met.

#### **G. Mechanical Equipment.**

1. **Building Walls.** Where mechanical equipment, such as utility vaults, air compressors, generators, antennae, satellite dishes, or similar equipment, is permitted on a building wall that abuts a public right-of-way or civic space, it shall be screened pursuant to Chapter 17-3.4. Standpipes, meters, vaults, and similar equipment need not be screened but shall not be placed on a front elevation when other practical alternatives exist; such equipment shall be placed on a side or rear elevation where practical.
2. **Rooftops.** Except as provided below, rooftop mechanical units shall be set back or screened behind a parapet wall so that they are not visible from any public right-of-way or civic space. Where such placement and screening is not practicable, the Planning Official may approve painting of mechanical units in lieu of screening; such painting may consist of colors that make the equipment visually subordinate to the building and adjacent buildings, if any.
3. **Ground-Mounted Mechanical Equipment.** Ground-mounted equipment, such as generators, air compressors, trash compactors, and similar equipment, shall be limited to side or rear yards and screened with fences or walls constructed of materials similar to those on adjacent buildings. Hedges, trellises, and similar plantings may also be used as screens where there is adequate air circulation and sunlight, and irrigation is provided. The City may require additional setbacks and noise attenuating equipment for compatibility with adjacent uses.

**Findings:** The Applicant does not propose any mechanical equipment abutting the right-of-way, nor any rooftop mechanical units with this application. Propane, air, and water filling stations are planned for customer use; these facilities are in accessible locations and are compatible with adjacent uses. These standards are met.

H. **Civic Space.** Commercial development projects shall provide civic space pursuant to Section 17-3.2.050.

**Findings:** The Applicant proposes less than 10,000 SF of leasable floor area. These standards do not apply to this application.

I. **Drive-Up and Drive-Through Facilities.** Drive-up and drive-through facilities shall comply with the requirements of Section 17-3.2.060. (Ord. 2017-08 §1)

**Findings:** This application does not include any drive-up and drive-through facilities. These standards do not apply.

### 17-3.3.030 Vehicular Access and Circulation

A. **Purpose and Intent.** Section 17-3.3.030 implements the street access policies of the City of Molalla Transportation System Plan. It is intended to promote safe vehicle access and egress to properties, while maintaining traffic operations in conformance with adopted standards. "Safety," for the purposes of this chapter, extends to all modes of transportation.

B. **Permit Required.** Vehicular access to a public street (e.g., a new or modified driveway connection to a street or highway) requires an approach permit approved by the applicable roadway authority.

**Findings:** This condition is met subject to a condition of approval. The Applicant's submitted application shows that the applicant proposes access from OR-211 and is under the jurisdiction of the Oregon Department of Transportation (ODOT). As a condition of approval, the Applicant shall obtain an approach permit from ODOT prior to construction.

C. **Traffic Study Requirements.** The City, in reviewing a development proposal or other action requiring an approach permit, may require a traffic impact analysis, pursuant to Section 17-3.6.020, to determine compliance with this Code.

**Findings:** The Applicant submitted a Traffic Impact Study prepared by a Registered Engineer and addressing the appropriate standards as part of the application package. This standard is met.



D. **Approach and Driveway Development Standards.** Approaches and driveways shall conform to all of the following development standards:

1. The number of approaches on higher classification streets (e.g., collector and arterial streets) shall be minimized; where practicable, access shall be taken first from a lower classification street.

**Findings:** The subject property's only street frontage is to OR-211, from which the Applicant proposes a single access. This access also serves parcels associated with Cascade Center. This standard is met.

2. Approaches shall conform to the spacing standards of subsections E and F, below, and shall conform to minimum sight distance and channelization standards of the roadway authority.

**Findings:** The subject property is adjacent to OR-211, which is under ODOT jurisdiction. Due to existing access placements on neighboring properties, there is no possible placement for the proposed approach within the subject site that would meet required access separation requirements on all sides. In pre-application meetings, ODOT recommended an shared access location straddling the border of the subject parcel and adjacent parcel to the west, concurrently abandoning a proposed accesses to Cascade Center between 720 W Main ST and 740 W Main ST. ODOT has concurred on the proposed location in comments provided to the City on this application. This standard is met.

3. Driveways shall be paved and meet applicable construction standards. Where permeable paving surfaces are allowed or required, such surfaces shall conform to applicable Public Works Design Standards.

**Findings:** The Applicant has proposed a paved driveway and shall be designed to meet all Molalla Public Works Design Standards. This standard is met.

4. The City Engineer may limit the number or location of connections to a street, or limit directional travel at an approach to one-way, right-turn only, or other restrictions, where the roadway authority requires mitigation to alleviate safety or traffic operations concerns.

**Findings:** Only one access from OR-211 is proposed by the Applicant. The property also connects to points within the Cascade Center development by way of a private drive along the northern portion of the subject parcel. ODOT comments (see exhibit G) did not recommend limitations to directional travel or other mitigation measures. This standard is met.

5. Where the spacing standards of the roadway authority limit the number or location of connections to a street or highway, the City Engineer may require a driveway extend to one or more edges of a parcel and be designed to allow for future extension and inter-parcel circulation as adjacent properties develop. The City Engineer may also require the owner(s) of the subject site to record an access easement for future joint use of the approach and driveway as the adjacent property(ies) develop(s).

**Findings:** This standard is met subject to conditions of approval. The Applicant's submitted application shows that the proposed driveway extends to the private drive on the south side of the parcel that connects westward to points within Cascade Center. As a condition of approval, the Applicant shall record cross access easements and maintenance agreements between the subject parcel and Cascade Center parcels west of S Leroy Ave for utilization of the proposed access to OR-211 and the private drive networks to the west prior to occupancy.

The Applicant has not proposed to extend the private drive to the east towards the existing storage facility. With an unlikely redevelopment of parcels to the east in the foreseeable future, Staff finds an aesthetic benefit to retaining the proposed green space within that portion of the property. To facilitate inter-parcel circulation if and when parcels to the east develop the Applicant shall record cross access easements between the subject parcel and parcels to the east prior to occupancy.

6. Where applicable codes require emergency vehicle access, approaches and driveways shall be designed and constructed to accommodate emergency vehicle apparatus and shall conform to applicable fire protection requirements. The City Engineer may restrict parking, require signage, or require other public safety improvements pursuant to the recommendations of an emergency service provider.

**Findings:** This standard is met subject to a condition of approval. As a condition of approval, the Applicant shall confirm that the turning radius for the new parking area can accommodate fire apparatus in their engineering plan submittals.

7. As applicable, approaches and driveways shall be designed and constructed to accommodate truck/trailer-turning movements.

**Findings:** This standard is met subject to a condition of approval. The Applicant's submitted truck turning template shows a turning motion into the site from the opposite lane of traffic from OR-211. Because of this misalignment, Staff cannot evaluate the ability of the access to accommodate proposed truck traffic and fire access. As a condition of approval, the Applicant shall submit a revised truck turning template plan with civil review plans showing truck turning radii for the largest proposed vehicle to enter the site to ensure the proposed approaches can accommodate that vehicle. This plan shall show turning motions from the appropriate lanes from the ROW in OR-211.

8. Except where the City Engineer and roadway authority, as applicable, permit an open access with perpendicular or angled parking, driveways shall accommodate all projected vehicular traffic on-site without vehicles stacking or backing up onto a street.
9. Driveways shall be designed so that vehicle areas, including, but not limited to, drive-up and drive-through facilities and vehicle storage and service areas, do not obstruct any public right-of-way.

**Findings:** All proposed off-street parking and drive-through facilities are interior to the site and the submitted TIA shows that no queuing will enter the right-of-way. These standards are met.

10. Approaches and driveways shall not be wider than necessary to safely accommodate projected peak hour trips and turning movements, and shall be designed to minimize crossing distances for pedestrians.

**Findings:** The Applicant's submitted application shows a 30' wide approach, which is designed to accommodate trucks and emergency vehicles and is consistent with Molalla Public Works Standards. This standard is met.

11. As it deems necessary for pedestrian safety, the City Engineer, in consultation with the roadway authority, as applicable, may require that traffic-calming features, textured driveway surfaces (e.g., pavers or similar devices), curb extensions, signage or traffic control devices, or other features, be installed on or in the vicinity of a site as a condition of development approval.

**Findings:** Neither the City Engineer nor the roadway authority recommend any traffic calming features, nor are any proposed. This standard is met.

12. Construction of approaches along acceleration or deceleration lanes, and along tapered (reduced width) portions of a roadway, shall be avoided; except where no reasonable alternative exists and the approach does not create safety or traffic operations concern.

**Findings:** The Applicant's proposal does not include construction of approaches along acceleration or deceleration lanes or along tapered portions of the roadway. This standard does not apply.

13. Approaches and driveways shall be located and designed to allow for safe maneuvering in and around loading areas, while avoiding conflicts with pedestrians, parking, landscaping, and buildings.

**Findings:** The Applicant's submitted site plan shows separation between pedestrian and vehicular circulation areas. Loading areas are likewise separated to reduce conflict. This standard is met.

14. Where sidewalks or walkways occur adjacent to a roadway, driveway aprons constructed of concrete shall be installed between the driveway and roadway edge. The roadway authority may require the driveway apron be installed outside the required sidewalk or walkway surface, consistent with Americans with Disabilities Act (ADA) requirements, and to manage surface water runoff and protect the roadway surface.

**Findings:** The Applicant's proposal includes a new sidewalk within the right-of-way that meets City and ODOT standards for materials and width. This standard is met.

15. Where an accessible route is required pursuant to ADA, approaches and driveways shall meet accessibility requirements where they coincide with an accessible route.

**Findings:** This standard is met subject to a condition of approval. As a condition of approval, all approaches and driveways shall meet ADA accessibility requirements where they coincide with an accessible route.

16. The City Engineer may require changes to the proposed configuration and design of an approach, including the number of drive aisles or lanes, surfacing, traffic-calming features, allowable turning movements, and other changes or mitigation, to ensure traffic safety and operations.

**Findings:** With the potential exception of approach modifications to accommodate truck and emergency vehicle movements mentioned above, no changes are required to the proposed configuration and design of the approach. This standard is met.

17. Where a new approach onto a state highway or a change of use adjacent to a state highway requires ODOT approval, the applicant is responsible for obtaining ODOT approval. The City Engineer may approve a development conditionally, requiring the applicant first obtain required ODOT permit(s) before commencing development, in which case the City will work cooperatively with the applicant and ODOT to avoid unnecessary delays.

**Findings:** This condition is met subject to a condition of approval. The Applicant's submitted application shows that the applicant proposes access from OR-211 and is under the jurisdiction of the Oregon Department of Transportation (ODOT). As a condition of approval, the Applicant shall obtain an approach permit from ODOT prior to construction.

18. Where an approach or driveway crosses a drainage ditch, canal, railroad, or other feature that is under the jurisdiction of another agency, the applicant is responsible for obtaining all required approvals and permits from that agency prior to commencing development.
19. Where a proposed driveway crosses a culvert or drainage ditch, the City Engineer may require the developer to install a culvert extending under and beyond the edges of the driveway on both sides of it, pursuant to applicable Public Works Design Standards.

**Findings:** The Applicants proposed approach does not cross a feature under the jurisdiction of another agency, including a drainage culvert or ditch. These criteria do not apply.

20. Except as otherwise required by the applicable roadway authority or waived by the City Engineer temporary driveways providing access to a construction site or staging area shall be paved or graveled to prevent tracking of mud onto adjacent paved streets.

**Findings:** These standards are met subject to a condition of approval. As a condition of approval, temporary driveways providing access to a construction site or staging area shall be paved or graveled to prevent tracking of mud onto adjacent paved streets.

21. Development that increases impervious surface area shall conform to the storm drainage and surface water management requirements of Section 17-3.6.050.

**Findings:** These standards are met subject to conditions of approval. Applicant submitted a stormwater drainage plan with their application package. Onsite private storm system shall comply with plumbing code requirements. The detention and flow control facilities shall be reviewed, permitted, and inspected by Molalla Public Works. The onsite storm conveyance system shall be reviewed and inspected by Clackamas County Building under a plumbing permit, in accordance with MMC 13.13 Surface Water Management. Additional stormwater analysis is provided in Staff responses to Section 17-3.6.050.

- E. **Approach Separation from Street Intersections.** Except as provided by subsection H, minimum distances shall be maintained between approaches and street intersections consistent with the current version of the Public Works Design Standards and Transportation System Plan.
- F. **Approach Spacing.** Except as provided by subsection H or as required to maintain street operations and safety, the following minimum distances shall be maintained between approaches consistent with the current version of the Public Works Design Standards and Transportation System Plan.

**Findings:** These standards are met subject to a condition of approval. The subject property is adjacent to OR-211, which is under ODOT jurisdiction. Due to existing access placements on neighboring properties, there is no possible placement for the proposed approach within the subject site that would meet required access separation requirements. With that said, the proposed approach location addresses safety and circulation concerns much more sufficiently than other locations on the property and addresses the concerns of the relocated access for Cascade Center. As a condition of approval, all driveway approaches shall be designed and constructed consistent with the current version of the Molalla Public Works Design Standards, Molalla Transportation Systems Plan, and ODOT standards.

G. **Vision Clearance.** No visual obstruction (e.g., sign, structure, solid fence, or shrub vegetation) greater than 2.5 feet in height shall be placed in “vision clearance areas” at street intersections.. The minimum vision clearance area may be modified by the Planning Official through a Type I procedure, upon finding that more or less sight distance is required (i.e., due to traffic speeds, roadway alignment, etc.). Placement of light poles, utility poles, and tree trunks should be avoided within vision clearance areas.

**Findings:** This standard is met subject to conditions of approval. As an ongoing condition of approval, no visual obstructions shall be placed in vision clearance areas.

H. **Exceptions and Adjustments.** The City Engineer may approve adjustments to the spacing standards of subsections E and F, above, where an existing connection to a City street does not meet the standards of the roadway authority and the proposed development moves in the direction of code compliance. The Planning Official through a Type II procedure may also approve a deviation to the spacing standards on City streets where it finds that mitigation measures (removal of one access), joint use driveways (more than one property uses same access), directional limitations (e.g., one-way), turning restrictions (e.g., right-in/ right-out only), or other mitigation alleviate all traffic operations and safety concerns.

**Findings:** The Applicant has not submitted any requests for exceptions and adjustment to access and spacing standards and non are requested by City Staff or ODOT. This standard is met.

I. **Joint Use Access Easement and Maintenance Agreement.** Where the City approves a joint use driveway, the property owners shall record an easement with the deed allowing joint use of and cross access between adjacent properties. The owners of the properties agreeing to joint use of the driveway shall record a joint maintenance agreement with the deed, defining maintenance responsibilities of property owners. The applicant shall provide a fully executed copy of the agreement to the City for its records, but the City is not responsible for maintaining the driveway or resolving any dispute between property owners.

**Findings:** This condition is met subject to a condition of approval. The Applicant's submitted application shows that the applicant proposes access from OR-211 and is under the jurisdiction of the Oregon Department of Transportation (ODOT). This proposed access serves properties on the eastern side of Cascade Center in addition to the proposed development. As a condition of approval, the Applicant shall record joint use access and maintenance agreements with adjacent properties within the Cascade Center development and properties to the east prior to occupancy.

### 17-3.3.040 Pedestrian Access and Circulation

B. **Standards.** Developments shall conform to all of the following standards for pedestrian access and circulation as generally illustrated in Figure 17-3.3-3:

1. **Continuous Walkway System.** A pedestrian walkway system shall extend throughout the development site and connect to adjacent sidewalks, if any, and to all future phases of the development, as applicable.

**Findings:** The Applicant's submitted site plan shows a continuous sidewalk along the OR-211 frontage connecting with existing sidewalks to the east and west. The proposed private walkway connected the proposed public sidewalk to the proposed development and points west within Cascade Center. The onsite network connecting the public sidewalk to the proposed building, proposed parking, and extends to Parcel 2 for future development. This standard is met.

2. **Safe, Direct, and Convenient.** Walkways within developments shall provide safe, reasonably direct, and convenient connections between primary building entrances and all adjacent parking areas, recreational areas, playgrounds, and public rights-of-way conforming to the following standards:
  - a. The walkway is reasonably direct when it follows a route that does not deviate unnecessarily from a straight line or it does not involve a significant amount of out-of-direction travel.
  - b. The walkway is designed primarily for pedestrian safety and convenience, meaning it is reasonably free from hazards and provides a reasonably smooth and consistent surface and direct route of travel between destinations. The Planning Official may require landscape buffering between walkways and adjacent parking lots or driveways to mitigate safety concerns.

- c. The walkway network connects to all primary building entrances, consistent with the building design standards of Chapter 17-3.2 and, where required, Americans with Disabilities Act (ADA) requirements.

**Findings:** These standards are met subject to a condition of approval. Proposed sidewalks form a direct connection between the roadway, building, parking, and development within Cascade Center. Proposed walkways promote vehicle/pedestrian separation to the extent practicable and are free of hazards.

As a condition of approval, all walkways connecting to primary building entrances shall be designed consistent with ADA requirements.

3. **Vehicle/Walkway Separation.** Except as required for crosswalks, per subsection 4, below, where a walkway abuts a driveway or street it shall be raised six inches and curbed along the edge of the driveway or street. Alternatively, the Planning Official may approve a walkway abutting a driveway at the same grade as the driveway if the walkway is physically separated from all vehicle-maneuvering areas. An example of such separation is a row of bollards (designed for use in parking areas) with adequate minimum spacing between them to prevent vehicles from entering the walkway.

**Findings:** The Applicant's submitted narrative states that the proposed walkway shall be raised from vehicle maneuvering areas and curbed with the exception of drive aisle crossings. This standard is met.

4. **Crosswalks.** Where a walkway crosses a parking area or driveway ("crosswalk"), it shall be clearly marked with contrasting paving materials (e.g., pavers, light-color concrete inlay between asphalt, or similar contrasting material). The crosswalk may be part of a speed table to improve driver-visibility of pedestrians. Painted or thermo-plastic striping and similar types of non-permanent applications are discouraged, but may be approved for lesser used crosswalks not exceeding 24 feet in length.

**Response:** The Applicant's submitted site plan shows crosswalks at all intersections with the proposed drive aisles and proposes striping as all drive aisles exceed 24'. This standard is met.

5. **Walkway Width and Surface.** Walkways, including access ways required for subdivisions pursuant to Chapter 17-4.3, shall be constructed of concrete, asphalt, brick or masonry pavers, or other durable surface, as approved by the City Engineer, and not less than six feet wide. Multi-use paths (i.e., designed for shared use by bicyclists and pedestrians) shall be concrete or asphalt and shall conform to the current version of the Public Works Design Standards and Transportation System Plan.



6. **Walkway Construction (Private).** Walkway surfaces may be concrete, asphalt, brick or masonry pavers, or other City-approved durable surface meeting ADA requirements. Walkways shall be not less than six feet in width in commercial and mixed use developments and where access ways are required for subdivisions under Division IV.

**Findings:** The Applicant's submitted site plan shows proposed sidewalks and walkways that are at least 6ft in width and the submitted narrative states that they will be designed with appropriate materials to meet standards of this code. These standards are met.

7. **Multi-Use Pathways.** Multi-use pathways, where approved, shall be a minimum width and constructed of materials consistent with the current version of the Public Works Design Standards and Transportation System Plan.

**Findings:** No multi-use pathway are proposed. This standard does not apply.

## Chapter 17-3.4 Landscaping, Fences and Walls, Outdoor Lighting

### 17-3.4.030 Landscaping and Screening

- A. **General Landscape Standard.** All portions of a lot not otherwise developed with buildings, accessory structures, vehicle maneuvering areas, or parking shall be landscaped.

**Findings:** The Applicant's submitted landscaping plan shows that all areas of the subject parcel that are not developed with buildings, vehicular areas or pedestrian areas will be landscaped. This standard is met.

- B. **Minimum Landscape Area.** All lots shall conform to the minimum landscape area standards of the applicable zoning district, as contained in Tables 17-2.2.040.D and 17-2.2.040.E. The Planning Official, consistent with the purposes in Section 17-3.4.010, may allow credit toward the minimum landscape area for existing vegetation that is retained in the development.

**Findings:** The Applicant's submitted landscaping plan shows 5,420 SF of landscaped area for approximately 14% of the subject parcel. This exceeds the 5% standard for commercial zones in Tables 17-2.2.040.E. This standard is met.

- C. **Plant Selection.** A combination of deciduous and evergreen trees, shrubs, and ground covers shall be used for all planted areas, the selection of which shall be based on local climate, exposure, water availability, and drainage conditions, among other factors.

When new vegetation is planted, soils shall be amended and irrigation shall be provided, as necessary, to allow for healthy plant growth. The selection of plants shall be based on all of the following standards and guidelines:

1. Use plants that are appropriate to the local climate, exposure, and water availability. The presence of utilities and drainage conditions shall also be considered.
2. Plant species that do not require irrigation once established (naturalized) are preferred over species that require irrigation.
3. Trees shall be not less than two-inch caliper for street trees and one and one-half-inch caliper for other trees at the time of planting. Trees to be planted under or near power lines shall be selected so as to not conflict with power lines at maturity.
4. Shrubs shall be planted from five-gallon containers, minimum, where they are for required screens or buffers, and two-gallon containers minimum elsewhere.
5. Shrubs shall be spaced in order to provide the intended screen or canopy cover within two years of planting.
6. All landscape areas, whether required or not, that are not planted with trees and shrubs or covered with allowable non-plant material, shall have ground cover plants that are sized and spaced to achieve plant coverage of not less than 75 percent at maturity.
7. Bark dust, chips, aggregate, or other non-plant ground covers may be used, but shall cover not more than 35 percent of any landscape area. Non-plant ground covers cannot be a substitute for required ground cover plants.
8. Where stormwater retention or detention, or water quality treatment facilities are proposed, they shall meet the requirements of the current version of the Public Works Design Standards.
9. Existing mature trees that can thrive in a developed area and that do not conflict with other provisions of this Code shall be retained where specimens are in good health, have desirable aesthetic characteristics, and do not present a hazard.
10. Landscape plans shall avoid conflicts between plants and buildings, streets, walkways, utilities, and other features of the built environment.
11. Evergreen plants shall be used where a sight-obscuring landscape screen is required.
12. Deciduous trees should be used where summer shade and winter sunlight is desirable.
13. Landscape plans should provide focal points within a development, for example, by preserving large or unique trees or groves or by using flowering plants or trees with fall color.
14. Landscape plans should use a combination of plants for seasonal variation in color and yearlong interest.
15. Where plants are used to screen outdoor storage or mechanical equipment, the selected plants shall have growth characteristics that are compatible with such features.

16. Landscape plans shall provide for both temporary and permanent erosion control measures, which shall include plantings where cuts or fills, including berms, swales, stormwater detention facilities, and similar grading, is proposed.
17. When new vegetation is planted, soils shall be amended and irrigation provided, as necessary, until the plants are naturalized and able to grow on their own.

**Findings:** These standards are met subject to a condition of approval. Applicant's submitted landscaping plan shows locally adapted plants that meet size specifications. The submitted landscaping plan is compliant with coverage specifications.

The Applicant's submitted tree removal plan site plans show 19 existing trees onsite, including 13 that have a circumference (based on diameter of breast height) greater than 12 inches, meeting most accepted definitions for a "mature tree." MMC Section 21.90.020 Tree Retention subsection C requires that *"Any tree that is removed shall be replanted on the same lot within 1 year unless the Planning Director determines that an adequate number of trees remain on the property."* Several of these mature trees are the invasive ailanthus "tree of heaven" which will require removal per MMC 8.05.040.

The Applicant proposes removing all existing trees on the parcel and replanting 8 trees onsite. Staff requires further investigation to determine that it is appropriate to remove all existing trees. Of the trees proposed for removal, the Applicant shall provide a report from a certified arborist prior to building or grading permit for mature trees numbered 12849, 12857, 12858, and 12859 to determine viability for survival within the proposed development or state an intention to keep these trees. These trees are sited outside of the development envelope, are not invasive, and retention would provide an aesthetic benefit. If the arborists report determines that they would have a substantial chance for survival after buildout, the Applicant shall retain these trees. In that instance, the Applicant may modify location of proposed trees in their vicinity to ensure their survival. If the trees are determined unlikely to survive they may be removed.

Staff recommends granting approval removal for all onsite trees not listed above as part of this decision.

**D. Central Commercial C-1 District Streetscape Standard.** Developers of projects within the Central Commercial C-1 zoning district can meet the landscape area requirement of subsection B, in part, by installing street trees in front of their projects. The Planning Official shall grant credit toward the landscape area requirement using a ratio of 1:1, where one square foot of planted area (e.g., tree well or planter surface area) receives one square foot of credit. The Planning Official may grant additional landscape area credit by the same ratio where the developer widens the sidewalk or creates a plaza or other civic space pursuant to Section 17-3.2.050.

**Findings:** The subject property is not in the C-1 zone. These standards do not apply.

E. **Parking Lot Landscaping.** All of the following standards shall be met for parking lots. If a development contains multiple parking lots, then the standards shall be evaluated separately for each parking lot.

1. A minimum of 10 percent of the total surface area of all parking areas, as measured around the perimeter of all parking spaces and maneuvering areas, shall be landscaped. Such landscaping shall consist of shade trees distributed throughout the parking area. A combination of deciduous and evergreen trees, shrubs, and ground cover plants is required. The trees shall be planned so that they provide a partial canopy cover over the parking lot within five years. At a minimum, one tree per 12 parking spaces on average shall be planted over and around the parking area.

**Findings:** The Applicant's submitted landscaping plan shows 11% of the parking area landscaped. Two trees are proposed within the vehicle maneuvering areas, meeting the two required trees for 16 parking spaces by this section. This standard is met.

2. All parking areas with more than 20 spaces shall provide landscape islands with trees that break up the parking area into rows of not more than 10 contiguous parking spaces. Landscape islands and planters shall have dimensions of not less than 48 square feet of area and no dimension of less than six feet, to ensure adequate soil, water, and space for healthy plant growth.

**Findings:** The Applicant's submitted site plans show 16 parking spaces. These standards do not apply.

3. All required parking lot landscape areas not otherwise planted with trees must contain a combination of shrubs and groundcover plants so that, within two years of planting, not less than 50 percent of that area is covered with living plants.

**Findings:** The Applicant's submitted landscaping plan shows that parking landscaping areas not planted with trees have proposed shrubs and groundcover that cover at least 50% of the landscaping area. This standard is met.

4. Wheel stops, curbs, bollards, or other physical barriers are required along the edges of all vehicle-maneuvering areas to protect landscaping from being damaged by vehicles. Trees shall be planted not less than two feet from any such barrier.

**Findings:** The Applicant's submitted narrative states that areas around parking stalls will have either curbs or wheel stops to protect landscaping areas. This standard is met.

5. Trees planted in tree wells within sidewalks or other paved areas shall be installed with root barriers, consistent with applicable nursery standards.

**Findings:** The Applicant's submitted narrative states that all planned trees will be installed with root barriers. This standard is met.

F. **Screening Requirements.** Screening is required for outdoor storage areas, unenclosed uses, and parking lots, and may be required in other situations as determined by the Planning Official. Landscaping shall be provided pursuant to the standards of subsections F.1 through 3. (See also Figure 17-3.4-4.)

1. **Outdoor Storage and Unenclosed Uses.** All areas of a site containing or proposed to contain outdoor storage of goods, materials, equipment, and vehicles (other than required parking lots and service and delivery areas, per Site Design Review), and areas containing junk, salvage materials, or similar contents, shall be screened from view from adjacent rights-of-way and residential uses by a sight-obscuring fence, wall, landscape screen, or combination of screening methods. See also Section 17-3.4.040 for related fence and wall standards.

**Findings:** The Applicant's submitted application includes a trash enclosure that will be screened. The application does not include any outdoor storage areas. This standard does not apply.

2. **Parking Lots.** The edges of parking lots shall be screened to minimize vehicle headlights shining into adjacent rights-of-way and residential yards. Parking lots abutting a sidewalk or walkway shall be screened using a low-growing hedge or low garden wall to a height of between three feet and four feet.

**Findings:** The Applicant's submitted landscaping plan shows that all parking areas are screened by vegetation. This standard is met.

3. **Other Uses Requiring Screening.** The Planning Official may require screening in other situations as authorized by this Code, including, but not limited to, outdoor storage areas, blank walls, Special Uses pursuant to Chapter 17-2.3, flag lots, and as mitigation where an applicant has requested an adjustment pursuant to Chapter 17-4.7.

**Findings:** Staff does not propose additional requirements for screening with this application.

**G. Maintenance.** All landscaping shall be maintained in good condition, or otherwise replaced by the property owner.

**Findings:** This standard can be met with a condition of approval. As an ongoing condition of approval all landscaping shall be maintained in good condition, or otherwise replaced by the property owner.

### 17-3.4.040 Fences and Walls

A. **Purpose.** This section provides general development standards for fences, and walls that are not part of a building, such as screening walls and retaining walls.

B. **Applicability.** Section 17-3.4.040 applies to all fences, and to walls that are not part of a building, including modifications to existing fences and walls.

**Findings:** The Applicant's proposal includes a fence around the proposed trash enclosure to which this section applies.

C. **Height.**

#### 1. Residential Zones.

**Findings:** The Applicant's proposal is in a non-residential zone. These standards do not apply.

2. **Non-Residential Zones.** Fences and freestanding walls (i.e., exclusive of building walls) for non-residential uses shall not exceed the following height above grade, where grade is measured from the base of the subject fence or wall.

a. Within Front or Street-Facing Side Yard Setback. Four feet, except the following additional height is allowed for properties located within an industrial, public, or institutional zone:

(1) Where approved by the City Planning Official, a fence constructed of open chain link or other "see-through" composition that allows 90 percent light transmission may reach a height of up to eight feet.

b. Within an Interior Side or Rear Yard Setback. Eight feet; except the fence or wall height, as applicable, shall not exceed the distance from the fence or wall line to the nearest primary structure on an adjacent property.

**Findings:** The Applicant does not propose any fences or walls within setback areas. These standards do not apply.

3. **All Zones.** Fences and walls shall comply with the vision clearance standards of Section 17-3.3.030.G. Other provisions of this Code, or the requirements of the roadway authority, may limit allowable height of a fence or wall below the height limits of this section.

**Findings:** No fences and walls are proposed in vision clearance areas as a part of this application. This standard is met.

- D. **Materials.** Prohibited fence and wall materials include straw bales, tarps, barbed or razor wire (except in the M-2 Heavy Industrial zone); scrap lumber, untreated wood (except cedar or redwood), corrugated metal, sheet metal, scrap materials; dead, diseased, or dying plants; and materials similar to those listed herein.

**Findings:** No prohibited materials are proposed in the construction of the proposed fence. This standard is met.

- E. **Permitting.** A Type I approval is required to install a fence of six feet or less in height, or a wall that is four feet or less in height. All other walls and fences require review and approval by the Planning Official through a Type II procedure. The Planning Official may require installation of walls or fences as a condition of approval for development, as provided by other Code sections. A building permit may be required for some fences and walls, pursuant to applicable building codes. Walls greater than four feet in height shall be designed by a Professional Engineer licensed in the State of Oregon.

**Findings:** Staff recommends approval of the proposed trash enclosure fence as part of this site design review.

- F. **Maintenance.** Fences and walls shall be maintained in good condition, or otherwise replaced by the property owner. (Ord. 2017-08 §1)

**Findings:** This standard is met subject to a condition of approval. As an ongoing condition of approval, fences and walls shall be maintained in good condition, or otherwise replaced by the property owner.

### 17-3.4.050 Outdoor Lighting

- A. **Purpose.** This section contains regulations requiring adequate levels of outdoor lighting while minimizing negative impacts of light pollution.
- B. **Applicability.** All outdoor lighting shall comply with the standards of this section.

### C. Standards.

1. Light poles, except as required by a roadway authority or public safety agency, shall not exceed a height of 20 feet; pedestal- or bollard-style lighting shall be used to illuminate walkways. Flag poles, utility poles, and streetlights are exempt from this requirement.

**Findings:** The Applicant's submitted lighting specifications show no proposed poles over 20 feet in height. This standard is met.

2. Where a light standard is placed over a sidewalk or walkway, a minimum vertical clearance of eight feet shall be maintained.

**Findings:** The Applicant's submitted lighting plan shows no proposed poles over walkways with less than 8 feet of clearance. This standard is met.

3. Outdoor lighting levels shall be subject to review and approval through Site Design Review. As a guideline, lighting levels shall be no greater than necessary to provide for pedestrian safety, property or business identification, and crime prevention.

**Findings:** The Applicant's submitted narrative states that lighting levels are designed for safety. Target lighting levels meet below standards. This standard is met.

4. Except as provided for up-lighting of flags and permitted building-mounted signs, all outdoor light fixtures shall be directed downward, and have full cutoff and full shielding to preserve views of the night sky and to minimize excessive light spillover onto adjacent properties.

**Findings:** The Applicant's submitted lighting specifications show fixtures that direct light downwards with cutoff and shielding toward the night sky and adjacent properties. This standard is met.

5. Lighting shall be installed where it will not obstruct public ways, driveways, or walkways.

**Findings:** The Applicant's submitted lighting plan shows that proposed locations do not obstruct public ways, driveways, or walkways. This standard is met.

6. Walkway lighting in private areas shall have a minimum average illumination of not less than 0.2 foot-candles. Lighting along public walkways shall meet the current version of the Public Works Design Standards and AASHTO lighting requirements.



**Findings:** The Applicant's submitted lighting plan shows that the planned walkway lighting has an average illumination of 1.9 foot-candles. This standard is met.

7. Active building entrances shall have a minimum average illumination of not less than two foot-candles.

**Findings:** The Applicant's submitted lighting plan shows that the planned walkway lighting has an average illumination greater than 2 foot-candles. This standard is met.

8. Surfaces of signs shall have an illumination level of not more than two foot-candles.

**Findings:** The Applicant has not submitted signage with this application. This standard does not apply. Proposed signs will be held to this standard as submitted.

9. Parking lots and outdoor services areas, including quick vehicle service areas, shall have a minimum illumination of not less than 0.2 foot-candles, average illumination of approximately 0.8 foot-candles, and a uniformity ratio (maximum-to-minimum ratio) of not more than 20:1.

**Findings:** This standard is met subject to a condition of approval. For the parking area, the Applicant's submitted lighting plan shows an overall average illumination of 1.4 foot-candles and a ratio of 20:1. No portion of the parking area has an illumination area less than 0.2 foot candles. The Applicant has not shown illumination levels for all of the fueling service areas. It is not clear whether there is no illumination for parts of the fueling station or whether canopy illumination is not shown. As a condition of approval, the Applicant shall submit a revised lighting plan meeting standards and that incorporates the entire fueling station area.

10. Where illumination grid lighting plans cannot be reviewed or if fixtures do not provide photometrics and bulbs are under 2,000 lumens, use the following guidelines:
  - a. Poles should be no greater in height than four times the distance to the property line.
  - b. Maximum lumen levels should be based on fixture height.
  - c. Private illumination shall not be used to light adjoining public right-of-way.

**Findings:** The Applicant has submitted a photometrics plan meeting standards. These standards do not apply.

11. Where a light standard is placed within a walkway, an unobstructed pedestrian through zone not less than 48 inches wide shall be maintained.

**Findings:** The Applicant's submitted lighting plan does not include lighting standards within the pedestrian walkway. This standard is met.

12. Lighting subject to this section shall consist of materials approved for outdoor use and shall be installed according to the manufacturer's specifications.

**Findings:** This Applicant's submitted lighting specifications show lighting that are intended for outdoor use. Applicant states in their narrative that they will install lighting to manufacturers specifications. This standard is met.

- D. Permitting. A Type I approval is required to install or replace outdoor lighting. The Planning Official may require lighting as a condition of approval for some projects, pursuant to other Code requirements.
- E. Maintenance. For public health and safety, outdoor lighting shall be maintained in good condition, or otherwise replaced by the property owner. (Ord. 2017-08 §1)

**Findings:** These standards are met subject to a condition of approval. As an ongoing condition of approval, all outdoor lighting shall be maintained in good condition, or otherwise replaced by the property owner.

## Chapter 17-3.5 Parking and Loading

### Section 17-3.5.020 Applicability and General Regulations

- A. **Where the Regulations Apply.** The regulations of this chapter apply to all parking areas in all zones, at all times, whether parking is required by this Code or put in for the convenience of property owners or users.
- B. **Occupancy.** All required parking areas must be developed in accordance with the requirements of this Code prior to occupancy of any structure on the subject site. Where landscaping, screening, or other improvements are required pursuant to this Code, all such improvements must be installed and approved by the Planning Official prior to occupancy.

**Findings:** These standards are met subject to a condition of approval. As a condition of approval, all landscaping, parking, lighting, and other improvements shall be installed by the Applicant and approved by the Planning Official prior to occupancy.

**C. Calculations of Amounts of Required and Allowed Parking.**

1. When computing parking spaces based on floor area, parking structures and non-leasable floor spaces, such as storage closets, mechanical equipment rooms, and similar spaces, are not counted.
2. The number of parking spaces is computed based on the primary uses on the site except as stated in subsection C.3. When there are two or more separate primary uses on a site, the minimum and maximum parking for the site is the sum of the required or allowed parking for the individual primary uses. For shared parking, see Section 17-3.5.030.D.
3. When more than 50 percent of the floor area on a site is in an accessory use, the required or allowed parking is calculated separately for the accessory use. An example would be a 10,000 square foot building with a 7,000 square foot warehouse and a 3,000 square foot accessory retail area. The minimum and maximum parking would be computed separately for the retail and warehouse uses.
4. Required parking spaces periodically used for the storage of equipment or goods may be counted toward meeting minimum parking standards, provided that such storage is an allowed use under Section 17-2.2.030, and is permitted as a Temporary Use under Section 17-2.3.160.

**Findings:** Parking is considered for the fueling station and convenience store uses. Parking spaces are intended for temporary vehicle storage uses only.

**D. Use of Required Parking Spaces.** Except as otherwise provided by this section, required parking spaces must be available for residents, customers, or employees of the use. Fees may be charged for the use of required parking spaces. Required parking spaces may not be assigned in any way to a use on another site, except for shared parking pursuant to Section 17-3.5.030.D.

**E. Proximity of Parking to Use.** Required parking spaces for residential uses must be located on the site of the use or on a parcel or tract owned in common by all the owners of the properties that will use the parking area. Required parking spaces for nonresidential uses must be located on the site of the use or in a parking area that has its closest pedestrian access point within 800 feet of the site.

**Findings:** Staff finds that the proposed parking spaces are provided for customers and employees of the site and that the proposed parking lot is on site and closer than 800 ft from primary pedestrian entrances. These standards are met.

- F. **Improvement of Parking Areas.** Motorized vehicle parking is allowed only on streets with an improved shoulder of sufficient width; within garages, carports, and other approved structures; and on driveways or parking lots that have been developed in conformance with this Code. For applicable design standards, see Chapter 17-3.2 Building Orientation and Design; Chapter 17-3.3 Access and Circulation; Chapter 17-3.4 Landscaping, Fences and Walls, Outdoor Lighting and Chapter 17-3.6 Public Facilities. (Ord. 2017-08 §1)

**Findings:** There is no proposed parking within the right-of-way. All parking is onsite. This standard is met.

### Section 17-3.5.030 Automobile Parking

- A. **Minimum Number of Off-Street Automobile Parking Spaces.** Except as provided by this subsection A, or as required for Americans with Disabilities Act compliance under subsection G, off-street parking shall be provided pursuant to one of the following three standards:
1. The standards in Table 17-3.5.030.A;
  2. A standard from Table 17-3.5.030.A for a use that the Planning Official determines is similar to the proposed use; or
  3. Subsection B Exceptions, which includes a Parking Demand Analysis option.

**Findings:** Staff finds that the Applicant is providing parking for 4,165 SF of retail space and a fueling station. Minimum parking allowances for the site is 12 vehicular stalls. The Applicant's proposal includes 15 vehicular stalls. These standards are met.

B. **Carpool and Vanpool Parking Requirements.**

2. Carpool and vanpool parking spaces shall be identified for the following uses:
  - a. New commercial and industrial developments with 50 or more parking spaces;
  - b. New institutional or public assembly uses; and
  - c. Transit park-and-ride facilities with 50 or more parking spaces.
3. Of the total spaces available for employee, student, and commuter parking, at least five percent, but not fewer than two, shall be designated for exclusive carpool and vanpool parking.
4. Carpool and vanpool parking spaces shall be located closer to the main employee, student or commuter entrance than all other parking spaces with the exception of ADA parking spaces.
5. Required carpool/vanpool spaces shall be clearly marked "Reserved—Carpool/Vanpool Only."

**Findings:** The submitted proposal is for a commercial use with fewer than 50 parking spaces. No carpool or vanpool spaces have been proposed. This standard does not apply.

**C. Exceptions and Reductions to Off-Street Parking.**

**Findings:** The Applicant has not requested any off-street parking exceptions and Staff finds that no exceptions are necessary to meet compliance with this code. This standard does not apply.

- D. Maximum Number of Off-Street Automobile Parking Spaces.** The maximum number of off-street automobile parking spaces allowed per site equals the minimum number of required spaces for the use pursuant to Table 17-3.5.030.A, times a factor of:
1. 1.2 spaces for uses fronting a street with adjacent on-street parking spaces; or
  2. 1.5 spaces, for uses fronting no street with adjacent on-street parking; or
  3. A factor based on applicant's projected parking demand, subject to City approval.

**Findings:** Staff finds that the proposal has no available adjacent off-street parking, which allows for a maximum number of parking stalls that is 1.5x minimum requirements. Maximum parking standards for the proposed development are 18 vehicular stalls. The Applicant proposed 15 vehicular stalls. This standard is met.

- E. 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 overlap (e.g., uses primarily of a daytime versus nighttime nature; weekday uses versus weekend uses), and provided that the right of joint use is evidenced by a recorded deed, lease, contract, or similar written instrument establishing the joint use. Shared parking requests shall be subject to review and approval through a Type I Review.

**Findings:** The Applicant has not requested any shared parking arrangements. This standard does not apply.

- F. Parking Stall Design and Minimum Dimensions.** Where a new off-street parking area is proposed, or an existing off-street parking area is proposed for expansion, the entire parking area shall be improved in conformance with this Code. At a minimum the parking spaces and drive aisles shall be paved with asphalt, concrete, or other City-approved

materials, provided the Americans with Disabilities Act requirements are met, and shall conform to the minimum dimensions in Table 17-3.5.030.F and the figures below. All off-street parking areas shall contain wheel stops, perimeter curbing, bollards, or other edging as required to prevent vehicles from damaging buildings or encroaching into walkways, sidewalks, landscapes, or the public right-of-way. Parking areas shall also provide for surface water management, pursuant to Section 17-3.6.050.

**Findings:** All proposed stalls are at a 90 degree angle from the drive aisle. MMC Table 17-3.5.030 F requires that 90 degree angled spaces, as proposed, have at least:

18' stall depth.

8.5' stall curb width

23' drive aisle (2 way).

The Applicant's submitted site plan shows 18' stall depths, 8.5' stall widths, and a 23' drive aisle. This standard is met.

**G. Adjustments to Parking Area Dimensions.** The dimensions in subsection E are minimum standards. The Planning Official, through a Type II procedure, may adjust the dimensions based on evidence that a particular use will require more or less maneuvering area. For example, the Planning Official may approve an adjustment where an attendant will be present to move vehicles, as with valet parking. In such cases, a form of guarantee must be filed with the City ensuring that an attendant will always be present when the lot is in operation.

**Findings:** The Applicant has not requested any modifications to parking area dimensions and Staff finds that no adjustments are necessary to meet compliance with this code. This standard does not apply.

**H. Americans with Disabilities Act (ADA).** Parking shall be provided consistent with ADA requirements, including, but not limited to, the minimum number of spaces for automobiles, van-accessible spaces, location of spaces relative to building entrances, accessible routes between parking areas and building entrances, identification signs, lighting, and other design and construction requirements.

**Findings:** This standard is met subject to a condition of approval. As a condition of approval, parking shall be provided consistent with ADA requirements.

- I. **Electric Charging Stations.** Charging stations for electric vehicles are allowed as an accessory use to parking areas developed in conformance with this Code, provided the charging station complies with applicable building codes and any applicable state or federal requirements.

**Findings:** No electric charging stations are proposed. This standard does not apply.

### 17-3.5.040 Bicycle Parking

- A. **Standards.** Bicycle parking spaces shall be provided with new development and, where a change of use occurs, at a minimum, shall follow the standards in Table 17-3.5.040.A. Where an application is subject to Conditional Use Permit approval or the applicant has requested a reduction to an automobile-parking standard, pursuant to Section 17-3.5.030.C, the Planning Official may require bicycle parking spaces in addition to those in Table 17-3.5.040.A.
- B. **Design.** Bicycle parking shall consist of staple-design steel racks or other City-approved racks, lockers, or storage lids providing a safe and secure means of storing a bicycle, consistent with the Public Works Design Standards.
- C. **Exemptions.** This section does not apply to single-family and duplex housing, home occupations, and agricultural uses.
- D. **Hazards.** Bicycle parking shall not impede or create a hazard to pedestrians or vehicles and shall be located to not conflict with the vision clearance standards of Section 17-3.3.030.G.

**Findings:** The Applicant's submitted site plan shows 4 staple racks. The racks are provided onsite, by the northeast corner of the proposed building and adjacent to the proposed sidewalk the northern storefront. With 15 proposed on-site vehicle spaces, parking for 3 bicycles is required. The proposed bicycle parking area does not impede pedestrian traffic nor does it impede vision. Bicycle parking is in close proximity to the primary retail entrances. These standards are met.

### 17-3.5.040 Loading Areas

- A. **Purpose.** The purpose of Section 17-3.5.050 is to provide adequate loading areas for commercial and industrial uses that do not interfere with the operation of adjacent streets.
- B. **Applicability.** Section 17-3.5.050 applies to uses that are expected to have service or delivery truck visits. It applies only to uses visited by trucks with a 40-foot or longer

wheelbase, at a frequency of one or more vehicles per week. The Planning Official shall determine through a Type I review the number, size, and location of required loading areas, if any.

- C. **Standard.** Where an off-street loading space is required, it 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. The Planning Official may restrict the use of other public rights-of-way, so applicants are advised to provide complete and accurate information about the potential need for loading spaces.
- D. **Placement, Setbacks, and Landscaping.** Loading areas shall conform to the standards of Chapter 17-3.2 Building Orientation and Design; Chapter 17-3.3 Access and Circulation; and Chapter 17-3.4 Landscaping, Fences and Walls, Outdoor Lighting. Where parking areas are prohibited between a building and the street, loading areas are also prohibited.
- E. **Exceptions and Adjustments.** The Planning Official, through a Type I Review, may approve a loading area adjacent to or within a street right-of-way where it finds that loading and unloading operations are short in duration (i.e., less than one hour), infrequent, do not obstruct traffic during peak traffic hours, do not interfere with emergency response services, and are acceptable to the applicable roadway authority. (Ord. 2017-08 §1)

**Findings:** The Applicant submitted loading comments in an email dated 6/28/2022 as part of this application package. The Applicant does not propose loading areas for the convenience store and does not anticipate deliveries from trucks with a wheelbase greater than 40'. The Applicant's submitted comments state the proposed underground storage tanks for the fuel station on the drive aisle north of the fueling station is designed for trucks with a wheelbase of greater than 40'. It is situated such that it will not impact the pedestrian walkway nor adjacent streets or driveways. These standards are met.

## Chapter 17-3.6 Public Facilities

### 17-3.6.020 Transportation Standards

**Findings:** Transportation standards are met subject to conditions of approval.

1. Per MMC 17-3.6.020.A.4 the proposed development meets thresholds for Traffic Impact Analysis (TIA) due to exceeding the peak hour trip count of 25. For projects abutting OR-211, the City requires signal warrant analysis for all nine warrants regarding the OR-211 and Leroy Ave intersection to determine when the traffic signal designated in the Molalla



Transportation Systems Plan is required. Applicant has prepared and submitted a TIA for the proposed development that analyzed each signal warrant. The TIA which has been analyzed and accepted by the City and ODOT. Per ODOT warrant thresholds, the proposed development does not meet signal threshold at the OR-211/Leroy intersection and therefore no signal improvements will be required. The report raised no concerns that onsite queuing would impact City right-of-way functions.

2. OR 211 (W Main Street): OR 211 (W Main Street) is an arterial street under Oregon Department of Transportation (ODOT) jurisdiction. Applicant will be required to abandon the two existing driveway access points to the property. Applicant shall relocate existing east access to Cascade Center from the west side of adjacent property (between taxlots 52E08C 04900 and 52E08C 05000) and take access from a new shared connection off OR-211 (W Main Street) between the subject site and taxlot 52E08C 05000 to the west, minimizing the number of driveways taking access directly from OR-211. Driveway access shall extend to the southern edge of the parcel and connect to adjacent east-west access drive within Cascade Center.
3. Access to the State highway is regulated by OAR 734.51. Applicant is required to obtain a State Highway Approach Road Permit; donate right of way to ODOT to implement the OR 211 cross section in the city's TSP, construct frontage improvements consistent with the TSP, and obtain permits for work in the ODOT right of way.
4. The Applicant's submitted truck turning template shows a turning motion into the site from the opposite lane of traffic from OR-211. Because of this misalignment, Staff cannot evaluate the ability of the access to accommodate proposed truck traffic and fire access. As a condition of approval, the Applicant shall submit a revised truck turning template plan with civil review plans showing truck turning radii for the largest proposed vehicle to enter the site to ensure the proposed approaches can accommodate that vehicle. This plan shall show turning motions from the appropriate lanes from the ROW in OR-211.
5. Right-of-way Dedications/Donations: On ODOT rights of way, applicant will be required to donate sufficient right-of-way along variable width improvements and construct curb, sidewalk, and bike lanes as necessary to be consistent with Molalla TSP, ODOT and ADA standards. ODOT requires donations of right-of-way to follow the requirements of Chapter 5.322. Developer Mitigation Donation in the ODOT Right-of-Way Manual.
6. Access to public streets shall be limited to the location identified on the application materials or as required by ODOT. All accesses shall be constructed in such a manner as to eliminate turning conflicts. The proposed width for access shall meet ODOT requirements.
7. Applicant will be required to dedicate a 10-foot-wide public utility easement (PUE) fronting the public right-of-way if one does not exist and provide a copy of the recorded

dedication prior to occupancy. No structures are allowed to encroach into the easement. Applicant shall be required to submit a legal description and exhibit map for review and sign City easements. Once completed, applicant will be required to record easements with the County Recorder's Office and return the original document to the City prior to final occupancy. If an existing PUE exists, applicant shall provide proof of the existing dedication.

8. Roadway lighting is required on all new development. Applicant shall be required to design and install roadway lighting on OR-211. Location and number shall be determined during civil plan review.
9. An ODOT Miscellaneous Permit must be obtained for all work in the highway right of way. When the total value of improvements within the ODOT right of way is estimated to be \$100,000 or more, an agreement with ODOT is required to address the transfer of ownership of the improvement to ODOT. An Intergovernmental Agreement (IGA) is required for agreements involving local governments and a Cooperative Improvement Agreement (CIA) is required for private sector agreements. The agreement shall address the work standards that must be followed, maintenance responsibilities, and compliance with ORS 276.071, which includes State of Oregon prevailing wage requirements.

### **17-3.6.030 Public Use Areas**

**Findings:** No public use areas are proposed with this application. These standards do not apply.

### **17-3.6.040 Sanitary Sewer and Water Service Improvements**

#### **Sanitary:**

A 12-inch sewer main exists within OR-211. Applicant proposes to connect to existing 6-inch sanitary lateral located on the property. Applicant will be required to construct a public sanitary sewer cleanout meeting Molalla Standard Specifications for Public Works Construction.

#### **Water:**

A 12-inch water main exists on OR-211. Applicant proposes to connect to existing water service and provide separate fire protection via a DCDA Vault with FDC. Extension of fire protection will be from main line connection located on OR-211. If upsizing of water service is required during the review process, the difference between the existing SDC water credit and the upsized cost will apply in accordance with MMC 13.14 for water and sanitary service.

Should Fire Department regulations require additional fire flow that results in looping the water line through the site, then applicants engineer shall coordinate with Public Works for the extension of a public water line, and dedication of easements.

### **17-3.6.050 Storm Drainage and Surface Water Management Facilities**

**Findings:** Applicant proposes to collect and detain all stormwater onsite and discharge to Cascade Center Development facilities. Onsite private storm system shall comply with plumbing code requirements. The detention and flow control facilities shall be reviewed, permitted, and inspected by Public Works. The onsite storm conveyance system shall be reviewed and inspected by Clackamas County Building under a plumbing permit, in Accordance with MMC 13.13 Surface Water Management. Applicant shall record a private stormwater easement with Cascade Center. Staff advises confirming with ODOT whether discharge to Cascade Center stormwater facilities will result in additional State permitting.

Per comments from ODOT, An ODOT Miscellaneous Permit is required for connection to state highway drainage facilities. Connection will only be considered if the site's drainage naturally enters ODOT right of way. The applicant must provide ODOT District with a preliminary drainage plan showing impacts to the highway right of way.

A drainage study prepared by an Oregon Registered Professional Engineer is usually required by ODOT if:

1. Total peak runoff entering the highway right of way is greater than 1.77 cubic feet per second; or
2. The improvements create an increase of the impervious surface area greater than 10,758 square feet.

### **17-3.6.060 Utilities**

**Findings:** Utilities standards are met subject to a condition of approval. All utilities to the project shall be served underground services. No overhead crossings of public right of way shall be approved by the city.

### **17-3.6.070 Easements**

**Findings:** Required easement recordings include:

- Dedication of a 10 ft public utility easement is required along OR-211 frontage.
- Private stormwater easement with Cascade Center.
- Cross access easements between the subject parcels and parcels to the east and west

### 17-3.6.80 Construction Plan Approval

**Findings:** Construction Plan Approval standards are met subject to conditions of approval. From the materials submitted, it appears that the storm drain, domestic water, and sanitary sewer facilities will be obtained from main line connections and/or extensions. Separate engineering drawings reflecting the installation of public utilities will be required. Civil plans must be accepted prior to building permit authorization by the City. All public improvements shall be completed and accepted by the Public Works Department prior to issuance of any occupancy. No construction of, or connection to, any existing or proposed public utility/improvements will be permitted until all plans are approved by Staff, all fees have been paid, all necessary permits, bonding, right-of-way and easements have been obtained and approved by staff.

For commercial and industrial development projects, no building permit may be issued until all required public facility improvements are in place and approved by the City Engineer, or otherwise bonded, in conformance with the provision of the Code and the Public Works Design Standards in accordance with MMC 17-3.6 Public Facilities. All public facilities shall be completed and accepted by the Public Works Department prior to issuance of final occupancy.

City of Molalla Construction plan approval requirements include:

- A. Staff reserves the right to require revisions/modifications to the public improvement construction plans and completed street improvements if additional modifications or expansion of the sight distance onto adjacent streets is required.
- B. All public utility/improvement plans submitted for review shall be based upon a 22"x 34" format and shall be prepared in accordance with the City of Molalla Public Work's Standards.
- C. All survey monuments on the subject site or that may be subject to disturbance within the construction area, or the construction of any off-site improvements shall be adequately referenced and protected prior to commencement of any construction activity. If the survey monuments are disturbed, moved, relocated, or destroyed as a result of any construction, the project shall, at its cost, retain the services of a registered professional land surveyor in the State of Oregon to restore the monument to its original

condition and file the necessary surveys as required by Oregon State law. A copy of any recorded survey shall be submitted to Staff.

- D. Plans submitted for review shall meet the requirements described in Section 1 of the Molalla Standard Specifications for Public Works Construction.
- E. The applicant shall contact the Oregon Water Resources Department and inform them of any existing wells located on the subject site. Any existing well shall be limited to irrigation purposes only. Proper separation, in conformance with applicable State standards, shall be maintained between irrigation systems, public water systems, and public sanitary systems. Should the project abandon any existing wells, they shall be properly abandoned in conformance with State standards and supply the City with a copy of the final document.
- F. All utilities will be stubbed out to the far end of each street for future extension. The project shall utilize existing water, sewer, and storm water 'stub-outs' wherever possible. Water for domestic and fire protection shall be looped through the proposed site. Any 'stub-outs' determined to be not needed for the proposed development or any future development of the subject property shall be abandoned in accordance with the Molalla Standard Specifications for Public Works Construction.
- G. All public improvement designs shall meet the requirements of the Molalla Standard Specifications for Public Works Construction as amended by the Public Works Director.
- H. General Erosion Control – The applicant shall install, operate, and maintain adequate erosion control measures in conformance with the standards adopted by the City of Molalla and DEQ during the construction of any public/private utility and building improvements until such time as approved permanent vegetative materials have been installed. Applicant or Applicant's Contractor shall be responsible for all erosion control requirements under the 1200-C permit and shall coordinate directly with DEQ for questions related to 1200-C permit compliance.
- E. For non-residential uses, all adverse impacts to adjacent properties, such as light, glare, noise, odor, vibration, smoke, dust, or visual impact, are avoided; or where impacts cannot be avoided, they are minimized; and**

**Findings:** The proposed gas station and convenience store uses are not anticipated to create adverse impacts to adjacent properties, which are also commercial uses. The

Applicant has proposed vegetative screening on all property borders adjacent to existing uses to prevent headlight glare from the parking lot.

- F. The proposal meets all existing conditions of approval for the site or use, as required by prior land use decision(s), as applicable. Note: Compliance with other City codes and requirements, though not applicable land use standards, may be required prior to issuance of building permits. (Ord. 2017-08 §1)

**Findings:** Staff is not aware of any prior applicable land use decisions. This standard is met.

**Exhibit B:**

*Findings of Fact for CUP02-2022*

## 17-4.4.040 Criteria, Standards, and Conditions of Approval

**Findings:** The Applicant's submitted application included a proposed fueling station, which met the criteria for an outdoor per MMC 17-2.2.030 Allowed Uses H Outdoor Uses and Unenclosed Activities. Outdoor uses and unenclosed activities require a conditional use permit. The Applicant's conditional use permit may be granted approval in conjunction with the site design review. Applicable criteria for inclusion and staff responses are as follows:

The Planning Commission shall approve, approve with conditions, or deny an application for a conditional use, including requests to enlarge or alter a conditional use, based on findings of fact with respect to all of the criteria and standards in subsections A and B.

### B. Use Criteria.

1. The site size, dimensions, location, topography, and access are adequate for the needs of the proposed use, considering the proposed building mass, parking, traffic, noise, vibration, exhaust/emissions, light, glare, erosion, odor, dust, visibility, safety, and aesthetic considerations;

**Findings:** The Applicant's proposed design met all applicable zoning and design criteria subject to the conditions found in Exhibit A of this staff report. Staff finds the site suitable for the proposed development.

2. The negative impacts of the proposed use, if any, on adjacent properties and on the public can be mitigated through application of other code standards, or other reasonable conditions of approval;

**Findings:** The Applicant has proposed vegetative screening between vehicle maneuvering areas and parking areas and adjacent properties to limit impacts of glare. The Applicant submitted a Traffic Impact Analysis showing that the proposed development would not cause substantial stress to existing roadways and intersections. Staff does not anticipate additional impacts from this use but recommends "as necessary" review after one year of issuance of this conditional use permit to address concerns that may arise within the community.

3. All required public facilities, including water, sanitary sewer, and streets, have adequate capacity or are to be improved to serve the proposal, consistent with City standards; and

**Findings:** The Applicant's proposed public improvements met all applicable criteria for utilities and streets subject to the conditions found in Exhibit A of this staff report.



4. A conditional use permit shall not allow a use that is prohibited or not expressly allowed under Division II; nor shall a conditional use permit grant a variance without a variance application being reviewed with the conditional use application.

**Findings:** The Applicant's proposed use of a fueling station and retail convenience store is an allowed use under MMC Chapter 17, Division II within the General Commercial, C-2 zone.

- C. **Conditions of Approval.** The City may impose conditions that are found necessary to ensure that the use is compatible with other uses in the vicinity, and that the negative impact of the proposed use on the surrounding uses and public facilities is minimized. These conditions include, but are not limited to, one or more of the following:

**Findings:** The subject property is surrounded by general commercial (C-2) zoned land and Staff does not anticipate that the proposed unenclosed fueling station uses will create adverse effects on existing land uses that would require additional mitigation to conditions required through the site design review process (Exhibit B) and mitigation measures proposed by the Applicant. Applicant shall obtain all applicable State and Federal permitting associated with the fueling station use, as applicable. Failure to obtain applicable permitting may result in the revocation of this permit.

## Exhibit C:

*Consolidated Application Package For SDR08-  
2021, MP01-2021, and CUP02-2021*



**Planning & Community Development**  
 315 N. Kennel Avenue  
 Molalla, OR. 97038  
 (503) 759-0205

communityplanner@cityofmolalla.com

<i>FOR OFFICE USE ONLY:</i>	
Planning File No. : _____	City Approval: _____
Date Received: _____	Title _____
Fee: _____	Date: _____
Land Use Type: II	Fee Paid: _____
Received by: _____	

## APPLICATION FOR LAND USE ACTION

Type of Land Use Action Requested: (check all that apply)

- Annexation
- Plan Amendment (Proposed Zone \_\_\_\_\_)
- Planned Unit Development
- Site Design Review
- Variance (list standards to be varied in description)
- Conditional Use
- Partition (# of lots \_\_\_\_\_)
- Subdivision (# of lots \_\_\_\_\_)
- Other: \_\_\_\_\_

**Owner/Applicant:**

Applicant: Molalla Petroleum, LLC Phone: Contact Applicant's Consultant  
 Applicant Address: 1038 Broadway St. NE, Salem, OR 97301 Email: Contact Applicant's Consultant  
 Owner: Donald Bunnell, Trustee Phone: Contact Applicant's Consultant  
 Owner Address: 8751 Redcliff, Riverside, CA 92508 Email: Contact Applicant's Consultant  
 Contact for additional info: Daisy Goebel; AKS Engineering & Forestry, LLC; 3700 River Road N, Suite 1, Keizer, OR 97303, (503) 400-6028

**Property Information:**

Address: 710 W. Main Street, Mollala OR 97038  
 Assessors Map/Taxlot #: 5 2E 08C Tax Lots 300 and 390  
 Current Use of Site: Single-Family Home Zoning Designation: General Commercial (C-2)  
 Intended Use: Existing residence will be removed and replaced with a fueling station and convinience store

**Proposed Action:**

Site design review for a proposed fueling station and convinience store. Conditional Use Permit is required for the approval of all outdoor uses and unenclosed activities, including fueling stations, per MMC 17-2.2.030.

Proposed Use: Fueling station and convinience store

Proposed No. of Phases (one each year): N/A

**Authorizing Signatures:**

*I hereby certify that the information on this application and attachments are correct and that the property affected by this application is in the exclusive ownership or control of the applicant, or that the applicant has the consent of all partners in ownership of the affected property. An authorization letter from the property owner has been attached in the event that the owner's signature has not been provided below.*

**Property Owner(s):**

Donald Bunnell

Print or Type

Donald Bunnell

Signature

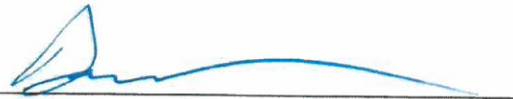
Print or Type

Signature

**Applicant(s) or Authorized Agent:**

Don Sidhu as Member

Print or Type



Signature

Print or Type

Signature

**The following materials must be submitted with your application or it will not be accepted at the counter.** Once taken at the counter, the City has up to 30 days to review the materials submitted to determine if we have everything we need to complete the review. Applicant can verify submittal includes specific materials necessary for the application per checklist.

- 3 Copies of Application Form\*** completely filled out and signed by the property owner (or person with authority to make decisions on the property).
- Copy of Deed** to verify ownership, easements, etc.
- At least 3 folded** sets of plans\*
- At least 3 copies** of narrative addressing application criteria\*
- Fee** (along with calculations utilized to determine fee if applicable)

**\*Please Note** that the required numbers of copies identified on the checklist are required for completeness; however, upon initial submittal applicants are encouraged to submit only 3 copies for completeness review. Prior to completeness, the required number of copies identified on the checklist and one full electronic copy will be required to be submitted.

# Concurrent Application for Site Design Review and Conditional Use Permits at 710 W Main Street

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**Date:** April 2022

**Submitted to:** City of Molalla  
Planning Department  
315 Kennel Ave  
Molalla OR 97038

**Applicant:** Molalla Petroleum, LLC  
1038 Broadway Street NE  
Salem, OR 97301

**AKS Job Number:** 9010



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## Exhibits

- Exhibit A:** City Land Use Application Form
  - Exhibit B:** Preliminary Site Plans
  - Exhibit C:** Transportation Impact Study
  - Exhibit D:** Preliminary Architectural Drawings
  - Exhibit E:** Preliminary Title Report
  - Exhibit F:** Vesting Deed
  - Exhibit G:** Clackamas County Assessor’s Map
  - Exhibit H:** Preliminary Stormwater Report
  - Exhibit I:** Geotechnical Report
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# Concurrent Application for Site Design Review and Conditional Use Permits at 710 W Main Street

**Submitted to:** City of Molalla  
Planning Department  
PO Box 248  
Molalla, OR 97038

**Applicant:** Molalla Petroleum, LLC  
1038 Broadway Street NE  
Salem, OR 97301

**Property Owners:** Donald Gary Bunnell and Marie Anne Bunnell, and  
successors, as Trustees of the Bunnell Family Trust  
8751 Redcliff Place  
Riverside CA, 92508

**Applicant’s Consultant:** AKS Engineering & Forestry, LLC  
3700 River Road N, Suite 1  
Keizer, OR 97303

Contact: Zach Pelz, AICP  
Email: PelzZ@aks-eng.com  
Phone: (503) 400-6028

**Site Location:** 710 W Main Street

**Clackamas County  
Assessor’s Map:** 5 2E 8C, Tax Lots 300 and 390

**Site Size:** ±0.87 acres

**Land Use District:** General Commercial (C-2)



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## I. Executive Summary

This application involves a Type III Site Design Review and Conditional Use Permit for a new fueling station and convenience store. The subject property is ±0.87 acres in size (Clackamas County Assessor's Map 5 2E 8C, Tax Lots 300 and 390) and is in the General Commercial (C-2) zoning district. The project is planned to access W Main St./Oregon Route 211 (Woodburn-Estacada Highway) from a shared accessway on the western portion of the property that will serve both the subject site as well as existing and future uses on the abutting parcels to the south and west. The shared accessway will extend through the shared property line and then head west to provide access to S Leroy Avenue. The S Leroy Avenue connection will improve on-site circulation, reduce traffic at the intersection of S Leroy Avenue and W Main St., and minimize individual driveways onto W Main St.

This application includes a Type III Site Design Review for the allowed retail use and a Conditional Use Permit to allow the fueling station to operate as an unenclosed activity in accordance with MMC Section 17-2.2.030 (H). The applicable standards and criteria for the planned uses are addressed in this narrative, which is supported by preliminary plans and other included application materials. This documentation represents substantial evidence and provides the basis for City staff to approve the application.

## II. Site Description/Setting

The property included in this application comprises a total area of ±0.87 acres with a gently sloping topography. The site has an existing residential house and two existing driveways with access to W Main St. The site is directly East of the approved Cascade Center Master Planned development. All the surrounding lots are zoned C-2, as is the subject site.

**North:** The site fronts W Main St. to the North and currently takes access from an existing residential looped driveway. The lot across the street contains a towing company sandwiched between two residential properties.

**South:** The southern property boundary is bordered by Tax Lot 4700, which comprises ±4.65 acres. A multifamily community is under construction on Tax Lot 4700 with landscaping and parking improvements buffering new homes from the planned fueling station.

**East:** The property that abuts the site to the east contains self-storage facilities (Northwest Self Storage).

**West:** Tax Lot 5000 contains 0.90 acres. The lot is currently vacant but is planned to be developed with a credit union. If approved, the subject site will share access to W Main St. with the credit union and such application for Site Design Review is currently pending with the City.

## III. Applicable Review Criteria

### CITY OF MOLALLA DEVELOPMENT CODE

#### Chapter 17-2.2 ZONING DISTRICT REGULATIONS

##### 17-2.2.030 Allowed Uses



- A. **Uses Allowed in Base Zones.** Allowed uses include those that are permitted, those that are permitted subject to special use standards, and those that are allowed subject to approval of a conditional use permit, as identified by Table 17-2.2.030. Allowed uses fall into four general categories: Residential, Public and Institutional, Commercial, and Other. If Table 17-2.2.030 does not list a specific use, and Division V Definitions does not identify the use or include it as an example of an allowed use, the City may find that use is allowed, or is not allowed, by following the procedures of Section 17-1.5.010 Code Interpretations. Uses not listed in Table 17-2.2.030 and not found to be similar to an allowed use are prohibited.
- B. **Permitted Uses and Uses Permitted Subject to Special Use Standards.** Uses listed as “Permitted (P)” are allowed provided they conform to Section 17-2.2.040 Lot and Development Standards. Uses listed as “Permitted Subject to Special Use Standards (S)” are allowed, provided they conform to the Chapter 17-2.3 Special Use Standards and Section 17-2.2.040 Lot and Development Standards. Uses listed as “Not Allowed (N)” are prohibited. Uses not listed but similar to those allowed may be permitted pursuant to Section 17-1.5.010.
- C. **Conditional Uses.** Uses listed as “Conditional Use Permit Required (CU)” are allowed subject to the requirements of Chapter 17-4.4 Conditional Use Permits.
- (...)
- H. **Outdoor Uses and Unenclosed Activities.** Notwithstanding the provisions of Table 17-2.2.030, any use, except for an allowed accessory use, that occurs primarily outside (i.e., not within a permitted building) requires a Conditional Use Permit under Chapter 17-4.4. Examples of outdoor uses and unenclosed activities that may or may not be considered accessory uses, depending on their location and size relative to other uses on the same property, include, but are not limited to, automotive services, vehicle and equipment repair, fueling, drive-in restaurants, drive-up windows and similar drive-through facilities, automatic teller machines, kiosks, outdoor assembly and theaters, outdoor markets, and similar uses.
- I. **Temporary Uses.** Temporary uses occur for not longer than 45 days, in any calendar year. Uses may be permitted on a temporary basis, subject to review and approval under Chapter 17-4.2 Site Design Review. Special Use Standards listed in Chapter 17.2.3 may also apply to temporary uses.
- J. **Disclaimer.** Property owners are responsible for verifying whether a specific use is allowed on a particular site. Submittal of a Zoning Checklist for review and approval by the Planning Official shall be required in order to determine whether a use is allowed on a given site, and whether further land use review is required.

Use	C-2 Zone
Commercial Retail Sales and Services	P
Automotive Repair and Service (including fueling station)	P

**Response:** This application involves a Site Design Review for a fueling station and a convenience store. Both planned uses are allowed in the base zoning district (C-2). The applicable development standards and special use standards for each use are outlined in the responses below. The automotive and retail uses are permitted outright, but all Outdoor Uses and Unenclosed Activities, including fueling stations, require Conditional Use Permits, per item H, above. This narrative contains responses to the applicable Conditional Use Permit requirements of Chapter 17-4.4. This criterion is met.

17-2.2.040 Lot and Development Standards

- A. Development Standards. Section 17-2.2.040 provides the general lot and development standards for each of the City’s base zoning districts. The standards of Section 17-2.2.040 are organized into two tables: Table 17-2.2.040.D applies to Residential zones, and Table 17-2.2.040.E applies to non-residential zones.

**Response:** This application involves a Site Design Review for the allowed commercial uses and a Conditional Use Permit for the conditionally permitted use (outdoor uses and unenclosed activities) within the C-2 zoning designation. The standards for development in the C-2 zone are addressed below along with all applicable conditional use standards and approval criteria.

- B. Design Standards. City standards for Access, Circulation, Site and Building Design, Parking, Landscaping, Fences and Screening, and Public Improvements, among others, are located in Division III. Notwithstanding the provisions of Section 17-2.2.040 and Division III, different standards may apply in specific locations, such as at street intersections, within overlay zones, adjacent to natural features, and other areas as may be regulated by this Code or subject to state or federal requirements. For requirements applicable to the City’s overlay zones, please refer to Chapter 17-2.4.

**Response:** As applicable, the above-referenced code sections are discussed in detail throughout this application.

- C. Disclaimer. Property owners are responsible for verifying whether a proposed development meets the applicable standards of this Code. Submittal of a Zoning Checklist for review and approval by the Planning Official may be required in order to determine whether use is allowed on a given site, and whether further land use review is required.

**Response:** The City confirmed during a formal pre-application conference on September 16, 2021, that the Planned uses are allowed under the procedures outlined in this application.

- D. Lot and Development Standards for Residential Districts. The development standards in Table 17-2.2.040.D apply to all new development as of November 10, 2017 in residential zones.

**Response:** This application does not include development within a residential district; therefore, these standards do not apply.

- E. Lot and Development Standards for Non-Residential Districts. The development standards in Table 17-2.2.040.E apply to all new development as of November 10, 2017 in the City’s non-residential zones, as follows.

**Response:** The standards of Table 17-2.2.040.D are included below. The preliminary plans (Exhibit B) show that the planned buildings will meet the setback requirements identified below.

Standard	C-Zone Requirement	Proposal
Min. Lot Area	None	0.87 acres
Min. Lot Width and Depth	None	±98-174 feet Wide, ±277 feet Deep
Standard Max. Height	55 feet	23 feet
Side/Rear Yard Fence Height	6 feet	N/A

Max. Lot Coverage	100%	11%
Min. Landscape Area	5%	14%
Min. Setback	0 feet	0 feet

**Build-To Line: New Buildings Only:** At least one primary building entrance shall be built no farther from the street right-of-way than the build-to line; except where a greater setback is required for a Planned Street Improvement, then the build-to line increases proportionately. The build-to line may also be increased through Site Design Review when pedestrian amenities are provided between a primary building entrance and the street right-of-way. To avoid encroachment into the right-of-way, doorways are not required to be flush with the build-to line.

**Response:** This application meets the build-to line requirement by providing the convenience store with a pedestrian entrance that connects to the primary accessway to the west of the site, which is located directly adjacent to the access street. Parking and vehicular circulation areas will not be placed between the building entrance and the pedestrian walkway. Additionally, the fueling station structure will be built as close to the build-to-line as is practical without compromising the required public utility easements, circulation, spacing, access, and landscaping requirements. This criterion is met.

**Chapter 17-3.2 BUILDING ORIENTATION AND DESIGN**

**17-3.2.040 Non-Residential Buildings**

**A. Purpose and Applicability.** The following requirements apply to non-residential development, including individual buildings and developments with multiple buildings such as shopping centers, office complexes, mixed-use developments, and institutional campuses. The standards are intended to create and maintain a built environment that is conducive to pedestrian accessibility, reducing dependency on the automobile for short trips, while providing civic space for employees and customers, supporting natural surveillance of public spaces, and creating human-scale design. The standards require buildings placed close to streets, with storefront windows (where applicable), with large building walls divided into smaller planes, and with architectural detailing.

**Response:** This application includes non-residential development subject to the City’s orientation and design standards. The layout incorporates accessibility, walkability, human-scale design, and aesthetic considerations, as addressed in this narrative and shown on the site plan included in Exhibit B. The building is located close to the adjacent access street and incorporates aesthetic detailing such as a stone building base and large storefront windows on the North side of the building.

**B. Building Orientation.** The following standards apply to new buildings and building additions that are subject to Site Design Review. The Planning Official may approve adjustments to the standards as part of a Site Design Review approval, pursuant to Chapters 17-4.2 and 17-4.7, respectively.

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1. Buildings subject to this section shall conform to the applicable build-to line standard in Table 17-2.2.040.E, as generally illustrated in Figure 17-3.2-6. The standard is met when at least 50 percent of the abutting street frontage has a building placed no farther from at least one street property line than the build-to line in Table 17-2.2.040.E; except in the Central Commercial C-1 zone, at least 80 percent of the abutting street frontage shall have a building placed no farther from at least one street property line than the required build-to-line. The Planning Official, through Site Design Review, may waive the build to line standard where it finds that one or more of the conditions in subdivisions a through g occurs.
    - a. A proposed building is adjacent to a single-family dwelling, and an increased setback promotes compatibility with the adjacent dwelling.
    - b. The standards of the roadway authority preclude development at the build-to line.
    - c. The applicant proposes extending an adjacent sidewalk or plaza for public use, or some other pedestrian amenity is proposed to be placed between the building and public right-of-way, pursuant to Section 17-3.2.050 and subject to Site Design Review approval.
    - d. The build-to line may be increased to provide a private open space (e.g., landscaped forecourt), pursuant to Section 17-3.2.050, between a residential use in a mixed-use development (e.g., live-work building with ground floor residence) and a front or street property line.
    - e. A significant tree or other environmental feature precludes strict adherence to the standard and will be retained and incorporated in the design of the project.
    - f. A public utility easement or similar restricting legal condition that is outside the applicant's control makes conformance with the build-to line impracticable. In this case, the building shall instead be placed as close to the street as possible given the legal constraint, and pedestrian amenities (e.g., plaza, courtyard, landscaping, outdoor seating area, etc.) shall be provided within the street setback in said location pursuant to Section 17-3.2.050.
    - g. An existing building that was lawfully created but does not conform to the above standard is proposed to be expanded and compliance with this standard is not practicable.

**Response:** The Applicant requests that the Planning Official waive this requirement because the nature of the planned use and a public utility easement preclude such a location. Per C above, Applicant's plan includes a pedestrian walkway between the onsite building and the public right-of-way.

2. Except as provided in subsections C.5 and 6, all buildings shall have at least one primary entrance (i.e., tenant entrance, lobby entrance, breezeway entrance, or courtyard entrance) facing an abutting street (i.e., within 45 degrees of the street property line); or if the building entrance must be turned more than 45 degrees from the street (i.e., front door is on a side or rear elevation) due to the configuration of the site or similar constraints, a pedestrian walkway must connect the primary entrance to the sidewalk in conformance with Section 17-3.3.040.

**Response:** As shown in Exhibits B and D, the primary building entrance is oriented north, toward the abutting W Main St. This criterion is met.

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3. Off-street parking, trash storage facilities, and ground-level utilities (e.g., utility vaults), and similar obstructions shall not be placed between building entrances and the street(s) to which they are oriented. To the extent practicable, such facilities shall be oriented internally to the block and accessed by alleys or driveways.

**Response:** As shown in Exhibit B, off-street parking is located north and south of the convenience store and is placed south of the onsite fueling island. All off street parking is separated from the abutting street by the fueling island structure and associated facilities. This criterion is met.

4. Off-street parking shall be oriented internally to the site to the extent practicable, and shall meet the Access and Circulation requirements of Chapter 17-3.3, the Landscape and Screening requirements of Chapter 17-3.4, and the Parking and Loading requirements of Chapter 17-3.5.

**Response:** The off-street parking facilities are located internally to the site and accessed by both the vehicular and pedestrian circulation systems. The requirements of Chapters 17-3.3 through 17-3.5 are addressed in the findings below. The criterion is met.

5. Where a development contains multiple buildings and there is insufficient street frontage to meet the above building orientation standards for all buildings on the subject site, a building's primary entrance may orient to plaza, courtyard, or similar pedestrian space containing pedestrian amenities and meeting the requirements under Section 17-3.2.050, subject to Site Design Review approval. When oriented this way, the primary entrance(s), plaza, or courtyard shall be connected to the street by a pedestrian walkway conforming to Section 17-3.3.040.

**Response:** The building orientation standards are met by the planned pedestrian walkways. This criterion is not applicable.

- C. Large-Format Developments. Plans for new developments, or any phase thereof, with a total floor plate area (ground floor area of all buildings) greater than 35,000 square feet shall meet all of the following standards in subsections C.1 through 9, as generally illustrated in Figure 17-3.2. The planning Official may approve adjustments to the standards as part of a Site Design Review approval, pursuant to Chapters 17-4.2 and 17-4.7, respectively.

[...]

**Response:** As shown in Exhibits B and D, the planned development does not include a total floor plate area greater than 35,000 square feet; therefore, the Large-Format Development criteria do not apply.

- D. Primary Entrances and Windows. The following standards, as generally illustrated in Figures 17-3.2-8 and 17.3.2-9, apply to new buildings and building additions that are subject to Site Design Review. The Planning Official may approve adjustments to the standards as part of a Site Design Review approval, pursuant to Chapters 17-4.2 and 17-4.7, respectively.

1. All Elevations of Buildings. Architectural designs shall address all elevations of a building. Building forms, detailing, materials, textures, and color shall contribute to a unified design with architectural integrity. Materials used on the front façade must turn the building corners and include at least a portion of the side elevations, consistent with the overall composition and design integrity of the building.

**Response:** The architectural plans, included as Exhibit D, include architectural designs for each of the building elevations. The materials used on the front façade are used across the rear and

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side elevations and the building has a consistent design and composition in compliance with the requirements of this section. This criterion is met.

2. **Pedestrian Entrances.** Ground level entrances oriented to a street shall be at least partly transparent for natural surveillance and to encourage an inviting and successful business environment. This standard may be met by providing a door with a window or windows, a transom window above the door, or sidelights beside the door. Where ATMs or other kiosks are proposed on any street-facing elevation, they shall be visible from the street for security and have a canopy, awning, or other weather protection shelter.

**Response:** As shown in the architectural plans, included as Exhibit D, the pedestrian entrance is to be constructed of tempered glass and will be largely transparent. Windows are also provided adjacent to and above the planned pedestrian entrance. No ATMs or other kiosks are proposed with this application. This criterion is met.

3. **Corner Entrances.** Buildings on corner lots are encouraged to have corner entrances. Where a corner entrance is not provided, the building plan shall provide an architectural element or detailing (e.g., tower, beveled corner, art, special trim, etc.) that accentuates the corner location.

**Response:** This application does not include buildings on corner lots; therefore, this criterion is not applicable.

4. **All primary building entrances shall open to the sidewalk and shall conform to Americans with Disabilities Act (ADA) requirements, as applicable. Primary entrances above or below grade may be allowed where ADA accessibility is provided.**

**Response:** As shown on Exhibits B and D, the building entrance opens to the sidewalk and complies with ADA accessibility requirements.

5. **Windows—General.** Except as approved for parking structures or accessory structures, the front/street-facing elevations of buildings shall provide display windows, windowed doors, and where applicable, transom windows to express a storefront character.

**Response:** As shown on Exhibit D, the architectural design includes glass storefront entry doors and large front windows. This criterion is met.

6. **Storefront Windows.** Storefront windows shall consist of framed picture or bay windows, which may be recessed. Framing shall consist of trim detailing such as piers or pilasters (sides), lintels or hoods (tops), and kick plates or bulkheads (base)—or similar detailing—consistent with a storefront character. The ground floor, street-facing elevation(s) of all buildings shall comprise at least 60 percent transparent windows, measured as a section extending the width of the street-facing elevation between the building base (or 30 inches above the sidewalk grade, whichever is less) and a plane 72 inches above the sidewalk grade.

**Response:** As shown on Exhibit D, the planned storefront windows comply with this requirement. The windows extend along ±62 percent of the building width; this criterion is met.



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7. **Defined Upper Story(ies).** Building elevations shall contain detailing that visually defines street level building spaces (storefronts) from upper stories. The distinction between street level and upper floors shall be established, for example, through the use of awnings, canopies, belt course, or similar detailing, materials, or fenestration. Upper floors may have less window area than ground floors, but shall follow the vertical lines of the lower level piers and the horizontal definition of spandrels and any cornices. Upper floor window orientation shall primarily be vertical, or have a width that is no greater than height. Paired or grouped windows that, together, are wider than they are tall, shall be visually divided to express the vertical orientation of individual windows.

**Response:** As shown on the preliminary architectural plans, the planned convenience store building will only consist of a single story; therefore, these criteria are not applicable.

8. **Buildings not Adjacent to a Street.** Buildings that are not adjacent to a street, such as those that are setback behind another building and those that are oriented to a civic space (e.g., internal plaza or court), shall meet the 60 percent transparency standard on all elevations abutting civic space(s) and on elevations containing a primary entrance.

**Response:** This application does not include buildings that are not adjacent to a street. As shown on the Architectural Drawings included as Exhibit D, the front elevation meets the 60 percent transparency standard. This criterion is met.

9. **Side and Rear Elevation Windows.** All side and rear elevations, except for zero lot line or common wall elevations, where windows are not required, shall provide not less than 30 percent transparency.

**Response:** The applicant is proposing an exception to this transparency standard in accordance with MMC 17.3.2.040.D.12, addressed below.

10. **Window Trim.** At a minimum, windows shall contain trim, reveals, recesses, or similar detailing of not less than four inches in width or depth as applicable. The use of decorative detailing and ornamentation around windows (e.g., corbels, medallions, pediments, or similar features) is encouraged.

**Response:** As shown on the site plan included as Exhibit D, the applicable windows on the front façade include trim detailing consistent with the building design and the shadow boxes on the side and rear facades will include trim detailing consistent with this requirement. This criterion is met.

11. **Projecting Windows, Display Cases.** Windows and display cases shall not break the front plane of the building (e.g., projecting display boxes are discouraged). For durability, and aesthetic reasons, display cases, when provided, shall be flush with the building façade (not affixed to the exterior) and integrated into the building design with trim or other detailing. Window flower boxes are allowed, provided they do not encroach into the pedestrian through-zone.

**Response:** Window projections and aesthetic display cases are not proposed with this application. This criterion is met.

12. **Window Exceptions.** The planning Official may approve an exception to the above standards where existing topography makes compliance impractical. Where it is not practicable to use glass, windows for parking garages or similar structures, the building design must incorporate openings or other detailing that resembles window patterns (rhythm and scale.)

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**Response:** Side and rear windows are impractical for the convenience store building due to the orientation of the building and the nature of the intended use. The side and rear interior walls will be lined with storage, coolers, bathrooms, utilities, and kitchens that make compliance with the transparency standards impractical. Accordingly, aesthetic shadow boxes have been incorporated on the rear and side walls to enhance the building's façade. The planned shadow boxes, shown on Exhibit D, emulate the rhythm and scale of exterior window designs.

E. **Articulation and Detailing.** The following standards apply to new buildings and building additions that are subject to Site Design Review. The Planning Official may approve adjustments to the standards as part of a Site Design Review approval, pursuant to Chapters 17-4.2 and 17-4.7, respectively.

1. **Articulation.** All building elevations that orient to a street or civic space shall have breaks in the wall plane (articulation) of not less than one break for every 30 feet of building length or width, as applicable, pursuant to the following standards, which are generally illustrated in Figures 17-3.2-10, 17-3.2-11, and 17-3.2-12.

a. A “break” for the purposes of this subsection is a change in wall plane of not less than 24 inches in depth. Breaks may include, but are not limited to, an offset, recess, window reveal, pilaster, frieze, pediment, cornice, parapet, gable, dormer, eave, coursing, canopy, awning, column, building base, balcony, permanent awning or canopy, marquee, or similar architectural feature.

b. The Planning Official through Site Design Review may approve detailing that does not meet the 24-inch break-in-wall-pane standard where it finds that proposed detailing is more consistent with the architecture of historically significant or historic-contributing buildings existing in the vicinity.

c. Changes in paint color and features that are not designed as permanent architectural elements, such as display cabinets, window boxes, retractable and similar mounted awnings or canopies, and other similar features, do not meet the 24-inch break-in-plane standard.

d. Building elevations that do not orient to a street or civic space need not comply with the 24-inch break-in-wall-plane standard but should complement the overall composition of the building.

**Response:** As shown on Exhibit D, windows, shadow boxes, and other permanent architectural features provide breaks in the wall plane consistent with the above requirements.

2. **Change in Materials.** Elevations should incorporate changes in material that define a building's base, middle, and top, as applicable, and create visual interest and relief. Side and rear elevations that do not face a street, public parking area, pedestrian access way, or plaza may utilize changes in texture and/or color of materials, provided that the design is consistent with the overall composition of the building.

**Response:** As shown on the preliminary architectural drawings, the building is planned to be constructed with an adhered stone base comprising the bottommost four feet of the building and extending around all four sides of the structure. This criterion is met.



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3. **Horizontal Lines.** New buildings and exterior remodels shall generally follow the prominent horizontal lines existing on adjacent buildings at similar levels along the street frontage. Examples of such horizontal lines include, but are not limited to: the base below a series of storefront windows, an awning or canopy line, a belt course between building stories, a cornice, or a parapet line. Where existing adjacent buildings do not meet the City's current building design standards, a new building may establish new horizontal lines.

**Response:** The planned convenience store building is not directly adjacent to any existing buildings along the street frontage. This criterion is not applicable.

4. **Ground Floor and Upper Floor Division.** A clear visual division shall be maintained between the ground level floor and upper floors, for example, through the use of a belt course, transom, awning, canopy, or similar division.

**Response:** The planned convenience store is a one-story building; therefore, this criterion is not applicable.

5. **Vertical Rhythms.** New construction or front elevation remodels shall reflect a vertical orientation, either through breaks in volume or the use of surface details.

**Response:** As shown on the preliminary architectural plans (Exhibit D), the proposed building design incorporates architectural detailing consistent with this requirement.

- F. **Pedestrian Shelters.** The following standards apply to new buildings and building additions that are subject to Site Design Review. The Planning Official may approve adjustments to the standards as part of a Site Design Review approval, pursuant to Chapters 17-4.2 and 17-4.7, respectively.

1. **Minimum Pedestrian Shelter Coverage.** Permanent awnings, canopies, recesses, or similar pedestrian shelters shall be provided along at least 75 percent of the ground floor elevation(s) of a building where the building abuts a sidewalk, civic space, or pedestrian access way. Pedestrian shelters used to meet the above standard shall extend at least five feet over the pedestrian area; except that the Planning Official, through Site Design Review, may reduce the above standards where it finds that existing right-of-way dimensions, easements, or building code requirements preclude standard shelters. In addition, the above standards do not apply where a building has a ground floor dwelling, as in a mixed-use development of live-work building, and the dwelling has a covered entrance. The Planning Official shall waive the above standards if the pedestrian shelter would extend into the right-of-way and the roadway authority does not allow encroachments in the right-of-way.

**Response:** This application does not include buildings that abut public sidewalks, accessways, or civic space areas, therefore a pedestrian shelter in accordance with the above standards is not required. Nonetheless, the applicant has proposed a metal awning extending ±2-feet from the building that extends along ±67 percent of the frontage elevation for aesthetic variation.

2. **Pedestrian Shelter Design.** Pedestrian shelters shall comply with applicable building codes, and shall be designed to be visually compatible with the architecture of a building. If mezzanine or transom windows exist, the shelter shall be below such windows where practical. Where applicable, pedestrian shelters shall be designed to accommodate pedestrian signage (e.g., blade signs), while maintaining required vertical clearance.

**Response:** As addressed above, this application is not subject to the pedestrian shelter requirements of this section.

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G. Mechanical Equipment.

1. **Building Walls.** Where mechanical equipment, such as utility vaults, air compressors, generators, antennae, satellite dishes, or similar equipment, is permitted on a building wall that abuts a public right-of-way or civic space, it shall be screened pursuant to Chapter 17-3.4. Standpipes, meters, vaults, and similar equipment need not be screened but shall not be placed on a front elevation when other practical alternatives exist; such equipment shall be placed on a side or rear elevation where practical.

**Response:** This application does not include exterior mechanical equipment abutting a public right-of-way or civic space. This criterion is not applicable.

2. **Rooftops.** Except as provided below, rooftop mechanical units shall be set back or screened behind a parapet wall so that they are not visible from any public right-of-way or civic space. Where such placement and screening is not practicable, the Planning Official may approve painting of mechanical units in lieu of screening; such painting may consist of colors that make the equipment visually subordinate to the building and adjacent buildings, if any.

**Response:** Rooftop mechanical units are not included in the planned architectural design. This criterion is not applicable.

3. **Ground-Mounted Mechanical Equipment.** Ground-mounted equipment, such as generators, air compressors, trash compactors, and similar equipment, shall be limited to side or rear yards and screened with fences or may require additional setbacks and noise attenuating equipment for compatibility with adjacent uses.

**Response:** Ground-Mounted equipment such as generators and trash compactors will not be required for the planned convenience store building. Propane, air, and water filling stations are planned for customer use; these facilities are in accessible locations and are compatible with adjacent uses. This criterion is met.

H. **Civic Space.** Commercial development projects shall provide civic space pursuant to Section 17-3.2.050.

**Response:** Section 17-3.2.050 applies only to commercial and mixed-use developments with more than 10,000 square feet of gross leasable floor area. This criterion does not apply.

I. **Drive-Up and Drive-Through Facilities.** Drive-up and drive-through facilities shall comply with the requirements of Section 17-3.2.060.

**Response:** This application does not include any drive-up and drive-through facilities; therefore, this criterion does not apply.

Chapter 17-3.3 ACCESS AND CIRCULATION

17-3.3.030 Vehicular Access and Circulation

(...)

- J. **Permit Required.** Vehicular access to a public street (e.g., a new or modified driveway connection to a street or highway) requires an approach permit approved by the applicable roadway authority.

**Response:** This application involves Site Design Review for a commercial facility that is planned to take access from a shared connection to W Main St. located between the subject site and the commercial development (future credit union) to the west. Because W Main St. is a

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state highway, the approach will be permitted as required through ODOT. This criterion will be met.

**K. Traffic Study Requirements.** The City, in reviewing a development proposal or other action requiring an approach permit, may require a traffic impact analysis, pursuant to Section 17-3.6.020, to determine compliance with this Code.

**Response:** A Transportation Impact Study (TIS) is included with this application (Exhibit C). The TIS examines the traffic impacts of the planned improvements on the transportation system in the vicinity of the site. Based on the detailed analysis of the TIS, the surrounding transportation system can safely and effectively support the planned project. The TIS also found that the site's access has adequate intersection sight distance to ensure safe operation. This criterion is satisfied.

**D. Approach and Driveway Development Standards.** Approaches and driveways shall conform to all of the following development standards:

1. The number of approaches on higher classification streets (e.g., collector and arterial streets) shall be minimized; where practicable, access shall be taken first from a lower classification street.

**Response:** After discussions with City and ODOT staff, the Applicant has agreed to relocate the shared access that has been approved on the west side of the credit unit site to instead be shared between the Molalla Petroleum site and the proposed credit union to the west, thus minimizing the number of driveways taking access directly from W Main St. The two existing driveways that access W Main St. will be abandoned as a part of the project. There are no lower classification streets available to provide connections to the site, and the planned approach will minimize the number of access points serving the developments in the project's vicinity. This criterion is met.

2. Approaches shall conform to the spacing standards of subsections E and F, below, and shall conform to minimum sight distance and channelization standards of the roadway authority.

**Response:** The shared access has been planned in coordination with ODOT and adjacent property owners. As discussed in detail in subsections E and F below, the planned approach conforms to the spacing and sight distance standards of the roadway authority. This criterion is met.

3. Driveways shall be paved and meet applicable construction standards. Where permeable paving surfaces are allowed or required, such surfaces shall conform to applicable Public Works Design Standards.

**Response:** As shown on the Preliminary Plans (Exhibit B), the site will be accessed by a shared approach to W Main St. that has been developed in coordination with City of Molalla and ODOT staff. The approach will be paved and is designed to meet the applicable City of Molalla construction standards. This criterion is met.

4. The City Engineer may limit the number or location of connections to a street, or limit directional travel at an approach to one-way, right-turn only, or other restrictions, where the roadway authority requires mitigation to alleviate safety or traffic operations concerns.

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**Response:** As discussed above, the Applicant has made significant efforts to minimize, and even reduce, the number of street connections. The planned approach has been developed with input and guidance from ODOT and City staff. Safety and traffic operations concerns have been mitigated, as applicable, using shared access connections to reduce the number of connections to W Main St. and maximize the distance between intersections.

5. Where the spacing standards of the roadway authority limit the number or location of connections to a street or highway, the City Engineer may require a driveway extend to one or more edges of a parcel and be designed to allow for future extension and inter-parcel circulation as adjacent properties develop. The City Engineer may also require the owner(s) of the subject site to record an access easement for future joint use of the approach and driveway as the adjacent property(ies) develop(s).

**Response:** The planned shared access has been designed with input from ODOT and City staff to limit the number and location of connections to W Main St./OR 211. The driveway extends to the southern edge of the parcel and allows access from the adjacent residential housing development to the planned commercial uses. The access drive will continue west to S Leroy Avenue serving the adjacent commercial and residential properties. Easements for the reciprocal use of the shared access is expected to be recorded prior to the approval of this land use application.

6. Where applicable codes require emergency vehicle access, approaches and driveways shall be designed and constructed to accommodate emergency vehicle apparatus and shall conform to applicable fire protection requirements. The City Engineer may restrict parking, require signage, or require other public safety improvements pursuant to the recommendations of an emergency service provider.

**Response:** As shown on the Preliminary Plans (Exhibit B), the planned access will allow emergency vehicles to access all exterior building walls from the western property line. Additionally, the site has been designed to include turning radii that can accommodate emergency vehicle movement within the site. This criterion is met.

7. As applicable, approaches and driveways shall be designed and constructed to accommodate truck/trailer-turning movements.

**Response:** As shown on the Preliminary Plans, the access approach has been designed to accommodate the typical types of vehicles that would access a fueling station, including emergency vehicles, fuel trucks, and garbage trucks. This criterion is met.

8. Except where the City Engineer and roadway authority, as applicable, permit an open access with perpendicular or angled parking, driveways shall accommodate all projected vehicular traffic on-site without vehicles stacking or backing up onto a street.

**Response:** As shown on the Preliminary Plans, this project does not include an open access with parking located where it can back up onto a public street. Additionally, the fueling stations have been designed with access that is oriented interior to the site. This criterion is met.

9. Driveways shall be designed so that vehicle areas, including, but not limited to, drive-up and drive-through facilities and vehicle storage and service areas, do not obstruct any public right-of-way.

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**Response:** As shown on the Preliminary Plans (Exhibit B) the project has been designed to not involve or require obstructions to public rights-of-way. The TIA included as Exhibit C verifies that the onsite circulation system can sufficiently meet the anticipated transportation needs without causing vehicles to back up onto the street or obstruct any public rights-of-way. This criterion is met.

10. Approaches and driveways shall not be wider than necessary to safely accommodate projected peak hour trips and turning movements and shall be designed to minimize crossing distances for pedestrians.

**Response:** As shown on the Preliminary Plans (Exhibit B) and substantiated by the TIS included as Exhibit C, the planned approach is designed to accommodate anticipated peak hour trips and is not wider than necessary. The design was developed with input from the City of Molalla and ODOT. This criterion is met.

11. As it deems necessary for pedestrian safety, the City Engineer, in consultation with the roadway authority, as applicable, may require that traffic-calming features, textured driveway surfaces (e.g., pavers or similar devices), curb extensions, signage or traffic control devices, or other features, be installed on or in the vicinity of a site as a condition of development approval.

**Response:** The planned development has been designed in consultation with the City Engineer as well as ODOT staff to provide safe access to and within the site. Pedestrian connections have been provided in safe and convenient locations to connect the convenience store building to the sidewalk along W Main St., as well as the future residential development to the south of the site. Additional measures are not needed or warranted. To the extent applicable, this criterion is satisfied.

12. Construction of approaches along acceleration or deceleration lanes, and along tapered (reduced width) portions of a roadway, shall be avoided; except where no reasonable alternative exists and the approach does not create safety or traffic operations concern.

**Response:** This application does not include approaches along acceleration or deceleration lanes or reduced width portions of roadway. This criterion is met.

13. Approaches and driveways shall be located and designed to allow for safe maneuvering in and around loading areas, while avoiding conflicts with pedestrians, parking, landscaping, and buildings.

**Response:** Loading areas are designed to accommodate anticipated access and maneuvering areas for large vehicles, as necessary while avoiding conflicts with pedestrians, parking, landscaping, and buildings.

14. Where sidewalks or walkways occur adjacent to a roadway, driveway aprons constructed of concrete shall be installed between the driveway and roadway edge. The roadway authority may require the driveway apron be installed outside the required sidewalk or walkway surface, consistent with Americans with Disabilities Act (ADA) requirements, and to manage surface water runoff and protect the roadway surface.
15. Where an accessible route is required pursuant to ADA, approaches and driveways shall meet accessibility requirements where they coincide with an accessible route.

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**Response:** This application includes a sidewalk adjacent to W Main St. As shown on the Preliminary Plans (Exhibit B), the driveway apron for the access to W Main St. is planned to be constructed of concrete and will meet applicable accessibility requirements. These criteria are satisfied.

16. The City Engineer may require changes to the proposed configuration and design of an approach, including the number of drive aisles or lanes, surfacing, traffic-calming features, allowable turning movements, and other changes or mitigation, to ensure traffic safety and operations.

**Response:** The driveway approach has been designed to City standards with input from City staff. Additional safety and operational mitigation measures are not required.

17. Where a new approach onto a state highway or a change of use adjacent to a state highway requires ODOT approval, the applicant is responsible for obtaining ODOT approval. The City Engineer may approve a development conditionally, requiring the applicant first obtain required ODOT permit(s) before commencing development, in which case the City will work cooperatively with the applicant and ODOT to avoid unnecessary delays.

**Response:** As shown on the Preliminary Plans, the site will take access from a shared driveway on the western edge of the site to W Main St., which is regulated by ODOT. The design has been developed with input from ODOT and it is understood that a permit from ODOT will be required. This criterion is met.

18. Where an approach or driveway crosses a drainage ditch, canal, railroad, or other feature that is under the jurisdiction of another agency, the applicant is responsible for obtaining all required approvals and permits from that agency prior to commencing development.

**Response:** As shown on the Preliminary Plans (Exhibit B), the existing approach does not cross a feature that is under the jurisdiction of another agency. This criterion is not applicable.

19. Where a proposed driveway crosses a culvert or drainage ditch, the City Engineer may require the developer to install a culvert extending under and beyond the edges of the driveway on both sides of it, pursuant to applicable Public Works Design Standards.

**Response:** As shown on the Preliminary Plans (Exhibit B), the existing approach does not cross a culvert or drainage ditch. This criterion is not applicable.

20. Except as otherwise required by the applicable roadway authority or waived by the City Engineer temporary driveways providing access to a construction site or staging area shall be paved or graveled to prevent tracking of mud onto adjacent paved streets.

**Response:** As shown on the Preliminary Plans, the site's existing access consists of a gravel driveway. An interior gravel construction entrance is planned to be installed prior to construction. This criterion is met.

21. Development that increases impervious surface area shall conform to the storm drainage and surface water management requirements of Section 17-3.6.050.

**Response:** As shown on the Composite Utility Plan included in Exhibit B, the planned improvements for the site conform to the storm drainage and surface water management requirements of Section 17-3.6.050. This criterion is satisfied.



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- E. **Approach Separation from Street Intersections.** Except as provided by subsection H, minimum distances shall be maintained between approaches and street intersections consistent with the current version of the Public Works Design Standards and Transportation System Plan.

**Response:** The property abuts W Main St. and currently has two existing driveway access points serving the existing residential home. As shown on the Preliminary Plans (Exhibit B), the existing driveways will be abandoned and replaced with a single shared access serving both the planned development and the neighboring future credit union site to the west of the subject property. The access point will be over 500 feet from the intersection of W Main St. and S Leroy Avenue and  $\pm 325$  feet from the intersection of W Main St. and Ridings Avenue.

- F. **Approach Spacing.** Except as provided by subsection H or as required to maintain street operations and safety, the following minimum distances shall be maintained between approaches consistent with the current version of the Public Works Design Standards and Transportation System Plan.

**Response:** The property abuts W Main St., which is an ODOT facility, and their access spacing standards supersede the City's standards. The site's shared access design was discussed in detail with ODOT at the pre-application conference, where ODOT agreed that the site's planned access would be preferable to the existing double-access driveway, which would need to be abandoned. This criterion is met.

- G. **Vision Clearance.** No visual obstruction (e.g., sign, structure, solid fence, or shrub vegetation) greater than 2.5 feet in height shall be placed in "vision clearance areas" at street intersections. The minimum vision clearance area may be modified by the Planning Official through a Type I procedure, upon finding that more or less sight distance is required (i.e., due to traffic speeds, roadway alignment, etc.). Placement of light poles, utility poles, and tree trunks should be avoided within vision clearance areas.

**Response:** As shown on the Preliminary Plans (Exhibit B), the vision clearance area of the intersection of W Main St. and the site access is planned to be free of visual obstructions per this section. This criterion is met.

- H. **Exceptions and Adjustments.** The City Engineer may approve adjustments to the spacing standards of subsections E and F, above, where an existing connection to a City street does not meet the standards of the roadway authority and the proposed development moves in the direction of code compliance. The Planning Official through a Type II procedure may also approve a deviation to the spacing standards on City streets where it finds that mitigation measures, such as consolidated access (removal of one access), joint use driveways (more than one property uses same access), directional limitations (e.g., one-way), turning restrictions (e.g., right-in/right-out only), or other mitigation alleviate all traffic operations and safety concerns.

**Response:** The site is located within an ODOT-designated Urban Business Area (UBA), and therefore requires a minimum spacing of 350-feet between highway approach locations. As shown on the Preliminary Plans (Exhibit B), the centerline of the proposed shared access is  $\pm 500$ -feet from the centerline of S Leroy Ave. and  $\pm 355$ -feet from the nearest approach to the east (Northwest Self Storage). The access has been planned in coordination with City and

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ODOT staff to mitigate any traffic operations and safety concerns, as applicable. This criterion is met.

- I. **Joint Use Access Easement and Maintenance Agreement.** Where the City approves a joint use driveway, the property owners shall record an easement with the deed allowing joint use of and cross access between adjacent properties. The owners of the properties agreeing to joint use of the driveway shall record a joint maintenance agreement with the deed, defining maintenance responsibilities of property owners. The applicant shall provide a fully executed copy of the agreement to the City for its records, but the City is not responsible for maintaining the driveway or resolving any dispute between property owners.

**Response:** As shown on the Preliminary Plans, access for this site is planned to be taken from a joint-use access driveway. An easement allowing reciprocal access to the sites, as well as a joint maintenance agreement defining the maintenance responsibilities of the property owners, are being developed and will be finalized and recorded prior to the occupancy of the commercial development. This criterion is met.

17-3.3.040 Pedestrian Access and Circulation

(...)

- B. **Standards.** Developments shall conform to all of the following standards for pedestrian access and circulation as generally illustrated in Figure 17-3.3-3:
  - 1. **Continuous Walkway System.** A pedestrian walkway system shall extend throughout the development site and connect to adjacent sidewalks, if any, and to all future phases of the development, as applicable.

**Response:** As shown on the Preliminary Plans (Exhibit B), the planned pedestrian walkway system extends throughout the site and connects to the sidewalks along W Main St. and S Leroy Avenue. This standard is met.

- 2. **Safe, Direct, and Convenient.** Walkways within developments shall provide safe, reasonably direct, and convenient connections between primary building entrances and all adjacent parking areas, recreational areas, playgrounds, and public rights-of-way conforming to the following standards:
  - a. The walkway is reasonably direct when it follows a route that does not deviate unnecessarily from a straight line or it does not involve a significant amount of out-of-direction travel.
  - b. The walkway is designed primarily for pedestrian safety and convenience, meaning it is reasonably free from hazards and provides a reasonably smooth and consistent surface and direct route of travel between destinations. The Planning Official may require landscape buffering between walkways and adjacent parking lots or driveways to mitigate safety concerns.
  - c. The walkway network connects to all primary building entrances, consistent with the building design standards of Chapter 17-3.2 and, where required, Americans with Disabilities Act (ADA) requirements.

**Response:** As shown on the Preliminary Plans (Exhibit B), the planned walkways connect building entrances, parking areas, adjacent residential housing, and W Main St. in reasonably direct routes. The walkway is designed to be paved, compliant with Americans with Disabilities Act (ADA) requirements, and free from hazards. These standards are satisfied.



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3. **Vehicle/Walkway Separation.** Except as required for crosswalks, per subsection 4, below, where a walkway abuts a driveway or street it shall be raised six inches and curbed along the edge of the driveway or street. Alternatively, the Planning Official may approve a walkway abutting a driveway at the same grade as the driveway if the walkway is physically separated from all vehicle-maneuvering areas. An example of such separation is a row of bollards (designed for use in parking areas) with adequate minimum spacing between them to prevent vehicles from entering the walkway.

**Response:** As shown on the Preliminary Plans (Exhibit B), curbs are planned for walkways where they abut driveways or streets. This criterion is met.

4. **Crosswalks.** Where a walkway crosses a parking area or driveway (“crosswalk”), it shall be clearly marked with contrasting paving materials (e.g., pavers, light-color concrete inlay between asphalt, or similar contrasting material). The crosswalk may be part of a speed table to improve driver-visibility of pedestrians. Painted or thermo-plastic striping and similar types of non-permanent applications are discouraged, but may be approved for lesser used crosswalks not exceeding 24 feet in length.

**Response:** Drive aisles within the project are greater than 24 feet wide. Where crossings are necessary, these areas are planned to be clearly delineated with striping, as is permitted below. This criterion is satisfied.

5. **Walkway Width and Surface.** Walkways, including access ways required for subdivisions pursuant to Chapter 17-4.3, shall be constructed of concrete, asphalt, brick or masonry pavers, or other durable surface, as approved by the City Engineer, and not less than six feet wide. Multi-use paths (i.e., designed for shared use by bicyclists and pedestrians) shall be concrete or asphalt and shall conform to the current version of the Public Works Design Standards and Transportation System Plan.

**Response:** This project includes public walkways serving a commercial site. As shown on the preliminary plans, the walkways included in this application are planned to be 6-foot wide and constructed of concrete. This standard is met.

6. **Walkway Construction (Private).** Walkway surfaces may be concrete, asphalt, brick or masonry pavers, or other City-approved durable surface meeting ADA requirements. Walkways shall be not less than six feet in width in commercial and mixed-use developments and where access ways are required for subdivisions under Division IV.

**Response:** This application includes private walkways serving a commercial development. The planned walkways will be constructed of approved materials. As shown on the preliminary plans, private walkways will be 6-feet in width and compliant with ADA requirements. This standard is met.

7. **Multi-Use Pathways.** Multi-use pathways, where approved, shall be a minimum width and constructed of materials consistent with the current version of the Public Works Design Standards and Transportation System Plan.

**Response:** This application does not include multi-use pathways. This standard does not apply.

#### Chapter 17-3.4 LANDSCAPING, FENCES AND WALLS, OUTDOOR LIGHTING

##### 17-3.4.030 Landscaping and Screening

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- A. General Landscape Standard. All portions of a lot not otherwise developed with buildings, accessory structures, vehicle maneuvering areas, or parking shall be landscaped.
  - B. Minimum Landscape Area. All lots shall conform to the minimum landscape area standards of the applicable zoning district, as contained in Tables 17-2.2.040.D and 17-2.2.040.E. The Planning Official, consistent with the purposes in Section 17-3.4.010, may allow credit toward the minimum landscape area for existing vegetation that is retained in the development.

**Response:** As shown on the Preliminary Landscape Plan, approximately 14 percent of the site is planned to include landscaping, which exceeds the minimum standard of 5 percent shown in Table 17-2.2.040.E. As further illustrated on the Preliminary Landscape Plan, the areas not planned for future buildings, parking areas, or vehicle maneuvering areas are planned to be landscaped. These standards are satisfied.

- C. Plant Selection. A combination of deciduous and evergreen trees, shrubs, and ground covers shall be used for all planted areas, the selection of which shall be based on local climate, exposure, water availability, and drainage conditions, among other factors. When new vegetation is planted, soils shall be amended and irrigation shall be provided, as necessary, to allow for healthy plant growth. The selection of plants shall be based on all of the following standards and guidelines:
  - 1. Use plants that are appropriate to the local climate, exposure, and water availability. The presence of utilities and drainage conditions shall also be considered.
  - 2. Plant species that do not require irrigation once established (naturalized) are preferred over species that require irrigation.
  - 3. Trees shall be not less than two-inch caliper for street trees and one and one-half-inch caliper for other trees at the time of planting. Trees to be planted under or near power lines shall be selected so as to not conflict with power lines at maturity.
  - 4. Shrubs shall be planted from five-gallon containers, minimum, where they are for required screens or buffers, and two-gallon containers minimum elsewhere.
  - 5. Shrubs shall be spaced in order to provide the intended screen or canopy cover within two years of planting.
  - 6. All landscape areas, whether required or not, that are not planted with trees and shrubs or covered with allowable non-plant material, shall have ground cover plants that are sized and spaced to achieve plant coverage of not less than 75 percent at maturity.
  - 7. Bark dust, chips, aggregate, or other non-plant ground covers may be used, but shall cover not more than 35 percent of any landscape area. Non-plant ground covers cannot be a substitute for required ground cover plants.
  - 8. Where stormwater retention or detention, or water quality treatment facilities are proposed, they shall meet the requirements of the current version of the Public Works Design Standards.
  - 9. Existing mature trees that can thrive in a developed area and that do not conflict with other provisions of this Code shall be retained where specimens are in good health, have desirable aesthetic characteristics, and do not present a hazard.
  - 10. Landscape plans shall avoid conflicts between plants and buildings, streets, walkways, utilities, and other features of the built environment.

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11. Evergreen plants shall be used where a sight-obscuring landscape screen is required.
  12. Deciduous trees should be used where summer shade and winter sunlight is desirable.
  13. Landscape plans should provide focal points within a development, for example, by preserving large or unique trees or groves or by using flowering plants or trees with fall color.
  14. Landscape plans should use a combination of plants for seasonal variation in color and yearlong interest.
  15. Where plants are used to screen outdoor storage or mechanical equipment, the selected plants shall have growth characteristics that are compatible with such features.
  16. Landscape plans shall provide for both temporary and permanent erosion control measures, which shall include plantings where cuts or fills, including berms, swales, stormwater detention facilities, and similar grading, is proposed.
  17. When new vegetation is planted, soils shall be amended and irrigation provided, as necessary, until the plants are naturalized and able to grow on their own.

**Response:** The Preliminary Landscape Plan, included in Exhibit B, shows that all plant materials used will meet the above guidelines. These criteria are met.

(...)

- E. **Parking Lot Landscaping.** All of the following standards shall be met for parking lots. If a development contains multiple parking lots, then the standards shall be evaluated separately for each parking lot.
  1. A minimum of 10 percent of the total surface area of all parking areas, as measured around the perimeter of all parking spaces and maneuvering areas, shall be landscaped. Such landscaping shall consist of shade trees distributed throughout the parking area. A combination of deciduous and evergreen trees, shrubs, and ground cover plants is required. The trees shall be planned so that they provide a partial canopy cover over the parking lot within five years. At a minimum, one tree per 12 parking spaces on average shall be planted over and around the parking area.

**Response:** As shown on the Preliminary Landscape Plan, parking area landscaping is included that meets the requirement above. The parking area will have 11 percent of its total surface area landscaped, including the provision of two trees. This criterion is met.

2. All parking areas with more than 20 spaces shall provide landscape islands with trees that break up the parking area into rows of not more than 10 contiguous parking spaces. Landscape islands and planters shall have dimensions of not less than 48 square feet of area and no dimension of less than six feet, to ensure adequate soil, water, and space for healthy plant growth.

**Response:** This application does not include more than 20 parking spaces. Planned parking meets the above requirements and is broken up by landscaped bays on the northeast and southeast corners of the planned convenience store. A Preliminary Landscape Plan is included in Exhibit B verifying the requirements are met. The criterion is met.

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3. All required parking lot landscape areas not otherwise planted with trees must contain a combination of shrubs and groundcover plants so that, within two years of planting, not less than 50 percent of that area is covered with living plants.

**Response:** As shown on the Preliminary Landscape Plan, parking area landscaping includes the required materials noted above. This standard is met.

4. Wheel stops, curbs, bollards, or other physical barriers are required along the edges of all vehicle-maneuvering areas to protect landscaping from being damaged by vehicles. Trees shall be planted not less than two feet from any such barrier.

**Response:** As shown on the Preliminary Plans, wheel stops or curbs are planned along the edges of vehicle maneuvering areas. This standard is met.

5. Trees planted in tree wells within sidewalks or other paved areas shall be installed with root barriers, consistent with applicable nursery standards.

**Response:** Planned trees will be installed with root barriers and will comply with applicable industry standards. This criterion is met.

F. **Screening Requirements.** Screening is required for outdoor storage areas, unenclosed uses, and parking lots, and may be required in other situations as determined by the Planning Official. Landscaping shall be provided pursuant to the standards of subsections F.1 through 3. (See also Figure 17-3.4-4.)

1. **Outdoor Storage and Unenclosed Uses.** All areas of a site containing or proposed to contain outdoor storage of goods, materials, equipment, and vehicles (other than required parking lots and service and delivery areas, per Site Design Review), and areas containing junk, salvage materials, or similar contents, shall be screened from view from adjacent rights-of-way and residential uses by a sight-obscuring fence, wall, landscape screen, or combination of screening methods. See also Section 17-3.4.040 for related fence and wall standards.

**Response:** This application includes a planned fence around the trash enclosure that will comply with the above requirements. No other outdoor storage areas are planned. This standard is satisfied.

2. **Parking Lots.** The edges of parking lots shall be screened to minimize vehicle headlights shining into adjacent rights-of-way and residential yards. Parking lots abutting a sidewalk or walkway shall be screened using a low-growing hedge or low garden wall to a height of between three feet and four feet.

**Response:** As shown on the Preliminary Landscape Plan, the edges of the planned parking areas are screened with the appropriate landscaping. This standard is met.

3. **Other Uses Requiring Screening.** The Planning Official may require screening in other situations as authorized by this Code, including, but not limited to, outdoor storage areas, blank walls, Special Uses pursuant to Chapter 17-2.3, flag lots, and as mitigation where an applicant has requested an adjustment pursuant to Chapter 17-4.7.

**Response:** Outdoor storage areas, blank walls, and other similar features are not included in the application. As shown on the Preliminary Landscape Plan, landscaping is planned to accompany hard surfaced area (e.g. parking) and building exteriors. This standard is satisfied.

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17-3.4.040 Fences and Walls

- A. Purpose. This section provides general development standards for fences, and walls that are not part of a building, such as screening walls and retaining walls.
- B. Applicability. Section 17-3.4.040 applies to all fences, and to walls that are not part of a building, including modifications to existing fences and walls.
- C. Height.
  - 2. Non-Residential Zones. Fences and freestanding walls (i.e., exclusive of building walls) for non-residential uses shall not exceed the following height above grade, where grade is measured from the base of the subject fence or wall.
    - a. Within Front or Street-Facing Side Yard Setback. Four feet, except the following additional height is allowed for properties located within an industrial, public, or institutional zone:
      - 1) Where approved by the City Planning Official, a fence constructed of open chain link or other “see-through” composition that allows 90 percent light transmission may reach a height of up to eight feet.
    - b. Within an Interior Side or Rear Yard Setback. Eight feet; except the fence or wall height, as applicable, shall not exceed the distance from the fence or wall line to the nearest primary structure on an adjacent property.

(...)

**Response:** As shown on the Preliminary Architectural Plans (Exhibit D), this application includes a planned fence around the trash enclosure. This fence is outside of the site’s setback areas. Additional fences are not included in the application. That said, if additional fences are desired later, they can meet these standards. To the extent applicable, these standards are satisfied.

- 3. All Zones. Fences and walls shall comply with the vision clearance standards of Section 17-3.3.030.G. Other provisions of this Code, or the requirements of the roadway authority, may limit allowable height of a fence or wall below the height limits of this section.

**Response:** This application does not include planned fences or walls within vision clearance areas. This standard is not applicable.

- D. Materials. Prohibited fence and wall materials include straw bales, tarps, barbed or razor wire (except in the M-2 Heavy Industrial zone); scrap lumber, untreated wood (except cedar or redwood), corrugated metal, sheet metal, scrap materials; dead, diseased, or dying plants; and materials similar to those listed herein.

**Response:** This application does not include fences or walls constructed out of prohibited materials. This standard is satisfied.

17-3.4.050 Outdoor Lighting

- (...)
- B. Applicability. All outdoor lighting shall comply with the standards of this section.
- C. Standards.
  - 1. Light poles, except as required by a roadway authority or public safety agency, shall not exceed a height of 20 feet; pedestal- or bollard-style lighting shall be

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used to illuminate walkways. Flag poles, utility poles, and streetlights are exempt from this requirement.

**Response:** This application includes planned outdoor lighting, as shown on the Preliminary Site Lighting Plan included in Exhibit B. This standard is met.

2. Where a light standard is placed over a sidewalk or walkway, a minimum vertical clearance of eight feet shall be maintained.

**Response:** This application includes three 20-ft.-tall freestanding outdoor lighting poles that will comply with the eight-foot minimum clearance standard. This criterion is met.

3. Outdoor lighting levels shall be subject to review and approval through Site Design Review. As a guideline, lighting levels shall be no greater than necessary to provide for pedestrian safety, property or business identification, and crime prevention.

**Response:** This application includes planned outdoor lighting in the parking area, walkways, and building entrances, and security lighting. As shown on the Preliminary Site Lighting Plan, the planned lighting levels are not greater than necessary to provide safety. This standard is satisfied.

4. Except as provided for up-lighting of flags and permitted building-mounted signs, all outdoor light fixtures shall be directed downward, and have full cutoff and full shielding to preserve views of the night sky and to minimize excessive light spillover onto adjacent properties.

**Response:** The planned outdoor light fixtures will consist of downward-facing lights with cutoffs to minimize light intrusion onto adjacent properties. This standard is met.

5. Lighting shall be installed where it will not obstruct public ways, driveways, or walkways.

**Response:** As shown on the Preliminary Site Lighting Plan, the locations for the planned site lighting do not obstruct public ways, driveways, or walkways. This standard is satisfied.

6. Walkway lighting in private areas shall have a minimum average illumination of not less than 0.2 foot-candles. Lighting along public walkways shall meet the current version of the Public Works Design Standards and AASHTO lighting requirements.

**Response:** As shown on the Preliminary Site Lighting Plan, the planned walkway lighting has an average illumination of 1.9 foot-candles. Lighting along public walkways is not included with this application. The existing street light directly across from the site as well as the proposed onsite lighting will provide sufficient illumination while minimizing excessive light spillover onto adjacent properties. To the extent applicable, this standard is satisfied.

7. Active building entrances shall have a minimum average illumination of not less than two foot-candles.

**Response:** As shown on the Preliminary Site Lighting Plan, the planned lighting of active building entrances has an average minimum illumination of 2 foot-candles. This standard is satisfied.

8. Surfaces of signs shall have an illumination level of not more than two foot-candles.



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**Response:** Signage is not proposed at this time, although future sign plans will be requested later. This standard is not applicable.

9. Parking lots and outdoor services areas, including quick vehicle service areas, shall have a minimum illumination of not less than 0.2 foot-candles, average illumination of approximately 0.8 foot-candles, and a uniformity ratio (maximum-to-minimum ratio) of not more than 20:1.

**Response:** As shown on the Preliminary Site Lighting Plan, the planned lighting fixtures in the parking area have a minimum illumination of 0.2 foot-candles, average illumination of 1.1 foot-candles, and a uniformity ratio of 16.5. This standard is satisfied.

10. Where illumination grid lighting plans cannot be reviewed or if fixtures do not provide photometrics and bulbs are under 2,000 lumens, use the following guidelines:
  - a. Poles should be no greater in height than four times the distance to the property line.
  - b. Maximum lumen levels should be based on fixture height.
  - c. Private illumination shall not be used to light adjoining public right-of-way.

**Response:** The applicant has provided a site lighting plan in compliance with this code; therefore the above guidelines do not apply.

11. Where a light standard is placed within a walkway, an unobstructed pedestrian through zone not less than 48 inches wide shall be maintained.

**Response:** As shown on the Preliminary Plans, walkway lighting fixtures are not placed within walkway areas.

12. Lighting subject to this section shall consist of materials approved for outdoor use and shall be installed according to the manufacturer's specifications.

**Response:** The planned lighting materials will be constructed of appropriate materials designed for outdoor use and will be installed according to the manufacturer's specifications. This standard is satisfied.

#### Chapter 17-3.5 PARKING AND LOADING

##### 17-3.5.030 Automobile Parking

- A. Minimum Number of Off-Street Automobile Parking Spaces. Except as provided by this subsection A, or as required for Americans with Disabilities Act compliance under subsection G, off-street parking shall be provided pursuant to one of the following three standards:
  1. The standards in Table 17-3.5.030.A;
  2. A standard from Table 17-3.5.030.A for a use that the Planning Official determines is similar to the proposed use; or
  3. Subsection B Exceptions, which includes a Parking Demand Analysis option.

Table 17-3.5.030.A Automobile Parking Spaces by Use	
Use Categories	Minimum Parking per Land Use (Fractions are rounded down to the closest whole number.)
<b>Commercial Categories</b>	
Quick Vehicle Servicing or Vehicle Repair	2 spaces, excluding vehicle service or queuing area, or per Conditional Use Permit review (Chapter 17-4.4)
Retail Sales and Commercial Service	<u>Retail</u> : 1 space per 400 sq. ft. floor area

**Response:** This application involves Site Design Review for a gas station and 4,165-square-foot convenience store. Eleven spaces are required for the store and two are required for the fueling station; 15 are provided; therefore, this standard is met.

**B. Carpool and Vanpool Parking Requirements.**

1. Carpool and vanpool parking spaces shall be identified for the following uses:
  - a. New commercial and industrial developments with 50 or more parking spaces;
  - b. New institutional or public assembly uses; and
  - c. Transit park-and-ride facilities with 50 or more parking spaces.

**Response:** This application does not include more than 50 parking spaces nor institutional or public assembly-type uses; therefore, these requirements are not applicable.

**A. Exceptions and Reductions to Off-Street Parking.**

(...)

**Response:** This application does not include an exception or reduction to off-street parking. Therefore, these standards are not applicable.

**D. Maximum Number of Off-Street Automobile Parking Spaces.** The maximum number of off-street automobile parking spaces allowed per site equals the minimum number of required spaces for the use pursuant to Table 17-3.5.030.A, times a factor of:

1. 1.2 spaces for uses fronting a street with adjacent on-street parking spaces; or
2. 1.5 spaces, for uses fronting no street with adjacent on-street parking; or
3. A factor based on applicant's projected parking demand, subject to City approval.

**Response:** This application involves Site Design Review for a small commercial development on a site that does not have adjacent on-street parking. As discussed in 17-3.5.030(A) above, the minimum number of required automobile parking spaces is 13, therefore the maximum automobile parking spaces allowed would be 19. This application includes 15 planned parking spaces. This standard is met.



E. **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 overlap (e.g., uses primarily of a daytime versus nighttime nature; weekday uses versus weekend uses), and provided that the right of joint use is evidenced by a recorded deed, lease, contract, or similar written instrument establishing the joint use. Shared parking requests shall be subject to review and approval through a Type I Review.

**Response:** The proposed parking facilities satisfy the minimum parking requirements for both the gas station and convenience store use. This criterion is not applicable.

F. **Parking Stall Design and Minimum Dimensions.** Where a new off-street parking area is proposed, or an existing off-street parking area is proposed for expansion, the entire parking area shall be improved in conformance with this Code. At a minimum the parking spaces and drive aisles shall be paved with asphalt, concrete, or other City-approved materials, provided the Americans with Disabilities Act requirements are met, and shall conform to the minimum dimensions in Table 17-3.5.030.F and the figures below. All off-street parking areas shall contain wheel stops, perimeter curbing, bollards, or other edging as required to prevent vehicles from damaging buildings or encroaching into walkways, sidewalks, landscapes, or the public right-of-way. Parking areas shall also provide for surface water management, pursuant to Section 17-3.6.050.

Table 17-3.5.030.F Parking Area Minimum Dimensions*				
PARKING ANGLE < °	CURB LENGTH	STALL DEPTH	AISLE DEPTH	STRIPE LENGTH
		SINGLE D1	TWO WAY A2	
90°	8'-6"	18'	23'	18'

**Response:** As shown on the Preliminary Plans (Exhibit B), the planned parking spaces are designed in conformance with the dimensional standards of this section. Therefore, this standard is met.

G. **Adjustments to Parking Area Dimensions.** The dimensions in subsection E are minimum standards. The Planning Official, through a Type II procedure, may adjust the dimensions based on evidence that a particular use will require more or less maneuvering area. For example, the Planning Official may approve an adjustment where an attendant will be present to move vehicles, as with valet parking. In such cases, a form of guarantee must be filed with the City ensuring that an attendant will always be present when the lot is in operation.

**Response:** As previously discussed, the parking area minimum dimensions in Table 17-3.5.030.F are met. Adjustments to these standards are not required nor warranted. This criterion is not applicable.

H. **Americans with Disabilities Act (ADA).** Parking shall be provided consistent with ADA requirements, including, but not limited to, the minimum number of spaces for automobiles, van-accessible spaces, location of spaces relative to building entrances, accessible routes between parking areas and building entrances, identification signs, lighting, and other design and construction requirements.

**Response:** As shown on the Preliminary Plans (Exhibit B), there is one planned ADA-compliant parking space, which is appropriate for the project. This criterion is met.

- I. **Electric Charging Stations.** Charging stations for electric vehicles are allowed as an accessory use to parking areas developed in conformance with this Code, provided the charging station complies with applicable building codes and any applicable state or federal requirements.

**Response:** This application does not include electric charging stations. This criterion is not applicable.

17-3.5.040 **Bicycle Parking**

- A. **Standards.** Bicycle parking spaces shall be provided with new development and, where a change of use occurs, at a minimum, shall follow the standards in Table 17-3.5.040.A. Where an application is subject to Conditional Use Permit approval or the applicant has requested a reduction to an automobile-parking standard, pursuant to Section 17-3.5.030.C, the Planning Official may require bicycle parking spaces in addition to those in Table 17-3.5.040.A.

Table 17-3.5.040.A Minimum Required Bicycle Parking Spaces	
Use	Minimum Number of Spaces
Commercial	2 bike spaces per primary use or 1 per 5 vehicle spaces, whichever is greater

**Response:** This application involves Site Design Review for a convenience store and six-pump fueling station. Because the site plan includes 15 vehicle parking spaces and two primary uses (retail and vehicle servicing), four bicycle parking spaces are required. As shown on the Preliminary Site Plan, four bicycle parking spaces are provided; therefore, this criterion is satisfied.

- B. **Design.** Bicycle parking shall consist of staple-design steel racks or other City-approved racks, lockers, or storage lids providing a safe and secure means of storing a bicycle, consistent with the Public Works Design Standards.

**Response:** The planned bicycle racks will meet the City of Molalla Public Works Design Standards. Final design is subject to Public Works approval. This criterion is met.

- C. **Exemptions.** This section does not apply to single-family and duplex housing, home occupations, and agricultural uses.

**Response:** This application involves Site Design Review for a commercial use. Therefore, this exemption is not applicable.

- D. **Hazards.** Bicycle parking shall not impede or create a hazard to pedestrians or vehicles, and shall be located so as to not conflict with the vision clearance standards of Section 17-3.3.030.G.

**Response:** As shown on the Preliminary Plans (Exhibit B), the planned bicycle parking locations will not create a hazard to pedestrians or vehicles and do not conflict with the vision clearance standards. This criterion is satisfied.

Chapter 17-3.6 **PUBLIC FACILITIES**

17-3.6.020 **Transportation Standards**

- A. **General Requirements.**
  - 1. Except as provided by subsection A.5, existing substandard streets and planned streets within or abutting a proposed development shall be improved in accordance with the standards of Chapter 17-3.6 as a condition of development approval.

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**Response:** This application does not include or abut existing substandard streets. Therefore, this criterion is not applicable.

2. All street improvements, including the extension or widening of existing streets and public access ways, shall conform to Section 17-3.6.020, and shall be constructed consistent with the City of Molalla Public Works Design Standards.

**Response:** This application does not include an extension or widening of an existing street or public access way. The planned access connections planned to be constructed to the west of the subject property will be privately owned with reciprocal access easements granted to the properties served by the driveways. This standard is not applicable.

3. All new streets shall be contained within a public right-of-way. Public access ways (e.g., pedestrian ways) may be contained within a right-of-way or a public access easement, subject to review and approval of the City Engineer.

**Response:** This application does not include new streets. The driveway connections provided to the west will be privately owned, with reciprocal access easements granted to properties served by the approach.

4. The purpose of this subsection is to coordinate the review of land use applications with roadway authorities and to implement Section 660-012-0045(2)(e) of the State Transportation Planning Rule, which requires the City to adopt a process to apply conditions to development proposals in order to minimize impacts and protect transportation facilities. The following provisions also establish when a proposal must be reviewed for potential traffic impacts; when a Transit Analysis Letter (TAL) or Traffic Impact Analysis (TIA) must be submitted with a development application in order to determine whether conditions are needed to minimize impacts to and protect transportation facilities; the required contents of a TAL/TIA; and who is qualified to prepare the analysis.
  - a. Determining the Required Level of Transportation Analysis and Documentation. A Transportation Impact Analysis (TIA) is required for developments that are expected to have an impact on the transportation system. The analysis shall be based upon the latest edition of the ITE Trip Generation Manual or an agreed-upon alternative methodology where credible data is available to support the alternative methodology. When specific criteria generally associated with small developments are met, a Transportation Analysis Letter (TAL) may be substituted for the required TIA. At the discretion of the City Engineer, a TAL may satisfy the City's transportation analysis requirements, in lieu of a TIA when a development meets all the following criteria:  
  
(...)

**Response:** As discussed in the pre-application conference, a Transportation Impact Study is required for this application. A study meeting the above requirements has been included in this application (Exhibit C), and was prepared by Lancaster Mobley. This requirement is met.

(...)

- c. Transportation Impact Analysis Contents. The following information shall be included in each TIA submitted to the City. Additional information specified by the City in the scoping summary or through

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the pre-application meeting or other project meetings shall also be included.

- (1) Completed TIA checklist signed by the professional engineer responsible for the preparation of the TIA.
- (2) Table of Contents—Listings of all sections, figures, and tables included in the report.
- (3) Executive Summary—A summary of key points, findings, conclusions, and recommendation including a mitigation plan.
- (4) Introduction, including:
  - i. Proposed land use action including site location, zoning, building size, and project scope.
  - ii. Map showing the proposed site, building footprint, access driveways, and parking facilities.
  - iii. Map of the study area that shows site location and surrounding roadway facilities.
- (5) Existing Conditions.
  - i. Existing site conditions and adjacent land uses.
  - ii. Roadway characteristics of important transportation facilities and modal opportunities located within the study area, including roadway functional classifications, street cross-section, posted speeds, bicycle and pedestrian facilities, on-street parking, and transit facilities.
  - iii. Existing lane configurations and traffic control devices at the study area intersections.
  - iv. Existing traffic volumes and operational analysis of the study area roadways and intersections.
  - v. Roadway and intersection crash history analysis.
  - vi. Intersection and stopping sight distance related to new and impacted driveways and intersections.
- (6) Background Conditions (Without the Proposed Land Use Action).
  - i. Approved in-process developments and funded transportation improvements in the study area.
  - ii. Traffic growth assumptions.
  - iii. Addition of traffic from other planned developments.
  - iv. Background traffic volumes and operational analysis.
- (7) Full Buildout Traffic Conditions (With the Proposed Land Use Action).
  - i. Description of the proposed development plans.
  - ii. Trip generation characteristics of proposed project (including trip reduction documentation).

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- iii. Trip distribution assumptions.
  - iv. Full buildout traffic volumes and intersection operational analysis.
  - v. Site circulation and parking.
  - vi. Intersection and site-access driveway queuing analysis.
  - vii. Recommended roadway and intersection mitigation measures (if necessary).
- (8) Conclusions and recommendations.
- (9) Appendix—With Dividers or Tabs.
- i. Traffic count summary sheets.
  - ii. Crash analysis summary sheets.
  - iii. Existing, background, and full buildout traffic operational analysis worksheets with detail to review capacity calculations.
  - iv. Signal, left-turn, and right-turn lane warrant evaluation calculations.
  - v. Signal timing sheets depicting the timing and phasing used in analysis.
  - vi. Other analysis summary sheets such as queuing.
- (10) To present the information required to analyze the transportation impacts of development, the following figures shall be included in the TIS:
- i. Vicinity Map.
  - ii. Existing Lane Configurations and Traffic Control Devices.
  - iii. Existing Traffic Volumes and Levels of Service for each required time period.
  - iv. Future Year Background Traffic Volumes and Levels of Service for each required time period.
  - v. Proposed Site Plan, including access points for abutting parcels and for those across the street from the proposed development.
  - vi. Future Year Assumed Lane Configurations and Traffic Control Devices.
  - vii. Estimated Trip Distribution/Assignment Pattern.
  - viii. Trip reductions (pass-by trips at site access(es)).
  - ix. Site-Generated Traffic Volumes for each required time period.
  - x. Full Buildout Traffic Volumes and Levels of Service for each required time period.

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**Response:** A Transportation Impact Study (TIS) that contains the applicable information listed above is included with the submittal materials included in this application (Exhibit C). This standard is satisfied.

5. The City Engineer may waive or allow deferral of standard street improvements, including sidewalk, roadway, bicycle lane, undergrounding of utilities, and landscaping, as applicable, where one or more of the following conditions in subdivisions (a) through (d) is met. Where the City Engineer agrees to defer a street improvement, it shall do so only where the property owner agrees not to remonstrate against the formation of a local improvement district in the future.
  - a. The standard improvement conflicts with an adopted capital improvement plan.
  - b. The standard improvement would create a safety hazard.
  - c. It is unlikely due to the developed condition of adjacent property that the subject improvement would be extended in the foreseeable future, and the improvement under consideration does not by itself significantly improve transportation operations or safety.
  - d. The improvement under consideration is part of an approved partition and the proposed partition does not create any new street.

**Response:** This application does not include a request for deferral of standard street improvements. Therefore, these requirements are not applicable.

**B. Street Location, Alignment, Extension, and Grades.**

1. All new streets, to the extent practicable, shall connect to the existing street network and allow for the continuation of an interconnected street network, consistent with adopted public facility plans and pursuant to subsection D Transportation Connectivity and Future Street Plans.
2. Specific street locations and alignments shall be determined in relation to existing and planned streets, topographic conditions, public convenience and safety, and in appropriate relation to the proposed use of the land to be served by such streets.
3. Grades of streets shall conform as closely as practicable to the original (pre-development) topography to minimize grading.
4. New streets and street extensions exceeding a grade of 10 percent over a distance more than 200 feet, to the extent practicable, shall be avoided. Where such grades are unavoidable, the City Engineer may approve an exception to the 200-foot standard and require mitigation, such as a secondary access for the subdivision, installation of fire protection sprinkler systems in dwellings, or other mitigation to protect public health and safety.
5. Where the locations of planned streets are shown on a local street network plan, the development shall implement the street(s) shown on the plan.
6. Where required local street connections are not shown on an adopted City street plan, or the adopted street plan does not designate future streets with sufficient specificity, the development shall provide for the reasonable

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continuation and connection of existing streets to adjacent developable properties, conforming to the standards of this Code.

7. Existing street-ends that abut a proposed development site shall be extended with the development, unless prevented by environmental or topographical constraints, existing development patterns, or compliance with other standards in this Code. In such situations, the applicant must provide evidence that the environmental or topographic constraint precludes reasonable street connection.
8. Proposed streets and any street extensions required pursuant to this section shall be located, designed, and constructed to allow continuity in street alignments and to facilitate future development of vacant or redevelopable lands.

**Response:** This application does not include new streets or street extensions. The private accessways planned to the west and south of the site conform with Public Works Design Standards and comply with the joint use access easement and maintenance agreement requirements of the Molalla Municipal Code. Therefore, the standards included in this section are not applicable.

**C. Rights-of-Way and Street Section Widths.**

1. Street rights-of-way and section widths shall comply with the current version of the Public Works Design Standards and Transportation System Plan. The standards are intended: to provide for streets of suitable location, width, and design to accommodate expected vehicle, pedestrian, and bicycle traffic; to afford satisfactory access to law enforcement, fire protection, sanitation, and road maintenance equipment; and to provide a convenient and accessible network of streets, avoiding undue hardships to adjoining properties.

**Response:** This application does not include new streets. However, it does include a private driveway that has been designed to conform to the City of Molalla Public Works Design Standards. It also includes striping and access improvements within the W Main St. right-of-way that have been designed to conform to ODOT standards. To the extent applicable, this standard is satisfied.

(...)

**D. Transportation Connectivity and Future Street Plans. The following standards apply to the creation of new streets:**

(...)

**Response:** This application does not include new streets. These standards are not applicable.

- E. **Engineering Design Standards.** Street design shall conform to the standards of the applicable roadway authority; for City streets that is the current version of the Public Works Design Standards and Transportation System Plan. Where a conflict occurs between this Code and the Public Works Design Standards, the provisions of the Design Standards shall govern.

**Response:** This application does not include new streets. However, it does include a private driveway that has been designed to conform to the City of Molalla Public Works Design Standards. It also includes improvements within the W Main St. right-of-way that have been designed to conform to ODOT standards. This standard is satisfied.



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- F. Fire Code Standards. Where Fire Code standards conflict with City standards, the City shall consult with the Fire Marshal in determining appropriate requirements. The City shall have the final determination regarding applicable standards.

**Response:** This application includes emergency vehicle turnarounds within the site. As shown on the Preliminary Plans, the site circulation areas are of adequate size to accommodate fire truck turning movements. This standard is met.

- G. Substandard Existing Right-of-Way. Where an existing right-of-way adjacent to a proposed development is less than the standard width, the City Engineer may require the dedication of additional rights-of-way at the time of Subdivision, Partition, or Site Plan Review, pursuant to the standards in the Public Works Design Standards and Transportation System Plan.

**Response:** The site is not adjacent to an existing right-of-way with a substandard width. Improvements to the highway frontage have been determined in coordination with the City and ODOT to conform to applicable standards. The above requirement is not applicable.

- H. Traffic Calming. The City may require the installation of traffic calming features such as traffic circles, curb extensions, reduced street width (parking on one side), medians with pedestrian crossing refuges, speed tables, speed humps, or special paving to slow traffic in neighborhoods or commercial areas with high pedestrian traffic.

**Response:** The proposed vehicular and pedestrian circulation system has been designed to accommodate safe pedestrian access to and within the site. Additional traffic calming features along the shared accessway are not planned.

- I. Sidewalks, Planter Strips, and Bicycle Lanes. Except where the City Engineer grants a deferral of public improvements, pursuant to Chapter 17-4.2 or Chapter 17-4.3, sidewalks, planter strips, and bicycle lanes shall be installed concurrent with development or widening of new streets, pursuant to the requirements of this chapter. Maintenance of sidewalks and planter strips in the right-of-way is the continuing obligation of the adjacent property owner.

**Response:** This application does not include new streets. Therefore, this standard is not applicable.

- J. Streets Adjacent to Railroad Right-of-Way. When a transportation improvement is proposed within 300 feet of a railroad crossing, or a modification is proposed to an existing railroad crossing, the Oregon Department of Transportation and the rail service provider shall be notified and given an opportunity to comment, in conformance with the provisions of Division IV. Private crossing improvements are subject to review and licensing by the rail service provider.

**Response:** This application does not include streets adjacent to railroad right-of-way. This standard is not applicable.

- K. Street Names. No new street name shall be used which will duplicate or be confused with the names of existing streets in the City of Molalla or vicinity. Street names shall be submitted to the City for review and approval in consultation with Clackamas County and emergency services.

**Response:** This application does not include new streets. Therefore, this standard is not applicable.

- L. Survey Monuments. Upon completion of a street improvement and prior to acceptance by the City, it shall be the responsibility of the developer's registered professional land surveyor to provide certification to the City that all boundary and interior monuments have been reestablished and protected.



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**Response:** It is understood that necessary boundary monuments are to be reestablished and protected. This standard is satisfied.

- M. **Street Signs.** The city, county, or state with jurisdiction shall install all signs for traffic control and street names. The cost of signs required for new development shall be the responsibility of the developer. Street name signs shall be installed at all street intersections. Stop signs and other signs may be required.

**Response:** This standard is understood.

- N. **Streetlight Standards.** Streetlights shall be relocated or new lights installed, as applicable, with street improvement projects. Streetlights shall conform to City standards, be directed downward, and full cutoff and full shielding to preserve views of the night sky and to minimize excessive light spillover onto adjacent properties.

**Response:** This application does not include public streetlights, but private walkways and vehicular circulation areas will be lit in accordance with the lighting standards of this code and the above criteria. The existing streetlight located directly across from the subject site and the planned onsite lighting will provide adequate lighting levels for pedestrian safety while minimizing excessive light spillover onto adjacent properties. This criterion is met.

- O. **Mail Boxes.** Mailboxes shall conform to the requirements of the United States Postal Service and the State of Oregon Structural Specialty Code.

**Response:** This standard is understood. The criteria can be met.

- P. **Street Cross-Sections.** The final lift of pavement shall be placed on all new constructed public roadways prior to final City acceptance of the roadway.

**Response:** This application does not include new public streets. Therefore, this standard is not applicable.

17-3.6.040 **Sanitary Sewer and Water Service Improvements**

- A. **Sewers and Water Mains Required.** All new development is required to connect to City water and sanitary sewer systems. Sanitary sewer and water system improvements shall be installed to serve each new development and to connect developments to existing mains in accordance with the adopted facility master plans and applicable Public Works Design Standards. Where streets are required to be stubbed to the edge of the subdivision, sewer and water system improvements and other utilities shall also be stubbed with the streets, except as may be waived by the City Engineer where alternate alignment(s) are provided.

**Response:** As shown on the Preliminary Plans, connections to City facilities will be provided via extensions of the existing water and sanitary sewer lines located in W Main St. right-of-way. This criterion is satisfied.

(...)

17-3.6.050 **Storm Drainage and Surface Water Management Facilities**

- A. **General Provisions.** The City shall issue a development permit only where adequate provisions for stormwater runoff have been made in conformance with the requirements of the current version of the Public Works Design Standards and Stormwater Master Plan.
- B. **Accommodation of Upstream Drainage.** Culverts and other drainage facilities shall be large enough to accommodate existing and potential future runoff from the entire upstream drainage area, whether inside or outside the development. Such facilities shall be subject to review and approval by the City Engineer.

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- C. **Effect on Downstream Drainage.** Where it is anticipated by the City Engineer that the additional runoff resulting from the development will overload an existing drainage facility, the City shall withhold approval of the development until provisions have been made for improvement of the potential condition or until provisions have been made for storage of additional runoff caused by the development in accordance with City standards.

**Response:** As shown on the Preliminary Plans, stormwater runoff is planned to be collected via media filter catch basins designed to route stormwater to an underground 36-inch detention pipe located on the west of the site. The stormwater will then be routed to a flow control manhole before being released into an existing stormwater line located at the west end of the shared accessway adjacent to Dollar General. The preliminary plans demonstrate that the planned improvements conform to the Public Works Design Standards and Stormwater Master Plan. These criteria are satisfied.

- D. **Over-Sizing.** The City may require as a condition of development approval that sewer, water, or storm drainage systems serving new development be sized to accommodate future development within the area as projected by the applicable facility master plan, provided that the City may grant the developer credit toward any required system development charge for the same pursuant to the System Development Charge.

**Response:** As shown on the Preliminary Plans, sewer, water, and storm drainage for the site are planned to be provided by connecting to existing utilities located in the W Main St. right-of-way. The planned improvements are sufficient to accommodate the development. To the extent applicable, this criterion is met.

- E. **Existing Watercourse.** Where a proposed development is traversed by a watercourse, drainage way, channel, or stream, the City may require a stormwater easement or drainage right-of-way conforming substantially with the lines of such watercourse and such further width as will be adequate for conveyance and maintenance to protect the public health and safety.

**Response:** The site does not have an existing watercourse, drainage way, channel, or stream. This criterion is not applicable.

17-3.6.060 Utilities

The following standards apply to new development where extension of electric power, gas, or communication lines is required:

- A. **General Provision.** The developer of a property is responsible for coordinating the development plan with the applicable utility providers and paying for the extension and installation of utilities not otherwise available to the subject property.

**Response:** The Applicant is aware that coordination with utility providers is required to develop the site. This criterion will be met.

- B. **Underground Utilities.**

1. **General Requirement.** The requirements of the utility service provider shall be met. All utility lines in new subdivisions, including, but not limited to, those required for electric, communication, and lighting, and related facilities, shall be placed underground, except where the City Engineer determines that placing utilities underground would adversely impact adjacent land uses. The Planning Official may require screening and buffering of above ground facilities to protect the public health, safety, or welfare.

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**Response:** All planned utilities have been designed in coordination with applicable service providers and will be installed underground. This criterion is met.

2. Subdivisions. In order to facilitate underground placement of utilities, the following additional standards apply to all new subdivisions:  
(...)

**Response:** This application involves Site Design Review, not a subdivision. Therefore, these criteria are not applicable.

- C. Exception to Undergrounding Requirement. The City Engineer may grant exceptions to the undergrounding standard where existing physical constraints, such as geologic conditions, streams, or existing development conditions make underground placement impractical.

**Response:** This application does not include exceptions to the underground utilities standards. This criterion is not applicable.

17-4.1.040 Type III Procedure (Quasi-Judicial Review—Public Hearing)

Type III decisions are made by the Planning Commission after a public hearing, with an opportunity for appeal to the City Council.

A. Application Requirements.

1. Application Forms. Applications requiring Quasi-Judicial Review shall be made on forms provided by the Planning Official.

**Response:** This application includes the required application forms (Exhibit A). This submittal requirement is satisfied.

2. Submittal Information. The Planning Official shall advise the applicant on application submittal requirements. At a minimum, the application shall include all of the following information:
  - a. The information requested on the application form;
  - b. Plans and exhibits required for the specific approval(s) being sought;
  - c. A written statement or letter explaining how the application satisfies each and all of the relevant criteria and standards in sufficient detail;
  - d. Information demonstrating compliance with prior decision(s) and conditions of approval for the subject site, as applicable; and
  - e. The required fee.
  - f. Comments, if obtained from neighborhood contact per Section 17-4.1.070.

**Response:** The required fee and other required application materials, as applicable, are included with this application. These submittal requirements are satisfied.

17-4.1.070 Neighborhood Contact

- 
- A. **Purpose and Applicability.** Applicants for master planned development, subdivision, or site design review on projects involving parcels or lots larger than one acre and located adjacent to any residential zone, and property owner-applicants for zone changes, are recommended to contact neighboring property owners and offer to a hold meeting with them prior to submitting an application. This is to ensure that affected property owners are given an opportunity to preview a proposal and offer input to the applicant before a plan is formally submitted to the City, thereby raising any concerns about the project and the project's compatibility with surrounding uses early in the design process when changes can be made relatively inexpensively.

**Response:** This application includes Site Design Review involving a property that is not larger than one acre and it is not adjacent to residentially zoned properties. Therefore, this recommendation is not applicable.

#### Chapter 17-4.2 SITE DESIGN REVIEW

##### 17-4.2.030 Review Procedure

Site Design Review shall be conducted using the Type II procedure in Section 17-4.1.030, except that proposals exceeding any one of the thresholds below shall be reviewed using the Type III procedure in Section 17-4.1.040:

- A. The proposed use's estimated vehicle trip generation exceeds 100 average daily trips, based on the latest edition of the Institute of Transportation Engineers (ITE) Manual;

**Response:** This application involves Site Design Review for a fueling station and convenience store. According to the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11<sup>th</sup> Edition, the proposed use will exceed 100 average daily trips. Therefore, this application will be reviewed as a Type III procedure.

(...)

##### 17-4.2.040 Application Submission Requirements

All of the following information is required for Site Design Review application submittal, except where the Planning Official and the City Engineer determines that some information is not pertinent and therefore is not required.

- A. **General Submission Requirements.**
  1. Information required for Type II or Type III review, as applicable (see Chapter 17-4.1).

**Response:** Detailed responses to the applicable code sections of Chapter 17-4.1 have been provided. This submittal requirement is met.

2. **Public Facilities and Services Impact Study.** The impact study shall quantify and assess the effect of the development on public facilities and services. The City shall advise as to the scope of the study. The study shall address, at a minimum, the transportation system, including required improvements for vehicles and pedestrians; the drainage system; the parks system; water system; and sewer system. For each system and type of impact, the study shall propose improvements necessary to meet City requirements. The City may require a Traffic Impact Analysis pursuant to Section 17-3.6.020.A(4).

**Response:** This application is for Site Design Review for the construction of a fueling station and convenience store. The Preliminary Plans, application materials, and this narrative demonstrate that public services and facilities are available to serve the project. This standard is satisfied.

- 
- B. Site Design Review Information. In addition to the general submission requirements, an applicant for Site Design Review shall provide the following information, as deemed applicable by the Planning Official. The Planning Official may request any information that he or she needs to review the proposal and prepare a complete staff report and recommendation to the approval body.
1. Site Analysis Map. The site analysis map shall contain all the following information, as the Planning Official deems applicable:
    - a. The applicant's entire property and the surrounding property to a distance sufficient to determine the location of the development in the city, and the relationship between the proposed development site and adjacent property and development. The property boundaries, dimensions, and gross area shall be identified;
    - b. Topographic contour lines at two-foot intervals for slopes, except where the Public Works Director determines that larger intervals will be adequate for steeper slopes;
    - c. Identification of slopes greater than 15 percent, with slope categories identified in five percent increments (e.g., 0%-5%, >5%-10%, >10%-15%, >15%-20%, and so forth);
    - d. The location and width of all public and private streets, drives, sidewalks, pathways, rights-of-way, and easements on the site and adjoining the site;
    - e. Potential natural hazard areas, including, as applicable, the base flood elevation identified on FEMA Flood Insurance Rate Maps or as otherwise determined through site specific survey, areas subject to high water table, and areas designated by the City, county, or state as having a potential for geologic hazards;
    - f. Areas subject to overlay zones;
    - g. Site features, including existing structures, pavement, large rock outcroppings, areas having unique views, and drainage ways, canals, and ditches;
    - h. The location, size, and species of trees and other vegetation (outside proposed building envelope) having a caliper (diameter) of six inches or greater at four feet above grade;
    - i. North arrow, scale, and the names and addresses of all persons listed as owners of the subject property on the most recently recorded deed; and
    - j. Name and address of project designer, engineer, surveyor, and/or planner, if applicable.

**Response:** The Preliminary Plans (Exhibit B) included in the application materials show the information required above, as applicable. This submittal requirement is met.

2. Proposed Site Plan. The site plan shall contain all the following information:
  - a. The proposed development site, including boundaries, dimensions, and gross area;
  - b. Features identified on the existing site analysis maps that are proposed to remain on the site;
  - c. Features identified on the existing site map, if any, which are proposed to be removed or modified by the development;

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- d. The location and dimensions of all proposed public and private streets, drives, rights-of-way, and easements;
  - e. The location and dimensions of all existing and proposed structures, utilities, pavement, and other improvements on the site. Setback dimensions for all existing and proposed buildings shall be provided on the site plan;
  - f. The location and dimensions of entrances and exits to the site for vehicular, pedestrian, and bicycle access;
  - g. The location and dimensions of all parking and vehicle circulation areas (show striping for parking stalls and wheel stops);
  - h. Pedestrian and bicycle circulation areas, including sidewalks, internal pathways, pathway connections to adjacent properties, and any bicycle lanes or trails;
  - i. Loading and service areas for waste disposal, loading, and delivery;
  - j. Outdoor recreation spaces, common areas, plazas, outdoor seating, street furniture, and similar improvements;
  - k. Location, type, and height of outdoor lighting;
  - l. Location of mail boxes, if known;
  - m. Name and address of project designer, if applicable;
  - n. Locations of bus stops and other public or private transportation facilities; and
  - o. Locations, sizes, and types of signs.

**Response:** The Preliminary Plans (Exhibit B) included in the application materials show the information required above, as applicable. This submittal requirement is met.

3. **Architectural Drawings.** Architectural drawings shall include, as applicable:
  - a. Building elevations with dimensions;
  - b. Building materials, colors, and type; and
  - c. Name and contact information of the architect or designer.

**Response:** The Preliminary Architectural Plans (Exhibit D) included in the application materials show the information required above. This submittal requirement is met.

4. **Preliminary Grading Plan.** A preliminary grading plan prepared by a registered engineer shall be required for development sites one-half acre or larger, or where otherwise required by the City. The preliminary grading plan shall show the location and extent to which grading will take place, indicating general changes to contour lines, slope ratios, slope stabilization proposals, and location and height of retaining walls, if proposed. Surface water detention and treatment plans may also be required, in accordance with Section 17-3.6.040.

**Response:** A Preliminary Grading and Erosion and Sediment Control Plan prepared by a registered professional engineer is included in the Preliminary Plans (Exhibit B). A Geotechnical engineering report, included as Exhibit I, was used to inform the development of the grading plan. This submittal requirement is met.

5. **Landscape Plan.** Where a landscape plan is required, it shall show the following, pursuant to Chapter 17-3.4:



- a. The location and height of existing and proposed fences, buffering, or screening materials;
- b. The location of existing and proposed terraces, retaining walls, decks, patios, shelters, and play areas;
- c. The location, size, and species of the existing and proposed plant materials (at time of planting);
- d. Existing and proposed building and pavement outlines;
- e. Specifications for soil at time of planting, irrigation if plantings are not drought tolerant (may be automatic or other approved method of irrigation), and anticipated planting schedule; and
- f. Other information as deemed appropriate by the Planning Official. An arborist's report may be required for sites with mature trees that are to be retained and protected.

**Response:** As applicable, the above information is illustrated on the Preliminary Landscape Plan and Preliminary Architectural Plans included in this application. This submittal requirement is met.

6. Deed Restrictions. Copies of all existing and proposed restrictions or covenants, including those for roadway access control.

**Response:** The applicant is in the process of developing an agreement with the neighboring credit union property addressing access and maintenance responsibilities pertaining to the shared access that is planned for the site. Applicant will provide copies of such documents upon recordation with Clackamas County. This requirement can be met.

7. Narrative. Letter or narrative report documenting compliance with the applicable approval criteria contained in Section 17-4.2.050.

**Response:** This narrative includes responses to the applicable approval criteria of Section 17-4.2.050, below. This submittal requirement is met.

8. Traffic Impact Analysis, when required by Section 17-3.6.020.A(4).

**Response:** A TIS prepared by Lancaster Mobley is included with the application materials (Exhibit C). This submittal requirement is met.

9. Other information determined by the Planning Official. The City may require studies or exhibits prepared by qualified professionals to address specific site features or project impacts (e.g., traffic, noise, environmental features, natural hazards, etc.), as necessary to determine a proposal's conformance with this Code.

**Response:** This application includes plans and reports that are sufficient to show compliance with the applicable sections of the Molalla Development Code. This criterion is satisfied.

17-4.2.050 Approval Criteria

An application for Site Design Review shall be approved if the proposal meets all of the following criteria. The Planning Official, in approving the application, may impose reasonable conditions of approval, consistent with the applicable criteria.

- A. The application is complete, in accordance with Section 17-4.2.040;

**Response:** As discussed in the responses to Section 17-4.2.040, this application includes the required submittal materials. This criterion is satisfied.

- 
- B. The application complies with all of the applicable provisions of the underlying Zoning District (Division II), including, but not limited to, building and yard setbacks, lot area and dimensions, density and floor area, lot coverage, building height, building orientation, architecture, and other applicable standards;

**Response:** This application involves Site Design Review for a fueling station and convenience store on a property within the C-2 zoning designation. As discussed in detail above, this application complies with the applicable provisions of the C-2 Zone. This criterion is met.

- C. The proposal includes required upgrades, if any, to existing development that does not comply with the applicable zoning district standards, pursuant to Chapter 17-1.4 Nonconforming Situations;

**Response:** The property has an existing double-access driveway that is nonconforming, pursuant to MMC Chapter 17-1.4. The site development plan includes the deconstruction of the existing access drive and installation of a conforming shared-use driveway to the west of the site in conformance with the code. This criterion is met.

- D. The proposal complies with all of the Development and Design Standards of Division III, as applicable, including, but not limited to:

1. Chapter 17-3.3 Access and Circulation,
2. Chapter 17-3.4 Landscaping, Fences and Walls, Outdoor Lighting,
3. Chapter 17-3.5 Parking and Loading,
4. Chapter 17-3.6 Public Facilities, and

**Response:** This narrative addresses the applicable Development and Design Standards of Division III and demonstrates compliance. This criterion is met.

5. Chapter 17-3.7 Signs;

**Response:** It is anticipated the site will have signage. The final sign designs and locations are not available at the time of this application because they will be contingent on final architectural design and site plan approval. A sign permit application that meets the applicable requirements of Chapter 17-3.7 will be submitted separately. To the extent applicable, this criterion is met.

- E. For non-residential uses, all adverse impacts to adjacent properties, such as light, glare, noise, odor, vibration, smoke, dust, or visual impact, are avoided; or where impacts cannot be avoided, they are minimized; and

**Response:** This application includes landscaping at the south of the site to provide a visual buffer reducing impacts on the residential use located adjacent to the site. No adverse impacts, beyond those customarily experienced across commercial uses in a commercial zone, are expected on either parcel to the east and west. Lighting is appropriately screened in conformance with this code. This criterion is met.

- F. The proposal meets all existing conditions of approval for the site or use, as required by prior land use decision(s), as applicable.

**Note:** Compliance with other City codes and requirements, though not applicable land use criteria, may be required prior to issuance of building permits.

**Response:** This site does not have existing conditions of approval required by a prior land use decision. Therefore, this criterion is not applicable.



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Chapter 17-4.4 CONDITIONAL USE PERMITS

17-4.4.030 Application Submission Requirements

In addition to the submission requirements for a Type III review under Section 17-4.1.040, applications for conditional use permits shall include a description of existing conditions, a site plan, and information on any existing and any proposed restrictions or covenants. (For a more detailed description of each item, please refer to Section 17-4.2.040 Application Submission Requirements.) An application for a conditional use permit shall also contain a narrative report or letter responding to the applicable approval criteria in Section 17-4.4.040. (Ord. 2017-08 §1)

**Response:** The attached preliminary plans (Exhibit B) include the required items and this narrative includes responses to the applicable approval criteria, below. This criterion is met.

17-4.4.040 The Planning Commission shall approve, approve with conditions, or deny an application for a conditional use, including requests to enlarge or alter a conditional use, based on findings of fact with respect to all of the criteria and standards in subsections A and B.

A. Use Criteria.

1. The site size, dimensions, location, topography, and access are adequate for the needs of the proposed use, considering the proposed building mass, parking, traffic, noise, vibration, exhaust/emissions, light, glare, erosion, odor, dust, visibility, safety, and aesthetic considerations;
2. The negative impacts of the proposed use, if any, on adjacent properties and on the public can be mitigated through application of other code standards, or other reasonable conditions of approval;
3. All required public facilities, including water, sanitary sewer, and streets, have adequate capacity or are to be improved to serve the proposal, consistent with City standards; and
4. A conditional use permit shall not allow a use that is prohibited or not expressly allowed under Division II; nor shall a conditional use permit grant a variance without a variance application being reviewed with the conditional use application.

**Response:** The site size, dimensions, location, topography, and access are adequate for the needs of the proposed development. Any foreseeable negative impacts of the proposed fueling station are mitigated to the extent practical. The site is currently served by public facilities and the developer has included plans to increase the capacity of public facilities, where applicable, to adequately serve the proposed use. This narrative includes detailed responses to applicable use criteria and site development standards.

A Transportation Impact Study (TIS) has been prepared for this site and is included in this application package as Exhibit C. The TIS examined the traffic impacts of the planned development on the transportation system and provides recommendations for ensuring continued safe and efficient operation of the adjacent transportation facilities. The TIS found that no significant crash patterns were identified at the study intersections, adequate sight distance is maintained on the site, and the projected traffic demand will not trigger the criteria for the installation of a traffic signal at the intersection of W Main St. and Leroy Ave. The planned transportation improvements incorporate the mitigation measures recommended by the TIS and have been developed with input from Lancaster Mobley as well as the Oregon Department of Transportation. These criteria are met.

---

B. Conditions of Approval. Criteria, Standards, and Conditions of Approval. The City may impose conditions that are found necessary to ensure that the use is compatible with other uses in the vicinity, and that the negative impact of the proposed use on the surrounding uses and public facilities is minimized. These conditions include, but are not limited to, one or more of the following:

1. Limiting the hours, days, place, and/or manner of operation;
2. Requiring site or architectural design features which minimize environmental impacts such as noise, vibration, exhaust/emissions, light, glare, erosion, odor, and/or dust;
3. Requiring larger setback areas, lot area, and/or lot depth or width;
4. Limiting the building or structure height, size, lot coverage, and/or location on the site;
5. Designating the size, number, location, and/or design of vehicle access points or parking and loading areas;
6. Requiring street right-of-way to be dedicated and street improvements made, or the installation of pathways or sidewalks, as applicable;
7. Requiring landscaping, screening, drainage, water quality facilities, and/or improvement of parking and loading areas;
8. Limiting the number, size, location, height, and/or lighting of signs;
9. Limiting or setting standards for the location, type, design, and/or intensity of outdoor lighting;
10. Requiring berms, screening, or landscaping and the establishment of standards for their installation and maintenance;
11. Requiring and designating the size, height, location, and/or materials for fences;
12. Requiring the protection and preservation of existing trees, soils, vegetation, watercourses, habitat areas, drainage areas, historic resources, cultural resources, and/or sensitive lands;
13. Requiring improvements to water, sanitary sewer, or storm drainage systems, in conformance with City standards; and
14. The Planning Commission may require review and renewal of conditional use permits annually or in accordance with another timetable. Where applicable, the timetable shall provide for periodic review and renewal, or expiration, of the conditional use permit to ensure compliance with conditions of approval; such period review may occur through a Type III review process, except where the Planning Commission delegates authority to the Planning Official to issue renewals, who shall do so through a Type I or Type II procedure (see Chapter 17-4.1 for review procedures). (Ord. 2017-08 §1)

**Response:** Potential impacts related to the planned development were discussed in detail with City staff prior to application submittal. The applicant has included plans for mitigating negative impacts on neighboring properties to the extent practical. Applicant does not anticipate the need for any conditions of approval to satisfy the applicable approval criteria.

---

#### **IV. Conclusion**

The required findings have been made, and this written narrative and accompanying documentation demonstrate that the application is consistent with the applicable provisions of the City of Molalla Development Code. The evidence in the record supports approval of the application.

# **Exhibit A: City Land Use Application Form**

---



**Planning & Community Development**  
 315 N. Kennel Avenue  
 Molalla, OR. 97038  
 (503) 759-0205

communityplanner@cityofmolalla.com

<i>FOR OFFICE USE ONLY:</i>	
Planning File No. : _____	City Approval: _____
Date Received: _____	Title _____
Fee: _____	Date: _____
Land Use Type: II	Fee Paid: _____
Received by: _____	

## APPLICATION FOR LAND USE ACTION

Type of Land Use Action Requested: (check all that apply)

- |  |  |
|--|--|
| <input type="checkbox"/> Annexation  | <input checked="" type="checkbox"/> Conditional Use    |
| <input type="checkbox"/> Plan Amendment (Proposed Zone _____)                  | <input type="checkbox"/> Partition (# of lots _____)   |
| <input type="checkbox"/> Planned Unit Development                              | <input type="checkbox"/> Subdivision (# of lots _____) |
| <input checked="" type="checkbox"/> Site Design Review                         | <input type="checkbox"/> Other: _____                  |
| <input type="checkbox"/> Variance (list standards to be varied in description) |  |

**Owner/Applicant:**

Applicant: Molalla Petroleum, LLC Phone: Contact Applicant's Consultant  
 Applicant Address: 1038 Broadway St. NE, Salem, OR 97301 Email: Contact Applicant's Consultant  
 Owner: Donald Bunnell, Trustee Phone: Contact Applicant's Consultant  
 Owner Address: 8751 Redcliff, Riverside, CA 92508 Email: Contact Applicant's Consultant  
 Contact for additional info: Daisy Goebel; AKS Engineering & Forestry, LLC; 3700 River Road N, Suite 1, Keizer, OR 97303, (503) 400-6028

**Property Information:**

Address: 710 W. Main Street, Mollala OR 97038  
 Assessors Map/Taxlot #: 5 2E 08C Tax Lots 300 and 390  
 Current Use of Site: Single-Family Home Zoning Designation: General Commercial (C-2)  
 Intended Use: Existing residence will be removed and replaced with a fueling station and convinience store

**Proposed Action:**

Site design review for a proposed fueling station and convinience store. Conditional Use Permit is required for the approval of all outdoor uses and unenclosed activities, including fueling stations, per MMC 17-2.2.030.

Proposed Use: Fueling station and convinience store

Proposed No. of Phases (one each year): N/A

**Authorizing Signatures:**

*I hereby certify that the information on this application and attachments are correct and that the property affected by this application is in the exclusive ownership or control of the applicant, or that the applicant has the consent of all partners in ownership of the affected property. An authorization letter from the property owner has been attached in the event that the owner's signature has not been provided below.*

**Property Owner(s):**

Donald Bunnell

Print or Type

Donald Bunnell

Signature

Print or Type

Signature

**Applicant(s) or Authorized Agent:**

Don Sidhu as Member

Print or Type



Signature

Print or Type

Signature

**The following materials must be submitted with your application or it will not be accepted at the counter.** Once taken at the counter, the City has up to 30 days to review the materials submitted to determine if we have everything we need to complete the review. Applicant can verify submittal includes specific materials necessary for the application per checklist.

- 3 Copies of Application Form\*** completely filled out and signed by the property owner (or person with authority to make decisions on the property).
- Copy of Deed** to verify ownership, easements, etc.
- At least 3 folded** sets of plans\*
- At least 3 copies** of narrative addressing application criteria\*
- Fee** (along with calculations utilized to determine fee if applicable)

**\*Please Note** that the required numbers of copies identified on the checklist are required for completeness; however, upon initial submittal applicants are encouraged to submit only 3 copies for completeness review. Prior to completeness, the required number of copies identified on the checklist and one full electronic copy will be required to be submitted.

## **Exhibit B: Preliminary Site Plans**

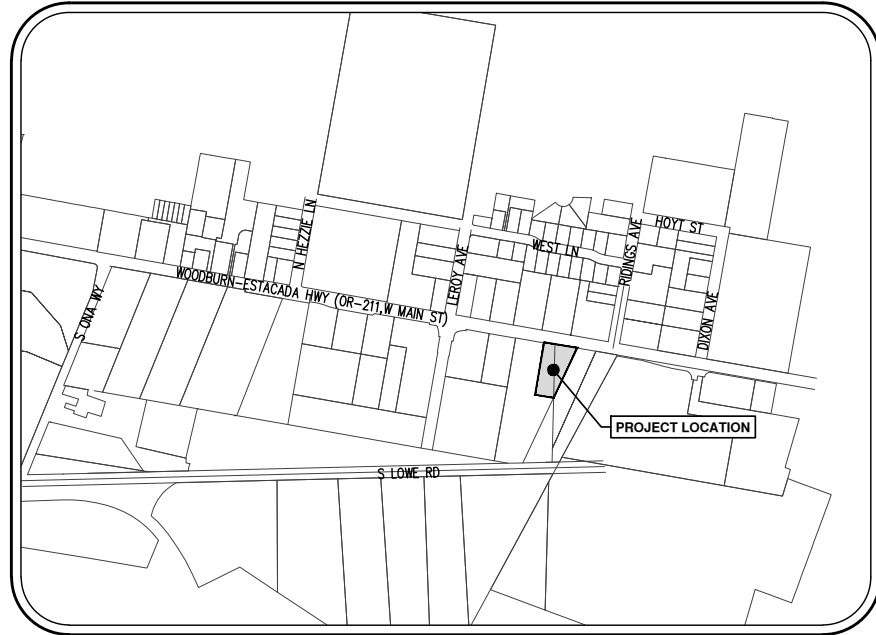
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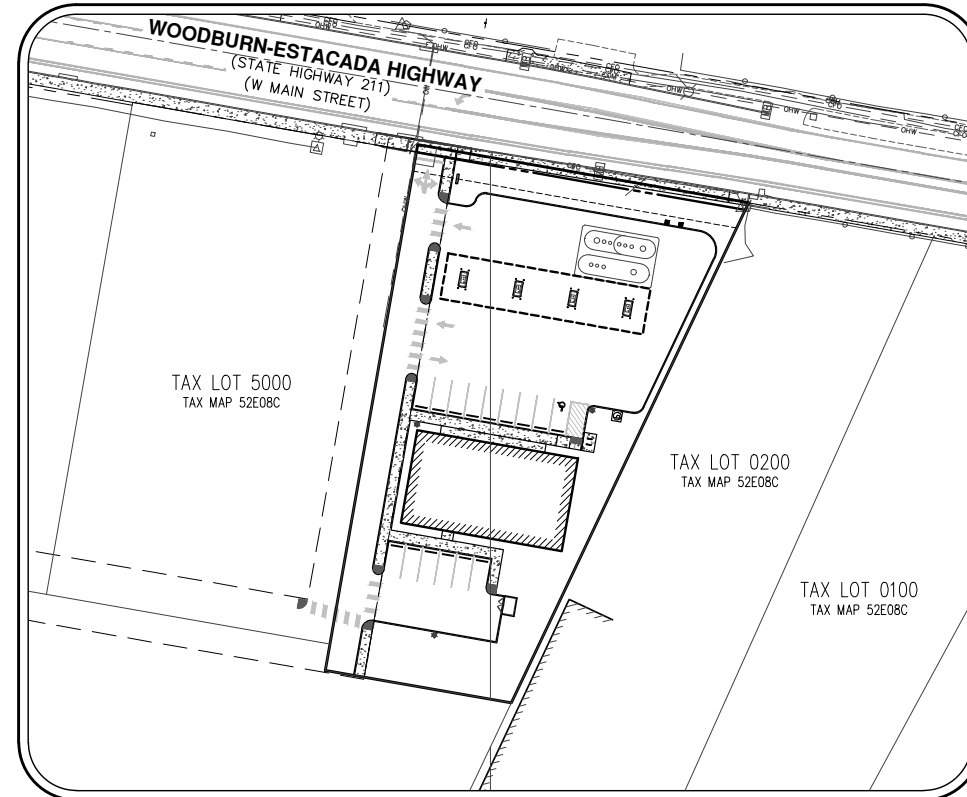
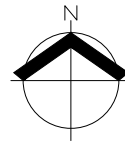
# 710 W MAIN STREET

## SITE DESIGN REVIEW PLANS



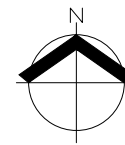
**VICINITY MAP**

NTS



**SITE MAP**

SCALE: 1"=50'



**APPLICANT:**

MOLALLA PETROLEUM, LLC  
1038 BROADWAY STREET NE  
SALEM, OR 97301

**LAND USE PLANNING,  
CIVIL ENGINEERING,  
AND SURVEYING FIRM:**

AKS ENGINEERING & FORESTRY, LLC  
CONTACT: ZACH PELZ, AICP  
3700 RIVER ROAD N, SUITE 1  
KEIZER, OR 97303  
PH: 503-400-6028

**PROJECT LOCATION:**

710 W MAIN STREET  
MOLALLA, OR 97038

**PROPERTY DESCRIPTION:**

TAX LOTS 300 & 390 CLACKAMAS COUNTY TAX  
MAP 5-2E-08C LOCATED IN THE SW  
ONE-QUARTER OF SECTION 8, TOWNSHIP 5  
SOUTH, RANGE 2 EAST WILLAMETTE MERIDIAN,  
CITY OF MOLALLA, CLACKAMAS COUNTY, OREGON

**SITE AREA:**

± 0.87 ACRES

**ZONING:**

GENERAL COMMERCIAL (C-2)

**EXISTING LAND USE:**

EXISTING DETACHED SINGLE-FAMILY RESIDENCE  
AND ASSOCIATED OUTBUILDINGS

**PROJECT PURPOSE:**

SITE DESIGN REVIEW FOR A NEW FUELING  
STATION WITH CONVENIENCE STORE

### SHEET INDEX

- P-01 COVER SHEET WITH VICINITY AND SITE MAPS
- P-02 EXISTING CONDITIONS PLAN
- P-03 PRELIMINARY DEMOLITION PLAN
- P-04 PRELIMINARY SITE PLAN
- P-05 PRELIMINARY DETAILED DIMENSION PLAN
- P-06 PRELIMINARY COMPOSITE UTILITY PLAN
- P-07 PRELIMINARY SITE PLAN WITH AERIAL PHOTOGRAPH
- P-08 PRELIMINARY GRADING AND EROSION AND SEDIMENT CONTROL PLAN
- P-09 PRELIMINARY SITE LIGHTING PLAN
- P-10 PRELIMINARY FIRE TRUCK TURNING MOVEMENT PLAN
- P-11 PRELIMINARY LANDSCAPE PLAN
- P-12 PRELIMINARY LANDSCAPE DETAILS

### LEGEND

	EXISTING	PROPOSED		EXISTING	PROPOSED
DECIDUOUS TREE			STORM DRAIN CLEAN OUT		
CONIFEROUS TREE			STORM DRAIN CATCH BASIN		
FIRE HYDRANT			STORM DRAIN AREA DRAIN		
WATER BLOWOFF			STORM DRAIN MANHOLE		
WATER METER			GAS METER		
WATER VALVE			GAS VALVE		
DOUBLE CHECK VALVE			GUY WIRE ANCHOR		
AIR RELEASE VALVE			UTILITY POLE		
SANITARY SEWER CLEAN OUT			POWER VAULT		
SANITARY SEWER MANHOLE			POWER JUNCTION BOX		
SIGN			POWER PEDESTAL		
STREET LIGHT			COMMUNICATIONS VAULT		
MAILBOX			COMMUNICATIONS JUNCTION BOX		
			COMMUNICATIONS RISER		

### EXISTING

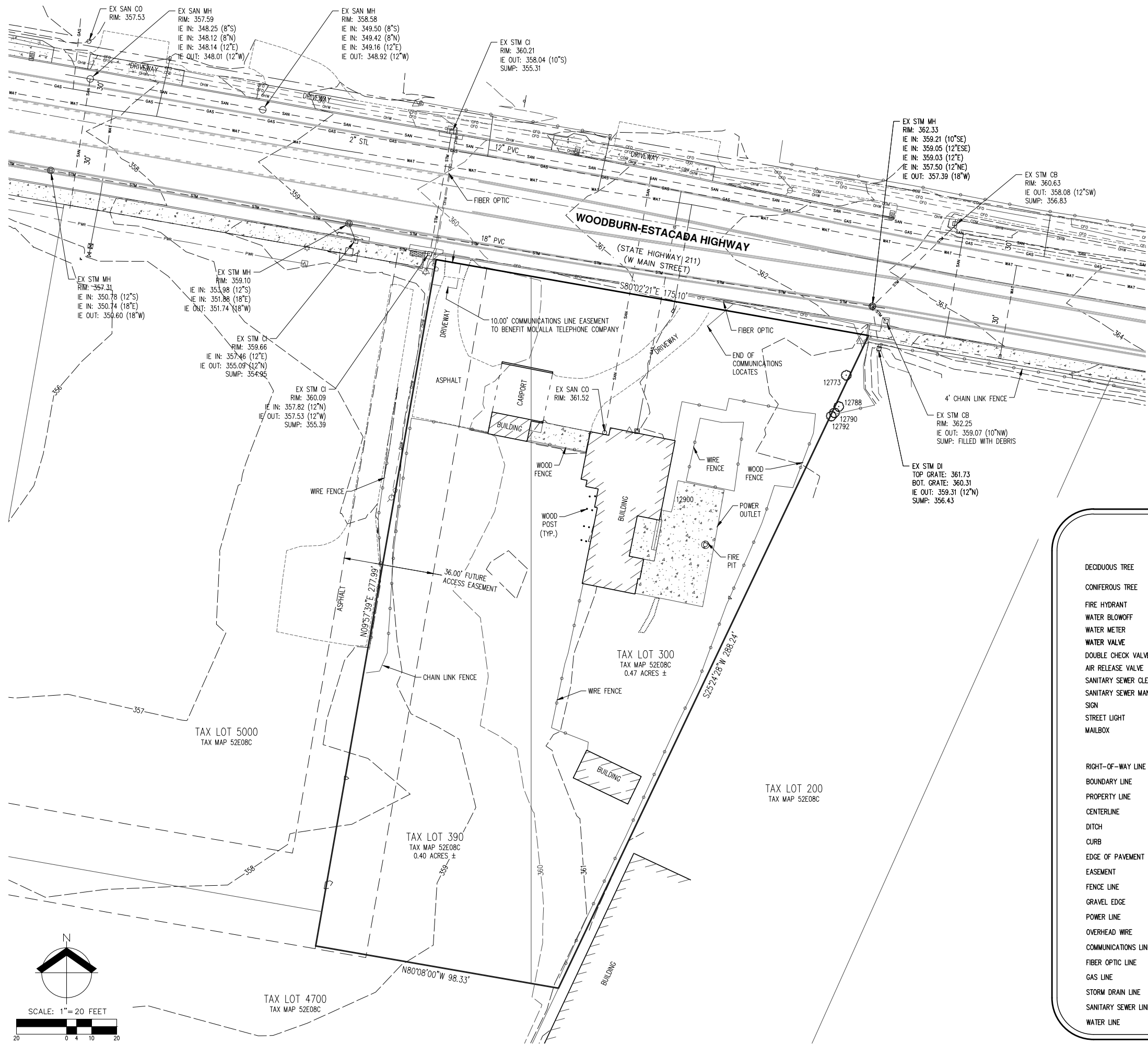
### PROPOSED

	EXISTING	PROPOSED
RIGHT-OF-WAY LINE		
BOUNDARY LINE		
PROPERTY LINE		
CENTERLINE		
DITCH		
CURB		
EDGE OF PAVEMENT		
EASEMENT		
FENCE LINE		
GRAVEL EDGE		
POWER LINE		
OVERHEAD WIRE		
COMMUNICATIONS LINE		
FIBER OPTIC LINE		
GAS LINE		
STORM DRAIN LINE		
SANITARY SEWER LINE		
WATER LINE		



RENEWS: DECEMBER 31, 2022  
JOB NUMBER: 9010  
DATE: 04/07/2022  
DESIGNED BY: LTP  
DRAWN BY: AC  
CHECKED BY: MBH





- NOTES:**
- UTILITIES SHOWN ARE BASED ON UNDERGROUND UTILITY LOCATE MARKINGS BY OTHERS, PROVIDED PER UTILITY LOCATE TICKET NUMBER 21288211. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITY LOCATES REPRESENT THE ONLY UTILITIES IN THE AREA. CONTRACTORS ARE RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS PRIOR TO BEGINNING CONSTRUCTION.
  - FIELD WORK WAS CONDUCTED SEPTEMBER 30 - DECEMBER 20, 2021.
  - VERTICAL DATUM: ELEVATIONS ARE BASED ON NATIONAL GEODETIC SURVEY BENCHMARK PID: RD1508, LOCATED AT THE NE CORNER OF HIGHWAY 99E AND S BARLOW ROAD WITH AN ELEVATION OF 105.09 FEET (NAVD 88).
  - THIS IS NOT A PROPERTY BOUNDARY SURVEY TO BE RECORDED WITH THE COUNTY SURVEYOR. BOUNDARIES MAY BE PRELIMINARY AND SHOULD BE CONFIRMED WITH THE STAMPING SURVEYOR PRIOR TO RELYING ON FOR DETAILED DESIGN OR CONSTRUCTION.
  - BUILDING FOOTPRINTS ARE MEASURED TO SIDING UNLESS NOTED OTHERWISE. CONTACT SURVEYOR WITH QUESTIONS REGARDING BUILDING TIES.
  - CONTOUR INTERVAL IS 1 FOOT.
  - TREES WITH DIAMETER OF 6" AND GREATER ARE SHOWN. TREE DIAMETERS WERE MEASURED UTILIZING A DIAMETER TAPE AT BREAST HEIGHT. TREE INFORMATION IS SUBJECT TO CHANGE UPON ARBORIST INSPECTION.

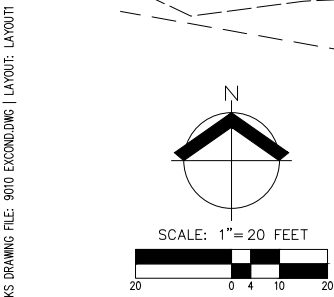
**LEGEND**

<b>EXISTING</b>	<b>EXISTING</b>
DECIDUOUS TREE	STORM DRAIN CLEAN OUT
CONIFEROUS TREE	STORM DRAIN CATCH BASIN
FIRE HYDRANT	STORM DRAIN AREA DRAIN
WATER BLOWOFF	STORM DRAIN MANHOLE
WATER METER	GAS METER
WATER VALVE	GAS VALVE
DOUBLE CHECK VALVE	GUY WIRE ANCHOR
AIR RELEASE VALVE	UTILITY POLE
SANITARY SEWER CLEAN OUT	POWER VAULT
SANITARY SEWER MANHOLE	POWER JUNCTION BOX
SIGN	POWER PEDESTAL
STREET LIGHT	COMMUNICATIONS VAULT
MAILBOX	COMMUNICATIONS JUNCTION BOX
	COMMUNICATIONS RISER
<b>EXISTING</b>	
RIGHT-OF-WAY LINE	
BOUNDARY LINE	
PROPERTY LINE	
CENTERLINE	
DITCH	
CURB	
EDGE OF PAVEMENT	
EASEMENT	
FENCE LINE	
GRAVEL EDGE	
POWER LINE	
OVERHEAD WIRE	
COMMUNICATIONS LINE	
FIBER OPTIC LINE	
GAS LINE	
STORM DRAIN LINE	
SANITARY SEWER LINE	
WATER LINE	

**EXISTING CONDITIONS PLAN**  
**710 W MAIN STREET**  
**MOLALLA PETROLEUM**  
**MOLALLA, OREGON**

REGISTERED PROFESSIONAL LAND SURVEYOR  
 PRELIMINARY NOT FOR CONSTRUCTION  
 JANUARY 11, 2005  
 COURT D. RETTIG  
 60124LS  
 RENEWS: 12/31/22

JOB NUMBER: 9010  
 DATE: 04/07/2022  
 DESIGNED BY:  
 DRAWN BY: MEB  
 CHECKED BY: RDR





- # DEMOLITION KEYED NOTES:**
1. REMOVE EXISTING CURB INLET AND REPLACE WITH STORM MANHOLE
  2. REMOVE EXISTING TEMPORARY CURB RAMP
  3. REMOVE PORTION OF EXISTING CONCRETE CURB TO ACCOMMODATE DRIVEWAY DROP AND APPROACH
  4. REMOVE PORTION OF EXISTING CONCRETE SIDEWALK TO ACCOMMODATE DRIVEWAY DROP AND APPROACH
  5. REMOVE EXISTING CONCRETE CURB DRIVEWAY DROP AND REPLACE WITH FULL HEIGHT CURB
  6. REMOVE EXISTING ASPHALT DRIVEWAY
  7. REMOVE EXISTING FENCE
  8. REMOVE EXISTING CONCRETE PAD
  9. REMOVE/RELOCATE EXISTING COMMUNICATIONS VAULT AND PEDESTAL
  10. REMOVE/RELOCATE EXISTING UTILITY POLE
  11. EXISTING BUILDING TO BE RELOCATED UNDER SEPARATE PERMIT
  12. REMOVE EXISTING TREE
  13. REMOVE EXISTING PAVEMENT STRIPING TO ACCOMMODATE NEW LEFT TURN LANE EXTENSION

- NOTES**
1. ALL EXISTING WELLS, SEPTIC SYSTEMS, OUTHOUSES, FUEL TANKS, ETC. SHALL BE DECOMMISSIONED PER ALL APPLICABLE COUNTY AND STATE REQUIREMENTS. CONTRACTOR SHALL PROVIDE DOCUMENTATION OF DECOMMISSIONING TO ALL APPLICABLE PARTIES.
  2. COORDINATE REMOVAL OF ALL UNDERGROUND UTILITIES WITH APPLICABLE UTILITY PROVIDER(S).

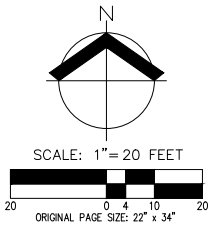
**LEGEND**

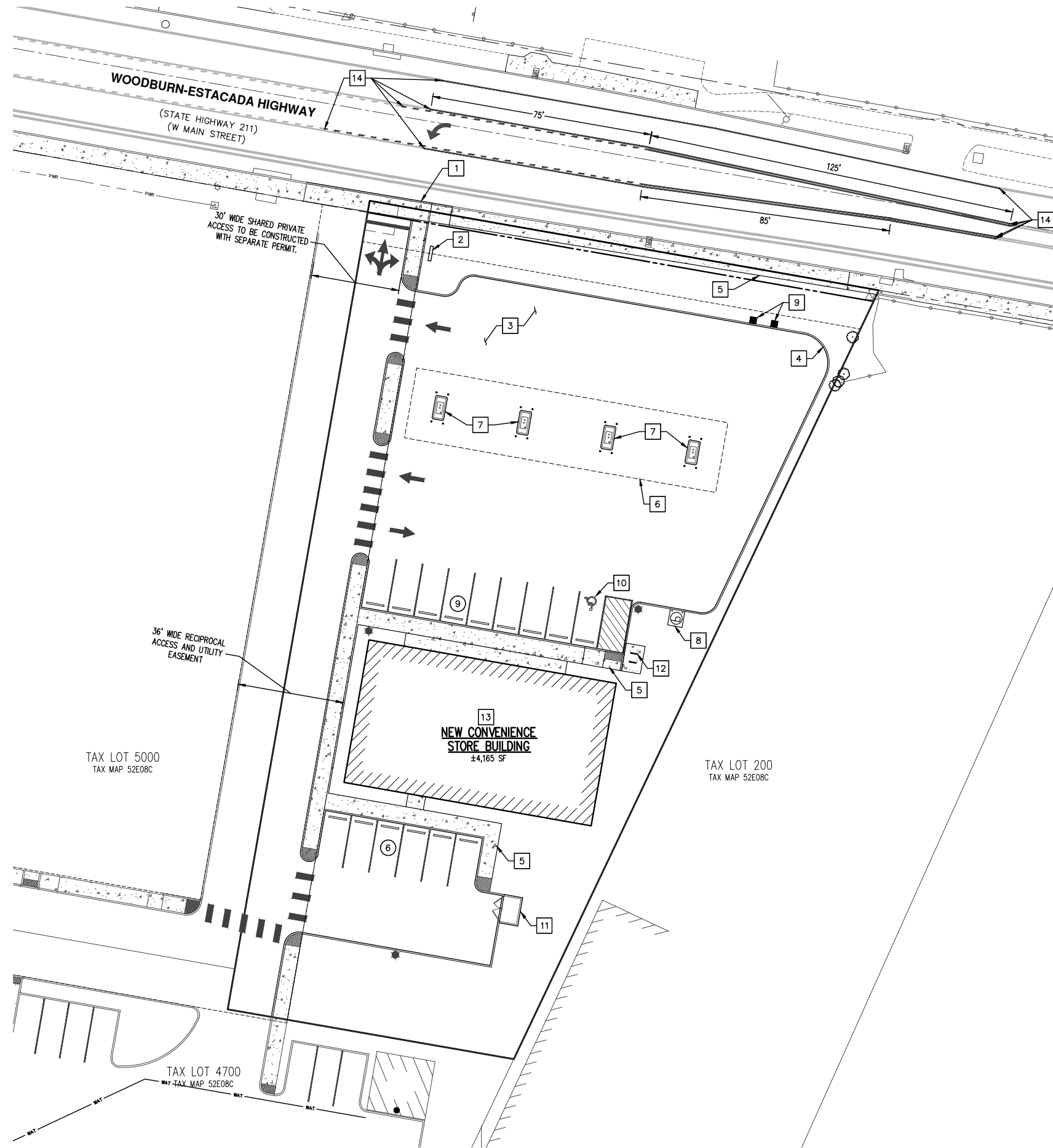
EXISTING GROUND CONTOUR (1 FT)	---	359
EXISTING GROUND CONTOUR (5 FT)	---	360
DISTURBED AREA BOUNDARY	---	
SAWCUT LINE	---	
ASPHALT TO BE REMOVED		

**PRELIMINARY DEMOLITION PLAN  
 710 W MAIN STREET  
 MOLALLA PETROLEUM  
 MOLALLA, OREGON**



RENEWS: DECEMBER 31, 2022  
 JOB NUMBER: 9010  
 DATE: 04/07/2022  
 DESIGNED BY: LTP  
 DRAWN BY: AC  
 CHECKED BY: MBH





# SITE PLAN KEYED NOTES:

1. COMMERCIAL DRIVEWAY DROP AND APPROACH
2. COMMERCIAL SIGNAGE
3. AC PAVEMENT (TYP)
4. CONCRETE CURB (TYP)
5. CONCRETE SIDEWALK (TYP)
6. FUEL STATION OVERHEAD (CANOPY TO BE CONSTRUCTED DESIGN-BUILD)
7. FUEL PUMP ISLAND
8. PROPANE TANK FILLING STATION
9. AIR AND WATER STATION
10. ADA ACCESSIBLE PARKING STALL WITH LOADING AREA
11. TRASH AND RECYCLING AREA
12. BICYCLE PARKING
13. CONVENIENCE STORE BUILDING
14. MEDIAN/TURN LANE STRIPING EXTENSION

SITE AREA SUMMARY

AREA DESCRIPTION	AREA (SF)	% OF TOTAL AREA
TOTAL SITE AREA:	±37,991	---
STRUCTURES:	±4,165	±11%
LANDSCAPING:	±5,420	±14%

# PARKING COUNT:

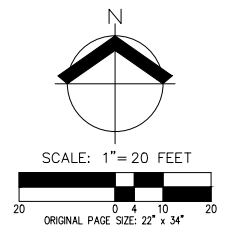
TOTAL SPACES REQUIRED:	11 (1 PER 400 SF OF FLOOR AREA; 2 FOR VEHICLE SERVICE/REPAIR USE)
TOTAL SPACES PROVIDED:	15
BICYCLE PARKING REQUIRED:	4 (1 PER 5 VEHICLE PARKING SPACES; 2 PER PRIMARY USE)
BICYCLE PARKING PROVIDED:	4

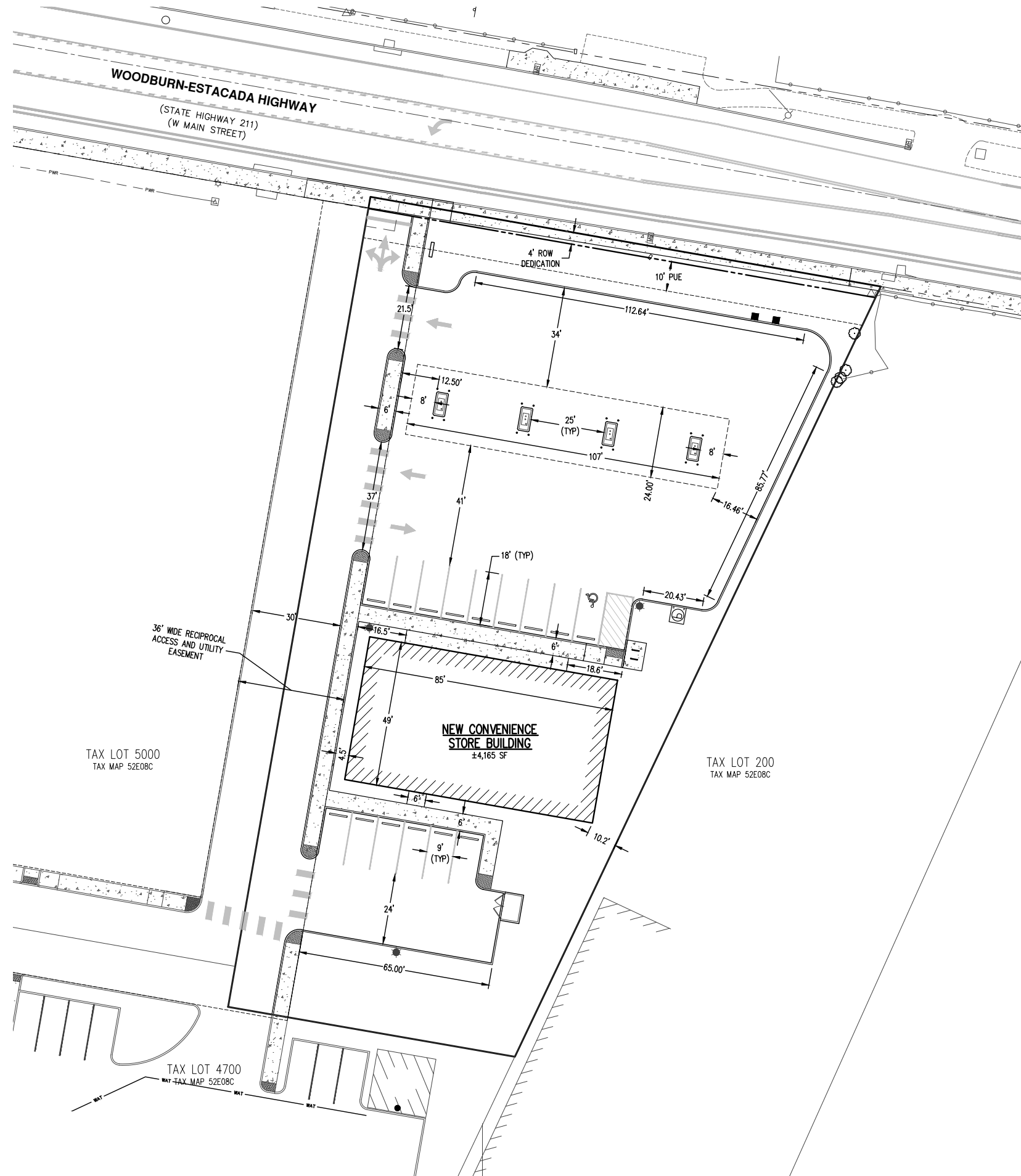
**PRELIMINARY SITE PLAN  
 710 W MAIN STREET  
 MOLALLA PETROLEUM  
 MOLALLA, OREGON**



RENEWS: DECEMBER 31, 2022

JOB NUMBER: 9010  
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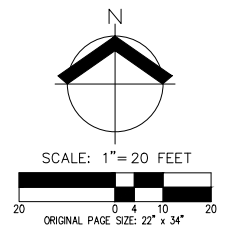


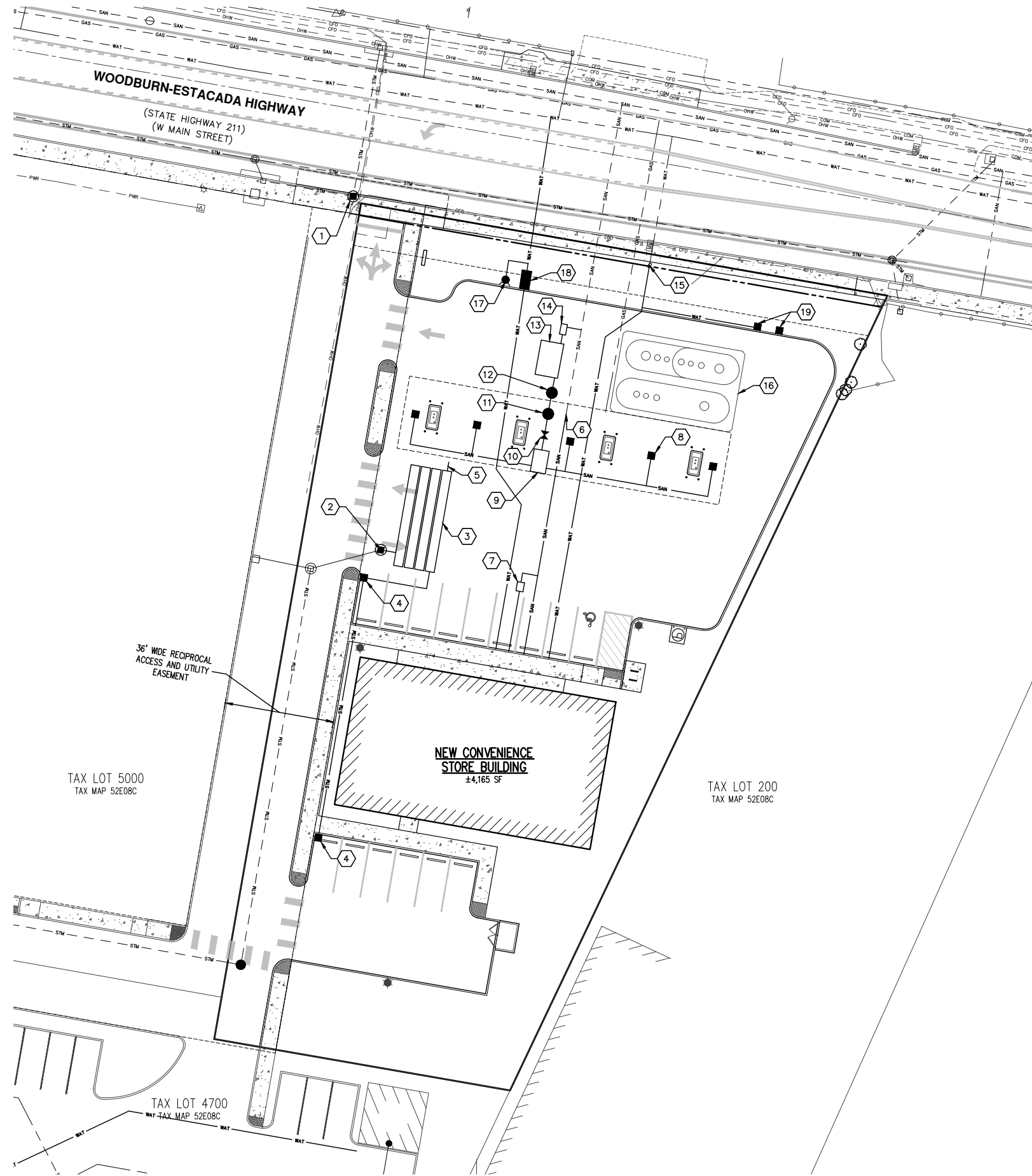


**PRELIMINARY DETAILED DIMENSION PLAN**  
**710 W MAIN STREET**  
**MOLALLA PETROLEUM**  
**MOLALLA, OREGON**



RENEWS: DECEMBER 31, 2022  
 JOB NUMBER: 9010  
 DATE: 04/07/2022  
 DESIGNED BY: LTP  
 DRAWN BY: AC  
 CHECKED BY: MBH





- # COMPOSITE UTILITY PLAN KEYED NOTES:
1. NEW STORM DRAIN MANHOLE OVER EXISTING STORM LINE
  2. PRIVATE STORM DRAINAGE FLOW CONTROL MANHOLE
  3. 36" STORMWATER DETENTION PIPE
  4. STORMFILTER CATCH BASIN (TYP)
  5. STORM DRAIN STUB TO ROOF DRAIN SYSTEM
  6. CONNECT TO EXISTING SANITARY SEWER LATERAL AND EXTEND
  7. GREASE INTERCEPTOR
  8. SANITARY CATCH BASIN (TYP)
  9. OIL/WATER SEPARATOR
  10. SANITARY GATE VALVE
  11. MANHOLE WITH OIL STOP VALVE
  12. MONITORING MANHOLE
  13. STEP TANK
  14. STEP TANK DISCHARGE VALVE VAULT
  15. CONNECT TO EXISTING WATER SERVICE METER AND EXTEND
  16. UNDERGROUND FUEL STORAGE TANKS
  17. FIRE HYDRANT
  18. FIRE PROTECTION DCDA VAULT WITH FDC
  19. AIR AND WATER STATION

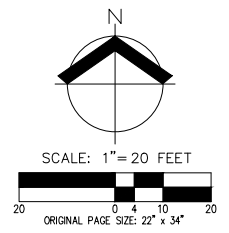
TAX LOT 5000  
TAX MAP 52E08C

36" WIDE RECIPROCAL  
ACCESS AND UTILITY  
EASEMENT

**NEW CONVENIENCE  
STORE BUILDING**  
±4,165 SF

TAX LOT 200  
TAX MAP 52E08C

TAX LOT 4700  
TAX MAP 52E08C



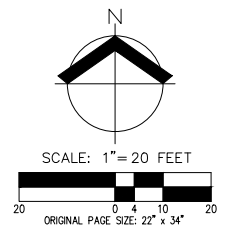
**PRELIMINARY COMPOSITE UTILITY PLAN**  
**710 W MAIN STREET**  
**MOLALLA PETROLEUM**  
**MOLALLA, OREGON**



RENEWS: DECEMBER 31, 2022

JOB NUMBER: 9010  
 DATE: 04/07/2022  
 DESIGNED BY: LTP  
 DRAWN BY: AC  
 CHECKED BY: MBH





**PRELIMINARY SITE PLAN WITH AERIAL PHOTOGRAPH**  
**710 W MAIN STREET**  
**MOLALLA PETROLEUM**  
**MOLALLA, OREGON**

**AKS**  
 AKS ENGINEERING & FORESTRY, LLC  
 3700 RIVER RD. N. STE. 1  
 KETZER, OR 97103  
 503.400.6028  
 WWW.AKS-ENG.COM  
 ENGINEERING • SURVEYING • NATURAL RESOURCES  
 FORESTRY • PLANNING • LANDSCAPE ARCHITECTURE



RENEWS:	DECEMBER 31, 2022
JOB NUMBER:	9010
DATE:	04/07/2022
DESIGNED BY:	LTP
DRAWN BY:	AC
CHECKED BY:	MBH

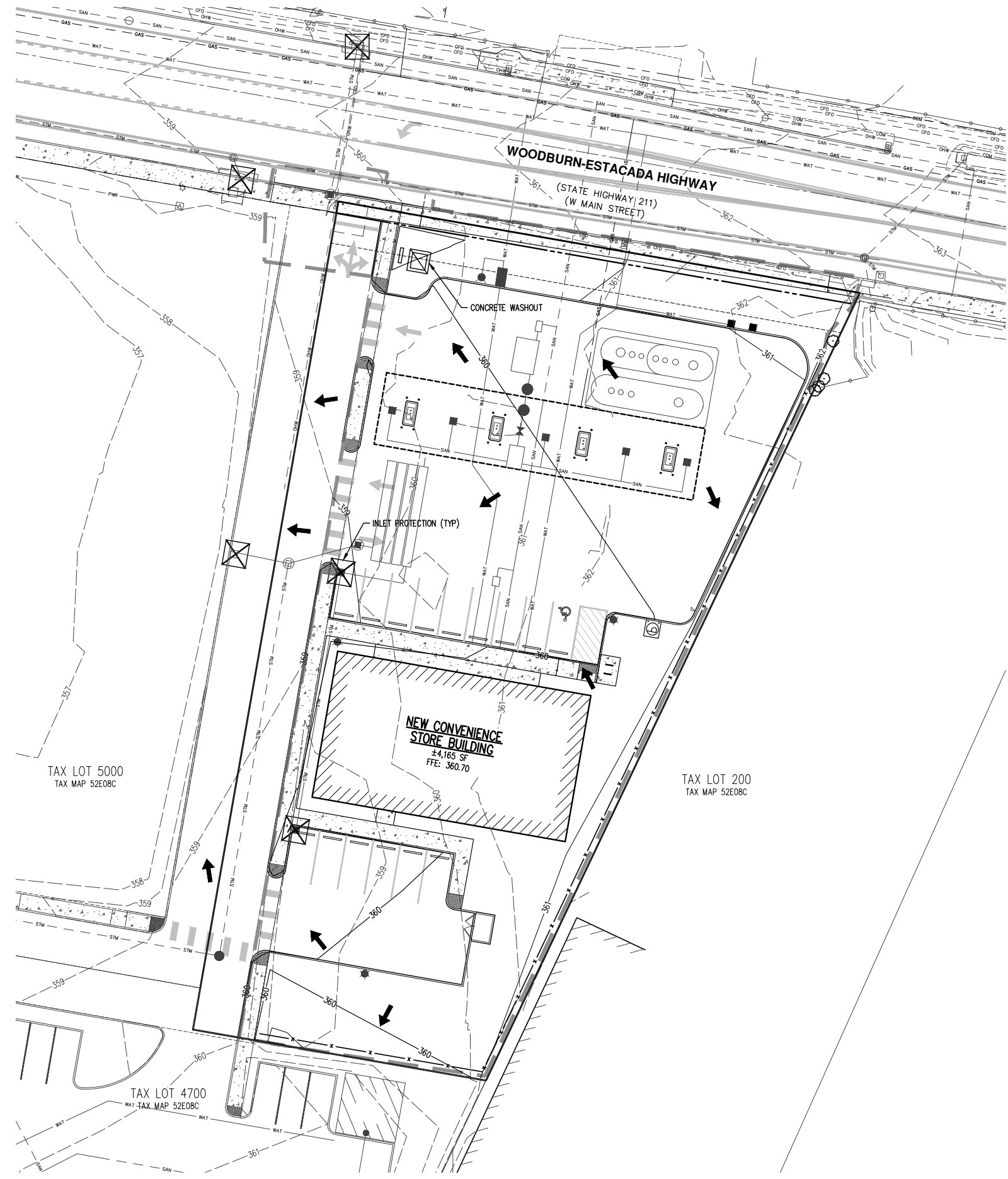


**PRELIMINARY GRADING AND EROSION AND SEDIMENT CONTROL PLAN**

**710 W MAIN STREET  
 MOLALLA PETROLEUM  
 MOLALLA, OREGON**



RENEWS: DECEMBER 31, 2022  
 JOB NUMBER: 9010  
 DATE: 04/07/2022  
 DESIGNED BY: LTP  
 DRAWN BY: AC  
 CHECKED BY: MBH

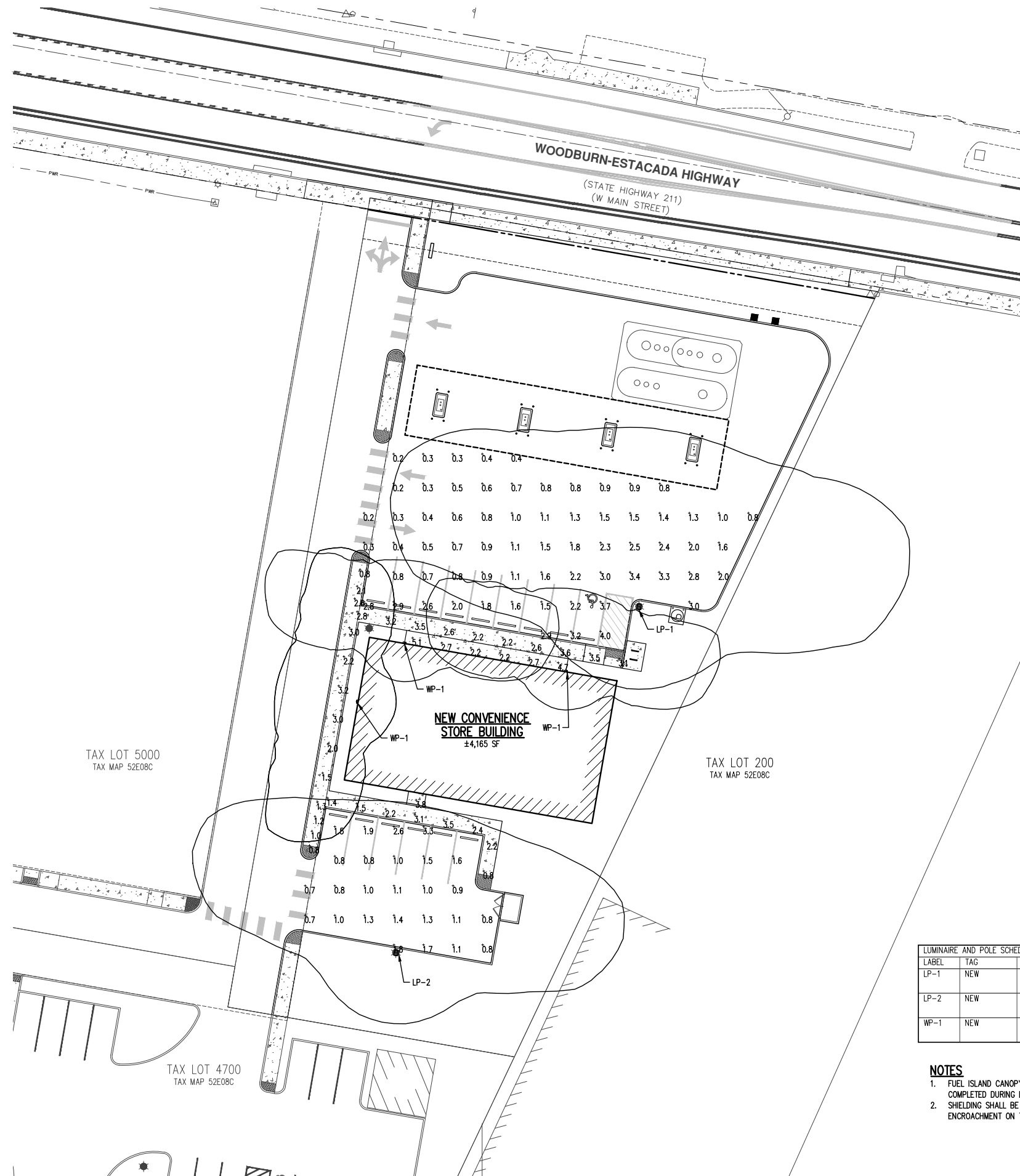


**LEGEND**

EXISTING GROUND CONTOUR (1 FT)	---	359
EXISTING GROUND CONTOUR (5 FT)	---	360
FINISHED GRADE CONTOUR (1 FT)	---	359
FINISHED GRADE CONTOUR (5 FT)	---	360
SEDIMENT FENCE	X	
INLET PROTECTION (TYP)	⊗	
CONCRETE WASHOUT AREA	□	
DRAINAGE FLOW DIRECTION	→	
GRADING LIMITS	- - -	

SCALE: 1" = 20 FEET

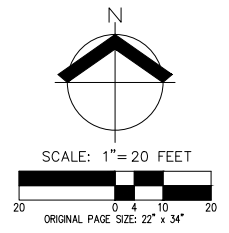
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**SITE LIGHT LEVEL SUMMARY**  
**PARKING AREA AND OUTDOOR SERVICE AREAS**  
 MINIMUM LIGHT LEVEL  
 -TARGET: 0.2 fc  
 -ACHIEVED: 0.2 fc  
 AVERAGE LIGHT LEVEL  
 -TARGET: ≥0.8 fc  
 -ACHIEVED: 1.4 fc  
 UNIFORMITY RATIO (MAX/MIN)  
 -TARGET: ≤20.0  
 -ACHIEVED: 20.0  
**WALKWAYS**  
 AVERAGE LIGHT LEVEL  
 -TARGET: ≥0.2 fc  
 -ACHIEVED: 2.3 fc  
**BUILDING ENTRANCES**  
 MINIMUM LIGHT LEVEL  
 -TARGET: ≥2.0 fc  
 -ACHIEVED: 2.2 fc

LABEL	TAG	DESCRIPTION	MOUNTING HEIGHT (FT)	ARM LENGTH (FT)	POLE TYPE	QTY	TOTAL LUMENS	LUM. WATTS	LLF
LP-1	NEW	US ARCHITECTURAL LIGHTING VALULUME LED (VLL-LED-PLD-III-40LED-1050mA-WW-1-RAL-8019-T)	20	0.5	AL	1	14,495	128	0.9
LP-2	NEW	US ARCHITECTURAL LIGHTING VALULUME LED (VLL-LED-PLD-III-40LED-700mA-WW-1-RAL-8019-T)	20	0.5	AL	1	9,223	65	0.9
WP-1	NEW	MCGRAW-EDISON GWC GALLEON WALL PACK (GWC-SA1A-730-U-SL2-BZ)	12			3	4,874	34	0.9

- NOTES**
- FUEL ISLAND CANOPY LIGHTING ANALYSIS TO BE COMPLETED DURING DESIGN-BUILD PROCESS.
  - SHIELDING SHALL BE INSTALLED TO LIMIT LIGHT ENCROACHMENT ON TAX LOT 200.



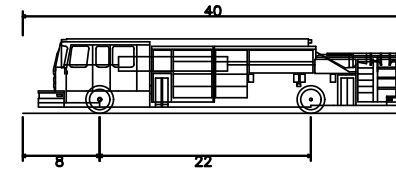
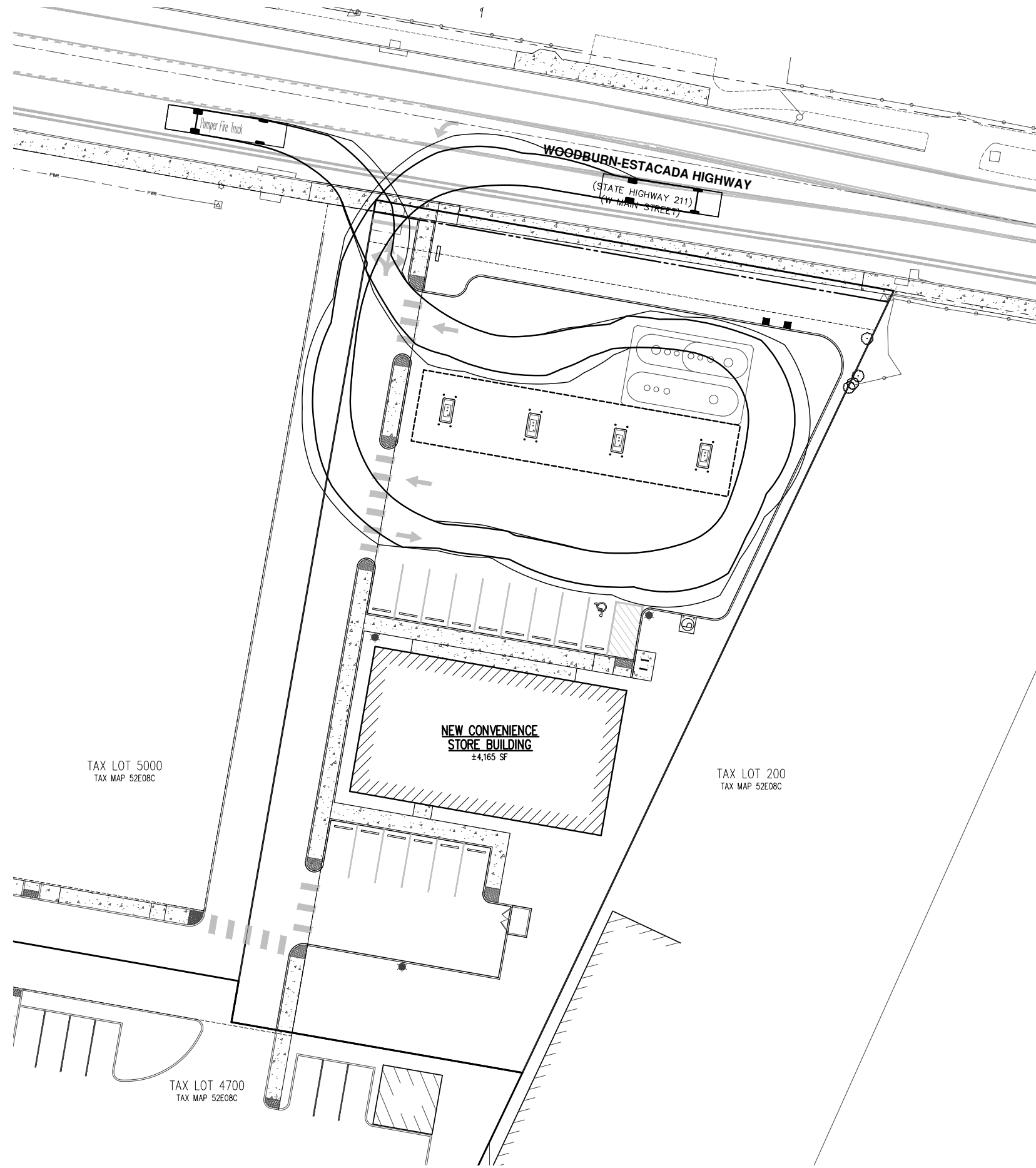
**PRELIMINARY SITE LIGHTING PLAN**  
**710 W MAIN STREET**  
**MOLALLA PETROLEUM**  
**MOLALLA, OREGON**



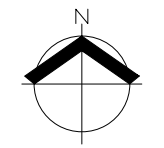
RENEWS: DECEMBER 31, 2022  
 JOB NUMBER: 9010  
 DATE: 04/07/2022  
 DESIGNED BY: LTP  
 DRAWN BY: AC  
 CHECKED BY: MBH



AKS DRAWING FILE: 9010 TRUCK TURNING.DWG | LAYOUT: P-10



Pumper Fire Truck	
Overall Length	40.000ft
Overall Width	8.167ft
Overall Body Height	7.745ft
Min Body Ground Clearance	0.656ft
Track Width	8.167ft
Lock-to-lock time	5.00s
Max Wheel Angle	45.00°



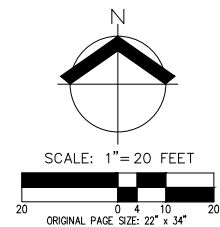
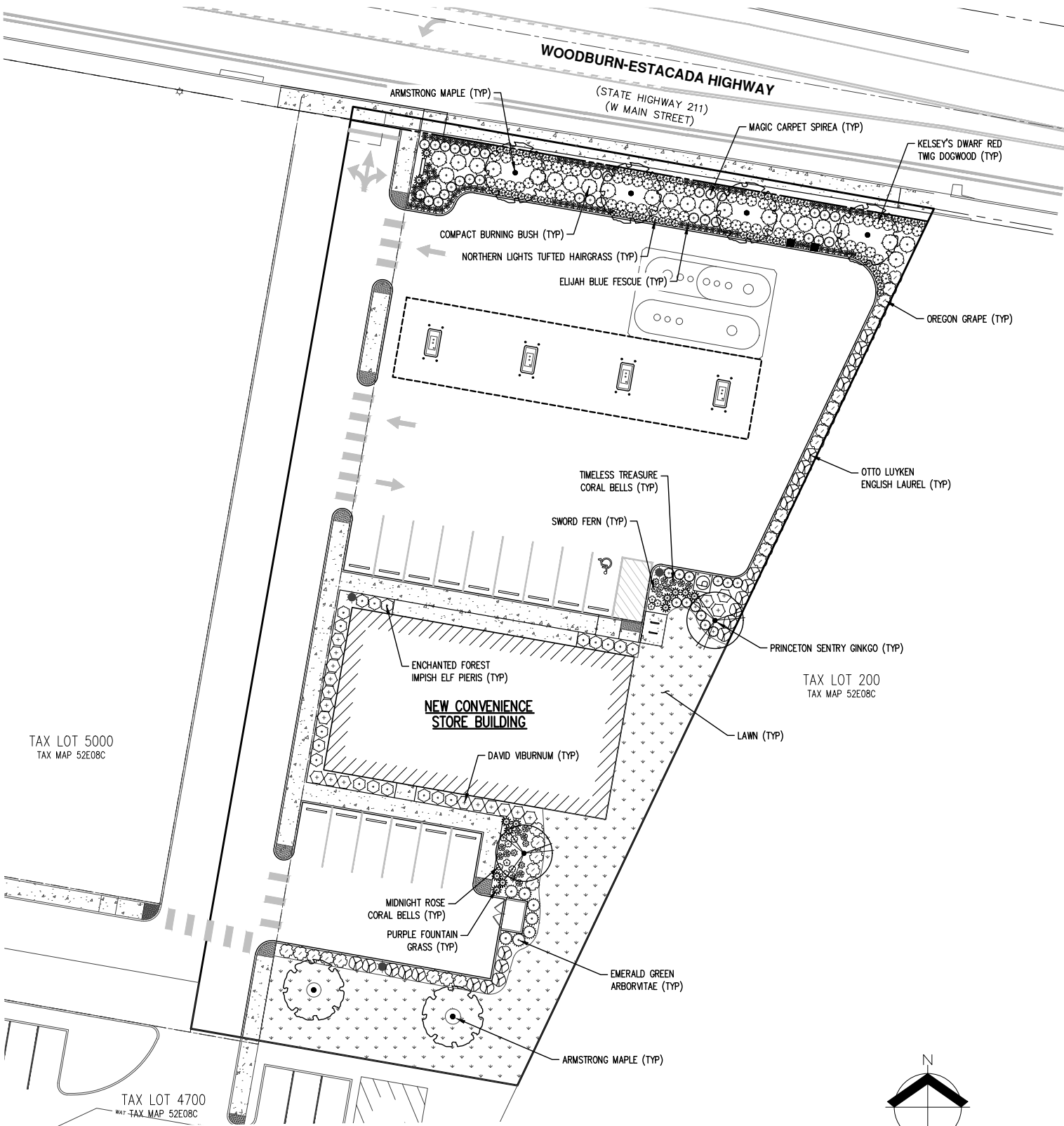
SCALE: 1" = 20 FEET  
 ORIGINAL PAGE SIZE: 22" x 34"

**PRELIMINARY FIRE TRUCK TURNING MOVEMENT PLAN**  
**710 W MAIN STREET**  
**MOLALLA PETROLEUM**  
**MOLALLA, OREGON**

**AKS**  
 AKS ENGINEERING & FORESTRY, LLC  
 3700 RIVER RD N, STE 1  
 KETZEE, OR 97303  
 503.400.6028  
 WWW.AKS-ENG.COM  
 ENGINEERING • SURVEYING • NATURAL RESOURCES  
 FORESTRY • PLANNING • LANDSCAPE ARCHITECTURE



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 DESIGNED BY: LTP  
 DRAWN BY: AC  
 CHECKED BY: MBH



**PRELIMINARY PLANT SCHEDULE**

TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
	6	ACER RUBRUM 'ARMSTRONG'	ARMSTRONG RED MAPLE	2" CAL. B&B	AS SHOWN
	2	GINKGO BILOBA 'PRINCETON SENTRY'	PRINCETON SENTRY GINKGO	2" CAL. B&B	AS SHOWN

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
	65	CORNUS SERICEA 'KELSEY'	KELSEY'S DWARF RED TWIG DOGWOOD	2 GAL. CONT.	36" o.c.
	73	DESCHAMPISIA CESPITOSA 'NORTHERN LIGHTS'	NORTHERN LIGHTS TUFTED HAIR GRASS	1 GAL. CONT.	24" o.c.
	24	EUONYMUS ALATUS 'COMPACTUS'	COMPACT BURNING BUSH	2 GAL. CONT.	60" o.c.
	95	FESTUCA GLAUCA 'ELJAH BLUE'	ELJAH BLUE FESCUE	1 GAL. CONT.	24" o.c.
	10	HEUCHERA X 'MIDNIGHT ROSE'	MIDNIGHT ROSE CORAL BELLS	1 GAL. CONT.	24" o.c.
	14	HEUCHERA X 'TIMELESS TREASURE'	TIMELESS TREASURE CORAL BELLS	1 GAL. CONT.	24" o.c.
	7	MACROTHELYPTERIS TORRESIANA	SWORDFERN	1 GAL. CONT.	24" o.c.
	28	MAHONIA AQUIFOLIUM	OREGON GRAPE	3 GAL. CONT.	48" o.c.
	13	PENNISETUM SETACEUM 'RUBRUM'	PURPLE FOUNTAIN GRASS	1 GAL. CONT.	36" o.c.
	19	PIERIS JAPONICA 'SHY' TM	ENCHANTED FOREST IMPISH ELF PIERIS	2 GAL. CONT.	48" o.c.
	26	PRUNUS LAUROCERASUS 'OTTO LUYKEN'	OTTO LUYKEN ENGLISH LAUREL	3 GAL. CONT.	48" o.c.
	45	SPIRAEA JAPONICA 'WALBUMA'	MAGIC CARPET JAPANESE SPIREA	2 GAL. CONT.	36" o.c.
	7	THUJA OCCIDENTALIS 'SMARAGD'	EMERALD GREEN ARBORVITAE	5'-6' HT. CONT.	48" o.c.
	19	VIBURNUM DAVIDII	DAVID VIBURNUM	2 GAL. CONT.	48" o.c.

GROUND COVERS	QTY	DESCRIPTION
	±4,283 SF	LAWN - NORTHWEST SUPREME LAWN MIX. SUNMARK SEEDS OR OTHER APPROVED EQUAL COMPOSITION BY WEIGHT: CUTTER II PERENNIAL RYEGRASS (LOLIUM PERENNE VAR. CUTTER II) 35%; DASHER III PERENNIAL RYEGRASS (LOLIUM PERENNE VAR. DASHER III) 35%; GARNET CREEPING RED FESCUE (FESTUCA RUBRA) 15%; WINDWARD CHEWINGS FESCUE (FESTUCA RUBRA SPP. LONGIFOLIA) 15%. APPLY AT A RATE OF 8 LBS PER 1,000 SF OR OTHER RATE APPROVED BY VENDOR.

**PRELIMINARY LANDSCAPE NOTES**

- PRELIMINARY LANDSCAPE PLAN IS INTENDED TO PORTRAY DESIGN INTENT ONLY. PLAN CHANGES, INCLUDING CHANGES TO PLANT VARIETY, LOCATIONS, AND OTHER PLAN ELEMENTS MAY OCCUR PRIOR TO FINAL PLAN APPROVAL, WHERE ALLOWED BY CITY OF MOLALLA STANDARDS.
- ALL LANDSCAPING SHALL CONFORM TO APPLICABLE CITY OF MOLALLA STANDARDS (DEVELOPMENT CODE 17-3.4) AND TO AMERICAN STANDARDS FOR NURSERY STOCK, ANSI Z60.1, CURRENT EDITION. ALL LANDSCAPING MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH RECOGNIZED, BEST-PRACTICE INDUSTRY STANDARDS, SUCH AS THOSE ADOPTED BY THE OREGON LANDSCAPE CONTRACTORS BOARD (OLCB).
- CONTRACTOR SHALL BE RESPONSIBLE FOR PLANTING AND PROVIDING IRRIGATION, AS NECESSARY, FOR ALL LANDSCAPE AREAS, PER MOLALLA DEVELOPMENT CODE 17-3.4.030(C)(17). IRRIGATION SYSTEM SHALL BE DESIGN-BUILD BY THE LANDSCAPE CONTRACTOR.
- ALL PLANT MATERIAL SHALL BE OF HIGH GRADE, HEALTHY, EVENLY BRANCHED, TYPICAL FOR THEIR SPECIES, AND MEET THE SIZE AND GRADING OF THE AMERICAN STANDARDS FOR NURSERY STOCK (ANSI Z60.1). CONTAINERIZED PLANT STOCK SHALL BE FULLY ROOTED, BUT NOT ROOT-BOUND, IN THE CONTAINERS IN WHICH THEY ARE DELIVERED.
- SOIL PREPARATION: ADEQUATE TOPSOIL SHALL BE PROVIDED AND AMENDED AS NECESSARY FOR HEALTHY PLANT ESTABLISHMENT, PER DEVELOPMENT CODE 17-3.4.030(C)(17).
- MULCH: APPLY 3" DEEP WELL-AGED MEDIUM GRIND OR SHREDDED DARK HEMLOCK BARK MULCH IN PLANTING BEDS, TAKING CARE TO NOT COVER FOLIAGE OR BURY ROOT CROWNS.

**SITE AREA SUMMARY**

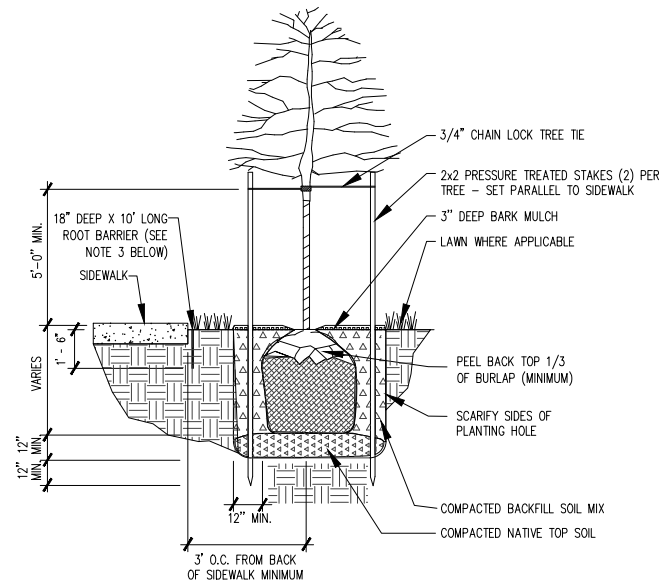
TOTAL SITE AREA: ±37,991 SF  
 TOTAL LANDSCAPE AREA: ±5,420 SF (±14%)

**PARKING AREA SUMMARY**

PARKING AREA: ±13,284 SF  
 TOTAL SPACES PROVIDED: 15 SPACES  
 TOTAL PARKING AREA TREES REQUIRED: 2 TREES (1 PER 12 SPACES)  
 TOTAL PARKING AREA TREES PROVIDED: 2 TREES  
 PARKING AREA LANDSCAPE REQUIRED: ±1,328 SF (13,284 SF X 10%)  
 PARKING AREA LANDSCAPE PROVIDED: ±1,501 SF (±11%)



JOB NUMBER:	9010
DATE:	04/07/2022
DESIGNED BY:	ZTN
DRAWN BY:	ZTN
CHECKED BY:	TEB



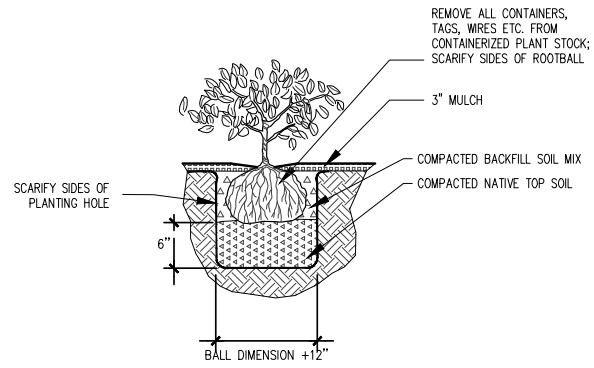
**1** TYPICAL STREET TREE PLANTING DETAIL

P-12

NTS

NOTES:

1. DRIVE STAKES OUTSIDE OF ROOTBALL PARALLEL TO STREET AND SIDEWALK.
2. SET TREE 3" ABOVE FINISH GRADE TO ALLOW FOR SETTLING OF SOIL AND BARK MULCH APPLICATION. FINISH GRADE OF SOIL/BARK MULCH SHALL NOT COVER NATURAL ROOT FLARE. KEEP MULCH A MINIMUM OF 2" FROM BARK OF TREE.
3. FOR TREES LOCATED WITHIN PAVED AREAS, SUCH AS PARKING LOT TREE ISLANDS, PROVIDE AN 18" DEEP BY 10' LONG ROOT BARRIER DIRECTLY NEXT TO AND SLIGHTLY BELOW LEVEL OF CURB WHERE TREES ARE WITHIN 4' OF HARDSCAPING (CURBS, SIDEWALKS, DRIVES, ETC.). CENTER BARRIER ON TREE TRUNK. ROOT BARRIER SHALL BE DEEP ROOT UB 18-2 ROOT BARRIER PANELS OR OTHER APPROVED EQUAL. INSTALL PER MANUFACTURE'S RECOMMENDATIONS.
4. BACKFILL SOIL MIX FOR TREE PLANTING TO BE 1/3 ORGANIC MATERIALS, 1/3 TOPSOIL, AND 1/3 SANDY LOAM.
5. REMOVE ALL WIRES, METAL BASKETS, TWINE, AND OTHER NON-BIODEGRADABLE MATERIALS FROM TREE ROOTBALL PRIOR TO PLANTING.
6. CONTRACTOR SHALL WATER-SETTLE PLANTING HOLES TO REMOVE AIR POCKETS PRIOR TO SPREADING MULCH.



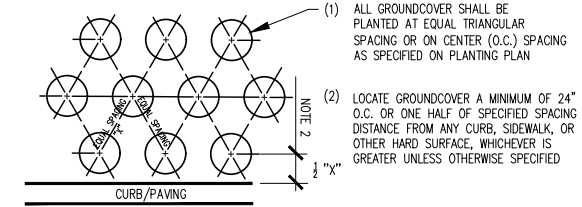
**2** TYPICAL SHRUB PLANTING DETAIL

P-12

NTS

NOTES:

1. BACKFILL SOIL MIX SHALL BE 1/3 ORGANIC MATERIALS, 1/3 TOPSOIL, AND 1/3 SANDY LOAM.
2. REMOVE ALL CONTAINERS, METAL, TWINE, TAGS, AND OTHER NON-BIODEGRADABLE MATERIALS PRIOR TO PLANTING.
3. ALL CONTAINERIZED PLANT STOCK SHALL BE VIGOROUS, FREE OF DISEASE AND PESTS, EVENLY FORMED, AND BE FULLY ROOTED IN THE CONTAINER IN WHICH THEY ARE DELIVERED. ALL PLANTS SHALL FOLLOW ANSI Z60.1 STANDARDS FOR NURSERY STOCK FOR CONTAINER SIZE, HEIGHT, ETC.
4. CONTRACTOR SHALL WATER-SETTLE PLANTING HOLES TO REMOVE AIR POCKETS PRIOR TO SPREADING MULCH.
5. CARE SHALL BE TAKEN TO AVOID COVERING ROOT CROWN OR FOLIAGE OF PLANTS WITH BARK MULCH.



**3** TYPICAL GROUNDCOVER PLANTING DETAIL

P-12

NTS

NOTES:

1. BACKFILL SOIL MIX SHALL BE 1/3 ORGANIC MATERIALS, 1/3 TOPSOIL, AND 1/3 SANDY LOAM.
2. REMOVE ALL CONTAINERS, METAL, TWINE, TAGS, AND OTHER NON-BIODEGRADABLE MATERIALS PRIOR TO PLANTING.
3. ALL CONTAINERIZED PLANT STOCK SHALL BE VIGOROUS, FREE OF DISEASE AND PESTS, EVENLY FORMED, AND BE FULLY ROOTED IN THE CONTAINER IN WHICH THEY ARE DELIVERED. ALL PLANTS SHALL FOLLOW ANSI Z60.1 STANDARDS FOR NURSERY STOCK FOR CONTAINER SIZE, HEIGHT, ETC.
4. CONTRACTOR SHALL WATER-SETTLE PLANTING HOLES TO REMOVE AIR POCKETS PRIOR TO SPREADING MULCH. DO NOT COVER FOLIAGE OR ROOT CROWN OF GROUNDCOVER PLANTS.



JOB NUMBER:	9010
DATE:	04/07/2022
DESIGNED BY:	ZTN
DRAWN BY:	ZTN
CHECKED BY:	TEB

## **Exhibit C: Transportation Impact Study**

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**lancaster  
moble**

## Molalla Petroleum – 710 W Main Street

Transportation Impact  
Study

Molalla, Oregon

Date:

April 7, 2022

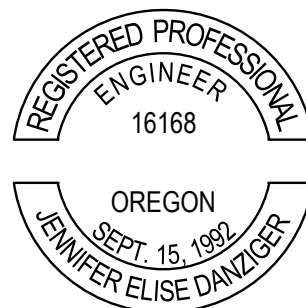
Prepared for:

Molalla Petroleum

Prepared by:

Myla Cross

Jennifer Danziger, PE



RENEWS: 12/31/2023

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## Executive Summary

- The property located at 710 W Main Street in Molalla, Oregon has been proposed for redevelopment. An existing single family residential home will be replaced with a fuel station with 8 vehicle fueling positions and a 4,165 square foot (SF) convenience store.
- The trip generation calculations show that the proposed development is projected to generate a total of 216 morning peak hour, 182 evening peak hour, and 2,058 weekday trips. Approximately 10 morning peak hour, 18 evening peak hour, and 206 daily trips are anticipated to be internal to the Cascade Center and Cascade Place developments. Pass-by trips are estimated at 124 morning peak hour, 92 evening peak hour, and 1,074 weekday trips. Primary trip generation is estimated at 82 morning peak hour, 72 evening peak hour, and 778 daily trips that will be added to the network.
- No significant trends or crash patterns were identified at any of the study intersections. Accordingly, no specific safety mitigation is recommended.
- Adequate sight distance is available at the site access to ensure safe operation of the intersection along W Main Street (OR 211).
- A westbound left-turn lane is warranted on W Main Street (OR 211) at the new East Shared Access during both the morning and evening peak hours. A minimum of 75 feet of storage (3 vehicles) should be provided.
- Although the eastbound right-turn lane warrant was met on W Main Street (OR 211) at the new East Shared Access, installation of a right-turn lane is not recommended because it will increase stress for bicyclists in the bike lane throughout the day while the turn lane is only warranted during the evening peak period.
- The projected traffic demand at the intersection of W Main Street (OR 211) at the new East Shared Access does not meet the ODOT preliminary traffic signal warrant thresholds.
- Detailed analysis of traffic signal warrants at the intersection of W Main Street (OR 211) at Leroy Avenue show the proposed development will not trigger the criteria for installation of a traffic signal at this location.
- All study intersections are projected to meet ODOT standards except for W Main Street (OR 211) and Leroy Avenue. Standard methodologies show demand on the northbound approach of Leroy Avenue is forecast to exceed capacity during the evening peak hour under both background and buildout conditions with extremely long delays. However, conditions at the Leroy Avenue intersection can be better represented by traffic simulations rather than HCM methodologies because they consider how the traffic signals on OR 211 (W Main Street) at OR 213 and at Molalla Avenue affect the traffic flow past Leroy Avenue. Simulated scenarios demonstrate that the intersection can accommodate the forecast demand without a traffic signal.
- The 95th percentile queues at the study intersections can be accommodated by the available vehicle storage space under all scenarios.
  - Queues on the northbound left-turn lane of Leroy Avenue are estimated at 75 to 100 feet which is consistent with the simulation delays and demonstrate that the intersection will not be failing without a traffic signal.
  - Queues for the westbound left-turn lane on W Main Street at the East Shared Access indicate that 50 to 75 feet of storage (2 to 3 vehicles) should be provided.





# Project Description

## Introduction

The property located at 710 W Main Street in Molalla, Oregon has been proposed for redevelopment. An existing single family residential home will be replaced with a fuel station with 8 vehicle fueling positions and a 4,165 square foot (SF) convenience store.

This report examines the traffic impacts of the proposed development on the transportation system in the vicinity of the project site. Based on correspondence with Molalla's city engineer and ODOT's development coordinator, this report conducts safety and capacity/level of service analyses at the following six (6) intersections and the site access driveway:

1. W Main Street (OR 211) & Cascade Highway South (OR 213)
2. W Main Street (OR 211) & Cascade Center West Access
3. W Main Street (OR 211) & Leroy Avenue (Secondary Site Access)
4. W Main Street (OR 211) & New East Shared Access (Primary Site Access)
5. W Main Street (OR 211) & Ridings Avenue
6. W Main Street (OR 211) & Molalla Avenue

All supporting data and calculations are included in the appendix to this report.

## Location Description

The proposed project intends to develop the site on Tax Lots 52E08C 00300 and 00390 with a gas station and convenience store. The gas station will have 8 vehicle fueling positions (VFPs) and the convenience store will be 4,165 square feet (SF). The project intends to take access via a shared, two-way access road intersecting W Main Street (OR 211), approximately 515 feet east of Leroy Avenue and 335 feet west of Ridings Avenue. The access road will connect to the internal circulation network serving the Cascade Center developments and will replace an approved access to W Main Street in the vicinity of Cascade Center Lots 11 and 12. The project proposes three driveways that connect to the relocated access road.

Figure 1 displays a vicinity map of the project area, with the project site outlined in yellow and the Cascade Center commercial and Cascade Plan residential areas outlined in red and cyan, respectively. The internal network is conceptually illustrated with the black arrows. The site plan is attached.



Figure 1: Project Location (image from Google Earth)

### Vicinity Streets

The study area includes five roadways expected to be impacted by the proposed development. Table 1 provides a description of each of the vicinity roadways.

Table 1: Roadway Characteristics

Street Name	Functional Classification	Travel Lanes	Speed	Curbs & Sidewalks	On-Street Parking	Bicycle Facilities
ODOT Jurisdiction						
W Main St (OR 211)	Arterial & District Hwy	2-3	35 mph	Partial both sides	None	Partial both sides
Cascade Hwy S (OR 213)	Arterial & District Hwy	2-3	35 mph	Partial both sides	None	Partial both sides
City of Molalla Jurisdiction						
Leroy Ave	Local	2	25 mph	Continuous	None	None
Ridings Ave	Local	2	25 mph	Partial both sides	Permitted	None
Molalla Ave	Arterial	2	25 mph	None	None	None

Notes: Functional Classification based on the Molalla Transportation System Plan

### Study Intersections

Through coordination with the City of Molalla and ODOT, six (6) study intersections were identified for evaluation. The existing characteristics of these intersections are summarized in Table 2.



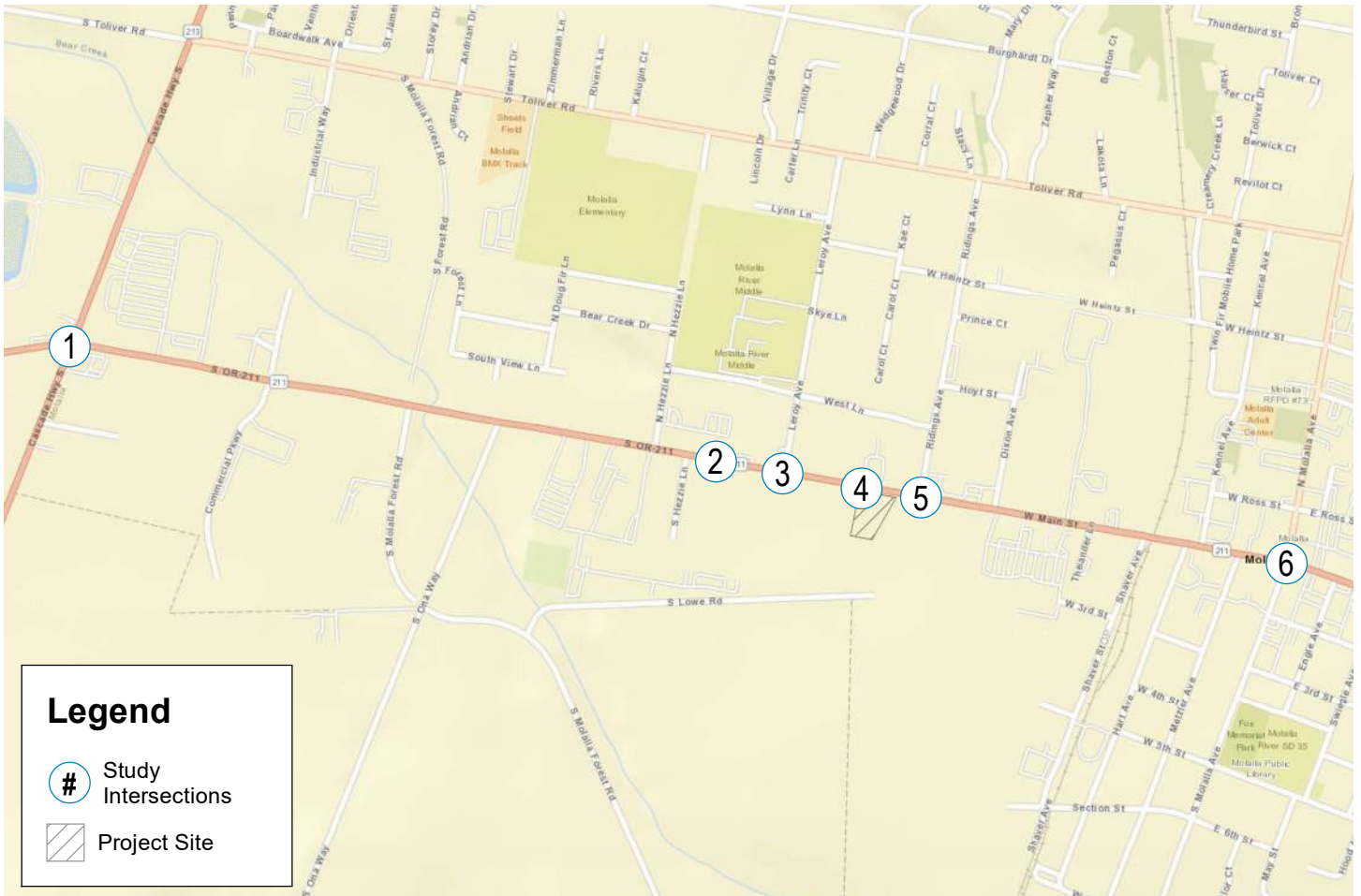
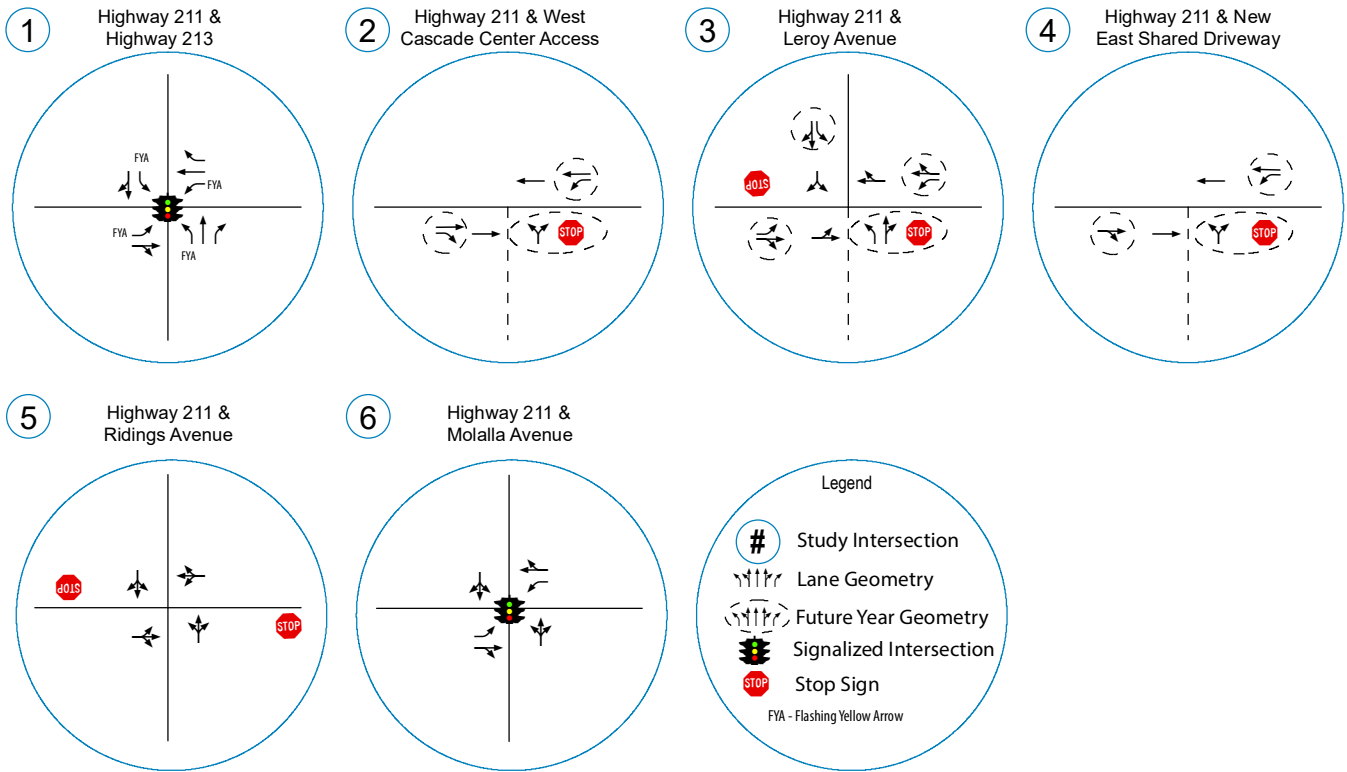
**Table 2: Vicinity Intersection Descriptions**

	<b>Intersection</b>	<b>Geometry</b>	<b>Traffic Control</b>	<b>Phasing/Stopped Approaches</b>
1	W Main St (OR 211) & Cascade Hwy S (OR 213)	4-Leg	Signalized	Protected/Permitted Left Turn for All Approaches
2	W Main St (OR 211) & West Access	3-Leg	Stop Controlled	NB Stop Controlled
3	W Main St (OR 211) & Leroy Ave	4-Leg	Stop Controlled	NB/SB Stop Controlled
4	W Main St (OR 211) & East Shared Access	3-Leg	Stop Controlled	NB Stop Controlled
5	W Main St (OR 211) & Ridings Ave	4-Leg	Stop Controlled	SB/NB Stop Controlled
6	W Main St (OR 211) & Molalla Ave	4-Leg	Signalized	EB/WB Protected Left-Turn

A vicinity map showing the project site, vicinity streets, and intersection configurations is shown in Figure 2.

## Transit

South Clackamas Transit District has three routes that serve the City of Molalla. The Molalla City Bus route has a bus stop just over ½ mile walking/biking distance from the project site at the Ross Street Transit Center. The Molalla City route loops throughout the City in a largely clockwise direction. The bus runs from 7:30 AM to 5:35 PM, Monday through Friday, 9:30 AM to 3:45 PM, and has no service on Sunday. Headways are roughly one hour.



## Site Trips

### Trip Generation

To estimate the number of trips that could be generated by the proposed development, trip rates from the *Trip Generation Manual*<sup>1</sup> were used. Data from the land use code 210, Single Family Detached Housing is used to estimate the existing site's trip generation based on the number of dwelling units (DU). 945, Convenience Store/Gas Station is used to estimate the proposed development's trip generation based on the number of VFPs for stores with 4,000 to 5,500 SF of gross floor area (GFA).

The resulting trip generation estimates are summarized in Table 3. Detailed trip generation calculations are included in Appendix A.

**Table 3: Trip Generation Summary**

Land Use	Intensity	AM Peak Hour			PM Peak Hour			Weekday Total
		In	Out	Total	In	Out	Total	
<b>Existing Land Use</b>								
<i>210 - Single-Family Detached Housing</i>	<i>1 DU</i>	<i>0</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>0</i>	<i>1</i>	<i>10</i>
<b>Proposed Land Use</b>								
945 - Convenience Store/Gas Station	8 VFP	108	108	216	91	91	182	2,058
<i>Internal Trips (5% AM/10% PM/10% Daily)<sup>1</sup></i>		5	5	10	9	9	18	206
External Trips		103	103	206	82	82	164	1,852
<i>Pass-By Trips (60% AM/56% PM/58% Daily)<sup>2</sup></i>		62	62	124	46	46	92	1,074
Primary Trips		41	41	82	36	36	72	778

Notes:

1. The internal trip capture rate was assumed to be 10% throughout the day except for the morning peak period.
2. The daily pass-by rate is assumed to be the average of the peak hour rates.

The proposed development is projected to generate 216 morning peak hour, 182 evening peak hour, and 2,058 weekday driveway trips. As discussed below, some of these trips will be linked to other activities in Cascade Center and some will be pass-by trips already on the transportation network. Further details about these calculations are provided below. The primary trip generation is estimated at 82 morning peak hour, 72 evening peak hour, and 778 daily trips that will be added to the network.

Given the connections to the retail, restaurant, and residential in the Cascade Center development, the site is anticipated to attract some trips from those developments. The rates from the ITE *Trip Generation Handbook*<sup>2</sup> produce internal trip estimates ranging from 10 percent in the morning to nearly 50 percent in the afternoon. These results are too high considering the other possible internal linkages in the Cascade Center; therefore, a simple reduction of 5 percent in the morning, 10 percent in the evening, and 10 percent daily is proposed. These

<sup>1</sup> Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 11th Edition, 2021.

<sup>2</sup> ITE, *Trip Generation Handbook*, 3<sup>rd</sup> Edition, 2017.

rates are similar to the rates used for the Cascade Center development. This rate results in a reduction of 10 morning peak hour, 18 evening peak hour, and 206 daily trips.

The newest ITE *Trip Generation Manual* includes updates to the pass-by rates. The average rates for sites with between 2 and 8 VFPs are 60 percent for the morning peak period and 56 percent for the evening peak period. The daily pass-by rate was assumed to be the average (58 percent) of the peak period rates. The resulting pass-by trips are estimated at 124 morning peak hour, 92 evening peak hour, and 1,074 weekday trips.

The primary trip generation is estimated at 82 morning peak hour, 72 evening peak hour, and 778 daily trips that will be added to the network.

## Trip Distribution

The directional distribution of site trips to and from the proposed development was estimated based on locations of likely trip destinations, locations of major transportation facilities in the site vicinity, and existing travel patterns at the study area intersections. The following trip distribution is proposed for primary trips:

- Approximately 30 percent of trips will travel to/from the west along OR 211
  - Approximately 10 percent will continue to travel to/from the west along OR 211
  - Approximately 10 percent will travel to/from the north along OR 213
  - Approximately 10 percent will travel to/from the south along OR 213
- Approximately 60 percent of trips will travel to/from the east along OR 211
  - Approximately 30 percent will continue to travel to/from the east along OR 211
  - Approximately 20 percent will travel to/from the north along Molalla Avenue
  - Approximately 10 percent will travel to/from the south along Molalla Avenue
- Approximately 5 percent of trips will travel to/from the north along Leroy Avenue
- Approximately 5 percent of trips will travel to/from the north along Ridings Avenue

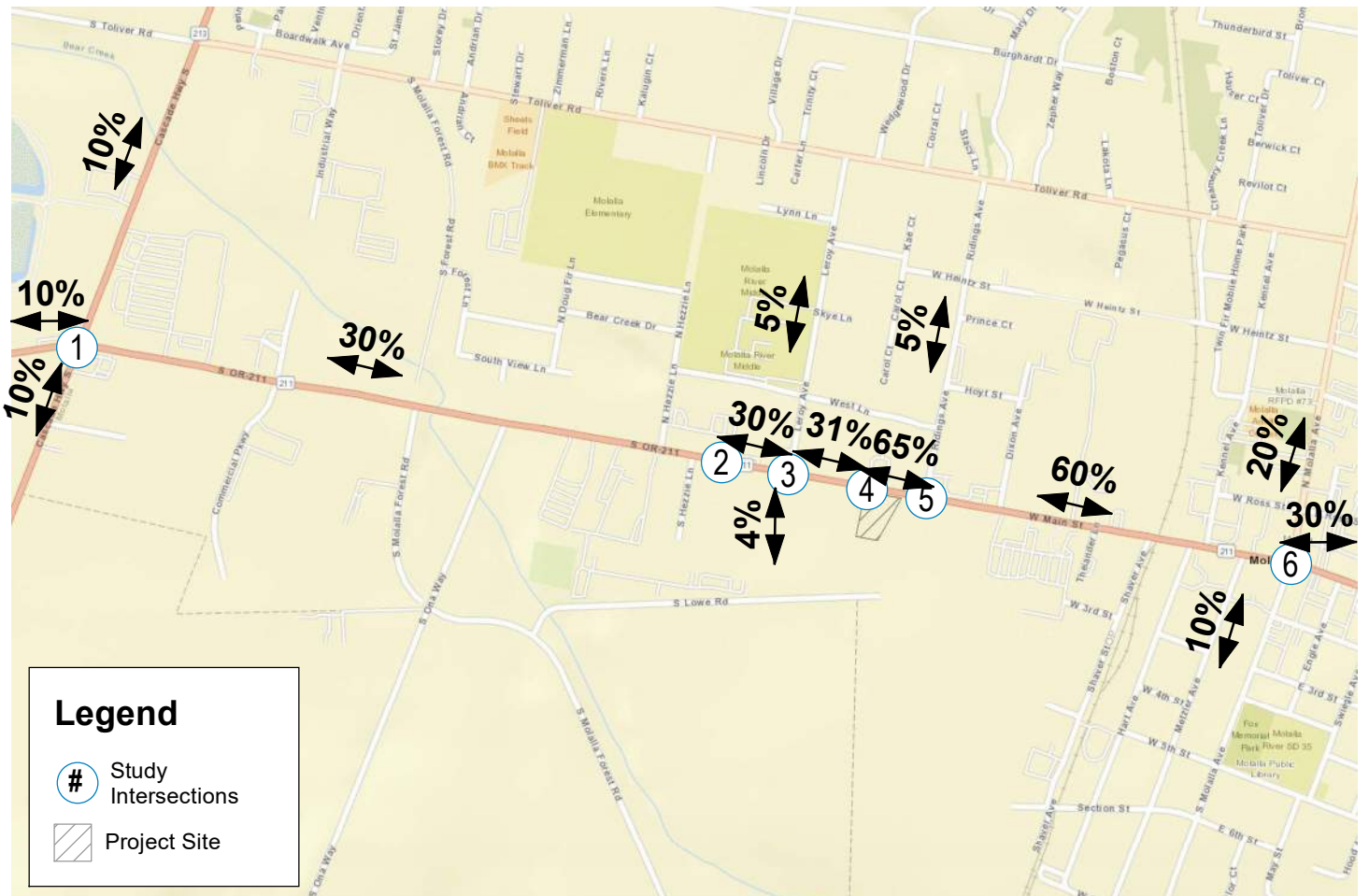
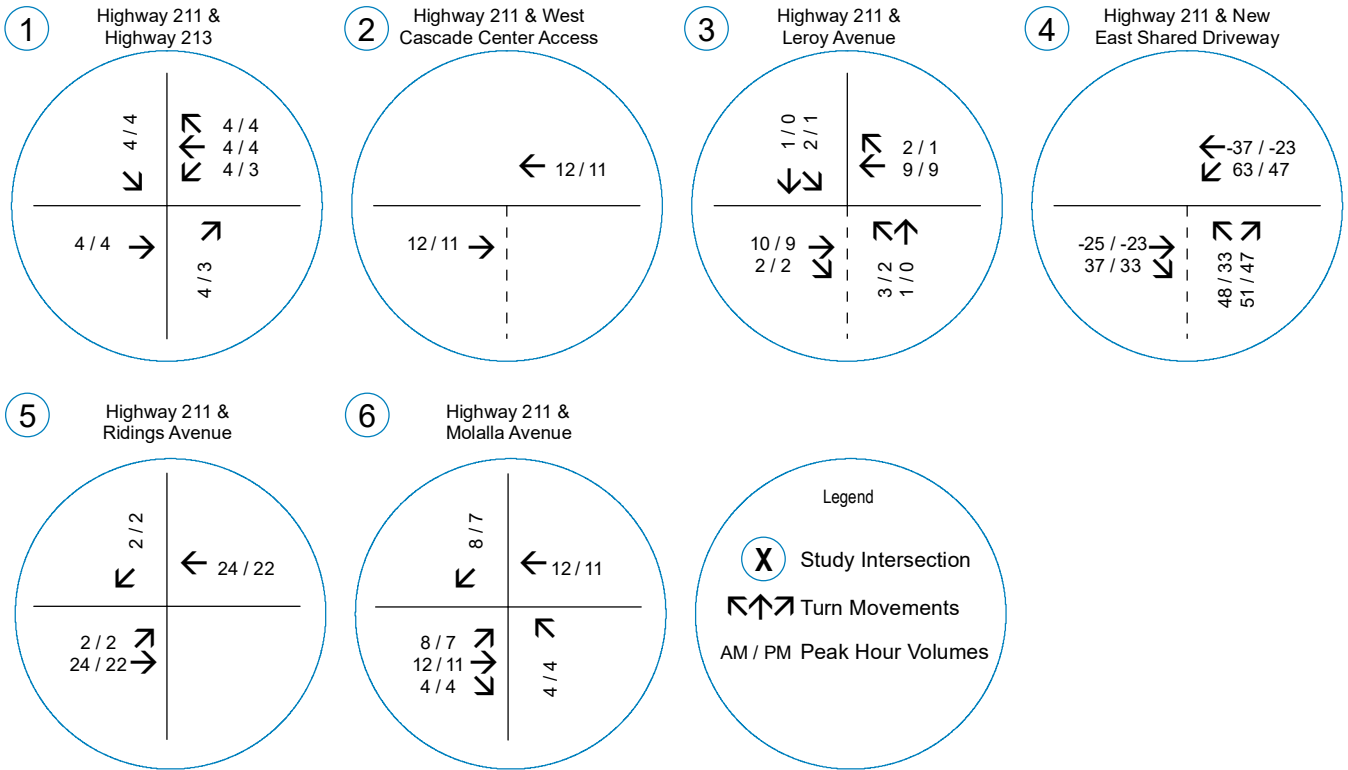
The following trip distribution is proposed for pass-by trips:

- Approximately 40 percent of the traffic will be traveling eastbound while 60 percent will be traveling westbound during the morning peak hour
- Approximately 50 percent of the traffic will be traveling eastbound while 50 percent will be traveling westbound during the evening peak hour

The closest access to the proposed development is a new shared access along the western frontage of the development although the site also connects through to Leroy Avenue. Only a small percentage of traffic is expected to travel through the Cascade Center to use Leroy Avenue to access OR 211 since the route is longer than using the east driveway. An estimated 4 percent of the site traffic will use the Leroy intersection to exit the site and that traffic will be traveling northbound on Leroy Avenue or westbound on OR 211.

The trip distribution and assignment for the total site trips generated during the morning and evening peak hours are shown in Figure 3.





# Traffic Volumes

## Existing Conditions

To address the pandemic impacts on current traffic volumes, a combination of historical and new traffic counts was used. Since all proposed study intersections are located along the state highway system, the following general adjustment factors were used to develop the existing volumes:

- A growth rate for the study area traffic was derived using ODOT’s 2039 Future Volume Table, in accordance with ODOT’s *Analysis Procedures Manual*. Averaging data corresponding to mileposts 16.08 and 16.12 of ODOT highway number 160 (Highway 213) and mileposts 11.26, 12.14, and 12.25 of ODOT highway number 161 (Highway 211) resulted in a linear growth factor of 2.26 percent per year.
- Traffic volumes on the highways were seasonally adjusted to reflect the 30<sup>th</sup> highest hour of traffic, per procedures described in ODOT’s *Analysis Procedures Manual*. Using the ODOT’s Seasonal Trend Table<sup>3</sup>, seasonal adjustment factors were calculated based on the Commuter seasonal trend.

The methodology for developing the volumes at each intersection is described in Table 4.

**Table 4: Existing Traffic Volume Adjustments**

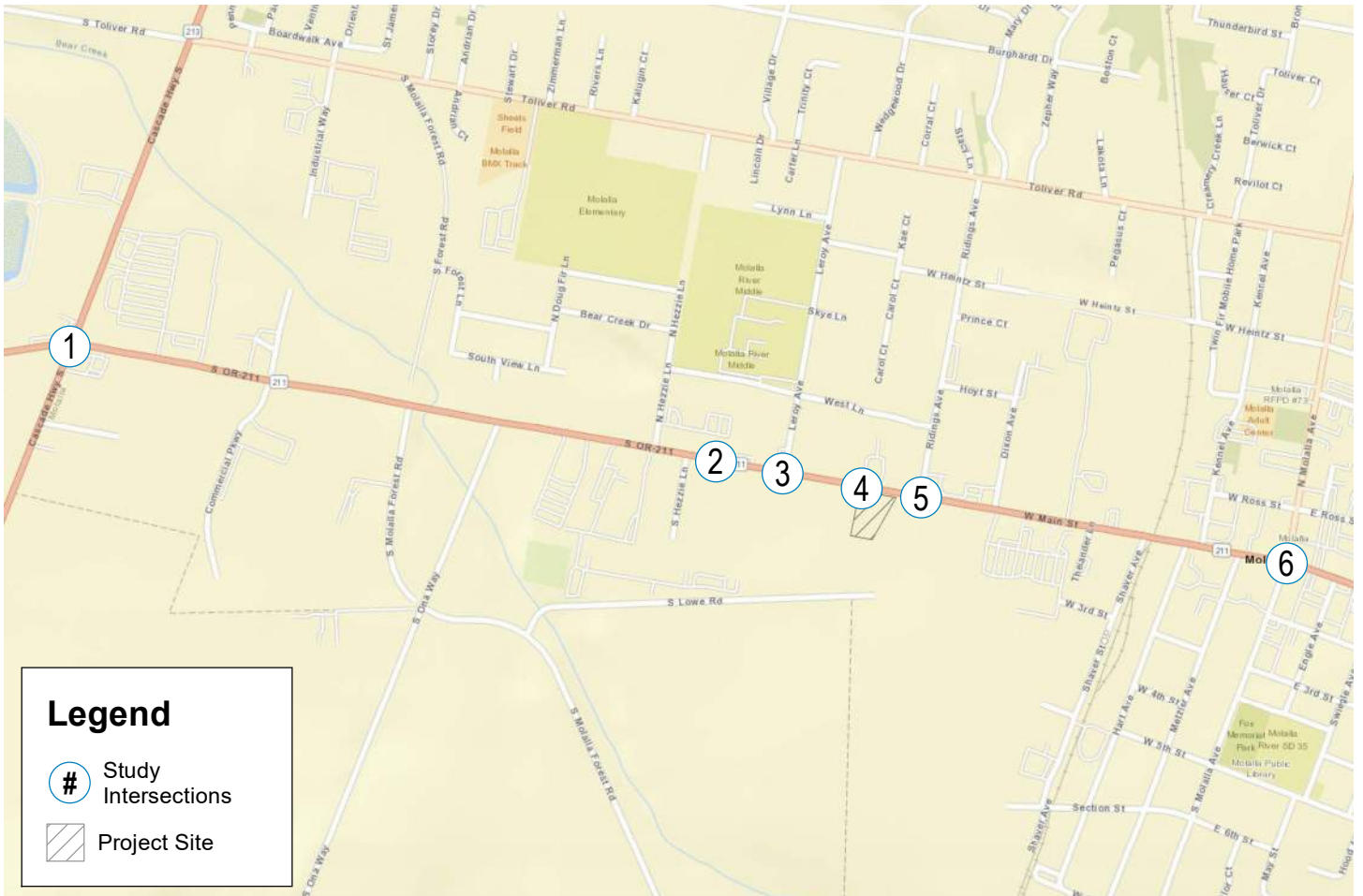
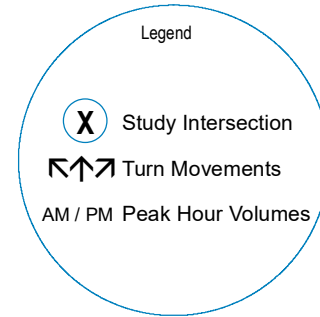
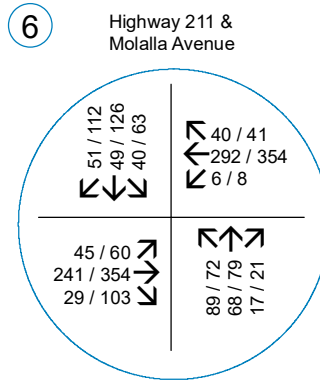
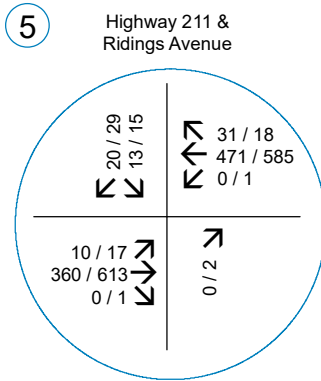
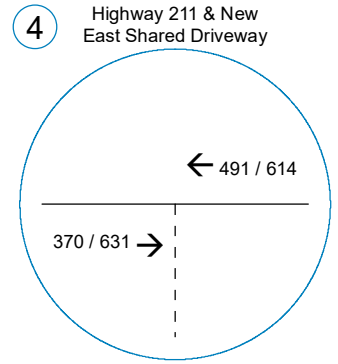
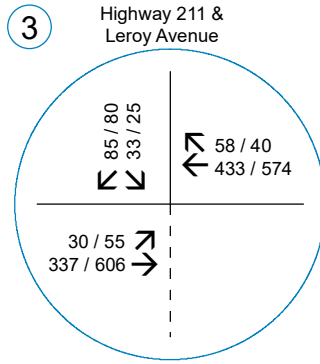
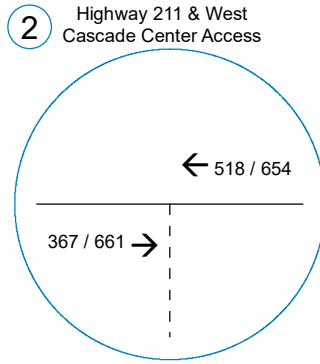
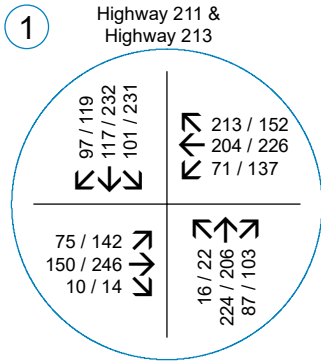
Intersection		Count Dates	Adjustment Methodology
1	W Main St (OR 211) & Cascade Hwy S (OR 213)	9/21/2021 10/15/2019	<ul style="list-style-type: none"> <li>• Grow 2019 counts by 2 years and seasonally adjust volumes</li> <li>• Seasonally adjust 2021 counts</li> <li>• Develop and apply Covid factor to year 2021 counts</li> </ul>
2	W Main St (OR 211) & West Access	NA	<ul style="list-style-type: none"> <li>• Use volumes from west of Leroy Avenue</li> </ul>
3	W Main St (OR 211) & Leroy Ave	10/9/2018 9/21/2021 12/15/2021	<ul style="list-style-type: none"> <li>• Grow 2018 counts by 3 years and seasonally adjust volumes</li> <li>• Seasonally adjust 2021 counts</li> <li>• Develop and apply Covid factor to year 2021 counts</li> </ul>
4	W Main St (OR 211) & East Shared Access	NA	<ul style="list-style-type: none"> <li>• Use volumes from east of Leroy Avenue</li> </ul>
5	W Main St (OR 211) & Ridings Ave	7/29/2021	<ul style="list-style-type: none"> <li>• Seasonally adjust 2021 counts</li> <li>• Balance with volumes from east of Leroy Avenue</li> </ul>
6	W Main St (OR 211) & Molalla Ave	10/9/2018 9/21/2021 (PM Only)	<ul style="list-style-type: none"> <li>• Grow 2018 counts by 3 years and seasonally adjust volumes</li> <li>• Seasonally adjust 2021 counts</li> <li>• Develop and apply Covid factor to year 2021 counts</li> </ul>

Since the most recent counts were all collected in year 2021 and this study is being prepared in January 2022, all traffic volumes were adjusted to a year 2021 existing condition, as shown in Figure 4.

<sup>3</sup> ODOT Seasonal Trend Table (Updated 7/20/2021)







## Background Conditions

Two components were included in the background traffic estimates: 1) general growth and 2) growth associated with planned developments. The buildout year is assumed to be 2023.

For the general background growth, the annual growth rate of 2.26 percent per year will be applied to the adjusted year 2021 existing traffic volumes.

In addition to the general growth, five nearby developments that are approved but were not yet constructed at the time of the traffic counts will be included as in-process traffic:

1. Cascade Center
2. Cascade Place Multifamily
3. Colima Apartments – Phase 1
4. Molalla Retail Center at 31330 Highway 213
5. Colima Apartments – Phase 2

Figure 5 shows the resulting year 2023 background traffic volumes.

## Buildout Conditions

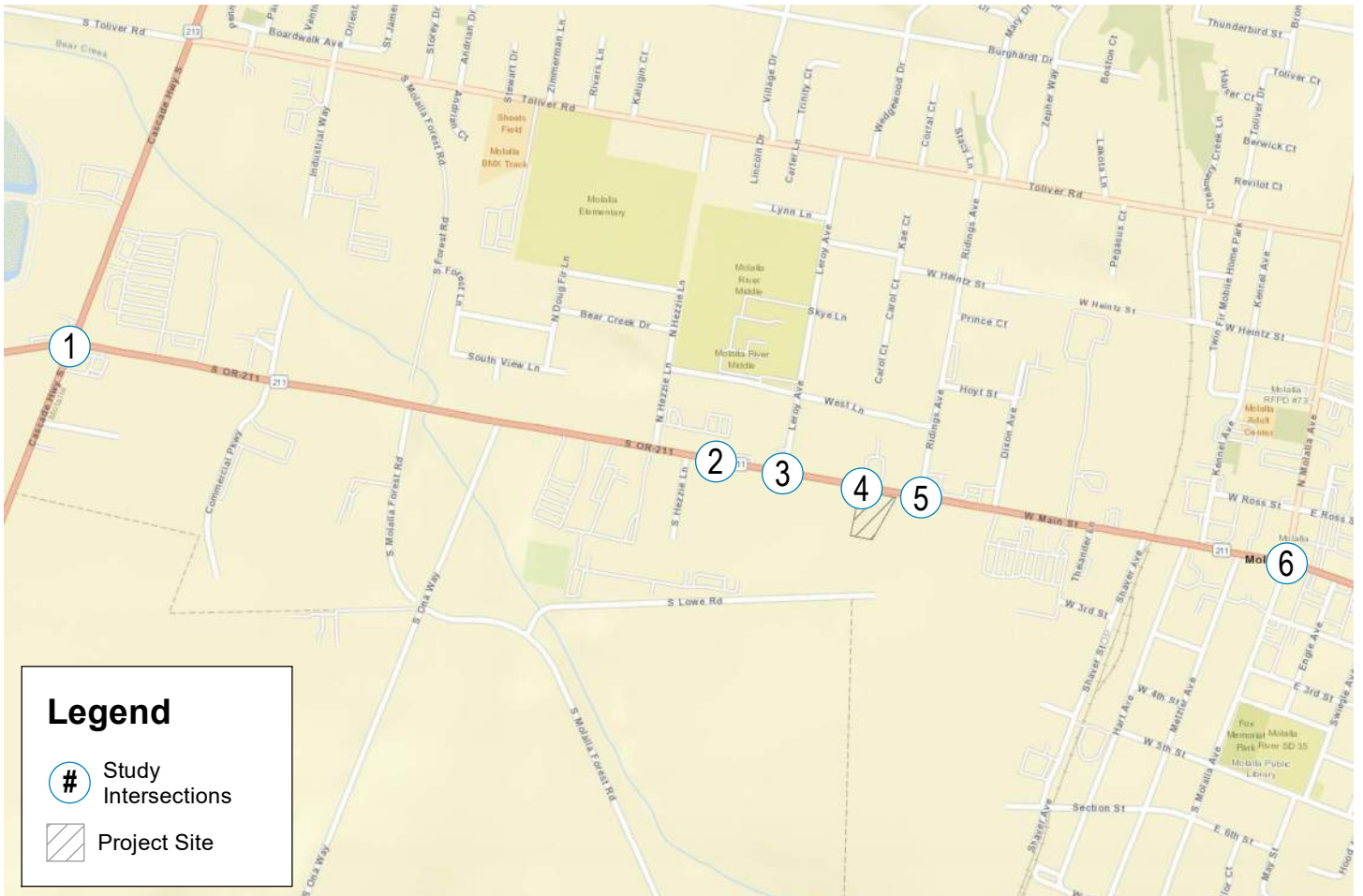
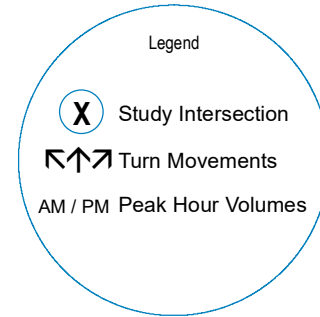
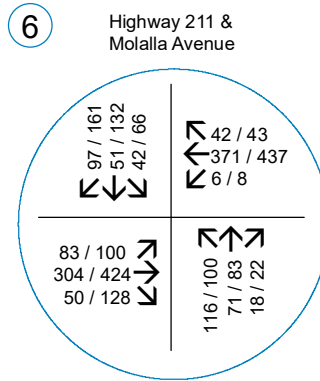
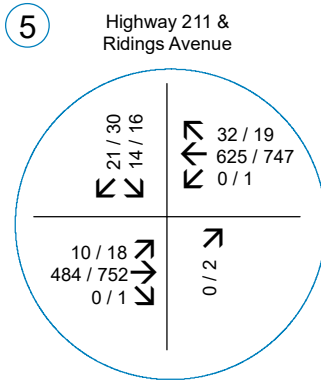
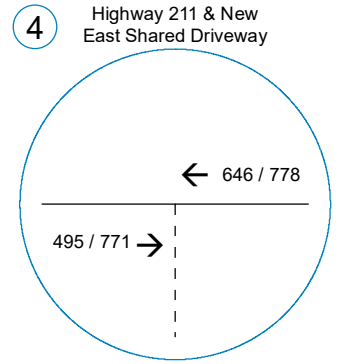
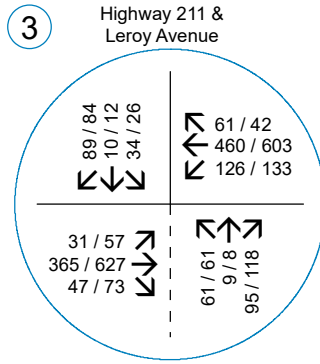
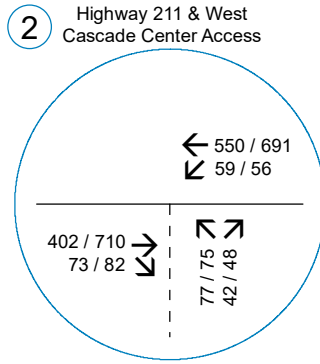
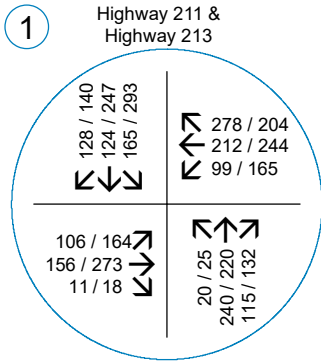
The proposed development will construct a new shared access east of Leroy Avenue that connects into the east side of the Cascade Center. This new east access will extend southward from W Main Street to connect with a new internal roadway that will eventually run along the northern edge of the multifamily development to connect with Leroy Avenue. With the completion of the internal network, the proposed development will have access to the commercial developments in the Cascade Center as well as the multifamily housing.

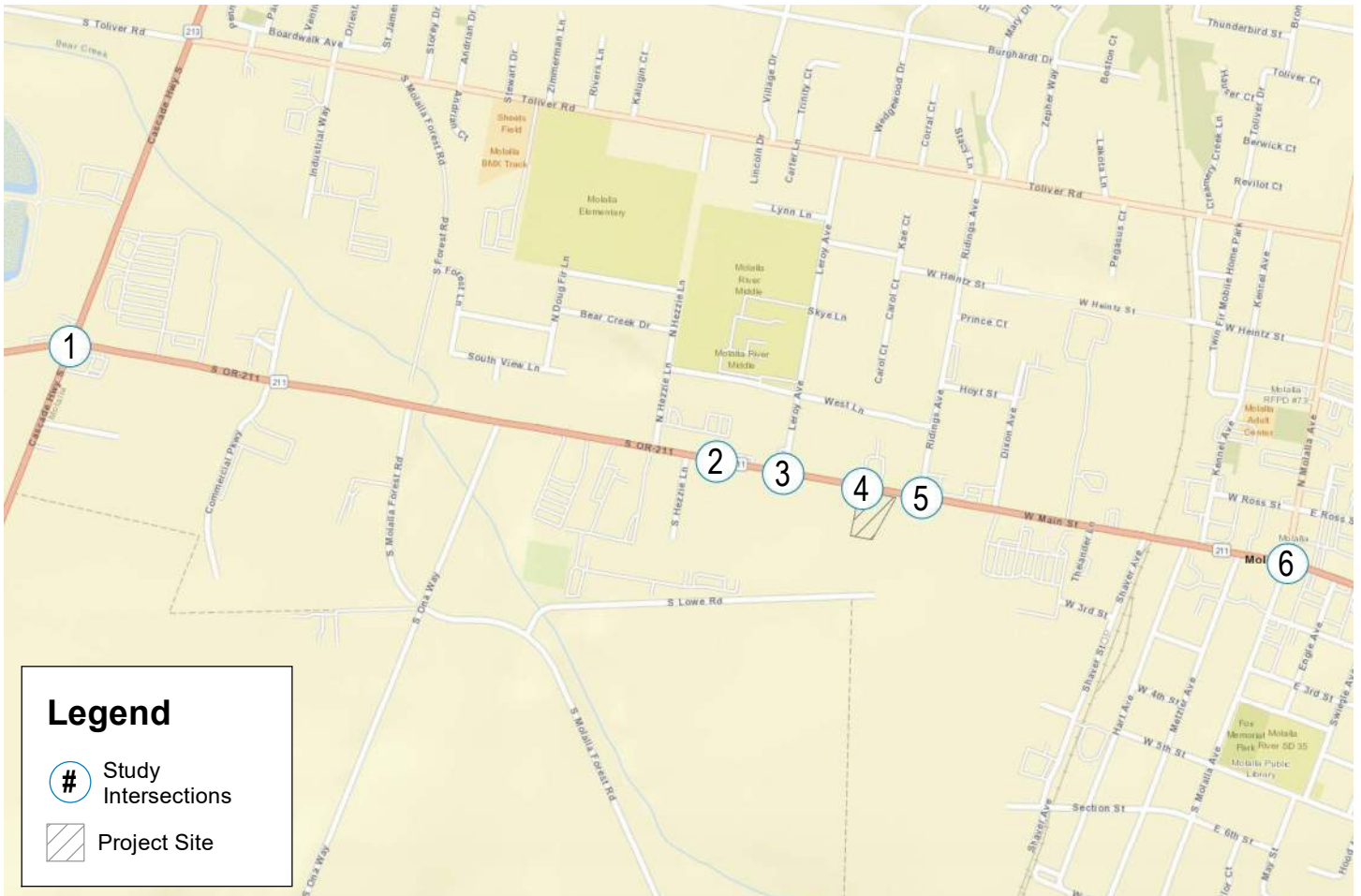
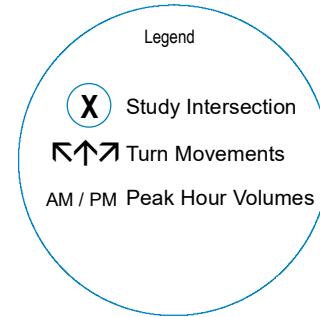
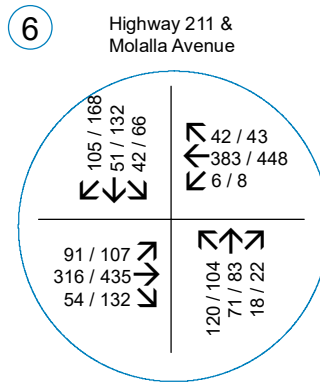
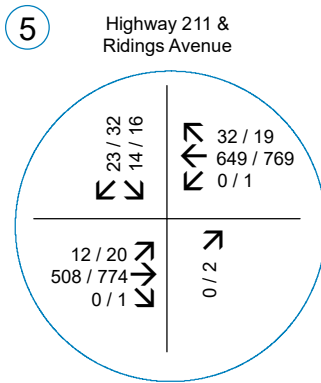
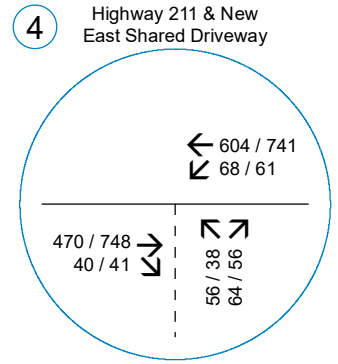
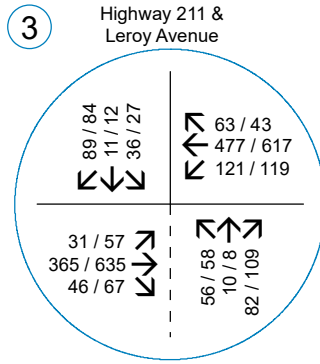
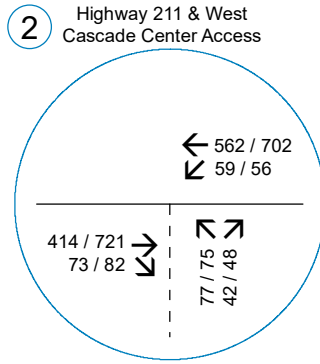
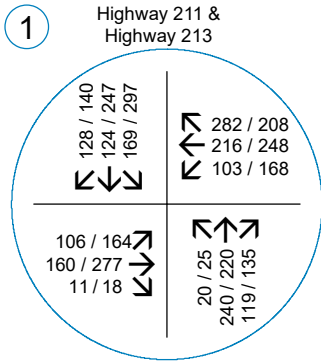
This new east access road will also provide an alternate connection to Leroy Avenue between the Cascade Place multifamily housing and W Main Street. For the apartments east of Leroy Avenue, the new access road will provide a more direct connection to destinations to/from the east along W Main Street and for some of the apartment residents, it will provide a more direct and faster connect for destinations to the west as well. Therefore, reassignment of some of site trips for this development was assumed as part of the buildout condition.

A review of the Cascade Place Multifamily site plan shows nine apartment buildings east of Leroy Avenue and four apartment buildings west of Leroy Avenue. Based on this building layout, approximately 65 to 70 percent of the units are expected to be located east of Leroy Avenue. Considering the building distribution, approximately 20 percent of the traffic to/from the west and 35 percent of the traffic to/from the east was reassigned to the new east shared access.

The volumes from the year 2023 background condition were combined with the peak hour trips generated by the proposed development, and the reassigned trips for the multifamily housing were added to the year 2023 background volumes to obtain the expected Year 2023 buildout conditions. The resulting year 2023 buildout traffic volumes at the study intersections are shown in Figure 6.

**a**







# Safety Analysis

## Crash History Review

Using data obtained from ODOT's Crash Data System, a review of approximately five years of the most recent available crash history (January 2016 through December 2020) was performed at the study intersections. The crash data was evaluated based on the number of crashes, the type of collisions, and the severity of the collisions. Crash severity is based on injuries sustained by people involved in the crash, and includes five categories:

- *PDO* – Property Damage Only
- *Injury C* – Possible Injury
- *Injury B* – Suspected Minor Injury
- *Injury A* – Suspected Serious Injury
- *Fatality*

Crash rates provide the ability to compare safety risks at different intersections by accounting for both the number of crashes that have occurred during the study period and the number of vehicles that typically travel through the intersection. Crash rates were calculated using the common assumption that traffic counted during the evening peak hour represents approximately 10 percent of the average daily traffic (ADT) at the intersection.

The study intersections adhere to the crash analysis methodologies within ODOT's Analysis Procedures Manual (APM). According to *Exhibit 4-1: Intersection Crash Rates per MEV by Land Type and Traffic Control* of the APM, intersections which experience crash rates in excess of their respective 90<sup>th</sup> percentile crash rates should be "flagged for further analysis". Crash rates in excess of 90<sup>th</sup> percentile crashes per million entering vehicles (CMEV) may be indicative of design deficiencies and therefore require a need for further investigation and possible mitigation.

Table 5 provides a summary of crash types while Table 6 summarizes crash severities and rates for each of the study intersections. Detailed crash data is provided in Appendix C.

Table 5: Crash Type Summary

Intersection		Crash Type							Total Crashes
		Turn	Rear End	Angle	Side swipe	Fixed Object	Ped	Bike	
1	W Main St (OR 211) & Cascade Hwy S (OR 213)	13	8	2	2	0	1	0	26
3	W Main St (OR 211) & Leroy Ave	2	4	0	0	0	0	0	6
5	W Main St (OR 211) & Ridings Ave	2	2	0	0	0	0	0	4
6	W Main St (OR 211) & Molalla Ave	3	4	4	0	1	1	0	13

Table 6: Crash Severity and Rate Summary

Intersection		Severity					Total Crashes	PHEV	Crash Rate	90 <sup>th</sup> % Rate
		PDO	C	B	A	Fatal				
1	W Main St (OR 211) & Cascade Hwy S (OR 213)	15	7	4	0	0	26	18,300	0.78	0.860
3	W Main St (OR 211) & Leroy Ave	1	2	3	0	0	6	13,850	0.24	0.293
5	W Main St (OR 211) & Ridings Ave	1	2	1	0	0	4	12,800	0.17	0.293
6	W Main St (OR 211) & Molalla Ave	8	5	0	0	0	13	13,930	0.51	0.408

### Crash Severity

None of the crashes reported in the five-year analysis period resulted in a fatality or an incapacitating injury (Injury A):

### Pedestrian and Bicycle Collisions

Two of the reported crashes involved a bicyclist and one of the reported crashes involved a pedestrian:

- Near the intersection of W Main Street (OR 211) & Cascade Highway S (OR 213), a northbound vehicle turning left struck an eastbound pedestrian crossing north of the intersection. The pedestrian sustained injuries consistent with *Injury B* classification and the driver of the vehicle was not reported to have sustained any injuries. The pedestrian was reported to be illegally in the roadway and crossing between intersections. The collision occurred during the daytime under clear and dry conditions.
- At the intersection of W Main Street (OR 211) & Molalla Avenue, a northbound vehicle turning left struck an eastbound pedestrian traveling in the crosswalk. The pedestrian sustained injuries consistent with *Injury C* classification and the driver of the vehicle was not reported to have sustained any injuries.



The driver of the vehicle was reported to have failed to yield the right of way. The collision occurred during the daytime under clear and dry conditions.

### **ODOT 90<sup>th</sup> Percentile Crash Rates**

Intersection crash rates were calculated and one, W Main Street (OR 211) at Molalla Avenue has a rate above the respective ODOT 90<sup>th</sup> percentile crash rates. During the analysis period, this intersection was all-way, stop-controlled with one lane on each approach except eastbound W Main Street, which included a right-turn lane. A traffic signal was installed at the intersection in 2021 and W Main Street was restriped to include separate left-turn lanes. Therefore, the previous crash history and patterns at this intersection are anticipated to change.

### **Conclusion**

Based on a review of the most recent five years of available crash data, no significant trends or crash patterns were identified at any of the study intersections. No safety mitigation is recommended per the crash data analysis

## Sight Distance Evaluation

A sight distance analysis was conducted at the site access driveway. To evaluate the sight distance available at these intersections, intersection sight distance was measured and recommended in accordance with the current AASHTO manual<sup>4</sup>. According to AASHTO, the driver's eye is assumed to be 14.5 feet from the near edge of the nearest travel lane of the intersecting street and at a height of 3.5 feet above the minor-street approach pavement. The vehicle driver's eye-height along the major-street approach is assumed to be 3.5 feet above the cross-street pavement. W Main Street (OR 211) has a posted speed limit of 35 mph in both directions and will be widened to a three-lane cross-section, thus the minimum recommended intersection sight distance is 415 feet in both directions.

A field investigation was conducted on Wednesday, January 5, 2022, to measure sight distance for this location. Photos displaying the sight distance viewpoints from the future site access driveway for the eastbound and westbound approaches are included in Appendix C. The following observations were made:

- Sight distance was measured to be approximately 100 feet east of the site access driveway due to obstructions by onsite foliage. Upon the planned removal of the onsite foliage as part of the proposed redevelopment project, sufficient sight distance exceeding the 415-foot requirement can be achieved.
- Sight distance was measured to exceed 415 feet west of the site access driveway which meets the minimum recommendation.

Sufficient sight distance will be maintained by the proposed development by keeping clear sight distance triangles for this approach including structures and planted foliage.

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<sup>4</sup> American Association of State Highway and Transportation Officials (AASHTO), *A Policy on Geometric Design of Highways and Streets*, 7th Edition, 2018.

# Site Access Warrant Analysis

## Left-turn Lane Warrants

Left-turn lane warrants were examined for westbound traffic at the new intersection of W Main Street (OR 211) and the proposed East Shared Access. A left-turn refuge is primarily a safety consideration for the major street, removing left-turning vehicles from the through traffic stream. The warrants examined implement the design curves developed by the Texas Transportation Institute (TTI), as adopted by ODOT in its *Analysis Procedures Manual*. These warrants are evaluated based on the number of left-turning vehicles, the number of advancing and opposing vehicles, the number of lanes, and the roadway travel speed.

The left-turn lane warrants were met for the westbound approach of this intersection during both the morning and evening peak hours. Frontage improvements along the project site allow for striping of a two-way left-turn lane on W Main Street (OR 211) with a taper back to two lanes east of the property. The length of the striping needed will be discussed in the Queueing Analysis section of the report.

## Right-Turn Lane Warrants

Right-turn lane warrants were also examined for eastbound traffic at the new intersection of W Main Street (OR 211) and the proposed East Shared Access. A right-turn refuge lane is primarily a safety consideration for the major street, removing right-turning vehicles traveling at slower speeds from the through traffic stream. The right-turn lane warrants were examined using methodologies provided in ODOT's APM Chapter 12. Right-turn lane warrants were evaluated based on the number of advancing vehicles, number of turning vehicles, travel speed, and the number of through lanes.

The right-turn lane warrants were not met for the eastbound approach of this intersection during the morning peak hour but were met during the evening peak hour. Since warrants are intended as a guideline, before recommending a right-turn lane, other safety factors should also be considered. W Main Street (OR 211) will include an eastbound bike lane along the property frontage. Adding a right-turn lane would bring the bike lane between the through lane and the turn lane, which can increase stress for a bicyclist as they may be riding between vehicles. Because the warrant was only met during the evening period while the bicycle stress would be present all day, the installation of a right-turn lane is not recommended with the proposed development.

## Traffic Signal Warrants

ODOT's preliminary traffic signal warrants were examined for the new unsignalized study intersection of W Main Street (OR 211) at East Shared Access to determine whether the installation of a new traffic signal will be warranted at the intersections by the project buildout year 2023. Based on the preliminary analysis, traffic signal warrants are not projected to be met for the intersection. Accordingly, no signalization of the unsignalized study intersection is necessary or recommended.



## Signal Warrant at Leroy Avenue

The Manual on Uniform Traffic Control Devices (MUTCD)<sup>5</sup> provides guidance on when to consider the installation of a traffic signal. At the right location, a traffic signal can provide for orderly movement of traffic, serve pedestrians trying to cross a busy street, and reduce the frequency of certain types of crashes (especially right-angle collisions). However, signals can add delay and congestion to the system, increase diversions to local streets, and increase the frequency of certain types of crashes (especially rear-end collisions). Therefore, the MUTCD recommends an engineering study of conditions and provides a series of factors, or warrants, which can be used to aid in deciding when a traffic signal should be considered. The ODOT Traffic Signal Policy and Guidelines require that one or more of the MUTCD traffic signal warrants shall be met to consider installation of a traffic signal on a state highway.

A traffic signal at the intersection of W Main Street (OR 211) and Leroy Avenue has been under consideration since the first approvals of Cascade Center. The 2019 study included a detailed warrant evaluation based on the volume criteria in the that demonstrated that thresholds for installation of a traffic signal were not met. The warrants were assessed again with the Cascade Place Multifamily study and the thresholds were not met.

Both of those studies evaluated warrants based on 16-hour traffic counts collected in the year 2018. New data was not collected due to the pandemic, which caused a drop in traffic volumes below historical levels. Although volumes continue to be somewhat depressed, trends are showing volumes approaching previous levels. Therefore, a 16-hour traffic and pedestrian volume count was collected in 2021 to provide an updated assessment of the traffic signal warrants at this intersection.

### Traffic Volume Estimates

Year 2023 buildout volumes from the new 16-hour traffic counts were estimated by 1) seasonally adjusting the highway through traffic, 2) applying a uniform pandemic adjustment factor of 1.05, 3) growing the existing volumes by a rate of 2.26 percent per year for three years, 4) adding the traffic from two approved developments (Cascade Center and Cascade Place Multifamily), and 5) adding traffic from the proposed development. Although some traffic was measured on the northbound approach of Leroy Avenue due to construction and the opening of the first building on the site. These volumes were excluded from the count since the construction traffic is temporary and the building traffic is included in the approved development traffic estimates.

A detailed breakdown of the traffic generated by the two approved developments was not available from either study. To estimate the site traffic for those developments, a background condition was first estimated by seasonally adjusting the 16-hour volumes from the 2018 traffic counts and growing them by 2.5 percent per year for four years. The background demand was then subtracted from the buildout volumes used to assess signal warrants in the 2019 study for Cascade Place Multifamily. This process yielded an estimate of the combined approved project volumes for the left-turn and through movements on Leroy Avenue and all movements on W Main Street. Although some traffic to/from the multifamily housing is anticipated to use the new East Shared Access to be constructed with the proposed development, no diversions were assumed for the warrant analysis.

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<sup>5</sup> Federal Highway Administration, Manual on Uniform Traffic Control Devices for Streets and Highways, 2009 Edition with Revisions 1 and 2 dated May 2012.

The 16-hour traffic volumes for the proposed development were derived from the time-of-day profiles available in the ITE *Trip Generation Manual*. As noted in the *Site Trips* section of this report, approximately 4 percent of the site-generated traffic is anticipated to use Leroy Avenue rather than the new East Shared Access. All other traffic would use the East Shared Access with 96 percent of the site traffic entering/exiting the intersection on W Main Street east of Leroy Avenue.

### **Warrant Assumptions**

The City of Molalla has an estimated population of 10,228 according to the US Census Bureau<sup>6</sup>, which exceeds the minimum requirement for an intersection that lies within the built-up area of an isolated community having a population of less than 10,000. Furthermore, development directly surrounding the city that would also be considered in this analysis. Therefore, the 70% warrant for high-speed roadways (40 mph minimum) is not applicable at this intersection in any of the analyses.

W Main Street (OR 211) has a posted speed limit of 35 mph. Therefore, the 70% warrant for high-speed roadways (40 mph minimum) is not applicable at this intersection in any of the analyses.

At the intersection with Leroy Avenue, W Main Street (OR 211) has exclusive left-turn lanes. Although ODOT guidance in the APM suggests that this configuration could be counted as a two-lane roadway, the left-turn movement only accounts for 6 to 7 percent of the total volume; therefore, the warrants were evaluated assuming the highway was a one-lane roadway. However, the volumes on the approaches were conservatively assumed to include all highway movements.

Leroy Avenue includes a left-turn and a through-right lane on both approaches. ODOT guidance in the APM suggests that this configuration could be counted as a two-lane roadway. The guidance also requires that right turns be excluded from the calculation if they are below 85 percent of the available lane capacity, which is the case for Leroy Avenue. Therefore, the warrants were evaluated assuming Leroy Avenue was a one-lane roadway. However, the evaluations performed for Cascade Place Multifamily included both the left-turn and through volumes in the calculation. For consistency, the same assumption was made for this analysis.

### **Warrant Assessment**

Chapter 4C of the MUTCD, 2009 provides the guidance for determining whether a signal should be installed at an intersection. It includes nine warrants: three based on traffic volumes, two based on pedestrian volumes, and four other that consider crash history, proximity to a rail crossing, and network factors. Table 7 presents a summary of the warrant analysis.

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<sup>6</sup> US Department of Commerce, US Census Bureau Quick Facts, Molalla City  
<https://www.census.gov/quickfacts/fact/table/molallacityoregon/PST045221>



Table 7: Warrant Summary for W Main Street/Leroy Avenue

Warrant		Criteria	Findings
1	Eight-Hour Vehicular Volume	Condition A, Minimum Vehicular Volume: 500 vehicles on major street and 150 vehicles on minor street for eight hours	Major street volumes exceed the threshold, but all minor street volumes are well below the threshold. <i>Warrant not met.</i>
		Condition B, Interruption of Continuous Traffic: 750 vehicles on major street and 75 vehicles on minor street for eight hours	Major street volumes exceed the threshold, but minor street volumes only exceed the threshold for two hours of the day. <i>Warrant not met.</i>
2	Four-Hour Vehicular Volume	Variable traffic volume thresholds based on a curve with minimum minor street volume of 80 vehicles for four hours	All plotted volumes fall below the curve. <i>Warrant not met.</i>
3	Peak Hour	Variable traffic volume thresholds based on a curve with minimum minor street volume of 100 vehicles for one hour	All plotted volumes fall below the curve. <i>Warrant not met.</i>
4	Pedestrian Volume	Variable volume thresholds based on a curve with minimum volume of 107 pedestrian crossings for four hours	Even with significant growth in pedestrian activity, crossing will fall well below the curve. <i>Warrant not met.</i>
		Variable volume thresholds based on a curve with minimum volume of 133 pedestrian crossings for one hour	Even with significant growth in pedestrian activity, crossings will fall well below the curve. <i>Warrant not met.</i>
5	School Crossing	Adequate gaps in traffic and a minimum volume of 20 school children crossing in one hour	Proposed development will not change the school children crossings warrant not met with other approved developments. <i>Warrant not met.</i>
6	Coordinated Signal System	Progressive movement in a coordinated signal system to maintain proper platooning of vehicles.	Existing signals on W Main Street are uncoordinated. <i>Warrant not relevant.</i>
7	Crash Experience	Five or more reported crashes have occurred within a 12-month period that might not have occurred with a signal	Only 8 crashes reported in a 5-year analysis period with fewer than 3 crashes reported in any year. <i>Warrant not met.</i>
8	Roadway Network	Intersection must include two major routes	Leroy Avenue is not a major route. <i>Warrant not relevant.</i>
9	Intersection Near a Grade Crossing	A railroad crossing must be located within 140 feet of the stop line for any approach.	There are no railroads located within at least a mile of this intersection. <i>Warrant not relevant.</i>

As demonstrated in Table 7, the warrants for a traffic signal are not met at the intersection of W Main Street (OR 211) and Leroy Avenue. Note, a crosswalk with a rectangular rapid flashing beacon (RRFB) is planned to be installed on the west leg of the intersection by Cascade Center, which will facilitate pedestrian crossings.



## Operational Analysis

An operational analysis was conducted for each of the study intersections per the signalized and unsignalized intersection analysis methodologies in the *Highway Capacity Manual* (HCM)<sup>7</sup>. The Synchro/SimTraffic software was used for the analysis.

Two performance measures are assessed for intersection operations:

- The Level of service (LOS) is a measure based on average delay per vehicle that ranges from LOS A, which indicates little or no delay, to LOS F, which indicates a significant amount of congestion and delay.
- The volume to capacity (v/c) ratio is a measure that compares the traffic volume (demand) against the available capacity of an intersection, with v/c ratios above 1.0 indicating that an intersection is operating above capacity.

## Performance Targets

Since the study intersections are under ODOT jurisdiction, the applicable performance targets for these facilities are established under the Oregon Highway Plan (OHP) and are based on the v/c ratio of the intersection. Since OR 213 and OR 211 are District Highways located in the City's Urban Growth Boundary with speed limits between 35 and 45 mph, the target maximum allowable v/c ratio is 0.90.<sup>8</sup>

## Delay & Capacity Analysis

The LOS, delay, and v/c results of the capacity analysis are shown in Table 8. Detailed calculations as well as tables showing the relationship between delay and LOS are included in Appendix D.

As shown in Table 8, all study intersections are projected to operate within ODOT standards under all analysis scenarios, except for W Main Street (OR 211) and Leroy Avenue. Demand on the northbound approach of Leroy Avenue is forecast to exceed capacity during the evening peak hour under both background and buildout conditions. The substandard operations at this intersection are directly precipitated by the Cascade Center development. The proposed project is anticipated to add minimal traffic to this approach.

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<sup>7</sup> Transportation Research Board, *Highway Capacity Manual 6<sup>th</sup> Edition*, 2016.

<sup>8</sup> Oregon Department of Transportation, 1999 Oregon Highway Plan, Including amendments November 1999 through May 2015, 1999.

Table 8: Capacity Analysis Summary

Intersection & Scenario	Morning Peak Hour			Evening Peak Hour		
	LOS	Delay (s)	V/C	LOS	Delay (s)	V/C
<b>1. OR 211 (W Main Street) &amp; OR 213</b>						
2021 Existing Condition	B	17	0.43	B	20	0.61
2023 Background Condition	C	20	0.54	C	24	0.70
2023 Buildout Condition	B	21	0.54	C	24	0.71
<b>2. OR 211 (W Main Street) &amp; West Cascade Center Access</b>						
2021 Existing Condition	-	-	-	-	-	-
2023 Background Condition	D	35	0.54	D	27	0.45
2023 Buildout Condition	C	20	0.36	D	28	0.46
<b>3. OR 211 (W Main Street) &amp; Leroy Avenue</b>						
2021 Existing Condition	C	20	0.35	D	27.8	0.41
2023 Background Condition	F	>100	0.89	F	>100	<u>1.89</u>
2023 Buildout Condition	F	>100	0.84	F	>100	<u>1.70</u>
<b>4. OR 211 (W Main Street) &amp; East Cascade Center Access</b>						
2021 Existing Condition	-	-	-	-	-	-
2023 Background Condition	-	-	-	-	-	-
2023 Buildout Condition	C	20	0.36	C	23	0.34
<b>5. OR 211 (W Main Street) &amp; Ridings Avenue</b>						
2021 Existing Condition	C	16	0.10	C	24	0.20
2023 Background Condition	C	22	0.15	E	39	0.32
2023 Buildout Condition	C	23	0.19	E	42	0.35
<b>6. OR 211 (W Main Street) &amp; Molalla Avenue</b>						
2021 Existing Condition	B	11	0.54	B	13	0.65
2023 Background Condition	B	13	0.66	B	16	0.75
2023 Buildout Condition	B	13	0.68	B	17	0.77

Note: Traffic counts for existing conditions were collected prior to the construction of the West Cascade Center Access and the southern leg of the OR 211 & Leroy Avenue intersection.

**BOLDED** results indicate operation above acceptable jurisdictional standards.



## Traffic Simulations of Delay

The HCM methodologies for evaluating intersection operations rely on theoretical estimates of capacity to estimate the v/c ratio and delay. While they are an excellent tool for operations evaluation, the HCM does not reflect systemic conditions and the influence of activity upstream or downstream from each intersection. For example, a traffic signal affects the flow of vehicles on a roadway. When the signal turns green, a “platoon” of closely spaced vehicles travels through the intersection. When the signal turns red, gaps in traffic flow between the platoons are created. Vehicles waiting at stop signs on side streets use these gaps to turn onto or cross a major roadway.

An alternative tool for estimating intersection delay are traffic simulations, which are also used for estimating queuing in a study network. This simulations capture the effects of the traffic signals on the flow of traffic past unsignalized intersections. Five network simulation runs were conducted using the Synchro/SimTraffic software and the average delays were calculated. The results are summarized Table 9 for the intersection of W Main Street (OR 211) and Leroy Avenue. Detailed delay reports are included in Appendix D.

**Table 9: Simulated Delays at W Main Street/Leroy Avenue**

Approach/Movement		2023 Background Delays (s)		2023 Buildout Delays (s)	
		Morning	Evening	Morning	Evening
Northbound	Left	18	57	20	45
	Through/Right	20/9	29/12	16/7	31/13
Southbound	Left	19	40	19	44
	Through/Right	15/9	42/16	17/11	40/14
Eastbound	Left	5	6	5	7
	Through/Right	1/1	2/1	1/1	2/1
Westbound	Left	5	9	5	9
	Through/Right	2/1	2/1	2/1	2/1

*Note: Simulation are based on random arrival patterns; thus, calculated delays may fluctuate up or down slightly for each scenario.*

As shown in Table 9, the delays from the traffic simulations are lower than those estimated using the theoretical capacity calculations from the HCM. During the evening peak hour, delays for the northbound left-turn movement are estimated at under 60 seconds for both the year 2023 background and buildout conditions. These results demonstrate that the intersection will not be failing without a traffic signal as indicated in the HCM analysis.

For the intersection of OR 211 (W Main Street) & Leroy Avenue, the forecast delays are better represented by traffic simulations rather than HCM methodologies because they capture how the traffic signals on OR 211 (W Main Street) at OR 213 and at Molalla Avenue affect the traffic conditions at Leroy Avenue. Under 2023 background and buildout conditions, simulated scenarios demonstrate that the intersection can accommodate the forecast demand without a traffic signal.

## Queueing Analysis

In accordance with the ODOT Analysis Procedures Manual (APM), an analysis of projected queueing was conducted for the study intersections. The 95<sup>th</sup> percentile queue lengths were estimated based on the same Synchro/SimTraffic simulations used for the delay calculations. The 95<sup>th</sup> percentile queue is a statistical measurement which indicates there is a 5 percent chance that the queue may exceed this length during the analysis period; however, given this is a probability, the 95<sup>th</sup> percentile queue length may theoretically never be met or observed in the field.

The 95<sup>th</sup> percentile queue lengths reported in the simulation are presented in Table 10 for the morning and evening peak hours. Reported queue lengths were rounded up to the nearest 25 feet, equivalent to an average vehicle length. Detailed queueing analysis reports are included in Appendix D.

**Table 10: 95<sup>th</sup> Percentile Queueing Analysis Summary**

Intersection/Movement	Available Storage (ft)	2023 Background Queue (ft)		2023 Buildout Queue (ft)	
		Morning	Evening	Morning	Evening
<b>1. OR 211 (W Main Street) &amp; OR 213</b>					
NB Left-Turn Lane	250	50	50	50	50
NB Right-Turn Lane	260	50	75	50	75
SB Left-Turn Lane	310	150	250	150	250
EB Left-Turn Lane	260	100	125	125	150
WB Left-Turn Lane	235	100	150	125	150
WB Right-Turn Lane	230	150	125	150	150
<b>2. OR 211 (W Main Street) &amp; West Cascade Center Access</b>					
NB Approach	150	75	125	75	125
EB Right-Turn Lane	100	25	25	25	25
WB Left-Turn Lane	75	50	75	50	50
<b>3. OR 211 (W Main Street) &amp; Leroy Avenue</b>					
NB Left-Turn Lane	120	75	100	75	100
NB Through-Right Lane		75	100	75	100
SB Left-Turn Lane	100	75	50	75	75
SB Through-Right Lane		100	100	75	100
EB Left-Turn Lane	100	50	50	50	50
WB Left-Turn Lane	100	75	100	75	75
<b>4. OR 211 (W Main Street) &amp; East Cascade Center Access</b>					
NB Approach	250	-	-	100	100
WB Left-Turn Lane	TBD	-	-	75	75

Table 10: 95<sup>th</sup> Percentile Queueing Analysis Summary

Intersection/Movement	Available Storage (ft)	2023 Background Queue (ft)		2023 Buildout Queue (ft)	
		Morning	Evening	Morning	Evening
<b>5. OR 211 (W Main Street) &amp; Ridings Avenue</b>					
NB Approach		<25	25	<25	25
SB Approach	150	75	75	50	75
<b>6. OR 211 (W Main Street) &amp; Molalla Avenue</b>					
EB Left-Turn Lane	150	100	150	100	175
WB Left-Turn Lane	150	25	50	50	25

*Note: Simulation are based on random arrival patterns; thus, calculated delays may fluctuate up or down slightly for each scenario. **BOLDED** text indicates queue extends beyond available lane storage.*

As shown in Table 10, the 95th percentile queues at the study intersections can be accommodated by the available vehicle storage space under all scenarios.

Queues on the northbound left-turn lane of Leroy Avenue are estimated at 75 to 100 feet which is consistent with the simulation delays presented in Table 9. These results demonstrate that the intersection will not be failing without a traffic signal as indicated in the HCM analysis.

Queues for the westbound left-turn lane on W Main Street at the East Shared Access indicate that 50 to 75 feet of storage (2 to 3 vehicles) should be provided.





## Conclusions

Key findings of this study include:

- No significant trends or crash patterns were identified at any of the study intersections. Accordingly, no specific safety mitigation is recommended.
- Adequate sight distance is available at the site access to ensure safe operation of the intersection along W Main Street (OR 211).
- A westbound left-turn lane is warranted on W Main Street (OR 211) at the new East Shared Access during both the morning and evening peak hours. A minimum of 75 feet of storage (3 vehicles) should be provided.
- Although the eastbound right-turn lane warrant was met on W Main Street (OR 211) at the new East Shared Access, installation of a right-turn lane is not recommended because it will increase stress for bicyclists in the bike lane throughout the day while the turn lane is only warranted during the evening peak period.
- The projected traffic demand at the intersection of W Main Street (OR 211) at the new East Shared Access does not meet the ODOT preliminary traffic signal warrant thresholds.
- Detailed analysis of traffic signal warrants at the intersection of W Main Street (OR 211) at Leroy Avenue show the proposed development will not trigger the criteria for installation of a traffic signal at this location.
- All study intersections are projected to meet ODOT standards except for W Main Street (OR 211) and Leroy Avenue. Standard methodologies show demand on the northbound approach of Leroy Avenue is forecast to exceed capacity during the evening peak hour under both background and buildout conditions with extremely long delays. However, conditions at the Leroy Avenue intersection can be better represented by traffic simulations rather than HCM methodologies because they consider how the traffic signals on OR 211 (W Main Street) at OR 213 and at Molalla Avenue affect the traffic flow past Leroy Avenue. Simulated scenarios demonstrate that the intersection can accommodate the forecast demand without a traffic signal.
- The 95th percentile queues at the study intersections can be accommodated by the available vehicle storage space under all scenarios.
  - Queues on the northbound left-turn lane of Leroy Avenue are estimated at 75 to 100 feet which is consistent with the simulation delays and demonstrate that the intersection will not be failing without a traffic signal.
  - Queues for the westbound left-turn lane on W Main Street at the East Shared Access indicate that 50 to 75 feet of storage (2 to 3 vehicles) should be provided.

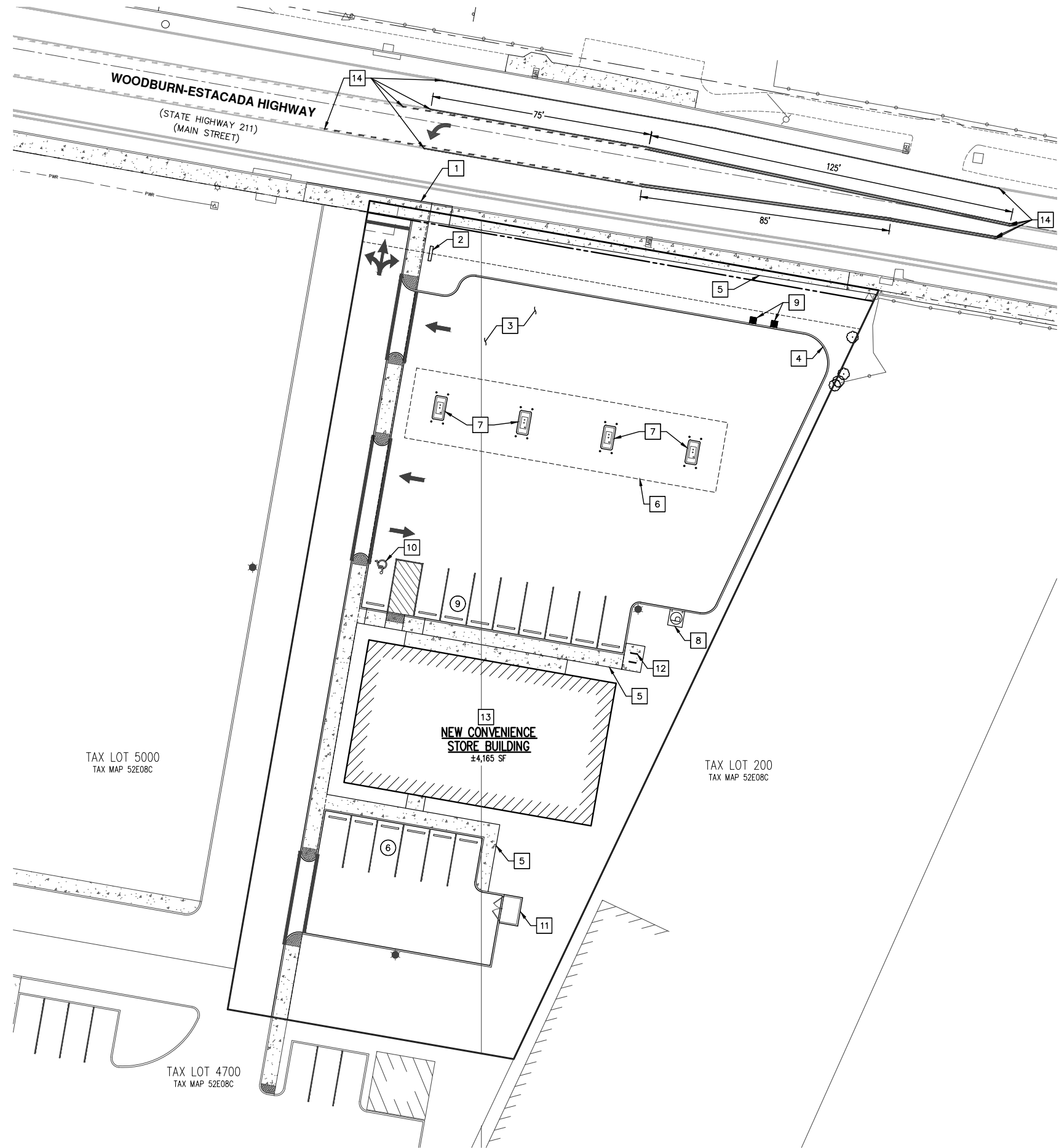


## Appendix A – Site Information

Site Plan

Trip Generation Calculations





- # SITE PLAN KEYED NOTES:
1. COMMERCIAL DRIVEWAY DROP AND APPROACH
  2. COMMERCIAL SIGNAGE
  3. AC PAVEMENT (TYP)
  4. CONCRETE CURB (TYP)
  5. CONCRETE SIDEWALK (TYP)
  6. FUEL STATION OVERHEAD (CANOPY TO BE CONSTRUCTED DESIGN-BUILD)
  7. FUEL PUMP ISLAND
  8. PROPANE TANK FILLING STATION
  9. AIR AND WATER STATION
  10. ADA ACCESSIBLE PARKING STALL WITH LOADING AREA
  11. TRASH AND RECYCLING AREA
  12. BICYCLE PARKING
  13. CONVENIENCE STORE BUILDING
  14. MEDIAN/TURN LANE STRIPING EXTENSION

# SITE AREA SUMMARY

AREA DESCRIPTION	AREA (SF)	% OF TOTAL AREA
TOTAL SITE AREA:	±37,991	---
STRUCTURES:	±4,165	±11%
LANDSCAPING:	±5,420	±14%

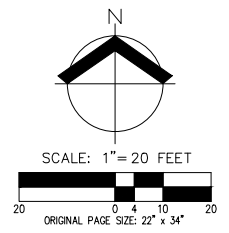
- # PARKING COUNT:
- |                           |                                    |
|---------------------------|------------------------------------|
| TOTAL SPACES REQUIRED:    | 11 (1 PER 400 SF OF FLOOR AREA)    |
| TOTAL SPACES PROVIDED:    | 15                                 |
| BICYCLE PARKING REQUIRED: | 3 (1 PER 5 VEHICLE PARKING SPACES) |
| BICYCLE PARKING PROVIDED: | 4                                  |

TAX LOT 5000  
TAX MAP 52E08C

TAX LOT 200  
TAX MAP 52E08C

TAX LOT 4700  
TAX MAP 52E08C

13  
**NEW CONVENIENCE  
STORE BUILDING**  
±4,165 SF



**PRELIMINARY SITE PLAN  
710 W MAIN STREET  
MOLALLA PETROLEUM  
MOLALLA, OREGON**



RENEWED: DECEMBER 31, 2022  
JOB NUMBER: 9010  
DATE: 03/28/2022  
DESIGNED BY: LTP  
DRAWN BY: AC  
CHECKED BY: MBH



## TRIP GENERATION CALCULATIONS

Source: Trip Generation Manual, 11th Edition

*Land Use:* Convenience Store/Gas Station  
*Land Use Code:* 945  
*Land Use Subcategory:* GFA (4-5.5k)  
*Setting/Location:* General Urban/Suburban  
*Variable:* Vehicle Fueling Positions  
*Trip Type:* Vehicle  
*Variable Quantity:* **8**

### AM PEAK HOUR

*Trip Rate:* 27.04

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	108	108	216

### PM PEAK HOUR

*Trip Rate:* 22.76

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	91	91	182

### WEEKDAY

*Trip Rate:* 257.13

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	1,029	1,029	2,058

### SATURDAY

*Trip Rate:* 291.67

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	1,167	1,167	2,334

*Caution: Small Sample Size*



### TRIP GENERATION CALCULATIONS

Source: Trip Generation Manual, 11th Edition

*Land Use:* Single-Family Detached Housing  
*Land Use Code:* 210  
*Land Use Subcategory:* All Sites  
*Setting/Location:* General Urban/Suburban  
*Variable:* Dwelling Units  
*Trip Type:* Vehicle  
*Variable Quantity:* 1

WARNING: Variable Quantity is less than Minimum Survey Size for Peak Hours

#### AM PEAK HOUR

*Trip Rate:* 0.7

	Enter	Exit	Total
Directional Split	26%	74%	
Trip Ends	0	1	1

#### PM PEAK HOUR

*Trip Rate:* 0.94

	Enter	Exit	Total
Directional Split	63%	37%	
Trip Ends	1	0	1

#### WEEKDAY

*Trip Rate:* 9.43

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	5	5	10

#### SATURDAY

*Trip Rate:* 9.48

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	5	5	10

### Vehicle Pass-By Rates by Land Use

Source: ITE Trip Generation Manual, 11th Edition

Land Use Code	945									
Land Use	Convenience Store/Gas Station									
Setting	General Urban/Suburban									
Time Period	Weekday AM Peak Period									
# Data Sites	16 Sites with between 2 and 8 VFP					28 Sites with between 9 and 20 VFP				
Average Pass-By Rate	60% for Sites with between 2 and 8 VFP					76% for Sites with between 9 and 20 VFP				
Pass-By Characteristics for Individual Sites										
						Non-Pass-By Trips				
GFA (000)	VFP	State or Province	Survey Year	# Interviews	Pass-By Trip (%)	Primary (%)	Diverted (%)	Total (%)	Adj Street Peak Hour Volume	Source
2	8	Maryland	1992	46	87	13	0	13	2235	25
2.1	6	Maryland	1992	26	58	23	19	42	2080	25
2.1	6	Maryland	1992	26	58	23	19	42	2080	25
2.2	8	Maryland	1992	31	47	34	19	53	1785	25
2.2	< 8	Indiana	1993	79	56	6	38	44	635	2
2.2	8	Maryland	1992	35	78	9	13	22	7080	25
2.3	6	Maryland	1992	37	32	41	27	68	2080	25
2.3	< 8	Kentucky	1993	58	64	5	31	36	1255	2
2.3	6	Maryland	1992	37	32	41	27	68	2080	25
2.4	< 8	Kentucky	1993	—	48	17	35	52	1210	2
2.6	< 8	Kentucky	1993	—	72	15	13	28	940	2
2.8	< 8	Kentucky	1993	—	54	11	35	46	1240	2
3	< 8	Indiana	1993	62	74	10	16	26	790	2
3.6	< 8	Kentucky	1993	49	67	4	29	33	1985	2
3.7	< 8	Kentucky	1993	49	66	16	18	34	990	2
4.694	12	Maryland	2000	—	72	—	—	28	2440	30
4.694	12	Maryland	2000	—	78	—	—	22	1561	30
4.694	12	Maryland	2000	—	79	—	—	21	2764	30
4.848	12	Virginia	2000	—	55	—	—	45	1398	30
5.06	12	Pennsylvania	2000	—	84	—	—	16	3219	30
5.242	12	Virginia	2000	—	74	—	—	26	1160	30
5.242	12	Virginia	2000	—	71	—	—	29	548	30
5.488	12	Delaware	2000	—	80	—	—	20	—	30
5.5	12	Pennsylvania	2000	—	85	—	—	15	2975	30
4.2	< 8	Kentucky	1993	47	62	19	19	38	1705	2
4.694	16	Maryland	2000	—	90	—	—	10	2278	30
4.694	16	Delaware	2000	—	74	—	—	26	2185	30
4.694	16	Delaware	2000	—	58	—	—	42	962	30
4.694	16	Delaware	2000	—	84	—	—	16	2956	30
4.694	16	New Jersey	2000	—	79	—	—	21	1859	30
4.694	20	Delaware	2000	—	84	—	—	16	3864	30
4.848	16	Virginia	2000	—	68	—	—	32	2106	30
4.848	16	Virginia	2000	—	85	—	—	15	2676	30
4.848	16	Virginia	2000	—	75	—	—	25	3244	30
4.848	16	Virginia	2000	—	71	—	—	29	1663	30
4.993	16	Pennsylvania	2000	—	75	—	—	25	1991	30
5.094	16	New Jersey	2000	—	86	—	—	14	1260	30
5.5	16	Pennsylvania	2000	—	82	—	—	18	1570	30
5.543	16	Pennsylvania	2000	—	84	—	—	16	1933	30
5.565	16	Pennsylvania	2000	—	77	—	—	23	2262	30
5.565	16	Pennsylvania	2000	—	68	—	—	32	2854	30
5.565	16	New Jersey	2000	—	58	—	—	42	1253	30
5.565	16	New Jersey	2000	—	79	—	—	21	1928	30
5.565	16	New Jersey	2000	---	84	---	---	16	1953	30

### Vehicle Pass-By Rates by Land Use

Source: ITE Trip Generation Manual, 11th Edition

Land Use Code	945									
Land Use	Convenience Store/Gas Station									
Setting	General Urban/Suburban									
Time Period	Weekday PM Peak Period									
# Data Sites	12 Sites with between 2 and 8 VFP					28 Sites with between 9 and 20 VFP				
Average Pass-By Rate	56% for Sites with between 2 and 8 VFP					75% for Sites with between 9 and 20 VFP				
Pass-By Characteristics for Individual Sites										
						Non-Pass-By Trips				
GFA (000)	VFP	State or Province	Survey Year	# Interviews	Pass-By Trip (%)	Primary (%)	Diverted (%)	Total (%)	Adj Street Peak Hour Volume	Source
2.1	8	Maryland	1992	31	52	13	35	48	1785	25
2.1	6	Maryland	1992	30	53	20	27	47	1060	25
2.2	< 8	Indiana	1993	115	48	16	36	52	820	2
2.3	< 8	Kentucky	1993	67	57	16	27	43	1954	2
2.3	6	Maryland	1992	55	40	11	49	60	2760	25
2.4	< 8	Kentucky	1993	—	58	13	29	42	2655	2
2.6	< 8	Kentucky	1993	68	67	15	18	33	950	2
2.8	< 8	Kentucky	1993	—	62	11	27	38	2875	2
3	< 8	Indiana	1993	80	65	15	20	35	1165	2
3.6	< 8	Kentucky	1993	60	56	17	27	44	2505	2
3.7	< 8	Kentucky	1993	70	61	16	23	39	2175	2
4.2	< 8	Kentucky	1993	61	58	26	16	42	2300	2
4.694	12	Maryland	2000	—	78	—	—	22	3549	30
4.694	12	Maryland	2000	—	67	—	—	33	2272	30
4.694	12	Maryland	2000	—	66	—	—	34	3514	30
4.848	12	Virginia	2000	—	71	—	—	29	2350	30
5.06	12	Pennsylvania	2000	—	91	—	—	9	4181	30
5.242	12	Virginia	2000	—	70	—	—	30	2445	30
5.242	12	Virginia	2000	—	56	—	—	44	950	30
5.488	12	Delaware	2000	—	73	—	—	27	—	30
5.5	12	Pennsylvania	2000	—	84	—	—	16	4025	30
4.694	16	Maryland	2000	—	89	—	—	11	2755	30
4.694	16	Delaware	2000	—	73	—	—	27	1858	30
4.694	16	Delaware	2000	—	59	—	—	41	1344	30
4.694	16	Delaware	2000	—	72	—	—	28	3434	30
4.694	16	New Jersey	2000	—	81	—	—	19	1734	30
4.694	20	Delaware	2000	—	76	—	—	24	1616	30
4.848	16	Virginia	2000	—	67	—	—	33	2.954	30
4.848	16	Virginia	2000	—	78	—	—	22	3086	30
4.848	16	Virginia	2000	—	83	—	—	17	4143	30
4.848	16	Virginia	2000	—	73	—	—	27	2534	30
4.993	16	Pennsylvania	2000	—	72	—	—	28	2917	30
5.094	16	New Jersey	2000	—	86	—	—	14	1730	30
5.5	16	Pennsylvania	2000	—	90	—	—	10	2616	30
5.543	16	Pennsylvania	2000	—	87	—	—	13	2363	30
5.565	16	Pennsylvania	2000	—	81	—	—	19	2770	30
5.565	16	Pennsylvania	2000	—	76	—	—	24	3362	30
5.565	16	New Jersey	2000	—	61	—	—	39	1713	30
5.565	16	New Jersey	2000	—	86	—	—	14	1721	30
5.565	16	New Jersey	2000	---	81	---	---	19	2227	30

## Appendix B – Traffic Volumes

Traffic Counts

In Process Traffic





### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

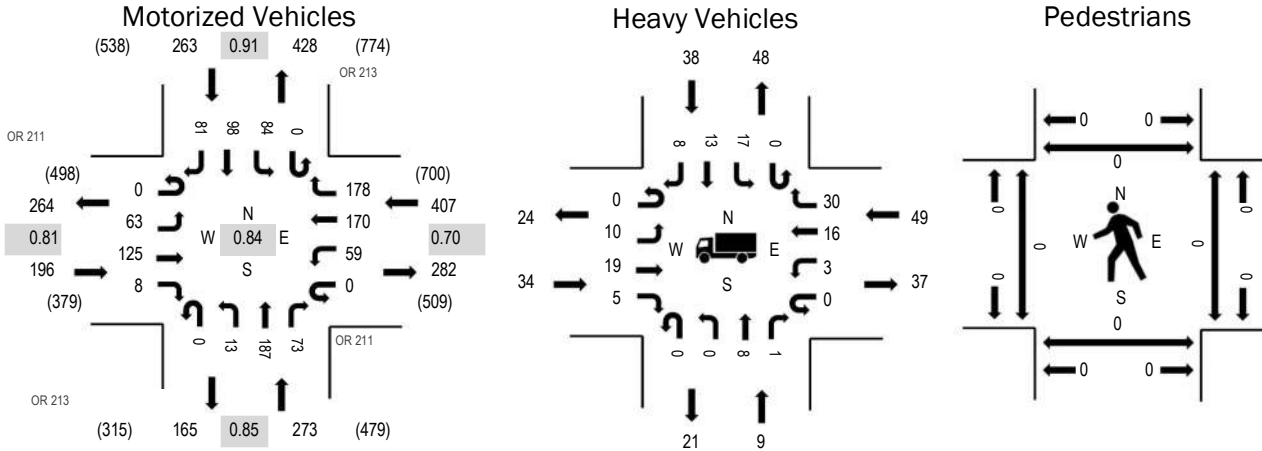
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	3	1	1	4	9	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	1	1	7	1	10	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	3	0	2	2	7	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	2	1	7	2	12	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	1	2	5	5	13	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	5	1	4	2	12	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	3	1	6	4	14	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	4	3	5	2	14	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	2	1	8	4	15	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	4	0	5	2	11	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	2	0	9	3	14	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	2	0	3	2	7	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0
8:00 AM	2	2	2	2	8	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	0	2	3	1	6	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	0	1	4	3	8	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	3	5	1	2	11	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	9	1	3	4	17	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	3	0	4	2	9	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	3	4	8	3	18	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	4	0	4	1	9	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	3	6	2	5	16	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	5	2	2	4	13	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	4	2	2	3	11	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	5	0	4	0	9	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	73	36	101	63	273	Count Total	0	0	0	0	0	Count Total	0	0	0	0	0
Peak Hour	31	12	63	31	137	Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	0	0



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**Location:** 1 OR 213 & OR 211 AM  
**Date:** Tuesday, September 21, 2021  
**Peak Hour:** 07:00 AM - 08:00 AM  
**Peak 15-Minutes:** 07:20 AM - 07:35 AM

**Peak Hour**



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	17.3%	0.81
WB	12.0%	0.70
NB	3.3%	0.85
SB	14.4%	0.91
All	11.4%	0.84

**Traffic Counts - Motorized Vehicles**

Interval Start Time	OR 211 Eastbound				OR 211 Westbound				OR 213 Northbound				OR 213 Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	5	14	2	0	4	15	14	0	1	14	4	0	6	1	2	82	1,139
7:05 AM	0	5	11	0	0	1	17	11	0	2	14	8	0	10	5	7	91	1,138
7:10 AM	0	5	9	0	0	4	15	24	0	2	15	15	0	9	9	9	116	1,127
7:15 AM	0	6	8	0	0	0	13	15	0	0	20	5	0	2	6	7	82	1,080
7:20 AM	0	6	10	1	0	7	15	27	0	4	15	4	0	5	5	4	103	1,081
7:25 AM	0	8	19	2	0	6	19	23	0	0	19	7	0	5	12	5	125	1,047
7:30 AM	0	4	12	0	0	12	13	23	0	1	17	9	0	5	9	7	112	1,015
7:35 AM	0	5	7	0	0	7	11	6	0	0	9	2	0	10	14	10	81	975
7:40 AM	0	8	11	0	0	3	15	16	0	0	20	9	0	10	9	7	108	961
7:45 AM	0	4	8	0	0	10	12	2	0	2	18	3	0	4	9	6	78	944
7:50 AM	0	0	9	1	0	2	12	6	0	1	16	3	0	6	11	10	77	940
7:55 AM	0	7	7	2	0	3	13	11	0	0	10	4	0	12	8	7	84	962
8:00 AM	0	7	7	1	0	2	6	11	0	1	17	5	0	3	16	5	81	957
8:05 AM	0	11	8	0	0	4	8	13	0	0	13	3	0	4	5	11	80	
8:10 AM	0	7	14	0	0	3	5	7	0	1	9	2	0	5	8	8	69	
8:15 AM	0	8	5	1	0	4	13	12	0	2	9	9	0	7	8	5	83	
8:20 AM	0	1	5	0	0	4	9	15	0	0	10	5	0	7	9	4	69	
8:25 AM	0	8	5	0	0	2	13	16	0	4	7	4	0	13	16	5	93	
8:30 AM	0	6	3	0	0	1	9	6	0	0	14	4	0	11	8	10	72	
8:35 AM	0	5	10	0	0	3	7	12	0	3	9	4	0	4	5	5	67	
8:40 AM	0	7	6	0	0	2	24	13	0	1	9	5	0	5	7	12	91	
8:45 AM	0	5	5	0	0	2	11	7	0	1	17	5	0	5	9	7	74	
8:50 AM	0	10	9	0	0	10	15	10	0	3	9	3	0	5	10	15	99	
8:55 AM	0	8	21	0	0	2	7	5	0	0	13	5	0	6	8	4	79	
Count Total	0	146	223	10	0	98	297	305	0	29	323	127	0	159	207	172	2,096	
Peak Hour	0	63	125	8	0	59	170	178	0	13	187	73	0	84	98	81	1,139	

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	3	2	2	0	7	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	1	0	4	2	7	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	1	1	4	3	9	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	0	1	6	0	7	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	6	1	6	3	16	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	8	1	6	4	19	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	1	0	3	4	8	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	3	0	2	5	10	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	3	1	4	1	9	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	3	1	4	4	12	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	1	1	4	3	9	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	4	0	4	9	17	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0
8:00 AM	3	0	2	5	10	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	3	1	4	4	12	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	3	2	1	4	10	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	1	1	2	6	10	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	1	1	5	6	13	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	1	1	5	2	9	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	0	0	2	4	6	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	3	0	2	6	11	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	2	2	4	3	11	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	0	4	4	3	11	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	1	2	7	2	12	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	4	1	2	5	12	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	56	24	89	88	257	Count Total	0	0	0	0	0	Count Total	0	0	0	0	0
Peak Hour	34	9	49	38	130	Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	0	0



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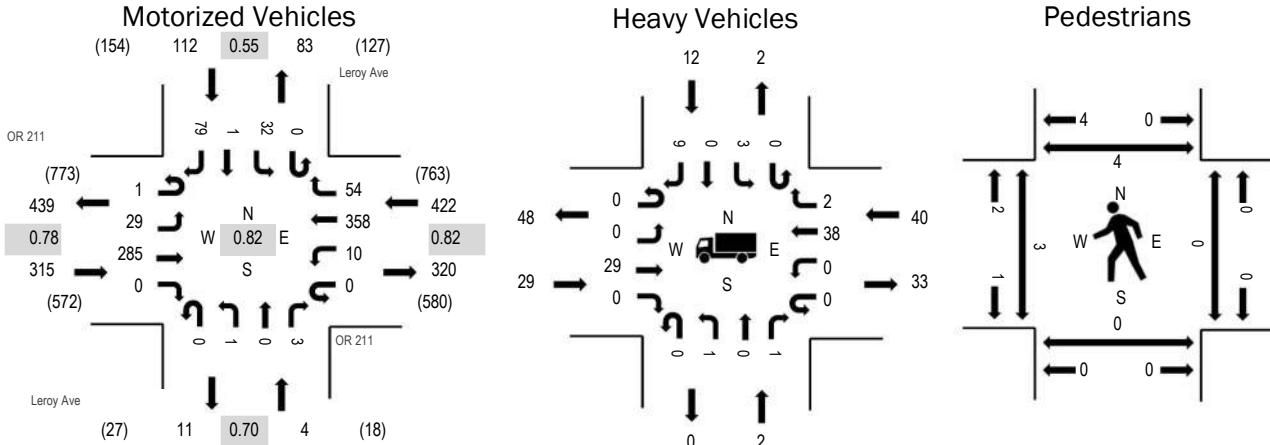
**Location:** 2 Leroy Ave & OR 211 AM

**Date:** Tuesday, September 21, 2021

**Peak Hour:** 07:00 AM - 08:00 AM

**Peak 15-Minutes:** 07:20 AM - 07:35 AM

**Peak Hour**



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	9.2%	0.78
WB	9.5%	0.82
NB	50.0%	0.70
SB	10.7%	0.55
All	9.7%	0.82

**Traffic Counts - Motorized Vehicles**

Interval Start Time	OR 211 Eastbound				OR 211 Westbound				Leroy Ave Northbound				Leroy Ave Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	2	20	0	0	3	32	3	0	0	0	0	0	1	1	2	64	853
7:05 AM	1	4	28	0	0	0	33	4	0	0	0	0	0	2	0	3	75	850
7:10 AM	0	7	26	0	0	1	29	9	0	0	0	0	0	3	0	7	82	832
7:15 AM	0	2	33	0	0	0	22	5	0	0	0	0	0	3	0	14	79	802
7:20 AM	0	1	21	0	0	0	25	9	0	0	0	0	0	3	0	14	73	776
7:25 AM	0	5	26	0	0	0	47	10	0	0	0	0	0	3	0	14	105	753
7:30 AM	0	1	33	0	0	1	31	1	0	0	0	2	0	5	0	7	81	702
7:35 AM	0	1	26	0	0	1	33	4	0	1	0	0	0	3	0	4	73	669
7:40 AM	0	2	5	0	0	2	35	3	0	0	0	0	0	1	0	4	52	648
7:45 AM	0	1	27	0	0	0	27	2	0	0	0	1	0	5	0	3	66	658
7:50 AM	0	1	24	0	0	0	23	3	0	0	0	0	0	3	0	4	58	645
7:55 AM	0	2	16	0	0	2	21	1	0	0	0	0	0	0	0	3	45	640
8:00 AM	0	0	23	0	0	2	28	5	0	0	0	0	0	1	1	1	61	654
8:05 AM	0	2	21	0	0	0	30	0	0	0	0	0	0	0	0	4	57	
8:10 AM	0	0	13	0	0	2	31	1	0	0	0	2	0	2	0	1	52	
8:15 AM	0	0	25	0	0	0	25	0	0	0	0	1	0	0	0	2	53	
8:20 AM	0	2	18	0	0	0	23	2	0	0	0	1	0	0	0	4	50	
8:25 AM	0	2	23	1	0	4	17	2	0	2	0	0	0	0	0	3	54	
8:30 AM	0	2	18	0	0	0	19	3	0	0	1	1	0	0	1	3	48	
8:35 AM	0	3	17	0	0	0	26	3	0	0	0	1	0	1	0	1	52	
8:40 AM	0	1	20	0	0	1	31	2	0	0	0	1	0	2	0	4	62	
8:45 AM	0	0	11	0	0	1	33	6	0	0	1	0	0	0	0	1	53	
8:50 AM	0	0	27	0	0	1	15	2	0	0	1	0	0	3	0	4	53	
8:55 AM	0	1	27	0	0	1	23	2	0	1	0	1	0	0	1	2	59	
Count Total	1	42	528	1	0	22	659	82	0	4	3	11	0	41	4	109	1,507	
Peak Hour	1	29	285	0	0	10	358	54	0	1	0	3	0	32	1	79	853	

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	0	3	1	4	7:00 AM	0	0	0	0	0	7:00 AM	2	0	0	0	2
7:05 AM	3	0	4	0	7	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	1	0	1	0	2	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	2	0	4	4	10	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	4	4
7:20 AM	1	0	4	1	6	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	8	0	3	2	13	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	3	1	1	2	7	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	3	1	3	0	7	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	1	0	5	0	6	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	3	0	4	1	8	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	3	0	5	1	9	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	1	0	3	0	4	7:55 AM	0	0	0	0	0	7:55 AM	1	0	0	0	1
8:00 AM	7	0	6	0	13	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	3	0	2	0	5	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	2	0	2	0	4	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	5	0	1	0	6	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	3	0	4	2	9	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	3	0	1	0	4	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	2	0	5	0	7	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	3	0	4	0	7	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	4	0	5	3	12	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	1	1
8:45 AM	2	0	4	0	6	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	4	1	2	0	7	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	2	0	2	0	4	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	3	3
Count Total	69	3	78	17	167	Count Total	0	0	0	0	0	Count Total	3	0	0	8	11
Peak Hour	29	2	40	12	83	Peak Hour	0	0	0	0	0	Peak Hour	3	0	0	4	7



### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	0	0	0	0	0	Count Total	0	0	0	0	0	Count Total	0	0	0	0	0
Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	0	0

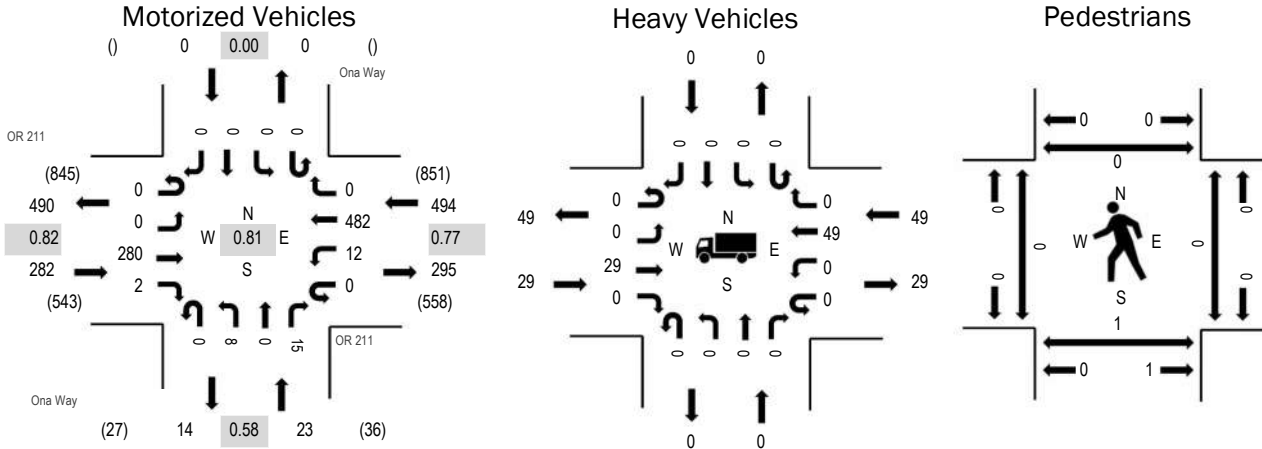




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**Location:** 4 Ona Way & OR 211 AM  
**Date:** Tuesday, September 21, 2021  
**Peak Hour:** 07:00 AM - 08:00 AM  
**Peak 15-Minutes:** 07:20 AM - 07:35 AM

**Peak Hour**



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	10.3%	0.82
WB	9.9%	0.77
NB	0.0%	0.58
SB	0.0%	0.00
All	9.8%	0.81

**Traffic Counts - Motorized Vehicles**

Interval Start Time	OR 211 Eastbound				OR 211 Westbound				Ona Way Northbound				Ona Way Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	0	20	0	0	1	39	0	0	2	0	0	0	0	0	0	62	799
7:05 AM	0	0	32	0	0	0	35	0	0	0	0	2	0	0	0	0	69	792
7:10 AM	0	0	31	0	0	0	42	0	0	1	0	0	0	0	0	0	74	779
7:15 AM	0	0	26	0	0	0	39	0	0	1	0	1	0	0	0	0	67	747
7:20 AM	0	0	20	0	0	1	48	0	0	1	0	1	0	0	0	0	71	736
7:25 AM	0	0	30	0	0	2	58	0	0	1	0	3	0	0	0	0	94	721
7:30 AM	0	0	25	0	0	1	51	0	0	1	0	3	0	0	0	0	81	678
7:35 AM	0	0	20	0	0	0	31	0	0	1	0	0	0	0	0	0	52	650
7:40 AM	0	0	9	0	0	2	36	0	0	0	0	1	0	0	0	0	48	647
7:45 AM	0	0	28	1	0	1	43	0	0	0	0	2	0	0	0	0	75	656
7:50 AM	0	0	22	0	0	1	29	0	0	0	0	2	0	0	0	0	54	623
7:55 AM	0	0	17	1	0	3	31	0	0	0	0	0	0	0	0	0	52	629
8:00 AM	0	0	30	0	0	2	22	0	0	1	0	0	0	0	0	0	55	631
8:05 AM	0	0	26	0	0	1	29	0	0	0	0	0	0	0	0	0	56	
8:10 AM	0	0	9	0	0	1	31	0	0	0	0	1	0	0	0	0	42	
8:15 AM	0	0	26	0	0	1	29	0	0	0	0	0	0	0	0	0	56	
8:20 AM	0	0	24	1	0	1	28	0	0	0	0	2	0	0	0	0	56	
8:25 AM	0	0	15	1	0	1	33	0	0	1	0	0	0	0	0	0	51	
8:30 AM	0	0	21	0	0	1	31	0	0	0	0	0	0	0	0	0	53	
8:35 AM	0	0	25	1	0	0	20	0	0	2	0	1	0	0	0	0	49	
8:40 AM	0	0	13	0	0	0	41	0	0	2	0	1	0	0	0	0	57	
8:45 AM	0	0	13	1	0	0	28	0	0	0	0	0	0	0	0	0	42	
8:50 AM	0	0	26	1	0	0	32	0	0	0	0	1	0	0	0	0	60	
8:55 AM	0	0	28	0	0	0	25	0	0	0	0	1	0	0	0	0	54	
Count Total	0	0	536	7	0	20	831	0	0	14	0	22	0	0	0	0	1,430	
Peak Hour	0	0	280	2	0	12	482	0	0	8	0	15	0	0	0	0	799	

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

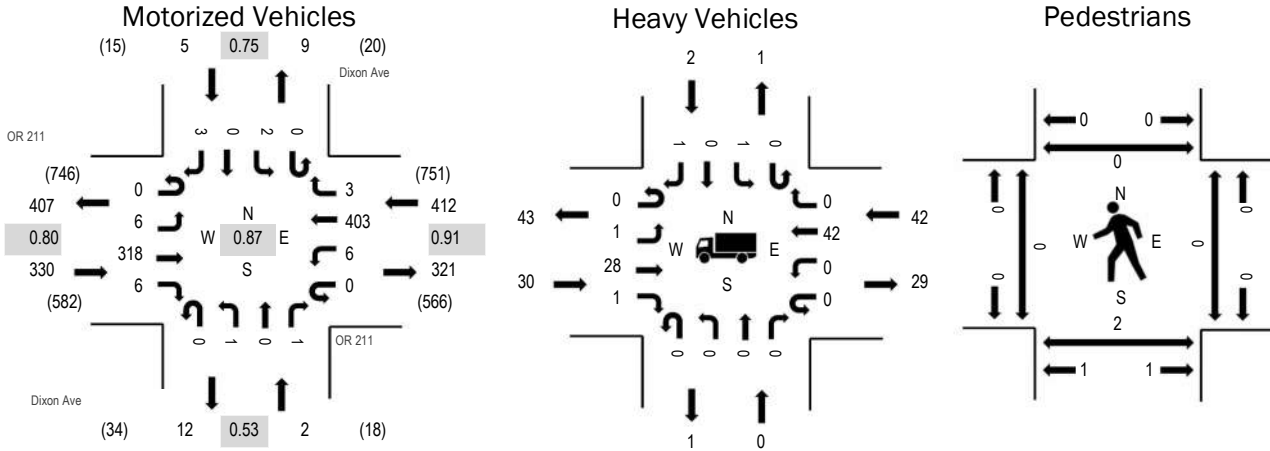
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	0	2	0	2	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	2	0	3	0	5	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	2	0	3	0	5	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	0	0	5	0	5	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	1	0	6	0	7	7:20 AM	0	0	0	0	0	7:20 AM	0	1	0	0	1
7:25 AM	10	0	6	0	16	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	2	0	3	0	5	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	3	0	3	0	6	7:35 AM	1	0	0	0	1	7:35 AM	0	0	0	0	0
7:40 AM	1	0	4	0	5	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	4	0	4	0	8	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	3	0	6	0	9	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	1	0	4	0	5	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0
8:00 AM	9	0	4	0	13	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	2	0	4	0	6	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	3	0	3	0	6	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	6	0	0	0	6	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	3	0	4	0	7	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	4	0	6	0	10	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	2	0	3	0	5	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	4	0	3	0	7	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	3	0	7	0	10	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	5	0	5	0	10	8:45 AM	1	0	0	0	1	8:45 AM	0	0	0	1	1
8:50 AM	2	0	4	0	6	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	2	0	1	0	3	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	3	3
Count Total	74	0	93	0	167	Count Total	2	0	0	0	2	Count Total	0	1	0	4	5
Peak Hour	29	0	49	0	78	Peak Hour	1	0	0	0	1	Peak Hour	0	1	0	0	1



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**Location:** 5 Dixon Ave & OR 211 AM  
**Date:** Tuesday, September 21, 2021  
**Peak Hour:** 07:00 AM - 08:00 AM  
**Peak 15-Minutes:** 07:25 AM - 07:40 AM

**Peak Hour**



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	9.1%	0.80
WB	10.2%	0.91
NB	0.0%	0.53
SB	40.0%	0.75
All	9.9%	0.87

**Traffic Counts - Motorized Vehicles**

Interval Start Time	OR 211 Eastbound				OR 211 Westbound				Dixon Ave Northbound				Dixon Ave Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	0	21	0	0	0	38	0	0	0	0	0	0	0	0	0	59	749
7:05 AM	0	1	29	0	0	0	37	0	0	0	0	0	0	0	0	0	67	748
7:10 AM	0	1	28	1	0	1	36	0	0	0	0	1	0	0	0	0	68	732
7:15 AM	0	0	36	0	0	0	24	1	0	0	0	0	0	0	0	1	62	723
7:20 AM	0	0	26	0	0	0	38	0	0	0	0	0	0	0	0	0	64	724
7:25 AM	0	0	25	0	0	1	45	1	0	0	0	0	0	0	0	0	72	704
7:30 AM	0	1	46	3	0	0	28	0	0	0	0	0	0	0	0	0	78	683
7:35 AM	0	1	28	0	0	0	35	1	0	0	0	0	0	0	0	0	65	641
7:40 AM	0	0	6	0	0	1	41	0	0	0	0	0	0	0	0	1	49	616
7:45 AM	0	0	31	1	0	1	30	0	0	0	0	0	0	1	0	1	65	627
7:50 AM	0	1	25	1	0	1	25	0	0	0	0	0	0	1	0	0	54	620
7:55 AM	0	1	17	0	0	1	26	0	0	1	0	0	0	0	0	0	46	613
8:00 AM	0	2	20	1	0	0	34	0	0	0	0	0	0	1	0	0	58	617
8:05 AM	0	1	19	1	0	0	28	0	0	0	0	2	0	0	0	0	51	
8:10 AM	0	1	19	0	0	1	35	1	0	1	0	0	0	1	0	0	59	
8:15 AM	0	2	23	2	0	0	28	3	0	1	0	2	0	1	1	0	63	
8:20 AM	0	0	14	2	0	0	25	0	0	1	0	1	0	1	0	0	44	
8:25 AM	0	0	28	0	0	0	20	0	0	1	1	1	0	0	0	0	51	
8:30 AM	0	0	15	0	0	0	19	0	0	0	0	1	0	0	1	0	36	
8:35 AM	0	0	12	2	0	0	24	0	0	0	0	0	0	0	0	2	40	
8:40 AM	0	0	23	1	0	1	34	0	0	1	0	0	0	0	0	0	60	
8:45 AM	0	0	15	0	0	2	38	0	0	1	0	1	0	0	0	1	58	
8:50 AM	0	0	28	2	0	0	16	0	0	0	0	1	0	0	0	0	47	
8:55 AM	0	0	15	4	0	1	29	0	0	0	0	0	0	1	0	0	50	
Count Total	0	12	549	21	0	11	733	7	0	7	1	10	0	7	2	6	1,366	
Peak Hour	0	6	318	6	0	6	403	3	0	1	0	1	0	2	0	3	749	

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

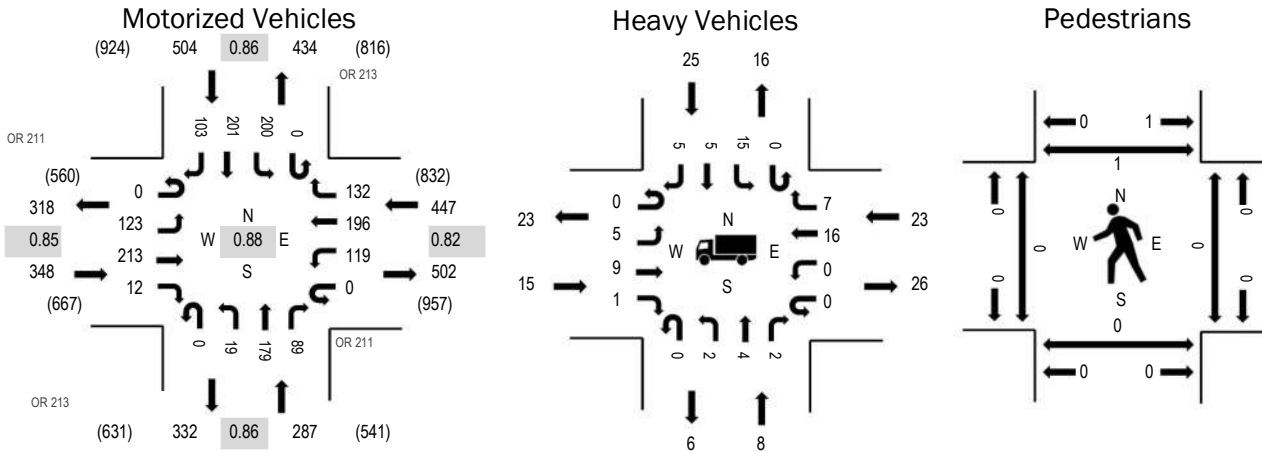
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	1	0	3	0	4	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	2	0	3	0	5	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	1	0	1	0	2	7:10 AM	0	0	0	0	0	7:10 AM	0	1	0	0	1
7:15 AM	1	0	4	0	5	7:15 AM	0	0	0	0	0	7:15 AM	0	1	0	0	1
7:20 AM	1	0	6	0	7	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	6	0	2	0	8	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	7	0	0	0	7	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	3	0	6	0	9	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	0	0	4	1	5	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	3	0	5	0	8	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	4	0	6	1	11	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	1	0	2	0	3	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0
8:00 AM	7	0	5	0	12	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	5	0	2	0	7	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	1	0	3	1	5	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	6	1	4	0	11	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	3	0	3	0	6	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	5	1	2	0	8	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	2	0	4	0	6	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	2	0	3	1	6	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	4	0	5	0	9	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	3	0	4	0	7	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	3	0	2	0	5	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	2	0	1	0	3	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	73	2	80	4	159	Count Total	0	0	0	0	0	Count Total	0	2	0	0	2
Peak Hour	30	0	42	2	74	Peak Hour	0	0	0	0	0	Peak Hour	0	2	0	0	2



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**Location:** 1 OR 213 & OR 211 PM  
**Date:** Tuesday, September 21, 2021  
**Peak Hour:** 04:30 PM - 05:30 PM  
**Peak 15-Minutes:** 05:10 PM - 05:25 PM

**Peak Hour**



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	4.3%	0.85
WB	5.1%	0.82
NB	2.8%	0.86
SB	5.0%	0.86
All	4.5%	0.88

**Traffic Counts - Motorized Vehicles**

Interval Start Time	OR 211 Eastbound				OR 211 Westbound				OR 213 Northbound				OR 213 Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	7	22	1	0	5	20	15	0	1	13	6	0	13	17	9	129	1,450
4:05 PM	0	12	18	0	0	12	12	8	0	0	17	11	0	12	12	3	117	1,455
4:10 PM	0	10	14	2	0	6	14	6	0	1	10	5	0	16	18	4	106	1,457
4:15 PM	0	4	11	1	0	8	21	12	0	0	22	8	0	11	17	10	125	1,512
4:20 PM	0	9	23	2	0	10	13	11	0	0	18	5	0	11	21	5	128	1,534
4:25 PM	0	9	20	1	0	5	12	12	0	0	6	4	0	15	10	9	103	1,550
4:30 PM	0	8	17	1	0	8	21	12	0	1	17	7	0	13	21	5	131	1,586
4:35 PM	0	9	21	0	0	14	9	17	0	0	13	2	0	17	10	12	124	1,559
4:40 PM	0	8	12	1	0	5	18	9	0	4	12	10	0	9	16	7	111	1,532
4:45 PM	0	10	21	1	0	2	13	11	0	0	11	5	0	19	17	6	116	1,544
4:50 PM	0	14	12	1	0	9	16	8	0	2	21	13	0	11	14	9	130	1,535
4:55 PM	0	6	20	3	0	9	14	8	0	0	17	8	0	17	17	11	130	1,524
5:00 PM	0	16	16	0	0	8	23	11	0	2	12	8	0	16	12	10	134	1,514
5:05 PM	0	8	15	1	0	5	10	10	0	3	18	6	0	14	22	7	119	
5:10 PM	0	19	20	1	0	25	16	12	0	1	9	12	0	14	22	10	161	
5:15 PM	0	7	24	3	0	11	30	11	0	2	11	5	0	21	15	7	147	
5:20 PM	0	10	22	0	0	12	8	11	0	3	19	9	0	30	14	6	144	
5:25 PM	0	8	13	0	0	11	18	12	0	1	19	4	0	19	21	13	139	
5:30 PM	0	10	15	1	0	9	8	6	0	1	12	10	0	16	13	3	104	
5:35 PM	0	6	16	1	0	13	9	10	0	1	9	2	0	13	11	6	97	
5:40 PM	0	10	16	1	0	11	16	11	0	2	10	9	0	10	21	6	123	
5:45 PM	0	8	12	0	0	4	9	13	0	3	13	8	0	13	20	4	107	
5:50 PM	0	10	21	1	0	9	19	3	0	2	16	13	0	13	11	1	119	
5:55 PM	0	7	18	0	0	8	8	17	0	0	10	6	0	19	17	10	120	
Count Total	0	225	419	23	0	219	357	256	0	30	335	176	0	362	389	173	2,964	
Peak Hour	0	123	213	12	0	119	196	132	0	19	179	89	0	200	201	103	1,586	

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	4	3	4	1	12	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	2	0	1	2	5	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	2	1	1	3	7	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	1	2	5	3	11	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	1	0	2	2	5	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	0	0	3	0	3	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	4	1	1	1	7	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	3	1	2	5	11	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	0	2	3	1	6	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	2	0	1	2	5	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	1	1
4:50 PM	1	1	1	3	6	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	1	0	0	1	2	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	1	3	4	2	10	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	0	0	0	5	5	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	1	0	3	0	4	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	1	0	4	3	8	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	0	0	0	1	1	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	1	0	4	1	6	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	0	1	1	0	2	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	0	0	2	0	2	5:35 PM	0	0	0	0	0	5:35 PM	0	0	1	0	1
5:40 PM	1	0	0	0	1	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	0	0	4	4	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	1	0	0	0	1	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	2	1	1	1	5	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	29	16	43	41	129	Count Total	0	0	0	0	0	Count Total	0	0	1	1	2
Peak Hour	15	8	23	25	71	Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	1	1



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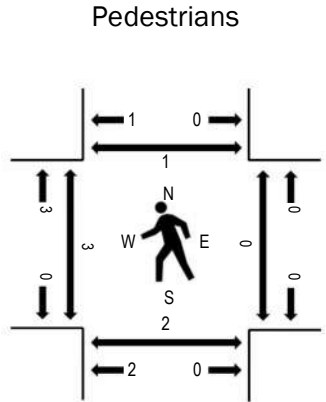
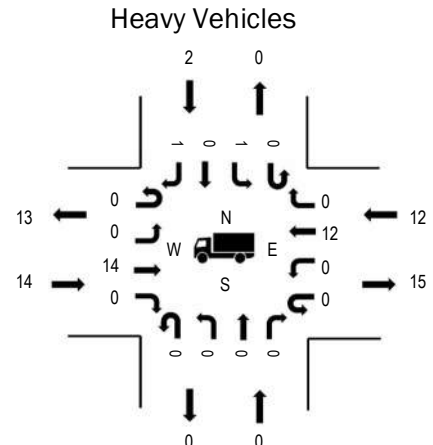
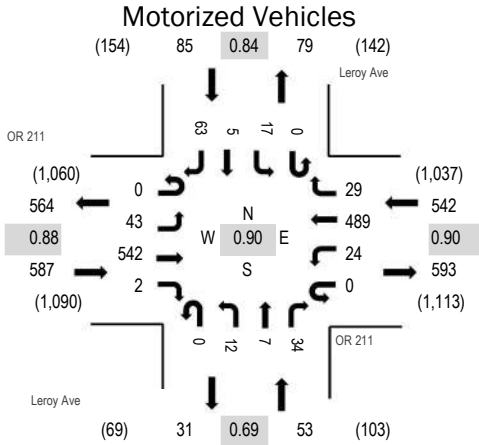
Location: 2 Leroy Ave & OR 211 PM

Date: Tuesday, September 21, 2021

Peak Hour: 04:55 PM - 05:55 PM

Peak 15-Minutes: 05:10 PM - 05:25 PM

**Peak Hour**



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	2.4%	0.88
WB	2.2%	0.90
NB	0.0%	0.69
SB	2.4%	0.84
All	2.2%	0.90

**Traffic Counts - Motorized Vehicles**

Interval Start Time	OR 211 Eastbound				OR 211 Westbound				Leroy Ave Northbound				Leroy Ave Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	2	38	1	0	1	39	2	0	1	0	6	0	1	0	5	96	1,129
4:05 PM	0	4	43	0	0	2	38	2	0	1	0	4	0	2	1	3	100	1,145
4:10 PM	0	2	37	0	0	5	38	4	0	1	0	2	0	1	0	3	93	1,128
4:15 PM	0	4	34	0	1	2	44	1	0	0	0	4	0	2	0	6	98	1,164
4:20 PM	0	0	36	1	0	1	28	1	0	1	0	4	0	0	0	4	76	1,172
4:25 PM	0	4	39	0	0	4	32	2	0	0	0	0	0	0	0	4	85	1,213
4:30 PM	0	2	35	0	0	2	39	3	0	0	0	3	0	1	0	2	87	1,240
4:35 PM	0	0	45	1	0	1	42	2	0	3	0	2	0	0	0	8	104	1,246
4:40 PM	0	3	40	0	0	3	36	2	0	0	0	5	0	0	1	4	94	1,235
4:45 PM	0	6	34	1	0	3	30	5	0	1	0	1	0	0	0	4	85	1,251
4:50 PM	0	2	37	1	0	3	33	5	0	2	1	3	0	2	1	5	95	1,262
4:55 PM	0	3	45	0	0	1	43	5	0	1	0	8	0	5	0	5	116	1,267
5:00 PM	0	4	51	0	0	0	42	1	0	3	0	2	0	0	3	6	112	1,255
5:05 PM	0	3	38	1	0	3	28	1	0	0	1	3	0	0	0	5	83	
5:10 PM	0	1	54	0	0	0	53	5	0	2	0	3	0	2	0	9	129	
5:15 PM	0	4	45	0	0	4	41	4	0	0	1	2	0	1	0	4	106	
5:20 PM	0	8	56	0	0	1	43	0	0	0	0	2	0	1	0	6	117	
5:25 PM	0	5	46	0	0	1	44	3	0	1	1	2	0	2	0	7	112	
5:30 PM	0	5	44	0	0	2	31	2	0	0	2	3	0	1	0	3	93	
5:35 PM	0	4	33	0	0	4	43	2	0	1	0	2	0	0	0	4	93	
5:40 PM	0	2	50	0	0	3	38	3	0	2	0	1	0	2	1	8	110	
5:45 PM	0	0	38	0	0	4	41	0	0	0	1	4	0	2	1	5	96	
5:50 PM	0	4	42	1	0	1	42	3	0	2	1	2	0	1	0	1	100	
5:55 PM	0	1	50	0	0	2	35	2	0	0	1	4	0	4	1	4	104	
Count Total	0	73	1,010	7	1	53	923	60	0	22	9	72	0	30	9	115	2,384	
Peak Hour	0	43	542	2	0	24	489	29	0	12	7	34	0	17	5	63	1,267	

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	1	0	3	0	4	4:00 PM	0	0	1	0	1	4:00 PM	0	0	0	0	0
4:05 PM	2	0	0	0	2	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	2	0	3	0	5	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	2	0	1	2	5	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	0	0	2	0	2	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	2	2
4:25 PM	1	0	4	0	5	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	0	2	0	2	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	5	0	2	0	7	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	3	3
4:40 PM	3	0	2	0	5	4:40 PM	0	0	0	0	0	4:40 PM	2	0	0	1	3
4:45 PM	2	0	2	1	5	4:45 PM	0	0	0	0	0	4:45 PM	0	2	0	0	2
4:50 PM	2	0	2	0	4	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	1	0	1	1	3	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	3	0	4	0	7	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	1	1
5:05 PM	1	0	0	0	1	5:05 PM	0	0	0	0	0	5:05 PM	2	2	0	0	4
5:10 PM	2	0	2	0	4	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	1	0	1	1	3	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	2	0	0	0	2	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	0	2	0	2	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	1	0	1	0	2	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	0	0	1	0	1	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	1	0	0	0	1	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	2	0	0	0	2	5:50 PM	0	0	0	0	0	5:50 PM	1	0	0	0	1
5:55 PM	2	0	2	0	4	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	36	0	37	5	78	Count Total	0	0	1	0	1	Count Total	5	4	0	7	16
Peak Hour	14	0	12	2	28	Peak Hour	0	0	0	0	0	Peak Hour	3	2	0	1	6





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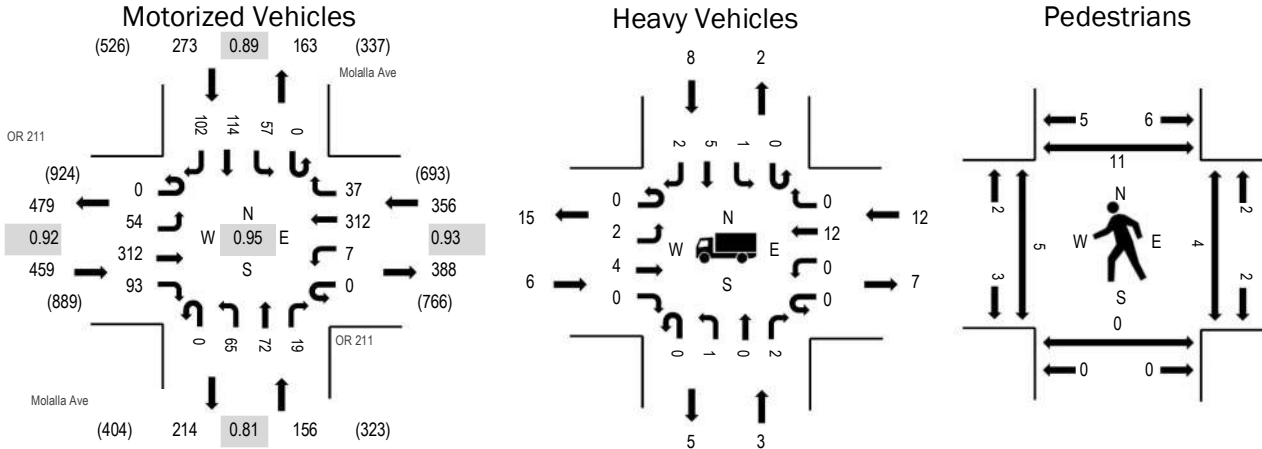
Location: 3 Molalla Ave & OR 211 PM

Date: Tuesday, September 21, 2021

Peak Hour: 04:50 PM - 05:50 PM

Peak 15-Minutes: 05:10 PM - 05:25 PM

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	1.3%	0.92
WB	3.4%	0.93
NB	1.9%	0.81
SB	2.9%	0.89
All	2.3%	0.95

Traffic Counts - Motorized Vehicles

Interval Start Time	OR 211 Eastbound				OR 211 Westbound				Molalla Ave Northbound			Molalla Ave Southbound			Total	Rolling Hour		
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left			Thru	Right
4:00 PM	0	1	29	2	0	4	16	2	0	8	4	4	0	6	8	10	94	1,220
4:05 PM	0	5	26	8	0	3	28	1	0	8	8	4	0	4	4	6	105	1,226
4:10 PM	0	8	22	5	0	1	26	4	0	7	8	1	0	4	9	12	107	1,217
4:15 PM	0	8	30	3	0	4	19	3	0	4	4	2	0	3	8	10	98	1,222
4:20 PM	0	3	24	13	0	2	24	2	0	3	8	1	0	7	7	9	103	1,237
4:25 PM	0	6	20	5	0	1	29	2	0	6	9	1	0	7	9	12	107	1,237
4:30 PM	0	6	27	8	0	0	22	3	0	7	7	1	0	6	6	11	104	1,225
4:35 PM	0	8	20	9	0	1	23	3	0	2	4	1	0	5	8	5	89	1,223
4:40 PM	0	2	29	7	0	0	24	5	0	6	5	0	0	6	13	7	104	1,238
4:45 PM	0	4	23	6	0	2	22	3	0	12	4	1	0	7	10	4	98	1,231
4:50 PM	0	3	26	12	0	0	29	3	0	4	6	2	0	3	9	6	103	1,244
4:55 PM	0	2	27	10	0	1	31	1	0	6	8	3	0	5	6	8	108	1,231
5:00 PM	0	4	30	7	0	0	17	7	0	6	8	0	0	3	10	8	100	1,211
5:05 PM	0	4	20	7	0	0	26	3	0	6	3	1	0	5	11	10	96	
5:10 PM	0	10	21	7	0	1	29	0	0	11	6	2	0	5	14	6	112	
5:15 PM	0	6	26	10	0	0	29	5	0	5	4	2	0	5	10	11	113	
5:20 PM	0	5	33	8	0	1	27	4	0	4	4	0	0	3	8	6	103	
5:25 PM	0	4	31	4	0	1	21	3	0	5	6	0	0	5	3	12	95	
5:30 PM	0	7	23	11	0	2	18	1	0	1	11	3	0	5	11	9	102	
5:35 PM	0	2	21	7	0	0	31	4	0	7	4	3	0	5	12	8	104	
5:40 PM	0	4	21	7	0	1	24	3	0	4	6	2	0	3	11	11	97	
5:45 PM	0	3	33	3	0	0	30	3	0	6	6	1	0	10	9	7	111	
5:50 PM	0	5	21	4	0	4	22	3	0	6	10	0	0	4	7	4	90	
5:55 PM	0	6	26	1	0	2	22	5	0	5	5	1	0	5	6	4	88	
Count Total	0	116	609	164	0	31	589	73	0	139	148	36	0	121	209	196	2,431	
Peak Hour	0	54	312	93	0	7	312	37	0	65	72	19	0	57	114	102	1,244	

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	1	0	0	2	3	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	2	1	1	0	4	4:05 PM	0	0	0	0	0	4:05 PM	0	0	1	1	2
4:10 PM	2	0	3	0	5	4:10 PM	0	0	0	0	0	4:10 PM	3	0	0	0	3
4:15 PM	3	0	1	1	5	4:15 PM	0	0	0	0	0	4:15 PM	0	0	1	0	1
4:20 PM	2	1	4	0	7	4:20 PM	0	0	0	0	0	4:20 PM	0	0	1	1	2
4:25 PM	1	0	2	0	3	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	2	0	0	2	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	3	1	1	0	5	4:35 PM	0	0	0	0	0	4:35 PM	1	0	0	1	2
4:40 PM	0	0	2	0	2	4:40 PM	0	0	0	0	0	4:40 PM	3	0	0	0	3
4:45 PM	1	0	0	0	1	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	1	1	1	1	4	4:50 PM	0	0	0	0	0	4:50 PM	0	0	2	1	3
4:55 PM	1	0	3	1	5	4:55 PM	0	0	0	0	0	4:55 PM	1	0	1	0	2
5:00 PM	0	1	0	1	2	5:00 PM	0	0	0	0	0	5:00 PM	1	0	1	0	2
5:05 PM	1	0	1	0	2	5:05 PM	0	0	0	0	0	5:05 PM	1	0	0	0	1
5:10 PM	0	0	2	1	3	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	1	1	3	0	5	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	1	0	1	0	2	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	3	3
5:25 PM	1	0	0	2	3	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	3	3
5:30 PM	0	0	1	1	2	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	2	2
5:35 PM	0	0	0	1	1	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	2	2
5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0	5:40 PM	1	0	0	0	1
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0	5:45 PM	1	0	0	0	1
5:50 PM	1	0	0	0	1	5:50 PM	0	0	0	0	0	5:50 PM	1	0	0	0	1
5:55 PM	1	1	1	0	3	5:55 PM	0	0	0	0	0	5:55 PM	1	0	2	2	5
Count Total	23	9	27	11	70	Count Total	0	0	0	0	0	Count Total	14	0	9	16	39
Peak Hour	6	3	12	8	29	Peak Hour	0	0	0	0	0	Peak Hour	5	0	4	11	20



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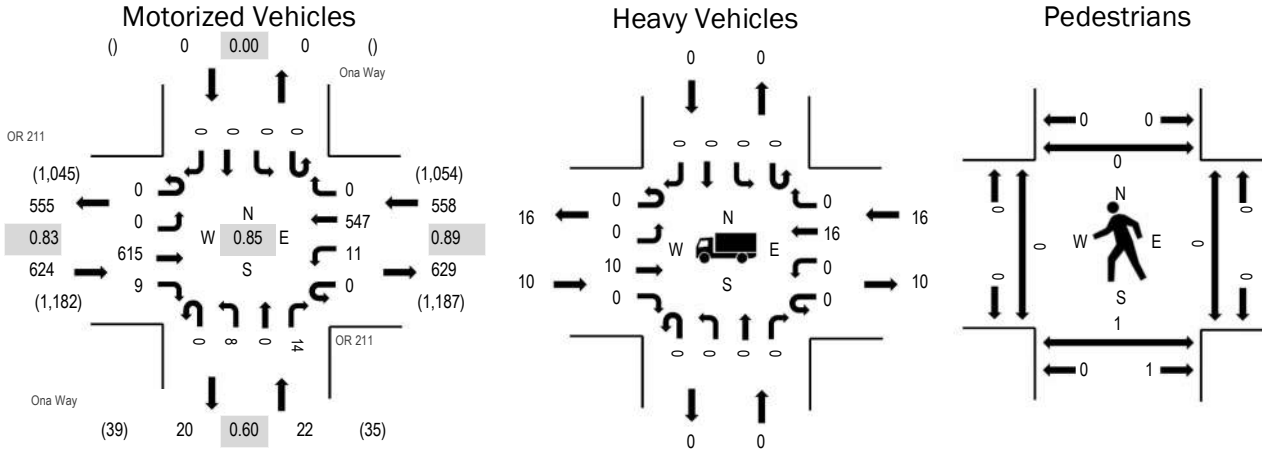
Location: 4 Ona Way & OR 211 PM

Date: Tuesday, September 21, 2021

Peak Hour: 04:55 PM - 05:55 PM

Peak 15-Minutes: 05:10 PM - 05:25 PM

**Peak Hour**



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	1.6%	0.83
WB	2.9%	0.89
NB	0.0%	0.60
SB	0.0%	0.00
All	2.2%	0.85

**Traffic Counts - Motorized Vehicles**

Interval Start Time	OR 211 Eastbound				OR 211 Westbound				Ona Way Northbound				Ona Way Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	42	0	0	0	44	0	0	0	0	0	0	0	0	0	86	1,074
4:05 PM	0	0	52	1	0	0	34	0	0	1	0	0	0	0	0	0	88	1,093
4:10 PM	0	0	51	0	0	1	36	0	0	0	0	1	0	0	0	0	89	1,083
4:15 PM	0	0	33	0	0	3	56	0	0	0	0	1	0	0	0	0	93	1,116
4:20 PM	0	0	49	2	0	1	34	0	0	0	0	0	0	0	0	0	86	1,138
4:25 PM	0	0	43	2	0	0	30	0	0	1	0	2	0	0	0	0	78	1,171
4:30 PM	0	0	45	2	0	1	46	0	0	1	0	0	0	0	0	0	95	1,197
4:35 PM	0	0	50	0	0	0	49	0	0	1	0	3	0	0	0	0	103	1,185
4:40 PM	0	0	50	1	0	0	42	0	0	0	0	0	0	0	0	0	93	1,178
4:45 PM	0	0	39	1	0	1	35	0	0	0	0	1	0	0	0	0	77	1,184
4:50 PM	0	0	39	0	0	0	43	0	0	0	0	1	0	0	0	0	83	1,192
4:55 PM	0	0	51	0	0	0	52	0	0	0	0	0	0	0	0	0	103	1,204
5:00 PM	0	0	53	0	0	1	49	0	0	1	0	1	0	0	0	0	105	1,197
5:05 PM	0	0	43	0	0	1	32	0	0	0	0	2	0	0	0	0	78	
5:10 PM	0	0	58	0	0	0	60	0	0	2	0	2	0	0	0	0	122	
5:15 PM	0	0	57	1	0	2	52	0	0	0	0	3	0	0	0	0	115	
5:20 PM	0	0	70	3	0	0	43	0	0	0	0	3	0	0	0	0	119	
5:25 PM	0	0	49	0	0	0	52	0	0	2	0	1	0	0	0	0	104	
5:30 PM	0	0	50	2	0	3	28	0	0	0	0	0	0	0	0	0	83	
5:35 PM	0	0	42	1	0	2	49	0	0	1	0	1	0	0	0	0	96	
5:40 PM	0	0	52	0	0	1	45	0	0	1	0	0	0	0	0	0	99	
5:45 PM	0	0	42	0	0	0	42	0	0	1	0	0	0	0	0	0	85	
5:50 PM	0	0	48	2	0	1	43	0	0	0	0	1	0	0	0	0	95	
5:55 PM	0	0	56	0	0	3	37	0	0	0	0	0	0	0	0	0	96	
Count Total	0	0	1,164	18	0	21	1,033	0	0	12	0	23	0	0	0	0	2,271	
Peak Hour	0	0	615	9	0	11	547	0	0	8	0	14	0	0	0	0	1,204	

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	1	0	4	0	5	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	3	1	1	0	5	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	3	0	2	0	5	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	1	1
4:15 PM	1	0	5	0	6	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	1	0	2	0	3	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	1	0	5	0	6	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	1	0	1	0	2	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	4	0	2	0	6	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	5	0	2	0	7	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	2	0	3	0	5	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	2	0	1	0	3	4:50 PM	0	0	0	0	0	4:50 PM	0	1	0	0	1
4:55 PM	2	0	2	0	4	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	1	0	4	0	5	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	2	0	0	0	2	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	1	0	2	0	3	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	1	0	2	0	3	5:15 PM	0	0	0	0	0	5:15 PM	0	1	0	0	1
5:20 PM	1	0	0	0	1	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	0	3	0	3	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	1	0	1	0	2	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	0	0	1	0	1	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	1	0	1	0	2	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	2	0	1	0	3	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	36	1	45	0	82	Count Total	0	0	0	0	0	Count Total	0	2	0	1	3
Peak Hour	10	0	16	0	26	Peak Hour	0	0	0	0	0	Peak Hour	0	1	0	0	1



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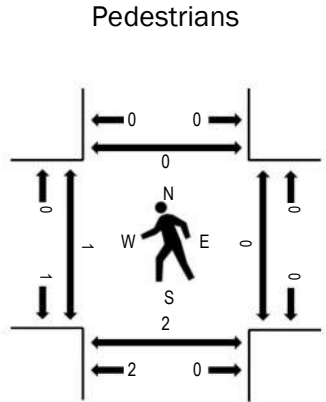
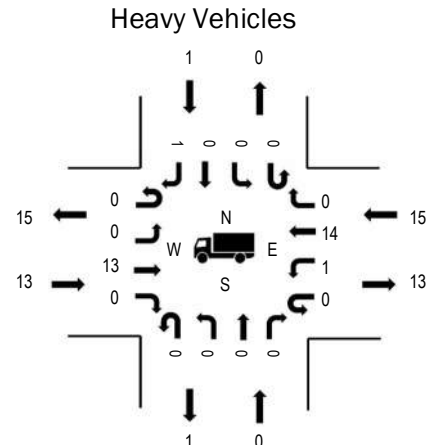
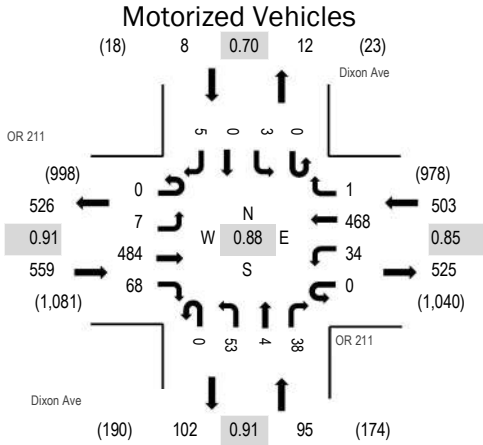
Location: 5 Dixon Ave & OR 211 PM

Date: Tuesday, September 21, 2021

Peak Hour: 04:55 PM - 05:55 PM

Peak 15-Minutes: 05:10 PM - 05:25 PM

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	2.3%	0.91
WB	3.0%	0.85
NB	0.0%	0.91
SB	12.5%	0.70
All	2.5%	0.88

Traffic Counts - Motorized Vehicles

Interval Start Time	OR 211 Eastbound				OR 211 Westbound				Dixon Ave Northbound				Dixon Ave Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	36	8	0	3	34	0	0	3	0	3	0	0	0	0	87	1,096
4:05 PM	0	0	46	6	1	4	41	1	0	0	0	2	0	0	0	0	101	1,106
4:10 PM	0	0	32	7	0	5	45	1	0	2	0	4	0	0	1	0	97	1,087
4:15 PM	0	0	40	2	0	0	41	2	0	3	0	6	0	0	0	0	94	1,107
4:20 PM	0	0	37	4	0	4	26	0	0	2	0	6	0	0	0	0	79	1,112
4:25 PM	0	1	31	4	0	4	39	3	0	3	0	5	0	0	0	1	91	1,149
4:30 PM	0	0	44	4	0	2	42	1	0	2	0	3	0	1	0	3	102	1,153
4:35 PM	0	0	38	9	0	2	30	0	0	4	0	4	0	0	0	0	87	1,133
4:40 PM	0	0	38	3	0	2	37	0	0	5	0	1	0	0	0	1	87	1,136
4:45 PM	0	1	36	2	0	2	34	0	0	3	0	7	0	1	0	0	86	1,135
4:50 PM	0	1	35	3	0	2	33	0	0	1	0	3	0	1	0	1	80	1,151
4:55 PM	0	1	41	5	0	2	48	0	0	5	0	3	0	0	0	0	105	1,165
5:00 PM	0	0	45	7	0	4	33	0	0	5	1	1	0	0	0	1	97	1,155
5:05 PM	0	1	35	8	0	2	29	0	0	4	0	2	0	0	0	1	82	
5:10 PM	0	1	47	7	0	1	51	0	0	3	2	3	0	1	0	1	117	
5:15 PM	0	1	35	5	0	5	42	0	0	4	0	6	0	0	0	1	99	
5:20 PM	0	0	54	6	0	3	46	0	0	3	0	4	0	0	0	0	116	
5:25 PM	0	0	40	7	0	4	35	0	0	5	0	3	0	0	0	1	95	
5:30 PM	0	0	39	2	0	2	28	0	0	5	1	5	0	0	0	0	82	
5:35 PM	0	1	35	4	0	4	40	0	0	4	0	2	0	0	0	0	90	
5:40 PM	0	1	33	6	0	2	36	1	0	4	0	3	0	0	0	0	86	
5:45 PM	0	1	41	8	0	4	38	0	0	7	0	3	0	0	0	0	102	
5:50 PM	0	0	39	3	0	1	42	0	0	4	0	3	0	2	0	0	94	
5:55 PM	0	0	50	4	0	1	33	0	0	3	0	4	0	0	0	0	95	
Count Total	0	10	947	124	1	65	903	9	0	84	4	86	0	6	1	11	2,251	
Peak Hour	0	7	484	68	0	34	468	1	0	53	4	38	0	3	0	5	1,165	

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

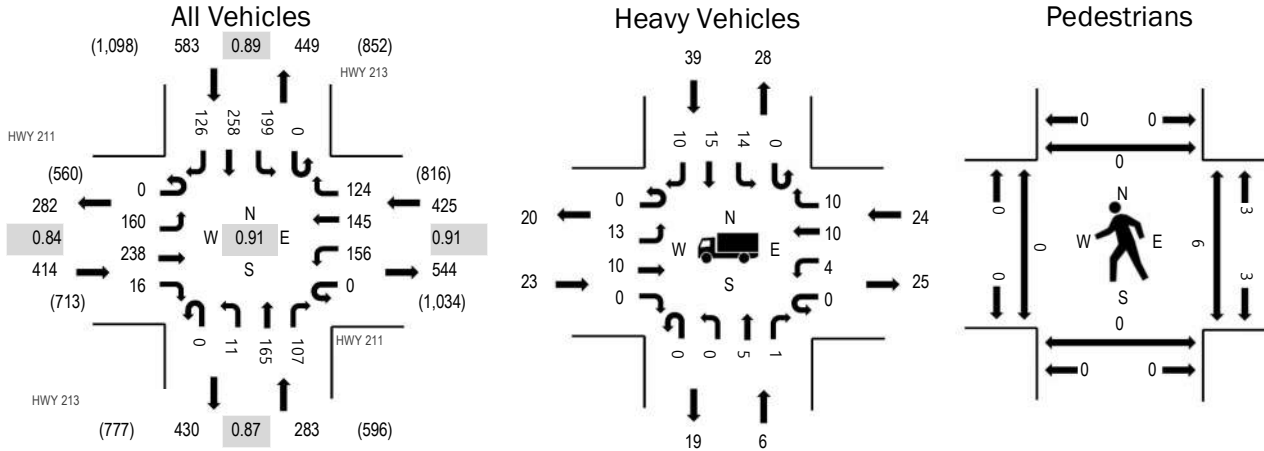
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	1	0	4	0	5	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	1	0	1	0	2	4:05 PM	0	0	0	0	0	4:05 PM	0	0	1	0	1
4:10 PM	2	0	2	0	4	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	3	0	2	0	5	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	1	0	2	0	3	4:20 PM	0	1	0	0	1	4:20 PM	0	0	0	0	0
4:25 PM	0	0	4	0	4	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	0	3	0	3	4:30 PM	0	0	0	0	0	4:30 PM	0	2	0	0	2
4:35 PM	5	0	1	0	6	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	2	0	3	1	6	4:40 PM	1	0	0	0	1	4:40 PM	0	2	0	0	2
4:45 PM	2	0	1	1	4	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	2	0	2	1	5	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	1	0	0	0	1	4:55 PM	0	0	0	0	0	4:55 PM	1	0	0	0	1
5:00 PM	2	0	5	0	7	5:00 PM	0	0	0	0	0	5:00 PM	0	2	0	0	2
5:05 PM	3	0	0	0	3	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	2	0	2	0	4	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	1	0	3	0	4	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	1	0	1	0	2	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	0	2	1	3	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	1	0	1	0	2	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	2	0	1	0	3	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	2	0	1	0	3	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	34	0	41	4	79	Count Total	1	1	0	0	2	Count Total	1	6	1	0	8
Peak Hour	13	0	15	1	29	Peak Hour	0	0	0	0	0	Peak Hour	1	2	0	0	3



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Location: HWY 213 & HWY 211 PM  
Date: Tuesday, October 15, 2019  
Peak Hour: 04:40 PM - 05:40 PM  
Peak 15-Minutes: 04:50 PM - 05:05 PM

**Peak Hour**



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	5.6%	0.84
WB	5.6%	0.91
NB	2.1%	0.87
SB	6.7%	0.89
All	5.4%	0.91

**Traffic Counts - All Vehicles**

Interval Start Time	HWY 211 Eastbound				HWY 211 Westbound				HWY 213 Northbound				HWY 213 Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	0	0	0	19	8	11	0	0	17	10	0	20	11	7	103	1,584
4:05 PM	0	0	9	1	0	9	12	15	0	2	10	10	0	19	17	7	111	1,623
4:10 PM	0	10	25	1	0	16	16	8	0	1	13	11	0	14	7	5	127	1,680
4:15 PM	0	21	49	2	0	9	14	6	0	8	18	10	0	18	17	12	184	1,687
4:20 PM	0	13	21	2	0	14	19	4	0	2	15	8	0	11	12	5	126	1,643
4:25 PM	0	3	10	2	0	7	15	6	0	0	13	5	0	24	23	13	121	1,651
4:30 PM	0	9	15	2	0	8	12	14	0	1	13	5	0	22	14	15	130	1,659
4:35 PM	0	0	1	0	0	13	9	11	0	3	18	7	0	15	22	11	110	1,670
4:40 PM	0	0	4	0	0	17	15	4	0	0	14	6	0	18	26	17	121	1,705
4:45 PM	0	10	23	0	0	13	17	11	0	0	10	11	0	11	12	9	127	1,680
4:50 PM	0	26	36	2	0	13	11	6	0	4	15	14	0	19	15	12	173	1,680
4:55 PM	0	11	17	2	0	10	14	13	0	1	14	10	0	18	32	9	151	1,670
5:00 PM	0	15	15	4	0	20	20	9	0	1	10	7	0	16	16	9	142	1,639
5:05 PM	0	15	22	2	0	10	5	17	0	0	19	11	0	22	32	13	168	
5:10 PM	0	11	23	1	0	9	10	15	0	0	10	3	0	17	22	13	134	
5:15 PM	0	13	25	1	0	14	9	11	0	3	15	10	0	14	18	7	140	
5:20 PM	0	10	27	1	0	16	10	10	0	1	12	7	0	11	18	11	134	
5:25 PM	0	21	12	1	0	11	11	12	0	0	11	6	0	16	21	7	129	
5:30 PM	0	9	24	2	0	8	13	7	0	0	21	7	0	18	22	10	141	
5:35 PM	0	19	10	0	0	15	10	9	0	1	14	15	0	19	24	9	145	
5:40 PM	0	11	9	0	0	11	11	11	0	1	13	6	0	14	7	2	96	
5:45 PM	0	15	14	3	0	5	8	11	0	2	12	8	0	16	24	9	127	
5:50 PM	0	10	20	0	0	9	16	14	0	0	30	12	0	15	20	17	163	
5:55 PM	0	7	13	1	0	10	6	4	0	3	17	9	0	15	29	6	120	
Count Total	0	259	424	30	0	286	291	239	0	34	354	208	0	402	461	235	3,223	
Peak Hour	0	160	238	16	0	156	145	124	0	11	165	107	0	199	258	126	1,705	

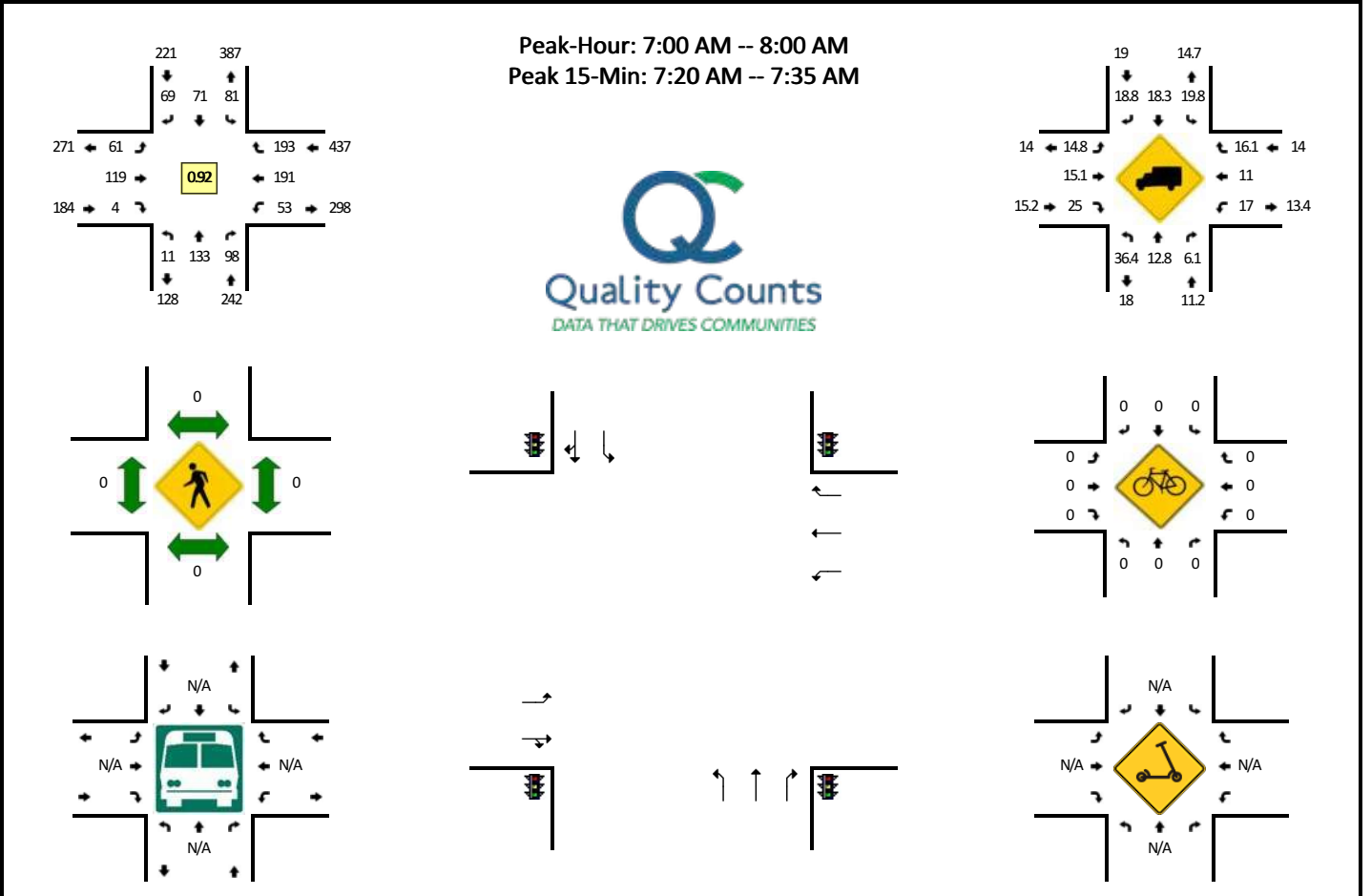
### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	3	2	2	7	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	1	2	4	4	11	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	3	0	3	0	6	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	2	5	4	3	14	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	6	2	2	0	10	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	2	0	2	2	6	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	3	2	2	3	10	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	0	2	0	0	2	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	0	1	4	4	9	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	3	2	3	2	10	4:45 PM	0	0	0	0	0	4:45 PM	0	0	2	0	2
4:50 PM	4	0	0	7	11	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	0	0	3	2	5	4:55 PM	0	0	0	0	0	4:55 PM	0	0	2	0	2
5:00 PM	3	0	5	1	9	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	3	0	1	1	5	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	2	1	1	5	9	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	0	1	1	2	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	5	0	2	3	10	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	1	2	2	4	9	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	0	0	1	6	7	5:30 PM	0	0	0	0	0	5:30 PM	0	0	1	0	1
5:35 PM	2	0	1	3	6	5:35 PM	0	0	0	0	0	5:35 PM	0	0	1	0	1
5:40 PM	3	1	2	2	8	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	2	1	0	3	6	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	1	1	2	2	6	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	0	1	1	6	8	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	46	26	48	66	186	Count Total	0	0	0	0	0	Count Total	0	0	6	0	6
Peak Hour	23	6	24	39	92	Peak Hour	0	0	0	0	0	Peak Hour	0	0	6	0	6



**LOCATION:** OR-213 -- OR-211  
**CITY/STATE:** Molalla, OR

**QC JOB #:** 14815601  
**DATE:** Tue, Oct 9 2018

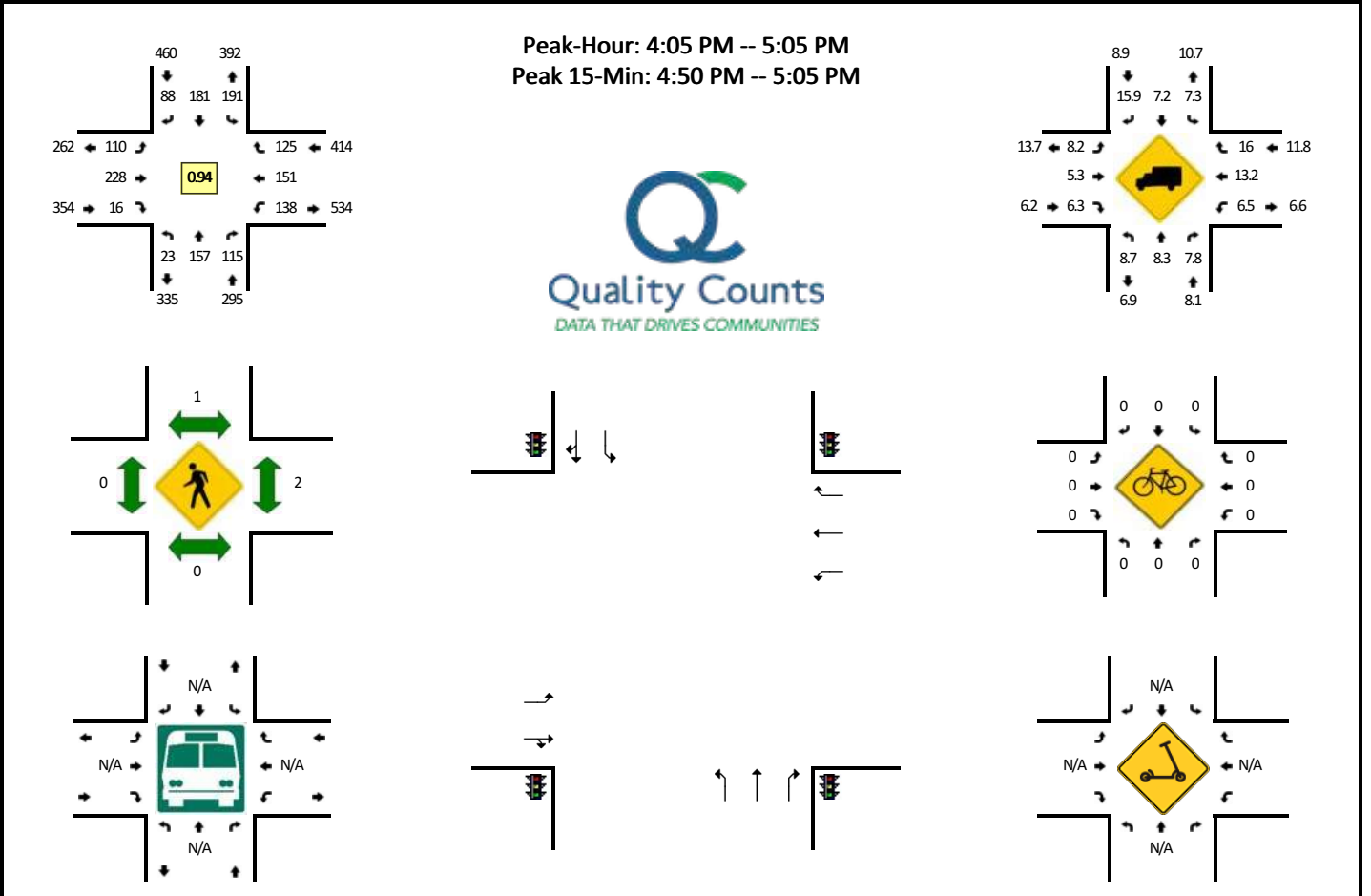


5-Min Count Period Beginning At	OR-213 (Northbound)				OR-213 (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	11	11	0	4	1	6	0	4	11	0	0	4	13	14	0	79	
7:05 AM	1	5	4	0	6	10	10	0	8	10	0	0	3	17	17	0	91	
7:10 AM	0	8	9	0	3	6	5	0	6	13	1	0	5	13	25	0	94	
7:15 AM	2	17	5	0	6	9	8	0	3	9	1	0	1	14	21	0	96	
7:20 AM	0	10	9	0	4	4	7	0	4	9	0	0	8	26	21	0	102	
7:25 AM	4	15	5	0	4	4	7	0	10	8	0	0	6	16	18	0	97	
7:30 AM	0	14	6	0	10	6	5	0	4	7	0	0	5	25	15	0	97	
7:35 AM	3	9	12	0	9	8	6	0	4	9	0	0	4	18	16	0	98	
7:40 AM	0	6	14	0	9	6	3	0	5	8	0	0	5	13	15	0	84	
7:45 AM	1	9	11	0	11	7	2	0	2	5	1	0	3	12	15	0	79	
7:50 AM	0	15	7	0	5	4	3	0	7	14	0	0	2	9	10	0	76	
7:55 AM	0	14	5	0	10	6	7	0	4	16	1	0	7	15	6	0	91	1084
8:00 AM	3	7	0	0	9	4	3	0	6	7	1	0	5	11	10	0	66	1071
8:05 AM	1	14	6	0	11	5	11	0	1	6	1	0	3	16	17	0	92	1072
8:10 AM	0	14	4	0	1	2	4	0	8	9	1	0	3	10	7	0	63	1041
8:15 AM	1	10	5	0	7	12	9	0	8	10	3	0	4	7	14	0	90	1035
8:20 AM	1	17	5	0	13	6	1	0	7	10	0	0	4	19	9	0	92	1025
8:25 AM	2	14	5	0	8	9	4	0	5	11	1	0	5	10	13	0	87	1015
8:30 AM	1	9	5	0	13	9	7	0	6	5	1	0	9	16	14	0	95	1013
8:35 AM	1	12	3	0	7	10	7	0	4	17	0	0	3	13	8	0	85	1000
8:40 AM	1	9	3	0	7	5	4	0	0	6	0	0	4	23	9	0	71	987
8:45 AM	1	12	5	0	10	7	11	0	7	11	0	0	0	22	9	0	95	1003
8:50 AM	2	13	7	0	10	3	12	0	4	14	1	0	7	16	7	0	96	1023
8:55 AM	1	9	6	0	12	7	5	0	7	14	2	0	2	11	10	0	86	1018
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	156	80	0	72	56	76	0	72	96	0	0	76	268	216	0	1184	
Heavy Trucks	4	12	4		16	4	20		4	16	0		16	36	40		172	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

*Comments:*

**LOCATION:** OR-213 -- OR-211  
**CITY/STATE:** Molalla, OR

**QC JOB #:** 14815602  
**DATE:** Tue, Oct 9 2018

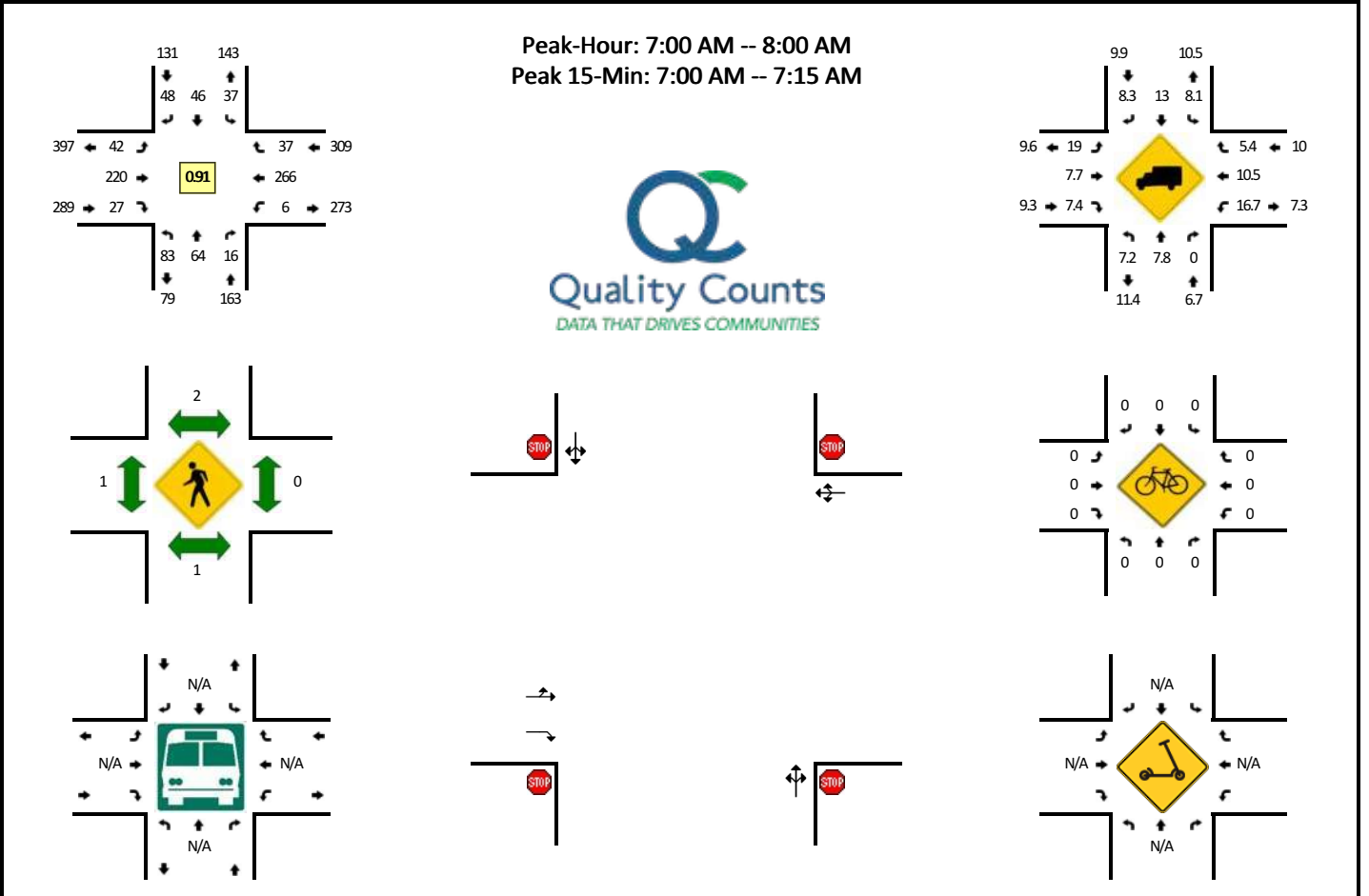


5-Min Count Period Beginning At	OR-213 (Northbound)				OR-213 (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	11	5	0	25	14	14	0	8	22	2	0	8	14	8	0	132	
4:05 PM	1	11	13	0	10	21	10	0	12	16	0	0	6	15	13	0	128	
4:10 PM	0	12	12	0	9	10	6	0	9	18	0	0	14	15	12	0	117	
4:15 PM	2	12	7	0	13	14	5	0	8	20	2	0	9	9	5	0	106	
4:20 PM	2	13	8	0	11	15	7	0	9	20	0	0	13	11	8	0	117	
4:25 PM	1	12	12	0	9	10	6	0	9	28	1	0	10	14	9	0	121	
4:30 PM	4	14	5	0	25	20	7	0	13	12	1	0	13	2	11	0	127	
4:35 PM	3	11	9	0	21	14	7	0	11	31	4	0	10	14	14	0	149	
4:40 PM	1	12	9	0	17	14	5	0	6	14	3	0	18	10	9	0	118	
4:45 PM	0	13	15	0	20	19	10	0	9	16	0	0	15	6	11	0	134	
4:50 PM	1	10	8	0	18	17	9	0	11	17	3	0	10	14	15	0	133	
4:55 PM	2	22	6	0	21	13	7	0	4	14	0	0	15	14	9	0	127	1509
5:00 PM	6	15	11	0	17	14	9	0	9	22	2	0	5	27	9	0	146	1523
5:05 PM	1	10	11	0	11	11	9	0	8	16	0	0	14	12	3	0	106	1501
5:10 PM	0	6	4	0	10	20	5	0	9	21	0	0	13	19	14	0	121	1505
5:15 PM	2	10	3	0	21	15	6	0	8	19	2	0	7	9	8	0	110	1509
5:20 PM	2	13	7	0	15	17	10	0	5	21	0	0	10	10	8	0	118	1510
5:25 PM	2	13	6	0	11	16	7	0	11	10	4	0	13	5	10	0	108	1497
5:30 PM	3	12	8	0	17	16	6	0	7	25	1	0	8	8	8	0	119	1489
5:35 PM	1	8	11	0	16	11	7	0	1	13	3	0	9	13	14	0	107	1447
5:40 PM	0	15	7	0	12	22	3	0	12	23	2	0	11	8	9	0	124	1453
5:45 PM	1	9	10	0	15	13	4	0	5	6	3	0	20	16	2	0	104	1423
5:50 PM	1	13	7	0	21	14	4	0	6	13	0	0	7	12	7	0	105	1395
5:55 PM	2	10	8	0	13	11	4	0	6	13	0	0	9	9	10	0	95	1363
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	36	188	100	0	224	176	100	0	96	212	20	0	120	220	132	0	1624	
Heavy Trucks	4	16	4		16	4	12		8	20	0		0	20	8		112	
Buses																		
Pedestrians		0				0				0				4			4	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

**LOCATION:** Molalla Ave -- OR-211  
**CITY/STATE:** Molalla, OR

**QC JOB #:** 14815607  
**DATE:** Tue, Oct 9 2018

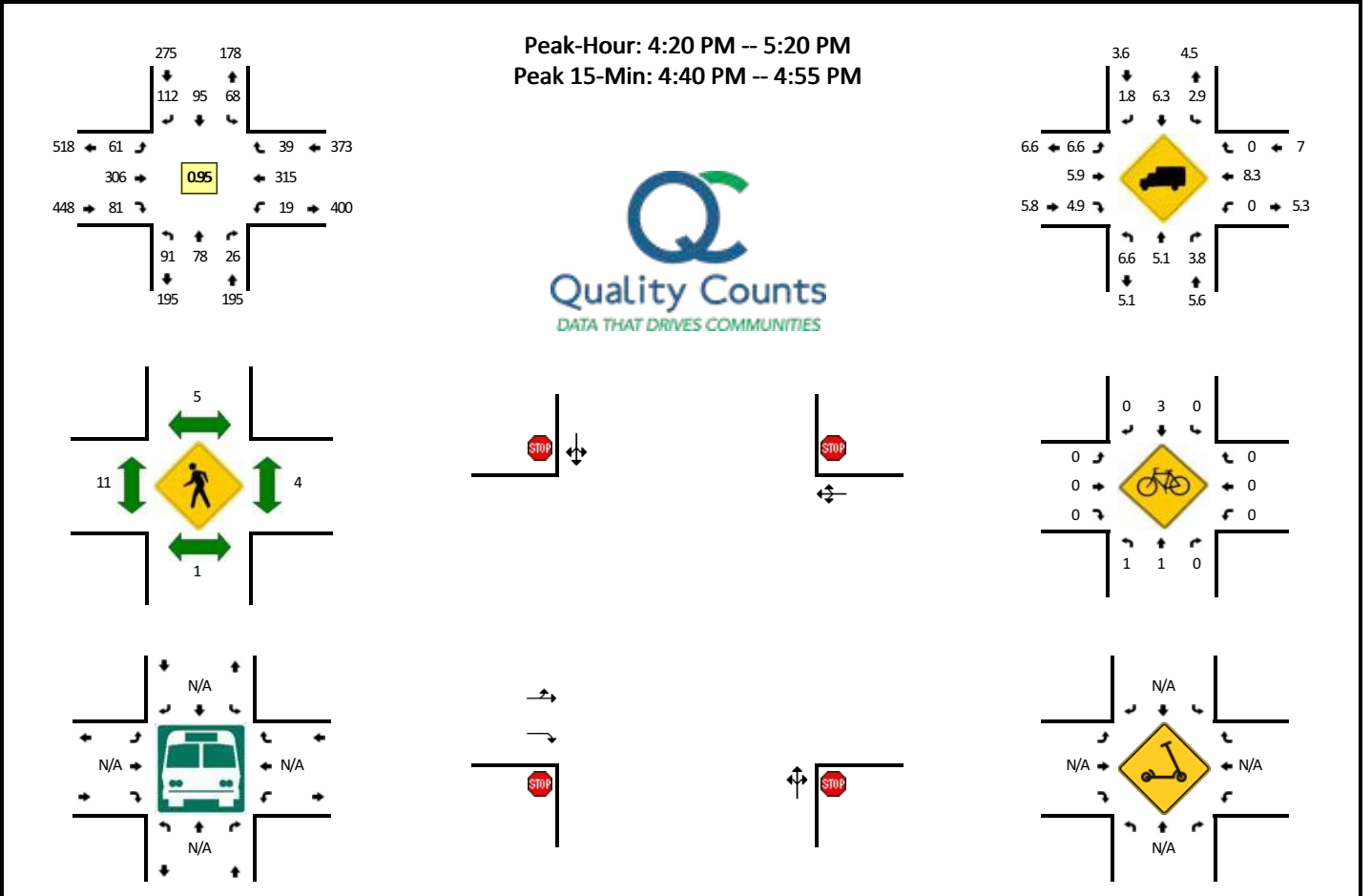


5-Min Count Period Beginning At	Molalla Ave (Northbound)				Molalla Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	11	8	2	0	2	2	5	0	5	19	0	0	1	21	0	0	76	
7:05 AM	6	9	3	0	3	2	5	0	4	21	1	0	0	28	9	0	91	
7:10 AM	6	9	4	0	2	3	3	0	9	18	1	0	0	18	4	0	77	
7:15 AM	9	9	1	0	0	6	4	0	5	14	2	0	0	21	5	0	76	
7:20 AM	12	6	0	0	1	4	4	0	1	17	2	0	2	29	2	0	80	
7:25 AM	6	4	0	0	2	4	8	0	1	15	2	0	2	24	0	0	68	
7:30 AM	4	3	2	0	0	5	4	0	2	17	3	0	0	17	2	0	59	
7:35 AM	7	2	0	0	0	5	2	0	2	22	5	0	0	22	4	0	71	
7:40 AM	8	3	2	0	7	2	5	0	3	20	3	0	0	19	3	0	75	
7:45 AM	5	2	1	0	11	6	4	0	4	18	3	0	0	26	2	0	82	
7:50 AM	5	3	1	0	5	2	3	0	2	21	1	0	1	18	3	0	65	
7:55 AM	4	6	0	0	4	5	1	0	4	18	4	0	0	23	3	0	72	892
8:00 AM	10	4	1	0	5	1	4	0	3	19	0	0	0	23	6	0	76	892
8:05 AM	3	3	2	0	0	9	5	0	2	12	1	0	2	19	4	0	62	863
8:10 AM	7	1	4	0	3	2	1	0	1	20	5	0	1	17	8	0	70	856
8:15 AM	3	6	1	0	4	4	9	0	3	9	2	0	1	23	3	0	68	848
8:20 AM	4	6	1	0	1	3	3	0	4	23	0	0	0	13	4	0	62	830
8:25 AM	7	8	2	0	3	2	2	0	2	13	6	0	1	16	2	0	64	826
8:30 AM	5	5	0	0	2	4	1	0	4	15	3	0	0	13	4	0	56	823
8:35 AM	7	2	0	0	4	3	5	0	1	16	1	0	2	26	6	0	73	825
8:40 AM	8	8	1	0	1	3	2	0	2	16	3	0	1	22	3	0	70	820
8:45 AM	3	5	3	0	3	7	9	0	5	8	4	0	0	16	6	0	69	807
8:50 AM	8	4	3	0	7	4	2	0	2	14	3	0	0	13	5	0	65	807
8:55 AM	6	3	2	0	5	1	5	0	3	20	5	0	3	16	5	0	74	809
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	104	36	0	28	28	52	0	72	232	8	0	4	268	52	0	976	
Heavy Trucks	4	4	0		0	0	12		16	36	0		4	28	4		108	
Buses																	0	
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																	0	

Comments:

**LOCATION:** Molalla Ave -- OR-211  
**CITY/STATE:** Molalla, OR

**QC JOB #:** 14815608  
**DATE:** Tue, Oct 9 2018

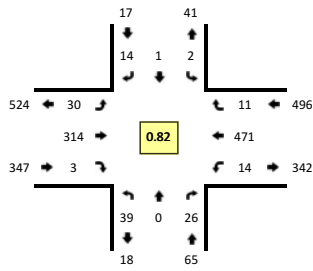


5-Min Count Period Beginning At	Molalla Ave (Northbound)				Molalla Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	5	9	3	0	11	10	10	0	5	30	4	0	3	10	7	0	107	
4:05 PM	6	5	2	0	9	10	7	0	6	27	9	0	3	26	4	0	114	
4:10 PM	2	5	1	0	10	9	7	0	4	28	6	0	1	26	2	0	101	
4:15 PM	6	6	1	0	1	11	10	0	9	20	5	0	2	18	4	0	93	
4:20 PM	10	11	3	0	5	8	6	0	8	21	6	0	4	23	0	0	105	
4:25 PM	7	5	2	0	4	13	9	0	5	29	10	0	3	30	2	0	119	
4:30 PM	6	6	1	0	5	3	8	0	3	32	6	0	1	31	4	0	106	
4:35 PM	11	8	4	0	4	13	6	0	4	23	4	0	1	22	4	0	104	
4:40 PM	11	4	3	0	8	6	8	0	5	31	8	0	1	33	2	0	120	
4:45 PM	4	10	2	0	7	9	11	0	4	28	6	0	2	25	2	0	110	
4:50 PM	5	4	3	0	7	7	11	0	4	28	9	0	0	27	4	0	109	
4:55 PM	9	2	3	0	4	4	17	0	6	20	3	0	3	29	1	0	101	1289
5:00 PM	7	4	1	0	5	11	5	0	3	25	9	0	3	30	3	0	106	1288
5:05 PM	11	8	2	0	5	4	12	0	8	20	7	0	0	23	5	0	105	1279
5:10 PM	6	7	2	0	8	6	12	0	4	27	5	0	0	23	8	0	108	1286
5:15 PM	4	9	0	0	6	11	7	0	7	22	8	0	1	19	4	0	98	1291
5:20 PM	11	3	2	0	3	11	11	0	5	21	2	0	1	23	2	0	95	1281
5:25 PM	10	9	1	0	4	12	10	0	5	21	6	0	7	21	0	0	106	1268
5:30 PM	3	6	1	0	7	7	12	0	1	27	9	0	2	30	3	0	108	1270
5:35 PM	4	9	1	0	3	9	4	0	10	23	12	0	3	18	6	0	102	1268
5:40 PM	7	10	1	0	7	8	5	0	4	24	4	0	2	29	1	0	102	1250
5:45 PM	10	5	1	0	6	10	8	0	7	23	7	0	1	29	3	0	110	1250
5:50 PM	8	8	1	0	4	8	16	0	10	17	11	0	0	19	5	0	107	1248
5:55 PM	7	2	4	0	4	10	7	0	3	29	7	0	3	20	0	0	96	1243
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	80	72	32	0	88	88	120	0	52	348	92	0	12	340	32	0	1356	
Heavy Trucks	0	0	0		4	4	4		4	16	0		0	28	0		60	
Buses																		
Pedestrians		0				0				0				4			4	
Bicycles	0	0	0		0	8	0		0	0	0		0	0	0		8	
Scoters																		

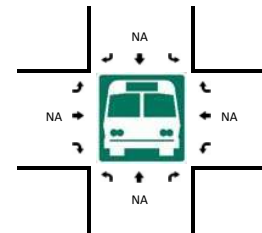
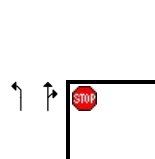
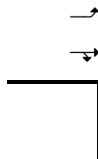
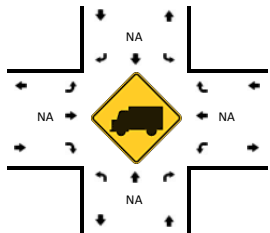
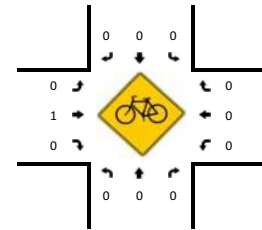
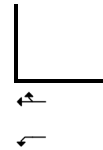
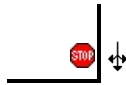
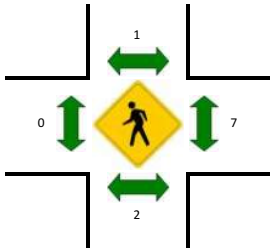
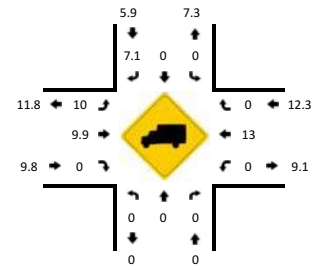
*Comments:*

**LOCATION:** N Hezzie Ln -- OR-211  
**CITY/STATE:** Molalla, OR

**QC JOB #:** 14815603  
**DATE:** Tue, Oct 9 2018



**Peak-Hour: 7:00 AM -- 8:00 AM**  
**Peak 15-Min: 7:15 AM -- 7:30 AM**

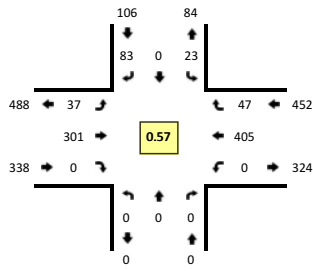


5-Min Count Period Beginning At	N Hezzie Ln (Northbound)				N Hezzie Ln (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	5	0	0	0	0	0	3	0	1	31	0	0	1	34	0	0	75	
7:05 AM	5	0	3	0	0	0	1	0	2	30	0	0	0	38	0	0	79	
7:10 AM	2	0	2	0	0	0	3	0	2	27	0	0	1	33	0	0	70	
7:15 AM	7	0	6	0	1	0	0	0	7	28	0	0	3	42	1	0	95	
7:20 AM	0	0	2	0	0	1	4	0	2	17	0	0	2	60	1	0	89	
7:25 AM	7	0	3	0	0	0	0	0	1	30	0	0	1	55	2	0	99	
7:30 AM	1	0	3	0	0	0	2	0	5	16	0	0	2	44	1	0	74	
7:35 AM	3	0	0	0	0	0	0	0	2	35	0	0	0	31	1	0	72	
7:40 AM	2	0	2	0	1	0	0	0	2	21	0	0	1	39	0	0	68	
7:45 AM	4	0	0	0	0	0	1	0	4	27	1	0	2	35	1	0	75	
7:50 AM	2	0	3	0	0	0	0	0	1	22	0	0	0	32	1	0	61	
7:55 AM	1	0	2	0	0	0	0	0	1	30	2	0	1	28	3	0	68	925
8:00 AM	1	0	0	0	0	0	0	0	4	22	0	0	1	38	0	0	66	916
8:05 AM	1	0	1	0	0	0	2	0	1	19	0	0	1	28	0	0	53	890
8:10 AM	1	0	3	0	1	0	0	0	1	20	0	0	0	31	0	0	57	877
8:15 AM	3	0	1	0	0	0	0	0	1	18	0	0	3	21	1	0	48	830
8:20 AM	1	0	1	0	0	0	0	0	3	20	0	1	1	33	0	0	60	801
8:25 AM	1	0	1	0	0	0	3	0	2	38	0	0	0	41	1	0	87	789
8:30 AM	2	0	0	0	0	0	3	0	3	18	0	0	0	27	0	1	54	769
8:35 AM	0	0	0	0	1	0	3	0	1	28	0	0	1	28	2	0	64	761
8:40 AM	2	0	1	0	1	1	2	0	1	23	0	0	0	40	1	0	72	765
8:45 AM	0	0	0	0	2	0	1	0	1	22	1	0	1	31	0	0	59	749
8:50 AM	4	0	0	0	1	0	1	0	2	27	0	0	2	25	4	0	66	754
8:55 AM	0	0	1	0	1	0	1	0	1	33	1	0	0	36	1	0	75	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	56	0	44	0	4	4	16	0	40	300	0	0	24	628	16	0	1132	
Heavy Trucks	0	0	0		0	0	0		4	24	0		0	100	0		128	
Pedestrians		4				0				0				0			4	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Railroad																		
Stopped Buses																		

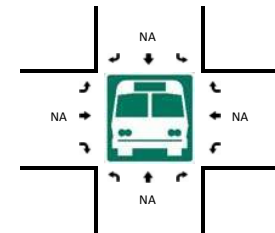
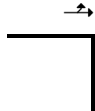
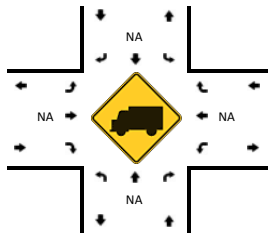
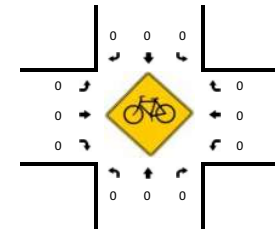
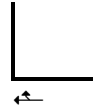
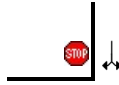
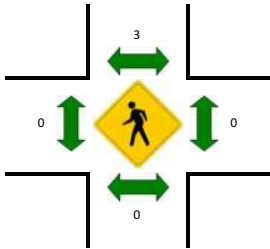
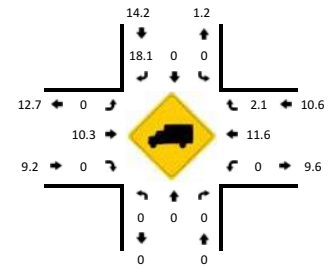
Comments:

**LOCATION:** Leroy Ave -- OR-211  
**CITY/STATE:** Molalla, OR

**QC JOB #:** 14815609  
**DATE:** Tue, Oct 9 2018



**Peak-Hour: 7:00 AM -- 8:00 AM**  
**Peak 15-Min: 7:15 AM -- 7:30 AM**



5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	0	0	0	0	0	2	0	1	12	0	0	0	41	2	0	58	
6:05 AM	0	0	0	0	0	0	1	0	1	14	0	0	0	26	2	0	44	
6:10 AM	0	0	0	0	0	0	2	0	2	14	0	0	0	27	0	0	45	
6:15 AM	0	0	0	0	0	0	2	0	0	24	0	0	0	29	0	0	55	
6:20 AM	0	0	0	0	1	0	1	0	0	8	0	0	0	28	3	0	41	
6:25 AM	0	0	0	0	1	0	2	0	2	16	0	0	0	32	0	0	53	
6:30 AM	0	0	0	0	0	0	2	0	0	17	0	0	0	40	0	0	59	
6:35 AM	0	0	0	0	0	0	3	0	0	17	0	0	0	36	1	0	57	
6:40 AM	0	0	0	0	0	0	2	0	3	22	0	0	0	33	0	0	60	
6:45 AM	0	0	0	0	1	0	2	0	1	31	0	0	0	32	2	0	69	
6:50 AM	0	0	0	0	0	0	3	0	2	27	0	0	0	41	4	0	77	
6:55 AM	0	0	0	0	2	0	5	0	1	25	0	0	0	28	3	0	64	682
7:00 AM	0	0	0	0	0	0	4	0	2	29	0	0	0	26	4	0	65	689
7:05 AM	0	0	0	0	2	0	4	0	4	25	0	0	0	36	11	0	82	727
7:10 AM	0	0	0	0	1	0	6	0	6	27	0	0	0	28	5	0	73	755
7:15 AM	0	0	0	0	2	0	11	0	2	25	0	0	0	31	8	0	79	779
7:20 AM	0	0	0	0	2	0	15	0	6	23	0	0	0	46	9	0	101	839
7:25 AM	0	0	0	0	6	0	12	0	4	22	0	0	0	43	7	0	94	880
7:30 AM	0	0	0	0	2	0	14	0	5	19	0	0	0	37	1	0	78	899
7:35 AM	0	0	0	0	2	0	3	0	2	25	0	0	0	30	0	0	62	904
7:40 AM	0	0	0	0	0	0	6	0	4	21	0	0	0	36	0	0	67	911
7:45 AM	0	0	0	0	1	0	4	0	1	28	0	0	0	32	2	0	68	910
7:50 AM	0	0	0	0	2	0	1	0	1	27	0	0	0	30	0	0	61	894
7:55 AM	0	0	0	0	3	0	3	0	0	30	0	0	0	30	0	0	66	896
8:00 AM	0	0	0	0	1	0	0	0	3	16	0	0	0	32	0	0	52	883
8:05 AM	0	0	0	0	0	0	3	0	0	27	0	0	0	29	1	0	60	861
8:10 AM	0	0	0	0	0	0	3	0	0	22	0	0	0	31	2	0	58	846
8:15 AM	0	0	0	0	1	0	1	0	0	12	0	0	0	25	0	0	39	806
8:20 AM	0	0	0	0	0	0	4	0	3	30	0	0	0	27	3	0	67	772
8:25 AM	0	0	0	0	1	0	2	0	1	26	0	0	0	34	1	0	65	743
8:30 AM	0	0	0	0	1	0	5	0	3	20	0	0	0	26	0	0	55	720
8:35 AM	0	0	0	0	0	0	2	0	0	33	0	0	0	26	0	0	61	719
8:40 AM	0	0	0	0	0	0	1	0	3	18	0	0	0	41	4	0	67	719
8:45 AM	0	0	0	0	3	0	2	0	1	22	0	0	0	30	4	0	62	713
8:50 AM	0	0	0	0	0	0	8	0	0	31	0	0	0	26	3	0	68	720
8:55 AM	0	0	0	0	1	0	10	0	2	27	0	0	0	23	0	0	63	717

5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
9:00 AM	0	0	0	0	1	0	4	0	2	29	0	0	0	31	4	0	71	736
9:05 AM	0	0	0	0	0	0	3	0	3	29	0	0	0	23	2	0	60	736
9:10 AM	0	0	0	0	0	0	1	0	0	31	0	0	0	38	1	0	71	749
9:15 AM	0	0	0	0	1	0	2	0	2	19	0	0	0	28	1	0	53	763
9:20 AM	0	0	0	0	0	0	3	0	1	22	0	0	0	31	5	0	62	758
9:25 AM	0	0	0	0	4	0	4	0	2	23	0	0	0	32	0	0	65	758
9:30 AM	0	0	0	0	0	0	3	0	2	18	0	0	0	31	1	0	55	758
9:35 AM	0	0	0	0	0	0	3	0	0	19	0	0	0	31	2	0	55	752
9:40 AM	0	0	0	0	1	0	4	0	2	21	0	0	0	27	0	0	55	740
9:45 AM	0	0	0	0	2	0	4	0	0	27	0	0	0	29	2	0	64	742
9:50 AM	0	0	0	0	0	0	1	0	0	25	0	0	0	32	3	0	61	735
9:55 AM	0	0	0	0	0	0	0	0	0	29	0	0	0	45	1	0	75	747
10:00 AM	0	0	0	0	0	0	3	0	1	29	0	0	0	37	1	0	71	747
10:05 AM	0	0	0	0	0	0	0	0	1	24	0	0	0	29	1	0	55	742
10:10 AM	0	0	0	0	1	0	1	0	0	33	0	0	0	32	2	0	69	740
10:15 AM	0	0	0	0	1	0	1	0	1	25	0	0	0	40	1	0	69	756
10:20 AM	0	0	0	0	1	0	3	0	1	27	0	0	0	28	3	0	63	757
10:25 AM	0	0	0	0	1	0	4	0	2	31	0	0	0	30	3	0	71	763
10:30 AM	0	0	0	0	0	0	2	0	0	31	0	0	0	35	0	0	68	776
10:35 AM	0	0	0	0	1	0	2	0	0	22	0	0	0	45	2	0	72	793
10:40 AM	0	0	0	0	0	0	2	0	1	23	0	0	0	27	2	0	55	793
10:45 AM	0	0	0	0	1	0	1	0	2	22	0	0	0	42	6	0	74	803
10:50 AM	0	0	0	0	0	0	2	0	0	34	0	0	0	52	2	0	90	832
10:55 AM	0	0	0	0	0	0	1	0	0	32	0	0	0	49	2	0	84	841
11:00 AM	0	0	0	0	1	0	0	0	2	25	0	0	0	45	1	0	74	844
11:05 AM	0	0	0	0	2	0	3	0	1	25	0	0	0	44	1	0	76	865
11:10 AM	0	0	0	0	1	0	2	0	3	43	0	0	0	37	5	0	91	887
11:15 AM	0	0	0	0	4	0	2	0	0	35	0	0	0	47	2	0	90	908
11:20 AM	0	0	0	0	1	0	4	0	1	35	0	0	0	36	1	0	78	923
11:25 AM	0	0	0	0	0	0	3	0	2	31	0	0	0	31	1	0	68	920
11:30 AM	0	0	0	0	1	0	3	0	0	35	0	0	0	34	1	0	74	926
11:35 AM	0	0	0	0	1	0	1	0	3	34	0	0	0	46	0	0	85	939
11:40 AM	0	0	0	0	2	0	1	0	4	31	0	0	0	38	4	0	80	964
11:45 AM	0	0	0	0	1	0	5	0	0	29	0	0	0	44	4	0	83	973
11:50 AM	0	0	0	0	4	0	0	0	1	31	0	0	0	44	1	0	81	964
11:55 AM	0	0	0	0	1	0	0	0	2	33	0	0	0	35	5	0	76	956
12:00 PM	0	0	0	0	1	0	4	0	1	40	0	0	0	47	3	0	96	978
12:05 PM	0	0	0	0	1	0	3	0	3	35	0	0	0	40	2	0	84	986
12:10 PM	0	0	0	0	1	0	7	0	0	38	0	0	0	33	2	0	81	976
12:15 PM	0	0	0	0	1	0	2	0	3	34	0	0	0	40	0	0	80	966
12:20 PM	0	0	0	0	2	0	2	0	2	38	0	0	0	23	0	0	67	955
12:25 PM	0	0	0	0	3	0	3	0	1	38	0	0	0	36	2	0	83	970
12:30 PM	0	0	0	0	3	0	2	0	3	33	0	0	0	35	0	0	76	972
12:35 PM	0	0	0	0	1	0	0	0	1	47	0	0	0	34	1	0	84	971
12:40 PM	0	0	0	0	1	0	1	0	1	24	0	0	0	36	0	0	63	954
12:45 PM	0	0	0	0	1	0	2	0	5	33	0	0	0	37	5	0	83	954
12:50 PM	0	0	0	0	0	0	3	0	1	38	0	0	0	35	1	0	78	951
12:55 PM	0	0	0	0	3	0	1	0	1	31	0	0	0	46	1	0	83	958
1:00 PM	0	0	0	0	0	0	0	0	1	35	0	0	0	28	0	0	64	926
1:05 PM	0	0	0	0	1	0	0	0	3	32	0	0	0	41	5	0	82	924
1:10 PM	0	0	0	0	2	0	4	0	2	28	0	0	0	37	4	0	77	920
1:15 PM	0	0	0	0	1	0	2	0	1	44	0	0	0	30	1	0	79	919
1:20 PM	0	0	0	0	1	0	3	0	1	42	0	0	0	38	4	0	89	941
1:25 PM	0	0	0	0	1	0	2	0	0	35	0	0	0	41	3	0	82	940
1:30 PM	0	0	0	0	1	0	2	0	3	55	0	0	0	30	1	0	92	956
1:35 PM	0	0	0	0	2	0	3	0	3	34	0	0	0	42	1	0	85	957
1:40 PM	0	0	0	0	1	0	2	0	3	38	0	0	0	44	3	0	91	985
1:45 PM	0	0	0	0	1	0	3	0	0	27	0	0	0	33	1	0	65	967
1:50 PM	0	0	0	0	4	0	2	0	3	34	0	0	0	39	2	0	84	973
1:55 PM	0	0	0	0	1	0	2	0	4	26	0	0	0	31	3	0	67	957
2:00 PM	0	0	0	0	3	0	2	0	1	32	0	0	0	43	3	0	84	977
2:05 PM	0	0	0	0	0	0	3	0	2	33	0	0	0	32	3	0	73	968
2:10 PM	0	0	0	0	0	0	3	0	4	40	0	0	0	37	3	0	87	978
2:15 PM	0	0	0	0	3	0	1	0	2	32	0	0	0	38	7	0	83	982
2:20 PM	0	0	0	0	2	0	9	0	2	37	0	0	0	30	3	0	83	976
2:25 PM	0	0	0	0	4	0	10	0	0	39	0	0	0	29	3	0	85	979
2:30 PM	0	0	0	0	3	0	4	0	1	40	0	0	0	31	2	0	81	968
2:35 PM	0	0	0	0	3	0	1	0	1	37	0	0	0	46	3	0	91	974
2:40 PM	0	0	0	0	1	0	1	0	1	43	0	0	0	34	1	0	81	964
2:45 PM	0	0	0	0	2	0	5	0	1	36	0	0	0	40	3	0	87	986
2:50 PM	0	0	0	0	1	0	5	0	3	37	0	0	0	39	2	0	87	989
2:55 PM	0	0	0	0	0	0	6	0	1	39	0	0	0	60	2	0	108	1030
3:00 PM	0	0	0	0	2	0	1	0	3	39	0	0	0	39	4	0	88	1034
3:05 PM	0	0	0	0	2	0	3	0	1	33	0	0	0	46	1	0	86	1047

5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:10 PM	0	0	0	0	3	0	10	0	3	44	0	0	0	49	0	0	109	1069
3:15 PM	0	0	0	0	1	0	6	0	3	43	0	0	0	48	3	0	104	1090
3:20 PM	0	0	0	0	1	0	3	0	0	41	0	0	0	56	1	0	102	1109
3:25 PM	0	0	0	0	0	0	2	0	2	49	0	0	0	30	2	0	85	1109
3:30 PM	0	0	0	0	2	0	9	0	7	46	0	0	0	43	1	0	108	1136
3:35 PM	0	0	0	0	1	0	6	0	3	41	0	0	0	43	1	0	95	1140
3:40 PM	0	0	0	0	2	0	7	0	2	58	0	0	0	37	2	0	108	1167
3:45 PM	0	0	0	0	0	0	2	0	0	38	0	0	0	41	1	0	82	1162
3:50 PM	0	0	0	0	1	0	4	0	2	48	0	0	0	37	1	0	93	1168
3:55 PM	0	0	0	0	0	0	5	0	3	51	0	0	0	38	6	0	103	1163
4:00 PM	0	0	0	0	1	0	7	0	3	50	0	0	0	31	1	0	93	1168
4:05 PM	0	0	0	0	0	0	1	0	4	49	0	0	0	41	1	0	96	1178
4:10 PM	0	0	0	0	1	0	6	0	2	46	0	0	0	39	3	0	97	1166
4:15 PM	0	0	0	0	1	0	5	0	2	49	0	0	0	39	2	0	98	1160
4:20 PM	0	0	0	0	2	0	4	0	2	45	0	0	0	41	3	0	97	1155
4:25 PM	0	0	0	0	0	0	2	0	3	45	0	0	0	38	4	0	92	1162
4:30 PM	0	0	0	0	4	0	3	0	1	49	0	0	0	46	2	0	105	1159
4:35 PM	0	0	0	0	1	0	4	0	4	44	0	0	0	46	2	0	101	1165
4:40 PM	0	0	0	0	0	0	2	0	5	53	0	0	0	45	3	0	108	1165
4:45 PM	0	0	0	0	2	0	5	0	6	37	0	0	0	46	5	0	101	1184
4:50 PM	0	0	0	0	1	0	9	0	4	53	0	0	0	44	6	0	117	1208
4:55 PM	0	0	0	0	0	0	5	0	4	42	0	0	0	42	8	0	101	1206
5:00 PM	0	0	0	0	2	0	5	0	1	59	0	0	0	46	6	0	119	1232
5:05 PM	0	0	0	0	1	0	5	0	3	49	0	0	0	42	5	0	105	1241
5:10 PM	0	0	0	0	2	0	8	0	6	39	0	0	0	61	3	0	119	1263
5:15 PM	0	0	0	0	1	0	4	0	2	49	0	0	0	33	3	0	92	1257
5:20 PM	0	0	0	0	1	0	3	0	4	45	0	0	0	39	4	0	96	1256
5:25 PM	0	0	0	0	1	0	2	0	4	49	0	0	0	44	6	0	106	1270
5:30 PM	0	0	0	0	0	0	8	0	6	43	0	0	0	39	4	0	100	1265
5:35 PM	0	0	0	0	2	0	8	0	4	49	0	0	0	37	3	0	103	1267
5:40 PM	0	0	0	0	0	0	7	0	5	45	0	0	0	31	6	0	94	1253
5:45 PM	0	0	0	0	1	0	10	0	3	48	0	0	0	43	1	0	106	1258
5:50 PM	0	0	0	0	4	0	5	0	3	45	0	0	0	40	7	0	104	1245
5:55 PM	0	0	0	0	2	0	2	0	2	41	0	0	0	29	5	0	81	1225
6:00 PM	0	0	0	0	0	0	4	0	8	45	0	0	0	47	2	0	106	1212
6:05 PM	0	0	0	0	2	0	3	0	4	47	0	0	0	31	1	0	88	1195
6:10 PM	0	0	0	0	2	0	6	0	5	43	0	0	0	36	0	0	92	1168
6:15 PM	0	0	0	0	3	0	4	0	3	46	0	0	0	40	3	0	99	1175
6:20 PM	0	0	0	0	4	0	3	0	1	35	0	0	0	32	1	0	76	1155
6:25 PM	0	0	0	0	1	0	1	0	3	34	0	0	0	31	0	0	70	1119
6:30 PM	0	0	0	0	2	0	6	0	7	31	0	0	0	37	4	0	87	1106
6:35 PM	0	0	0	0	7	0	15	0	4	38	0	0	0	24	0	0	88	1091
6:40 PM	0	0	0	0	2	0	4	0	7	42	0	0	0	26	3	0	84	1081
6:45 PM	0	0	0	0	0	0	3	0	1	41	0	0	0	31	5	0	81	1056
6:50 PM	0	0	0	0	4	0	7	0	5	39	0	0	0	32	4	0	91	1043
6:55 PM	0	0	0	0	0	0	7	0	3	37	0	0	0	28	4	0	79	1041
7:00 PM	0	0	0	0	2	0	1	0	4	27	0	0	0	23	3	0	60	995
7:05 PM	0	0	0	0	9	0	12	0	3	23	0	0	0	18	3	0	68	975
7:10 PM	0	0	0	0	2	0	4	0	3	32	0	0	0	26	2	0	69	952
7:15 PM	0	0	0	0	3	0	1	0	1	28	0	0	0	30	2	0	65	918
7:20 PM	0	0	0	0	0	0	0	0	1	33	0	0	0	22	1	0	57	899
7:25 PM	0	0	0	0	0	0	2	0	2	23	0	0	0	18	2	0	47	876
7:30 PM	0	0	0	0	1	0	2	0	0	22	0	0	0	31	1	0	57	846
7:35 PM	0	0	0	0	0	0	2	0	0	14	0	0	0	27	5	0	48	806
7:40 PM	0	0	0	0	0	0	0	0	3	26	0	0	0	18	2	0	49	771
7:45 PM	0	0	0	0	2	0	1	0	2	18	0	0	0	18	1	0	42	732
7:50 PM	0	0	0	0	1	0	1	0	3	20	0	0	0	17	0	0	42	683
7:55 PM	0	0	0	0	2	0	1	0	2	7	0	0	0	14	0	0	26	630
8:00 PM	0	0	0	0	0	0	1	0	2	18	0	0	0	10	0	0	31	601
8:05 PM	0	0	0	0	1	0	2	0	1	17	0	0	0	16	2	0	39	572
8:10 PM	0	0	0	0	0	0	2	0	2	22	0	0	0	26	1	0	53	556
8:15 PM	0	0	0	0	1	0	2	0	2	15	0	0	0	16	1	0	37	528
8:20 PM	0	0	0	0	0	0	1	0	1	14	0	0	0	18	2	0	36	507
8:25 PM	0	0	0	0	0	0	2	0	3	19	0	0	0	11	0	0	35	495
8:30 PM	0	0	0	0	0	0	3	0	2	9	0	0	0	22	0	0	36	474
8:35 PM	0	0	0	0	0	0	1	0	2	18	0	0	0	18	0	0	39	465
8:40 PM	0	0	0	0	1	0	1	0	4	15	0	0	0	11	1	0	33	449
8:45 PM	0	0	0	0	0	0	1	0	1	16	0	0	0	23	1	0	42	449
8:50 PM	0	0	0	0	1	0	2	0	2	15	0	0	0	14	2	0	36	443
8:55 PM	0	0	0	0	1	0	2	0	2	14	0	0	0	21	2	0	42	459
9:00 PM	0	0	0	0	1	0	1	0	1	8	0	0	0	17	1	0	29	457
9:05 PM	0	0	0	0	0	0	2	0	0	9	0	0	0	9	0	0	20	438
9:10 PM	0	0	0	0	0	0	1	0	1	15	0	0	0	8	0	0	25	410
9:15 PM	0	0	0	0	1	0	0	0	4	17	0	0	0	14	0	0	36	409



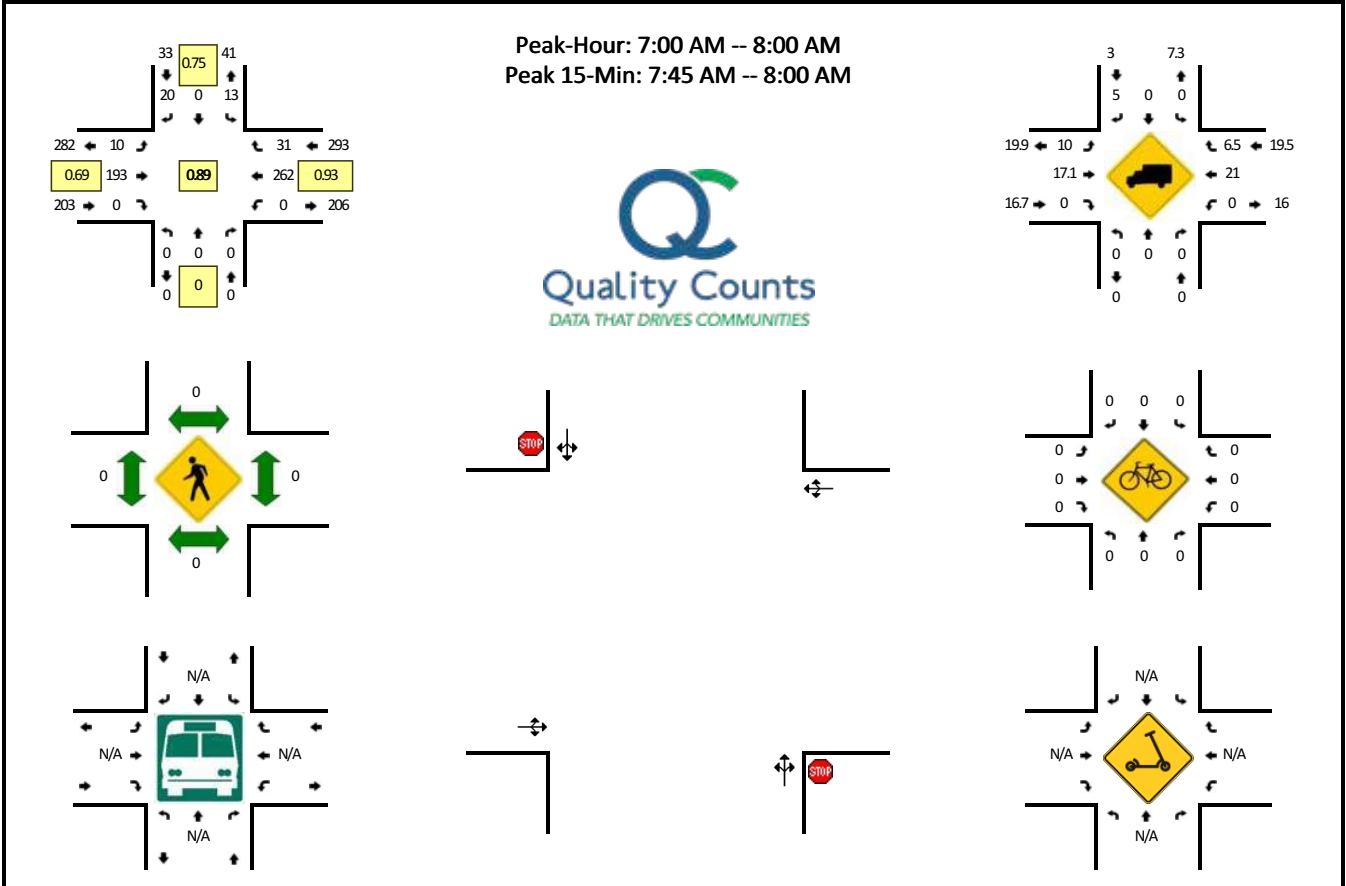
5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
9:20 PM	0	0	0	0	0	0	1	0	3	19	0	0	0	8	0	0	31	404
9:25 PM	0	0	0	0	0	0	1	0	0	18	0	0	0	6	0	0	25	394
9:30 PM	0	0	0	0	0	0	0	0	2	12	0	0	0	5	0	0	19	377
9:35 PM	0	0	0	0	0	0	0	0	1	8	0	0	0	9	1	0	19	357
9:40 PM	0	0	0	0	0	0	0	0	0	16	0	0	0	11	0	0	27	351
9:45 PM	0	0	0	0	1	0	1	0	0	7	0	0	0	8	0	0	17	326
9:50 PM	0	0	0	0	0	0	1	0	0	7	0	0	0	5	0	0	13	303
9:55 PM	0	0	0	0	0	0	2	0	1	9	0	0	0	4	1	0	17	278
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	40	0	152	0	48	280	0	0	0	480	96	0	1096	
Heavy Trucks	0	0	0		0	0	36		0	24	0		0	64	0		124	
Pedestrians			0				0				0				0		0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Railroad Stopped Buses																	0	
<i>Comments:</i>																		

Report generated on 1/11/2019 9:16 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

**LOCATION:** Ridings Ave -- OR-211  
**CITY/STATE:** Molalla, OR

**QC JOB #:** 15525601  
**DATE:** Thu, Jul 29 2021

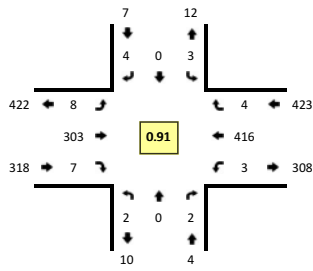


15-Min Count Period Beginning At	Ridings Ave (Northbound)				Ridings Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	4	0	3	0	4	34	0	0	0	60	12	0	117	
7:15 AM	0	0	0	0	2	0	9	0	5	47	0	0	0	76	3	0	142	
7:30 AM	0	0	0	0	1	0	5	0	0	39	0	0	0	67	9	0	121	
7:45 AM	0	0	0	0	6	0	3	0	1	73	0	0	0	59	7	0	149	529
8:00 AM	0	0	1	0	2	1	6	0	1	37	1	0	0	49	10	0	108	520
8:15 AM	0	1	1	0	2	0	2	0	0	42	1	0	1	62	13	0	125	503
8:30 AM	0	0	0	0	4	0	5	0	1	39	0	0	1	48	10	0	108	490
8:45 AM	0	0	0	0	4	0	4	0	1	44	1	0	0	53	10	0	117	458
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	24	0	12	0	4	292	0	0	0	236	28	0	596	
Heavy Trucks	0	0	0	0	0	0	0	0	0	68	0	0	0	48	0	0	116	
Buses																		
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scooters																		

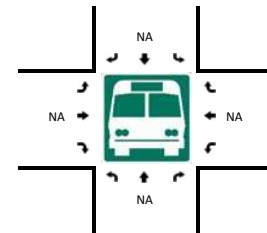
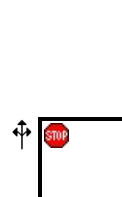
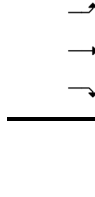
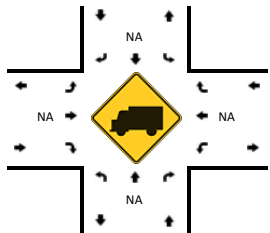
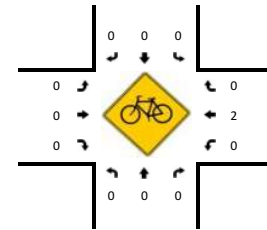
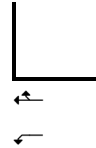
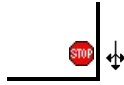
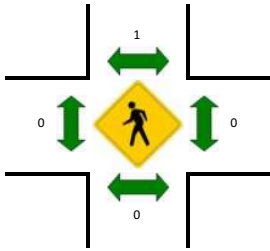
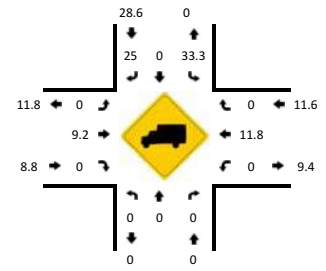
Comments:

**LOCATION:** Dixon Ave -- OR-211  
**CITY/STATE:** Molalla, OR

**QC JOB #:** 14815605  
**DATE:** Tue, Oct 9 2018



**Peak-Hour: 7:00 AM -- 8:00 AM**  
**Peak 15-Min: 7:15 AM -- 7:30 AM**



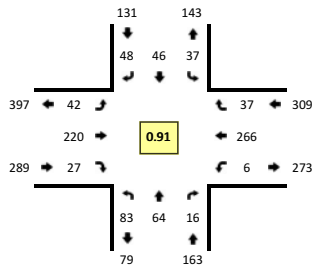
5-Min Count Period Beginning At	Dixon Ave (Northbound)				Dixon Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	0	0	0	25	0	0	0	32	1	0	58	
7:05 AM	0	0	0	0	0	0	0	0	1	30	0	0	0	45	0	0	76	
7:10 AM	0	0	0	0	0	0	1	0	1	26	0	0	0	31	0	0	59	
7:15 AM	0	0	0	0	0	0	0	0	3	22	1	0	0	33	0	0	59	
7:20 AM	0	0	0	0	1	0	0	0	0	23	2	0	0	49	1	0	76	
7:25 AM	1	0	0	0	0	0	1	0	0	22	1	0	0	46	0	0	71	
7:30 AM	0	0	0	0	0	0	0	0	0	22	0	0	3	30	0	0	55	
7:35 AM	0	0	0	0	0	0	0	0	1	28	1	0	0	32	0	0	62	
7:40 AM	0	0	0	0	1	0	1	0	0	24	1	0	0	24	0	0	51	
7:45 AM	1	0	0	0	0	0	0	0	1	28	0	0	0	36	0	0	66	
7:50 AM	0	0	1	0	0	0	0	0	0	24	1	0	0	30	2	0	58	
7:55 AM	0	0	1	0	1	0	1	0	1	29	0	0	0	28	0	0	61	752
8:00 AM	0	0	0	0	0	0	1	0	0	18	0	0	0	37	1	0	57	751
8:05 AM	1	0	0	0	0	0	1	0	0	20	0	0	0	29	0	0	51	726
8:10 AM	0	0	0	0	1	0	1	0	0	25	0	0	1	27	1	0	56	723
8:15 AM	2	0	0	0	1	0	0	0	0	12	1	0	1	25	1	0	43	707
8:20 AM	2	0	0	0	0	0	0	0	0	29	2	0	0	27	0	0	60	691
8:25 AM	2	0	0	0	1	0	1	0	0	20	4	0	0	27	1	0	56	676
8:30 AM	0	0	1	0	1	0	1	0	0	25	0	0	1	21	1	0	51	672
8:35 AM	0	1	0	0	1	0	1	0	0	26	2	0	1	30	0	0	62	672
8:40 AM	1	0	1	0	1	0	2	0	0	18	0	0	1	33	0	0	57	678
8:45 AM	0	0	1	0	0	0	0	0	0	23	2	0	0	37	1	0	64	676
8:50 AM	0	0	0	0	1	0	0	0	0	23	4	0	2	28	0	0	58	676
8:55 AM	0	0	0	0	1	0	0	0	0	28	2	0	1	25	0	0	57	672

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	0	0	0	4	0	4	0	12	268	16	0	0	512	4	0	824
Heavy Trucks	0	0	0	0	0	0	0	0	0	20	0	0	0	60	0	0	80
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	1	0		1
Railroad																	
Stopped Buses																	

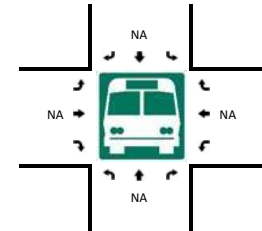
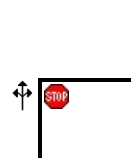
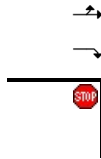
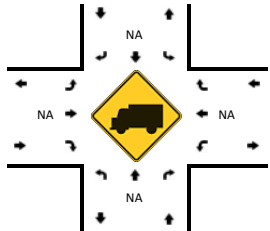
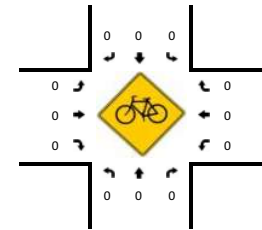
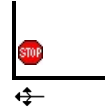
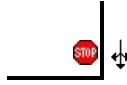
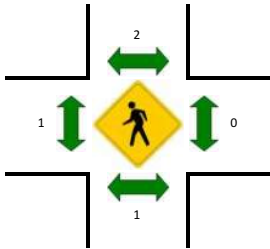
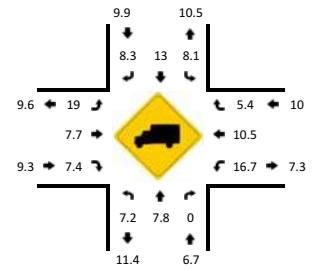
Comments:

**LOCATION:** Molalla Ave -- OR-211  
**CITY/STATE:** Molalla, OR

**QC JOB #:** 14815607  
**DATE:** Tue, Oct 9 2018



**Peak-Hour: 7:00 AM -- 8:00 AM**  
**Peak 15-Min: 7:00 AM -- 7:15 AM**

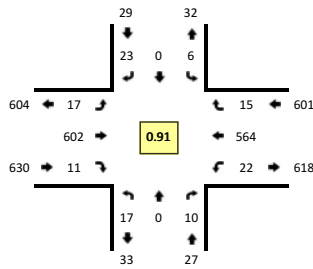


5-Min Count Period Beginning At	Molalla Ave (Northbound)				Molalla Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	11	8	2	0	2	2	5	0	5	19	0	0	1	21	0	0	76	
7:05 AM	6	9	3	0	3	2	5	0	4	21	1	0	0	28	9	0	91	
7:10 AM	6	9	4	0	2	3	3	0	9	18	1	0	0	18	4	0	77	
7:15 AM	9	9	1	0	0	6	4	0	5	14	2	0	0	21	5	0	76	
7:20 AM	12	6	0	0	1	4	4	0	1	17	2	0	2	29	2	0	80	
7:25 AM	6	4	0	0	2	4	8	0	1	15	2	0	2	24	0	0	68	
7:30 AM	4	3	2	0	0	5	4	0	2	17	3	0	0	17	2	0	59	
7:35 AM	7	2	0	0	0	5	2	0	2	22	5	0	0	22	4	0	71	
7:40 AM	8	3	2	0	7	2	5	0	3	20	3	0	0	19	3	0	75	
7:45 AM	5	2	1	0	11	6	4	0	4	18	3	0	0	26	2	0	82	
7:50 AM	5	3	1	0	5	2	3	0	2	21	1	0	1	18	3	0	65	
7:55 AM	4	6	0	0	4	5	1	0	4	18	4	0	0	23	3	0	72	892
8:00 AM	10	4	1	0	5	1	4	0	3	19	0	0	0	23	6	0	76	892
8:05 AM	3	3	2	0	0	9	5	0	2	12	1	0	2	19	4	0	62	863
8:10 AM	7	1	4	0	3	2	1	0	1	20	5	0	1	17	8	0	70	856
8:15 AM	3	6	1	0	4	4	9	0	3	9	2	0	1	23	3	0	68	848
8:20 AM	4	6	1	0	1	3	3	0	4	23	0	0	0	13	4	0	62	830
8:25 AM	7	8	2	0	3	2	2	0	2	13	6	0	1	16	2	0	64	826
8:30 AM	5	5	0	0	2	4	1	0	4	15	3	0	0	13	4	0	56	823
8:35 AM	7	2	0	0	4	3	5	0	1	16	1	0	2	26	6	0	73	825
8:40 AM	8	8	1	0	1	3	2	0	2	16	3	0	1	22	3	0	70	820
8:45 AM	3	5	3	0	3	7	9	0	5	8	4	0	0	16	6	0	69	807
8:50 AM	8	4	3	0	7	4	2	0	2	14	3	0	0	13	5	0	65	807
8:55 AM	6	3	2	0	5	1	5	0	3	20	5	0	3	16	5	0	74	809
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	104	36	0	28	28	52	0	72	232	8	0	4	268	52	0	976	
Heavy Trucks	4	4	0		0	0	12		16	36	0		4	28	4		108	
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Railroad																		
Stopped Buses																		

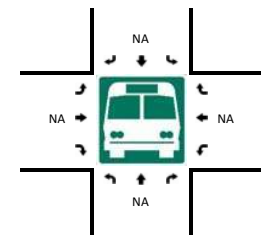
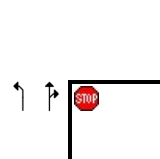
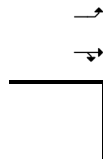
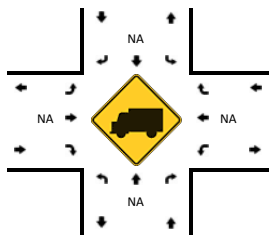
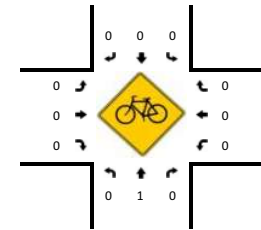
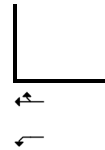
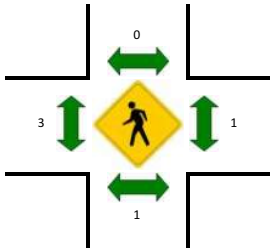
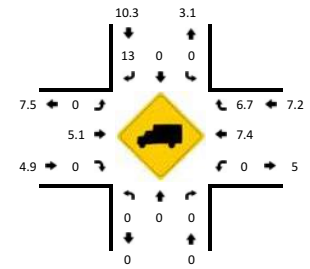
Comments:

**LOCATION:** N Hezzie Ln -- OR-211  
**CITY/STATE:** Molalla, OR

**QC JOB #:** 14815604  
**DATE:** Tue, Oct 9 2018



**Peak-Hour: 4:15 PM -- 5:15 PM**  
**Peak 15-Min: 5:00 PM -- 5:15 PM**

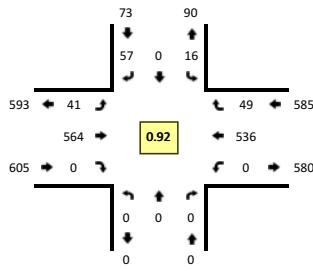


5-Min Count Period Beginning At	N Hezzie Ln (Northbound)				N Hezzie Ln (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	0	2	0	0	0	3	0	2	55	2	0	2	41	1	0	109	
4:05 PM	0	0	0	0	0	0	1	0	2	50	1	0	1	45	0	0	100	
4:10 PM	1	0	2	0	1	0	0	0	0	43	0	0	0	41	0	0	88	
4:15 PM	0	0	0	0	0	0	0	0	0	57	0	0	1	44	0	0	102	
4:20 PM	0	0	0	0	1	0	1	0	0	45	1	0	1	46	0	0	95	
4:25 PM	1	0	0	0	0	0	1	0	0	48	1	0	1	41	0	0	93	
4:30 PM	3	0	0	0	0	0	2	0	1	49	2	0	1	46	1	0	105	
4:35 PM	2	0	1	0	1	0	1	0	3	56	0	0	2	45	0	0	111	
4:40 PM	1	0	1	0	1	0	2	0	2	52	2	0	4	44	2	0	111	
4:45 PM	2	0	3	0	1	0	4	0	1	45	0	0	2	46	1	0	105	
4:50 PM	0	0	1	0	1	0	2	0	4	52	0	0	3	52	0	0	115	
4:55 PM	1	0	1	0	0	0	3	0	1	43	1	0	3	43	1	0	97	1231
5:00 PM	3	0	1	0	0	0	2	0	1	57	2	0	1	51	2	0	120	1242
5:05 PM	1	0	0	0	0	0	1	0	1	52	1	0	2	42	6	0	106	1248
5:10 PM	3	0	2	0	1	0	4	0	3	46	1	0	1	64	2	0	127	1287
5:15 PM	3	0	0	0	2	0	3	0	2	45	2	0	4	30	2	0	93	1278
5:20 PM	0	0	0	0	0	0	3	0	1	44	1	0	0	42	1	0	92	1275
5:25 PM	1	0	2	0	1	0	2	0	0	49	2	0	3	45	0	0	105	1287
5:30 PM	0	0	3	0	2	0	2	0	0	59	0	0	1	44	2	0	113	1295
5:35 PM	1	0	1	0	0	0	0	0	2	38	1	0	2	38	0	0	83	1267
5:40 PM	2	0	2	0	0	0	2	0	1	52	2	0	4	40	2	0	107	1263
5:45 PM	2	0	1	0	0	0	0	0	2	47	0	0	0	46	2	0	100	1258
5:50 PM	2	0	1	0	0	0	3	0	1	52	1	0	2	43	2	0	107	1250
5:55 PM	0	0	1	0	0	0	0	0	1	42	0	0	2	31	0	0	77	1230
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
Beginning At	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	28	0	12	0	4	0	28	0	20	620	16	0	16	628	40	0	1412	
Heavy Trucks	0	0	0		0	0	4		0	40	0		0	12	4		60	
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Railroad																		
Stopped Buses																		

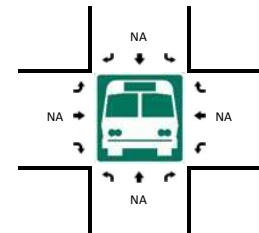
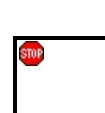
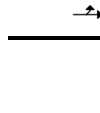
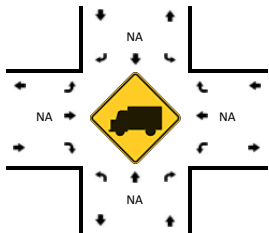
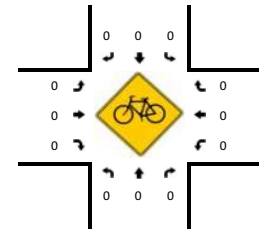
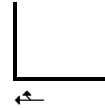
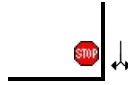
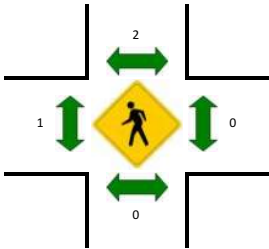
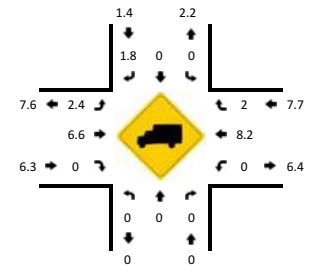
Comments:

**LOCATION:** Leroy Ave -- OR-211  
**CITY/STATE:** Molalla, OR

**QC JOB #:** 14815609  
**DATE:** Tue, Oct 9 2018



**Peak-Hour: 4:15 PM -- 5:15 PM**  
**Peak 15-Min: 5:00 PM -- 5:15 PM**



5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	0	0	0	0	0	2	0	1	12	0	0	0	41	2	0	58	
6:05 AM	0	0	0	0	0	0	1	0	1	14	0	0	0	26	2	0	44	
6:10 AM	0	0	0	0	0	0	2	0	2	14	0	0	0	27	0	0	45	
6:15 AM	0	0	0	0	0	0	2	0	0	24	0	0	0	29	0	0	55	
6:20 AM	0	0	0	0	1	0	1	0	0	8	0	0	0	28	3	0	41	
6:25 AM	0	0	0	0	1	0	2	0	2	16	0	0	0	32	0	0	53	
6:30 AM	0	0	0	0	0	0	2	0	0	17	0	0	0	40	0	0	59	
6:35 AM	0	0	0	0	0	0	3	0	0	17	0	0	0	36	1	0	57	
6:40 AM	0	0	0	0	0	0	2	0	3	22	0	0	0	33	0	0	60	
6:45 AM	0	0	0	0	1	0	2	0	1	31	0	0	0	32	2	0	69	
6:50 AM	0	0	0	0	0	0	3	0	2	27	0	0	0	41	4	0	77	
6:55 AM	0	0	0	0	2	0	5	0	1	25	0	0	0	28	3	0	64	682
7:00 AM	0	0	0	0	0	0	4	0	2	29	0	0	0	26	4	0	65	689
7:05 AM	0	0	0	0	2	0	4	0	4	25	0	0	0	36	11	0	82	727
7:10 AM	0	0	0	0	1	0	6	0	6	27	0	0	0	28	5	0	73	755
7:15 AM	0	0	0	0	2	0	11	0	2	25	0	0	0	31	8	0	79	779
7:20 AM	0	0	0	0	2	0	15	0	6	23	0	0	0	46	9	0	101	839
7:25 AM	0	0	0	0	6	0	12	0	4	22	0	0	0	43	7	0	94	880
7:30 AM	0	0	0	0	2	0	14	0	5	19	0	0	0	37	1	0	78	899
7:35 AM	0	0	0	0	2	0	3	0	2	25	0	0	0	30	0	0	62	904
7:40 AM	0	0	0	0	0	0	6	0	4	21	0	0	0	36	0	0	67	911
7:45 AM	0	0	0	0	1	0	4	0	1	28	0	0	0	32	2	0	68	910
7:50 AM	0	0	0	0	2	0	1	0	1	27	0	0	0	30	0	0	61	894
7:55 AM	0	0	0	0	3	0	3	0	0	30	0	0	0	30	0	0	66	896
8:00 AM	0	0	0	0	1	0	0	0	3	16	0	0	0	32	0	0	52	883
8:05 AM	0	0	0	0	0	0	3	0	0	27	0	0	0	29	1	0	60	861
8:10 AM	0	0	0	0	0	0	3	0	0	22	0	0	0	31	2	0	58	846
8:15 AM	0	0	0	0	1	0	1	0	0	12	0	0	0	25	0	0	39	806
8:20 AM	0	0	0	0	0	0	4	0	3	30	0	0	0	27	3	0	67	772
8:25 AM	0	0	0	0	1	0	2	0	1	26	0	0	0	34	1	0	65	743
8:30 AM	0	0	0	0	1	0	5	0	3	20	0	0	0	26	0	0	55	720
8:35 AM	0	0	0	0	0	0	2	0	0	33	0	0	0	26	0	0	61	719
8:40 AM	0	0	0	0	0	0	1	0	3	18	0	0	0	41	4	0	67	719
8:45 AM	0	0	0	0	3	0	2	0	1	22	0	0	0	30	4	0	62	713
8:50 AM	0	0	0	0	0	0	8	0	0	31	0	0	0	26	3	0	68	720
8:55 AM	0	0	0	0	1	0	10	0	2	27	0	0	0	23	0	0	63	717

5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
9:00 AM	0	0	0	0	1	0	4	0	2	29	0	0	0	31	4	0	71	736
9:05 AM	0	0	0	0	0	0	3	0	3	29	0	0	0	23	2	0	60	736
9:10 AM	0	0	0	0	0	0	1	0	0	31	0	0	0	38	1	0	71	749
9:15 AM	0	0	0	0	1	0	2	0	2	19	0	0	0	28	1	0	53	763
9:20 AM	0	0	0	0	0	0	3	0	1	22	0	0	0	31	5	0	62	758
9:25 AM	0	0	0	0	4	0	4	0	2	23	0	0	0	32	0	0	65	758
9:30 AM	0	0	0	0	0	0	3	0	2	18	0	0	0	31	1	0	55	758
9:35 AM	0	0	0	0	0	0	3	0	0	19	0	0	0	31	2	0	55	752
9:40 AM	0	0	0	0	1	0	4	0	2	21	0	0	0	27	0	0	55	740
9:45 AM	0	0	0	0	2	0	4	0	0	27	0	0	0	29	2	0	64	742
9:50 AM	0	0	0	0	0	0	1	0	0	25	0	0	0	32	3	0	61	735
9:55 AM	0	0	0	0	0	0	0	0	0	29	0	0	0	45	1	0	75	747
10:00 AM	0	0	0	0	0	0	3	0	1	29	0	0	0	37	1	0	71	747
10:05 AM	0	0	0	0	0	0	0	0	1	24	0	0	0	29	1	0	55	742
10:10 AM	0	0	0	0	1	0	1	0	0	33	0	0	0	32	2	0	69	740
10:15 AM	0	0	0	0	1	0	1	0	1	25	0	0	0	40	1	0	69	756
10:20 AM	0	0	0	0	1	0	3	0	1	27	0	0	0	28	3	0	63	757
10:25 AM	0	0	0	0	1	0	4	0	2	31	0	0	0	30	3	0	71	763
10:30 AM	0	0	0	0	0	0	2	0	0	31	0	0	0	35	0	0	68	776
10:35 AM	0	0	0	0	1	0	2	0	0	22	0	0	0	45	2	0	72	793
10:40 AM	0	0	0	0	0	0	2	0	1	23	0	0	0	27	2	0	55	793
10:45 AM	0	0	0	0	1	0	1	0	2	22	0	0	0	42	6	0	74	803
10:50 AM	0	0	0	0	0	0	2	0	0	34	0	0	0	52	2	0	90	832
10:55 AM	0	0	0	0	0	0	1	0	0	32	0	0	0	49	2	0	84	841
11:00 AM	0	0	0	0	1	0	0	0	2	25	0	0	0	45	1	0	74	844
11:05 AM	0	0	0	0	2	0	3	0	1	25	0	0	0	44	1	0	76	865
11:10 AM	0	0	0	0	1	0	2	0	3	43	0	0	0	37	5	0	91	887
11:15 AM	0	0	0	0	4	0	2	0	0	35	0	0	0	47	2	0	90	908
11:20 AM	0	0	0	0	1	0	4	0	1	35	0	0	0	36	1	0	78	923
11:25 AM	0	0	0	0	0	0	3	0	2	31	0	0	0	31	1	0	68	920
11:30 AM	0	0	0	0	1	0	3	0	0	35	0	0	0	34	1	0	74	926
11:35 AM	0	0	0	0	1	0	1	0	3	34	0	0	0	46	0	0	85	939
11:40 AM	0	0	0	0	2	0	1	0	4	31	0	0	0	38	4	0	80	964
11:45 AM	0	0	0	0	1	0	5	0	0	29	0	0	0	44	4	0	83	973
11:50 AM	0	0	0	0	4	0	0	0	1	31	0	0	0	44	1	0	81	964
11:55 AM	0	0	0	0	1	0	0	0	2	33	0	0	0	35	5	0	76	956
12:00 PM	0	0	0	0	1	0	4	0	1	40	0	0	0	47	3	0	96	978
12:05 PM	0	0	0	0	1	0	3	0	3	35	0	0	0	40	2	0	84	986
12:10 PM	0	0	0	0	1	0	7	0	0	38	0	0	0	33	2	0	81	976
12:15 PM	0	0	0	0	1	0	2	0	3	34	0	0	0	40	0	0	80	966
12:20 PM	0	0	0	0	2	0	2	0	2	38	0	0	0	23	0	0	67	955
12:25 PM	0	0	0	0	3	0	3	0	1	38	0	0	0	36	2	0	83	970
12:30 PM	0	0	0	0	3	0	2	0	3	33	0	0	0	35	0	0	76	972
12:35 PM	0	0	0	0	1	0	0	0	1	47	0	0	0	34	1	0	84	971
12:40 PM	0	0	0	0	1	0	1	0	1	24	0	0	0	36	0	0	63	954
12:45 PM	0	0	0	0	1	0	2	0	5	33	0	0	0	37	5	0	83	954
12:50 PM	0	0	0	0	0	0	3	0	1	38	0	0	0	35	1	0	78	951
12:55 PM	0	0	0	0	3	0	1	0	1	31	0	0	0	46	1	0	83	958
1:00 PM	0	0	0	0	0	0	0	0	1	35	0	0	0	28	0	0	64	926
1:05 PM	0	0	0	0	1	0	0	0	3	32	0	0	0	41	5	0	82	924
1:10 PM	0	0	0	0	2	0	4	0	2	28	0	0	0	37	4	0	77	920
1:15 PM	0	0	0	0	1	0	2	0	1	44	0	0	0	30	1	0	79	919
1:20 PM	0	0	0	0	1	0	3	0	1	42	0	0	0	38	4	0	89	941
1:25 PM	0	0	0	0	1	0	2	0	0	35	0	0	0	41	3	0	82	940
1:30 PM	0	0	0	0	1	0	2	0	3	55	0	0	0	30	1	0	92	956
1:35 PM	0	0	0	0	2	0	3	0	3	34	0	0	0	42	1	0	85	957
1:40 PM	0	0	0	0	1	0	2	0	3	38	0	0	0	44	3	0	91	985
1:45 PM	0	0	0	0	1	0	3	0	0	27	0	0	0	33	1	0	65	967
1:50 PM	0	0	0	0	4	0	2	0	3	34	0	0	0	39	2	0	84	973
1:55 PM	0	0	0	0	1	0	2	0	4	26	0	0	0	31	3	0	67	957
2:00 PM	0	0	0	0	3	0	2	0	1	32	0	0	0	43	3	0	84	977
2:05 PM	0	0	0	0	0	0	3	0	2	33	0	0	0	32	3	0	73	968
2:10 PM	0	0	0	0	0	0	3	0	4	40	0	0	0	37	3	0	87	978
2:15 PM	0	0	0	0	3	0	1	0	2	32	0	0	0	38	7	0	83	982
2:20 PM	0	0	0	0	2	0	9	0	2	37	0	0	0	30	3	0	83	976
2:25 PM	0	0	0	0	4	0	10	0	0	39	0	0	0	29	3	0	85	979
2:30 PM	0	0	0	0	3	0	4	0	1	40	0	0	0	31	2	0	81	968
2:35 PM	0	0	0	0	3	0	1	0	1	37	0	0	0	46	3	0	91	974
2:40 PM	0	0	0	0	1	0	1	0	1	43	0	0	0	34	1	0	81	964
2:45 PM	0	0	0	0	2	0	5	0	1	36	0	0	0	40	3	0	87	986
2:50 PM	0	0	0	0	1	0	5	0	3	37	0	0	0	39	2	0	87	989
2:55 PM	0	0	0	0	0	0	6	0	1	39	0	0	0	60	2	0	108	1030
3:00 PM	0	0	0	0	2	0	1	0	3	39	0	0	0	39	4	0	88	1034
3:05 PM	0	0	0	0	2	0	3	0	1	33	0	0	0	46	1	0	86	1047

5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:10 PM	0	0	0	0	3	0	10	0	3	44	0	0	0	49	0	0	109	1069
3:15 PM	0	0	0	0	1	0	6	0	3	43	0	0	0	48	3	0	104	1090
3:20 PM	0	0	0	0	1	0	3	0	0	41	0	0	0	56	1	0	102	1109
3:25 PM	0	0	0	0	0	0	2	0	2	49	0	0	0	30	2	0	85	1109
3:30 PM	0	0	0	0	2	0	9	0	7	46	0	0	0	43	1	0	108	1136
3:35 PM	0	0	0	0	1	0	6	0	3	41	0	0	0	43	1	0	95	1140
3:40 PM	0	0	0	0	2	0	7	0	2	58	0	0	0	37	2	0	108	1167
3:45 PM	0	0	0	0	0	0	2	0	0	38	0	0	0	41	1	0	82	1162
3:50 PM	0	0	0	0	1	0	4	0	2	48	0	0	0	37	1	0	93	1168
3:55 PM	0	0	0	0	0	0	5	0	3	51	0	0	0	38	6	0	103	1163
4:00 PM	0	0	0	0	1	0	7	0	3	50	0	0	0	31	1	0	93	1168
4:05 PM	0	0	0	0	0	0	1	0	4	49	0	0	0	41	1	0	96	1178
4:10 PM	0	0	0	0	1	0	6	0	2	46	0	0	0	39	3	0	97	1166
4:15 PM	0	0	0	0	1	0	5	0	2	49	0	0	0	39	2	0	98	1160
4:20 PM	0	0	0	0	2	0	4	0	2	45	0	0	0	41	3	0	97	1155
4:25 PM	0	0	0	0	0	0	2	0	3	45	0	0	0	38	4	0	92	1162
4:30 PM	0	0	0	0	4	0	3	0	1	49	0	0	0	46	2	0	105	1159
4:35 PM	0	0	0	0	1	0	4	0	4	44	0	0	0	46	2	0	101	1165
4:40 PM	0	0	0	0	0	0	2	0	5	53	0	0	0	45	3	0	108	1165
4:45 PM	0	0	0	0	2	0	5	0	6	37	0	0	0	46	5	0	101	1184
4:50 PM	0	0	0	0	1	0	9	0	4	53	0	0	0	44	6	0	117	1208
4:55 PM	0	0	0	0	0	0	5	0	4	42	0	0	0	42	8	0	101	1206
5:00 PM	0	0	0	0	2	0	5	0	1	59	0	0	0	46	6	0	119	1232
5:05 PM	0	0	0	0	1	0	5	0	3	49	0	0	0	42	5	0	105	1241
5:10 PM	0	0	0	0	2	0	8	0	6	39	0	0	0	61	3	0	119	1263
5:15 PM	0	0	0	0	1	0	4	0	2	49	0	0	0	33	3	0	92	1257
5:20 PM	0	0	0	0	1	0	3	0	4	45	0	0	0	39	4	0	96	1256
5:25 PM	0	0	0	0	1	0	2	0	4	49	0	0	0	44	6	0	106	1270
5:30 PM	0	0	0	0	0	0	8	0	6	43	0	0	0	39	4	0	100	1265
5:35 PM	0	0	0	0	2	0	8	0	4	49	0	0	0	37	3	0	103	1267
5:40 PM	0	0	0	0	0	0	7	0	5	45	0	0	0	31	6	0	94	1253
5:45 PM	0	0	0	0	1	0	10	0	3	48	0	0	0	43	1	0	106	1258
5:50 PM	0	0	0	0	4	0	5	0	3	45	0	0	0	40	7	0	104	1245
5:55 PM	0	0	0	0	2	0	2	0	2	41	0	0	0	29	5	0	81	1225
6:00 PM	0	0	0	0	0	0	4	0	8	45	0	0	0	47	2	0	106	1212
6:05 PM	0	0	0	0	2	0	3	0	4	47	0	0	0	31	1	0	88	1195
6:10 PM	0	0	0	0	2	0	6	0	5	43	0	0	0	36	0	0	92	1168
6:15 PM	0	0	0	0	3	0	4	0	3	46	0	0	0	40	3	0	99	1175
6:20 PM	0	0	0	0	4	0	3	0	1	35	0	0	0	32	1	0	76	1155
6:25 PM	0	0	0	0	1	0	1	0	3	34	0	0	0	31	0	0	70	1119
6:30 PM	0	0	0	0	2	0	6	0	7	31	0	0	0	37	4	0	87	1106
6:35 PM	0	0	0	0	7	0	15	0	4	38	0	0	0	24	0	0	88	1091
6:40 PM	0	0	0	0	2	0	4	0	7	42	0	0	0	26	3	0	84	1081
6:45 PM	0	0	0	0	0	0	3	0	1	41	0	0	0	31	5	0	81	1056
6:50 PM	0	0	0	0	4	0	7	0	5	39	0	0	0	32	4	0	91	1043
6:55 PM	0	0	0	0	0	0	7	0	3	37	0	0	0	28	4	0	79	1041
7:00 PM	0	0	0	0	2	0	1	0	4	27	0	0	0	23	3	0	60	995
7:05 PM	0	0	0	0	9	0	12	0	3	23	0	0	0	18	3	0	68	975
7:10 PM	0	0	0	0	2	0	4	0	3	32	0	0	0	26	2	0	69	952
7:15 PM	0	0	0	0	3	0	1	0	1	28	0	0	0	30	2	0	65	918
7:20 PM	0	0	0	0	0	0	0	0	1	33	0	0	0	22	1	0	57	899
7:25 PM	0	0	0	0	0	0	2	0	2	23	0	0	0	18	2	0	47	876
7:30 PM	0	0	0	0	1	0	2	0	0	22	0	0	0	31	1	0	57	846
7:35 PM	0	0	0	0	0	0	2	0	0	14	0	0	0	27	5	0	48	806
7:40 PM	0	0	0	0	0	0	0	0	3	26	0	0	0	18	2	0	49	771
7:45 PM	0	0	0	0	2	0	1	0	2	18	0	0	0	18	1	0	42	732
7:50 PM	0	0	0	0	1	0	1	0	3	20	0	0	0	17	0	0	42	683
7:55 PM	0	0	0	0	2	0	1	0	2	7	0	0	0	14	0	0	26	630
8:00 PM	0	0	0	0	0	0	1	0	2	18	0	0	0	10	0	0	31	601
8:05 PM	0	0	0	0	1	0	2	0	1	17	0	0	0	16	2	0	39	572
8:10 PM	0	0	0	0	0	0	2	0	2	22	0	0	0	26	1	0	53	556
8:15 PM	0	0	0	0	1	0	2	0	2	15	0	0	0	16	1	0	37	528
8:20 PM	0	0	0	0	0	0	1	0	1	14	0	0	0	18	2	0	36	507
8:25 PM	0	0	0	0	0	0	2	0	3	19	0	0	0	11	0	0	35	495
8:30 PM	0	0	0	0	0	0	3	0	2	9	0	0	0	22	0	0	36	474
8:35 PM	0	0	0	0	0	0	1	0	2	18	0	0	0	18	0	0	39	465
8:40 PM	0	0	0	0	1	0	1	0	4	15	0	0	0	11	1	0	33	449
8:45 PM	0	0	0	0	0	0	1	0	1	16	0	0	0	23	1	0	42	449
8:50 PM	0	0	0	0	1	0	2	0	2	15	0	0	0	14	2	0	36	443
8:55 PM	0	0	0	0	1	0	2	0	2	14	0	0	0	21	2	0	42	459
9:00 PM	0	0	0	0	1	0	1	0	1	8	0	0	0	17	1	0	29	457
9:05 PM	0	0	0	0	0	0	2	0	0	9	0	0	0	9	0	0	20	438
9:10 PM	0	0	0	0	0	0	1	0	1	15	0	0	0	8	0	0	25	410
9:15 PM	0	0	0	0	1	0	0	0	4	17	0	0	0	14	0	0	36	409



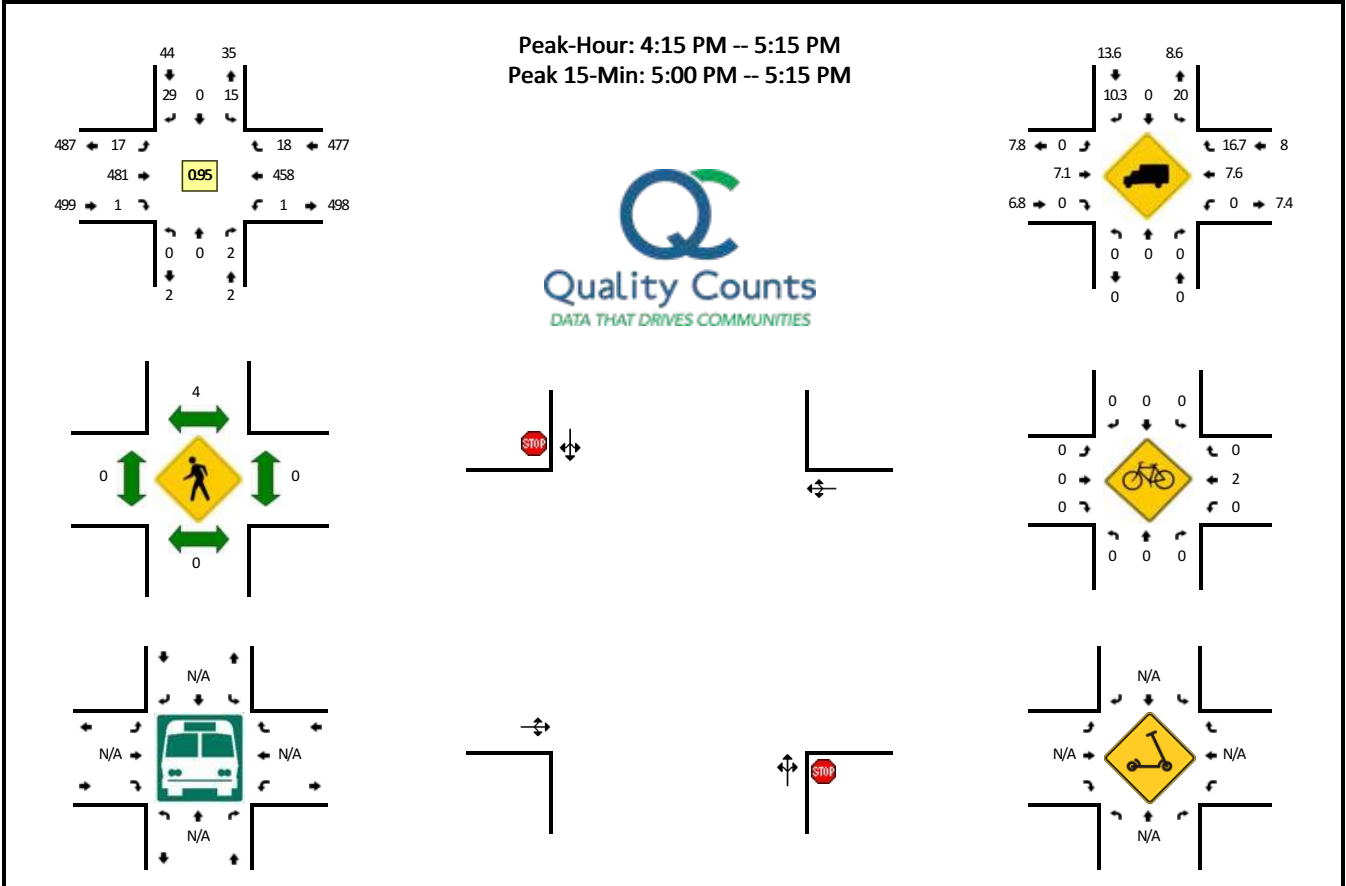
5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
9:20 PM	0	0	0	0	0	0	1	0	3	19	0	0	0	8	0	0	31	404
9:25 PM	0	0	0	0	0	0	1	0	0	18	0	0	0	6	0	0	25	394
9:30 PM	0	0	0	0	0	0	0	0	2	12	0	0	0	5	0	0	19	377
9:35 PM	0	0	0	0	0	0	0	0	1	8	0	0	0	9	1	0	19	357
9:40 PM	0	0	0	0	0	0	0	0	0	16	0	0	0	11	0	0	27	351
9:45 PM	0	0	0	0	1	0	1	0	0	7	0	0	0	8	0	0	17	326
9:50 PM	0	0	0	0	0	0	1	0	0	7	0	0	0	5	0	0	13	303
9:55 PM	0	0	0	0	0	0	2	0	1	9	0	0	0	4	1	0	17	278
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	72	0	40	588	0	0	0	596	56	0	1372	
Heavy Trucks	0	0	0		0	0	0		0	44	0		0	20	0		64	
Pedestrians			0				4				0				0		4	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Railroad																		
Stopped Buses																		
<i>Comments:</i>																		

Report generated on 1/11/2019 9:18 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

**LOCATION:** Ridings Ave -- OR-211  
**CITY/STATE:** Molalla, OR

**QC JOB #:** 15525602  
**DATE:** Thu, Jul 29 2021

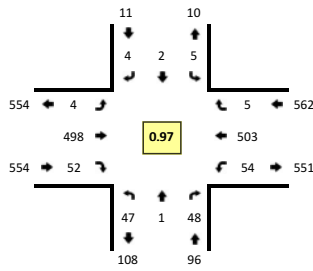


5-Min Count Period Beginning At	Ridings Ave (Northbound)				Ridings Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	0	0	0	0	2	37	0	0	0	36	0	0	75	
4:05 PM	0	0	0	0	2	0	0	0	1	34	0	0	0	28	0	0	65	
4:10 PM	0	1	0	0	1	1	3	0	1	49	1	0	0	42	0	0	99	
4:15 PM	0	0	0	0	0	0	6	0	1	29	0	0	0	38	0	0	74	
4:20 PM	0	0	0	0	1	0	1	0	2	48	0	0	0	43	3	0	98	
4:25 PM	0	0	0	0	0	0	3	0	2	46	0	0	0	36	1	0	88	
4:30 PM	0	0	0	0	1	0	3	0	2	33	1	0	0	41	1	0	82	
4:35 PM	0	0	1	0	4	0	0	0	2	48	0	0	0	32	0	0	87	
4:40 PM	0	0	1	0	3	0	2	0	2	37	0	0	1	40	4	0	90	
4:45 PM	0	0	0	0	1	0	2	0	1	41	0	0	0	28	2	0	75	
4:50 PM	0	0	0	0	1	0	2	0	0	41	0	0	0	40	2	0	86	
4:55 PM	0	0	0	0	1	0	0	0	1	38	0	0	0	30	2	0	72	991
5:00 PM	0	0	0	0	1	0	6	0	2	43	0	0	0	41	1	0	94	1010
5:05 PM	0	0	0	0	0	0	2	0	2	33	0	0	0	44	2	0	83	1028
5:10 PM	0	0	0	0	2	0	2	0	0	44	0	0	0	45	0	0	93	1022
5:15 PM	0	0	0	0	2	0	2	0	1	38	0	0	0	48	0	0	91	1039
5:20 PM	0	1	0	0	5	0	2	0	2	33	0	0	0	40	2	0	85	1026
5:25 PM	0	0	0	0	0	0	4	0	1	50	1	0	0	37	3	0	96	1034
5:30 PM	0	0	1	0	2	0	4	0	1	38	0	0	0	40	2	0	88	1040
5:35 PM	0	0	2	0	0	0	6	0	3	33	1	0	0	39	0	0	84	1037
5:40 PM	0	0	0	0	0	0	3	0	1	48	0	0	0	45	1	0	98	1045
5:45 PM	0	0	0	0	1	0	5	0	2	39	0	0	0	45	1	0	93	1063
5:50 PM	0	0	0	0	2	0	1	0	1	30	0	0	1	35	0	0	70	1047
5:55 PM	0	0	0	0	0	0	2	0	3	36	0	0	0	25	3	0	69	1044
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	40	0	16	480	0	0	0	520	12	0	1080	
Heavy Trucks	0	0	0	0	4	0	4	0	0	40	0	0	0	52	0	0	100	
Buses																		
Pedestrians	0	0				4				0				0			4	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

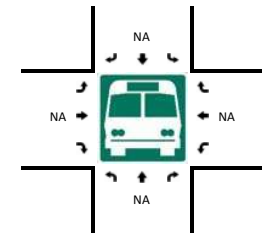
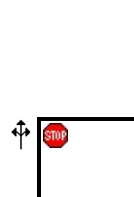
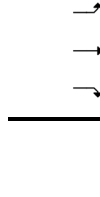
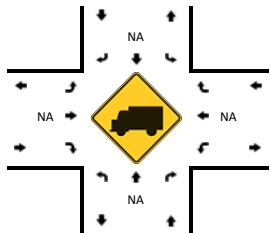
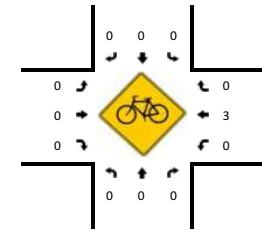
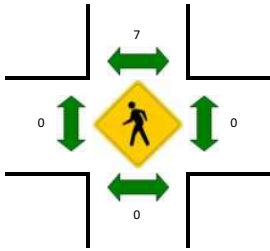
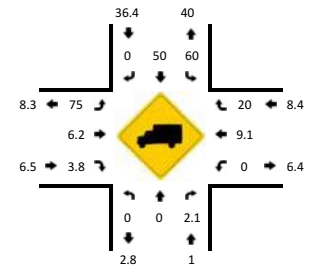
Comments:

**LOCATION:** Dixon Ave -- OR-211  
**CITY/STATE:** Molalla, OR

**QC JOB #:** 14815606  
**DATE:** Tue, Oct 9 2018



**Peak-Hour: 4:15 PM -- 5:15 PM**  
**Peak 15-Min: 4:30 PM -- 4:45 PM**



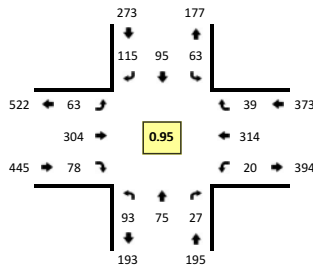
5-Min Count Period Beginning At	Dixon Ave (Northbound)				Dixon Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	4	0	3	0	0	0	0	0	0	38	7	0	2	32	0	0	86	
4:05 PM	3	0	4	0	1	0	1	0	0	50	7	0	1	38	0	0	105	
4:10 PM	3	0	7	0	0	0	1	0	0	41	8	0	4	33	1	0	98	
4:15 PM	7	0	5	0	0	0	1	0	1	43	4	0	5	31	0	0	97	
4:20 PM	6	0	6	0	1	0	1	0	0	41	3	0	4	38	0	0	100	
4:25 PM	1	1	3	0	1	0	0	0	1	40	3	0	5	39	1	0	95	
4:30 PM	3	0	5	0	0	0	0	0	0	49	6	0	4	44	1	0	112	
4:35 PM	2	0	2	0	1	0	0	0	0	34	6	0	5	43	0	0	93	
4:40 PM	2	0	7	0	0	0	0	0	0	43	6	0	4	48	1	0	111	
4:45 PM	3	0	5	0	1	1	0	0	1	36	2	0	8	41	0	0	98	
4:50 PM	6	0	4	0	0	0	0	0	0	44	6	0	4	41	2	0	107	
4:55 PM	1	0	4	0	1	0	2	0	0	40	2	0	2	43	0	0	95	1197
5:00 PM	4	0	2	0	0	0	0	0	0	53	3	0	2	47	0	0	111	1222
5:05 PM	4	0	3	0	0	0	0	0	0	41	6	0	6	48	0	0	108	1225
5:10 PM	8	0	2	0	0	1	0	0	1	34	5	0	5	40	0	0	96	1223
5:15 PM	6	0	6	0	0	0	2	0	0	45	5	0	1	29	0	0	94	1220
5:20 PM	3	0	4	0	0	0	0	0	0	34	8	0	3	40	1	0	93	1213
5:25 PM	1	0	2	0	2	0	0	0	1	46	4	0	2	46	1	0	105	1223
5:30 PM	1	1	4	0	1	0	0	0	0	31	5	0	0	41	0	0	84	1195
5:35 PM	5	0	4	0	0	0	0	0	1	46	10	0	7	31	0	0	104	1206
5:40 PM	4	0	2	0	0	0	0	0	0	36	5	0	4	37	0	0	88	1183
5:45 PM	3	0	3	0	1	0	0	0	1	39	3	0	4	41	0	0	95	1180
5:50 PM	7	0	3	0	0	0	0	0	0	38	3	0	4	41	0	0	96	1169
5:55 PM	2	0	3	0	1	0	0	0	0	39	8	0	4	30	0	0	87	1161

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	0	56	0	4	0	0	0	0	504	72	0	52	540	8	0	1264	
Heavy Trucks	0	0	0		0	0	0		0	20	4		0	76	0		100	
Pedestrians			0			12				0				0			12	
Bicycles	0	0	0		0	0	0		0	0	0		0	1	0		1	
Railroad																		
Stopped Buses																		

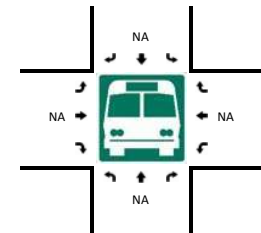
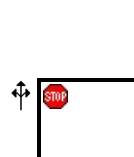
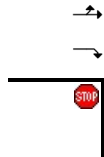
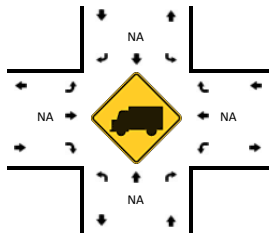
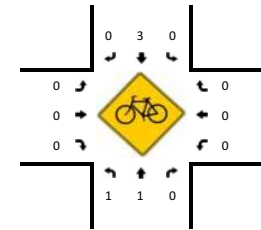
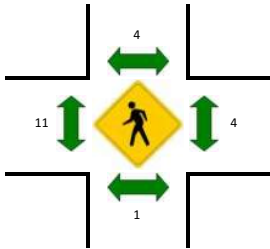
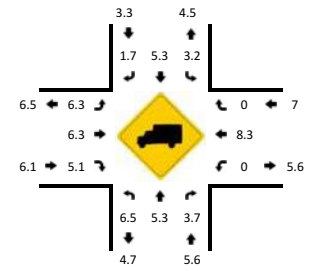
Comments:

**LOCATION:** Molalla Ave -- OR-211  
**CITY/STATE:** Molalla, OR

**QC JOB #:** 14815608  
**DATE:** Tue, Oct 9 2018



**Peak-Hour: 4:15 PM -- 5:15 PM**  
**Peak 15-Min: 4:40 PM -- 4:55 PM**



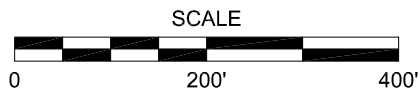
5-Min Count Period Beginning At	Molalla Ave (Northbound)				Molalla Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	5	9	3	0	11	10	10	0	5	30	4	0	3	10	7	0	107	
4:05 PM	6	5	2	0	9	10	7	0	6	27	9	0	3	26	4	0	114	
4:10 PM	2	5	1	0	10	9	7	0	4	28	6	0	1	26	2	0	101	
4:15 PM	6	6	1	0	1	11	10	0	9	20	5	0	2	18	4	0	93	
4:20 PM	10	11	3	0	5	8	6	0	8	21	6	0	4	23	0	0	105	
4:25 PM	7	5	2	0	4	13	9	0	5	29	10	0	3	30	2	0	119	
4:30 PM	6	6	1	0	5	3	8	0	3	32	6	0	1	31	4	0	106	
4:35 PM	11	8	4	0	4	13	6	0	4	23	4	0	1	22	4	0	104	
4:40 PM	11	4	3	0	8	6	8	0	5	31	8	0	1	33	2	0	120	
4:45 PM	4	10	2	0	7	9	11	0	4	28	6	0	2	25	2	0	110	
4:50 PM	5	4	3	0	7	7	11	0	4	28	9	0	0	27	4	0	109	
4:55 PM	9	2	3	0	4	4	17	0	6	20	3	0	3	29	1	0	101	1289
5:00 PM	7	4	1	0	5	11	5	0	3	25	9	0	3	30	3	0	106	1288
5:05 PM	11	8	2	0	5	4	12	0	8	20	7	0	0	23	5	0	105	1279
5:10 PM	6	7	2	0	8	6	12	0	4	27	5	0	0	23	8	0	108	1286
5:15 PM	4	9	0	0	6	11	7	0	7	22	8	0	1	19	4	0	98	1291
5:20 PM	11	3	2	0	3	11	11	0	5	21	2	0	1	23	2	0	95	1281
5:25 PM	10	9	1	0	4	12	10	0	5	21	6	0	7	21	0	0	106	1268
5:30 PM	3	6	1	0	7	7	12	0	1	27	9	0	2	30	3	0	108	1270
5:35 PM	4	9	1	0	3	9	4	0	10	23	12	0	3	18	6	0	102	1268
5:40 PM	7	10	1	0	7	8	5	0	4	24	4	0	2	29	1	0	102	1250
5:45 PM	10	5	1	0	6	10	8	0	7	23	7	0	1	29	3	0	110	1250
5:50 PM	8	8	1	0	4	8	16	0	10	17	11	0	0	19	5	0	107	1248
5:55 PM	7	2	4	0	4	10	7	0	3	29	7	0	3	20	0	0	96	1243

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	80	72	32	0	88	88	120	0	52	348	92	0	12	340	32	0	1356
Heavy Trucks	0	0	0		4	4	4		4	16	0		0	28	0		60
Pedestrians		0				0				0				4			4
Bicycles	0	0	0		0	2	0		0	0	0		0	0	0		2
Railroad																	
Stopped Buses																	

Comments:



Site plan provided by I&E Construction on 2/25/2019



Proposed Site Plan  
Molalla, Oregon

Figure  
2

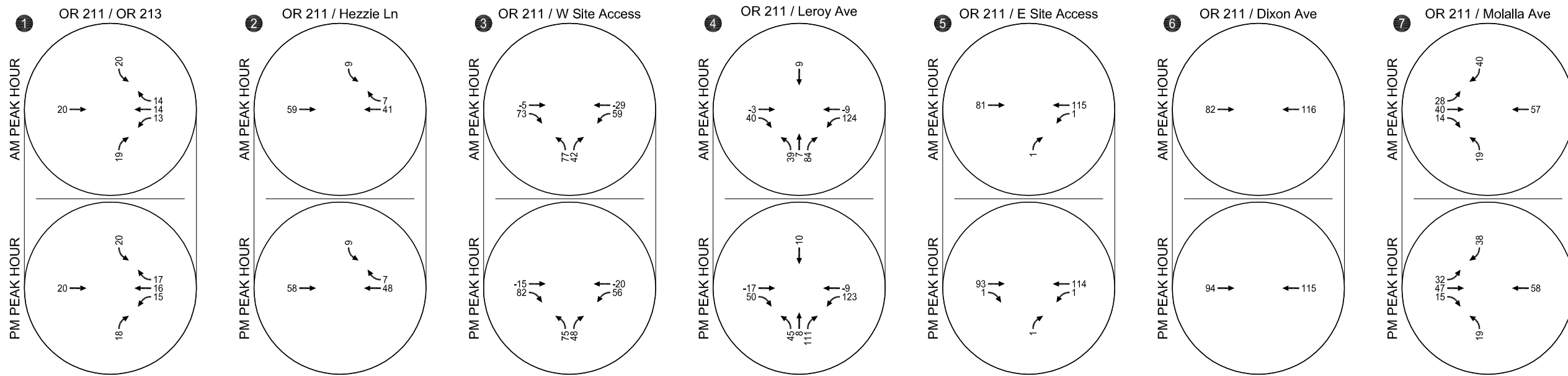
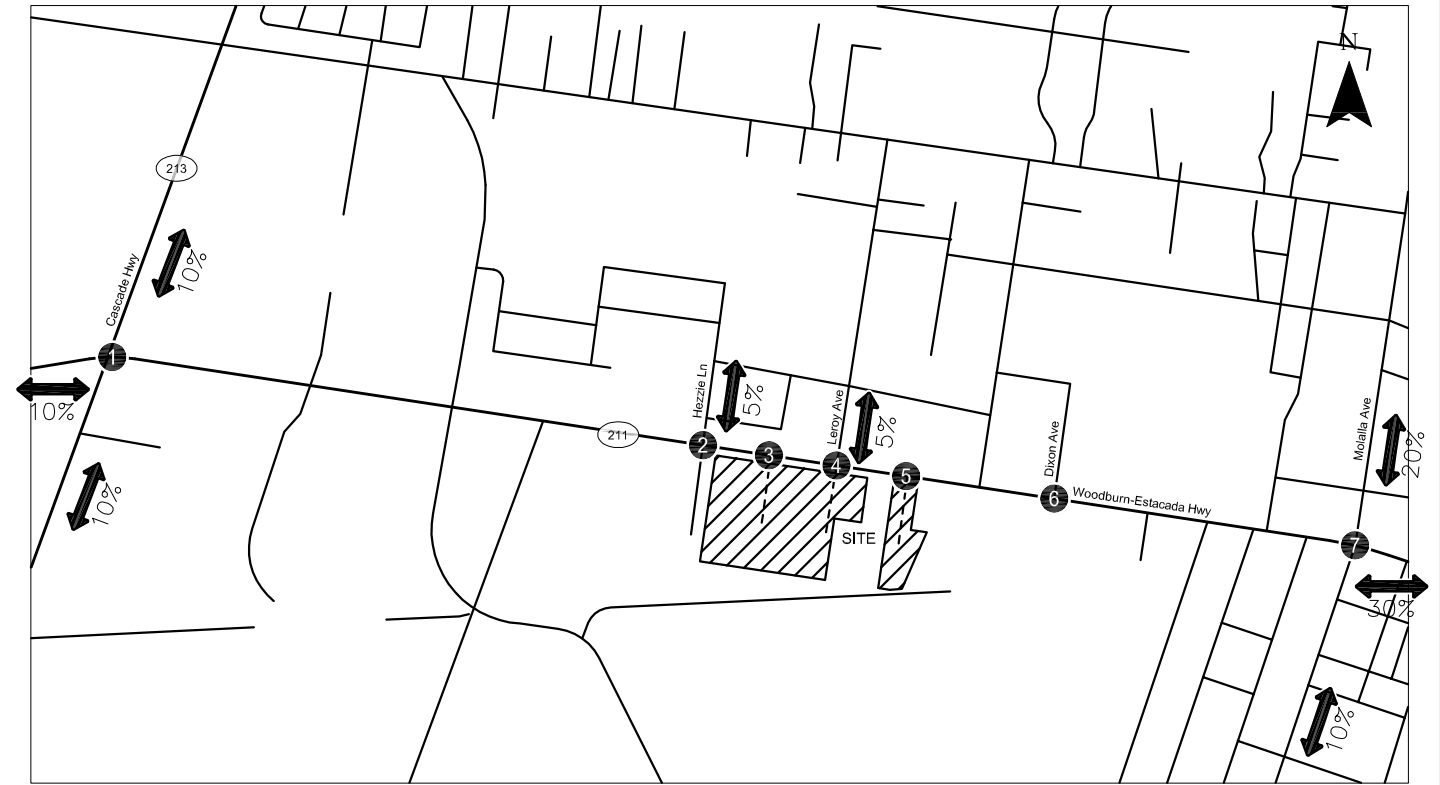
**Table 4. Trip Generation**

Land Use	ITE Code	Size	Weekday Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Fast Food Restaurant with Drive Through	934	6,300 ft <sup>2</sup>	2,966	253	129	124	206	107	99
<i>Less Internal (16% Daily, 3% AM, 13% PM)</i>			504	8	4	4	29	15	14
<i>Less Pass-by (50% Daily, 49% AM, 50% PM)</i>			1,232	120	60	60	88	44	44
Coffee Shop with Drive Through	937	1,400 ft <sup>2</sup>	1,148	124	63	61	61	30	31
<i>Less Internal (16% Daily, 3% AM, 13% PM)</i>			196	4	2	2	9	4	5
<i>Less Pass-by (89% Daily, 89% AM, 89% PM)</i>			848	106	53	53	46	23	23
Shopping Center (fitted)*	820	63,281 ft <sup>2</sup>	4,404	184	114	70	387	209	178
<i>Less Internal (16% Daily, 3% AM, 13% PM)</i>			748	6	3	3	54	29	25
<i>Less Pass-by (34% Daily, 34% PM)</i>			1,244	0	0	0	114	57	57
Free-Standing Discount Store	815	9,100 ft <sup>2</sup>	484	11	8	3	44	22	22
<i>Less Pass-by (34% Daily, 34% PM)</i>			164	0	0	0	14	7	7
Storage Units	151	256 units	46	2	1	1	5	3	2
<b>Gross Trips</b>			<b>9,048</b>	<b>574</b>	<b>315</b>	<b>259</b>	<b>703</b>	<b>371</b>	<b>332</b>
<i>Less Internal</i>			<i>1,448</i>	<i>18</i>	<i>9</i>	<i>9</i>	<i>92</i>	<i>48</i>	<i>44</i>
<i>Less Pass-by</i>			<i>3,488</i>	<i>226</i>	<i>113</i>	<i>113</i>	<i>262</i>	<i>131</i>	<i>131</i>
<b>Net New Trips</b>			<b>4,112</b>	<b>330</b>	<b>193</b>	<b>137</b>	<b>349</b>	<b>192</b>	<b>157</b>

\*Lot 4 represents a mix of 18,600 square feet of office and retail space. Recognizing the split between office and retail land uses is currently unknown and that the office space could range between relatively low trip generators such as an insurance agent to relatively high trip generators such as medical-dental space, all 18,600 square feet was analyzed as retail.

### Site Trip Distribution/Trip Assignment

The site-generated trips were distributed onto the study area roadway system according to the existing traffic patterns, as well as general population centers within the area. The estimated site-generated trips were assigned to the network by distributing the trips shown in Table 5 according to the trip distribution pattern shown in Figure 6. Figure 6 illustrates the site-generated trips that are expected to use the roadway system during the weekday AM and PM peak hours. Note that no trip reduction was made for the existing site structures that will be removed with the proposed site development.



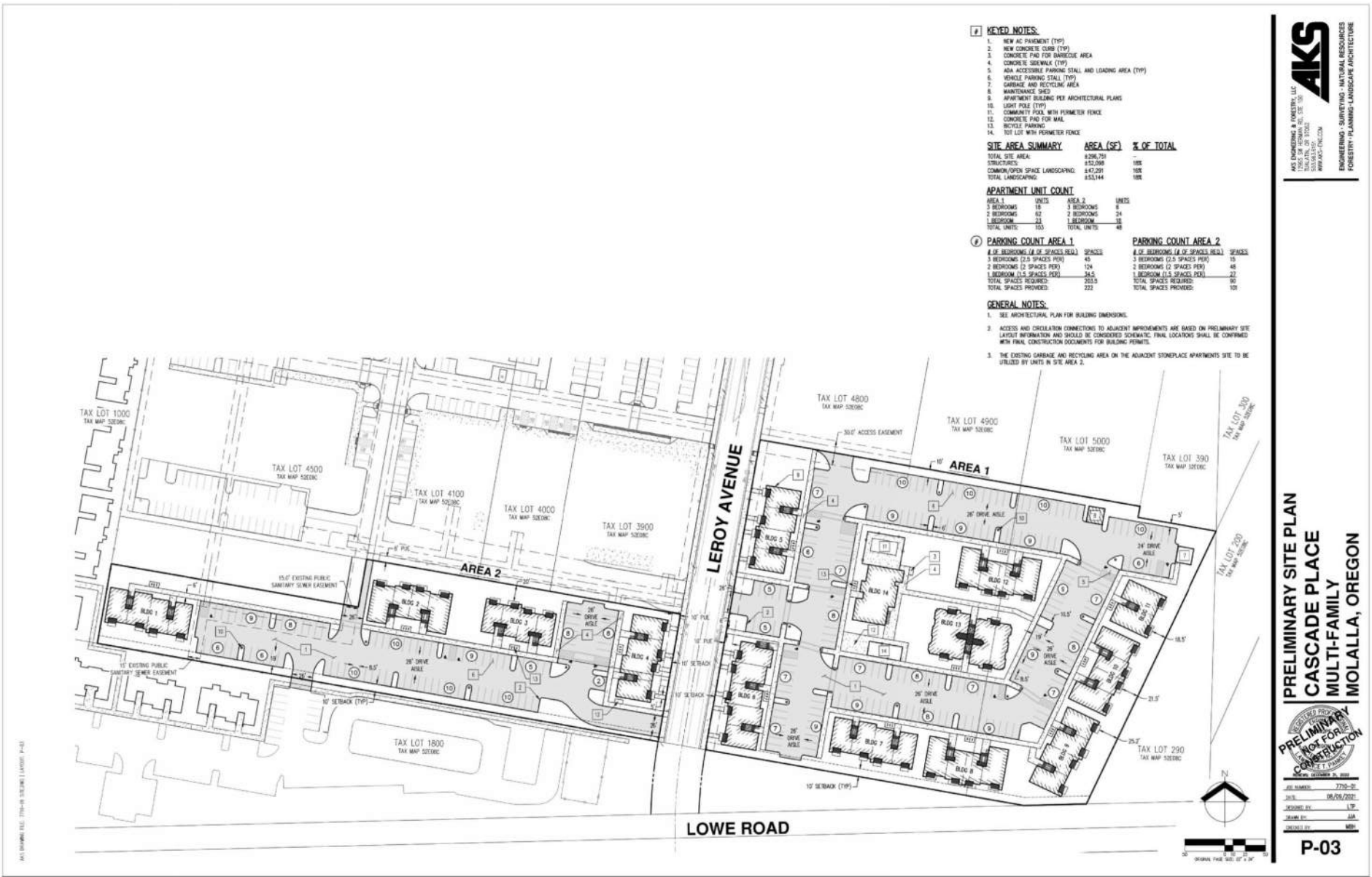
Negative values indicate pass-by trips

Site-Generated Trips  
Weekday AM and PM Peak Hours  
Molalla, Oregon

Figure  
6



H:\26\16752 - Cascade Center Multi-Family\Figs\16752\_Figs.dwg Aug 09, 2021 - 3:17pm - zbugg Layout Tab: 02 Site Plan



- KEYED NOTES:**
1. NEW AC PAYMENT (TYP)
  2. NEW CONCRETE CURB (TYP)
  3. CONCRETE PAD FOR BARBECUE AREA
  4. CONCRETE SIDEWALK (TYP)
  5. ADA ACCESSIBLE PARKING STALL AND LOADING AREA (TYP)
  6. VEHICLE PARKING STALL (TYP)
  7. GARAGE AND RECYCLING AREA
  8. MAINTENANCE SHED
  9. APARTMENT BUILDING PER ARCHITECTURAL PLANS
  10. LIGHT POLE (TYP)
  11. COMMUNITY POOL WITH PERIMETER FENCE
  12. CONCRETE PAD FOR MAIL
  13. BICYCLE PARKING
  14. TOT LOT WITH PERIMETER FENCE

**SITE AREA SUMMARY**

	AREA (SF)	% OF TOTAL
TOTAL SITE AREA:	4,296,751	-
STRUCTURES:	452,068	10%
COMMON OPEN SPACE LANDSCAPING:	1,472,291	34%
TOTAL LANDSCAPING:	2,531,144	59%

**APARTMENT UNIT COUNT**

AREA	UNITS	AREA	UNITS
3 BEDROOMS	18	3 BEDROOMS	8
2 BEDROOMS	62	2 BEDROOMS	24
1 BEDROOM	22	1 BEDROOM	16
<b>TOTAL UNITS:</b>	<b>102</b>	<b>TOTAL UNITS:</b>	<b>48</b>

**PARKING COUNT AREA 1**

# OF BEDROOMS (# OF SPACES REQ.)	SPACES
3 BEDROOMS (2.5 SPACES PER)	45
2 BEDROOMS (2 SPACES PER)	124
1 BEDROOM (1.5 SPACES PER)	34.5
<b>TOTAL SPACES REQUIRED:</b>	<b>203.5</b>
<b>TOTAL SPACES PROVIDED:</b>	<b>222</b>

**PARKING COUNT AREA 2**

# OF BEDROOMS (# OF SPACES REQ.)	SPACES
3 BEDROOMS (2.5 SPACES PER)	15
2 BEDROOMS (2 SPACES PER)	48
1 BEDROOM (1.5 SPACES PER)	27
<b>TOTAL SPACES REQUIRED:</b>	<b>90</b>
<b>TOTAL SPACES PROVIDED:</b>	<b>101</b>

- GENERAL NOTES:**
1. SEE ARCHITECTURAL PLAN FOR BUILDING DIMENSIONS.
  2. ACCESS AND CIRCULATION CONNECTIONS TO ADJACENT IMPROVEMENTS ARE BASED ON PRELIMINARY SITE LAYOUT INFORMATION AND SHOULD BE CONFIRMED SYNCHRONICALLY. FINAL LOCATIONS SHALL BE CONFIRMED WITH FINAL CONSTRUCTION DOCUMENTS FOR BUILDING PERMITS.
  3. THE EXISTING GARAGE AND RECYCLING AREA ON THE ADJACENT STONEPLACE APARTMENTS SITE TO BE UTILIZED BY UNITS IN SITE AREA 2.

**AKS**  
AKS ENGINEERING & ARCHITECTS, LLC  
12052 SW PERMAN AVE, STE 100  
SUNNYVALE, OREGON 97140  
WWW.AKS-ENR.COM  
ENGINEERING - SURVEYING - NATURAL RESOURCES  
FORESTRY - PLANNING - LANDSCAPE ARCHITECTURE

**PRELIMINARY SITE PLAN**  
**CASCADE PLACE**  
**MULTI-FAMILY**  
**MOLALLA, OREGON**

NO. 26752-02-000  
DATE: 08/09/2021  
DRAWN BY: LTP  
CHECKED BY: ABA  
DESIGNED BY: MSA

P-03

Site plan provided by AKS on 8/9/2021

Proposed Site Plan  
Molalla, Oregon

Figure  
2



## PROPOSED DEVELOPMENT PLAN

I&E Construction proposes to develop up to 151 multi-family units on the study site, to be accessed via a southward extension of Leroy Avenue across OR 211, which is currently being constructed by the Cascade Center commercial development. The anticipated build-out year is 2022. The multi-family units will replace the previously-approved 557 storage units on the site, reflected in the August 2019 Cascade Center Commercial Development TIA and June 2020 Addendum.

### Trip Generation

The projected weekday daily, AM, and PM peak-hour vehicle trip ends for the proposed development were based on fitted equation trip rates in the *Trip Generation Manual, 10<sup>th</sup> Edition* (Reference 7). Table 4 summarizes the anticipated number of trips that will be generated by the proposed Cascade Place multi-family units. As the 557 storage units approved as part of the Cascade Center commercial development will be replaced by the proposed 151 multi-family units, the trips associated with the storage units have been deducted from the overall trip generation (because the storage unit trips were included in the 2022 background traffic volumes).

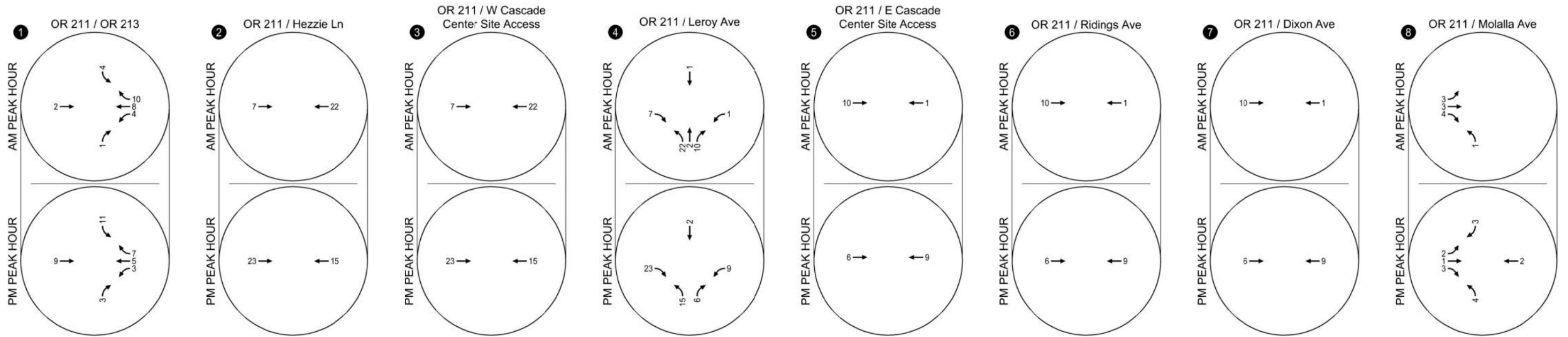
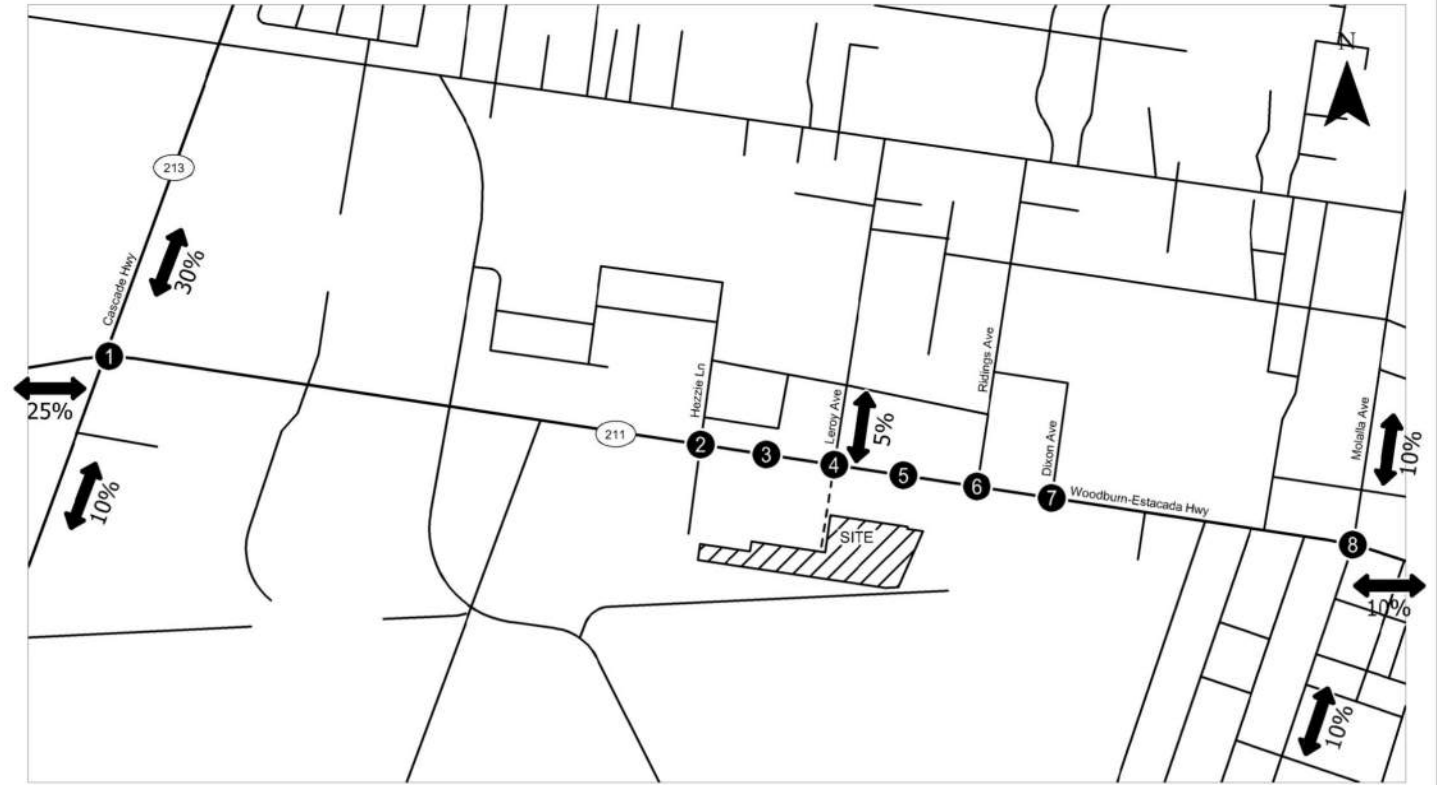
As shown, the proposed development is expected to generate approximately 722 weekday net new trips, of which 43 (9 in, 34 out) will occur during the AM peak hour and 55 (34 in, 21 out) will occur during the PM peak hour.

**Table 4. Trip Generation**

Land Use	ITE Code	Size	Weekday Daily	Weekday AM Peak Hour Trips			Weekday PM Peak Hour Trips		
				Total	In	Out	Total	In	Out
<b>Proposed Multi-Family Units</b>									
Multi-Family Housing (Mid-Rise)	221	151	822	51	13	38	66	40	26
<b>Planned Storage Units - To Be Removed</b>									
Mini-Warehouse	151	557	100	8	4	4	11	6	5
<b>Proposed Net New Trips</b>									
			722	43	9	34	55	34	21

### Site Trip Distribution/Trip Assignment

The site-generated trips were distributed onto the study area roadway system according to the existing traffic patterns, as well as general population centers within the area. The estimated site-generated trips were assigned to the network by distributing the trips shown in Table 5 according to the trip distribution pattern shown in Figure 6. Figure 6 illustrates the site-generated trips that are expected to use the roadway system during the weekday AM and PM peak hours.



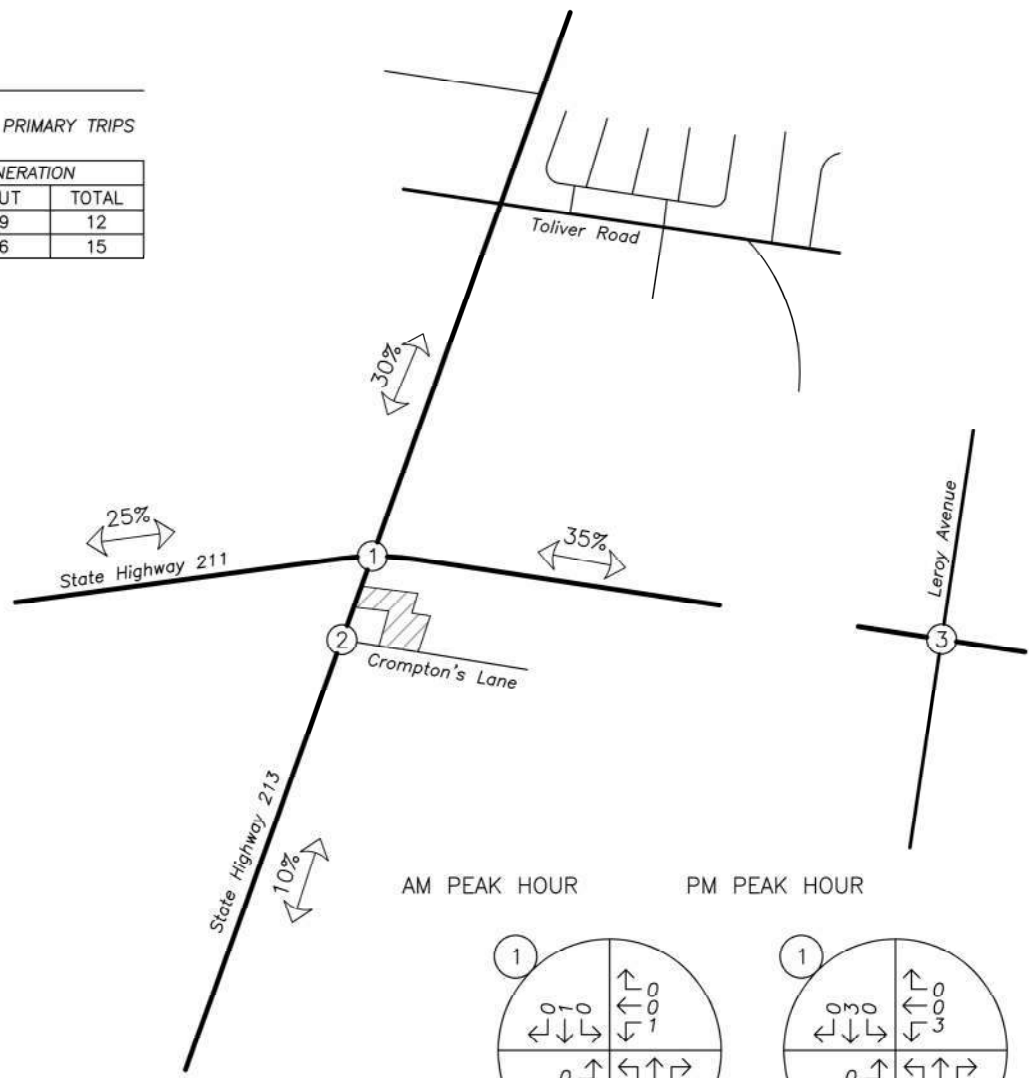
Net New Site-Generated Trips  
Weekday AM and PM Peak Hours  
Molalla, Oregon

Figure  
6

**LEGEND**

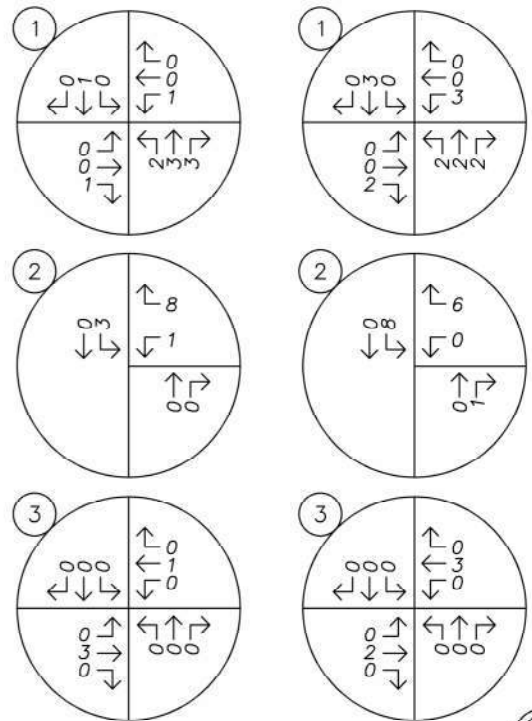
XX% PERCENT OF PRIMARY TRIPS

PRIMARY TRIP GENERATION			
	IN	OUT	TOTAL
AM	3	9	12
PM	9	6	15



AM PEAK HOUR

PM PEAK HOUR



no scale

## Site Trips

### Trip Generation

To estimate the number of trips that will be generated by the existing and proposed uses, trip rates from the *Trip Generation Manual*<sup>1</sup> were used. Data from the following land use code (LUC) 937, Coffee/Donut Shop with Drive-Through Window, was used to estimate site trip generation based on the gross floor area. For the second building, a worst-case trip generation option was assumed using LUC 934, Fast-Food Restaurant with Drive-Through window.

The proposed development is expected to significantly attract pass-by and diverted trips to the site. Pass-by trips are trips that leave the adjacent roadway to patronize a land use and then continue in their original direction of travel. Like pass-by trips, diverted trips are trips that divert from a nearby roadway not adjacent to the site to patronize a land use before continuing to their original destination.

Pass-by rates were determined by referencing new data from in the 11<sup>th</sup> edition of the *Trip Generation Manual*. For the coffee shop use, data is not available for LUC 937, but is available for a similar use, LUC 938, Coffee Shop with Drive-Through Window and No Indoor Seating. For the fast-food restaurant option, data is available.

The resulting trip generation is shown in Table 3. Detailed calculations are attached to this memo.

**Table 3: Trip Generation – Coffee Shop + Fast-Food Restaurant**

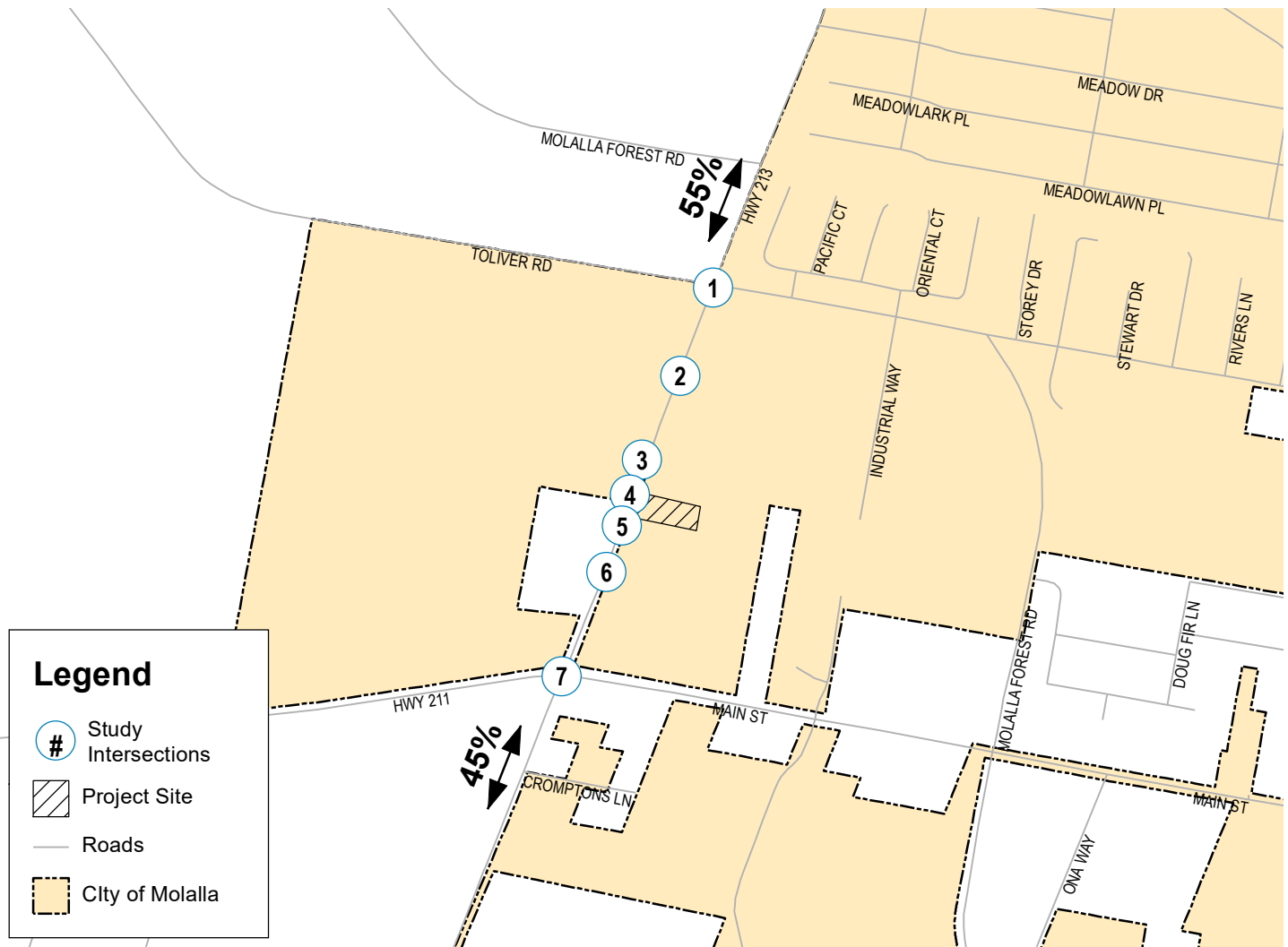
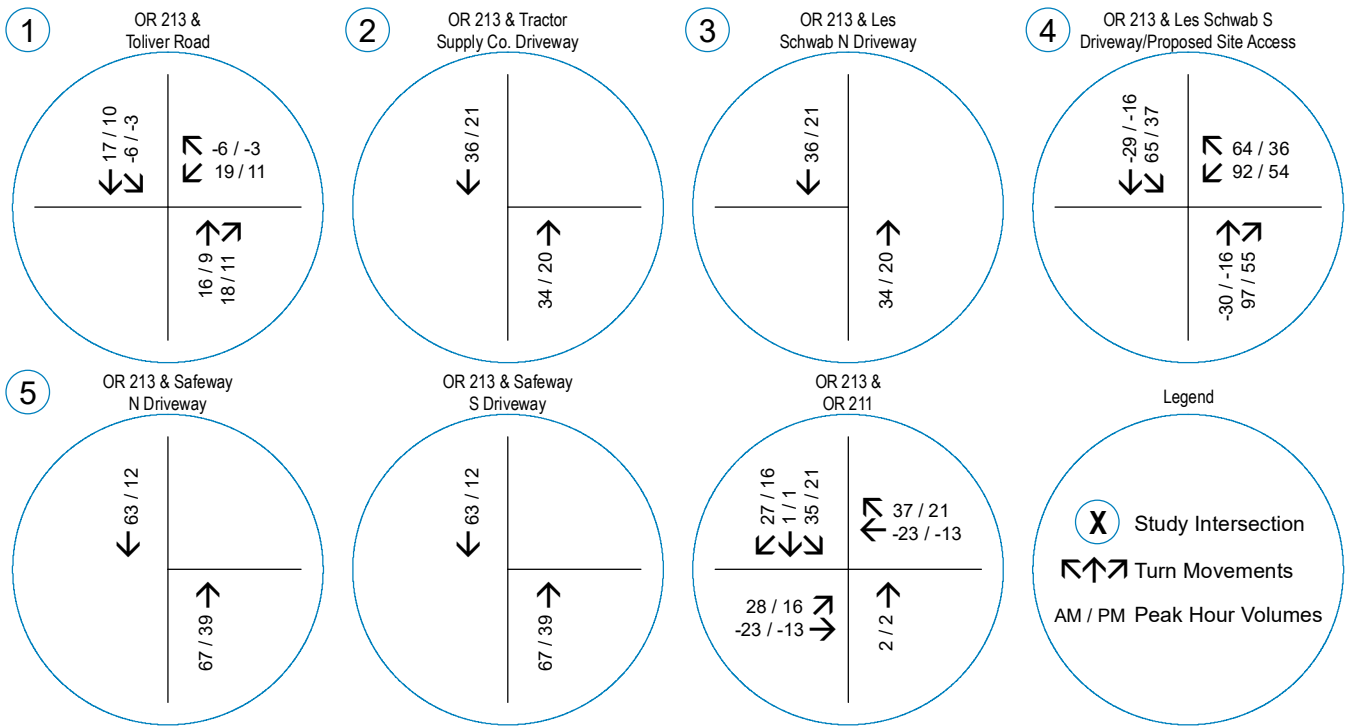
Description	Intensity (KSF)	Morning Peak Hour			Evening Peak Hour			Daily Trips
		In	Out	Total	In	Out	Total	
<b>Coffee/Donut Shop with Drive-Through Window (ITE Code 937)</b>								
External Trips	2.14	94	90	184	42	41	83	1,142
<i>Pass-by Trips (90%, 90%, 90%)<sup>1</sup></i>		83	83	166	37	37	74	1,028
Primary Site Trips		11	7	18	5	4	9	114
<b>Fast-Food Restaurant with Drive-Through Window (ITE Code 934)</b>								
External Trips	3	68	66	134	50	49	99	1,402
<i>Pass-by Trips (50%, 55%, 50%)<sup>2</sup></i>		34	34	68	27	27	54	702
Primary Site Trips		34	32	66	23	22	45	700
<b>Total Site</b>								
External Trips	5.14	162	156	318	92	90	182	2,544
<i>Pass-by Trips</i>		117	117	234	64	64	128	1,730
Primary Site Trips		45	39	84	28	26	54	814

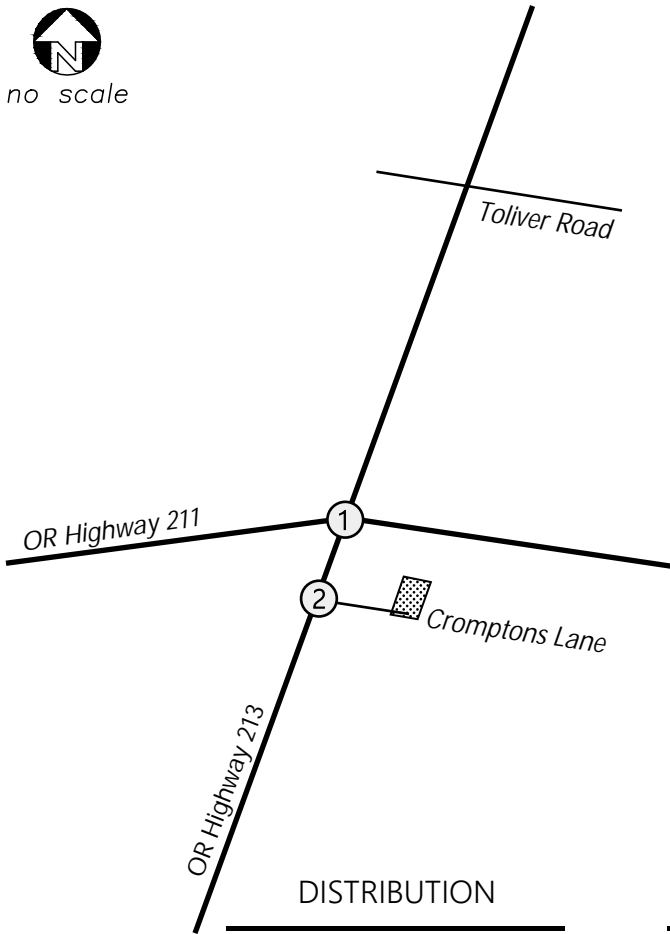
**Table Notes:**

1. *Pass-by rates are based on LUC 938, Coffee with Drive-Through and No Indoor Seating. Daily is assumed to be same as morning. Evening is also assumed to be same as morning for more conservative estimate.*
2. *Daily pass-by rate is assumed to be same as morning.*

<sup>1</sup> Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 11<sup>th</sup> Edition, 2021.

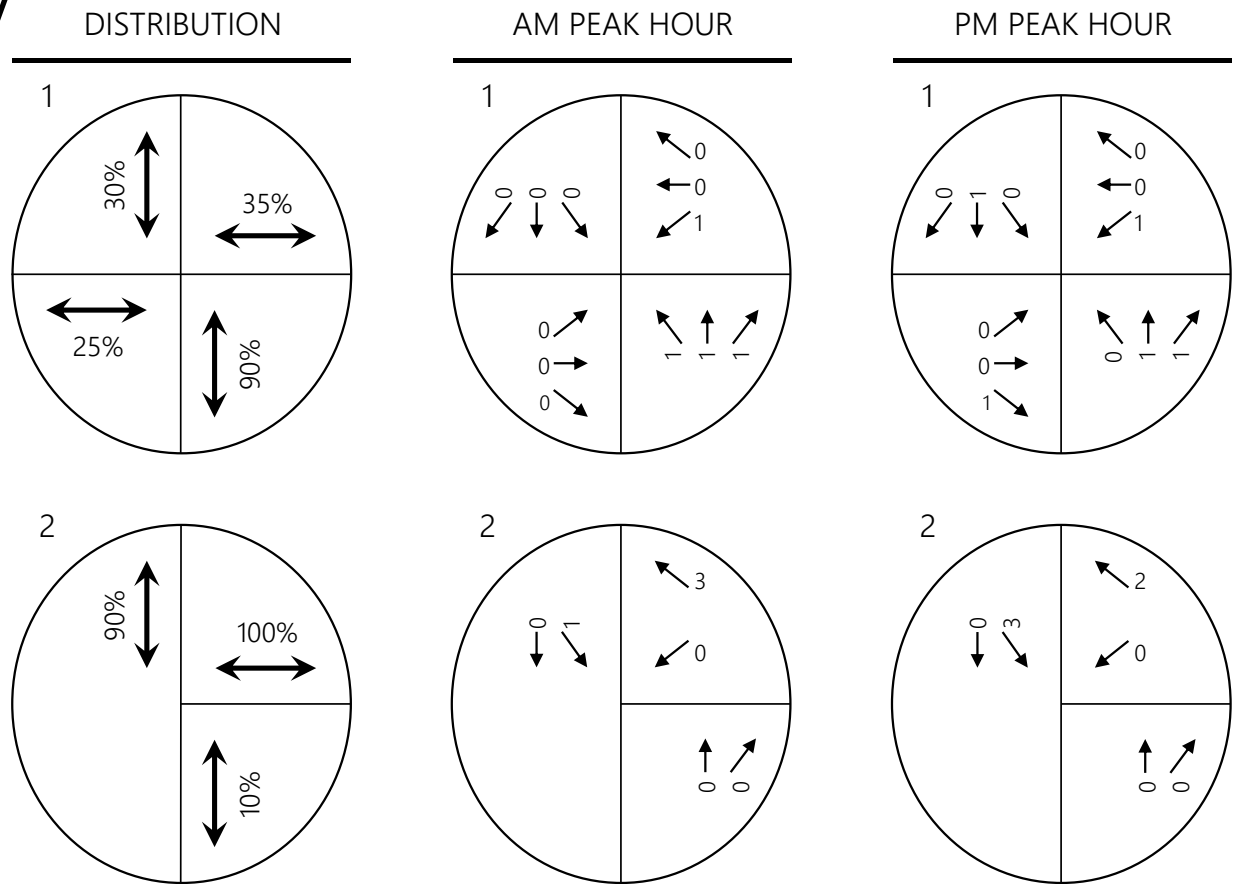






### Trip Generation

Period	In	Out	Total
AM	1	3	4
PM	3	2	5
DAILY	35	35	70



## Appendix C – Safety

Crash Reports

Sight Distance Photos

Signal Warrants

Turn Lane Warrants







OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
 URBAN NON-SYSTEM CRASH LISTING

CITY OF MOLALLA, CLACKAMAS COUNTY

MAIN ST at LEROY AVE, City of Molalla, Clackamas County, 01/01/2016 to 12/31/2020

5 - 6 of 6 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	A	S	P	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
INVEST	E	A	U	I	C	DAY	DIST	FIRST STREET		(MEDIAN)		RNDBT	SURF	COLL	OWNER	FROM					INJ	G	E	LICNS	PED						
RD DPT	E	L	G	N	H	R	TIME	SECOND STREET	DIRECT	LEGS	TRAF-																				
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
															02	NONE	0	STOP													
															PRVTE		W -E											011	013	00	
															PSNGR	CAR											000	000		00	
															03	NONE	0	STOP													
															PRVTE		W -E											022	013	00	
															PSNGR	CAR											000	000		00	
															03	NONE	0	STOP													
															PRVTE		W -E											022	013	00	
															PSNGR	CAR											000	000		00	
															03	NONE	0	STOP													
															PRVTE		W -E											022	013	00	
															PSNGR	CAR											000	000		00	
															04	NONE	0	STOP													
															PRVTE		W -E											022		00	
															PSNGR	CAR											000	000		00	
01711	N	N	N			05/04/2017	16	LEROY AVE	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE	0	STRGHT											004	29	
								MAIN ST	CN		UNKNOWN	N	DRY	REAR		PRVTE		E -W										000		00	
						10A			01	0		N	DAY	INJ		PSNGR	CAR									026	000		29		
						45 8 55.77	-122 35	016100100S00																							
							21.09								02	NONE	0	STOP													
															PRVTE		E -W												011	004	00
															PSNGR	CAR												000	000		00
															02	NONE	0	STOP													
															PRVTE		E -W												011	004	00
															PSNGR	CAR												000	000		00

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03/29/2022

## TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

## CRASH SUMMARIES BY YEAR BY COLLISION TYPE

MAIN ST at MOLALLA AVE, City of Molalla, Clackamas County, 01/01/2016 to 12/31/2020

COLLISION TYPE	FATAL	MAJOR	MODERATE	MINOR	PROP	TOTAL	PEOPLE	MAJOR	MODERATE	MINOR
	CRASHES	INJURY CRASHES	INJURY CRASHES	INJURY CRASHES	DAMAGE ONLY		KILLED	INJURIES	INJURIES	INJURIES
<b>YEAR: 2020</b>										
REAR-END	0	0	0	1	0	1	0	0	0	1
<b>2020 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
<b>YEAR: 2019</b>										
ANGLE	0	0	0	1	1	2	0	0	0	2
PEDESTRIAN	0	0	0	1	0	1	0	0	0	1
REAR-END	0	0	0	1	0	1	0	0	0	1
TURNING MOVEMENTS	0	0	0	1	2	3	0	0	0	1
<b>2019 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>3</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>
<b>YEAR: 2018</b>										
FIXED / OTHER OBJECT	0	0	0	0	1	1	0	0	0	0
REAR-END	0	0	0	0	1	1	0	0	0	0
<b>2018 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>YEAR: 2016</b>										
ANGLE	0	0	0	0	2	2	0	0	0	0
REAR-END	0	0	0	0	1	1	0	0	0	0
<b>2016 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>FINAL TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>8</b>	<b>13</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>

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URBAN NON-SYSTEM CRASH LISTING

MAIN ST and MOLALLA AVE, City of Molalla, Clackamas County, 01/01/2016 to 12/31/2020

1 - 5 of 19 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE	SPCL USE	MOVE	ACT	EVENT	CAUSE										
INVEST	E	A	U	I	C	O	DIST	FIRST STREET		(MEDIAN)	INT-REL	TRLR QTY													
RD DPT	E	L	G	N	H	R	FROM	SECOND STREET	DIRECT	LEGS	TRAF-	OWNER	FROM	PRTC	INJ										
UNLOC?	D	C	S	V	L	K	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#										
02314	N	N	N	N	N	07/02/2018	16	MAIN ST	INTER	CROSS	N	Y	CLD	FIX OBJ	01 NONE 9	TURN-R	054	08							
CITY						MO		MOLALLA AVE	S		STOP SIGN	N	DRY	FIX	N/A	W -S	000	00							
N						6A			05	0		N	DAY	PDO	SEMI TOW		01 DRVR	NONE	00	Unk UNK	000	000	00		
N						45 8 51.1	-122 34 37.54	016100100S00												UNK					
01793	N	N	N			07/10/2020	16	MAIN ST	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 0	STRGHT			27,07						
CITY						FR		MOLALLA AVE	S		FLASHBCN-R	N	DRY	REAR	PRVTE	SW-NE			000	00					
N						1P			06	0		N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	22	F	OR-Y	043	038	27,07	
N						45 8 51.09	-122 34 37.54	016100100S00																	
											02 NONE 0			STOP	PRVTE	SW-NE	01 DRVR	INJC	28	M	OTH-Y	000	011	000	00
											PSNGR CAR														
02211	N	N	N			07/01/2019	16	MAIN ST	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 0	STRGHT			29						
CITY						MO		MOLALLA AVE	SW		STOP SIGN	N	DRY	REAR	PRVTE	SW-NE			000	00					
N						6P			06	0		N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	40	M	OR-Y	026	000	29	
N						45 8 51.1	-122 34 37.54	016100100S00																	
											02 NONE 0			STOP	PRVTE	SW-NE	01 DRVR	INJC	50	F	OR-Y	000	011	000	00
											PSNGR CAR														
02613	N	N	N			06/09/2016	16	MAIN ST	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 9	STRGHT			29						
NONE						TH		MOLALLA AVE	NW		STOP SIGN	N	DRY	REAR	N/A	NW-SE			000	00					
N						9A			06	0		N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk UNK	000	000	00	00	
N						45 8 51.09	-122 34 37.54	016100100S00																	
											02 NONE 9			STOP	N/A	NW-SE	01 DRVR	NONE	00	Unk UNK	000	011	000	00	
											PSNGR CAR														
00825	N	N	N			03/06/2018	16	MAIN ST	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 9	STRGHT			29						
NONE						TU		MOLALLA AVE	NW		STOP SIGN	N	DRY	REAR	N/A	NW-SE			000	00					
N						7A			06	0		N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk UNK	000	000	00	00	
N						45 8 51.09	-122 34 37.54	016100100S00																	
											02 NONE 9			STOP	N/A	NW-SE	01 DRVR	NONE	00	Unk UNK	000	011	000	00	
											PSNGR CAR														

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CITY OF MOLALLA, CLACKAMAS COUNTY

MAIN ST and MOLALLA AVE, City of Molalla, Clackamas County, 01/01/2016 to 12/31/2020

6 - 9 of 19 Crash records shown.

SER#	S	D	M	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	SPCL USE	A	S	G	E	LICNS	PED	ACT	EVENT	CAUSE									
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY	MOVE	PRTC	INJ	G	E	LICNS	PED							
RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED								
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
01792	N	N	N				06/01/2019	16	MAIN ST	INTER	CROSS	N	N	CLR	PED	01	NONE	0	TURN-L										02,19		
CITY				SA					MOLALLA AVE	NW		TRF SIGNAL	N	DRY	PED		PRVTE	SW-NW											000	00	
N							12P			05	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	22	M	OR-Y		029		000	02		
N							45 8 51.1	-122 34 37.54	016100100S00																						
02518	N	N	N				06/04/2016	16	MAIN ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE	9	STRGHT										02		
NONE				SA					MOLALLA AVE	CN		STOP SIGN	N	DRY	ANGL		N/A	NE-SW											015	00	
N							10A			01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000		000	00		
N							45 8 51.09	-122 34 37.54	016100100S00																						
04906	N	Y	N				10/23/2016	16	MAIN ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE	9	STRGHT										03		
NO RPT				SU					MOLALLA AVE	CN		STOP SIGN	N	DRY	ANGL		N/A	S -N											000	00	
N							9P			04	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000		000	00		
N							45 8 51.09	-122 34 37.54	016100100S00																						
00743	N	N	N				03/02/2019	16	MAIN ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE	0	STRGHT										02		
NONE				SA					MOLALLA AVE	CN		STOP SIGN	N	DRY	TURN		PRVTE	NW-SE											015	00	
N							9A			04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	70	M	OR-Y		028		000	02		
N							45 8 51.1	-122 34 37.54	016100100S00																						
02830	N	N	N				08/17/2019	16	MAIN ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE	0	STRGHT										03		
CITY				SA					MOLALLA AVE	CN		STOP SIGN	N	DRY	ANGL		PRVTE	E -W											000	00	
N							1P			01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	34	M	OR-Y		021		000	03		
N							45 8 51.09	-122 34 37.54	016100100S00																						

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03/29/2022

## TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

## CRASH SUMMARIES BY YEAR BY COLLISION TYPE

MAIN ST at RIDINGS AVE, City of Molalla, Clackamas County, 01/01/2016 to 12/31/2020

COLLISION TYPE	FATAL	MAJOR	MODERATE	MINOR	PROP	TOTAL	PEOPLE	MAJOR	MODERATE	MINOR
	CRASHES	INJURY	INJURY	INJURY	DAMAGE		KILLED	INJURIES	INJURIES	INJURIES
<b>YEAR: 2019</b>										
TURNING MOVEMENTS	0	0	0	0	1	1	0	0	0	0
<b>2019 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>YEAR: 2018</b>										
REAR-END	0	0	1	0	0	1	0	0	1	2
<b>2018 TOTAL</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>
<b>YEAR: 2017</b>										
TURNING MOVEMENTS	0	0	0	1	0	1	0	0	0	1
<b>2017 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
<b>YEAR: 2016</b>										
REAR-END	0	0	0	1	0	1	0	0	0	1
<b>2016 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
<b>FINAL TOTAL</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>4</b>

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TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CONTINUOUS SYSTEM CRASH LISTING

160: CASCADE HWY SOUTH

Highway 160 ALL ROAD TYPES, MP 16.06 to 16.22 01/01/2016 to 12/31/2020, Both Add and Non-Add mileage

7 - 11 of 27 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE	MOVE	A	S	P#	TYPE	SVR	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE				
INVEST	E	A	U	I	C	DAY	CITY	COMPNT	FIRST STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY	MOVE	PRTC	INJ	G	E	LICNS	PED							
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM													
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LRS		(#LANES)	CONTL	DRVWY	LIGHT	SVR	V#	TYPE	TO	P#	TYPE	SVR	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
00773	N	N	N	N	N	02/28/2020	CLACKAMAS	1	16		INTER	CROSS	N	N	RAIN	S-STRGHT	01	NONE	0								29				
NONE						FR		MN	0		N				WET	REAR		PRVTE								000	00				
N						6P	MOLALLA UA	16.10		06	0				DUSK	INJ		PSNGR	CAR			01	DRVR	NONE	51	F	OR-Y	042	000	29	
N						45 9 2.54	-122 36 22.93					016000100S00																			
																	02	NONE	0												
																		PRVTE									000	00			
																		PSNGR	CAR			01	DRVR	INJC	38	M	OR-Y	000	000	00	
																	02	NONE	0								000	00			
																		PRVTE									000	00			
																		PSNGR	CAR			02	PSNG	INJC	34	F	OR<25	000	000	00	
04230	N	N	N	N	N	11/26/2019	CLACKAMAS	1	16		INTER	CROSS	N	N	RAIN	S-STRGHT	01	NONE	9								29				
CITY						TU		MN	0		S				WET	REAR		N/A								000	00				
N						5A	MOLALLA UA	16.10		06	0				DLIT	PDO		PSNGR	CAR			01	DRVR	NONE	00	Unk	UNK	000	000	00	
N						45 9 2.56	-122 36 22.95					016000100S00																			
																	02	NONE	9												
																		N/A									000	00			
																		PSNGR	CAR			01	DRVR	NONE	00	Unk	UNK	000	000	00	
02310	N	N	N	N	N	08/23/2020	CLACKAMAS	1	16		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	9								29				
NONE						SU		MN	0		S				DRY	REAR		N/A								000	00				
N						1P	MOLALLA UA	16.10		06	0				DAY	PDO		PSNGR	CAR			01	DRVR	NONE	00	Unk	UNK	000	000	00	
N						45 9 2.53	-122 36 22.95					016000100S00																			
																	02	NONE	9												
																		N/A									011	00			
																		PSNGR	CAR			01	DRVR	NONE	00	Unk	UNK	000	000	00	
03184	N	N	N	N	N	07/15/2016	CLACKAMAS	1	16		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	0								07				
CITY						FR		MN	0		W				DRY	REAR		RENTL								000	00				
N						3P	MOLALLA UA	16.10		06	0				DAY	INJ		PSNGR	CAR			01	DRVR	NONE	51	M	OR-Y	043	000	007	
N						45 9 2.53	-122 36 22.92					016000100S00																			
																	02	NONE	0												
																		PRVTE									011	00			
																		PSNGR	CAR			01	DRVR	INJC	17	F	OR-Y	000	000	00	
04148	N	N	N	N	N	09/09/2016	CLACKAMAS	1	16		INTER	CROSS	N	N	CLR	ANGL-STP	01	NONE	9								08,32				
CITY						FR		MN	0		W				DRY	TURN		N/A								000	00				
N						6P	MOLALLA UA	16.10		06	0				DAY	PDO		PSNGR	CAR			01	DRVR	NONE	00	Unk	UNK	000	000	00	
N						45 9 2.53	-122 36 22.92					016000100S00																			
																	02	NONE	9												
																		N/A									011	00			
																		PSNGR	CAR			01	DRVR	NONE	00	Unk	UNK	000	000	00	
03155	N	N	N	N	N	09/07/2018	CLACKAMAS	1	16		INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE	0								27,02,08				
STATE						FR		MN	0		CN				DRY	TURN		PRVTE								000	00				
N						6A	MOLALLA UA	16.10		01	0				DAY	INJ		PSNGR	CAR			01	DRVR	INJC	48	F	OR-Y	000	000	00	
N						45 9 2.54	-122 36 22.93					016000100S00																			

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160: CASCADE HWY SOUTH

Highway 160 ALL ROAD TYPES, MP 16.06 to 16.22 01/01/2016 to 12/31/2020, Both Add and Non-Add mileage

12 - 16 of 27 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE			SPCL USE			A S																				
												(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY	MOVE	PRTC		INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE								
INVEST	E	A	U	I	C	O	CITY	COMPNT	FIRST	STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC		INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE									
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND STREET	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE								
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LRS																													
																	02	NONE	0		TURN-L																	
																					S -W																	
02137	N	N	N	N	N	N	06/01/2017	CLACKAMAS	1	16		INTER	CROSS	N																								
CITY						TH																												02,13				
N						3P		MOLALLA UA		16.10		02	0																									
N						45 9 2.53		-122 36 22.92																														
03645	N	N	N	N	N	N	10/10/2018	CLACKAMAS	1	16		INTER	CROSS	N																								
CITY						WE																																
N						2P		MOLALLA UA		16.10		02	0																									
N						45 9 2.53		-122 36 22.92																														
01405	N	N	N	N	N	N	03/27/2016	CLACKAMAS	1	16		INTER	CROSS	N																								
CITY						SU																																
N						8P		MOLALLA UA		16.10		03	0																									
N						45 9 2.53		-122 36 22.92																														
04052	N	N	N	N	N	N	08/30/2016	CLACKAMAS	1	16		INTER	CROSS	N																								
CITY						TU																																
N						6P		MOLALLA UA		16.10		03	0																									
N						45 9 2.53		-122 36 22.92																														
02329	N	N	N	N	N	N	05/23/2016	CLACKAMAS	1	16		INTER	CROSS	N																								
NONE						MO																																
N						4A		MOLALLA UA		16.10		03	0																									
N						45 9 2.53		-122 36 22.92																														

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TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CONTINUOUS SYSTEM CRASH LISTING

160: CASCADE HWY SOUTH

Highway 160 ALL ROAD TYPES, MP 16.06 to 16.22 01/01/2016 to 12/31/2020, Both Add and Non-Add mileage

23 - 27 of 27 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE	MOVE	A	S	ERROR	ACT	EVENT	CAUSE											
INVEST	E	A	U	I	C	DAY	CITY	COMPNT	FIRST STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY														
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED							
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LRS		(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC						
02130	N	N	N	N	N	N	CLACKAMAS	1	16		INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE	9		TURN-L							02,08			
CITY						TU		MN	0		CN		TRF	SIGNAL	N	DRY	TURN	N/A			E	-S					000	00			
N						12P	MOLALLA UA	16.10			04	0	N	DAY	PDO		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00		
N						45 9 2.54	-122 36 22.93			016000100S00																					
																	02	NONE	9		STRGHT							000	000	00	
																	N/A				W	-E						000	000	00	
																	PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00		
03098	N	N	N	N	N	N	CLACKAMAS	1	16		INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE	9		TURN-R							02			
CITY						FR		MN	0		CN		TRF	SIGNAL	N	DRY	TURN	N/A			S	-E					016	00			
N						9A	MOLALLA UA	16.10			04	0	N	DAY	PDO		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00		
N						45 9 2.55	-122 36 22.94			016000100S00																					
																	02	NONE	9		TURN-L							000	000	00	
																	N/A				N	-E						000	000	00	
																	PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00		
04838	N	N	N	N	N	N	CLACKAMAS	1	16		ALLEY		N	N	RAIN	O-1 L-TURN	01	NONE	0		STRGHT							02,08			
CITY						WE		MN	0		UN	(NONE)	UNKNOWN	N	WET	TURN	PRVTE				S	-N					000	000	00		
N						6P	MOLALLA UA	16.13			04		N	DLIT	INJ		PSNGR	CAR		01	DRVR	INJC	29	F	OR-Y		000	000	00		
N						45 9 1.09	-122 36 23.65			016000100S00		(02)																			
																	02	NONE	0		TURN-L							019	00		
																	PRVTE				N	-E							000	000	00
																	PSNGR	CAR		01	DRVR	NONE	52	M	OR-Y		028,004	000	000	02,08	
04754	N	N	N	N		10/14/2016	CLACKAMAS	1	16		ALLEY		N	N	RAIN	ANGL-OTH	01	NONE	9		TURN-R							02			
CITY						FR		MN	0		UN	(NONE)	UNKNOWN	N	WET	TURN	N/A				E	-N						018	00		
N						5A	MOLALLA UA	16.13			04		N	DARK	PDO		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00		
N						45 9 1.09	-122 36 23.65			016000100S00		(02)																			
																	02	NONE	9		STRGHT							000	000	00	
																	N/A				S	-N						000	000	00	
																	PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00		
02156	N	N	N	N		06/27/2019	CLACKAMAS	1	16		TRANS		N	N	CLR	S-STRGHT	01	NONE	9		STRGHT							02			
NONE						TH		MN	0		UN	(NONE)	NONE	N	DRY	SS-O	N/A				S	-N						052	00		
N						2P	MOLALLA UA	16.16			05		N	DAY	PDO		PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00		
N						45 8 59.66	-122 36 24.4			016000100S00		(03)																			
																	02	NONE	9		STRGHT							000	000	00	
																	N/A				S	-N						000	000	00	
																	PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00		

Driveway Crash - south of intersection turning to east side (Gas Station)

Driveway Crash - south of intersection turning from east side (Gas Station)

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

161: WOODBURN-ESTACADA

Highway 161 ALL ROAD TYPES, MP 11.2 to 11.38 01/01/2016 to 12/31/2020, Both Add and Non-Add mileage

1 - 3 of 3 Crash records shown.

SER#	P	R	J	S	W	DATE	COUNTY	RD#	FC	CONN#	RD CHAR	INT-TYPE	SPCL USE	MOVE	A	S	ACT	EVENT	CAUSE												
INVEST	E	A	U	I	C	O	CITY	COMPNT	FIRST STREET	DIRECT	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY														
RD DPT	E	L	G	N	H	R	URBAN AREA	MLG	TYP	SECOND STREET	LOCTN	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED							
UNLOC?	D	C	S	V	L	K	LONG	MILEPNT	LRS		(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR					
04638	N	N	N	N		11/04/2017	CLACKAMAS	1	16		STRGHT	Y	N	UNK	S-1STOP	01	NONE	9	STRGHT											10	
NONE						SA		MN	0		UN	(NONE)	UNKNOWN	N	UNK	SS-O	N/A		W -E										000	00	
N						12P	MOLALLA UA	11.28			03	0	N	DAY	PDO		PSNGR	CAR	01	DRVR	NONE	00	Unk	UNK		000		000	00		
N						45 9 2.27	-122 36 25.08			016100100S00														UNK							
																	02	NONE	9	STOP									011	00	
																	N/A		W -E										000	000	00
																	PSNGR	CAR	01	DRVR	NONE	00	Unk	UNK		000		000	00	00	
																								UNK							
02749	N	N	N	N		08/07/2018	CLACKAMAS	1	16		INTER	CROSS	N	CLR	ANGL-STP	01	NONE	9	TURN-L											29	
NONE						TU		MN	0		E		TRF SIGNAL	N	DRY	TURN	N/A		N -E										000	00	
N						3P	MOLALLA UA	11.31			05	0	N	DAY	PDO		PSNGR	CAR	01	DRVR	NONE	00	Unk	UNK		000		000	00	00	
N						45 9 2.53	-122 36 22.92			016100100S00														UNK							
																	02	NONE	9	STOP									011	00	
																	N/A		W -E										000	000	00
																	PSNGR	CAR	01	DRVR	NONE	00	Unk	UNK		000		000	00	00	
																								UNK							
04140	N	N	N	N		08/28/2016	CLACKAMAS	1	16		ALLEY		N	CLR	ANGL-OTH	01	NONE	9	STRGHT											02	
CITY						SU		MN	0		UN	(NONE)	NONE	N	DRY	TURN	N/A		W -E										000	00	
N						10P	MOLALLA UA	11.34			04		N	DARK	PDO		PSNGR	CAR	01	DRVR	NONE	00	Unk	UNK		000		000	00	00	
N						45 9 2.37	-122 36 20.64			016100100S00		(02)												UNK							
																	02	NONE	9	TURN-L									018	00	
																	N/A		S -W										000	000	00
																	PSNGR	CAR	01	DRVR	NONE	00	Unk	UNK		000		000	00	00	
																								UNK							

Driveway Crash - east of intersection turning from south side (Gas Station)





Figure 1: Site Access Looking East- 15' From Edge of Travel Lane



Figure 2: Site Access Looking West – 14.5' From Edge of Travel Lane



INTERSECTION INFORMATION					
City:	Molalla	Condition:	Existing Conditions		
Population:	10,113		NB/SB Lefts & Throughs		
Intersection Location: (Rural/Urban)	Urban				
Major Street Name:	OR-211	Minor Street Name:	Leroy Avenue		
Number of Moving Lanes for Each	1	Number of Moving Lanes for Each	1		
Speed: Street	35 mph	Speed: Street	25 mph		
Width:	24 ft	Width:	40 ft		
Direction:	EB      WB	Direction:	NB      SB		
Hour Beginning:		Hour Beginning:			
12:00 AM		12:00 AM			
1:00 AM		1:00 AM			
2:00 AM		2:00 AM			
3:00 AM		3:00 AM			
4:00 AM		4:00 AM			
5:00 AM	100      252	5:00 AM	0      2		
6:00 AM	244      379	6:00 AM	0      7		
7:00 AM	357      470	7:00 AM	2      28		
8:00 AM	315      437	8:00 AM	8      19		
9:00 AM	334      399	9:00 AM	15      15		
10:00 AM	379      466	10:00 AM	7      12		
11:00 AM	379      526	11:00 AM	21      20		
12:00 PM	445      546	12:00 PM	11      18		
1:00 PM	451      511	1:00 PM	13      12		
2:00 PM	504      617	2:00 PM	12      33		
3:00 PM	565      654	3:00 PM	13      36		
4:00 PM	626      648	4:00 PM	24      26		
5:00 PM	574      547	5:00 PM	19      24		
6:00 PM	472      381	6:00 PM	9      24		
7:00 PM	296      231	7:00 PM	14      19		
8:00 PM	236      229	8:00 PM	9      7		
9:00 PM		9:00 PM			
10:00 PM		10:00 PM			
11:00 PM		11:00 PM			
24-hour Total	6,277      7,293	24-hour Total	177      302		

**Warrants Evaluated:**

- Warrant 1, 8-Hour Vehicular Volume - Evaluated for Conditions A & B
- Warrant 2, 4-Hour Vehicular Volume - Evaluated
- Warrant 3, Peak Hour - Evaluated for Conditions A-2, A-3 (A-1 needs to be evaluated separately), and Condition B
- Warrant 4, Pedestrian Volume - Not Analyzed
- Warrant 5, School Crossing - Not Analyzed
- Warrant 6, Coordinated Signal System - Not Analyzed
- Warrant 7, Accident Experience - Not Analyzed
- Warrant 8, Roadway Network - Not Analyzed
- Warrant 9, Intersection Near a Grade Crossing - Not Analyzed



**WARRANT 1, 8-HOUR VEHICULAR VOLUME**

	MAJOR			MINOR			<b>A</b>	<b>B</b>	<b>A or B</b>	<b>80% A&amp;B</b>
	EB	WB	Total	NB	SB	Max				
4:00 PM	626	648	1,274	24	26	26	N	N	N	N
3:00 PM	565	654	1,219	13	36	36	N	N	N	N
2:00 PM	504	617	1,121	12	33	33	N	N	N	N
5:00 PM	574	547	1,121	19	24	24	N	N	N	N
12:00 PM	445	546	991	11	18	18	N	N	N	N
1:00 PM	451	511	962	13	12	13	N	N	N	N
11:00 AM	379	526	905	21	20	21	N	N	N	N
6:00 PM	472	381	853	9	24	24	N	N	N	N
10:00 AM	379	466	845	7	12	12	N	N	N	N
7:00 AM	357	470	827	2	28	28	N	N	N	N
8:00 AM	315	437	752	8	19	19	N	N	N	N
9:00 AM	334	399	733	15	15	15	N	N	N	N

**Warrant Requirements:**

Major Street Lanes: 1  
 Minor Street Lanes: 1

**CONDITION A - Minimum Vehicular Volume**

Minimum Volume on Combined Major Street Approaches: 500  
 Minimum Volume on Higher Minor Street Approach: 150

**CONDITION B - Interruption of Continuous Traffic**

Minimum Volume on Combined Major Street Approaches: 750  
 Minimum Volume on Higher Minor Street Approach: 75

IS CONDITION A OF SIGNAL WARRANT 1 MET? NO  
 IS CONDITION B OF SIGNAL WARRANT 1 MET? NO  
 IS COMBINATION OF A OR B MET? NO  
 IS 80% OF CONDITION A AND CONDITION B MET? NO

Note: Signal Warrant 1 is met if either Condition A or Condition B is met.

**WARRANT 2, FOUR HOUR VEHICULAR VOLUME**

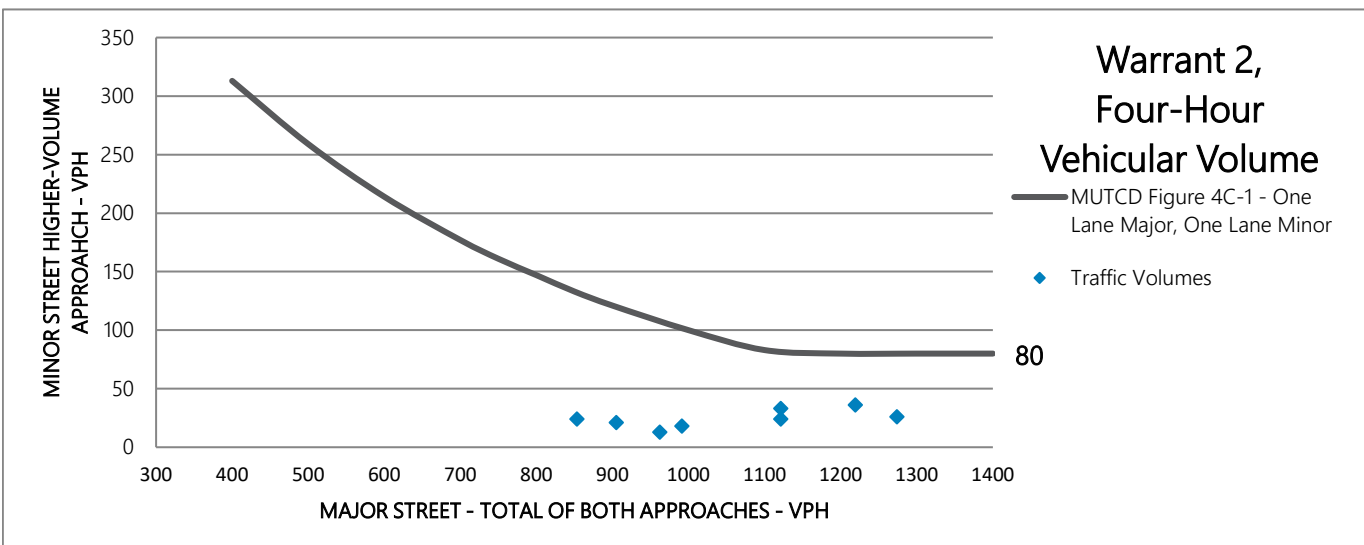
	MAJOR			MINOR			Calculated Threshold	
	EB	WB	Total	NB	SB	Max		
4:00 PM	626	648	1,274	24	26	26	80	N
3:00 PM	565	654	1,219	13	36	36	80	N
2:00 PM	504	617	1,121	12	33	33	80	N
5:00 PM	574	547	1,121	19	24	24	80	N
12:00 PM	445	546	991	11	18	18	102	N
1:00 PM	451	511	962	13	12	13	108	N
11:00 AM	379	526	905	21	20	21	120	N
6:00 PM	472	381	853	9	24	24	132	N

**Warrant Requirements:**

Major Street Lanes: 1

Minor Street Lanes: 1

**IS SIGNAL WARRANT 2 MET? NO**



**WARRANT 3, PEAK HOUR VEHICULAR VOLUME**

	MAJOR			MINOR			Calculated Threshold (B)	<b>A-2&amp;3</b>	<b>B</b>
	EB	WB	Total	NB	SB	Max			
4:00 PM	626	648	1,274	24	26	26	131	N	N
3:00 PM	565	654	1,219	13	36	36	142	N	N
2:00 PM	504	617	1,121	12	33	33	165	N	N
5:00 PM	574	547	1,121	19	24	24	165	N	N

**Warrant Requirements:**

Major Street Lanes: 1  
 Minor Street Lanes: 1

**CONDITION A-1 - Stopped Delay**

Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

**CONDITION A-2 - Minor Street Volume**

Minimum Volume on Higher Minor Street Approach: 100

**CONDITION A-3 - Total Approach Volume**

Minimum Volume of Total Approaches: 800

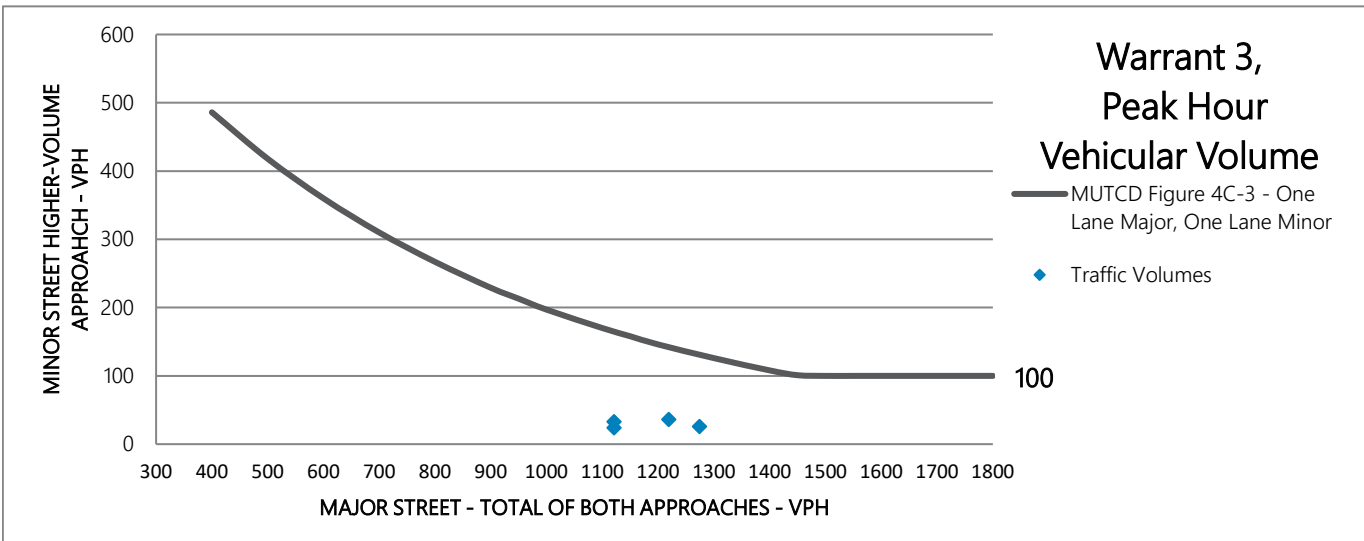
**CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)**

**ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET? NO**

Note: All 3 subsections of Condition A must be met to warrant signal.

**IS CONDITION B OF SIGNAL WARRANT 3 MET? NO**

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.



INTERSECTION INFORMATION					
City:	Molalla		Condition:	2023 Background Conditions	
Population:	10,113			NB/SB Lefts & Throughs	
Intersection Location: (Rural/Urban)	Urban				
Major Street Name: Number of Moving	OR-211		Minor Street Name: Number of Moving	Leroy Avenue	
Lanes for Each	1		Lanes for Each	1	
Speed: Street	35 mph		Speed: Street	25 mph	
Width:	24 ft		Width:	40 ft	
Direction:	EB	WB	Direction:	NB	SB
Hour Beginning:			Hour Beginning:		
12:00 AM			12:00 AM		
1:00 AM			1:00 AM		
2:00 AM			2:00 AM		
3:00 AM			3:00 AM		
4:00 AM			4:00 AM		
5:00 AM	124	288	5:00 AM	8	2
6:00 AM	284	429	6:00 AM	8	8
7:00 AM	461	659	7:00 AM	78	41
8:00 AM	387	525	8:00 AM	28	25
9:00 AM	410	503	9:00 AM	34	21
10:00 AM	465	603	10:00 AM	43	19
11:00 AM	488	714	11:00 AM	61	31
12:00 PM	575	763	12:00 PM	71	31
1:00 PM	573	709	1:00 PM	65	23
2:00 PM	632	822	2:00 PM	66	47
3:00 PM	698	860	3:00 PM	66	51
4:00 PM	774	912	4:00 PM	72	40
5:00 PM	723	757	5:00 PM	77	37
6:00 PM	600	555	6:00 PM	66	36
7:00 PM	388	358	7:00 PM	50	29
8:00 PM	308	330	8:00 PM	38	13
9:00 PM			9:00 PM		
10:00 PM			10:00 PM		
11:00 PM			11:00 PM		
24-hour Total	7,890	9,787	24-hour Total	831	454

**Warrants Evaluated:**

- Warrant 1, 8-Hour Vehicular Volume - Evaluated for Conditions A & B
- Warrant 2, 4-Hour Vehicular Volume - Evaluated
- Warrant 3, Peak Hour - Evaluated for Conditions A-2, A-3 (A-1 needs to be evaluated separately), and Condition B
- Warrant 4, Pedestrian Volume - Not Analyzed
- Warrant 5, School Crossing - Not Analyzed
- Warrant 6, Coordinated Signal System - Not Analyzed
- Warrant 7, Accident Experience - Not Analyzed
- Warrant 8, Roadway Network - Not Analyzed
- Warrant 9, Intersection Near a Grade Crossing - Not Analyzed

**WARRANT 1, 8-HOUR VEHICULAR VOLUME**

	MAJOR			MINOR			A	B	A or B	80% A&B
	EB	WB	Total	NB	SB	Max				
4:00 PM	774	912	1,686	72	40	72	N	N	N	N
3:00 PM	698	860	1,558	66	51	66	N	N	N	N
5:00 PM	723	757	1,480	77	37	77	N	Y	Y	N
2:00 PM	632	822	1,454	66	47	66	N	N	N	N
12:00 PM	575	763	1,338	71	31	71	N	N	N	N
1:00 PM	573	709	1,282	65	23	65	N	N	N	N
11:00 AM	488	714	1,202	61	31	61	N	N	N	N
6:00 PM	600	555	1,155	66	36	66	N	N	N	N
7:00 AM	461	659	1,120	78	41	78	N	Y	Y	N
10:00 AM	465	603	1,068	43	19	43	N	N	N	N
9:00 AM	410	503	913	34	21	34	N	N	N	N
8:00 AM	387	525	912	28	25	28	N	N	N	N

**Warrant Requirements:**

Major Street Lanes: 1  
 Minor Street Lanes: 1

**CONDITION A - Minimum Vehicular Volume**

Minimum Volume on Combined Major Street Approaches: 500  
 Minimum Volume on Higher Minor Street Approach: 150

**CONDITION B - Interruption of Continuous Traffic**

Minimum Volume on Combined Major Street Approaches: 750  
 Minimum Volume on Higher Minor Street Approach: 75

IS CONDITION A OF SIGNAL WARRANT 1 MET? NO  
 IS CONDITION B OF SIGNAL WARRANT 1 MET? NO  
 IS COMBINATION OF A OR B MET? NO  
 IS 80% OF CONDITION A AND CONDITION B MET? NO

Note: Signal Warrant 1 is met if either Condition A or Condition B is met.

**WARRANT 2, FOUR HOUR VEHICULAR VOLUME**

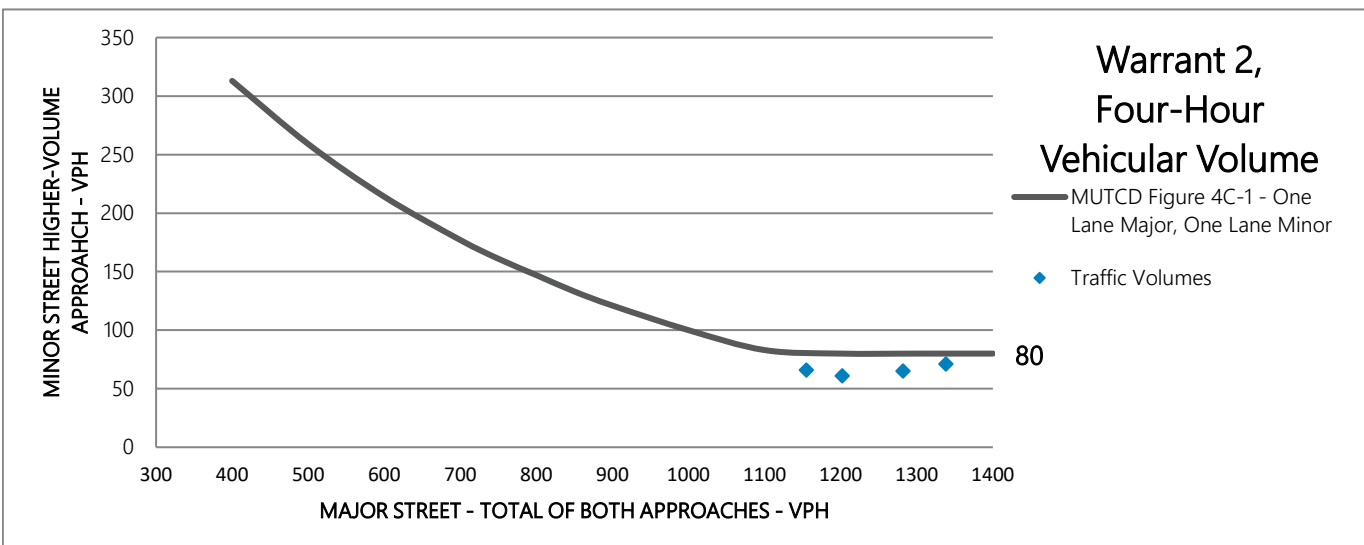
	MAJOR			MINOR			Calculated Threshold	
	EB	WB	Total	NB	SB	Max		
4:00 PM	774	912	1,686	72	40	72	80	N
3:00 PM	698	860	1,558	66	51	66	80	N
5:00 PM	723	757	1,480	77	37	77	80	N
2:00 PM	632	822	1,454	66	47	66	80	N
12:00 PM	575	763	1,338	71	31	71	80	N
1:00 PM	573	709	1,282	65	23	65	80	N
11:00 AM	488	714	1,202	61	31	61	80	N
6:00 PM	600	555	1,155	66	36	66	80	N

**Warrant Requirements:**

Major Street Lanes: 1

Minor Street Lanes: 1

**IS SIGNAL WARRANT 2 MET? NO**



**WARRANT 3, PEAK HOUR VEHICULAR VOLUME**

	MAJOR			MINOR			Calculated Threshold (B)	<b>A-2&amp;3</b>	<b>B</b>
	EB	WB	Total	NB	SB	Max			
4:00 PM	774	912	1,686	72	40	72	100	N	N
3:00 PM	698	860	1,558	66	51	66	100	N	N
5:00 PM	723	757	1,480	77	37	77	100	N	N
2:00 PM	632	822	1,454	66	47	66	100	N	N

**Warrant Requirements:**

Major Street Lanes: 1  
 Minor Street Lanes: 1

**CONDITION A-1 - Stopped Delay**

Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

**CONDITION A-2 - Minor Street Volume**

Minimum Volume on Higher Minor Street Approach: 100

**CONDITION A-3 - Total Approach Volume**

Minimum Volume of Total Approaches: 800

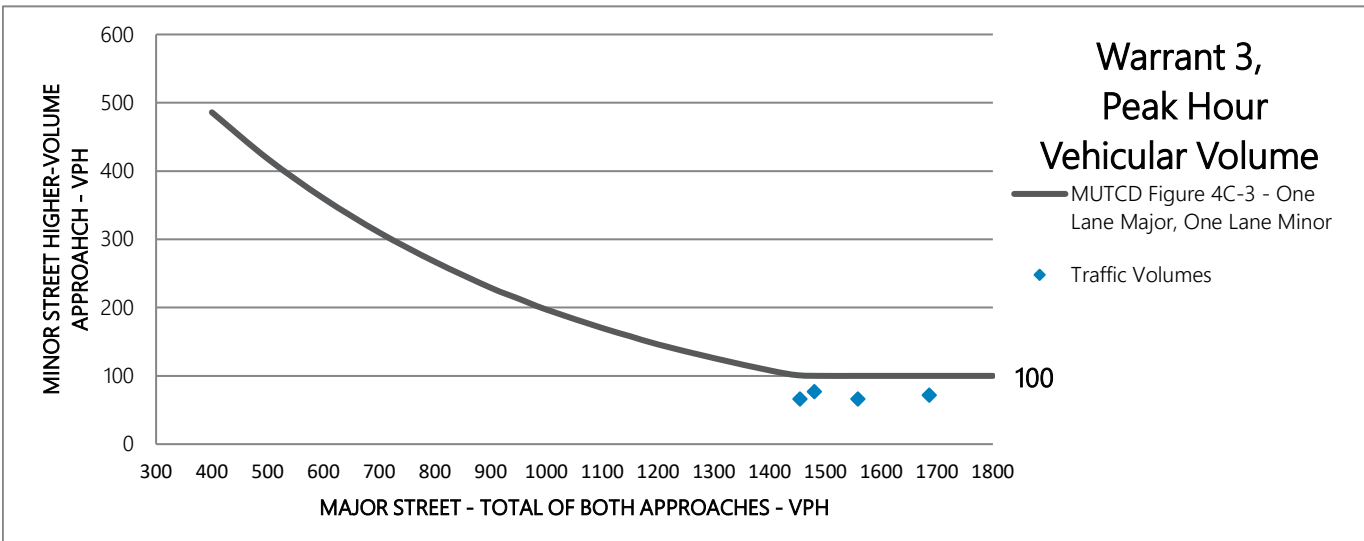
**CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)**

**ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET? NO**

Note: All 3 subsections of Condition A must be met to warrant signal.

**IS CONDITION B OF SIGNAL WARRANT 3 MET? NO**

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.



INTERSECTION INFORMATION					
City:	Molalla		Condition:	Buildout Conditions	
Population:	10,113			NB/SB Lefts & Throughs	
Intersection Location: (Rural/Urban)	Urban				
Major Street Name: Number of Moving	OR-211		Minor Street Name: Number of Moving	Leroy Avenue	
Lanes for Each	1		Lanes for Each	1	
Speed: Street	35 mph		Speed: Street	25 mph	
Width:	24 ft		Width:	40 ft	
Direction:	EB	WB	Direction:	NB	SB
Hour Beginning:			Hour Beginning:		
12:00 AM			12:00 AM		
1:00 AM			1:00 AM		
2:00 AM			2:00 AM		
3:00 AM			3:00 AM		
4:00 AM			4:00 AM		
5:00 AM	128	291	5:00 AM	8	2
6:00 AM	289	434	6:00 AM	8	9
7:00 AM	467	664	7:00 AM	80	42
8:00 AM	399	536	8:00 AM	32	28
9:00 AM	416	508	9:00 AM	36	22
10:00 AM	470	608	10:00 AM	45	20
11:00 AM	494	719	11:00 AM	63	32
12:00 PM	582	769	12:00 PM	73	32
1:00 PM	579	714	1:00 PM	67	24
2:00 PM	638	828	2:00 PM	68	48
3:00 PM	705	866	3:00 PM	68	52
4:00 PM	785	922	4:00 PM	74	41
5:00 PM	734	767	5:00 PM	79	38
6:00 PM	605	560	6:00 PM	68	37
7:00 PM	392	362	7:00 PM	50	30
8:00 PM	312	334	8:00 PM	38	13
9:00 PM			9:00 PM		
10:00 PM			10:00 PM		
11:00 PM			11:00 PM		
24-hour Total	7,995	9,882	24-hour Total	857	470

**Warrants Evaluated:**

- Warrant 1, 8-Hour Vehicular Volume - Evaluated for Conditions A & B
- Warrant 2, 4-Hour Vehicular Volume - Evaluated
- Warrant 3, Peak Hour - Evaluated for Conditions A-2, A-3 (A-1 needs to be evaluated separately), and Condition B
- Warrant 4, Pedestrian Volume - Not Analyzed
- Warrant 5, School Crossing - Not Analyzed
- Warrant 6, Coordinated Signal System - Not Analyzed
- Warrant 7, Accident Experience - Not Analyzed
- Warrant 8, Roadway Network - Not Analyzed
- Warrant 9, Intersection Near a Grade Crossing - Not Analyzed



**WARRANT 1, 8-HOUR VEHICULAR VOLUME**

	MAJOR			MINOR			<b>A</b>	<b>B</b>	<b>A or B</b>	<b>80% A&amp;B</b>
	EB	WB	Total	NB	SB	Max				
4:00 PM	785	922	1,707	74	41	74	N	N	N	N
3:00 PM	705	866	1,571	68	52	68	N	N	N	N
5:00 PM	734	767	1,501	79	38	79	N	Y	Y	N
2:00 PM	638	828	1,466	68	48	68	N	N	N	N
12:00 PM	582	769	1,351	73	32	73	N	N	N	N
1:00 PM	579	714	1,293	67	24	67	N	N	N	N
11:00 AM	494	719	1,213	63	32	63	N	N	N	N
6:00 PM	605	560	1,165	68	37	68	N	N	N	N
7:00 AM	467	664	1,131	80	42	80	N	Y	Y	N
10:00 AM	470	608	1,078	45	20	45	N	N	N	N
8:00 AM	399	536	935	32	28	32	N	N	N	N
9:00 AM	416	508	924	36	22	36	N	N	N	N

**Warrant Requirements:**

Major Street Lanes: 1  
 Minor Street Lanes: 1

**CONDITION A - Minimum Vehicular Volume**

Minimum Volume on Combined Major Street Approaches: 500  
 Minimum Volume on Higher Minor Street Approach: 150

**CONDITION B - Interruption of Continuous Traffic**

Minimum Volume on Combined Major Street Approaches: 750  
 Minimum Volume on Higher Minor Street Approach: 75

IS CONDITION A OF SIGNAL WARRANT 1 MET? NO  
 IS CONDITION B OF SIGNAL WARRANT 1 MET? NO  
 IS COMBINATION OF A OR B MET? NO  
 IS 80% OF CONDITION A AND CONDITION B MET? NO

Note: Signal Warrant 1 is met if either Condition A or Condition B is met.

**WARRANT 2, FOUR HOUR VEHICULAR VOLUME**

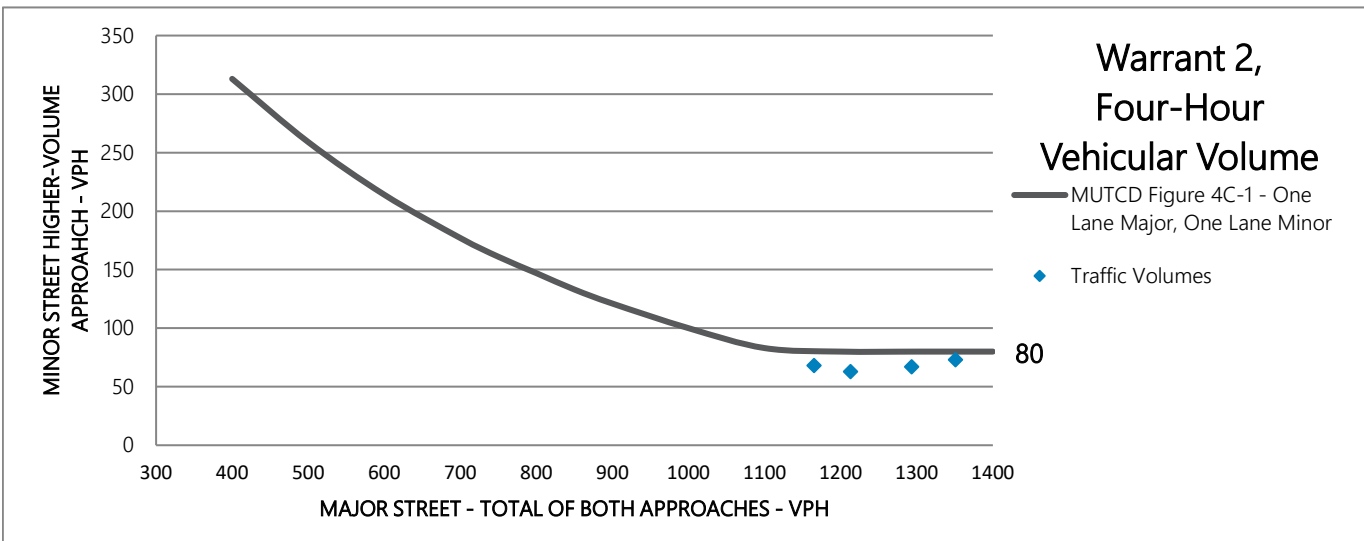
	MAJOR			MINOR			Calculated Threshold	
	EB	WB	Total	NB	SB	Max		
4:00 PM	785	922	1,707	74	41	74	80	N
3:00 PM	705	866	1,571	68	52	68	80	N
5:00 PM	734	767	1,501	79	38	79	80	N
2:00 PM	638	828	1,466	68	48	68	80	N
12:00 PM	582	769	1,351	73	32	73	80	N
1:00 PM	579	714	1,293	67	24	67	80	N
11:00 AM	494	719	1,213	63	32	63	80	N
6:00 PM	605	560	1,165	68	37	68	80	N

**Warrant Requirements:**

Major Street Lanes: 1

Minor Street Lanes: 1

**IS SIGNAL WARRANT 2 MET? NO**



**WARRANT 3, PEAK HOUR VEHICULAR VOLUME**

	MAJOR			MINOR			Calculated Threshold (B)	<b>A-2&amp;3</b>	<b>B</b>
	EB	WB	Total	NB	SB	Max			
4:00 PM	785	922	1,707	74	41	74	100	N	N
3:00 PM	705	866	1,571	68	52	68	100	N	N
5:00 PM	734	767	1,501	79	38	79	100	N	N
2:00 PM	638	828	1,466	68	48	68	100	N	N

**Warrant Requirements:**

Major Street Lanes: 1  
 Minor Street Lanes: 1

**CONDITION A-1 - Stopped Delay**

Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

**CONDITION A-2 - Minor Street Volume**

Minimum Volume on Higher Minor Street Approach: 100

**CONDITION A-3 - Total Approach Volume**

Minimum Volume of Total Approaches: 800

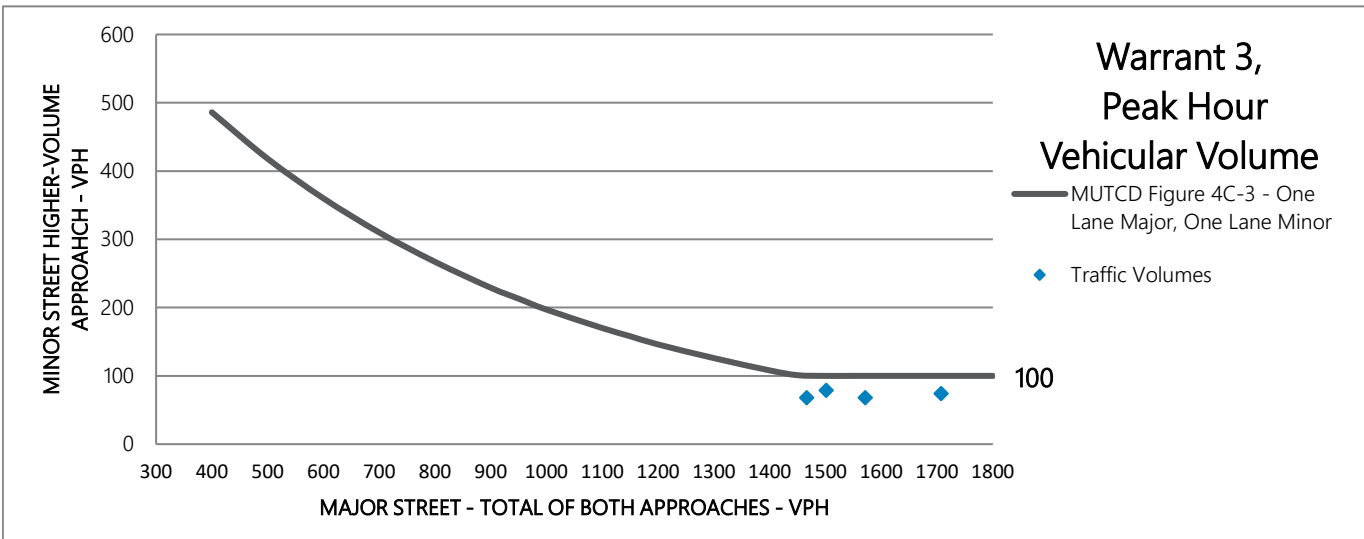
**CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)**

**ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET? NO**

Note: All 3 subsections of Condition A must be met to warrant signal.

**IS CONDITION B OF SIGNAL WARRANT 3 MET? NO**

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.

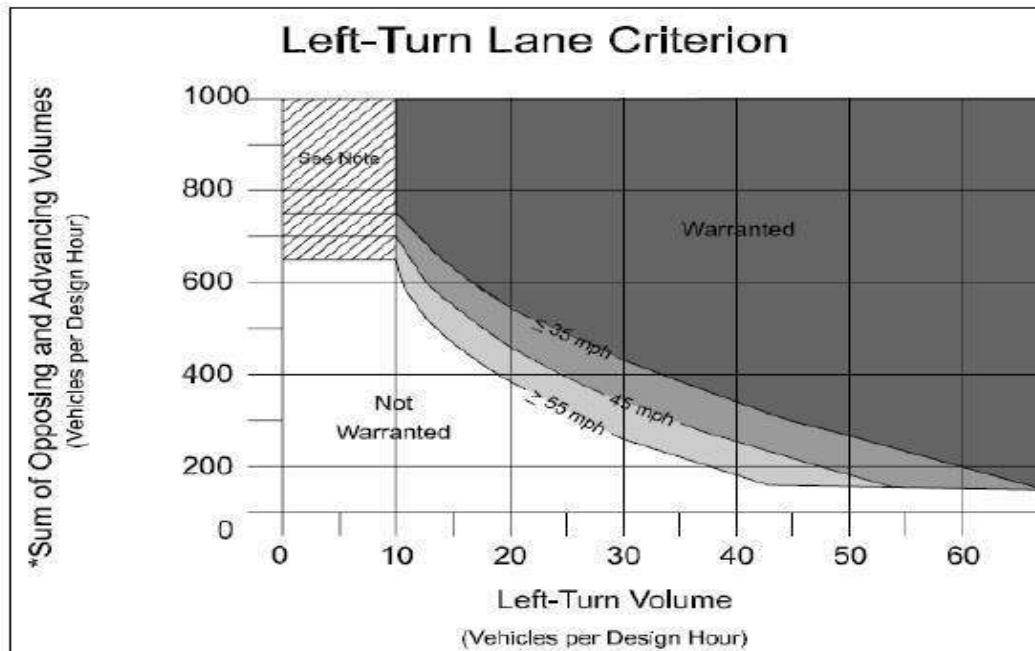


Project: 21190 - 710 W Main  
 Intersection: OR 211 & Shared Access  
 Date: 3/29/2022  
 Scenario: 2023 Buildout



Speed? 35 mph

AM Peak Hour		PM Peak Hour	
Left-Turn Volume	68	Left-Turn Volume	61
Approaching DHV	672	Approaching DHV	793
# of Advancing Through Lanes	1	# of Advancing Through Lanes	1
Opposing DHV	510	Opposing DHV	780
# of Opposing Through Lanes	1	# of Opposing Through Lanes	1
<b>O+A DHV</b>	<b>1182</b>	<b>O+A DHV</b>	<b>1573</b>
Lane Needed?	<b>Yes</b>	Lane Needed?	<b>Yes</b>



Source: Oregon DOT Analysis Procedures Manual 2008

$$*(\text{Advancing Vol} / \# \text{ of Advancing Through Lanes}) + (\text{Opposing Vol} / \# \text{ of Opposing Through Lanes})$$

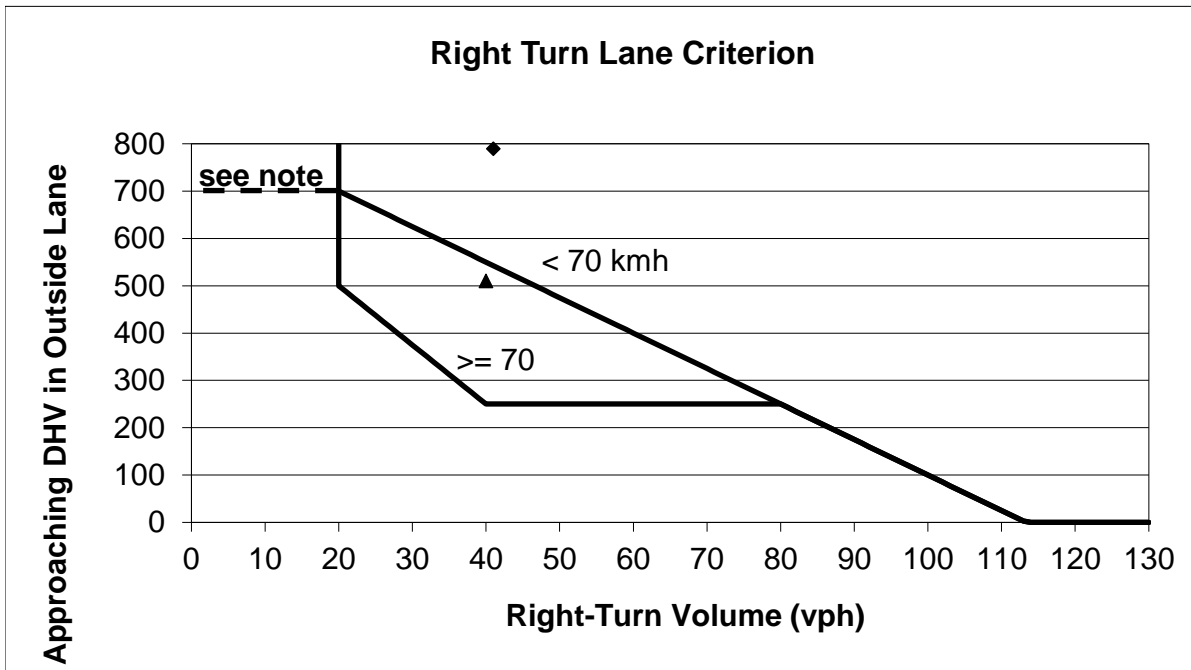
Note: The criterion is not met from zero to ten left turn vehicles per hour, but careful consideration should be given to installing a left turn lane due to the increased potential for accidents in the through lanes. While the turn volumes are low, the adverse safety and operational impacts may require installation of a left turn. The final determination will be based on a field study.

Project: 21190 - 710 W Main  
 Intersection: Hwy 211 @ East Shared Access  
 Date: 3/29/2022  
 Scenario: 2023 Buildout



Speed? 35 mph 56 kmh

AM Peak Hour		PM Peak Hour	
Right-Turn Volume	40	Right-Turn Volume	41
Approaching DHV	510	Approaching DHV	789
Lane Needed?	No	Lane Needed?	Yes



If there is no right turn lane, a shoulder needs to be provided.  
 If this intersection is in a rural area and is a connection to a public street, a right turn lane is needed.

## Appendix D – Operations

Synchro Operations Reports

SimTraffic Delay Reports

SimTraffic Queuing Reports



# HCM Signalized Intersection Capacity Analysis
























## 1: OR 213 & OR 211/OR 211 (W Main)

01/21/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	75	150	10	71	204	213	16	224	87	101	117	97	
Future Volume (vph)	75	150	10	71	204	213	16	224	87	101	117	97	
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1446	1508		1471	1549	1316	1599	1683	1430	1484	1456		
Flt Permitted	0.47	1.00		0.62	1.00	1.00	0.61	1.00	1.00	0.40	1.00		
Satd. Flow (perm)	711	1508		963	1549	1316	1026	1683	1430	629	1456		
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	
Adj. Flow (vph)	84	169	11	80	229	239	18	252	98	113	131	109	
RTOR Reduction (vph)	0	2	0	0	0	176	0	0	69	0	24	0	
Lane Group Flow (vph)	84	178	0	80	229	63	18	252	29	113	216	0	
Heavy Vehicles (%)	15%	15%	15%	13%	13%	13%	4%	4%	4%	12%	12%	12%	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases	2			6		6	8		8	4			
Actuated Green, G (s)	25.0	18.8		22.8	17.7	17.7	20.4	19.8	19.8	32.5	26.9		
Effective Green, g (s)	27.0	19.8		24.8	18.7	18.7	22.4	20.8	20.8	33.5	27.9		
Actuated g/C Ratio	0.38	0.28		0.35	0.26	0.26	0.31	0.29	0.29	0.47	0.39		
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		
Lane Grp Cap (vph)	342	418		377	405	344	334	490	416	399	568		
v/s Ratio Prot	c0.02	0.12		0.02	c0.15		0.00	c0.15		c0.03	0.15		
v/s Ratio Perm	0.07			0.06		0.05	0.02		0.02	0.10			
v/c Ratio	0.25	0.43		0.21	0.57	0.18	0.05	0.51	0.07	0.28	0.38		
Uniform Delay, d1	14.8	21.1		16.1	22.8	20.4	17.0	21.1	18.3	11.4	15.6		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2	0.3	0.5		0.2	1.5	0.2	0.0	0.7	0.1	0.3	0.3		
Delay (s)	15.1	21.6		16.3	24.3	20.6	17.1	21.8	18.3	11.7	15.9		
Level of Service	B	C		B	C	C	B	C	B	B	B		
Approach Delay (s)		19.6			21.5			20.6			14.5		
Approach LOS		B			C			C			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			19.4									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.46										
Actuated Cycle Length (s)			71.4									Sum of lost time (s)	16.0
Intersection Capacity Utilization			48.4%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

HCM 6th Signalized Intersection Summary  
 1: OR 213 & OR 211/OR 211 (W Main)

01/21/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	150	10	71	204	213	16	224	87	101	117	97
Future Volume (veh/h)	75	150	10	71	204	213	16	224	87	101	117	97
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1545	1545	1545	1573	1573	1573	1695	1695	1695	1586	1586	1586
Adj Flow Rate, veh/h	84	169	11	80	229	239	18	252	98	113	131	109
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	15	15	15	13	13	13	4	4	4	12	12	12
Cap, veh/h	406	426	28	484	464	393	354	378	321	363	223	185
Arrive On Green	0.09	0.30	0.28	0.08	0.30	0.30	0.04	0.22	0.22	0.10	0.28	0.26
Sat Flow, veh/h	1472	1435	93	1498	1573	1333	1615	1695	1437	1511	800	666
Grp Volume(v), veh/h	84	0	180	80	229	239	18	252	98	113	0	240
Grp Sat Flow(s),veh/h/ln	1472	0	1528	1498	1573	1333	1615	1695	1437	1511	0	1466
Q Serve(g_s), s	2.0	0.0	5.0	1.9	6.4	8.2	0.4	7.2	3.0	2.9	0.0	7.6
Cycle Q Clear(g_c), s	2.0	0.0	5.0	1.9	6.4	8.2	0.4	7.2	3.0	2.9	0.0	7.6
Prop In Lane	1.00		0.06	1.00		1.00	1.00		1.00	1.00		0.45
Lane Grp Cap(c), veh/h	406	0	454	484	464	393	354	378	321	363	0	408
V/C Ratio(X)	0.21	0.00	0.40	0.17	0.49	0.61	0.05	0.67	0.31	0.31	0.00	0.59
Avail Cap(c_a), veh/h	584	0	1262	583	1210	1026	470	1209	1025	615	0	1266
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.3	0.0	15.0	11.1	15.5	16.1	14.8	18.9	17.2	13.4	0.0	16.8
Incr Delay (d2), s/veh	0.2	0.0	0.4	0.1	0.6	1.1	0.0	1.5	0.4	0.4	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	1.6	0.5	2.0	2.3	0.1	2.6	0.9	0.8	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.4	0.0	15.4	11.2	16.1	17.3	14.8	20.4	17.6	13.7	0.0	17.8
LnGrp LOS	B	A	B	B	B	B	B	C	B	B	A	B
Approach Vol, veh/h		264			548			368			353	
Approach Delay, s/veh		14.1			15.9			19.4			16.5	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.5	19.8	6.2	18.8	8.6	19.7	9.1	15.9				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	43.0	5.0	45.0	10.0	40.0	13.0	37.0				
Max Q Clear Time (g_c+I1), s	3.9	7.0	2.4	9.6	4.0	10.2	4.9	9.2				
Green Ext Time (p_c), s	0.1	2.1	0.0	1.0	0.1	4.5	0.2	1.7				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			16.6									
HCM 6th LOS			B									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												



Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	367	0	0	518	0	0
Future Vol, veh/h	367	0	0	518	0	0
Conflicting Peds, #/hr	0	1	1	0	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	10	10	11	11	2	2
Mvmt Flow	412	0	0	582	0	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	413	0	996
Stage 1	-	-	-	-	413
Stage 2	-	-	-	-	583
Critical Hdwy	-	-	4.21	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.299	-	3.518
Pot Cap-1 Maneuver	-	-	1099	-	271
Stage 1	-	-	-	-	668
Stage 2	-	-	-	-	558
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1098	-	270
Mov Cap-2 Maneuver	-	-	-	-	399
Stage 1	-	-	-	-	667
Stage 2	-	-	-	-	557

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1098	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

HCM 6th TWSC  
3: Leroy Ave & OR 211 (W Main)

01/21/2022

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	337	0	0	433	58	0	0	0	33	0	85
Future Vol, veh/h	30	337	0	0	433	58	0	0	0	33	0	85
Conflicting Peds, #/hr	3	0	1	1	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	10	10	10	11	11	11	2	2	2	14	14	14
Mvmt Flow	34	379	0	0	487	65	0	0	0	37	0	96

Major/Minor	Major1		Major2		Minor1			Minor2				
Conflicting Flow All	555	0	0	380	0	0	1016	1003	380	970	971	523
Stage 1	-	-	-	-	-	-	448	448	-	523	523	-
Stage 2	-	-	-	-	-	-	568	555	-	447	448	-
Critical Hdwy	4.2	-	-	4.21	-	-	7.12	6.52	6.22	7.24	6.64	6.34
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.24	5.64	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.24	5.64	-
Follow-up Hdwy	2.29	-	-	2.299	-	-	3.518	4.018	3.318	3.626	4.126	3.426
Pot Cap-1 Maneuver	976	-	-	1131	-	-	216	242	667	221	241	531
Stage 1	-	-	-	-	-	-	590	573	-	516	511	-
Stage 2	-	-	-	-	-	-	508	513	-	568	553	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	973	-	-	1130	-	-	171	230	666	213	229	529
Mov Cap-2 Maneuver	-	-	-	-	-	-	171	230	-	213	229	-
Stage 1	-	-	-	-	-	-	563	547	-	492	509	-
Stage 2	-	-	-	-	-	-	416	511	-	543	528	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0	0	19.8
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	973	-	-	1130	-	-	374
HCM Lane V/C Ratio	-	0.035	-	-	-	-	-	0.355
HCM Control Delay (s)	0	8.8	0	-	0	-	-	19.8
HCM Lane LOS	A	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	1.6

HCM 6th TWSC  
4: Shared Access & OR 211 (W Main)

01/21/2022

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	370	0	0	491	0	0
Future Vol, veh/h	370	0	0	491	0	0
Conflicting Peds, #/hr	0	1	1	0	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	10	10	11	11	2	2
Mvmt Flow	416	0	0	552	0	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	417	0	970
Stage 1	-	-	-	-	417
Stage 2	-	-	-	-	553
Critical Hdwy	-	-	4.21	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.299	-	3.518
Pot Cap-1 Maneuver	-	-	1095	-	281
Stage 1	-	-	-	-	665
Stage 2	-	-	-	-	576
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1094	-	280
Mov Cap-2 Maneuver	-	-	-	-	280
Stage 1	-	-	-	-	664
Stage 2	-	-	-	-	575

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1094	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

HCM 6th TWSC  
5: OR 211 (W Main) & Ridings Ave

01/21/2022

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	360	0	0	471	31	0	0	0	13	0	20
Future Vol, veh/h	10	360	0	0	471	31	0	0	0	13	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	10	10	10	14	14	14	3	3	3	9	9	9
Mvmt Flow	11	383	0	0	501	33	0	0	0	14	0	21




















Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	534	0	0	383	0	0	933	939	383	923	923	518
Stage 1	-	-	-	-	-	-	405	405	-	518	518	-
Stage 2	-	-	-	-	-	-	528	534	-	405	405	-
Critical Hdwy	4.2	-	-	4.24	-	-	7.13	6.53	6.23	7.19	6.59	6.29
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.19	5.59	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.19	5.59	-
Follow-up Hdwy	2.29	-	-	2.326	-	-	3.527	4.027	3.327	3.581	4.081	3.381
Pot Cap-1 Maneuver	994	-	-	1113	-	-	245	263	662	243	263	544
Stage 1	-	-	-	-	-	-	620	597	-	528	522	-
Stage 2	-	-	-	-	-	-	532	523	-	609	587	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	994	-	-	1113	-	-	233	259	662	240	259	544
Mov Cap-2 Maneuver	-	-	-	-	-	-	233	259	-	240	259	-
Stage 1	-	-	-	-	-	-	611	589	-	521	522	-
Stage 2	-	-	-	-	-	-	511	523	-	600	579	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	16
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	994	-	-	1113	-	-	363
HCM Lane V/C Ratio	-	0.011	-	-	-	-	-	0.097
HCM Control Delay (s)	0	8.7	0	-	0	-	-	16
HCM Lane LOS	A	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.3

HCM Signalized Intersection Capacity Analysis  
 6: Molalla Ave & OR 211 (W Main)




















01/21/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	45	241	29	6	292	40	89	68	17	40	49	51	
Future Volume (vph)	45	241	29	6	292	40	89	68	17	40	49	51	
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	
Total Lost time (s)	4.0	3.5		4.0	3.5			3.5			3.5		
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00		
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99		
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00		
Frt	1.00	0.98		1.00	0.98			0.99			0.95		
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99		
Satd. Flow (prot)	1525	1576		1510	1558			1573			1480		
Flt Permitted	0.95	1.00		0.95	1.00			0.82			0.90		
Satd. Flow (perm)	1525	1576		1510	1558			1316			1351		
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	
Adj. Flow (vph)	49	265	32	7	321	44	98	75	19	44	54	56	
RTOR Reduction (vph)	0	5	0	0	5	0	0	4	0	0	25	0	
Lane Group Flow (vph)	49	292	0	7	360	0	0	188	0	0	129	0	
Confl. Peds. (#/hr)	2		1	1		2	1					1	
Heavy Vehicles (%)	9%	9%	9%	10%	10%	10%	7%	7%	7%	10%	10%	10%	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA		
Protected Phases	5	2		1	6			8			4		
Permitted Phases							8			4			
Actuated Green, G (s)	2.3	21.3		0.7	19.7			10.7			10.7		
Effective Green, g (s)	2.3	21.8		0.7	20.2			11.2			11.2		
Actuated g/C Ratio	0.05	0.49		0.02	0.45			0.25			0.25		
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0		
Vehicle Extension (s)	2.5	2.5		2.5	2.5			2.5			2.5		
Lane Grp Cap (vph)	78	768		23	704			329			338		
v/s Ratio Prot	c0.03	0.19		0.00	c0.23								
v/s Ratio Perm								c0.14			0.10		
v/c Ratio	0.63	0.38		0.30	0.51			0.57			0.38		
Uniform Delay, d1	20.8	7.2		21.8	8.7			14.6			13.9		
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00		
Incremental Delay, d2	12.9	0.2		5.4	0.5			1.8			0.5		
Delay (s)	33.7	7.4		27.1	9.2			16.5			14.4		
Level of Service	C	A		C	A			B			B		
Approach Delay (s)		11.1			9.5			16.5			14.4		
Approach LOS		B			A			B			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			12.0									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.54										
Actuated Cycle Length (s)			44.7									Sum of lost time (s)	11.0
Intersection Capacity Utilization			51.4%									ICU Level of Service	A
Analysis Period (min)			15										

c Critical Lane Group

HCM 6th Signalized Intersection Summary  
 6: Molalla Ave & OR 211 (W Main)

01/21/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	241	29	6	292	40	89	68	17	40	49	51
Future Volume (veh/h)	45	241	29	6	292	40	89	68	17	40	49	51
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1627	1627	1627	1614	1614	1614	1654	1654	1654	1614	1614	1614
Adj Flow Rate, veh/h	49	265	32	7	321	44	98	75	19	44	54	56
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	9	9	9	10	10	10	7	7	7	10	10	10
Cap, veh/h	99	610	74	17	522	72	303	198	39	188	182	142
Arrive On Green	0.06	0.43	0.43	0.01	0.38	0.36	0.26	0.27	0.26	0.26	0.27	0.26
Sat Flow, veh/h	1550	1424	172	1537	1388	190	589	728	145	246	671	524
Grp Volume(v), veh/h	49	0	297	7	0	365	192	0	0	154	0	0
Grp Sat Flow(s),veh/h/ln	1550	0	1596	1537	0	1579	1462	0	0	1441	0	0
Q Serve(g_s), s	1.2	0.0	5.0	0.2	0.0	7.2	0.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.2	0.0	5.0	0.2	0.0	7.2	3.9	0.0	0.0	3.2	0.0	0.0
Prop In Lane	1.00		0.11	1.00		0.12	0.51		0.10	0.29		0.36
Lane Grp Cap(c), veh/h	99	0	683	17	0	593	520	0	0	494	0	0
V/C Ratio(X)	0.50	0.00	0.43	0.41	0.00	0.62	0.37	0.00	0.00	0.31	0.00	0.00
Avail Cap(c_a), veh/h	448	0	1782	363	0	1680	1146	0	0	1122	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	17.2	0.0	7.6	18.7	0.0	9.7	11.6	0.0	0.0	11.4	0.0	0.0
Incr Delay (d2), s/veh	2.8	0.0	0.3	10.9	0.0	0.8	0.3	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.2	0.1	0.0	1.9	1.1	0.0	0.0	0.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.1	0.0	8.0	29.6	0.0	10.4	11.9	0.0	0.0	11.7	0.0	0.0
LnGrp LOS	C	A	A	C	A	B	B	A	A	B	A	A
Approach Vol, veh/h		346			372			192			154	
Approach Delay, s/veh		9.7			10.8			11.9			11.7	
Approach LOS		A			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.4	19.8		13.8	6.4	17.8		13.8				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	9.0	42.0		27.0	11.0	40.0		27.0				
Max Q Clear Time (g_c+I1), s	2.2	7.0		5.2	3.2	9.2		5.9				
Green Ext Time (p_c), s	0.0	3.7		0.6	0.1	4.6		0.7				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				10.8								
HCM 6th LOS				B								

# HCM Signalized Intersection Capacity Analysis

## 1: OR 213 & OR 211/OR 211 (W Main)

01/21/2022
























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	142	246	14	137	226	152	22	206	103	231	232	119	
Future Volume (vph)	142	246	14	137	226	152	22	206	103	231	232	119	
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00		
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1583	1654		1568	1651	1374	1614	1699	1405	1566	1567		
Flt Permitted	0.42	1.00		0.33	1.00	1.00	0.53	1.00	1.00	0.39	1.00		
Satd. Flow (perm)	707	1654		553	1651	1374	906	1699	1405	644	1567		
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	
Adj. Flow (vph)	156	270	15	151	248	167	24	226	113	254	255	131	
RTOR Reduction (vph)	0	2	0	0	0	127	0	0	85	0	15	0	
Lane Group Flow (vph)	156	283	0	151	248	40	24	226	28	254	371	0	
Confl. Peds. (#/hr)	1					1			6	6			
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	3%	3%	3%	6%	6%	6%	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases	2			6		6	8		8	4			
Actuated Green, G (s)	28.2	18.7		29.0	19.1	19.1	21.5	19.9	19.9	40.9	34.3		
Effective Green, g (s)	30.2	19.7		31.0	20.1	20.1	23.5	20.9	20.9	41.9	35.3		
Actuated g/C Ratio	0.36	0.23		0.37	0.24	0.24	0.28	0.25	0.25	0.50	0.42		
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		
Lane Grp Cap (vph)	361	385		333	392	326	273	420	347	504	654		
v/s Ratio Prot	0.05	c0.17		c0.06	0.15		0.00	0.13		c0.10	c0.24		
v/s Ratio Perm	0.10			0.11		0.03	0.02		0.02	0.15			
v/c Ratio	0.43	0.74		0.45	0.63	0.12	0.09	0.54	0.08	0.50	0.57		
Uniform Delay, d1	19.6	30.0		19.3	28.9	25.3	22.4	27.6	24.4	13.5	18.8		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2	0.6	6.8		0.7	2.9	0.1	0.1	1.0	0.1	0.6	0.9		
Delay (s)	20.2	36.8		20.0	31.8	25.4	22.5	28.6	24.5	14.1	19.7		
Level of Service	C	D		B	C	C	C	C	C	B	B		
Approach Delay (s)		30.9			26.8			26.9			17.5		
Approach LOS		C			C			C			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			24.7		HCM 2000 Level of Service					C			
HCM 2000 Volume to Capacity ratio			0.61										
Actuated Cycle Length (s)			84.5		Sum of lost time (s)					16.0			
Intersection Capacity Utilization			65.4%		ICU Level of Service					C			
Analysis Period (min)			15										

c Critical Lane Group

# HCM 6th Signalized Intersection Summary

## 1: OR 213 & OR 211/OR 211 (W Main)

01/21/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	142	246	14	137	226	152	22	206	103	231	232	119
Future Volume (veh/h)	142	246	14	137	226	152	22	206	103	231	232	119
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1682	1682	1682	1668	1668	1668	1709	1709	1709	1668	1668	1668
Adj Flow Rate, veh/h	156	270	15	151	248	167	24	226	113	254	255	131
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	5	5	5	6	6	6	3	3	3	6	6	6
Cap, veh/h	406	401	22	392	421	356	310	378	316	480	358	184
Arrive On Green	0.11	0.25	0.24	0.11	0.25	0.25	0.04	0.22	0.22	0.17	0.35	0.33
Sat Flow, veh/h	1602	1578	88	1589	1668	1411	1628	1709	1429	1589	1035	532
Grp Volume(v), veh/h	156	0	285	151	248	167	24	226	113	254	0	386
Grp Sat Flow(s),veh/h/ln	1602	0	1666	1589	1668	1411	1628	1709	1429	1589	0	1567
Q Serve(g_s), s	4.4	0.0	10.0	4.3	8.4	6.5	0.7	7.7	4.3	7.1	0.0	13.9
Cycle Q Clear(g_c), s	4.4	0.0	10.0	4.3	8.4	6.5	0.7	7.7	4.3	7.1	0.0	13.9
Prop In Lane	1.00		0.05	1.00		1.00	1.00		1.00	1.00		0.34
Lane Grp Cap(c), veh/h	406	0	423	392	421	356	310	378	316	480	0	542
V/C Ratio(X)	0.38	0.00	0.67	0.39	0.59	0.47	0.08	0.60	0.36	0.53	0.00	0.71
Avail Cap(c_a), veh/h	500	0	954	537	1007	852	392	847	708	756	0	1164
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.1	0.0	21.7	15.4	21.2	20.5	18.0	22.6	21.3	13.9	0.0	18.5
Incr Delay (d2), s/veh	0.4	0.0	1.4	0.5	1.0	0.7	0.1	1.1	0.5	0.7	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	3.8	1.4	3.1	2.0	0.3	2.9	1.4	2.3	0.0	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.6	0.0	23.1	15.8	22.2	21.2	18.1	23.7	21.8	14.6	0.0	19.8
LnGrp LOS	B	A	C	B	C	C	B	C	C	B	A	B
Approach Vol, veh/h		441			566			363			640	
Approach Delay, s/veh		20.4			20.2			22.7			17.8	
Approach LOS		C			C			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.1	20.4	6.7	26.3	11.2	20.3	14.8	18.3				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	12.0	36.0	5.0	47.0	10.0	38.0	21.0	31.0				
Max Q Clear Time (g_c+I1), s	6.3	12.0	2.7	15.9	6.4	10.4	9.1	9.7				
Green Ext Time (p_c), s	0.2	3.1	0.0	1.7	0.2	4.0	0.7	1.6				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				19.9								
HCM 6th LOS				B								
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												



Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	661	0	0	654	0	0
Future Vol, veh/h	661	0	0	654	0	0
Conflicting Peds, #/hr	0	1	1	0	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	4	5	5	2	2
Mvmt Flow	696	0	0	688	0	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	697	0	1386 698
Stage 1	-	-	-	-	697 -
Stage 2	-	-	-	-	689 -
Critical Hdwy	-	-	4.15	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.245	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	885	-	158 440
Stage 1	-	-	-	-	494 -
Stage 2	-	-	-	-	498 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	884	-	158 439
Mov Cap-2 Maneuver	-	-	-	-	298 -
Stage 1	-	-	-	-	494 -
Stage 2	-	-	-	-	498 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	884	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

HCM 6th TWSC  
 3: Leroy Ave & OR 211 (W Main)

01/21/2022

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	55	606	0	0	574	40	0	0	0	25	0	80
Future Vol, veh/h	55	606	0	0	574	40	0	0	0	25	0	80
Conflicting Peds, #/hr	4	0	2	2	0	4	4	0	0	0	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	4	4	4	5	5	5	2	2	2	3	3	3
Mvmt Flow	58	638	0	0	604	42	0	0	0	26	0	84

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	650	0	0	640	0	0	1427	1406	640	1383	1385	633
Stage 1	-	-	-	-	-	-	756	756	-	629	629	-
Stage 2	-	-	-	-	-	-	671	650	-	754	756	-
Critical Hdwy	4.14	-	-	4.15	-	-	7.12	6.52	6.22	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.13	5.53	-
Follow-up Hdwy	2.236	-	-	2.245	-	-	3.518	4.018	3.318	3.527	4.027	3.327
Pot Cap-1 Maneuver	927	-	-	930	-	-	113	139	475	120	143	478
Stage 1	-	-	-	-	-	-	400	416	-	469	474	-
Stage 2	-	-	-	-	-	-	446	465	-	400	415	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	923	-	-	928	-	-	86	125	474	111	128	474
Mov Cap-2 Maneuver	-	-	-	-	-	-	86	125	-	111	128	-
Stage 1	-	-	-	-	-	-	360	375	-	422	472	-
Stage 2	-	-	-	-	-	-	365	463	-	361	374	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			0			0			27.8		
HCM LOS							A			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	923	-	-	928	-	-	266
HCM Lane V/C Ratio	-	0.063	-	-	-	-	-	0.416
HCM Control Delay (s)	0	9.2	0	-	0	-	-	27.8
HCM Lane LOS	A	A	A	-	A	-	-	D
HCM 95th %tile Q(veh)	-	0.2	-	-	0	-	-	1.9

HCM 6th TWSC  
4: Shared Access & OR 211 (W Main)

01/21/2022

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	631	0	0	614	0	0
Future Vol, veh/h	631	0	0	614	0	0
Conflicting Peds, #/hr	0	1	1	0	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	4	5	5	2	2
Mvmt Flow	664	0	0	646	0	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	665	0	1312 666
Stage 1	-	-	-	-	665 -
Stage 2	-	-	-	-	647 -
Critical Hdwy	-	-	4.15	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.245	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	910	-	175 459
Stage 1	-	-	-	-	511 -
Stage 2	-	-	-	-	521 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	909	-	175 458
Mov Cap-2 Maneuver	-	-	-	-	175 -
Stage 1	-	-	-	-	510 -
Stage 2	-	-	-	-	520 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	909	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

HCM 6th TWSC  
5: OR 211 (W Main) & Ridings Ave

01/21/2022

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	17	613	1	1	585	18	0	0	2	15	0	29
Future Vol, veh/h	17	613	1	1	585	18	0	0	2	15	0	29
Conflicting Peds, #/hr	4	0	0	0	0	4	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	7	7	7	8	8	8	2	2	2	14	14	14
Mvmt Flow	18	645	1	1	616	19	0	0	2	16	0	31

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	639	0	0	646	0	0	1325	1323	646	1315	1314	630
Stage 1	-	-	-	-	-	-	682	682	-	632	632	-
Stage 2	-	-	-	-	-	-	643	641	-	683	682	-
Critical Hdwy	4.17	-	-	4.18	-	-	7.12	6.52	6.22	7.24	6.64	6.34
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.24	5.64	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.24	5.64	-
Follow-up Hdwy	2.263	-	-	2.272	-	-	3.518	4.018	3.318	3.626	4.126	3.426
Pot Cap-1 Maneuver	921	-	-	911	-	-	133	156	472	127	150	461
Stage 1	-	-	-	-	-	-	440	450	-	449	456	-
Stage 2	-	-	-	-	-	-	462	469	-	420	432	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	917	-	-	911	-	-	121	150	472	123	144	459
Mov Cap-2 Maneuver	-	-	-	-	-	-	121	150	-	123	144	-
Stage 1	-	-	-	-	-	-	426	436	-	433	453	-
Stage 2	-	-	-	-	-	-	430	466	-	405	419	-




















Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0			12.7			23.7		
HCM LOS							B			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	472	917	-	-	911	-	-	238
HCM Lane V/C Ratio	0.004	0.02	-	-	0.001	-	-	0.195
HCM Control Delay (s)	12.7	9	0	-	9	0	-	23.7
HCM Lane LOS		B	A	A	-	A	A	C
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.7

# HCM Signalized Intersection Capacity Analysis




















## 6: Molalla Ave & OR 211 (W Main)

01/21/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	60	354	103	8	354	41	72	79	21	63	126	112	
Future Volume (vph)	60	354	103	8	354	41	72	79	21	63	126	112	
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	
Total Lost time (s)	4.0	3.5		4.0	3.5			3.5			3.5		
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00		
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00			0.99		
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00		
Frt	1.00	0.97		1.00	0.98			0.98			0.95		
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99		
Satd. Flow (prot)	1599	1618		1582	1634			1610			1574		
Flt Permitted	0.95	1.00		0.95	1.00			0.79			0.91		
Satd. Flow (perm)	1599	1618		1582	1634			1295			1440		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	63	373	108	8	373	43	76	83	22	66	133	118	
RTOR Reduction (vph)	0	12	0	0	5	0	0	5	0	0	24	0	
Lane Group Flow (vph)	63	469	0	8	411	0	0	176	0	0	293	0	
Confl. Peds. (#/hr)	11		1	1		11	11		4	4		11	
Confl. Bikes (#/hr)			2			3							
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	4%	4%	4%	3%	3%	3%	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA		
Protected Phases	5	2		1	6			8			4		
Permitted Phases							8			4			
Actuated Green, G (s)	4.0	23.8		0.8	20.6			17.8			17.8		
Effective Green, g (s)	4.0	24.3		0.8	21.1			18.3			18.3		
Actuated g/C Ratio	0.07	0.45		0.01	0.39			0.34			0.34		
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0		
Vehicle Extension (s)	2.5	2.5		2.5	2.5			2.5			2.5		
Lane Grp Cap (vph)	117	722		23	633			435			484		
v/s Ratio Prot	c0.04	c0.29		0.01	0.25								
v/s Ratio Perm								0.14			c0.20		
v/c Ratio	0.54	0.65		0.35	0.65			0.40			0.61		
Uniform Delay, d1	24.3	11.7		26.5	13.6			13.9			15.0		
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00		
Incremental Delay, d2	3.7	1.9		6.5	2.0			0.4			1.8		
Delay (s)	28.0	13.6		33.1	15.7			14.3			16.9		
Level of Service	C	B		C	B			B			B		
Approach Delay (s)		15.3			16.0			14.3			16.9		
Approach LOS		B			B			B			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			15.7									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.65										
Actuated Cycle Length (s)			54.4									Sum of lost time (s)	11.0
Intersection Capacity Utilization			62.5%									ICU Level of Service	B
Analysis Period (min)			15										
c	Critical Lane Group												

HCM 6th Signalized Intersection Summary  
 6: Molalla Ave & OR 211 (W Main)

01/21/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	354	103	8	354	41	72	79	21	63	126	112
Future Volume (veh/h)	60	354	103	8	354	41	72	79	21	63	126	112
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	0.99		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1695	1695	1695	1682	1682	1682	1695	1695	1695	1709	1709	1709
Adj Flow Rate, veh/h	63	373	108	8	373	43	76	83	22	66	133	118
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	5	5	5	4	4	4	3	3	3
Cap, veh/h	118	560	162	20	569	66	249	237	51	161	216	165
Arrive On Green	0.07	0.45	0.45	0.01	0.39	0.38	0.28	0.29	0.28	0.28	0.29	0.28
Sat Flow, veh/h	1615	1253	363	1602	1474	170	458	814	176	215	741	567
Grp Volume(v), veh/h	63	0	481	8	0	416	181	0	0	317	0	0
Grp Sat Flow(s),veh/h/ln	1615	0	1615	1602	0	1643	1448	0	0	1523	0	0
Q Serve(g_s), s	1.7	0.0	10.4	0.2	0.0	9.2	0.0	0.0	0.0	4.1	0.0	0.0
Cycle Q Clear(g_c), s	1.7	0.0	10.4	0.2	0.0	9.2	4.1	0.0	0.0	8.2	0.0	0.0
Prop In Lane	1.00		0.22	1.00		0.10	0.42		0.12	0.21		0.37
Lane Grp Cap(c), veh/h	118	0	722	20	0	635	521	0	0	525	0	0
V/C Ratio(X)	0.53	0.00	0.67	0.39	0.00	0.66	0.35	0.00	0.00	0.60	0.00	0.00
Avail Cap(c_a), veh/h	329	0	1446	327	0	1471	1063	0	0	1119	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.7	0.0	9.6	21.6	0.0	11.1	12.6	0.0	0.0	14.1	0.0	0.0
Incr Delay (d2), s/veh	2.8	0.0	0.8	8.9	0.0	0.9	0.3	0.0	0.0	0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	2.8	0.1	0.0	2.7	1.3	0.0	0.0	2.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.5	0.0	10.4	30.5	0.0	12.0	12.9	0.0	0.0	14.9	0.0	0.0
LnGrp LOS	C	A	B	C	A	B	B	A	A	B	A	A
Approach Vol, veh/h		544			424			181			317	
Approach Delay, s/veh		11.8			12.4			12.9			14.9	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.6	23.2		16.3	7.2	20.5		16.3				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	9.0	39.0		30.0	9.0	39.0		30.0				
Max Q Clear Time (g_c+I1), s	2.2	12.4		10.2	3.7	11.2		6.1				
Green Ext Time (p_c), s	0.0	6.2		1.3	0.1	5.1		0.8				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				12.8								
HCM 6th LOS				B								

# HCM Signalized Intersection Capacity Analysis

## 1: OR 213 & OR 211/OR 211 (W Main)

03/28/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	156	11	99	212	278	20	240	115	165	124	128
Future Volume (vph)	106	156	11	99	212	278	20	240	115	165	124	128
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1446	1507		1471	1549	1316	1599	1683	1430	1484	1443	
Flt Permitted	0.41	1.00		0.61	1.00	1.00	0.59	1.00	1.00	0.37	1.00	
Satd. Flow (perm)	622	1507		944	1549	1316	986	1683	1430	573	1443	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	119	175	12	111	238	312	22	270	129	185	139	144
RTOR Reduction (vph)	0	2	0	0	0	237	0	0	93	0	29	0
Lane Group Flow (vph)	119	185	0	111	238	75	22	270	36	185	254	0
Heavy Vehicles (%)	15%	15%	15%	13%	13%	13%	4%	4%	4%	12%	12%	12%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8		8	4		
Actuated Green, G (s)	26.9	19.8		23.3	18.0	18.0	22.7	21.1	21.1	38.5	31.9	
Effective Green, g (s)	28.9	20.8		25.3	19.0	19.0	24.7	22.1	22.1	39.5	32.9	
Actuated g/C Ratio	0.37	0.26		0.32	0.24	0.24	0.31	0.28	0.28	0.50	0.42	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	313	398		346	374	318	330	473	402	443	604	
v/s Ratio Prot	c0.04	0.12		0.03	c0.15		0.00	c0.16		c0.07	0.18	
v/s Ratio Perm	0.10			0.08		0.06	0.02		0.03	0.14		
v/c Ratio	0.38	0.46		0.32	0.64	0.24	0.07	0.57	0.09	0.42	0.42	
Uniform Delay, d1	17.5	24.2		19.6	26.7	24.0	18.7	24.2	20.8	11.9	16.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	0.6		0.4	3.1	0.3	0.1	1.4	0.1	0.5	0.3	
Delay (s)	18.0	24.9		19.9	29.8	24.3	18.8	25.6	20.9	12.4	16.5	
Level of Service	B	C		B	C	C	B	C	C	B	B	
Approach Delay (s)		22.2			25.5			23.8			14.8	
Approach LOS		C			C			C			B	

### Intersection Summary

HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	78.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

# HCM 6th Signalized Intersection Summary

## 1: OR 213 & OR 211/OR 211 (W Main)

03/28/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷	↷	↶	↷	↷	↶	↷	↷
Traffic Volume (veh/h)	106	156	11	99	212	278	20	240	115	165	124	128
Future Volume (veh/h)	106	156	11	99	212	278	20	240	115	165	124	128
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1545	1545	1545	1573	1573	1573	1695	1695	1695	1586	1586	1586
Adj Flow Rate, veh/h	119	175	12	111	238	312	22	270	129	185	139	144
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	15	15	15	13	13	13	4	4	4	12	12	12
Cap, veh/h	394	473	32	489	510	432	326	374	317	370	223	231
Arrive On Green	0.09	0.33	0.32	0.08	0.32	0.32	0.04	0.22	0.22	0.13	0.31	0.30
Sat Flow, veh/h	1472	1430	98	1498	1573	1333	1615	1695	1437	1511	714	739
Grp Volume(v), veh/h	119	0	187	111	238	312	22	270	129	185	0	283
Grp Sat Flow(s),veh/h/ln	1472	0	1528	1498	1573	1333	1615	1695	1437	1511	0	1453
Q Serve(g_s), s	3.5	0.0	6.4	3.2	8.2	14.1	0.7	10.0	5.2	5.9	0.0	11.4
Cycle Q Clear(g_c), s	3.5	0.0	6.4	3.2	8.2	14.1	0.7	10.0	5.2	5.9	0.0	11.4
Prop In Lane	1.00		0.06	1.00		1.00	1.00		1.00	1.00		0.51
Lane Grp Cap(c), veh/h	394	0	505	489	510	432	326	374	317	370	0	453
V/C Ratio(X)	0.30	0.00	0.37	0.23	0.47	0.72	0.07	0.72	0.41	0.50	0.00	0.62
Avail Cap(c_a), veh/h	501	0	988	541	947	803	404	947	802	483	0	982
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.3	0.0	17.4	13.2	18.3	20.3	19.1	24.6	22.7	16.2	0.0	20.3
Incr Delay (d2), s/veh	0.3	0.0	0.3	0.2	0.5	1.7	0.1	2.0	0.6	0.8	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	2.1	1.0	2.8	4.1	0.2	3.9	1.7	1.9	0.0	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.6	0.0	17.7	13.4	18.8	22.0	19.1	26.6	23.3	17.0	0.0	21.3
LnGrp LOS	B	A	B	B	B	C	B	C	C	B	A	C
Approach Vol, veh/h		306			661			421			468	
Approach Delay, s/veh		16.1			19.4			25.2			19.6	
Approach LOS		B			B			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	26.5	6.7	25.2	10.1	26.1	12.9	19.0				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	43.0	5.0	45.0	10.0	40.0	13.0	37.0				
Max Q Clear Time (g_c+I1), s	5.2	8.4	2.7	13.4	5.5	16.1	7.9	12.0				
Green Ext Time (p_c), s	0.1	2.1	0.0	1.2	0.1	5.0	0.3	2.0				

### Intersection Summary

HCM 6th Ctrl Delay	20.2
HCM 6th LOS	C

### Notes

User approved pedestrian interval to be less than phase max green.



Intersection						
Int Delay, s/veh	3.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↘	↙
Traffic Vol, veh/h	402	73	59	550	77	42
Future Vol, veh/h	402	73	59	550	77	42
Conflicting Peds, #/hr	0	1	1	0	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	10	10	11	11	2	2
Mvmt Flow	452	82	66	618	87	47

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	535	0	1204 454
Stage 1	-	-	-	-	453 -
Stage 2	-	-	-	-	751 -
Critical Hdwy	-	-	4.21	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.299	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	989	-	203 606
Stage 1	-	-	-	-	640 -
Stage 2	-	-	-	-	466 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	988	-	189 605
Mov Cap-2 Maneuver	-	-	-	-	189 -
Stage 1	-	-	-	-	639 -
Stage 2	-	-	-	-	434 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	34.8
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	250	-	-	988	-
HCM Lane V/C Ratio	0.535	-	-	0.067	-
HCM Control Delay (s)	34.8	-	-	8.9	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	2.9	-	-	0.2	-

HCM 6th TWSC  
 3: Leroy Ave & OR 211 (W Main)

03/28/2022

Intersection												
Int Delay, s/veh	13.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↷		↶	↷	
Traffic Vol, veh/h	31	365	47	126	460	61	61	9	95	34	10	89
Future Vol, veh/h	31	365	47	126	460	61	61	9	95	34	10	89
Conflicting Peds, #/hr	3	0	1	1	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	10	10	10	11	11	11	2	2	2	14	14	14
Mvmt Flow	35	410	53	142	517	69	69	10	107	38	11	100

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	589	0	0	464	0	0	1399	1381	438	1404	1373	555
Stage 1	-	-	-	-	-	-	508	508	-	839	839	-
Stage 2	-	-	-	-	-	-	891	873	-	565	534	-
Critical Hdwy	4.2	-	-	4.21	-	-	7.12	6.52	6.22	7.24	6.64	6.34
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.24	5.64	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.24	5.64	-
Follow-up Hdwy	2.29	-	-	2.299	-	-	3.518	4.018	3.318	3.626	4.126	3.426
Pot Cap-1 Maneuver	948	-	-	1052	-	-	118	144	619	110	138	509
Stage 1	-	-	-	-	-	-	547	539	-	344	365	-
Stage 2	-	-	-	-	-	-	337	368	-	489	505	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	945	-	-	1051	-	-	77	120	618	74	115	508
Mov Cap-2 Maneuver	-	-	-	-	-	-	77	120	-	74	115	-
Stage 1	-	-	-	-	-	-	526	519	-	330	315	-
Stage 2	-	-	-	-	-	-	226	317	-	382	486	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.6			1.7			71.2			38.5		
HCM LOS							F			E		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	77	455	945	-	-	1051	-	-	74	378
HCM Lane V/C Ratio	0.89	0.257	0.037	-	-	0.135	-	-	0.516	0.294
HCM Control Delay (s)	166.1	15.6	9	-	-	9	-	-	97	18.4
HCM Lane LOS	F	C	A	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	4.6	1	0.1	-	-	0.5	-	-	2.2	1.2

HCM 6th TWSC  
 4: Shared Access & OR 211 (W Main)

03/28/2022

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶		↷	↶	↷	
Traffic Vol, veh/h	495	0	0	646	0	0
Future Vol, veh/h	495	0	0	646	0	0
Conflicting Peds, #/hr	0	1	1	0	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	10	10	11	11	2	2
Mvmt Flow	556	0	0	726	0	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	557	0	1284 558
Stage 1	-	-	-	-	557 -
Stage 2	-	-	-	-	727 -
Critical Hdwy	-	-	4.21	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.299	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	970	-	182 529
Stage 1	-	-	-	-	574 -
Stage 2	-	-	-	-	478 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	969	-	182 528
Mov Cap-2 Maneuver	-	-	-	-	182 -
Stage 1	-	-	-	-	573 -
Stage 2	-	-	-	-	478 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	969	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

HCM 6th TWSC  
5: OR 211 (W Main) & Ridings Ave

03/28/2022

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	484	0	0	625	32	0	0	0	14	0	21
Future Vol, veh/h	10	484	0	0	625	32	0	0	0	14	0	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	10	10	10	14	14	14	3	3	3	9	9	9
Mvmt Flow	11	515	0	0	665	34	0	0	0	15	0	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	699	0	0	515	0	0	1230	1236	515	1219	1219	682
Stage 1	-	-	-	-	-	-	537	537	-	682	682	-
Stage 2	-	-	-	-	-	-	693	699	-	537	537	-
Critical Hdwy	4.2	-	-	4.24	-	-	7.13	6.53	6.23	7.19	6.59	6.29
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.19	5.59	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.19	5.59	-
Follow-up Hdwy	2.29	-	-	2.326	-	-	3.527	4.027	3.327	3.581	4.081	3.381
Pot Cap-1 Maneuver	862	-	-	992	-	-	154	175	558	152	175	438
Stage 1	-	-	-	-	-	-	526	521	-	429	439	-
Stage 2	-	-	-	-	-	-	432	440	-	515	512	-
Platoon blocked, %		-	-	-	-	-						
Mov Cap-1 Maneuver	862	-	-	992	-	-	144	172	558	150	172	438
Mov Cap-2 Maneuver	-	-	-	-	-	-	144	172	-	150	172	-
Stage 1	-	-	-	-	-	-	517	512	-	421	439	-
Stage 2	-	-	-	-	-	-	410	440	-	506	503	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	22.1
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	862	-	-	992	-	-	248
HCM Lane V/C Ratio	-	0.012	-	-	-	-	-	0.15
HCM Control Delay (s)	0	9.2	0	-	0	-	-	22.1
HCM Lane LOS	A	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.5

# HCM Signalized Intersection Capacity Analysis

## 6: Molalla Ave & OR 211 (W Main)

03/28/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (vph)	83	304	50	6	371	42	116	71	18	42	51	97		
Future Volume (vph)	83	304	50	6	371	42	116	71	18	42	51	97		
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750		
Total Lost time (s)	4.0	3.5		4.0	3.5			3.5			3.5			
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00			
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99			
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00			
Frt	1.00	0.98		1.00	0.98			0.99			0.93			
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.99			
Satd. Flow (prot)	1525	1567		1510	1563			1571			1449			
Flt Permitted	0.95	1.00		0.95	1.00			0.72			0.91			
Satd. Flow (perm)	1525	1567		1510	1563			1158			1331			
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91		
Adj. Flow (vph)	91	334	55	7	408	46	127	78	20	46	56	107		
RTOR Reduction (vph)	0	6	0	0	5	0	0	4	0	0	42	0		
Lane Group Flow (vph)	91	383	0	7	449	0	0	221	0	0	167	0		
Confl. Peds. (#/hr)	2		1	1		2	1					1		
Heavy Vehicles (%)	9%	9%	9%	10%	10%	10%	7%	7%	7%	10%	10%	10%		
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA			
Protected Phases	5	2		1	6			8			4			
Permitted Phases							8			4				
Actuated Green, G (s)	6.7	30.2		0.9	24.4			18.2			18.2			
Effective Green, g (s)	6.7	30.7		0.9	24.9			18.7			18.7			
Actuated g/C Ratio	0.11	0.50		0.01	0.41			0.31			0.31			
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0			
Vehicle Extension (s)	2.5	2.5		2.5	2.5			2.5			2.5			
Lane Grp Cap (vph)	166	784		22	634			353			406			
v/s Ratio Prot	c0.06	0.24		0.00	c0.29									
v/s Ratio Perm								c0.19			0.13			
v/c Ratio	0.55	0.49		0.32	0.71			0.63			0.41			
Uniform Delay, d1	25.9	10.1		29.9	15.2			18.3			16.9			
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00			
Incremental Delay, d2	2.9	0.4		6.0	3.4			3.0			0.5			
Delay (s)	28.8	10.5		35.9	18.5			21.3			17.4			
Level of Service	C	B		D	B			C			B			
Approach Delay (s)		13.9			18.8			21.3			17.4			
Approach LOS		B			B			C			B			
<b>Intersection Summary</b>														
HCM 2000 Control Delay			17.3									HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio			0.66											
Actuated Cycle Length (s)			61.3								11.0			
Intersection Capacity Utilization			66.0%										ICU Level of Service	C
Analysis Period (min)			15											

c Critical Lane Group

# HCM 6th Signalized Intersection Summary

## 6: Molalla Ave & OR 211 (W Main)

03/28/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	304	50	6	371	42	116	71	18	42	51	97
Future Volume (veh/h)	83	304	50	6	371	42	116	71	18	42	51	97
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1627	1627	1627	1614	1614	1614	1654	1654	1654	1614	1614	1614
Adj Flow Rate, veh/h	91	334	55	7	408	46	127	78	20	46	56	107
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	9	9	9	10	10	10	7	7	7	10	10	10
Cap, veh/h	142	681	112	17	598	67	296	147	31	149	121	179
Arrive On Green	0.09	0.50	0.50	0.01	0.42	0.41	0.23	0.24	0.23	0.23	0.24	0.23
Sat Flow, veh/h	1550	1362	224	1537	1424	161	705	614	129	209	506	750
Grp Volume(v), veh/h	91	0	389	7	0	454	225	0	0	209	0	0
Grp Sat Flow(s),veh/h/ln	1550	0	1586	1537	0	1584	1447	0	0	1465	0	0
Q Serve(g_s), s	2.5	0.0	7.2	0.2	0.0	10.3	0.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.5	0.0	7.2	0.2	0.0	10.3	5.8	0.0	0.0	5.4	0.0	0.0
Prop In Lane	1.00		0.14	1.00		0.10	0.56		0.09	0.22		0.51
Lane Grp Cap(c), veh/h	142	0	794	17	0	665	457	0	0	433	0	0
V/C Ratio(X)	0.64	0.00	0.49	0.41	0.00	0.68	0.49	0.00	0.00	0.48	0.00	0.00
Avail Cap(c_a), veh/h	386	0	1528	313	0	1454	967	0	0	965	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.3	0.0	7.3	21.7	0.0	10.4	15.1	0.0	0.0	15.0	0.0	0.0
Incr Delay (d2), s/veh	3.6	0.0	0.3	11.1	0.0	0.9	0.6	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	1.8	0.1	0.0	2.9	1.8	0.0	0.0	1.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.9	0.0	7.6	32.8	0.0	11.3	15.7	0.0	0.0	15.7	0.0	0.0
LnGrp LOS	C	A	A	C	A	B	B	A	A	B	A	A
Approach Vol, veh/h		480			461			225			209	
Approach Delay, s/veh		10.5			11.7			15.7			15.7	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.5	25.6		14.1	8.0	22.0		14.1				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	9.0	42.0		27.0	11.0	40.0		27.0				
Max Q Clear Time (g_c+I1), s	2.2	9.2		7.4	4.5	12.3		7.8				
Green Ext Time (p_c), s	0.0	5.0		0.8	0.1	5.7		0.9				
























### Intersection Summary

HCM 6th Ctrl Delay	12.5
HCM 6th LOS	B

# HCM Signalized Intersection Capacity Analysis

## 1: OR 213 & OR 211/OR 211 (W Main)

03/28/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	164	273	18	165	244	204	25	220	132	293	247	140
Future Volume (vph)	164	273	18	165	244	204	25	220	132	293	247	140
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1583	1651		1568	1651	1374	1614	1699	1404	1566	1561	
Flt Permitted	0.42	1.00		0.25	1.00	1.00	0.51	1.00	1.00	0.35	1.00	
Satd. Flow (perm)	703	1651		415	1651	1374	874	1699	1404	580	1561	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	180	300	20	181	268	224	27	242	145	322	271	154
RTOR Reduction (vph)	0	2	0	0	0	167	0	0	111	0	16	0
Lane Group Flow (vph)	180	318	0	181	268	57	27	242	34	322	409	0
Confl. Peds. (#/hr)	1					1			6	6		
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	3%	3%	3%	6%	6%	6%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8		8	4		
Actuated Green, G (s)	30.2	21.0		33.8	22.8	22.8	22.8	21.2	21.2	46.4	39.8	
Effective Green, g (s)	32.2	22.0		35.8	23.8	23.8	24.8	22.2	22.2	47.4	40.8	
Actuated g/C Ratio	0.34	0.24		0.38	0.25	0.25	0.27	0.24	0.24	0.51	0.44	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	338	388		307	420	350	252	403	333	518	681	
v/s Ratio Prot	0.06	c0.19		c0.08	0.16		0.00	0.14		c0.14	0.26	
v/s Ratio Perm	0.13			0.15		0.04	0.03		0.02	c0.17		
v/c Ratio	0.53	0.82		0.59	0.64	0.16	0.11	0.60	0.10	0.62	0.60	
Uniform Delay, d1	22.9	33.8		21.2	31.0	27.1	25.6	31.7	27.8	15.2	20.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.3	12.3		2.4	2.8	0.2	0.1	2.1	0.1	2.0	1.3	
Delay (s)	24.1	46.2		23.6	33.7	27.2	25.8	33.8	27.9	17.2	21.3	
Level of Service	C	D		C	C	C	C	C	C	B	C	
Approach Delay (s)		38.2			28.9			31.2			19.6	
Approach LOS		D			C			C			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			28.3	HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			93.4	Sum of lost time (s)				16.0				
Intersection Capacity Utilization			73.2%	ICU Level of Service				D				
Analysis Period (min)			15									
c Critical Lane Group												

# HCM 6th Signalized Intersection Summary

## 1: OR 213 & OR 211/OR 211 (W Main)

03/28/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	164	273	18	165	244	204	25	220	132	293	247	140
Future Volume (veh/h)	164	273	18	165	244	204	25	220	132	293	247	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1682	1682	1682	1668	1668	1668	1709	1709	1709	1668	1668	1668
Adj Flow Rate, veh/h	180	300	20	181	268	224	27	242	145	322	271	154
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	5	5	5	6	6	6	3	3	3	6	6	6
Cap, veh/h	393	412	27	375	446	377	282	360	301	483	363	206
Arrive On Green	0.12	0.26	0.25	0.12	0.27	0.27	0.04	0.21	0.21	0.20	0.37	0.35
Sat Flow, veh/h	1602	1559	104	1589	1668	1411	1628	1709	1428	1589	995	565
Grp Volume(v), veh/h	180	0	320	181	268	224	27	242	145	322	0	425
Grp Sat Flow(s),veh/h/ln	1602	0	1663	1589	1668	1411	1628	1709	1428	1589	0	1561
Q Serve(g_s), s	6.0	0.0	13.4	6.1	10.7	10.6	1.0	9.9	6.8	11.0	0.0	18.2
Cycle Q Clear(g_c), s	6.0	0.0	13.4	6.1	10.7	10.6	1.0	9.9	6.8	11.0	0.0	18.2
Prop In Lane	1.00		0.06	1.00		1.00	1.00		1.00	1.00		0.36
Lane Grp Cap(c), veh/h	393	0	439	375	446	377	282	360	301	483	0	570
V/C Ratio(X)	0.46	0.00	0.73	0.48	0.60	0.59	0.10	0.67	0.48	0.67	0.00	0.75
Avail Cap(c_a), veh/h	416	0	828	477	918	776	343	604	505	692	0	940
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.4	0.0	25.6	17.8	24.4	24.4	22.0	27.7	26.5	16.8	0.0	21.3
Incr Delay (d2), s/veh	0.6	0.0	1.7	0.7	1.0	1.1	0.1	1.6	0.9	1.2	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	5.3	2.1	4.1	3.4	0.4	4.0	2.3	3.7	0.0	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.0	0.0	27.4	18.5	25.4	25.5	22.1	29.3	27.4	18.0	0.0	22.8
LnGrp LOS	B	A	C	B	C	C	C	C	C	B	A	C
Approach Vol, veh/h		500			673			414			747	
Approach Delay, s/veh		24.0			23.6			28.2			20.7	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.1	24.2	7.2	31.9	12.9	24.4	19.0	20.1				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	13.0	37.0	5.0	45.0	9.0	41.0	24.0	26.0				
Max Q Clear Time (g_c+I1), s	8.1	15.4	3.0	20.2	8.0	12.7	13.0	11.9				
Green Ext Time (p_c), s	0.3	3.4	0.0	1.9	0.1	4.8	1.0	1.6				

### Intersection Summary

HCM 6th Ctrl Delay	23.6
HCM 6th LOS	C

### Notes

User approved pedestrian interval to be less than phase max green.



Intersection						
Int Delay, s/veh	2.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↘	↙
Traffic Vol, veh/h	710	82	56	691	75	48
Future Vol, veh/h	710	82	56	691	75	48
Conflicting Peds, #/hr	0	1	1	0	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	4	5	5	2	2
Mvmt Flow	747	86	59	727	79	51

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	834	0	1594
Stage 1	-	-	-	-	748
Stage 2	-	-	-	-	846
Critical Hdwy	-	-	4.15	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.245	-	3.518
Pot Cap-1 Maneuver	-	-	786	-	118
Stage 1	-	-	-	-	468
Stage 2	-	-	-	-	421
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	785	-	109
Mov Cap-2 Maneuver	-	-	-	-	243
Stage 1	-	-	-	-	468
Stage 2	-	-	-	-	389

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	27.2
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	289	-	-	785	-
HCM Lane V/C Ratio	0.448	-	-	0.075	-
HCM Control Delay (s)	27.2	-	-	10	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	2.2	-	-	0.2	-

Intersection												
Int Delay, s/veh	30.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Vol, veh/h	57	627	73	133	603	42	61	8	118	26	12	84
Future Vol, veh/h	57	627	73	133	603	42	61	8	118	26	12	84
Conflicting Peds, #/hr	4	0	2	2	0	4	4	0	0	0	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	0	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	4	4	4	5	5	5	2	2	2	3	3	3
Mvmt Flow	60	660	77	140	635	44	64	8	124	27	13	88

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	683	0	0	739	0	0	1813	1784	701	1826	1800	665
Stage 1	-	-	-	-	-	-	821	821	-	941	941	-
Stage 2	-	-	-	-	-	-	992	963	-	885	859	-
Critical Hdwy	4.14	-	-	4.15	-	-	7.12	6.52	6.22	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.13	5.53	-
Follow-up Hdwy	2.236	-	-	2.245	-	-	3.518	4.018	3.318	3.527	4.027	3.327
Pot Cap-1 Maneuver	901	-	-	854	-	-	~ 61	82	439	59	79	458
Stage 1	-	-	-	-	-	-	369	389	-	315	341	-
Stage 2	-	-	-	-	-	-	296	334	-	338	372	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	898	-	-	852	-	-	~ 34	64	438	32	61	455
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 34	64	-	32	61	-
Stage 1	-	-	-	-	-	-	344	362	-	293	284	-
Stage 2	-	-	-	-	-	-	190	278	-	221	346	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	1.7	235.2	85.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	34	319	898	-	-	852	-	-	32	252
HCM Lane V/C Ratio	1.889	0.416	0.067	-	-	0.164	-	-	0.855	0.401
HCM Control Delay (s)	\$ 671.3	24.1	9.3	-	-	10.1	-	-	295.5	28.5
HCM Lane LOS	F	C	A	-	-	B	-	-	F	D
HCM 95th %tile Q(veh)	7.1	2	0.2	-	-	0.6	-	-	2.9	1.8

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM 6th TWSC  
 4: Shared Access & OR 211 (W Main)

03/28/2022

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	
Traffic Vol, veh/h	771	0	0	778	0	0
Future Vol, veh/h	771	0	0	778	0	0
Conflicting Peds, #/hr	0	1	1	0	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	4	5	5	2	2
Mvmt Flow	812	0	0	819	0	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	813	0	1633 814
Stage 1	-	-	-	-	813 -
Stage 2	-	-	-	-	820 -
Critical Hdwy	-	-	4.15	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.245	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	801	-	111 378
Stage 1	-	-	-	-	436 -
Stage 2	-	-	-	-	433 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	800	-	111 377
Mov Cap-2 Maneuver	-	-	-	-	249 -
Stage 1	-	-	-	-	436 -
Stage 2	-	-	-	-	433 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	800	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	18	752	1	1	747	19	0	0	2	16	0	30
Future Vol, veh/h	18	752	1	1	747	19	0	0	2	16	0	30
Conflicting Peds, #/hr	4	0	0	0	0	4	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	7	7	7	8	8	8	2	2	2	14	14	14
Mvmt Flow	19	792	1	1	786	20	0	0	2	17	0	32

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	810	0	0	793	0	0	1645	1643	793	1634	1633	800
Stage 1	-	-	-	-	-	-	831	831	-	802	802	-
Stage 2	-	-	-	-	-	-	814	812	-	832	831	-
Critical Hdwy	4.17	-	-	4.18	-	-	7.12	6.52	6.22	7.24	6.64	6.34
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.24	5.64	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.24	5.64	-
Follow-up Hdwy	2.263	-	-	2.272	-	-	3.518	4.018	3.318	3.626	4.126	3.426
Pot Cap-1 Maneuver	794	-	-	802	-	-	79	100	389	76	95	367
Stage 1	-	-	-	-	-	-	364	384	-	360	380	-
Stage 2	-	-	-	-	-	-	372	392	-	347	368	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	791	-	-	802	-	-	70	95	389	73	90	366
Mov Cap-2 Maneuver	-	-	-	-	-	-	70	95	-	73	90	-
Stage 1	-	-	-	-	-	-	348	367	-	343	378	-
Stage 2	-	-	-	-	-	-	339	390	-	330	352	-




















Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0			14.3			39.1		
HCM LOS							B			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	389	791	-	-	802	-	-	153
HCM Lane V/C Ratio	0.005	0.024	-	-	0.001	-	-	0.316
HCM Control Delay (s)	14.3	9.7	0	-	9.5	0	-	39.1
HCM Lane LOS	B	A	A	-	A	A	-	E
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	1.3

# HCM Signalized Intersection Capacity Analysis

## 6: Molalla Ave & OR 211 (W Main)

03/28/2022

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (vph)	100	424	128	8	437	43	100	83	22	66	132	161		
Future Volume (vph)	100	424	128	8	437	43	100	83	22	66	132	161		
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750		
Total Lost time (s)	4.0	3.5		4.0	3.5			3.5			3.5			
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00			
Frbp, ped/bikes	1.00	0.99		1.00	1.00			1.00			0.98			
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00			
Frt	1.00	0.97		1.00	0.99			0.99			0.94			
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99			
Satd. Flow (prot)	1599	1615		1582	1638			1608			1552			
Flt Permitted	0.95	1.00		0.95	1.00			0.63			0.92			
Satd. Flow (perm)	1599	1615		1582	1638			1036			1436			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95		
Adj. Flow (vph)	105	446	135	8	460	45	105	87	23	69	139	169		
RTOR Reduction (vph)	0	11	0	0	4	0	0	5	0	0	32	0		
Lane Group Flow (vph)	105	570	0	8	501	0	0	210	0	0	345	0		
Confl. Peds. (#/hr)	11		1	1			11	11		4	4	11		
Confl. Bikes (#/hr)			2				3							
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	4%	4%	4%	3%	3%	3%		
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA			
Protected Phases	5	2		1	6			8			4			
Permitted Phases							8			4				
Actuated Green, G (s)	6.3	32.1		0.9	26.7			20.9			20.9			
Effective Green, g (s)	6.3	32.6		0.9	27.2			21.4			21.4			
Actuated g/C Ratio	0.10	0.49		0.01	0.41			0.32			0.32			
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0			
Vehicle Extension (s)	2.5	2.5		2.5	2.5			2.5			2.5			
Lane Grp Cap (vph)	152	798		21	676			336			466			
v/s Ratio Prot	c0.07	c0.35		0.01	0.31									
v/s Ratio Perm								0.20			c0.24			
v/c Ratio	0.69	0.71		0.38	0.74			0.63			0.74			
Uniform Delay, d1	28.9	13.0		32.2	16.4			18.9			19.8			
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00			
Incremental Delay, d2	11.8	2.8		8.2	4.1			3.1			5.7			
Delay (s)	40.6	15.9		40.4	20.5			22.0			25.5			
Level of Service	D	B		D	C			C			C			
Approach Delay (s)		19.6			20.8			22.0			25.5			
Approach LOS		B			C			C			C			
<b>Intersection Summary</b>														
HCM 2000 Control Delay			21.5									HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio			0.75											
Actuated Cycle Length (s)			65.9								11.0			
Intersection Capacity Utilization			74.9%										ICU Level of Service	D
Analysis Period (min)			15											
c Critical Lane Group														

HCM 6th Signalized Intersection Summary  
 6: Molalla Ave & OR 211 (W Main)

03/28/2022


























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	424	128	8	437	43	100	83	22	66	132	161
Future Volume (veh/h)	100	424	128	8	437	43	100	83	22	66	132	161
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	0.99		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1695	1695	1695	1682	1682	1682	1695	1695	1695	1709	1709	1709
Adj Flow Rate, veh/h	105	446	135	8	460	45	105	87	23	69	139	169
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	5	5	5	4	4	4	3	3	3
Cap, veh/h	140	605	183	20	622	61	235	172	37	138	197	209
Arrive On Green	0.09	0.49	0.49	0.01	0.41	0.41	0.29	0.30	0.29	0.29	0.30	0.29
Sat Flow, veh/h	1615	1238	375	1602	1502	147	459	571	123	202	654	696
Grp Volume(v), veh/h	105	0	581	8	0	505	215	0	0	377	0	0
Grp Sat Flow(s),veh/h/ln	1615	0	1613	1602	0	1649	1154	0	0	1553	0	0
Q Serve(g_s), s	3.5	0.0	16.0	0.3	0.0	14.4	0.0	0.0	0.0	3.4	0.0	0.0
Cycle Q Clear(g_c), s	3.5	0.0	16.0	0.3	0.0	14.4	9.0	0.0	0.0	12.3	0.0	0.0
Prop In Lane	1.00		0.23	1.00		0.09	0.49		0.11	0.18		0.45
Lane Grp Cap(c), veh/h	140	0	788	20	0	683	433	0	0	530	0	0
V/C Ratio(X)	0.75	0.00	0.74	0.40	0.00	0.74	0.50	0.00	0.00	0.71	0.00	0.00
Avail Cap(c_a), veh/h	262	0	1177	260	0	1203	729	0	0	871	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	24.8	0.0	11.3	27.2	0.0	13.7	16.4	0.0	0.0	18.0	0.0	0.0
Incr Delay (d2), s/veh	5.9	0.0	1.0	9.2	0.0	1.2	0.7	0.0	0.0	1.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	4.8	0.2	0.0	4.7	2.2	0.0	0.0	4.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.6	0.0	12.4	36.4	0.0	14.9	17.1	0.0	0.0	19.3	0.0	0.0
LnGrp LOS	C	A	B	D	A	B	B	A	A	B	A	A
Approach Vol, veh/h		686			513			215			377	
Approach Delay, s/veh		15.2			15.3			17.1			19.3	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	30.6		20.2	8.8	26.5		20.2				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	9.0	40.0		29.0	9.0	40.0		29.0				
Max Q Clear Time (g_c+I1), s	2.3	18.0		14.3	5.5	16.4		11.0				
Green Ext Time (p_c), s	0.0	7.2		1.5	0.1	6.1		0.9				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				16.3								
HCM 6th LOS				B								

# HCM Signalized Intersection Capacity Analysis

## 1: OR 213 & OR 211/OR 211 (W Main)

03/28/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	164	273	18	165	244	204	25	220	132	293	247	140
Future Volume (vph)	164	273	18	165	244	204	25	220	132	293	247	140
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1583	1651		1568	1651	1374	1614	1699	1404	1566	1561	
Flt Permitted	0.42	1.00		0.25	1.00	1.00	0.51	1.00	1.00	0.35	1.00	
Satd. Flow (perm)	703	1651		415	1651	1374	874	1699	1404	580	1561	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	180	300	20	181	268	224	27	242	145	322	271	154
RTOR Reduction (vph)	0	2	0	0	0	167	0	0	111	0	16	0
Lane Group Flow (vph)	180	318	0	181	268	57	27	242	34	322	409	0
Confl. Peds. (#/hr)	1					1			6	6		
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	3%	3%	3%	6%	6%	6%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8		8	4		
Actuated Green, G (s)	30.2	21.0		33.8	22.8	22.8	22.8	21.2	21.2	46.4	39.8	
Effective Green, g (s)	32.2	22.0		35.8	23.8	23.8	24.8	22.2	22.2	47.4	40.8	
Actuated g/C Ratio	0.34	0.24		0.38	0.25	0.25	0.27	0.24	0.24	0.51	0.44	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	338	388		307	420	350	252	403	333	518	681	
v/s Ratio Prot	0.06	c0.19		c0.08	0.16		0.00	0.14		c0.14	0.26	
v/s Ratio Perm	0.13			0.15		0.04	0.03		0.02	c0.17		
v/c Ratio	0.53	0.82		0.59	0.64	0.16	0.11	0.60	0.10	0.62	0.60	
Uniform Delay, d1	22.9	33.8		21.2	31.0	27.1	25.6	31.7	27.8	15.2	20.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.3	12.3		2.4	2.8	0.2	0.1	2.1	0.1	2.0	1.3	
Delay (s)	24.1	46.2		23.6	33.7	27.2	25.8	33.8	27.9	17.2	21.3	
Level of Service	C	D		C	C	C	C	C	C	B	C	
Approach Delay (s)		38.2			28.9			31.2			19.6	
Approach LOS		D			C			C			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			28.3	HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			93.4	Sum of lost time (s)				16.0				
Intersection Capacity Utilization			73.2%	ICU Level of Service				D				
Analysis Period (min)			15									

c Critical Lane Group

# HCM 6th Signalized Intersection Summary

## 1: OR 213 & OR 211/OR 211 (W Main)

03/28/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	164	273	18	165	244	204	25	220	132	293	247	140
Future Volume (veh/h)	164	273	18	165	244	204	25	220	132	293	247	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1682	1682	1682	1668	1668	1668	1709	1709	1709	1668	1668	1668
Adj Flow Rate, veh/h	180	300	20	181	268	224	27	242	145	322	271	154
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	5	5	5	6	6	6	3	3	3	6	6	6
Cap, veh/h	393	412	27	375	446	377	282	360	301	483	363	206
Arrive On Green	0.12	0.26	0.25	0.12	0.27	0.27	0.04	0.21	0.21	0.20	0.37	0.35
Sat Flow, veh/h	1602	1559	104	1589	1668	1411	1628	1709	1428	1589	995	565
Grp Volume(v), veh/h	180	0	320	181	268	224	27	242	145	322	0	425
Grp Sat Flow(s),veh/h/ln	1602	0	1663	1589	1668	1411	1628	1709	1428	1589	0	1561
Q Serve(g_s), s	6.0	0.0	13.4	6.1	10.7	10.6	1.0	9.9	6.8	11.0	0.0	18.2
Cycle Q Clear(g_c), s	6.0	0.0	13.4	6.1	10.7	10.6	1.0	9.9	6.8	11.0	0.0	18.2
Prop In Lane	1.00		0.06	1.00		1.00	1.00		1.00	1.00		0.36
Lane Grp Cap(c), veh/h	393	0	439	375	446	377	282	360	301	483	0	570
V/C Ratio(X)	0.46	0.00	0.73	0.48	0.60	0.59	0.10	0.67	0.48	0.67	0.00	0.75
Avail Cap(c_a), veh/h	416	0	828	477	918	776	343	604	505	692	0	940
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.4	0.0	25.6	17.8	24.4	24.4	22.0	27.7	26.5	16.8	0.0	21.3
Incr Delay (d2), s/veh	0.6	0.0	1.7	0.7	1.0	1.1	0.1	1.6	0.9	1.2	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	5.3	2.1	4.1	3.4	0.4	4.0	2.3	3.7	0.0	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.0	0.0	27.4	18.5	25.4	25.5	22.1	29.3	27.4	18.0	0.0	22.8
LnGrp LOS	B	A	C	B	C	C	C	C	C	B	A	C
Approach Vol, veh/h		500			673			414			747	
Approach Delay, s/veh		24.0			23.6			28.2			20.7	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.1	24.2	7.2	31.9	12.9	24.4	19.0	20.1				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	13.0	37.0	5.0	45.0	9.0	41.0	24.0	26.0				
Max Q Clear Time (g_c+I1), s	8.1	15.4	3.0	20.2	8.0	12.7	13.0	11.9				
Green Ext Time (p_c), s	0.3	3.4	0.0	1.9	0.1	4.8	1.0	1.6				

### Intersection Summary

HCM 6th Ctrl Delay	23.6
HCM 6th LOS	C

### Notes

User approved pedestrian interval to be less than phase max green.



Intersection						
Int Delay, s/veh	2.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↘	↙
Traffic Vol, veh/h	710	82	56	691	75	48
Future Vol, veh/h	710	82	56	691	75	48
Conflicting Peds, #/hr	0	1	1	0	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	4	5	5	2	2
Mvmt Flow	747	86	59	727	79	51

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	834	0	1594 749
Stage 1	-	-	-	-	748 -
Stage 2	-	-	-	-	846 -
Critical Hdwy	-	-	4.15	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.245	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	786	-	118 412
Stage 1	-	-	-	-	468 -
Stage 2	-	-	-	-	421 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	785	-	109 411
Mov Cap-2 Maneuver	-	-	-	-	243 -
Stage 1	-	-	-	-	468 -
Stage 2	-	-	-	-	389 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	27.2
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	289	-	-	785	-
HCM Lane V/C Ratio	0.448	-	-	0.075	-
HCM Control Delay (s)	27.2	-	-	10	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	2.2	-	-	0.2	-

Intersection												
Int Delay, s/veh	30.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Vol, veh/h	57	627	73	133	603	42	61	8	118	26	12	84
Future Vol, veh/h	57	627	73	133	603	42	61	8	118	26	12	84
Conflicting Peds, #/hr	4	0	2	2	0	4	4	0	0	0	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	0	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	4	4	4	5	5	5	2	2	2	3	3	3
Mvmt Flow	60	660	77	140	635	44	64	8	124	27	13	88

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	683	0	0	739	0	0	1813	1784	701	1826	1800	665
Stage 1	-	-	-	-	-	-	821	821	-	941	941	-
Stage 2	-	-	-	-	-	-	992	963	-	885	859	-
Critical Hdwy	4.14	-	-	4.15	-	-	7.12	6.52	6.22	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.13	5.53	-
Follow-up Hdwy	2.236	-	-	2.245	-	-	3.518	4.018	3.318	3.527	4.027	3.327
Pot Cap-1 Maneuver	901	-	-	854	-	-	~ 61	82	439	59	79	458
Stage 1	-	-	-	-	-	-	369	389	-	315	341	-
Stage 2	-	-	-	-	-	-	296	334	-	338	372	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	898	-	-	852	-	-	~ 34	64	438	32	61	455
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 34	64	-	32	61	-
Stage 1	-	-	-	-	-	-	344	362	-	293	284	-
Stage 2	-	-	-	-	-	-	190	278	-	221	346	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0.7		1.7		235.2		85.4	
HCM LOS					F		F	

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	34	319	898	-	-	852	-	-	32	252
HCM Lane V/C Ratio	1.889	0.416	0.067	-	-	0.164	-	-	0.855	0.401
HCM Control Delay (s)	\$ 671.3	24.1	9.3	-	-	10.1	-	-	295.5	28.5
HCM Lane LOS	F	C	A	-	-	B	-	-	F	D
HCM 95th %tile Q(veh)	7.1	2	0.2	-	-	0.6	-	-	2.9	1.8

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM 6th TWSC  
 4: Shared Access & OR 211 (W Main)

03/28/2022

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶		↷	↶	↷	
Traffic Vol, veh/h	771	0	0	778	0	0
Future Vol, veh/h	771	0	0	778	0	0
Conflicting Peds, #/hr	0	1	1	0	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	4	5	5	2	2
Mvmt Flow	812	0	0	819	0	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	813	0	1633
Stage 1	-	-	-	-	813
Stage 2	-	-	-	-	820
Critical Hdwy	-	-	4.15	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.245	-	3.518
Pot Cap-1 Maneuver	-	-	801	-	111
Stage 1	-	-	-	-	436
Stage 2	-	-	-	-	433
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	800	-	111
Mov Cap-2 Maneuver	-	-	-	-	249
Stage 1	-	-	-	-	436
Stage 2	-	-	-	-	433

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	800	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	18	752	1	1	747	19	0	0	2	16	0	30
Future Vol, veh/h	18	752	1	1	747	19	0	0	2	16	0	30
Conflicting Peds, #/hr	4	0	0	0	0	4	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	7	7	7	8	8	8	2	2	2	14	14	14
Mvmt Flow	19	792	1	1	786	20	0	0	2	17	0	32

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	810	0	0	793	0	0	1645	1643	793	1634	1633	800
Stage 1	-	-	-	-	-	-	831	831	-	802	802	-
Stage 2	-	-	-	-	-	-	814	812	-	832	831	-
Critical Hdwy	4.17	-	-	4.18	-	-	7.12	6.52	6.22	7.24	6.64	6.34
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.24	5.64	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.24	5.64	-
Follow-up Hdwy	2.263	-	-	2.272	-	-	3.518	4.018	3.318	3.626	4.126	3.426
Pot Cap-1 Maneuver	794	-	-	802	-	-	79	100	389	76	95	367
Stage 1	-	-	-	-	-	-	364	384	-	360	380	-
Stage 2	-	-	-	-	-	-	372	392	-	347	368	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	791	-	-	802	-	-	70	95	389	73	90	366
Mov Cap-2 Maneuver	-	-	-	-	-	-	70	95	-	73	90	-
Stage 1	-	-	-	-	-	-	348	367	-	343	378	-
Stage 2	-	-	-	-	-	-	339	390	-	330	352	-




















Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0			14.3			39.1		
HCM LOS							B			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	389	791	-	-	802	-	-	153
HCM Lane V/C Ratio	0.005	0.024	-	-	0.001	-	-	0.316
HCM Control Delay (s)	14.3	9.7	0	-	9.5	0	-	39.1
HCM Lane LOS	B	A	A	-	A	A	-	E
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	1.3

# HCM Signalized Intersection Capacity Analysis




















## 6: Molalla Ave & OR 211 (W Main)

03/28/2022

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (vph)	100	424	128	8	437	43	100	83	22	66	132	161		
Future Volume (vph)	100	424	128	8	437	43	100	83	22	66	132	161		
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750		
Total Lost time (s)	4.0	3.5		4.0	3.5			3.5			3.5			
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00			
Frbp, ped/bikes	1.00	0.99		1.00	1.00			1.00			0.98			
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00			
Frt	1.00	0.97		1.00	0.99			0.99			0.94			
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99			
Satd. Flow (prot)	1599	1615		1582	1638			1608			1552			
Flt Permitted	0.95	1.00		0.95	1.00			0.63			0.92			
Satd. Flow (perm)	1599	1615		1582	1638			1036			1436			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95		
Adj. Flow (vph)	105	446	135	8	460	45	105	87	23	69	139	169		
RTOR Reduction (vph)	0	11	0	0	4	0	0	5	0	0	32	0		
Lane Group Flow (vph)	105	570	0	8	501	0	0	210	0	0	345	0		
Confl. Peds. (#/hr)	11		1	1			11	11		4	4	11		
Confl. Bikes (#/hr)			2				3							
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	4%	4%	4%	3%	3%	3%		
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA			
Protected Phases	5	2		1	6			8			4			
Permitted Phases							8			4				
Actuated Green, G (s)	6.3	32.1		0.9	26.7			20.9			20.9			
Effective Green, g (s)	6.3	32.6		0.9	27.2			21.4			21.4			
Actuated g/C Ratio	0.10	0.49		0.01	0.41			0.32			0.32			
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0			
Vehicle Extension (s)	2.5	2.5		2.5	2.5			2.5			2.5			
Lane Grp Cap (vph)	152	798		21	676			336			466			
v/s Ratio Prot	c0.07	c0.35		0.01	0.31									
v/s Ratio Perm								0.20			c0.24			
v/c Ratio	0.69	0.71		0.38	0.74			0.63			0.74			
Uniform Delay, d1	28.9	13.0		32.2	16.4			18.9			19.8			
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00			
Incremental Delay, d2	11.8	2.8		8.2	4.1			3.1			5.7			
Delay (s)	40.6	15.9		40.4	20.5			22.0			25.5			
Level of Service	D	B		D	C			C			C			
Approach Delay (s)		19.6			20.8			22.0			25.5			
Approach LOS		B			C			C			C			
<b>Intersection Summary</b>														
HCM 2000 Control Delay			21.5									HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio			0.75											
Actuated Cycle Length (s)			65.9								11.0			
Intersection Capacity Utilization			74.9%										ICU Level of Service	D
Analysis Period (min)			15											
c Critical Lane Group														

HCM 6th Signalized Intersection Summary  
 6: Molalla Ave & OR 211 (W Main)
























03/28/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	424	128	8	437	43	100	83	22	66	132	161
Future Volume (veh/h)	100	424	128	8	437	43	100	83	22	66	132	161
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	0.99		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1695	1695	1695	1682	1682	1682	1695	1695	1695	1709	1709	1709
Adj Flow Rate, veh/h	105	446	135	8	460	45	105	87	23	69	139	169
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	5	5	5	4	4	4	3	3	3
Cap, veh/h	140	605	183	20	622	61	235	172	37	138	197	209
Arrive On Green	0.09	0.49	0.49	0.01	0.41	0.41	0.29	0.30	0.29	0.29	0.30	0.29
Sat Flow, veh/h	1615	1238	375	1602	1502	147	459	571	123	202	654	696
Grp Volume(v), veh/h	105	0	581	8	0	505	215	0	0	377	0	0
Grp Sat Flow(s),veh/h/ln	1615	0	1613	1602	0	1649	1154	0	0	1553	0	0
Q Serve(g_s), s	3.5	0.0	16.0	0.3	0.0	14.4	0.0	0.0	0.0	3.4	0.0	0.0
Cycle Q Clear(g_c), s	3.5	0.0	16.0	0.3	0.0	14.4	9.0	0.0	0.0	12.3	0.0	0.0
Prop In Lane	1.00		0.23	1.00		0.09	0.49		0.11	0.18		0.45
Lane Grp Cap(c), veh/h	140	0	788	20	0	683	433	0	0	530	0	0
V/C Ratio(X)	0.75	0.00	0.74	0.40	0.00	0.74	0.50	0.00	0.00	0.71	0.00	0.00
Avail Cap(c_a), veh/h	262	0	1177	260	0	1203	729	0	0	871	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	24.8	0.0	11.3	27.2	0.0	13.7	16.4	0.0	0.0	18.0	0.0	0.0
Incr Delay (d2), s/veh	5.9	0.0	1.0	9.2	0.0	1.2	0.7	0.0	0.0	1.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	4.8	0.2	0.0	4.7	2.2	0.0	0.0	4.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.6	0.0	12.4	36.4	0.0	14.9	17.1	0.0	0.0	19.3	0.0	0.0
LnGrp LOS	C	A	B	D	A	B	B	A	A	B	A	A
Approach Vol, veh/h		686			513			215			377	
Approach Delay, s/veh		15.2			15.3			17.1			19.3	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	30.6		20.2	8.8	26.5		20.2				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	9.0	40.0		29.0	9.0	40.0		29.0				
Max Q Clear Time (g_c+I1), s	2.3	18.0		14.3	5.5	16.4		11.0				
Green Ext Time (p_c), s	0.0	7.2		1.5	0.1	6.1		0.9				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				16.3								
HCM 6th LOS				B								

# HCM Signalized Intersection Capacity Analysis

## 1: OR 213 & OR 211/OR 211 (W Main)

03/28/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	106	160	11	103	216	282	20	240	119	169	124	128	
Future Volume (vph)	106	160	11	103	216	282	20	240	119	169	124	128	
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1446	1507		1471	1549	1316	1599	1683	1430	1484	1443		
Flt Permitted	0.40	1.00		0.60	1.00	1.00	0.59	1.00	1.00	0.37	1.00		
Satd. Flow (perm)	615	1507		924	1549	1316	986	1683	1430	573	1443		
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	
Adj. Flow (vph)	119	180	12	116	243	317	22	270	134	190	139	144	
RTOR Reduction (vph)	0	2	0	0	0	240	0	0	96	0	29	0	
Lane Group Flow (vph)	119	190	0	116	243	77	22	270	38	190	254	0	
Heavy Vehicles (%)	15%	15%	15%	13%	13%	13%	4%	4%	4%	12%	12%	12%	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases	2			6		6	8		8	4			
Actuated Green, G (s)	26.9	19.9		23.5	18.2	18.2	22.8	21.2	21.2	38.6	32.0		
Effective Green, g (s)	28.9	20.9		25.5	19.2	19.2	24.8	22.2	22.2	39.6	33.0		
Actuated g/C Ratio	0.37	0.27		0.32	0.24	0.24	0.31	0.28	0.28	0.50	0.42		
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		
Lane Grp Cap (vph)	309	399		342	377	320	330	474	402	442	604		
v/s Ratio Prot	c0.04	0.13		0.03	c0.16		0.00	c0.16		c0.07	0.18		
v/s Ratio Perm	0.10			0.08		0.06	0.02		0.03	0.14			
v/c Ratio	0.39	0.48		0.34	0.64	0.24	0.07	0.57	0.09	0.43	0.42		
Uniform Delay, d1	17.6	24.3		19.6	26.7	23.9	18.8	24.2	20.9	12.0	16.2		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2	0.6	0.7		0.4	3.3	0.3	0.1	1.3	0.1	0.5	0.3		
Delay (s)	18.2	25.0		20.0	30.1	24.2	18.8	25.5	21.0	12.5	16.5		
Level of Service	B	C		C	C	C	B	C	C	B	B		
Approach Delay (s)		22.4			25.6			23.7			14.9		
Approach LOS		C			C			C			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			22.0									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.54										
Actuated Cycle Length (s)			78.8									Sum of lost time (s)	16.0
Intersection Capacity Utilization			55.9%									ICU Level of Service	B
Analysis Period (min)			15										
c	Critical Lane Group												

# HCM 6th Signalized Intersection Summary

## 1: OR 213 & OR 211/OR 211 (W Main)

03/28/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	160	11	103	216	282	20	240	119	169	124	128
Future Volume (veh/h)	106	160	11	103	216	282	20	240	119	169	124	128
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1545	1545	1545	1573	1573	1573	1695	1695	1695	1586	1586	1586
Adj Flow Rate, veh/h	119	180	12	116	243	317	22	270	134	190	139	144
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	15	15	15	13	13	13	4	4	4	12	12	12
Cap, veh/h	390	474	32	486	515	436	326	373	316	370	224	232
Arrive On Green	0.09	0.33	0.32	0.08	0.33	0.33	0.04	0.22	0.22	0.13	0.31	0.30
Sat Flow, veh/h	1472	1433	96	1498	1573	1333	1615	1695	1437	1511	714	739
Grp Volume(v), veh/h	119	0	192	116	243	317	22	270	134	190	0	283
Grp Sat Flow(s),veh/h/ln	1472	0	1528	1498	1573	1333	1615	1695	1437	1511	0	1453
Q Serve(g_s), s	3.6	0.0	6.7	3.4	8.5	14.5	0.7	10.2	5.5	6.1	0.0	11.5
Cycle Q Clear(g_c), s	3.6	0.0	6.7	3.4	8.5	14.5	0.7	10.2	5.5	6.1	0.0	11.5
Prop In Lane	1.00		0.06	1.00		1.00	1.00		1.00	1.00		0.51
Lane Grp Cap(c), veh/h	390	0	505	486	515	436	326	373	316	370	0	456
V/C Ratio(X)	0.31	0.00	0.38	0.24	0.47	0.73	0.07	0.72	0.42	0.51	0.00	0.62
Avail Cap(c_a), veh/h	494	0	972	532	932	790	403	931	789	475	0	966
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.5	0.0	17.7	13.3	18.5	20.5	19.4	25.0	23.2	16.5	0.0	20.5
Incr Delay (d2), s/veh	0.3	0.0	0.3	0.2	0.5	1.7	0.1	2.0	0.7	0.8	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	2.2	1.0	2.9	4.3	0.3	4.0	1.8	2.0	0.0	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.8	0.0	18.1	13.5	19.0	22.3	19.5	27.0	23.9	17.3	0.0	21.5
LnGrp LOS	B	A	B	B	B	C	B	C	C	B	A	C
Approach Vol, veh/h		311			676			426			473	
Approach Delay, s/veh		16.5			19.6			25.6			19.8	
Approach LOS		B			B			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.9	26.9	6.7	25.7	10.1	26.6	13.2	19.2				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	7.0	43.0	5.0	45.0	10.0	40.0	13.0	37.0				
Max Q Clear Time (g_c+I1), s	5.4	8.7	2.7	13.5	5.6	16.5	8.1	12.2				
Green Ext Time (p_c), s	0.0	2.2	0.0	1.2	0.1	5.1	0.3	2.0				

### Intersection Summary

HCM 6th Ctrl Delay	20.5
HCM 6th LOS	C

### Notes

User approved pedestrian interval to be less than phase max green.



Intersection						
Int Delay, s/veh	2.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	414	73	59	562	77	42
Future Vol, veh/h	414	73	59	562	77	42
Conflicting Peds, #/hr	0	1	1	0	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	10	10	11	11	2	2
Mvmt Flow	465	82	66	631	87	47

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	548	0	1230 467
Stage 1	-	-	-	-	466 -
Stage 2	-	-	-	-	764 -
Critical Hdwy	-	-	4.21	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.299	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	978	-	196 596
Stage 1	-	-	-	-	632 -
Stage 2	-	-	-	-	460 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	977	-	182 595
Mov Cap-2 Maneuver	-	-	-	-	311 -
Stage 1	-	-	-	-	631 -
Stage 2	-	-	-	-	428 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	19.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	374	-	-	977	-
HCM Lane V/C Ratio	0.358	-	-	0.068	-
HCM Control Delay (s)	19.9	-	-	9	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	1.6	-	-	0.2	-

HCM 6th TWSC  
3: Leroy Ave & OR 211 (W Main)

03/28/2022

Intersection												
Int Delay, s/veh	12.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Vol, veh/h	31	365	46	121	477	63	56	10	82	36	11	89
Future Vol, veh/h	31	365	46	121	477	63	56	10	82	36	11	89
Conflicting Peds, #/hr	3	0	1	1	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	10	10	10	11	11	11	2	2	2	14	14	14
Mvmt Flow	35	410	52	136	536	71	63	11	92	40	12	100

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	610	0	0	463	0	0	1407	1389	437	1405	1380	575
Stage 1	-	-	-	-	-	-	507	507	-	847	847	-
Stage 2	-	-	-	-	-	-	900	882	-	558	533	-
Critical Hdwy	4.2	-	-	4.21	-	-	7.12	6.52	6.22	7.24	6.64	6.34
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.24	5.64	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.24	5.64	-
Follow-up Hdwy	2.29	-	-	2.299	-	-	3.518	4.018	3.318	3.626	4.126	3.426
Pot Cap-1 Maneuver	931	-	-	1053	-	-	117	142	620	110	136	496
Stage 1	-	-	-	-	-	-	548	539	-	340	362	-
Stage 2	-	-	-	-	-	-	333	364	-	493	506	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	928	-	-	1052	-	-	75	119	619	76	114	495
Mov Cap-2 Maneuver	-	-	-	-	-	-	75	119	-	76	114	-
Stage 1	-	-	-	-	-	-	527	518	-	326	314	-
Stage 2	-	-	-	-	-	-	222	316	-	395	486	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0.6		1.6		69.2		39.9	
HCM LOS					F		E	

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	75	425	928	-	-	1052	-	-	76	362
HCM Lane V/C Ratio	0.839	0.243	0.038	-	-	0.129	-	-	0.532	0.31
HCM Control Delay (s)	156.2	16.2	9	-	-	8.9	-	-	96.9	19.4
HCM Lane LOS	F	C	A	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	4.2	0.9	0.1	-	-	0.4	-	-	2.3	1.3

HCM 6th TWSC  
4: Shared Access & OR 211 (W Main)

03/28/2022

Intersection						
Int Delay, s/veh	2.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	470	40	68	604	56	64
Future Vol, veh/h	470	40	68	604	56	64
Conflicting Peds, #/hr	0	1	1	0	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	10	10	11	11	2	2
Mvmt Flow	528	45	76	679	63	72

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	574	0	1384
Stage 1	-	-	-	-	552
Stage 2	-	-	-	-	832
Critical Hdwy	-	-	4.21	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.299	-	3.518
Pot Cap-1 Maneuver	-	-	956	-	158
Stage 1	-	-	-	-	577
Stage 2	-	-	-	-	427
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	955	-	145
Mov Cap-2 Maneuver	-	-	-	-	276
Stage 1	-	-	-	-	576
Stage 2	-	-	-	-	392

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	20.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	371	-	-	955	-
HCM Lane V/C Ratio	0.363	-	-	0.08	-
HCM Control Delay (s)	20.1	-	-	9.1	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	1.6	-	-	0.3	-

HCM 6th TWSC  
5: OR 211 (W Main) & Ridings Ave

03/28/2022

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	508	0	0	649	32	0	0	0	14	0	23
Future Vol, veh/h	12	508	0	0	649	32	0	0	0	14	0	23
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	10	10	10	14	14	14	3	3	3	9	9	9
Mvmt Flow	13	540	0	0	690	34	0	0	0	15	0	24

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	724	0	0	540	0	0	1285	1290	540	1273	1273	707
Stage 1	-	-	-	-	-	-	566	566	-	707	707	-
Stage 2	-	-	-	-	-	-	719	724	-	566	566	-
Critical Hdwy	4.2	-	-	4.24	-	-	7.13	6.53	6.23	7.19	6.59	6.29
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.19	5.59	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.19	5.59	-
Follow-up Hdwy	2.29	-	-	2.326	-	-	3.527	4.027	3.327	3.581	4.081	3.381
Pot Cap-1 Maneuver	843	-	-	971	-	-	141	163	540	139	162	424
Stage 1	-	-	-	-	-	-	507	506	-	415	428	-
Stage 2	-	-	-	-	-	-	418	429	-	497	496	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	843	-	-	971	-	-	131	159	540	137	158	424
Mov Cap-2 Maneuver	-	-	-	-	-	-	131	159	-	137	158	-
Stage 1	-	-	-	-	-	-	496	495	-	406	428	-
Stage 2	-	-	-	-	-	-	394	429	-	486	485	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	23.2
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	843	-	-	971	-	-	237
HCM Lane V/C Ratio	-	0.015	-	-	-	-	-	0.166
HCM Control Delay (s)	0	9.3	0	-	0	-	-	23.2
HCM Lane LOS	A	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.6

# HCM Signalized Intersection Capacity Analysis

## 6: Molalla Ave & OR 211 (W Main)

03/28/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	91	316	54	6	383	42	120	71	18	42	51	105	
Future Volume (vph)	91	316	54	6	383	42	120	71	18	42	51	105	
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	
Total Lost time (s)	4.0	3.5		4.0	3.5			3.5			3.5		
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00		
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99		
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00		
Frt	1.00	0.98		1.00	0.99			0.99			0.93		
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.99		
Satd. Flow (prot)	1525	1566		1510	1564			1570			1445		
Flt Permitted	0.95	1.00		0.95	1.00			0.70			0.91		
Satd. Flow (perm)	1525	1566		1510	1564			1131			1329		
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	
Adj. Flow (vph)	100	347	59	7	421	46	132	78	20	46	56	115	
RTOR Reduction (vph)	0	6	0	0	5	0	0	4	0	0	46	0	
Lane Group Flow (vph)	100	400	0	7	462	0	0	226	0	0	171	0	
Confl. Peds. (#/hr)	2		1	1		2	1					1	
Heavy Vehicles (%)	9%	9%	9%	10%	10%	10%	7%	7%	7%	10%	10%	10%	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA		
Protected Phases	5	2		1	6			8			4		
Permitted Phases							8			4			
Actuated Green, G (s)	6.7	30.7		0.9	24.9			18.8			18.8		
Effective Green, g (s)	6.7	31.2		0.9	25.4			19.3			19.3		
Actuated g/C Ratio	0.11	0.50		0.01	0.41			0.31			0.31		
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0		
Vehicle Extension (s)	2.5	2.5		2.5	2.5			2.5			2.5		
Lane Grp Cap (vph)	163	783		21	636			349			411		
v/s Ratio Prot	c0.07	0.26		0.00	c0.30								
v/s Ratio Perm								c0.20			0.13		
v/c Ratio	0.61	0.51		0.33	0.73			0.65			0.42		
Uniform Delay, d1	26.6	10.5		30.5	15.6			18.6			17.1		
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00		
Incremental Delay, d2	5.7	0.4		6.7	3.9			3.6			0.5		
Delay (s)	32.3	10.9		37.2	19.5			22.2			17.6		
Level of Service	C	B		D	B			C			B		
Approach Delay (s)		15.1			19.7			22.2			17.6		
Approach LOS		B			B			C			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			18.2									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.68										
Actuated Cycle Length (s)			62.4									Sum of lost time (s)	11.0
Intersection Capacity Utilization			68.5%									ICU Level of Service	C
Analysis Period (min)			15										

c Critical Lane Group

HCM 6th Signalized Intersection Summary  
 6: Molalla Ave & OR 211 (W Main)

03/28/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	316	54	6	383	42	120	71	18	42	51	105
Future Volume (veh/h)	91	316	54	6	383	42	120	71	18	42	51	105
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No				No
Adj Sat Flow, veh/h/ln	1627	1627	1627	1614	1614	1614	1654	1654	1654	1614	1614	1614
Adj Flow Rate, veh/h	100	347	59	7	421	46	132	78	20	46	56	115
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	9	9	9	10	10	10	7	7	7	10	10	10
Cap, veh/h	147	690	117	17	608	66	292	136	29	145	115	184
Arrive On Green	0.10	0.51	0.51	0.01	0.43	0.41	0.22	0.23	0.22	0.22	0.23	0.22
Sat Flow, veh/h	1550	1355	230	1537	1429	156	705	579	122	205	489	783
Grp Volume(v), veh/h	100	0	406	7	0	467	230	0	0	217	0	0
Grp Sat Flow(s),veh/h/ln	1550	0	1585	1537	0	1585	1407	0	0	1478	0	0
Q Serve(g_s), s	2.8	0.0	7.6	0.2	0.0	10.8	0.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.8	0.0	7.6	0.2	0.0	10.8	6.5	0.0	0.0	5.8	0.0	0.0
Prop In Lane	1.00		0.15	1.00		0.10	0.57		0.09	0.21		0.53
Lane Grp Cap(c), veh/h	147	0	807	17	0	674	441	0	0	428	0	0
V/C Ratio(X)	0.68	0.00	0.50	0.41	0.00	0.69	0.52	0.00	0.00	0.51	0.00	0.00
Avail Cap(c_a), veh/h	345	0	1427	307	0	1392	995	0	0	1010	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.7	0.0	7.3	22.1	0.0	10.5	15.7	0.0	0.0	15.6	0.0	0.0
Incr Delay (d2), s/veh	4.0	0.0	0.4	11.1	0.0	1.0	0.7	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	1.9	0.1	0.0	3.0	2.0	0.0	0.0	1.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.7	0.0	7.6	33.2	0.0	11.5	16.5	0.0	0.0	16.3	0.0	0.0
LnGrp LOS	C	A	A	C	A	B	B	A	A	B	A	A
Approach Vol, veh/h		506			474			230			217	
Approach Delay, s/veh		10.8			11.8			16.5			16.3	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.5	26.4		14.1	8.3	22.6		14.1				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	9.0	40.0		29.0	10.0	39.0		29.0				
Max Q Clear Time (g_c+I1), s	2.2	9.6		7.8	4.8	12.8		8.5				
Green Ext Time (p_c), s	0.0	5.2		0.9	0.1	5.8		0.9				
























Intersection Summary

HCM 6th Ctrl Delay	12.9
HCM 6th LOS	B

# HCM Signalized Intersection Capacity Analysis

## 1: OR 213 & OR 211/OR 211 (W Main)

03/28/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	164	277	18	168	248	208	25	220	135	297	247	140
Future Volume (vph)	164	277	18	168	248	208	25	220	135	297	247	140
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1583	1651		1568	1651	1374	1614	1699	1404	1566	1561	
Flt Permitted	0.42	1.00		0.24	1.00	1.00	0.51	1.00	1.00	0.35	1.00	
Satd. Flow (perm)	693	1651		404	1651	1374	874	1699	1404	578	1561	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	180	304	20	185	273	229	27	242	148	326	271	154
RTOR Reduction (vph)	0	2	0	0	0	170	0	0	113	0	16	0
Lane Group Flow (vph)	180	322	0	185	273	59	27	242	35	326	409	0
Confl. Peds. (#/hr)	1					1			6	6		
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	3%	3%	3%	6%	6%	6%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8		8	4		
Actuated Green, G (s)	30.4	21.2		34.2	23.1	23.1	22.9	21.3	21.3	46.7	40.1	
Effective Green, g (s)	32.4	22.2		36.2	24.1	24.1	24.9	22.3	22.3	47.7	41.1	
Actuated g/C Ratio	0.34	0.24		0.39	0.26	0.26	0.26	0.24	0.24	0.51	0.44	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	335	389		305	423	352	251	403	333	518	682	
v/s Ratio Prot	0.06	c0.19		c0.08	0.17		0.00	0.14		c0.14	0.26	
v/s Ratio Perm	0.13			0.16		0.04	0.03		0.03	c0.18		
v/c Ratio	0.54	0.83		0.61	0.65	0.17	0.11	0.60	0.11	0.63	0.60	
Uniform Delay, d1	23.1	34.1		21.4	31.1	27.2	25.8	31.9	28.0	15.4	20.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.3	13.2		2.9	3.0	0.2	0.1	2.1	0.1	2.1	1.3	
Delay (s)	24.3	47.2		24.3	34.1	27.3	26.0	34.0	28.1	17.5	21.4	
Level of Service	C	D		C	C	C	C	C	C	B	C	
Approach Delay (s)		39.1			29.2			31.4			19.7	
Approach LOS		D			C			C			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			28.7	HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			94.0	Sum of lost time (s)				16.0				
Intersection Capacity Utilization			73.9%	ICU Level of Service				D				
Analysis Period (min)			15									

c Critical Lane Group

# HCM 6th Signalized Intersection Summary

## 1: OR 213 & OR 211/OR 211 (W Main)

03/28/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	164	277	18	168	248	208	25	220	135	297	247	140
Future Volume (veh/h)	164	277	18	168	248	208	25	220	135	297	247	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1682	1682	1682	1668	1668	1668	1709	1709	1709	1668	1668	1668
Adj Flow Rate, veh/h	180	304	20	185	273	229	27	242	148	326	271	154
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	5	5	5	6	6	6	3	3	3	6	6	6
Cap, veh/h	390	414	27	374	451	382	282	359	300	483	364	207
Arrive On Green	0.12	0.27	0.25	0.12	0.27	0.27	0.04	0.21	0.21	0.20	0.37	0.35
Sat Flow, veh/h	1602	1560	103	1589	1668	1411	1628	1709	1428	1589	995	565
Grp Volume(v), veh/h	180	0	324	185	273	229	27	242	148	326	0	425
Grp Sat Flow(s),veh/h/ln	1602	0	1663	1589	1668	1411	1628	1709	1428	1589	0	1561
Q Serve(g_s), s	6.1	0.0	13.8	6.3	11.1	11.0	1.0	10.1	7.1	11.3	0.0	18.4
Cycle Q Clear(g_c), s	6.1	0.0	13.8	6.3	11.1	11.0	1.0	10.1	7.1	11.3	0.0	18.4
Prop In Lane	1.00		0.06	1.00		1.00	1.00		1.00	1.00		0.36
Lane Grp Cap(c), veh/h	390	0	441	374	451	382	282	359	300	483	0	571
V/C Ratio(X)	0.46	0.00	0.73	0.49	0.60	0.60	0.10	0.67	0.49	0.68	0.00	0.74
Avail Cap(c_a), veh/h	411	0	815	469	904	765	340	595	497	681	0	926
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.6	0.0	26.0	18.0	24.6	24.6	22.4	28.2	27.0	17.1	0.0	21.6
Incr Delay (d2), s/veh	0.6	0.0	1.8	0.8	1.0	1.1	0.1	1.7	0.9	1.2	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	5.4	2.2	4.2	3.6	0.4	4.1	2.4	3.9	0.0	6.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.3	0.0	27.8	18.8	25.6	25.7	22.5	29.8	27.9	18.3	0.0	23.0
LnGrp LOS	B	A	C	B	C	C	C	C	C	B	A	C
Approach Vol, veh/h		504			687			417			751	
Approach Delay, s/veh		24.4			23.8			28.7			21.0	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.4	24.6	7.2	32.4	13.0	25.0	19.3	20.3				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	13.0	37.0	5.0	45.0	9.0	41.0	24.0	26.0				
Max Q Clear Time (g_c+I1), s	8.3	15.8	3.0	20.4	8.1	13.1	13.3	12.1				
Green Ext Time (p_c), s	0.3	3.4	0.0	1.8	0.1	4.9	1.0	1.6				

### Intersection Summary

HCM 6th Ctrl Delay	23.9
HCM 6th LOS	C

### Notes

User approved pedestrian interval to be less than phase max green.



Intersection						
Int Delay, s/veh	2.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↘	↙
Traffic Vol, veh/h	721	82	56	702	75	48
Future Vol, veh/h	721	82	56	702	75	48
Conflicting Peds, #/hr	0	1	1	0	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	4	5	5	2	2
Mvmt Flow	759	86	59	739	79	51

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	846	0	1618
Stage 1	-	-	-	-	760
Stage 2	-	-	-	-	858
Critical Hdwy	-	-	4.15	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.245	-	3.518
Pot Cap-1 Maneuver	-	-	778	-	114
Stage 1	-	-	-	-	462
Stage 2	-	-	-	-	415
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	777	-	105
Mov Cap-2 Maneuver	-	-	-	-	239
Stage 1	-	-	-	-	462
Stage 2	-	-	-	-	383

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	27.9
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	284	-	-	777	-
HCM Lane V/C Ratio	0.456	-	-	0.076	-
HCM Control Delay (s)	27.9	-	-	10	-
HCM Lane LOS	D	-	-	B	-
HCM 95th %tile Q(veh)	2.3	-	-	0.2	-

Intersection												
Int Delay, s/veh	26.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Vol, veh/h	57	635	67	119	617	43	58	8	109	27	12	84
Future Vol, veh/h	57	635	67	119	617	43	58	8	109	27	12	84
Conflicting Peds, #/hr	4	0	2	2	0	4	4	0	0	0	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	0	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	4	4	4	5	5	5	2	2	2	3	3	3
Mvmt Flow	60	668	71	125	649	45	61	8	115	28	13	88

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	698	0	0	741	0	0	1802	1774	706	1811	1787	680
Stage 1	-	-	-	-	-	-	826	826	-	926	926	-
Stage 2	-	-	-	-	-	-	976	948	-	885	861	-
Critical Hdwy	4.14	-	-	4.15	-	-	7.12	6.52	6.22	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.13	5.53	-
Follow-up Hdwy	2.236	-	-	2.245	-	-	3.518	4.018	3.318	3.527	4.027	3.327
Pot Cap-1 Maneuver	889	-	-	852	-	-	62	83	436	60	81	449
Stage 1	-	-	-	-	-	-	366	387	-	321	346	-
Stage 2	-	-	-	-	-	-	302	339	-	338	371	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	886	-	-	850	-	-	~ 36	66	435	34	64	446
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 36	66	-	34	64	-
Stage 1	-	-	-	-	-	-	341	360	-	298	294	-
Stage 2	-	-	-	-	-	-	197	288	-	227	345	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.7			1.5			207.7			82.7		
HCM LOS							F			F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	36	315	886	-	-	850	-	-	34	255
HCM Lane V/C Ratio	1.696	0.391	0.068	-	-	0.147	-	-	0.836	0.396
HCM Control Delay (s)	\$ 579.1	23.6	9.4	-	-	10	-	-	276.9	28.1
HCM Lane LOS	F	C	A	-	-	A	-	-	F	D
HCM 95th %tile Q(veh)	6.6	1.8	0.2	-	-	0.5	-	-	2.9	1.8

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM 6th TWSC  
 4: Shared Access & OR 211 (W Main)

03/28/2022

Intersection						
Int Delay, s/veh	1.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶		↷	↶	↷	
Traffic Vol, veh/h	748	41	61	741	38	56
Future Vol, veh/h	748	41	61	741	38	56
Conflicting Peds, #/hr	0	1	1	0	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	4	5	5	2	2
Mvmt Flow	787	43	64	780	40	59

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	831	0	1719
Stage 1	-	-	-	-	810
Stage 2	-	-	-	-	909
Critical Hdwy	-	-	4.15	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.245	-	3.518
Pot Cap-1 Maneuver	-	-	788	-	99
Stage 1	-	-	-	-	438
Stage 2	-	-	-	-	393
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	787	-	91
Mov Cap-2 Maneuver	-	-	-	-	222
Stage 1	-	-	-	-	438
Stage 2	-	-	-	-	361

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	23.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	294	-	-	787	-
HCM Lane V/C Ratio	0.337	-	-	0.082	-
HCM Control Delay (s)	23.3	-	-	10	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	1.4	-	-	0.3	-

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	774	1	1	769	19	0	0	2	16	0	32
Future Vol, veh/h	20	774	1	1	769	19	0	0	2	16	0	32
Conflicting Peds, #/hr	4	0	0	0	0	4	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	7	7	7	8	8	8	2	2	2	14	14	14
Mvmt Flow	21	815	1	1	809	20	0	0	2	17	0	34

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	833	0	0	816	0	0	1696	1693	816	1684	1683	823
Stage 1	-	-	-	-	-	-	858	858	-	825	825	-
Stage 2	-	-	-	-	-	-	838	835	-	859	858	-
Critical Hdwy	4.17	-	-	4.18	-	-	7.12	6.52	6.22	7.24	6.64	6.34
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.24	5.64	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.24	5.64	-
Follow-up Hdwy	2.263	-	-	2.272	-	-	3.518	4.018	3.318	3.626	4.126	3.426
Pot Cap-1 Maneuver	779	-	-	786	-	-	73	93	377	70	88	356
Stage 1	-	-	-	-	-	-	352	374	-	350	370	-
Stage 2	-	-	-	-	-	-	361	383	-	335	357	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	776	-	-	786	-	-	63	88	377	67	83	355
Mov Cap-2 Maneuver	-	-	-	-	-	-	63	88	-	67	83	-
Stage 1	-	-	-	-	-	-	334	355	-	331	368	-
Stage 2	-	-	-	-	-	-	326	381	-	316	339	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0			14.6			42.2		
HCM LOS							B			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	377	776	-	-	786	-	-	146
HCM Lane V/C Ratio	0.006	0.027	-	-	0.001	-	-	0.346
HCM Control Delay (s)	14.6	9.8	0	-	9.6	0	-	42.2
HCM Lane LOS	B	A	A	-	A	A	-	E
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	1.4

# HCM Signalized Intersection Capacity Analysis

## 6: Molalla Ave & OR 211 (W Main)

03/28/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	435	132	8	448	43	104	83	22	66	132	168
Future Volume (vph)	107	435	132	8	448	43	104	83	22	66	132	168
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	3.5		4.0	3.5			3.5			3.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00			1.00			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.97		1.00	0.99			0.99			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99	
Satd. Flow (prot)	1599	1615		1583	1639			1607			1549	
Flt Permitted	0.95	1.00		0.95	1.00			0.61			0.92	
Satd. Flow (perm)	1599	1615		1583	1639			1010			1434	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	113	458	139	8	472	45	109	87	23	69	139	177
RTOR Reduction (vph)	0	11	0	0	4	0	0	5	0	0	34	0
Lane Group Flow (vph)	113	586	0	8	513	0	0	214	0	0	351	0
Confl. Peds. (#/hr)	11		1	1		11	11		4	4		11
Confl. Bikes (#/hr)			2			3						
Heavy Vehicles (%)	4%	4%	4%	5%	5%	5%	4%	4%	4%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	6.4	32.9		1.0	27.5			21.7			21.7	
Effective Green, g (s)	6.4	33.4		1.0	28.0			22.2			22.2	
Actuated g/C Ratio	0.09	0.49		0.01	0.41			0.33			0.33	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5			2.5			2.5	
Lane Grp Cap (vph)	151	797		23	678			331			470	
v/s Ratio Prot	c0.07	c0.36		0.01	0.31							
v/s Ratio Perm								0.21			c0.24	
v/c Ratio	0.75	0.74		0.35	0.76			0.65			0.75	
Uniform Delay, d1	29.8	13.6		33.0	16.9			19.4			20.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	17.3	3.3		6.5	4.6			3.8			6.0	
Delay (s)	47.2	16.9		39.5	21.5			23.2			26.2	
Level of Service	D	B		D	C			C			C	
Approach Delay (s)		21.7			21.8			23.2			26.2	
Approach LOS		C			C			C			C	

### Intersection Summary

HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	67.6	Sum of lost time (s)	11.0
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Signalized Intersection Summary  
 6: Molalla Ave & OR 211 (W Main)

03/28/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	107	435	132	8	448	43	104	83	22	66	132	168
Future Volume (veh/h)	107	435	132	8	448	43	104	83	22	66	132	168
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	0.99		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1695	1695	1695	1682	1682	1682	1695	1695	1695	1709	1709	1709
Adj Flow Rate, veh/h	113	458	139	8	472	45	109	87	23	69	139	177
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	5	5	5	4	4	4	3	3	3
Cap, veh/h	142	610	185	20	629	60	231	163	35	134	193	216
Arrive On Green	0.09	0.49	0.49	0.01	0.42	0.41	0.29	0.30	0.29	0.29	0.30	0.29
Sat Flow, veh/h	1615	1237	376	1602	1506	144	451	537	116	198	638	711
Grp Volume(v), veh/h	113	0	597	8	0	517	219	0	0	385	0	0
Grp Sat Flow(s),veh/h/ln	1615	0	1613	1602	0	1650	1105	0	0	1547	0	0
Q Serve(g_s), s	3.9	0.0	17.1	0.3	0.0	15.3	0.0	0.0	0.0	3.0	0.0	0.0
Cycle Q Clear(g_c), s	3.9	0.0	17.1	0.3	0.0	15.3	10.2	0.0	0.0	13.2	0.0	0.0
Prop In Lane	1.00		0.23	1.00		0.09	0.50		0.11	0.18		0.46
Lane Grp Cap(c), veh/h	142	0	795	20	0	689	419	0	0	529	0	0
V/C Ratio(X)	0.80	0.00	0.75	0.40	0.00	0.75	0.52	0.00	0.00	0.73	0.00	0.00
Avail Cap(c_a), veh/h	253	0	1137	251	0	1163	686	0	0	840	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	25.7	0.0	11.7	28.1	0.0	14.2	17.2	0.0	0.0	18.6	0.0	0.0
Incr Delay (d2), s/veh	7.4	0.0	1.4	9.2	0.0	1.2	0.8	0.0	0.0	1.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	5.2	0.2	0.0	5.1	2.4	0.0	0.0	4.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.1	0.0	13.1	37.4	0.0	15.4	17.9	0.0	0.0	20.1	0.0	0.0
LnGrp LOS	C	A	B	D	A	B	B	A	A	C	A	A
Approach Vol, veh/h		710			525			219			385	
Approach Delay, s/veh		16.3			15.8			17.9			20.1	
Approach LOS		B			B			B			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	31.8		20.9	9.0	27.5		20.9				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	9.0	40.0		29.0	9.0	40.0		29.0				
Max Q Clear Time (g_c+I1), s	2.3	19.1		15.2	5.9	17.3		12.2				
Green Ext Time (p_c), s	0.0	7.2		1.5	0.1	6.2		0.9				

Intersection Summary

HCM 6th Ctrl Delay	17.1
HCM 6th LOS	B

1: OR 213 & OR 211/OR 211 (W Main) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.8	0.6	0.4	0.1	0.0	0.1	3.8	0.7	3.5	3.5	0.8	0.7
Total Del/Veh (s)	16.4	19.2	13.6	22.2	21.1	14.7	16.3	24.7	7.0	18.8	15.5	9.5
Stop Del/Veh (s)	14.1	15.5	10.8	14.5	13.0	7.2	13.8	18.9	4.8	15.5	10.8	6.7

1: OR 213 & OR 211/OR 211 (W Main) Performance by movement

Movement	All
Denied Del/Veh (s)	1.1
Total Del/Veh (s)	17.7
Stop Del/Veh (s)	12.3

2: CP West & OR 211 (W Main) Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.1	0.2	0.0	0.0	0.1	0.2	0.0
Total Del/Veh (s)	6.0	5.6	4.1	1.0	14.0	9.1	4.2
Stop Del/Veh (s)	0.3	0.4	1.8	0.2	12.4	7.3	1.3

3: Leroy Ave & OR 211 (W Main) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0	0.0	3.8	0.3	0.4	3.9	0.2	0.3
Total Del/Veh (s)	4.9	1.1	0.8	4.6	1.5	0.8	17.5	19.6	8.8	19.2	15.2	9.0
Stop Del/Veh (s)	2.8	0.0	0.1	1.9	0.0	0.0	15.3	15.9	6.6	16.9	11.4	6.5

3: Leroy Ave & OR 211 (W Main) Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	4.0
Stop Del/Veh (s)	2.4

4: Shared Access & OR 211 (W Main) Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	0.9	0.7	0.8
Stop Del/Veh (s)	0.2	0.0	0.1

5: OR 211 (W Main) & Ridings Ave Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.2	0.1	0.1
Total Del/Veh (s)	6.1	0.7	4.3	3.6	13.3	7.6	3.0
Stop Del/Veh (s)	4.0	0.1	0.2	0.3	11.2	5.6	0.4

6: Molalla Ave & OR 211 (W Main) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	3.6	0.5	0.5	0.3	0.3	0.3	0.3	0.2	0.3
Total Del/Veh (s)	23.8	9.5	7.5	25.0	14.2	9.3	17.2	15.4	11.5	14.2	13.3	8.3
Stop Del/Veh (s)	18.1	4.0	3.6	22.1	9.2	6.3	14.1	11.2	9.5	11.2	9.6	6.7

6: Molalla Ave & OR 211 (W Main) Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	12.9
Stop Del/Veh (s)	8.5

Total Network Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	25.6
Stop Del/Veh (s)	14.9



1: OR 213 & OR 211/OR 211 (W Main) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.5	0.8	0.6	0.0	0.0	0.0	3.5	0.7	3.6	3.3	1.2	1.2
Total Del/Veh (s)	25.2	33.2	28.0	28.1	22.1	16.1	22.6	34.5	11.7	25.8	19.9	15.4
Stop Del/Veh (s)	22.1	27.6	23.6	19.7	14.4	8.1	20.2	28.2	9.3	20.7	13.7	10.6

1: OR 213 & OR 211/OR 211 (W Main) Performance by movement

Movement	All
Denied Del/Veh (s)	1.3
Total Del/Veh (s)	24.0
Stop Del/Veh (s)	18.0

2: CP West & OR 211 (W Main) Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.2	0.4	0.0	0.0	0.2	0.2	0.1
Total Del/Veh (s)	8.9	8.6	8.1	1.1	28.2	21.1	6.8
Stop Del/Veh (s)	0.2	0.2	5.8	0.2	26.6	19.6	2.1

3: Leroy Ave & OR 211 (W Main) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.2	4.1	0.2	0.3
Total Del/Veh (s)	5.6	1.6	1.3	9.1	1.7	1.1	57.4	29.4	12.3	39.9	41.7	16.3
Stop Del/Veh (s)	3.1	0.1	0.1	6.2	0.0	0.0	55.4	25.8	10.0	37.4	38.1	13.8

3: Leroy Ave & OR 211 (W Main) Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	6.5
Stop Del/Veh (s)	4.7

4: Shared Access & OR 211 (W Main) Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	1.2	0.8	1.0
Stop Del/Veh (s)	0.2	0.0	0.1

5: OR 211 (W Main) & Ridings Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.1	0.0	0.0	0.1	0.4	0.1	0.1	0.1	0.1
Total Del/Veh (s)	6.1	1.3	0.3	6.3	4.9	3.8	8.1	25.2	11.6	3.5
Stop Del/Veh (s)	4.0	0.2	0.0	2.5	0.2	0.2	6.6	23.1	9.4	0.7

6: Molalla Ave & OR 211 (W Main) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	3.2	0.6	0.5	0.2	0.3	0.3	0.4	0.4	0.5
Total Del/Veh (s)	38.0	14.5	14.0	31.6	20.0	16.6	24.7	22.2	14.3	17.7	19.2	13.7
Stop Del/Veh (s)	30.4	6.8	6.7	28.1	13.8	12.5	21.3	17.8	12.1	13.6	14.0	11.0

6: Molalla Ave & OR 211 (W Main) Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	18.5
Stop Del/Veh (s)	12.5

Total Network Performance

Denied Del/Veh (s)	1.2
Total Del/Veh (s)	37.0
Stop Del/Veh (s)	23.3

1: OR 213 & OR 211/OR 211 (W Main) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.7	0.6	0.6	0.1	0.0	0.1	3.4	0.7	3.5	3.5	0.8	0.8
Total Del/Veh (s)	18.2	18.2	15.8	22.1	21.7	14.5	17.9	26.4	7.5	21.1	15.3	9.8
Stop Del/Veh (s)	15.6	14.5	12.4	14.9	13.8	7.1	15.8	20.6	5.2	17.5	10.7	6.7

1: OR 213 & OR 211/OR 211 (W Main) Performance by movement

Movement	All
Denied Del/Veh (s)	1.2
Total Del/Veh (s)	18.2
Stop Del/Veh (s)	13.0

2: CP West & OR 211 (W Main) Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.2	0.2	0.1
Total Del/Veh (s)	6.3	6.2	4.4	1.0	16.5	10.3	4.5
Stop Del/Veh (s)	0.3	0.3	2.2	0.2	14.8	8.5	1.5

3: Leroy Ave & OR 211 (W Main) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	3.9	0.2	0.3	4.0	0.4	0.3
Total Del/Veh (s)	5.2	1.1	0.7	5.2	1.5	0.8	19.7	16.1	7.4	19.0	16.5	10.9
Stop Del/Veh (s)	2.9	0.1	0.0	2.6	0.1	0.1	17.6	12.4	5.2	16.8	12.7	8.3

3: Leroy Ave & OR 211 (W Main) Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	4.0
Stop Del/Veh (s)	2.4

4: Shared Access & OR 211 (W Main) Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.1	0.2	0.0	0.3	0.2	0.1
Total Del/Veh (s)	1.1	0.8	4.8	0.8	19.1	10.5	2.3
Stop Del/Veh (s)	0.1	0.1	2.6	0.0	17.0	8.4	1.3

5: OR 211 (W Main) & Ridings Ave Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.2	0.2	0.1	0.1
Total Del/Veh (s)	4.9	0.8	4.4	4.0	12.7	7.7	3.0
Stop Del/Veh (s)	2.9	0.2	0.2	0.2	11.0	5.8	0.4

6: Molalla Ave & OR 211 (W Main) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	3.5	0.5	0.6	0.3	0.3	0.2	0.3	0.3	0.3
Total Del/Veh (s)	23.9	10.0	8.2	26.9	15.2	10.3	16.3	15.1	8.7	13.5	14.4	8.6
Stop Del/Veh (s)	18.7	4.7	4.5	23.0	9.8	7.1	13.2	11.0	7.3	10.3	10.8	6.8

6: Molalla Ave & OR 211 (W Main) Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	13.4
Stop Del/Veh (s)	8.9

Total Network Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	26.3
Stop Del/Veh (s)	15.7

1: OR 213 & OR 211/OR 211 (W Main) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.5	0.8	0.8	0.0	0.0	0.0	3.5	0.8	3.4	3.3	1.3	1.3
Total Del/Veh (s)	24.3	33.3	26.8	30.7	21.0	15.6	22.5	34.4	12.1	24.8	21.2	16.6
Stop Del/Veh (s)	21.2	27.6	22.2	22.1	13.5	7.8	19.9	28.2	9.6	19.6	14.7	11.8

1: OR 213 & OR 211/OR 211 (W Main) Performance by movement

Movement	All
Denied Del/Veh (s)	1.3
Total Del/Veh (s)	24.0
Stop Del/Veh (s)	18.0

2: CP West & OR 211 (W Main) Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.2	0.5	0.0	0.0	0.2	0.2	0.1
Total Del/Veh (s)	8.8	8.6	6.8	1.0	30.3	17.0	6.7
Stop Del/Veh (s)	0.2	0.2	4.5	0.2	28.9	15.6	2.0

3: Leroy Ave & OR 211 (W Main) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	3.8	0.4	0.3
Total Del/Veh (s)	6.7	1.5	1.1	8.5	1.6	0.9	45.4	31.2	12.8	43.6	39.9	14.2
Stop Del/Veh (s)	4.2	0.1	0.1	5.7	0.1	0.0	43.4	27.4	10.5	41.3	35.9	11.9

3: Leroy Ave & OR 211 (W Main) Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	5.6
Stop Del/Veh (s)	3.9

4: Shared Access & OR 211 (W Main) Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.0	0.2	0.1	0.0
Total Del/Veh (s)	1.5	1.2	7.4	1.0	37.1	18.2	2.8
Stop Del/Veh (s)	0.1	0.2	5.3	0.0	35.3	16.2	1.5

5: OR 211 (W Main) & Ridings Ave Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBR	SBL	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1
Total Del/Veh (s)	7.4	1.5	0.9	3.7	5.0	4.3	21.2	32.3	13.8	3.7
Stop Del/Veh (s)	4.9	0.3	0.0	0.6	0.2	0.1	19.1	30.2	11.7	0.8

6: Molalla Ave & OR 211 (W Main) Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	3.7	0.6	0.5	0.3	0.3	0.2	0.5	0.5	0.5
Total Del/Veh (s)	34.2	16.0	15.8	30.9	20.9	14.4	25.6	23.4	17.1	21.4	20.5	16.8
Stop Del/Veh (s)	26.7	7.8	8.2	27.5	14.7	10.6	22.3	19.1	15.4	17.0	15.5	14.0

6: Molalla Ave & OR 211 (W Main) Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	19.6
Stop Del/Veh (s)	13.5

Total Network Performance

Denied Del/Veh (s)	1.2
Total Del/Veh (s)	37.0
Stop Del/Veh (s)	23.4

Intersection: 1: OR 213 & OR 211/OR 211 (W Main)

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	T	R	L	TR
Maximum Queue (ft)	114	174	123	212	190	46	225	62	181	210
Average Queue (ft)	42	76	54	99	86	10	94	15	73	77
95th Queue (ft)	87	145	101	178	149	31	178	44	138	150
Link Distance (ft)		943		3991			896			940
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	260		340		225	275		260	205	
Storage Blk Time (%)				0			0		0	0
Queuing Penalty (veh)				1			0		0	0

Intersection: 2: CP West & OR 211 (W Main)

Movement	EB	EB	WB	WB	NB
Directions Served	T	R	L	T	LR
Maximum Queue (ft)	24	8	65	12	96
Average Queue (ft)	1	0	18	0	40
95th Queue (ft)	9	6	51	6	77
Link Distance (ft)	3991			344	179
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		100	100		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Leroy Ave & OR 211 (W Main)

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	54	27	87	14	71	104	75	97
Average Queue (ft)	13	1	36	0	33	44	27	46
95th Queue (ft)	42	8	75	8	59	79	62	81
Link Distance (ft)		344		446		280		503
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100		100		100		100	
Storage Blk Time (%)			0			1		0
Queuing Penalty (veh)			0			0		0

Intersection: 4: Shared Access & OR 211 (W Main)

Movement	EB	WB
Directions Served	TR	T
Maximum Queue (ft)	16	11
Average Queue (ft)	1	1
95th Queue (ft)	9	9
Link Distance (ft)	446	300
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: OR 211 (W Main) & Ridings Ave

Movement	EB	WB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	130	8	74
Average Queue (ft)	13	0	26
95th Queue (ft)	68	4	60
Link Distance (ft)	300	2250	361
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Molalla Ave & OR 211 (W Main)

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	104	196	41	263	176	152
Average Queue (ft)	47	87	4	122	78	67
95th Queue (ft)	88	160	23	208	146	120
Link Distance (ft)		2250		457	688	380
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	150		150			
Storage Blk Time (%)		1		4		
Queuing Penalty (veh)		1		0		

Network Summary

Network wide Queuing Penalty: 4



Intersection: 1: OR 213 & OR 211/OR 211 (W Main)

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	T	R	L	TR
Maximum Queue (ft)	163	280	178	256	142	45	236	84	282	383
Average Queue (ft)	70	154	88	129	65	12	105	24	138	136
95th Queue (ft)	127	259	153	221	118	35	199	62	234	252
Link Distance (ft)		943		3991			896			940
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	260		340		225	275		260	205	
Storage Blk Time (%)		1		1			0		2	2
Queuing Penalty (veh)		2		5			0		10	6

Intersection: 2: CP West & OR 211 (W Main)

Movement	EB	EB	WB	WB	NB
Directions Served	T	R	L	T	LR
Maximum Queue (ft)	34	9	62	65	128
Average Queue (ft)	2	0	24	3	55
95th Queue (ft)	19	5	57	29	106
Link Distance (ft)	3991			345	179
Upstream Blk Time (%)	0				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)		100	100		
Storage Blk Time (%)	0			0	
Queuing Penalty (veh)	0			0	

Intersection: 3: Leroy Ave & OR 211 (W Main)

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	56	62	131	109	121	102	58	130
Average Queue (ft)	20	6	44	7	54	50	22	47
95th Queue (ft)	49	33	86	50	101	86	55	92
Link Distance (ft)		345		445	280	280		503
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100		100				100	
Storage Blk Time (%)		0	1	0				1
Queuing Penalty (veh)		0	4	0				0

Intersection: 4: Shared Access & OR 211 (W Main)

Movement	EB	WB
Directions Served	TR	T
Maximum Queue (ft)	55	6
Average Queue (ft)	2	0
95th Queue (ft)	23	5
Link Distance (ft)	445	300
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: OR 211 (W Main) & Ridings Ave

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	132	26	30	87
Average Queue (ft)	25	1	3	36
95th Queue (ft)	94	13	17	71
Link Distance (ft)	300	2250	195	361
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Molalla Ave & OR 211 (W Main)

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	220	344	86	338	212	235
Average Queue (ft)	73	154	11	174	89	116
95th Queue (ft)	151	266	53	288	162	191
Link Distance (ft)		2250		457	688	380
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	150		150			
Storage Blk Time (%)	1	7		10		
Queuing Penalty (veh)	5	7		1		

Network Summary

Network wide Queuing Penalty: 40

Intersection: 1: OR 213 & OR 211/OR 211 (W Main)

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	T	R	L	TR
Maximum Queue (ft)	168	178	122	234	194	42	226	54	181	193
Average Queue (ft)	46	83	54	106	81	9	95	16	81	73
95th Queue (ft)	106	153	106	191	152	30	180	43	149	146
Link Distance (ft)		943		3991			896			940
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	260		340		225	275		260	205	
Storage Blk Time (%)				0	0		0		0	0
Queuing Penalty (veh)				1	0		0		1	0

Intersection: 2: CP West & OR 211 (W Main)

Movement	EB	EB	WB	WB	NB
Directions Served	T	R	L	T	LR
Maximum Queue (ft)	34	16	70	17	95
Average Queue (ft)	2	1	20	1	40
95th Queue (ft)	18	7	54	13	74
Link Distance (ft)	3991			344	179
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		100	100		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Leroy Ave & OR 211 (W Main)

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	51	27	92	32	71	76	74	114
Average Queue (ft)	16	1	32	1	33	36	26	52
95th Queue (ft)	45	11	69	17	62	62	60	95
Link Distance (ft)		344		446		280		503
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100		100		100		100	
Storage Blk Time (%)			0	0	0	0	0	1
Queuing Penalty (veh)			0	0	0	0	1	0

Intersection: 4: Shared Access & OR 211 (W Main)

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	63	135
Average Queue (ft)	24	51
95th Queue (ft)	57	95
Link Distance (ft)		229
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: OR 211 (W Main) & Ridings Ave

Movement	EB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	108	60
Average Queue (ft)	10	23
95th Queue (ft)	58	53
Link Distance (ft)	300	361
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Molalla Ave & OR 211 (W Main)

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	124	236	44	266	158	158
Average Queue (ft)	51	97	8	136	76	63
95th Queue (ft)	98	183	31	228	138	118
Link Distance (ft)		2250		457	688	380
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	150		150			
Storage Blk Time (%)	0	1		5		
Queuing Penalty (veh)	0	1		0		

Network Summary

Network wide Queuing Penalty: 6
---------------------------------

Intersection: 1: OR 213 & OR 211/OR 211 (W Main)

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	T	R	L	TR
Maximum Queue (ft)	161	304	186	252	187	57	225	92	288	418
Average Queue (ft)	63	156	84	120	68	12	109	28	135	149
95th Queue (ft)	127	258	155	206	131	37	199	69	244	296
Link Distance (ft)		943		3991			896			940
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	260		340		225	275		260	205	
Storage Blk Time (%)		1		0			0		2	3
Queuing Penalty (veh)		2		2			0		6	10

Intersection: 2: CP West & OR 211 (W Main)

Movement	EB	EB	WB	WB	NB
Directions Served	T	R	L	T	LR
Maximum Queue (ft)	23	6	57	40	168
Average Queue (ft)	1	0	21	2	55
95th Queue (ft)	14	5	50	27	113
Link Distance (ft)	3991			345	179
Upstream Blk Time (%)					0
Queuing Penalty (veh)					0
Storage Bay Dist (ft)		100	100		
Storage Blk Time (%)				0	
Queuing Penalty (veh)				0	

Intersection: 3: Leroy Ave & OR 211 (W Main)

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	48	65	96	52	112	97	92	108
Average Queue (ft)	24	4	42	4	42	50	26	48
95th Queue (ft)	50	27	77	29	87	86	67	89
Link Distance (ft)		345		445	280	280		503
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100		100				100	
Storage Blk Time (%)		0	0	0			1	1
Queuing Penalty (veh)		0	1	0			1	0

Intersection: 4: Shared Access & OR 211 (W Main)

Movement	WB	WB	NB
Directions Served	L	T	LR
Maximum Queue (ft)	60	54	139
Average Queue (ft)	26	3	53
95th Queue (ft)	56	34	100
Link Distance (ft)		300	229
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)	100		
Storage Blk Time (%)		0	
Queuing Penalty (veh)		0	

Intersection: 5: OR 211 (W Main) & Ridings Ave

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	225	6	24	96
Average Queue (ft)	24	0	2	37
95th Queue (ft)	109	0	13	77
Link Distance (ft)	300	2250	195	361
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Molalla Ave & OR 211 (W Main)

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	226	380	34	358	205	249
Average Queue (ft)	78	180	6	178	88	129
95th Queue (ft)	173	322	26	293	164	234
Link Distance (ft)		2250		457	688	380
Upstream Blk Time (%)				0		1
Queuing Penalty (veh)				0		0
Storage Bay Dist (ft)	150		150			
Storage Blk Time (%)	0	10		10		
Queuing Penalty (veh)	1	11		1		

Network Summary

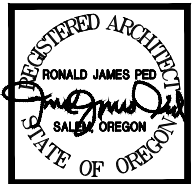
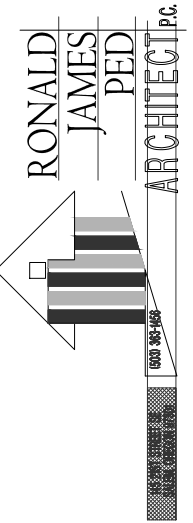
Network wide Queuing Penalty: 34
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## **Exhibit D: Preliminary Architectural Drawings**

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# US MARKET

## CONVENIENCE STORE & GAS STATION



### CODE SUMMARY

CODE: 2019 O66C  
 OCCUPANCY: M (CONVENIENCE STORE)  
 CONSTRUCTION: V-B

#### ALLOWABLE BUILDING AREAS-TABLE 503

OCCUPANCY	CONSTRUCTION TYPE	TABULAR BUILDING AREA	ACTUAL AREA
M	V-B	9,000 SF	4,377.5 SF

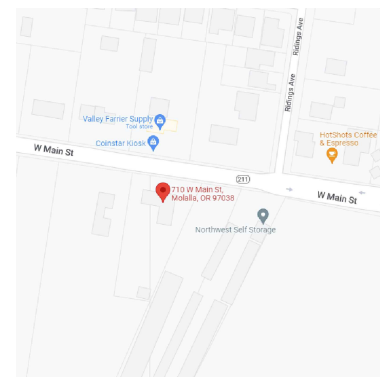
CODE: 2019 O66C  
 OCCUPANCY: S-1 (GAS STATION)  
 CONSTRUCTION: V-B

#### ALLOWABLE BUILDING AREAS-TABLE 503

OCCUPANCY	CONSTRUCTION TYPE	TABULAR BUILDING AREA	ACTUAL AREA
M	V-B	9,000 SF	2,784 SF

### DRAWING INDEX

- A11- SITE PLAN
- A12- SITE DETAILS
- S21- STRUCTURAL-FOUNDATION PLAN
- S22- STRUCTURAL-STEEL PLAN, STEEL DETAILS
- S23- STRUCTURAL-ROOF FRAMING PLAN, DETAILS
- S24- STRUCTURAL-NOTES
- A21- FLOOR PLAN/LS PLAN
- A22- ROOF PLAN
- A31- SECTIONS
- A32- SECTIONS
- A33- WALL SECTIONS
- A34- EXTERIOR ELEVATIONS, DETAILS
- A35- EXTERIOR ELEVATIONS, DETAILS
- A51- INTERIOR ELEVATIONS
- A61- REFLECTED CEILING PLAN
- A81- DETAILS
- A91- ACCESSIBILITY DETAILS
- A92- ACCESSIBILITY DETAILS
- M21- MECHANICAL PLAN
- M22- MECHANICAL DETAILS
- P21- PLUMBING PLAN
- L11- PLANTING PLAN
- L12- IRRIGATION PLAN



**VICINITY MAP**  
 SCALE: 1" = 100'

### PLUMBING FIXTURE SUMMATION

TABLE 2902.1

	OCCUPANCY	OCCUPANTS	PER SEX X/2	WC REQ'D MALE	WC REQ'D FEMALE	LAV REQ'D MALE	LAV REQ'D FEMALE
REQ'D FIXTURES SUBTOTAL (STORE)	M	43	21.5	1/500+043	1/500+043	1/150+028	1/150+028
				1	1	1	1
REQ'D FIXTURES SUBTOTAL (STATION)	M	13	3.1	1/500+014	1/500+014	1/150+049	1/150+049
				1	1	1	1
4392 SF / 60 OLF							
REQUIRED FIXTURES SUMMATION				2	2	2	2
PROVIDE FIXTURES				2.33	3	2	2

FUELING STATION AND CONVENIENCE STORE  
 MOLALLA PETROLEUM  
 710 WEST MAIN ST MOLALLA, OREGON 97038

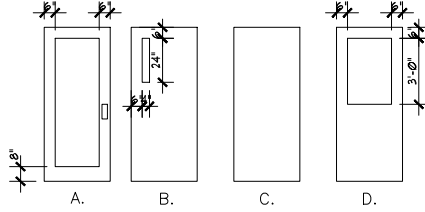
DATE: FEB 10, 2022  
 DRAWN:  
 JOB NO.: 2212

A1.1



ROOM FINISH SCHEDULE		FLOOR	BASE	WALLS	CEILING
NO.	ROOM	VCT VINYL (EXISTING)	WOOD	G.B. (PAINT)	G.B. (PAINT)
101	STORE FLOOR	CARPET #1	BRUSHMAT	TILE	PER INTERIOR ELEVATIONS
102	WALK-IN FREEZER	WOOD	WOOD 4"	TILE	G.B. (PAINT)
103	BACK ROOM	CONC. SLAB	CARPET 4"	TILE	G.B. (PAINT)
104	KITCHEN		VINYL 6"	TILE	G.B. (PAINT)
105	OFFICE			TILE	G.B. (PAINT)
106	ELECTRICAL				G.B. (PAINT)
107	CASHIER				G.B. (PAINT)
108	MEN				G.B. (PAINT)
109	WOMEN				G.B. (PAINT)
110	HALL				G.B. (PAINT)
111	WALK-IN COOLER				G.B. (PAINT)

DOOR SCHEDULE		TYPE	FINISH	FRAME	HWDR
NO.	SIZE	(1) AL	(2) FF	(3) TR	(4) 1
101	3'-0"x7'-0"x13/4"	A	AL	FF	TR
102	3'-0"x7'-0"x13/4"	A	AL	FF	TR
103	4'-0"x7'-0"x13/4"	B	HM	ME	TR
104	3'-0"x7'-0"x13/4"	C	TY	TY	TR
105	3'-0"x7'-0"x13/4"	C	TY	TY	TR
106	3'-0"x7'-0"x13/4"	D	TY	TY	TR
107	3'-0"x7'-0"x13/4"	C	TY	TY	TR

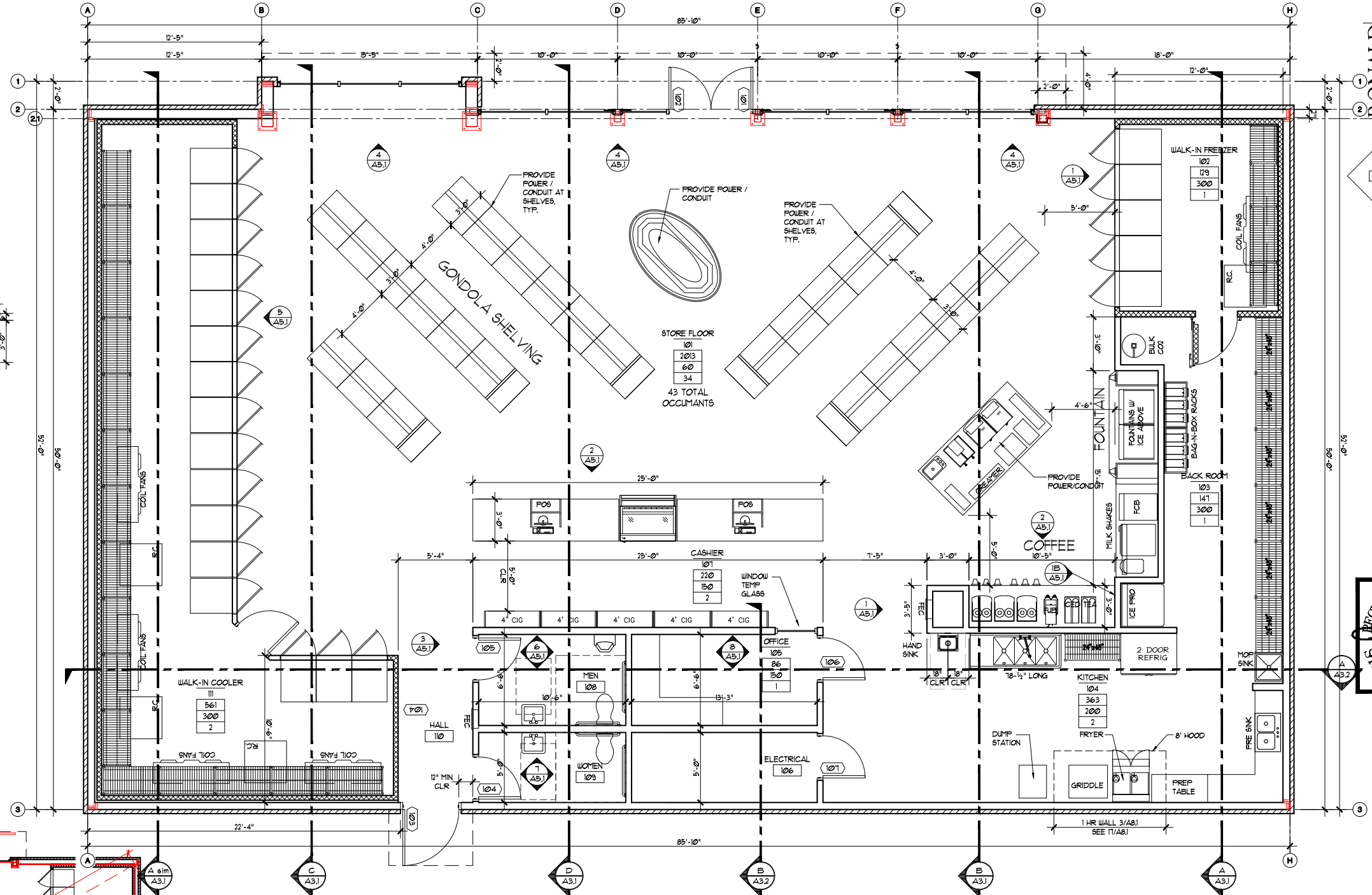


### HARDWARE SCHEDULE

- GROUP 1: ALL HARDWARE BY MFR INCLUDING OVERHEAD CONSOLE CLOSER OVERHEAD STOP \*\* WIRE PUSH/PULL
- GROUP 2: 1 1/2 PR HINGES CLOSER OVERHEAD STOP THRESHOLD WEATHER STRIP
- GROUP 3: 1 LOCK 1 1/2 PR HINGES 1 WALL STOP
- GROUP 4: 1 PRIVACY LOCK 1 1/2 PR HINGES 1 WALL STOP

### DOOR TYPES

- \*\* SHOWN ON SCHEDULE INDICATES TYPICAL
- DOOR TYPES
- CONSTRUCTION
  - TC - TYPICAL - SOLID CORE
  - HC - HOLLOW CORE
  - HM - HOLLOW METAL
  - MC - MINERAL CORE
  - RJ - ROLL UP/COIL
  - AL - ALUMINUM & GLASS
- MATERIAL/FINISH
  - TY - TYPICAL - WOOD TRANSPARENT
  - WF - WOOD FACTORY
  - PL - PLASTIC LAMINATE
  - ME - METAL ENAMEL
  - WE - WOOD ENAMEL
  - FF - FACTORY FINISH
- GLASS
  - TP - TYPICAL - CLEAR WIRE
  - TP - TEMPERED PLATE
  - SF - SAFETY GLASS
- 20, 45, 60, 90, INDICATES RATING IN MINUTES FOR OPENING
- TYPICAL FRAMES SHOWN \*\* NUMBER INDICATES DETAIL SHOWN ON SHEET.
- NUMBER REFERS TO HARDWARE GROUP OF HARDWARE SCHEDULE



**FLOOR PLAN**  
SCALE: 1/4" = 1'-0" 43225 SF

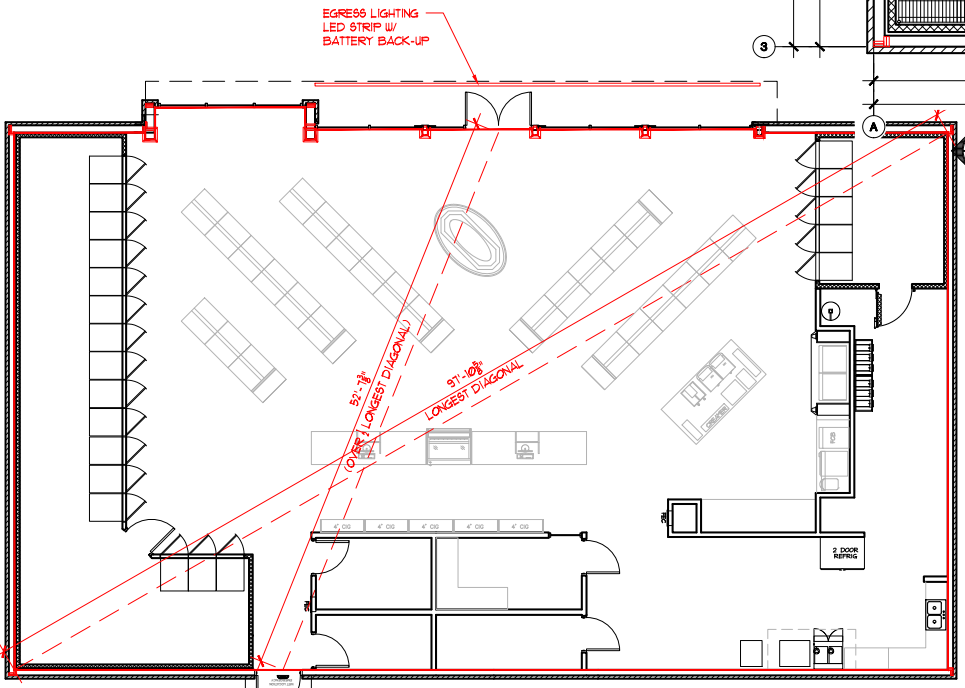
### SYMBOL KEY

- PROPOSED**
- FIRE EXTINGUISHER (1 PER 3000 SF) (1) REQ'D KIDDE DRY CHEMICAL FIRE EXTINGUISHER UL CLASSIFICATION 2A-10BC (43225 SF/3000 = 14.41) TOP OF EXTINGUISHER 48" AFF
  - EXIT LIGHT - COMBO WITH BATTERY BACKUP LITONIA QUANTUM ISSUIG 120 DC 6" EXIT-UNIT COMBO BACK MOUNT WITH BATTERY BACKUP
  - EGRESS LIGHT - WITH BATTERY BACKUP LIGHT FIXTURE INDUSTRIES, EL-WETLED LED EGRESS-UNIT BACK MOUNT WITH BATTERY BACKUP
- WALL SCHEDULE**
- PROPOSED WALL
  - EXIST. WALL
  - DEMO WALL
- OFFICE**
- ROOM NAME
  - ROOM NUMBER
  - SQUARE FOOTAGE
  - OCCUPANT LOAD FACTOR
  - OCCUPANT LOAD
- REVISION TAG**
- 1 - REVISION TAG
  - DOOR TAG
  - ELEVATION TAG / DATUM PT.

- 2406.3 HAZARDOUS LOCATIONS**  
THE FOLLOWING SHALL BE CONSIDERED SPECIFIC HAZARDOUS LOCATIONS REQUIRING SAFETY GLAZING MATERIALS:
- GLAZING IN SWINGING DOORS EXCEPT JALOUSIES (SEE SECTION 2406.3.1).
  - GLAZING IN FIXED AND SLIDING PANELS OF SLIDING DOOR ASSEMBLIES AND PANELS IN SLIDING AND BIFOLD CLOSET DOOR ASSEMBLIES.
  - GLAZING IN STORM DOORS.
  - GLAZING IN UNFRAMED SWINGING DOORS.
  - GLAZING IN DOORS AND ENCLOSURES FOR HOT TUBS, WHIRLPOOL, SAUNAS, STEAM ROOMS, BATHUBS AND SHOWERS. GLAZING IN ANY PORTION OF A BUILDING WALL ENCLOSING THESE COMPARTMENTS WHERE THE BOTTOM EXPOSED EDGE OF THE GLAZING IS LESS THAN 60 INCHES ABOVE THE WALKING SURFACE.
  - GLAZING IN AN INDIVIDUAL FIXED OR OPERABLE PANEL ADJACENT TO A DOOR WHERE THE NEAREST EXPOSED EDGE OF THE GLAZING IS WITHIN 24-INCH ARC OF EITHER VERTICAL EDGE OF THE DOOR IN A CLOSED POSITION AND WHERE THE EXPOSED EDGE OF THE GLAZING IS LESS THAN 60 INCHES ABOVE THE WALKING SURFACE.

### GLAZING NOTES FOR HAZARDOUS LOCATIONS

SCALE: NTS  
M:\TEMPLATES\GLAZING TEXT



**FLS PLAN**  
SCALE: 1/8" = 1'-0"

2

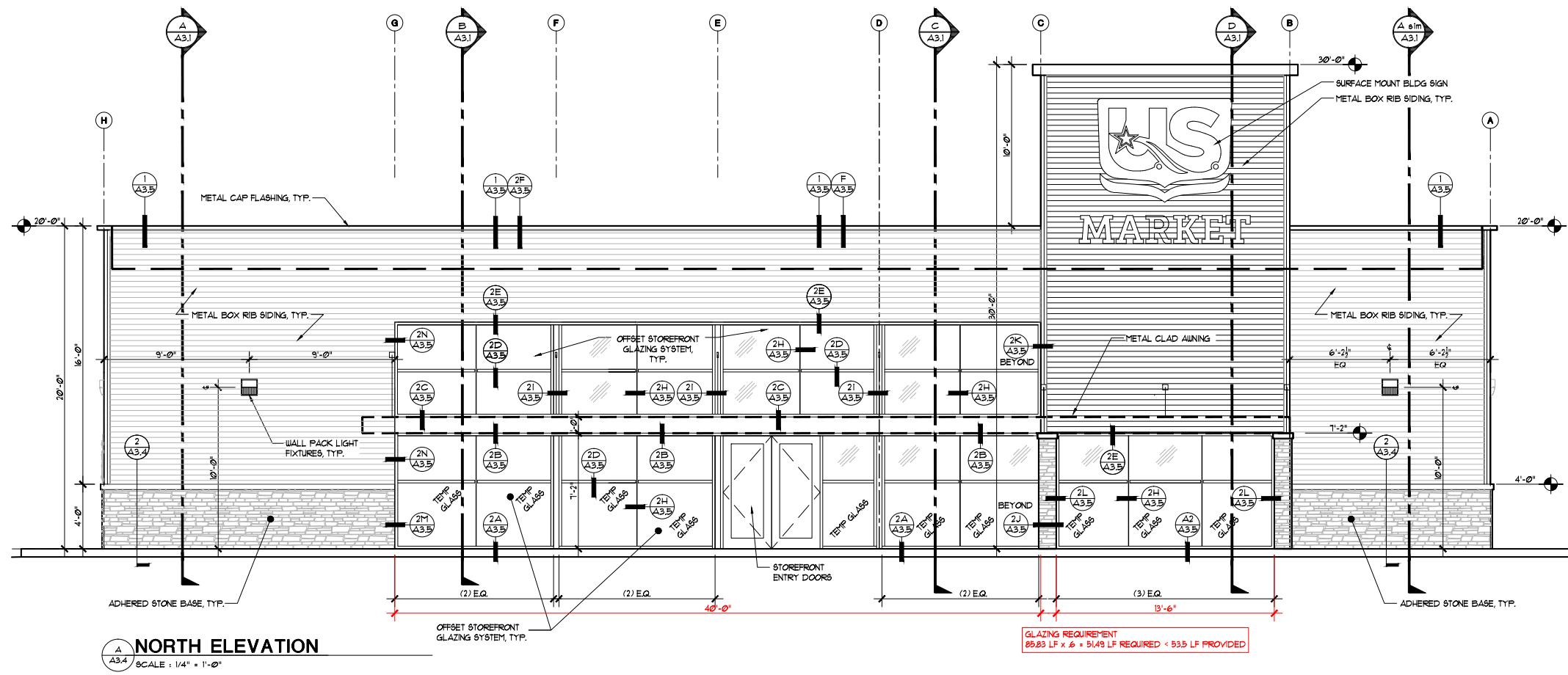


RONALD JAMES PED ARCHITECT P.C.  
600 385-865

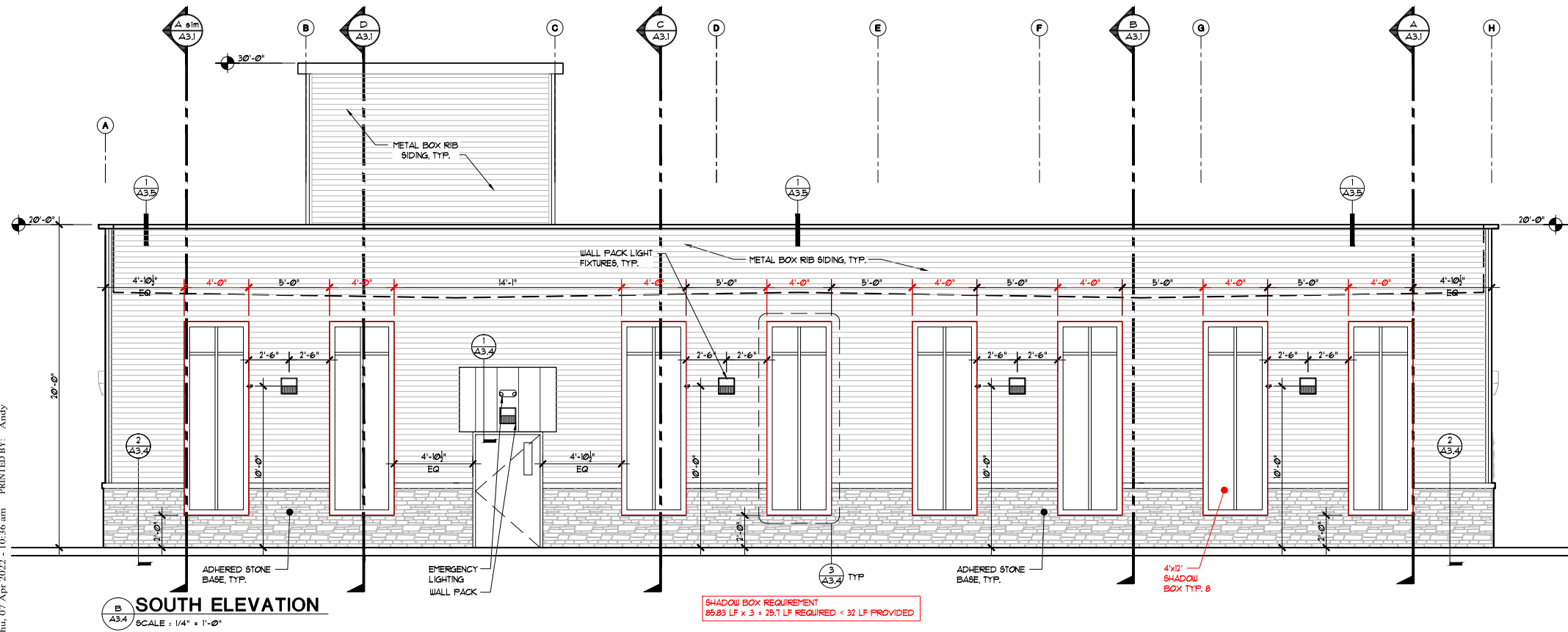
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MOLALLA PETROLEUM  
710 WEST MAIN ST MOLALLA, OREGON 97038

DATE: FEB 16, 2022  
DRAWN: AK  
JOB NO.: 2212

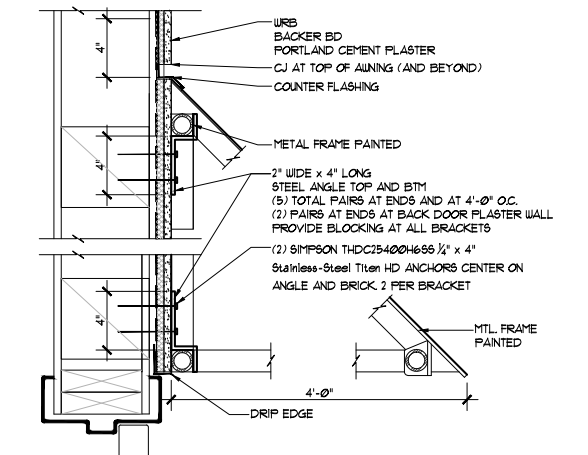
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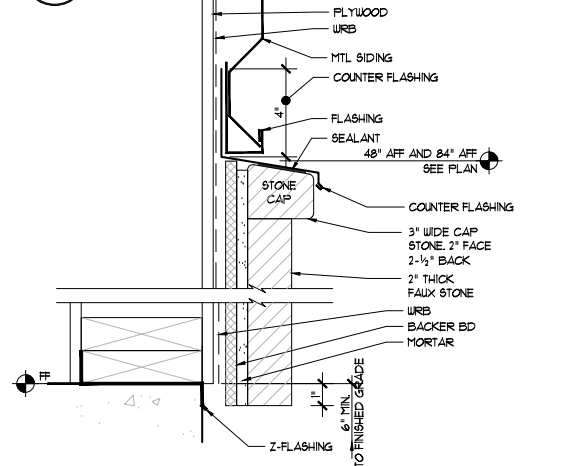
**NORTH ELEVATION**  
SCALE: 1/4" = 1'-0"



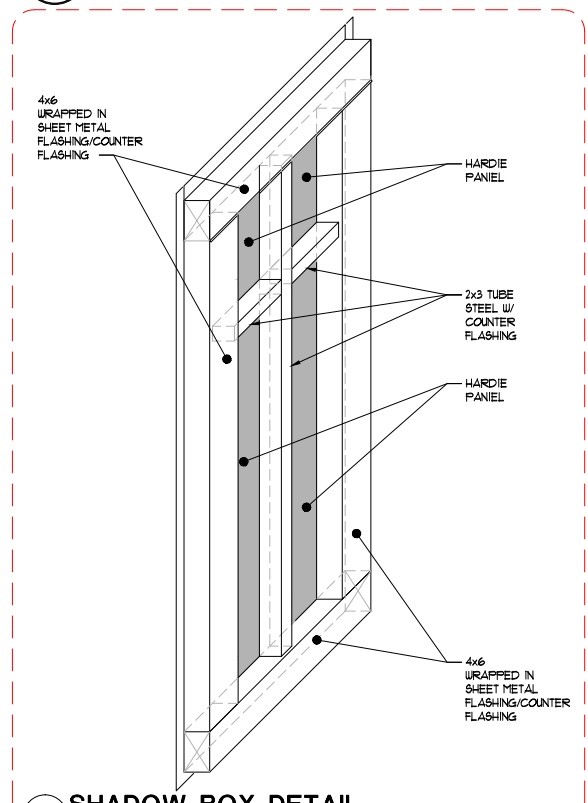
**SOUTH ELEVATION**  
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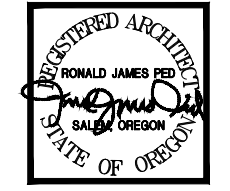
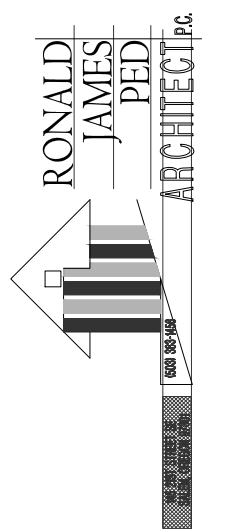
**METAL AWNING DETAIL**  
STUCCO WALL  
SCALE: 2" = 1'-0"



**STONE VENEER TO PLASTER DETAIL**  
SCALE: 3" = 1'-0"

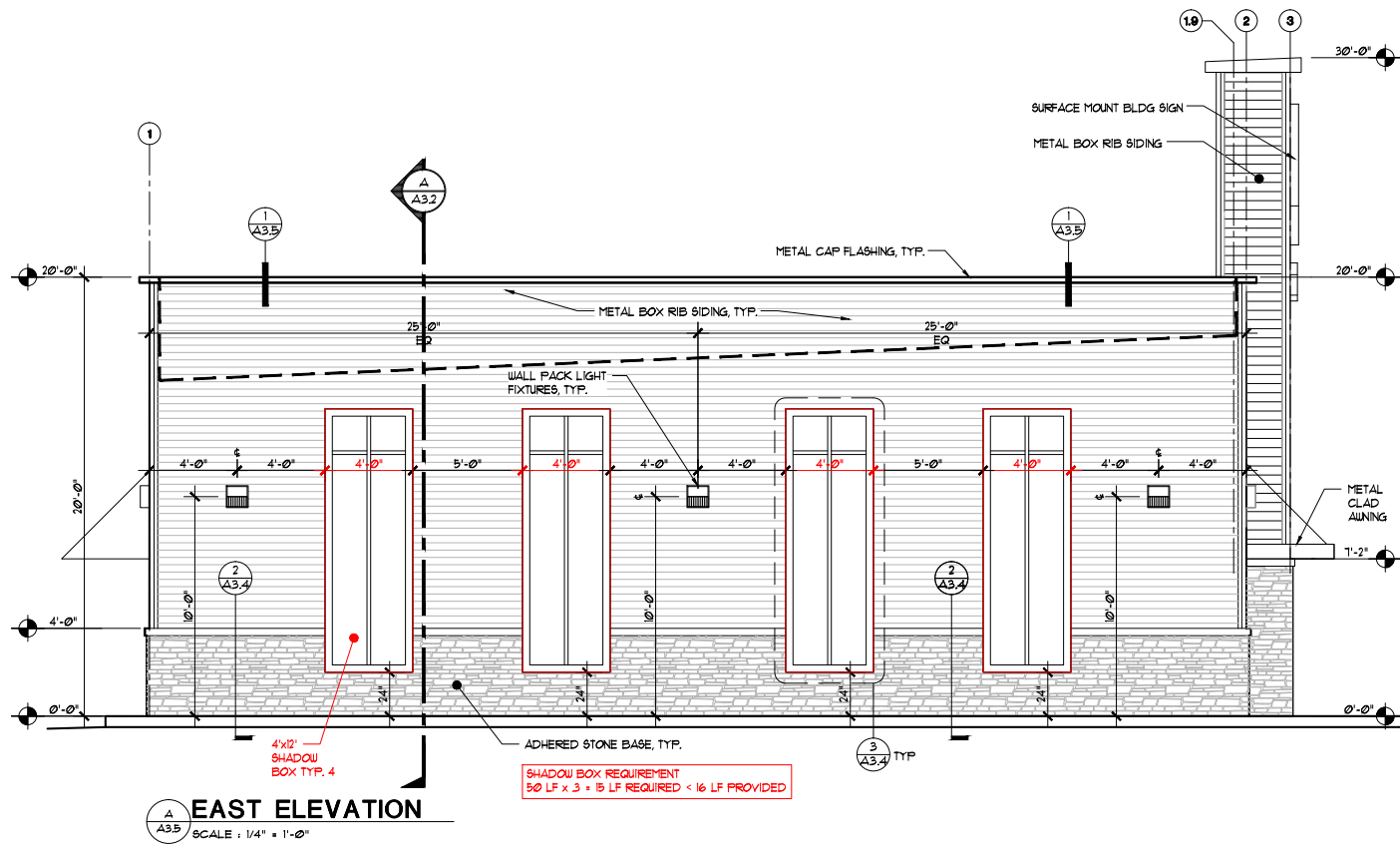


**SHADOW BOX DETAIL**  
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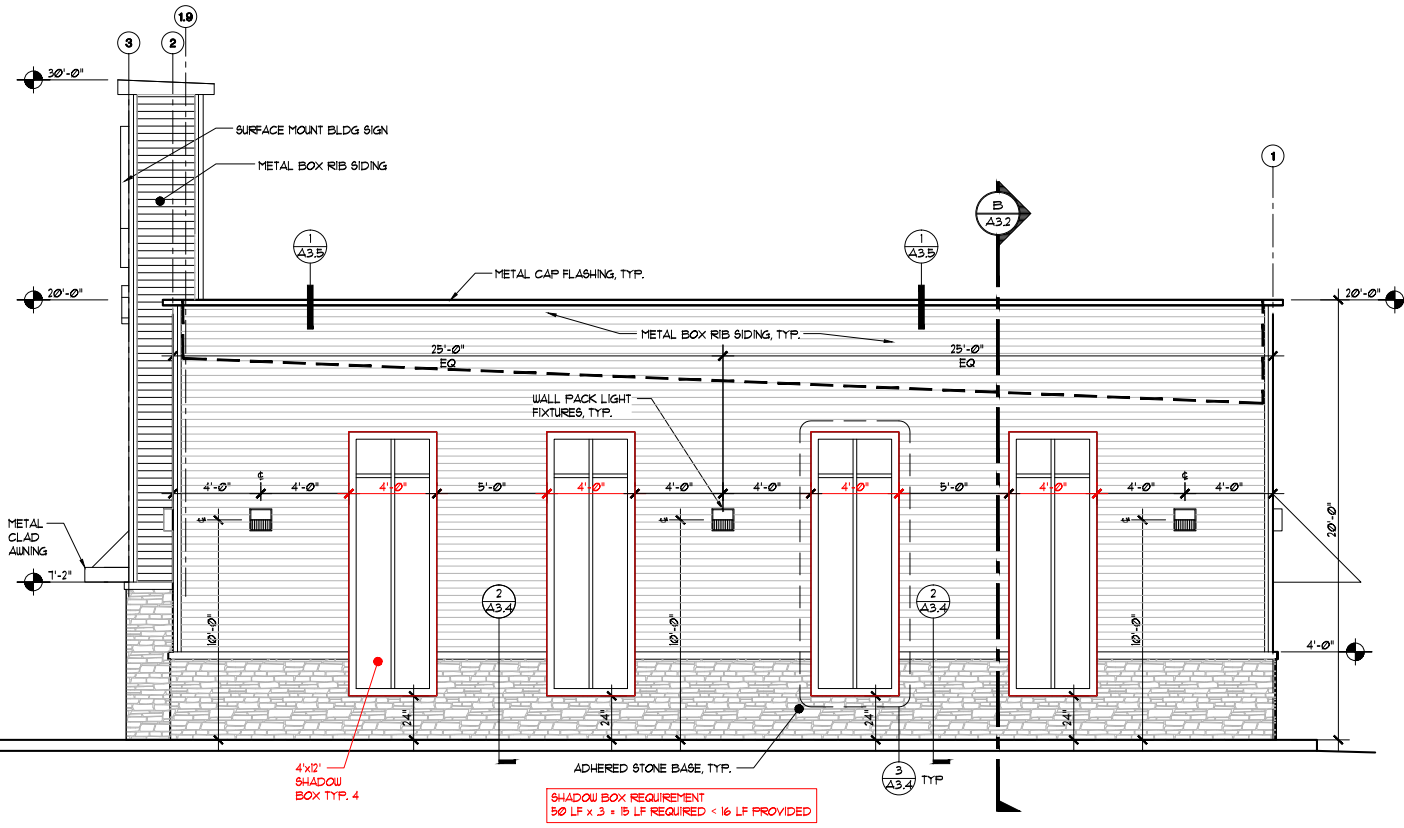


FUELING STATION AND CONVENIENCE STORE  
MOLALLA PETROLEUM  
710 WEST MAIN ST MOLALLA, OREGON 97038  
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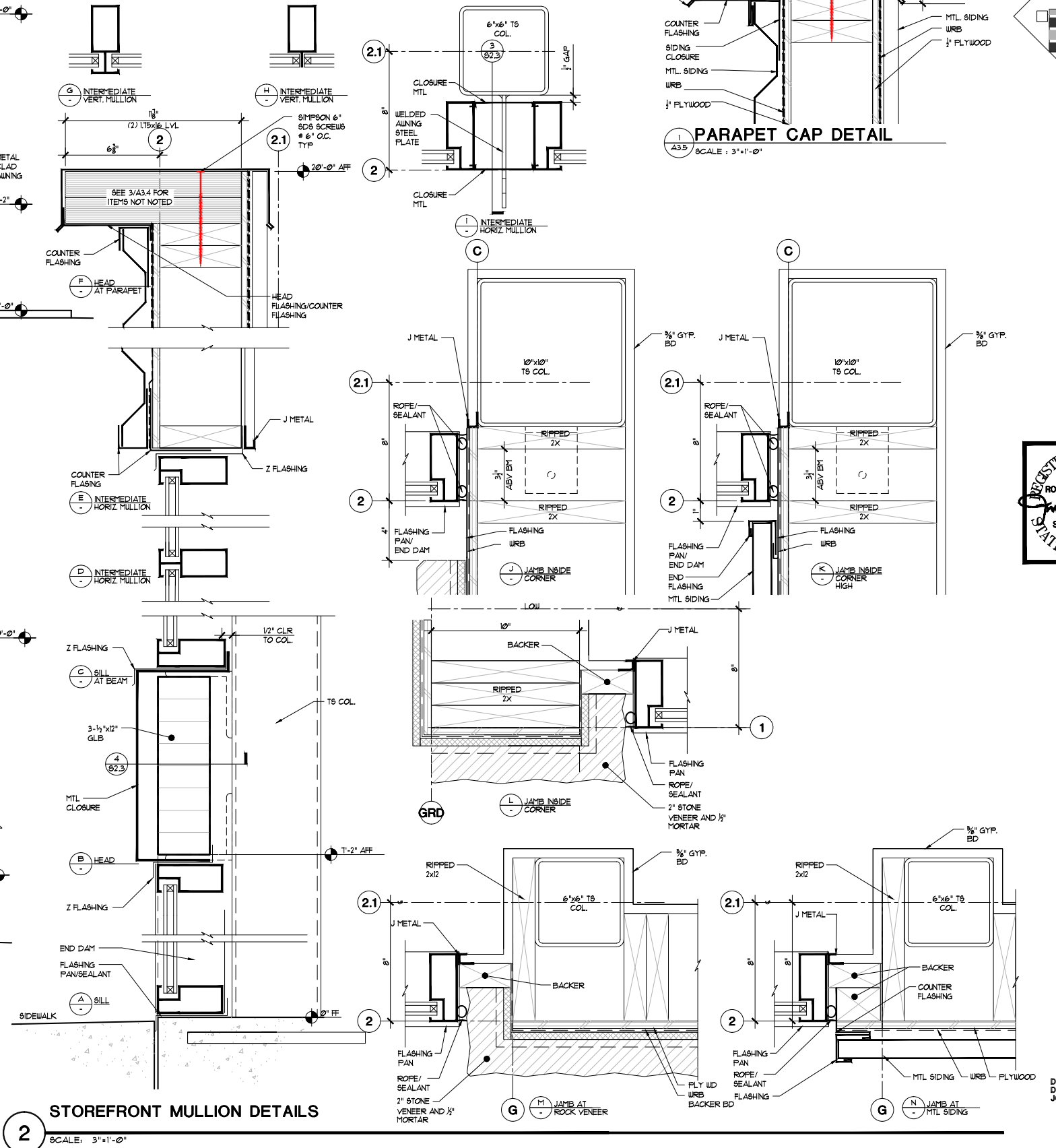
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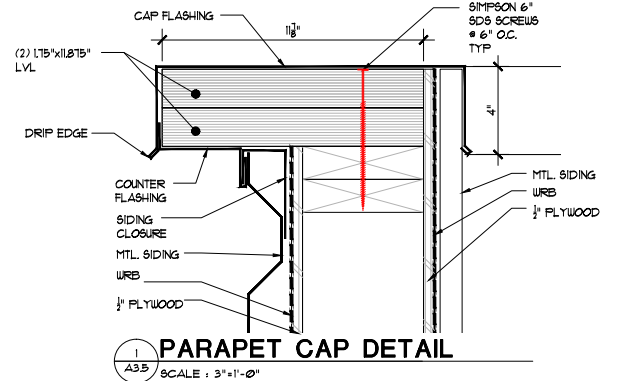
**A EAST ELEVATION**  
SCALE: 1/4" = 1'-0"



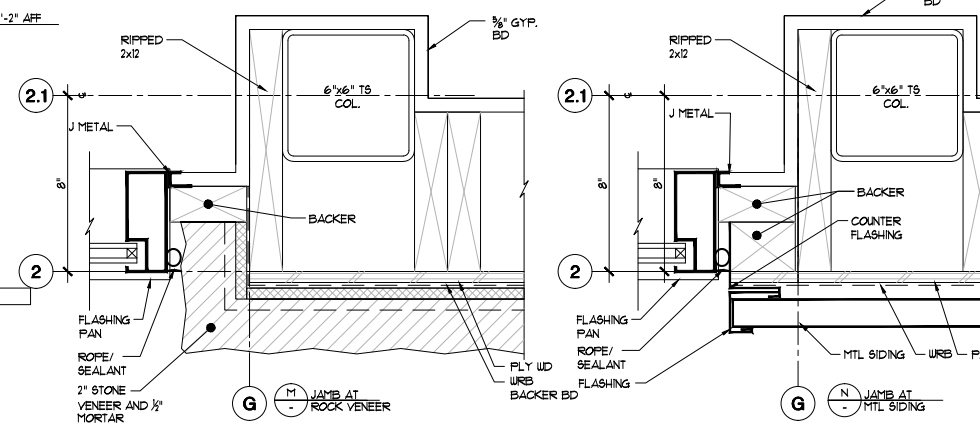
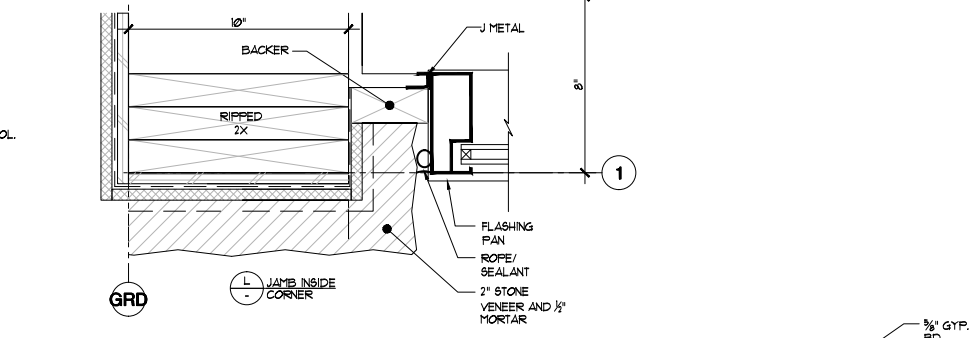
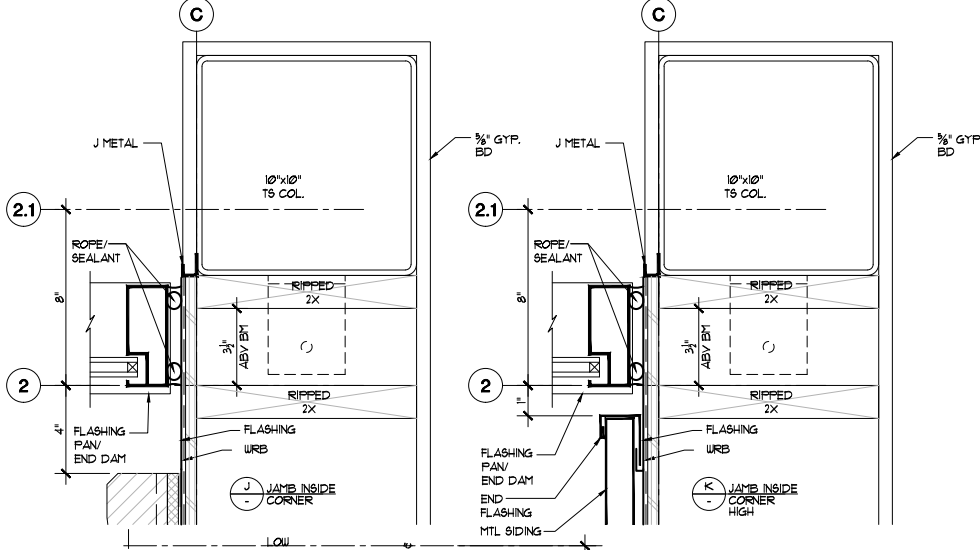
**B WEST ELEVATION**  
SCALE: 1/4" = 1'-0"



**2 STOREFRONT MULLION DETAILS**  
SCALE: 3/4" = 1'-0"



**1 PARAPET CAP DETAIL**  
SCALE: 3/4" = 1'-0"



**RONALD JAMES PEDERSEN ARCHITECT, P.C.**

FUELING STATION AND CONVENIENCE STORE  
**MOLALLA PETROLEUM**  
710 WEST MAIN ST MOLALLA, OREGON 97038  
DATE: FEB 16, 2022  
DRAWN: AK  
JOB NO.: 2212  
**A3.5**

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 PRINTED: Thu, 07 Apr 2022 - 09:15 am  
 LOCATION: P:\2212 US Market\molalla\_petro\PERMIT\A2.1.dwg A3.5 NEW  
 PRINTED BY: Andy

## **Exhibit E: Preliminary Title Report**

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**First American**

**First American Title Insurance Company**

121 SW Morrison Street, Suite 300  
Portland, OR 97204  
Phn - (503)222-3651 (800)929-3651  
Fax - (877)242-3513

Order No.: 7000-3795778  
August 09, 2021

**FOR QUESTIONS REGARDING YOUR CLOSING, PLEASE CONTACT:**

**JOYCE JAMESON**, Escrow Officer/Closer  
Phone: (503)350-5005 - Fax: (866)656-1602- Email:jjameson@firstam.com  
First American Title Insurance Company  
5335 SW Meadows Road, Suite 100, Lake Oswego, OR 97035

**FOR ALL QUESTIONS REGARDING THIS PRELIMINARY REPORT, PLEASE CONTACT:**

**James J. Welch**, Title Officer  
Toll Free: (800)929-3651 - Direct: (503)795-7669 - Email: jwelch@firstam.com

**Preliminary Title Report**

This report is for the exclusive use of the parties herein shown and is preliminary to the issuance of a title insurance policy and shall become void unless a policy is issued, and the full premium paid.

Please be advised that any provision contained in this document, or in a document that is attached, linked or referenced in this document, that under applicable law illegally discriminates against a class of individuals based upon personal characteristics such as race, color, religion, sex, sexual orientation, gender identity, familial status, disability, national origin, or any other legally protected class, is illegal and unenforceable by law.

**County Tax Roll Situs Address:** 710 W Main Street, Molalla, OR 97038

2006 ALTA Owners Standard Coverage	Liability \$	450,000.00	Premium \$	1,250.00
2006 ALTA Owners Extended Coverage	Liability \$		Premium \$	
2006 ALTA Lenders Standard Coverage	Liability \$		Premium \$	
2006 ALTA Lenders Extended Coverage	Liability \$		Premium \$	
Endorsement 9.10, 22 & 8.1			Premium \$	
Govt Service Charge			Cost \$	
City Lien/Service District Search			Cost \$	
Other			Cost \$	

We are prepared to issue Title Insurance Policy or Policies of First American Title Insurance Company, a Nebraska Corporation in the form and amount shown above, insuring title to the following described land:

The land referred to in this report is described in Exhibit A attached hereto.

and as of July 30, 2021 at 8:00 a.m., title to the fee simple estate is vested in:

Donald Gary Bunnell and Marie Anne Bunnell, and successors, as Trustees of the Bunnell Family Trust, dated October 25, 1997, a family trust

Subject to the exceptions, exclusions, and stipulations which are ordinarily part of such Policy form and the following:



1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records; proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.
2. Facts, rights, interests or claims which are not shown by the public records but which could be ascertained by an inspection of the land or by making inquiry of persons in possession thereof.
3. Easements, or claims of easement, not shown by the public records; reservations or exceptions in patents or in Acts authorizing the issuance thereof; water rights, claims or title to water.
4. Any encroachment (of existing improvements located on the subject land onto adjoining land or of existing improvements located on adjoining land onto the subject land), encumbrance, violation, variation, or adverse circumstance affecting the title that would be disclosed by an accurate and complete land survey of the subject land.
5. Any lien, or right to a lien, for services, labor, material, equipment rental or workers compensation heretofore or hereafter furnished, imposed by law and not shown by the public records.

**The exceptions to coverage 1-5 inclusive as set forth above will remain on any subsequently issued Standard Coverage Title Insurance Policy.**

**In order to remove these exceptions to coverage in the issuance of an Extended Coverage Policy the following items are required to be furnished to the Company; additional exceptions to coverage may be added upon review of such information:**

- A. Survey or alternative acceptable to the company
  - B. Affidavit regarding possession
  - C. Proof that there is no new construction or remodeling of any improvement located on the premises. In the event of new construction or remodeling the following is required:
    - i. Satisfactory evidence that no construction liens will be filed; or
    - ii. Adequate security to protect against actual or potential construction liens;
    - iii. Payment of additional premiums as required by the Industry Rate Filing approved by the Insurance Division of the State of Oregon
  6. Water rights, claims to water or title to water, whether or not such rights are a matter of public record.
  7. Taxes for the fiscal year 2021-2022 a lien due, but not yet payable
  8. City liens, if any, of the City of Molalla.
- Note: There are no liens as of July 30, 2021. All outstanding utility and user fees are not liens and therefore are excluded from coverage.
9. The rights of the public in and to that portion of the premises herein described lying within the limits of streets, roads and highways.
  10. Easement, including terms and provisions contained therein:  
 Recording Information: February 12, 1986 as Fee No. [86-5435](#)  
 In Favor of: Molalla Telephone Company  
 For: Ground telephone and communications facilities

11. In order to insure a transaction involving the herein named trust, we will need to be provided a Certification of Trust pursuant to ORS 130.800 through ORS 130.910.

- END OF EXCEPTIONS -

NOTE: Taxes for the year 2020-2021 PAID IN FULL

Tax Amount:	\$3,939.58
Map No.:	52E08C 00300
Property ID:	01092150
Tax Code No.:	035-039

NOTE: Taxes for the year 2020-2021 PAID IN FULL

Tax Amount:	\$663.81
Map No.:	52E08C 00390
Property ID:	05006753
Tax Code No.:	035-002

NOTE: According to the public record, the following deed(s) affecting the property herein described have been recorded within 24 months of the effective date of this report: Special Warranty Deed recorded February 03, 2020 as Fee No. [2020 008007](#), Elwin J. Ireland and Barbara Ireland to Donald Gary Bunnell and Marie Anne Bunnell.

Quitclaim Deed recorded March 09, 2020 as Fee No. [2020 017167](#), Donald Gary Bunnell and Marie Anne Bunnell to Donald Gary Bunnell and Marie Anne Bunnell, and successors, as Trustees of the Bunnell Family Trust, dated October 25, 1997, a family trust.

NOTE: We find no outstanding voluntary liens of record affecting subject property. An inquiry should be made concerning the existence of any unrecorded lien or other indebtedness which could give rise to any security interest in the subject property.

**THANK YOU FOR CHOOSING FIRST AMERICAN TITLE!  
WE KNOW YOU HAVE A CHOICE!**

**RECORDING INFORMATION**

Filing Address: **Clackamas County**  
1710 Red Soil Ct, Suite 110  
Oregon City, OR 97045

Recording Fees: **\$ 93.00 First Page**  
(Comprised of:  
\$ 5.00 per page  
\$ 5.00 per document - GIS Fee  
\$ 10.00 per document - Public Land Corner Preservation Fund  
\$ 11.00 per document - OLIS Assessment & Taxation Fee  
\$ 62.00 per document - Oregon Housing Alliance Fee)  
**\$ 5.00 E-Recording fee per document**  
**\$ 5.00 for each additional page**  
**\$ 5.00 for each additional document title, if applicable**  
**\$ 20.00 Non-Standard Document fee, if applicable**



**Exhibit "A"**

Real property in the County of Clackamas, State of Oregon, described as follows:

PART OF THE RACHEL LARKINS DONATION LAND CLAIM NO. 43 IN TOWNSHIP 5 SOUTH, RANGE 2 EAST OF THE WILLAMETTE MERIDIAN, IN THE CITY OF MOLALLA, COUNTY OF CLACKAMAS AND STATE OF OREGON, DESCRIBED AS:

BEGINNING AT THE MOST NORTHERLY NORTHEAST CORNER OF THAT TRACT OF LAND CONVEYED TO ARTHUR MOORE, BY DEED RECORDED DECEMBER 27, 1948 IN [BOOK 415, PAGE 162](#). DEED RECORDS OF CLACKAMAS COUNTY, OREGON; WHICH BEGINNING POINT IS ALSO A POINT ON THE NORTH BOUNDARY OF THE RACHEL LARKINS DONATION LAND CLAIM SOUTH 81° 31' EAST 2296.6 FEET, MORE OR LESS, FROM THE NORTHWEST CORNER OF SAID CLAIM: FROM SAID BEGINNING POINT THENCE SOUTH 8°, 30' WEST 308.00 FEET ALONG THE MOORE LINE TO A RE-ENTRANT CORNER OF SAID MOORE TRACT: THENCE SOUTH 81° 30' EAST ALONG THE MOORE LINE 97.2 FEET, MORE OR LESS, TO A POINT ON THE WESTERLY LINE OF THAT TRACT OF LAND CONVEYED TO EUGENE G. HARVEY, ET UX BY DEED RECORDED FEBRUARY 8, 1945, IN [BOOK 338 AT PAGE 608](#) AND RE-RECORDED OCTOBER 25, 1948 IN [BOOK 412 AT PAGE 716](#), SAID DEED RECORDS: RUNNING THENCE NORTH 23° 50' EAST ALONG SAID WESTERLY LINE 310.00 FEET, MORE OR LESS, TO THE NORTH LINE OF SAID RACHEL LARKINS DONATION LAND CLAIM AND THE NORTHWEST CORNER OF SAID HARVEY TRACT: RUNNING THENCE NORTH 81° 30' WEST ALONG THE NORTH LINE OF THE LARKINS DONATION LAND CLAIM 180.00 FEET, MORE OR LESS, TO THE PLACE OF BEGINNING.

NOTE: This legal description was created prior to January 01, 2008.



## First American Title Insurance Company

### SCHEDULE OF EXCLUSIONS FROM COVERAGE

#### ALTA LOAN POLICY (06/17/06)

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
  - (i) the occupancy, use, or enjoyment of the Land;
  - (ii) the character, dimensions, or location of any improvement erected on the Land;
  - (iii) the subdivision of land; or
  - (iv) environmental protection;
 or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
- (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, adverse claims, or other matters
  - (a) created, suffered, assumed, or agreed to by the Insured Claimant;
  - (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
  - (c) resulting in no loss or damage to the Insured Claimant;
  - (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 11, 13, or 14); or
  - (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Insured Mortgage.
4. Unenforceability of the lien of the Insured Mortgage because of the inability or failure of an Insured to comply with applicable doing-business laws of the state where the Land is situated.
5. Invalidity or unenforceability in whole or in part of the lien of the Insured Mortgage that arises out of the transaction evidenced by the Insured Mortgage and is based upon usury or any consumer credit protection or truth-in-lending law.
6. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction creating the lien of the Insured Mortgage, is
  - (a) a fraudulent conveyance or fraudulent transfer, or
  - (b) a preferential transfer for any reason not stated in Covered Risk 13(b) of this policy.
7. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the Insured Mortgage in the Public Records. This Exclusion does not modify or limit the coverage provided under Covered Risk 11(b).

#### ALTA OWNER'S POLICY (06/17/06)

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
  - (i) the occupancy, use, or enjoyment of the Land;
  - (ii) the character, dimensions, or location of any improvement erected on the Land;
  - (iii) the subdivision of land; or
  - (iv) environmental protection;
 or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
- (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, adverse claims, or other matters
  - (a) created, suffered, assumed, or agreed to by the Insured Claimant;
  - (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
  - (c) resulting in no loss or damage to the Insured Claimant;
  - (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risks 9 and 10); or
  - (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Title.
4. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction vesting the Title as shown in Schedule A, is
  - (a) a fraudulent conveyance or fraudulent transfer; or
  - (b) a preferential transfer for any reason not stated in Covered Risk 9 of this policy.
5. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

### SCHEDULE OF STANDARD EXCEPTIONS

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records; proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.
2. Facts, rights, interests or claims which are not shown by the public records but which could be ascertained by an inspection of the land or by making inquiry of persons in possession thereof.
3. Easements, or claims of easement, not shown by the public records; reservations or exceptions in patents or in Acts authorizing the issuance thereof; water rights, claims or title to water.
4. Any encroachment (of existing improvements located on the subject land onto adjoining land or of existing improvements located on adjoining land onto the subject land), encumbrance, violation, variation, or adverse circumstance affecting the title that would be disclosed by an accurate and complete land survey of the subject land.
5. Any lien or right to a lien, for services, labor, material, equipment rental or workers compensation heretofore or hereafter furnished, imposed by law and not shown by the public records.

NOTE: A SPECIMEN COPY OF THE POLICY FORM (OR FORMS) WILL BE FURNISHED UPON REQUEST

TI 149 Rev. 7-22-08



## Privacy Notice

**Effective:** October 1, 2019

**Notice Last Updated:** January 1, 2021

This Privacy Notice describes how First American Financial Corporation and its subsidiaries and affiliates (together referred to as "First American," "we," "us," or "our") collect, use, store, and share your information. This Privacy Notice applies to information we receive from you offline only, as well as from third parties, when you interact with us and/or use and access our services and products ("Products"). For more information about our privacy practices, including our online practices, please visit <https://www.firstam.com/privacy-policy/>. The practices described in this Privacy Notice are subject to applicable laws in the places in which we operate.

**What Type Of Information Do We Collect About You?** We collect a variety of categories of information about you. To learn more about the categories of information we collect, please visit <https://www.firstam.com/privacy-policy/>.

**How Do We Collect Your Information?** We collect your information: (1) directly from you; (2) automatically when you interact with us; and (3) from third parties, including business parties and affiliates.

**How Do We Use Your Information?** We may use your information in a variety of ways, including but not limited to providing the services you have requested, fulfilling your transactions, comply with relevant laws and our policies, and handling a claim. To learn more about how we may use your information, please visit <https://www.firstam.com/privacy-policy/>.

**How Do We Share Your Information?** We do not sell your personal information. We only share your information, including to subsidiaries, affiliates, and to unaffiliated third parties: (1) with your consent; (2) in a business transfer; (3) to service providers; and (4) for legal process and protection. To learn more about how we share your information, please visit <https://www.firstam.com/privacy-policy/>.

**How Do We Store and Protect Your Information?** The security of your information is important to us. That is why we take commercially reasonable steps to make sure your information is protected. We use our best efforts to maintain commercially reasonable technical, organizational, and physical safeguards, consistent with applicable law, to protect your information.

**How Long Do We Keep Your Information?** We keep your information for as long as necessary in accordance with the purpose for which it was collected, our business needs, and our legal and regulatory obligations.

**Your Choices** We provide you the ability to exercise certain controls and choices regarding our collection, use, storage, and sharing of your information. You can learn more about your choices by visiting <https://www.firstam.com/privacy-policy/>.

**International Jurisdictions:** Our Products are offered in the United States of America (US), and are subject to US federal, state, and local law. If you are accessing the Products from another country, please be advised that you may be transferring your information to us in the US, and you consent to that transfer and use of your information in accordance with this Privacy Notice. You also agree to abide by the applicable laws of applicable US federal, state, and local laws concerning your use of the Products, and your agreements with us.

We may change this Privacy Notice from time to time. Any and all changes to this Privacy Notice will be reflected on this page, and where appropriate provided in person or by another electronic method. **YOUR CONTINUED USE, ACCESS, OR INTERACTION WITH OUR PRODUCTS OR YOUR CONTINUED COMMUNICATIONS WITH US AFTER THIS NOTICE HAS BEEN PROVIDED TO YOU WILL REPRESENT THAT YOU HAVE READ AND UNDERSTOOD THIS PRIVACY NOTICE.**

**Contact Us** [dataprivacy@firstam.com](mailto:dataprivacy@firstam.com) or toll free at 1-866-718-0097.



### **For California Residents**

If you are a California resident, you may have certain rights under California law, including but not limited to the California Consumer Privacy Act of 2018 ("CCPA"). All phrases used in this section shall have the same meaning as those phrases are used under California law, including the CCPA.

**Right to Know.** You have a right to request that we disclose the following information to you: (1) the categories of **personal information** we have collected about or from you; (2) the categories of sources from which the **personal information** was collected; (3) the business or commercial purpose for such collection and/or disclosure; (4) the categories of third parties with whom we have shared your **personal information**; and (5) the specific pieces of your **personal information** we have collected. To submit a verified request for this information, go to our online privacy policy at [www.firstam.com/privacy-policy](http://www.firstam.com/privacy-policy) to submit your request or call toll-free at 1-866-718-0097. You may also designate an authorized agent to submit a request on your behalf by going to our online privacy policy at [www.firstam.com/privacy-policy](http://www.firstam.com/privacy-policy) to submit your request or by calling toll-free at 1-866-718-0097.

**Right of Deletion.** You also have a right to request that we delete the **personal information** we have collected from and about you. This right is subject to certain exceptions available under the CCPA and other applicable law. To submit a verified request for deletion, go to our online privacy policy at [www.firstam.com/privacy-policy](http://www.firstam.com/privacy-policy) to submit your request or call toll-free at 1-866-718-0097. You may also designate an authorized agent to submit a request on your behalf by going to our online privacy policy at [www.firstam.com/privacy-policy](http://www.firstam.com/privacy-policy) to submit your request or by calling toll-free at 1-866-718-0097.

**Verification Process.** For either a request to know or delete, we will verify your identity before responding to your request. To verify your identity, we will generally match the identifying information provided in your request with the information we have on file about you. Depending on the sensitivity of the information requested, we may also utilize more stringent verification methods to verify your identity, including but not limited to requesting additional information from you and/or requiring you to sign a declaration under penalty of perjury.

**Notice of Sale.** We do not sell California resident information, nor have we sold California resident information in the past 12 months. We have no actual knowledge of selling the information of minors under the age of 16.

**Right of Non-Discrimination.** You have a right to exercise your rights under California law, including under the CCPA, without suffering discrimination. Accordingly, First American will not discriminate against you in any way if you choose to exercise your rights under the CCPA.

**Notice of Collection.** To learn more about the categories of **personal information** we have collected about California residents over the last 12 months, please see "What Information Do We Collect About You" in <https://www.firstam.com/privacy-policy>. To learn about the sources from which we have collected that information, the business and commercial purpose for its collection, and the categories of third parties with whom we have shared that information, please see "How Do We Collect Your Information", "How Do We Use Your Information", and "How Do We Share Your Information" in <https://www.firstam.com/privacy-policy>.

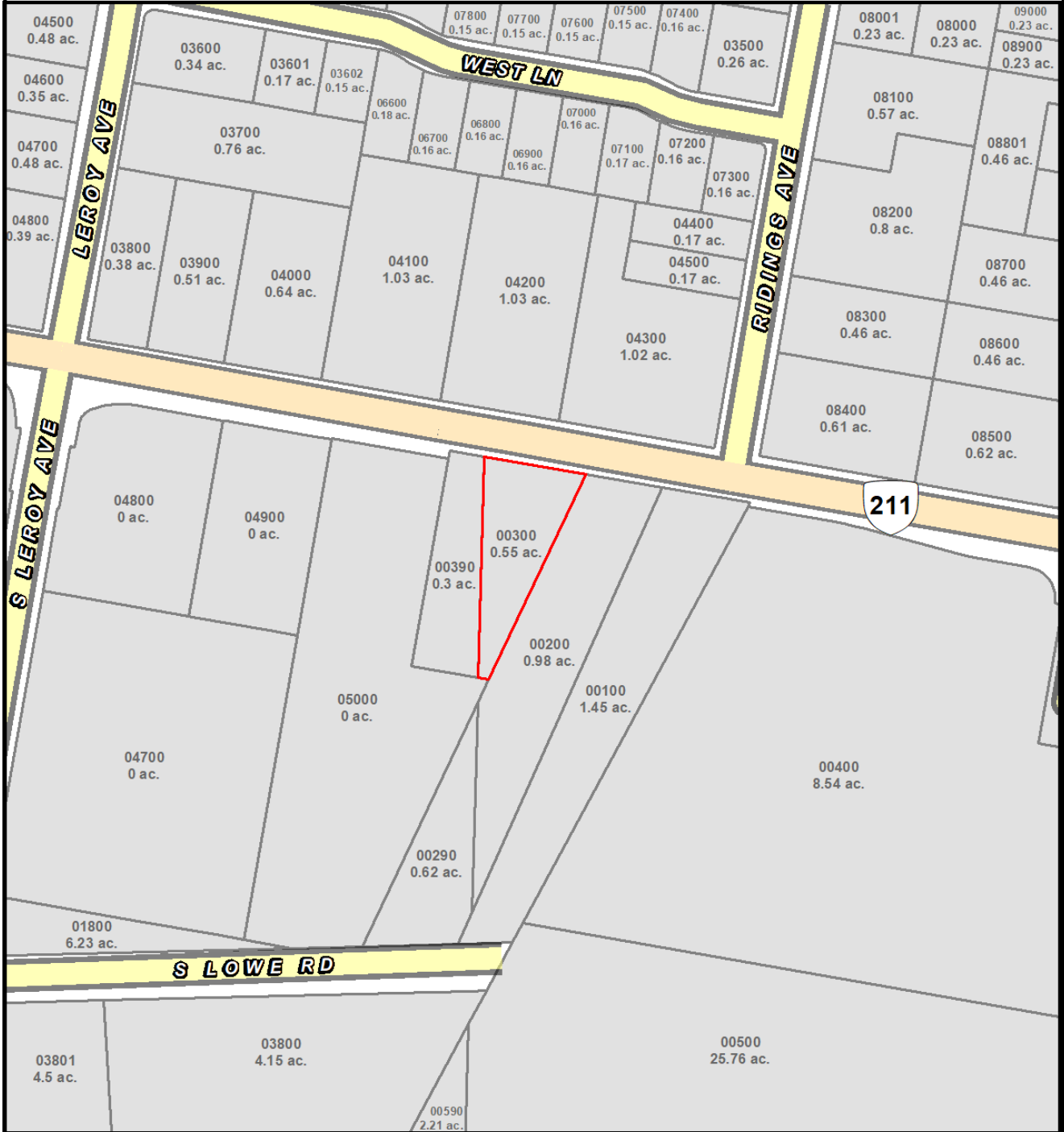
**Notice of Sale.** We have not sold the **personal information** of California residents in the past 12 months.

**Notice of Disclosure.** To learn more about the categories of **personal information** we may have disclosed about California residents in the past 12 months, please see "How Do We Use Your Information" and "How Do We Share Your Information" in <https://www.firstam.com/privacy-policy>.



First American Title

52E08C 00300  
710 W Main St  
Molalla, OR 97038



# Taxlot



Subject



Taxlot

8/2/2021

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## Exhibit F: Vesting Deed

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**Prepared By**

Donald Gary Bunnell  
8751 Redcliff Place  
Riverside, CA 92508

**After Recording Return To**

Donald Gary Bunnell  
8751 Redcliff Place  
Riverside, CA 92508

**Send all tax statements to**

Donald Gary Bunnell  
8751 Redcliff Place  
Riverside, CA 92508

Clackamas County Official Records  
Sherry Hall, County Clerk

2020-017167



\$103.00

02310999202000171670030032

03/09/2020 11:32:06 AM

D-D Cnt=1 Stn=75 TIFFANY  
\$15.00 \$16.00 \$62.00 \$10.00

Space Above This Line for Recorder's Use

**QUITCLAIM DEED**

STATE OF OREGON, COUNTY OF CLACKAMAS

KNOW ALL MEN BY THESE PRESENTS, That

Donald Gary Bunnell and Marie Anne Bunnell, a married couple, residing at 8751 Redcliff Place, County of Riverside, City of Riverside, State of California (hereinafter known as the "Grantor(s)") hereby remise, release, and forever quitclaim unto Donald Gary Bunnell and Marie Anne Bunnell, and successors, as Trustees of the Bunnell Family Trust, dated October 25, 1997, a family Trust, residing at 8751 Redcliff Place, County of Riverside, City of Riverside, State of California, (hereinafter known as the "Grantees(s)") for the sum of No Dollars (0) and releases all the rights, title, interest, and claim in or to the following described real estate, situated in the County of Clackamas, Oregon to-wit

**EXHIBIT "A"** attached

**To have and to hold**, the same together with all and singular the appurtenances thereunto belonging or in anywise appertaining, and all the estate, right, title, interest, lien, equity and claim whatsoever for the said first party, either in law or equity, to the only proper use, benefit and behoof of the said second party forever.



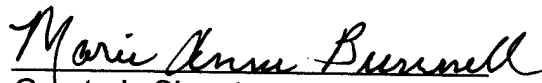
"BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300 (Definitions for ORS 195.300 to 195.336), 195.301 (Legislative findings) AND 195.305 (Compensation for restriction of use of real property due to land use regulation) TO 195.336 (Compensation and Conservation Fund) AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 (Definitions for ORS 92.010 to 92.192) OR 215.010 (Definitions), TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930 (Definitions for ORS 30.930 to 30.947), AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300 (Definitions for ORS 195.300 to 195.336), 195.301 (Legislative findings) AND 195.305 (Compensation for restriction of use of real property due to land use regulation) TO 195.336 (Compensation and Conservation Fund) AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010."

  
Grantor's Signature

Donald Gary Bunnell  
Grantor's Name

8751 Redcliff Place  
Address

Riverside, CA 92508  
City, State & Zip

  
Grantor's Signature

Marie Anne Bunnell  
Grantor's Name

8751 Redcliff Place  
Address

Riverside, CA 92508  
City, State & Zip

**STATE OF CALIFORNIA, COUNTY OF RIVERSIDE**

I, the undersigned, a Notary Public in and for said County, in said State, hereby certify that Donald Gary Bunnell and Marie Anne Bunnell whose names are signed to the foregoing instrument, and who are known to me, acknowledged before me on this day that, being informed of the contents of the instrument, they executed the same voluntarily on the day the same bears date.

Given under my hand this fifth (5th) day of March, 2020

Notary Public for California Carolyn Louise Choske

My Commission Expires: April 29, 2022

(2 of 3)





## EXHIBIT "A"

Part of the Rachel Larkins Donation Land Claim No. 43 in Township 5 South, Range 2 East of the Willamette Meridian, in the City of Molalla, County of Clackamas and State of Oregon, described as:

Beginning at the most Northerly Northeast corner of that tract of land conveyed to Arthur Moore, by deed recorded December 27, 1948 in Book 415, page 162. Deed Records of Clackamas County, Oregon; which beginning point is also a point on the North Boundary of the Rachel Larkins Donation Land Claim South  $81^{\circ} 31'$  East 2296.6 feet, more or less, from the Northwest corner of said claim: from said beginning point thence South  $8^{\circ}, 30'$  West 308.00 feet along the Moore line to a re-entrant corner of said Moore tract: thence South  $81^{\circ} 30'$  East along the Moore line 97.2 feet, more or less, to a point on the Westerly line of that tract of land conveyed to Eugene G. Harvey, et ux by deed recorded February 8, 1945, in Book 338 at Page 608 and re-recorded October 25, 1948 in Book 412 at page 716, said Deed Records: running thence North  $23^{\circ} 50'$  East along said Westerly line 310.00 feet, more or less, to the North line of said Rachel Larkins Donation Land Claim and the Northwest corner of said Harvey tract: running thence North  $81^{\circ} 30'$  West along the North line of the Larkins Donations Land Claim 180.00 feet, more or less, to the place of beginning.

## EXHIBIT "A"

(3 of 3)

## **Exhibit G: Clackamas County Assessor's Map**

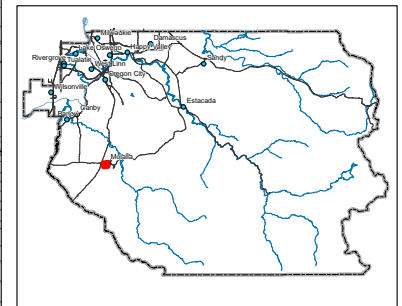
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D.L.C.  
RACHEL LARKIN NO. 43

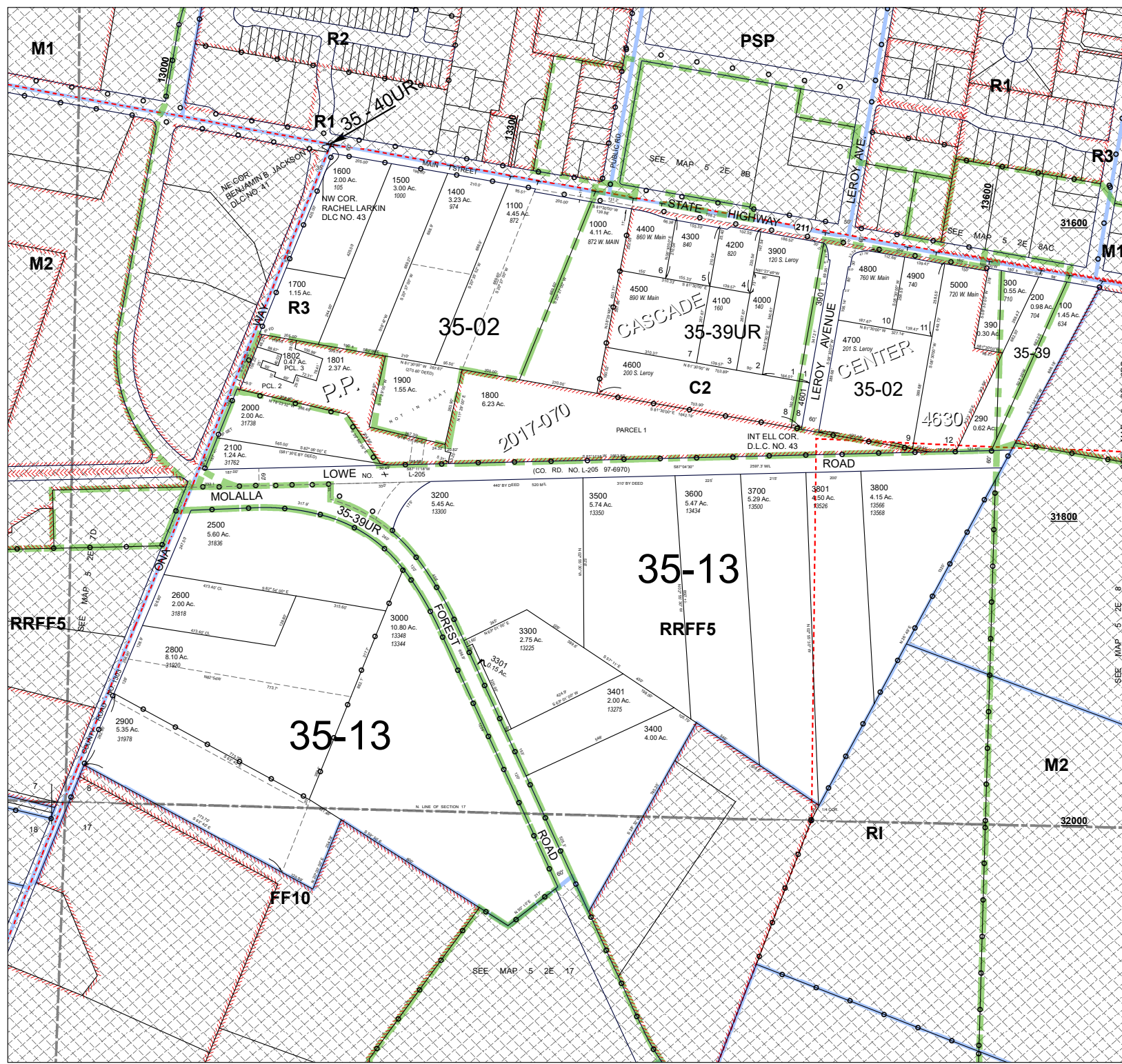
Cancelled Taxlots

- 900
- 901
- 800
- 700
- 600
- 500
- 400
- 300
- 2300
- 2700
- 1200
- 1400E1
- 2200
- 2400
- 3100

- Parcel Boundary
- Private Road ROW
- Historical Boundary
- Railroad Centerline
- TaxCodeLines
- Map Index
- WaterLines
- Land Use Zoning
- Plats
- Water
- Corner
- Section Corner
- 1/16th Line
- Govt Lot Line
- DLC Line
- Meander Line
- PLSS Section Line
- Historic Corridor 40'
- Historic Corridor 20'



THIS MAP IS FOR ASSESSMENT  
PURPOSES ONLY



## **Exhibit H: Preliminary Stormwater Report**

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# 710 W Main Street Molalla, Oregon Preliminary Stormwater Report

**Date:** April 2022

**Client:** Molalla Petroleum, LLC

**Engineering Contact:** Lawrence Pankey, PE

**Prepared By:** Lawrence Pankey, PE

**Engineering Firm:** AKS Engineering & Forestry, LLC  
12965 SW Herman Road  
Suite 100  
Tualatin, OR 97062

**AKS Job Number:** 7710-01



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- Appendix A:** Vicinity Map
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  - Appendix C.1:** Post-developed Catchment Map and Detail
  - Appendix C.2:** Post-developed Hydrograph and Flow Information Water Quality Storm Event
  - Appendix C.3:** Post-developed Hydrograph and Flow Information 2, 10, & 25-Year Storm Event
  - Appendix D:** Emergency Overflow Calculations
  - Appendix E:** Soils Information from the USDA NRCS Soil Survey of Clackamas County, Oregon
  - Appendix F:** Relevant Information from Technical Release 55 Urban Hydrology for Small Watersheds, ODOT Hydraulics Manual, City of Molalla Public Works Design Standard, and City of Molalla Stormwater Master Plan
-



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# Preliminary Stormwater Report

710 W MAIN STREET, MOLALLA, OREGON

## 1.0 Purpose of Report

The purpose of this report is to analyze the effect development of this site will have on the downstream stormwater conveyance system, document the criteria the proposed stormwater system was designed to meet, identify the sources of information on which the analysis was based, detail the design methodology, and document the results of the analysis.

## 2.0 Project Location/Description

The subject site is located on Tax Lots 300 and 390 of Clackamas County Assessor's Map 5 2E 08C. The site is located south of OR Highway 211 and east of the Cascade Center commercial development that is currently under construction. Currently the site area drains to the north and west. The stormwater runoff from the developed site will be routed to StormFilter catch basins located throughout the site for treatment and then conveyed to an underground stormwater detention pipe system. From there, runoff will be discharged to the storm drain stub provided by the Cascade Place Apartments project to the southwest.

## 3.0 Regulatory Design Criteria

### 3.1 Stormwater Quantity Management Criteria

#### 3.1.1 City of Molalla Standards

The site will provide stormwater quantity management per City of Molalla requirements, including:

- Stormwater quantity on-site detention facilities shall be designed to capture runoff so the post-development runoff rates from the site do not exceed the predevelopment runoff rates, based on a 2- through 25-year, 24-hour return storm.
- Sizing the storm drain pipes to convey stormwater flows for the 25-year storm.
- Providing an emergency overflow calculation for the 100-year storm.

The underground stormwater facilities for the subject site were designed to meet the above criteria for detention, conveyance, and overflow.

### 3.2 Stormwater Quality Management Criteria

#### 3.2.1 Oregon Department of Transportation (ODOT) Standards

The stormwater facilities will provide stormwater quality management per ODOT standards, detailed in the ODOT *Hydraulics Design Manual* (April 2014), which require the water quality design flow rate generated by 50 percent of the 2-year, 24-hour storm (2.5 inches) to be treated. The water quality design storm depth is 1.25 inches.

#### 3.2.2 City of Molalla Standards

Per Section 3.5.1.c of the *2020 Molalla Standard Specifications for Public Works Construction*, stormwater quality facilities shall be designed to capture and treat 80% of the average annual runoff volume, to the maximum extent possible, with the goal of 70% total suspended solids (TSS) removal.



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## **4.0 Design Methodology**

The Santa Barbara Urban Hydrograph (SBUH) Method was used to design the stormwater facilities. The SBUH Method utilizes the Natural Resources Conservation Service (NRCS) Type 1A 24-hour storm. HydroCAD computer software aided in the analysis. Representative runoff curve numbers (CN) were obtained from the *Technical Release 55 Urban Hydrology for Small Watersheds* and are included in Appendix F.

## **5.0 Design Parameters**

### **5.1 Design Storm**

#### **5.1.1 On-Site Inlet and Conduit Sizing**

Stormwater inlets for the site will be placed at locations that will adequately control stormwater runoff from drive aisles and parking lots. The on-site stormwater pipes will be sized using Manning's equation, based on peak flows for the 25-year, 24-hour storm event and per the Oregon Plumbing Specialty Code.

#### **5.1.2 Upstream Basin**

Stormwater runoff from the off-site upstream basin along the southern property line of the site will be captured and treated on the future Cascade Place Apartments site, and stormwater runoff from the upstream basin along the east property line of the site is captured by the existing Northwest Self Storage site.

### **5.2 Predeveloped Site Topography and Land Use**

#### **5.2.1 Site Topography**

Generally, the site has topography with slopes of less than 5% to the west.

#### **5.2.2 Land Use**

Currently, the site is occupied by a single family detached home with associated outbuildings, site improvements, and landscaping.

### **5.3 Soil Type**

The soils for this site are classified as Clackamas silt loam (hydrologic group "C/D") and Sawtell silt loam (hydrologic group "C") by the USDA NRCS Web Soil Survey for Clackamas County. Information on these soil types is provided in Appendix E.

### **5.4 Post-developed Site Topography and Land Use**

#### **5.4.1 Site Topography**

The post-developed site topography will be altered from the predeveloped site topography to allow for the construction of a parking lot, drive aisles, a fueling station, convenience store, and other associated infrastructure and features.

#### **5.4.2 Land Use**

The post-developed land use will consist of a fueling station and convenience store.

#### **5.4.3 Post-Developed Input Parameters**

Appendices B.2, C.2, and C.3 provide the HydroCAD reports and input parameters that were generated for the analyzed storm events with respect to the site improvements contributing to the drainage basins.

### **5.5 Description of Off-Site Contributory Basins**

There are no off-site stormwater runoff basins contributing to this site (other than the basins described in Section 5.1.2).

---

## 6.0 Calculation Methodology

### 6.1 Proposed Stormwater Conduit Sizing and Inlet Spacing

To meet standards for a private site, the on-site stormwater conduits will be sized per the Oregon Plumbing Specialty Code and (as needed) will be sized using Manning's equation, based on peak flows for the 25-year, 24-hour storm event. Catch basins will be placed at locations to adequately convey stormwater runoff from the drive aisles and parking lots.

### 6.2 Proposed Stormwater Quantity Control Facility Design

This project includes 36-inch diameter detention pipe that will be installed under the parking lot/drive aisle. The system was designed to accommodate flows generated by the developed areas of the subject property and to meet City of Molalla water quantity requirements (described in Section 3.1).

### 6.3 Proposed Stormwater Quality Facility Design

The StormFilter catch basins were sized to treat stormwater runoff from impervious area generated by the 1.25-inch storm. The design flow rate for treatment is 0.15 cubic feet per second (cfs). StormFilter catch basins with a total of 5 cartridges (each 18-inch cartridge can treat up to 0.03 cfs) will be used to accommodate flows generated by developed areas of the subject property in compliance with ODOT water quality requirements (described in Section 3.2), which exceed City of Molalla water quality requirements.

### 6.4 Emergency Overflow Calculations

The flow-control manhole was designed to allow overflow stormwater runoff to flow through the overflow riser inside the flow-control manhole and continue to flow downstream conveyance system.

### 6.5 Downstream Analysis

The underground stormwater detention pipe systems have been designed such that the duration and rate of stormwater peak flow from the post-developed site for the 2- through 25-year storm will be less than the duration and rate of peak flow from the pre-developed site for the 2- through 25-year storm. The stormwater discharge from the underground detention pipe system will flow to the stormwater system constructed with the Cascade Place Apartments development to the southwest. This development will not negatively impact the downstream capacity.

## 7.0 Stormwater Summary Table

The tables below summarize the pre-developed and post-developed peak flows for each storm event that is routed to the new stormwater facility:

**Table 7.1 Pre-Developed Peak Flow for 2, 10, & 25-year Storm Event**

Catchment	Peak Flows (cfs)		
	2-YR	10-YR	25-YR
1 (Pre-Developed)	0.15	0.27	0.34

---

**Table 7.2 Post-Developed Peak Flow for 2, 10, & 25-year Storm Event**

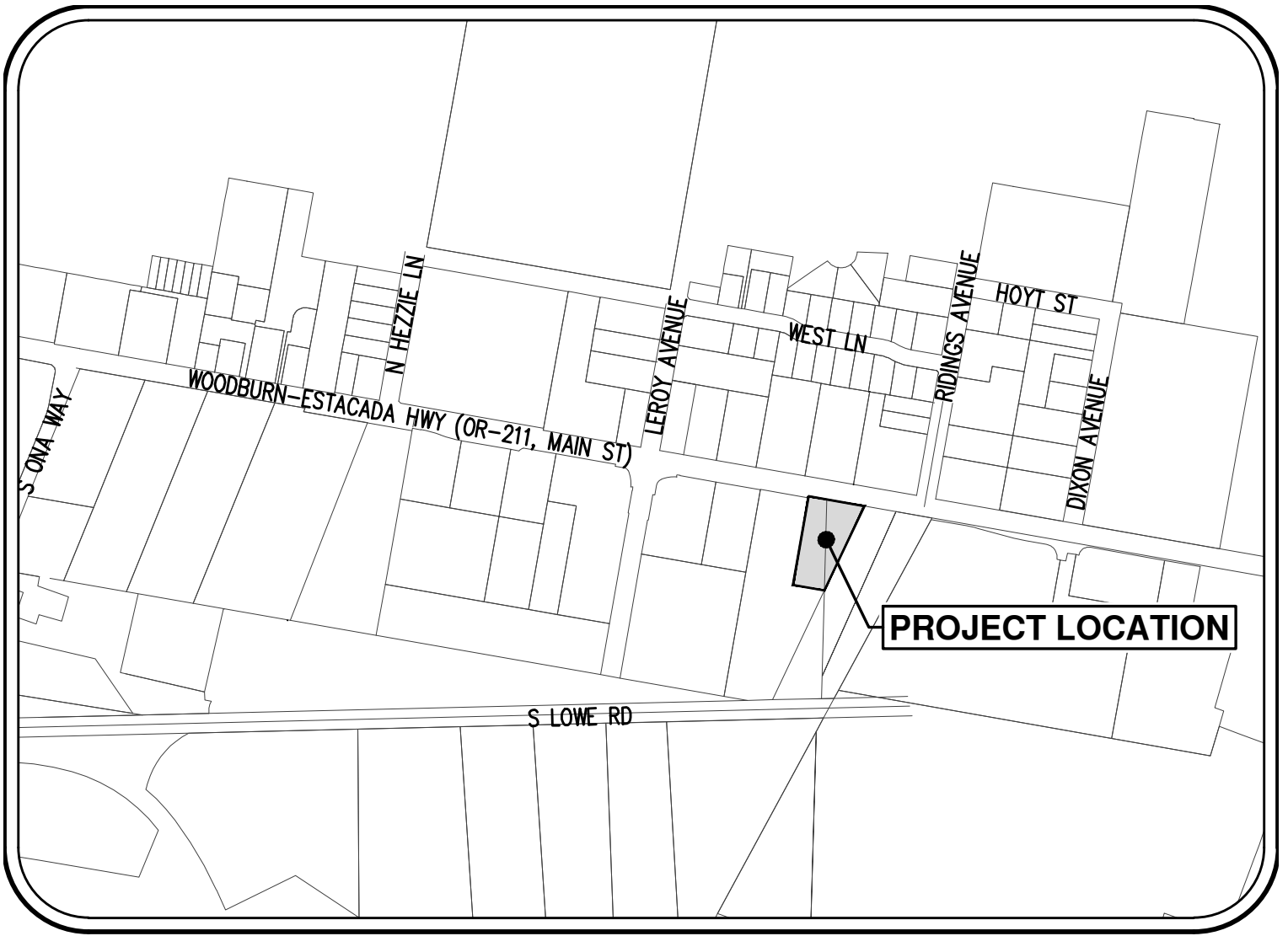
Catchment	Peak Flows (cfs)		
	2-YR	10-YR	25-YR
1 (Post-Developed)	0.33	0.49	0.56
Allowable Release Rate*	0.15	0.27	0.34
<b>1P (Underground Detention System) Design Release Rate</b>	<b>0.15</b>	<b>0.27</b>	<b>0.32</b>

\*The allowable release rate for the post-developed 2-year through 25-year storm event per City of Molalla standards is equal to the pre-developed peak flow rate for the 2-year through 25-year storm event.

## **Appendix A: Vicinity Map**

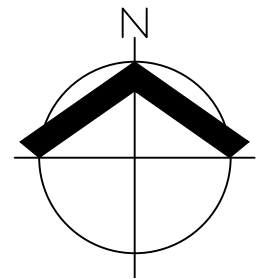
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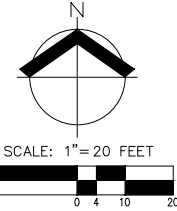
# VICINITY MAP

NTS



## **Appendix B.1: Pre-Developed Catchment Map and Detail**

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**PRE-DEVELOPED CATCHMENT MAP AND DETAIL**  
**710 W MAIN STREET**  
**MOLALLA PETROLEUM**  
**MOLALLA, OREGON**

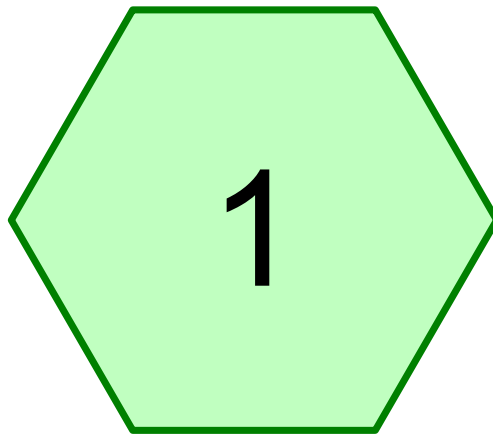


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DESIGNED BY:	LTP
DRAWN BY:	AC
CHECKED BY:	MBH

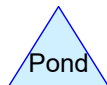
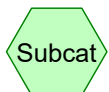
**Appendix B.2:  
Pre-Developed Hydrograph and Flow  
Information 2, 10, & 25-Year Storm Event**

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# PRE-DEVELOPMENT



# 9010 HydroCAD Pre

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Page 2

## Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
26,610	79	50-75% Grass cover, Fair, HSG C (1)
5,090	98	Existing Impervious (Roofs, Concrete, AC) (1)
<b>31,700</b>	<b>82</b>	<b>TOTAL AREA</b>

**9010 HydroCAD Pre**

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Type IA 24-hr 2-YR Rainfall=2.50"

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Page 3

Time span=0.00-24.00 hrs, dt=0.15 hrs, 161 points

Runoff by SBUH method, Split Pervious/Imperv.

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1: PRE-DEVELOPMENT** Runoff Area=31,700 sf 16.06% Impervious Runoff Depth>1.06"  
Flow Length=95' Slope=0.0250 '/' Tc=9.5 min CN=79/98 Runoff=0.15 cfs 2,806 cf

**Total Runoff Area = 31,700 sf Runoff Volume = 2,806 cf Average Runoff Depth = 1.06"**  
**83.94% Pervious = 26,610 sf 16.06% Impervious = 5,090 sf**

**Summary for Subcatchment 1: PRE-DEVELOPMENT**

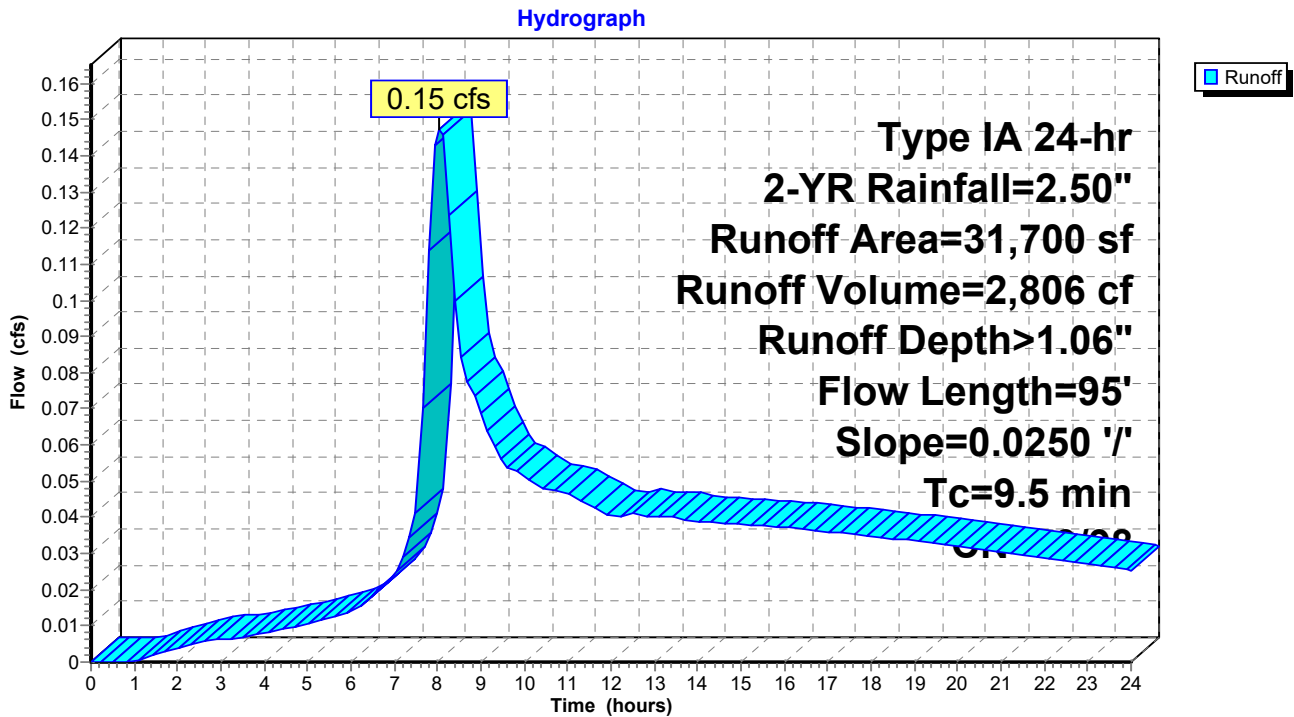
Runoff = 0.15 cfs @ 8.04 hrs, Volume= 2,806 cf, Depth> 1.06"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.15 hrs  
Type IA 24-hr 2-YR Rainfall=2.50"

Area (sf)	CN	Description
5,090	98	Existing Impervious (Roofs, Concrete, AC)
26,610	79	50-75% Grass cover, Fair, HSG C
31,700	82	Weighted Average
26,610		83.94% Pervious Area
5,090		16.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	95	0.0250	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 2.60"

**Subcatchment 1: PRE-DEVELOPMENT**



**9010 HydroCAD Pre**

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Type IA 24-hr 10-YR Rainfall=3.45"

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Page 5

Time span=0.00-24.00 hrs, dt=0.15 hrs, 161 points

Runoff by SBUH method, Split Pervious/Imperv.

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1: PRE-DEVELOPMENT** Runoff Area=31,700 sf 16.06% Impervious Runoff Depth>1.79"  
Flow Length=95' Slope=0.0250 '/' Tc=9.5 min CN=79/98 Runoff=0.27 cfs 4,729 cf

**Total Runoff Area = 31,700 sf Runoff Volume = 4,729 cf Average Runoff Depth = 1.79"**  
**83.94% Pervious = 26,610 sf 16.06% Impervious = 5,090 sf**

### Summary for Subcatchment 1: PRE-DEVELOPMENT

Runoff = 0.27 cfs @ 8.02 hrs, Volume= 4,729 cf, Depth> 1.79"

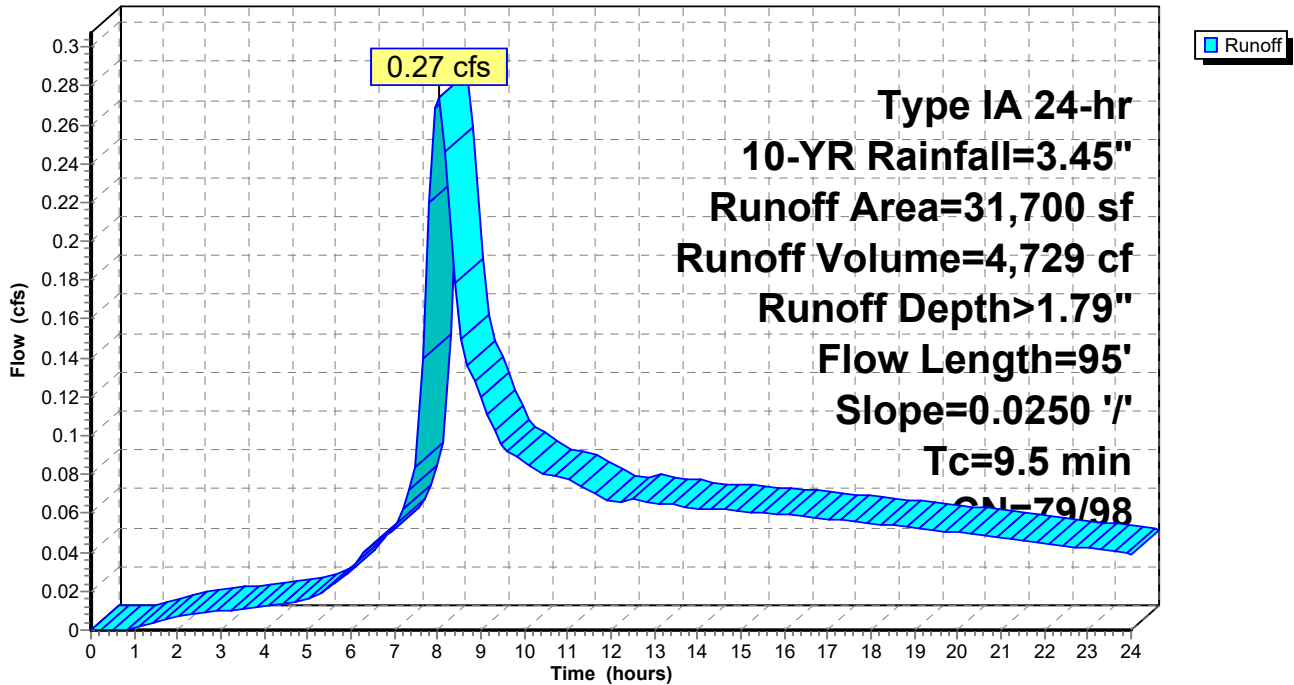
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.15 hrs  
Type IA 24-hr 10-YR Rainfall=3.45"

Area (sf)	CN	Description
5,090	98	Existing Impervious (Roofs, Concrete, AC)
26,610	79	50-75% Grass cover, Fair, HSG C
31,700	82	Weighted Average
26,610		83.94% Pervious Area
5,090		16.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	95	0.0250	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 2.60"

### Subcatchment 1: PRE-DEVELOPMENT

Hydrograph



**9010 HydroCAD Pre**

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Type IA 24-hr 25-YR Rainfall=3.90"

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Page 7

Time span=0.00-24.00 hrs, dt=0.15 hrs, 161 points

Runoff by SBUH method, Split Pervious/Imperv.

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1: PRE-DEVELOPMENT** Runoff Area=31,700 sf 16.06% Impervious Runoff Depth>2.16"  
Flow Length=95' Slope=0.0250 '/' Tc=9.5 min CN=79/98 Runoff=0.34 cfs 5,703 cf

**Total Runoff Area = 31,700 sf Runoff Volume = 5,703 cf Average Runoff Depth = 2.16"**  
**83.94% Pervious = 26,610 sf 16.06% Impervious = 5,090 sf**

### Summary for Subcatchment 1: PRE-DEVELOPMENT

Runoff = 0.34 cfs @ 8.02 hrs, Volume= 5,703 cf, Depth> 2.16"

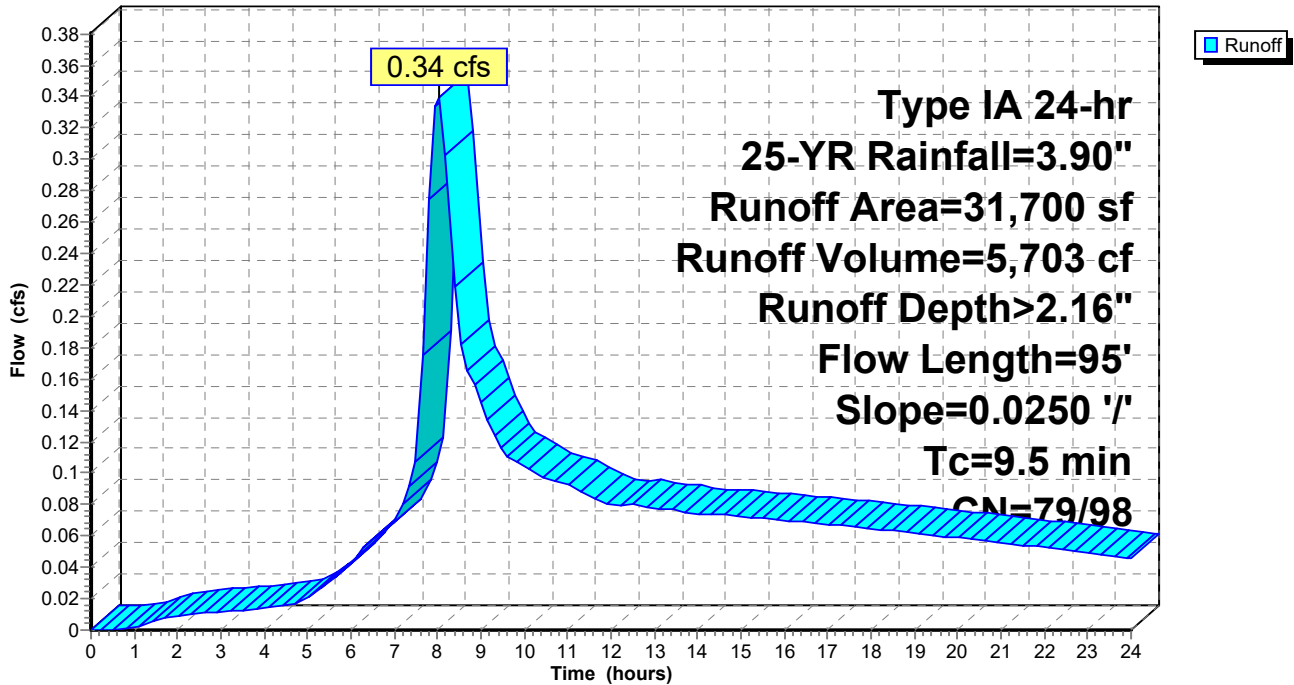
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.15 hrs  
Type IA 24-hr 25-YR Rainfall=3.90"

Area (sf)	CN	Description
5,090	98	Existing Impervious (Roofs, Concrete, AC)
26,610	79	50-75% Grass cover, Fair, HSG C
31,700	82	Weighted Average
26,610		83.94% Pervious Area
5,090		16.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	95	0.0250	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 2.60"

### Subcatchment 1: PRE-DEVELOPMENT

Hydrograph

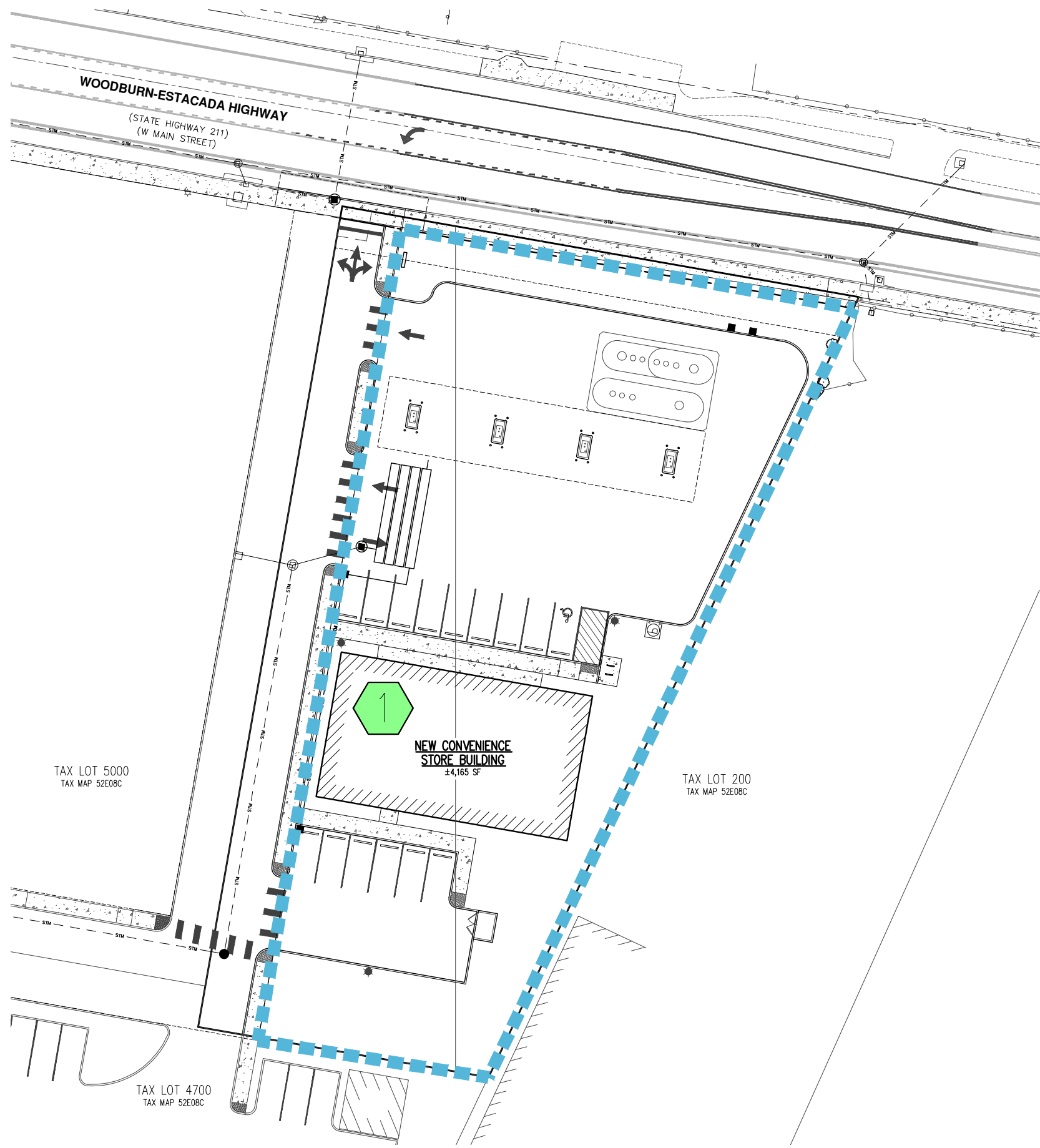




## **Appendix C.1: Post-Developed Catchment Map and Detail**

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**POST-DEVELOPED CATCHMENT MAP AND DETAIL**  
**710 W MAIN STREET**  
**MOLALLA PETROLEUM**  
**MOLALLA, OREGON**

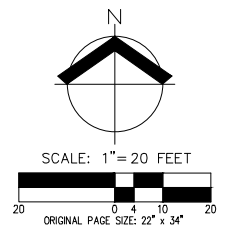


TAX LOT 5000  
 TAX MAP 52E08C

**NEW CONVENIENCE  
 STORE BUILDING**  
 14,165 SF

TAX LOT 200  
 TAX MAP 52E08C

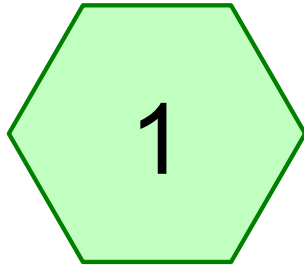
TAX LOT 4700  
 TAX MAP 52E08C



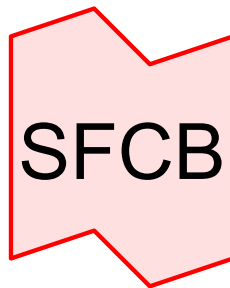
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DRAWN BY:	AC
CHECKED BY:	MBH

**Appendix C.2:  
Post-Developed Hydrograph and Flow  
Information Water Quality Storm Event**

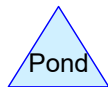
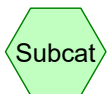
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POST-DEVELOPED



Stormfilter CBs



# 9010 HydroCAD Water Quality

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Page 2

## Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
24,030	98	Impervious (1)
<b>24,030</b>	<b>98</b>	<b>TOTAL AREA</b>

**9010 HydroCAD Water Quality**

Type IA 24-hr WATER QUALITY Rainfall=1.25"

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Page 3

Time span=0.00-24.00 hrs, dt=0.15 hrs, 161 points

Runoff by SBUH method, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1: POST-DEVELOPED**

Runoff Area=24,030 sf 100.00% Impervious Runoff Depth>1.03"

Tc=5.0 min CN=98 Runoff=0.15 cfs 2,068 cf

**Link SFCB: Stormfilter CBs**

Inflow=0.15 cfs 2,068 cf

Primary=0.15 cfs 2,068 cf

**Total Runoff Area = 24,030 sf Runoff Volume = 2,068 cf Average Runoff Depth = 1.03"**  
**0.00% Pervious = 0 sf 100.00% Impervious = 24,030 sf**

**Summary for Subcatchment 1: POST-DEVELOPED**

Runoff = 0.15 cfs @ 7.93 hrs, Volume= 2,068 cf, Depth> 1.03"

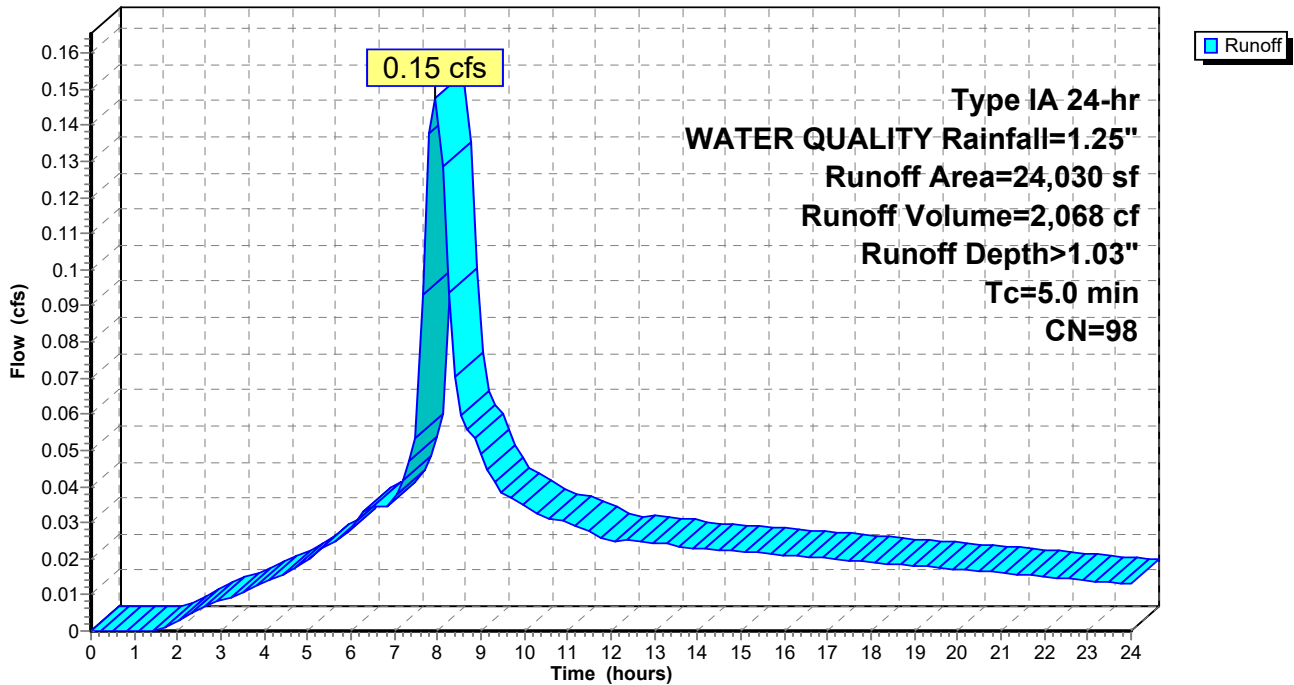
Runoff by SBUH method, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.15 hrs  
 Type IA 24-hr WATER QUALITY Rainfall=1.25"

Area (sf)	CN	Description
* 24,030	98	Impervious
24,030		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

**Subcatchment 1: POST-DEVELOPED**

Hydrograph

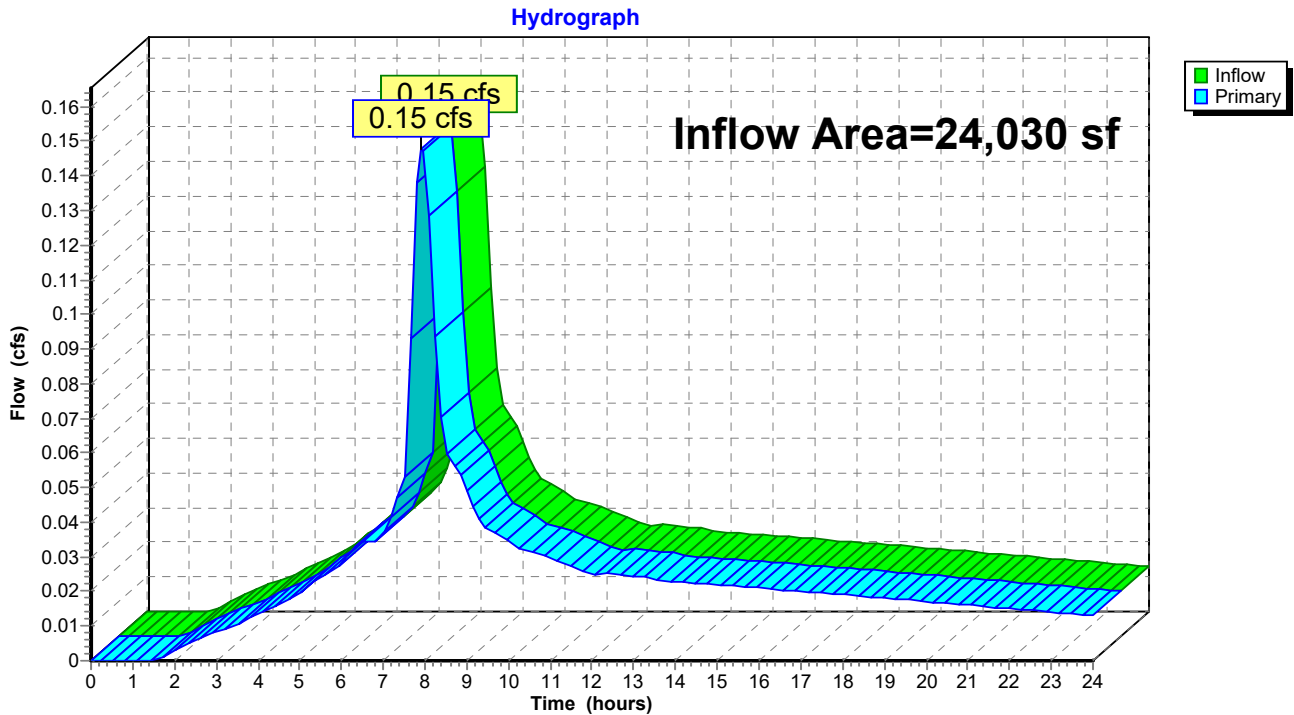


### Summary for Link SFCB: Stormfilter CBs

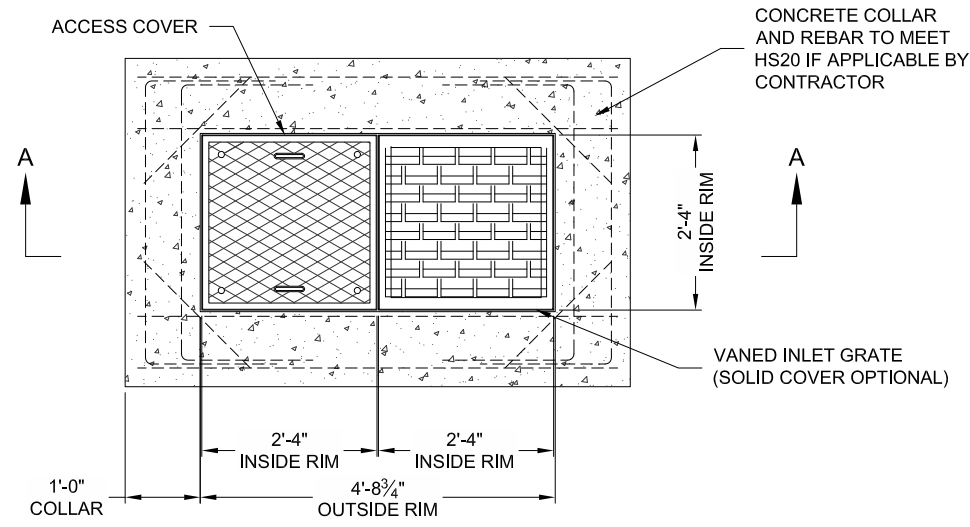
Inflow Area = 24,030 sf, 100.00% Impervious, Inflow Depth > 1.03" for WATER QUALITY event  
Inflow = 0.15 cfs @ 7.93 hrs, Volume= 2,068 cf  
Primary = 0.15 cfs @ 7.93 hrs, Volume= 2,068 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.15 hrs

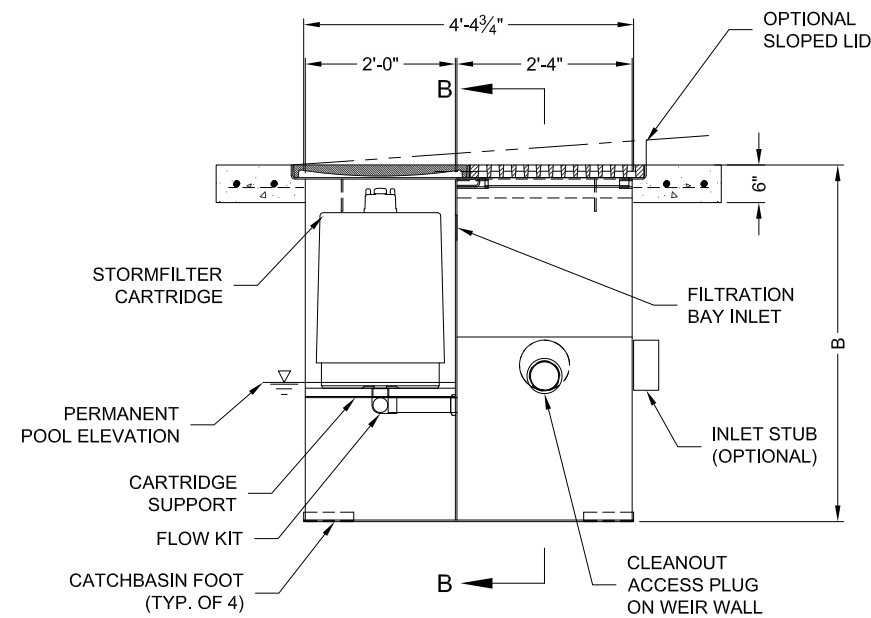
### Link SFCB: Stormfilter CBs



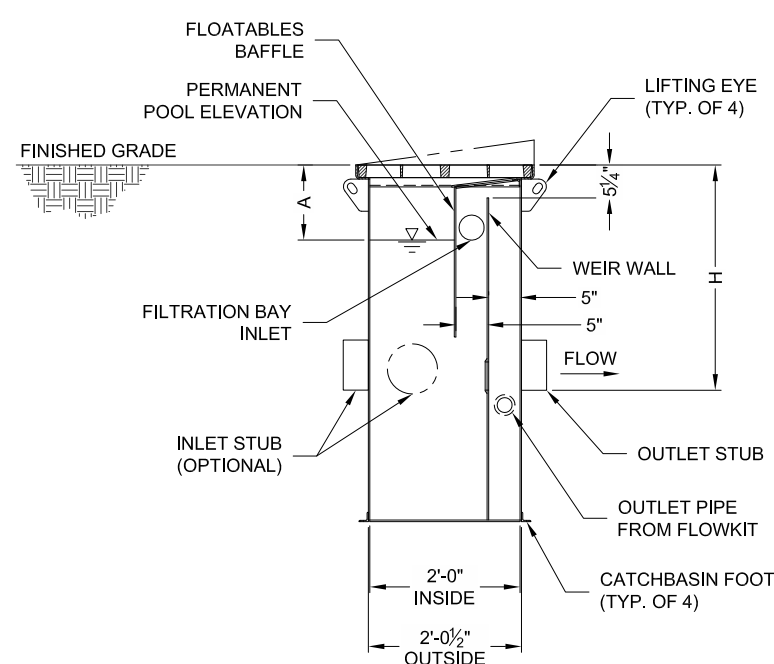




**PLAN VIEW**



**SECTION A-A**



**SECTION B-B**

**STORMFILTER STEEL CATCHBASIN DESIGN NOTES**

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. 1 CARTRIDGE CATCHBASIN HAS A MAXIMUM OF ONE CARTRIDGE. SYSTEM IS SHOWN WITH A 27" CARTRIDGE, AND IS ALSO AVAILABLE WITH AN 18" CARTRIDGE. STORMFILTER CATCHBASIN CONFIGURATIONS ARE AVAILABLE WITH A DRY INLET BAY FOR VECTOR CONTROL. PEAK HYDRAULIC CAPACITY PER TABLE BELOW. IF THE SITE CONDITIONS EXCEED PEAK HYDRAULIC CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

**CARTRIDGE SELECTION**

CARTRIDGE HEIGHT	27"			18"			18" DEEP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			3.3'		
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	18.79	11.25	15	12.53	7.5	15	12.53	7.5
PEAK HYDRAULIC CAPACITY	1.0			1.0			1.8		
INLET PERMANENT POOL LEVEL (A)	1'-0"			1'-0"			2'-0"		
OVERALL STRUCTURE HEIGHT (B)	4'-9"			3'-9"			4'-9"		

\* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY

**GENERAL NOTES**

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STORMFILTER CATCHBASIN STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. [www.contechES.com](http://www.contechES.com)
3. STORMFILTER CATCHBASIN WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
4. INLET SHOULD NOT BE LOWER THAN OUTLET. INLET (IF APPLICABLE) AND OUTLET PIPING TO BE SPECIFIED BY ENGINEER AND PROVIDED BY CONTRACTOR.
5. MANUFACTURER TO APPLY A SURFACE BEAD WELD IN THE SHAPE OF THE LETTER "O" ABOVE THE OUTLET PIPE STUB ON THE EXTERIOR SURFACE OF THE STEEL SFCB.
6. STORMFILTER CATCHBASIN EQUIPPED WITH 4 INCH (APPROXIMATE) LONG STUBS FOR INLET (IF APPLICABLE) AND OUTLET PIPING. STANDARD OUTLET STUB IS 8 INCHES IN DIAMETER. MAXIMUM OUTLET STUB IS 15 INCHES IN DIAMETER. CONNECTION TO COLLECTION PIPING CAN BE MADE USING FLEXIBLE COUPLING BY CONTRACTOR.
7. STEEL STRUCTURE TO BE MANUFACTURED OF 1/4 INCH STEEL PLATE. CASTINGS SHALL MEET AASHTO M306 LOAD RATING. TO MEET HS20 LOAD RATING ON STRUCTURE, A CONCRETE COLLAR IS REQUIRED. WHEN REQUIRED, CONCRETE COLLAR WITH #4 REINFORCING BARS TO BE PROVIDED BY CONTRACTOR.
8. FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
9. SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).

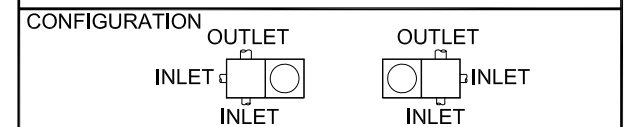
**INSTALLATION NOTES**

- A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CATCHBASIN (LIFTING CLUTCHES PROVIDED).
- C. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

**1-CARTRIDGE CATCHBASIN STORMFILTER DATA**

STRUCTURE ID	XXX
WATER QUALITY FLOW RATE (cfs)	X.XX
PEAK FLOW RATE (<1 cfs)	X.XX
RETURN PERIOD OF PEAK FLOW (yrs)	XXX
CARTRIDGE HEIGHT (27", 18", 18" DEEP)	XX
CARTRIDGE FLOW RATE (gpm)	XX
MEDIA TYPE (PERLITE, ZPG, PSORB)	XXXXX
RIM ELEVATION	XXX.XX'

PIPE DATA:	I.E.	DIAMETER
INLET STUB	XXX.XX'	XX"
OUTLET STUB	XXX.XX'	XX"

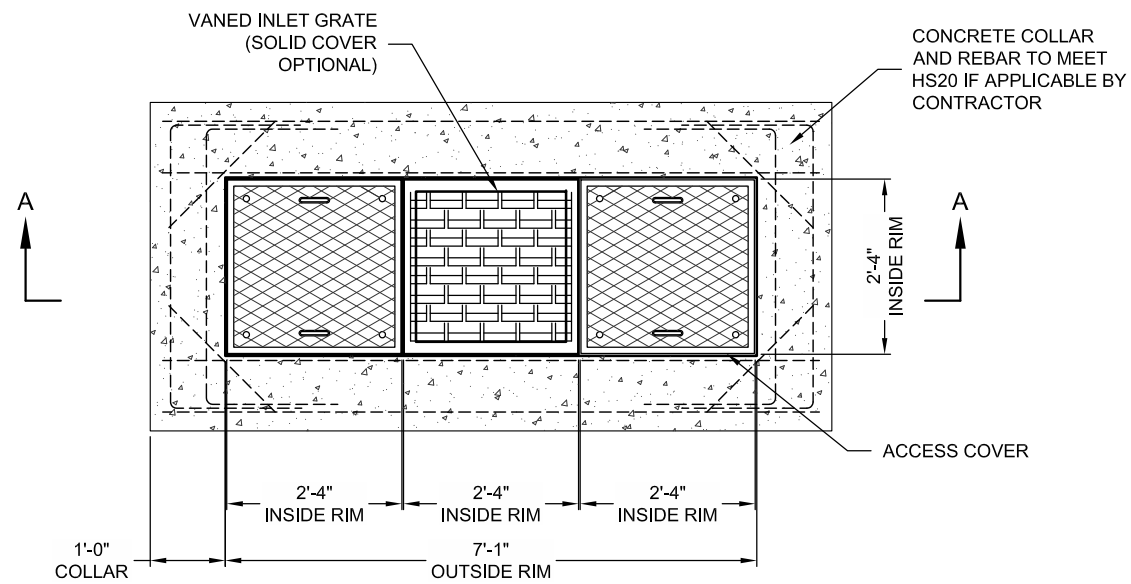


SLOPED LID	YES/NO
SOLID COVER	YES/NO
NOTES/SPECIAL REQUIREMENTS:	

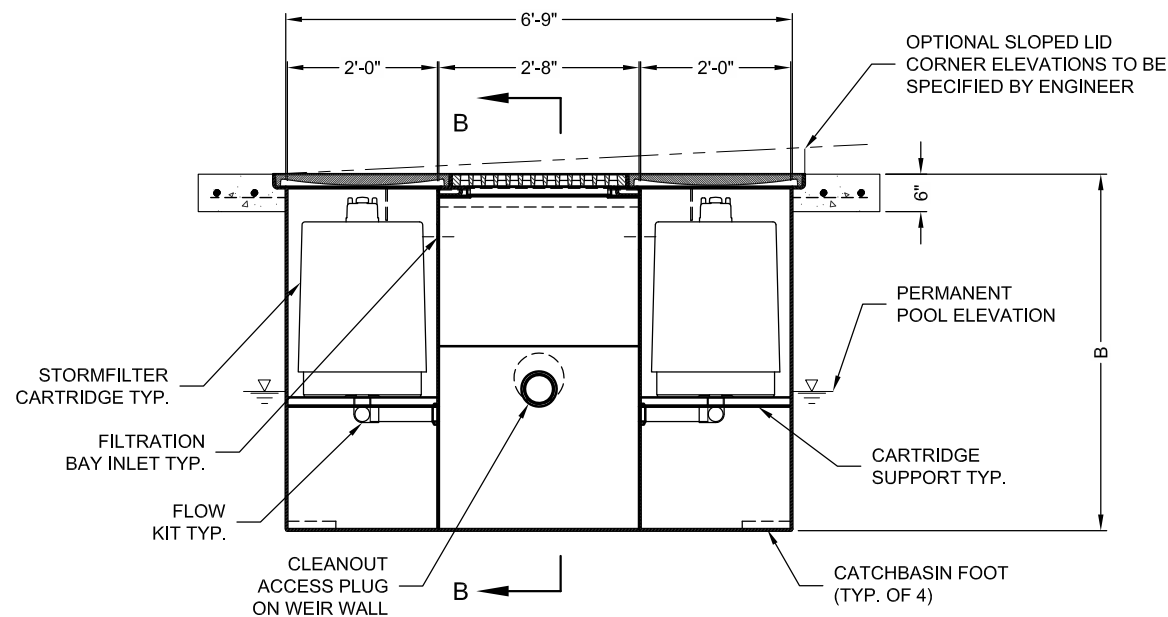


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 800-526-3999 513-645-7000 513-645-7993 FAX

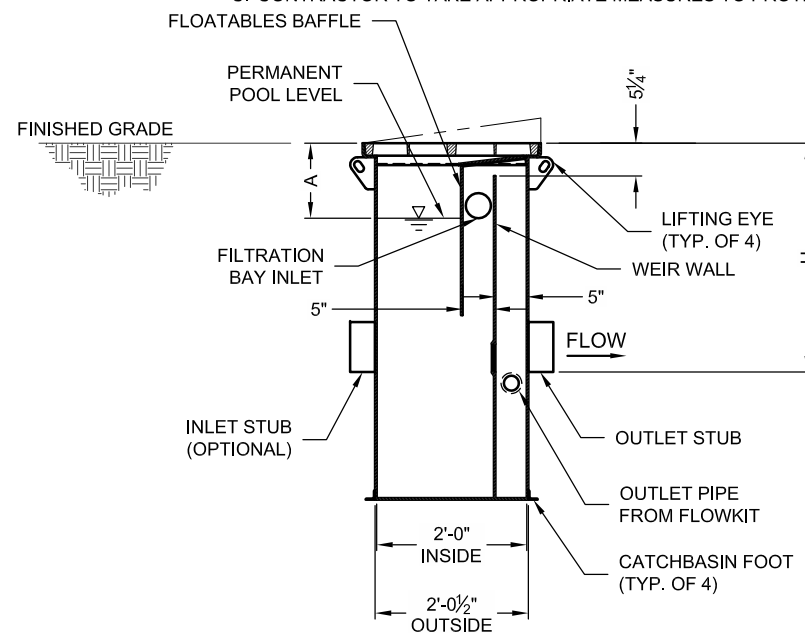
**1 CARTRIDGE CATCHBASIN  
 STORMFILTER  
 STANDARD DETAIL**



**PLAN VIEW**



**SECTION A-A**



**SECTION B-B**

**STORMFILTER STEEL CATCHBASIN DESIGN NOTES**

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. 2 CARTRIDGE CATCHBASIN HAS A MAXIMUM OF TWO CARTRIDGES. SYSTEM IS SHOWN WITH A 27" CARTRIDGE, AND IS ALSO AVAILABLE WITH AN 18" CARTRIDGE. STORMFILTER CATCHBASIN CONFIGURATIONS ARE AVAILABLE WITH A DRY INLET BAY FOR VECTOR CONTROL. PEAK HYDRAULIC CAPACITY PER TABLE BELOW. IF THE SITE CONDITIONS EXCEED PEAK HYDRAULIC CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

**CARTRIDGE SELECTION**

CARTRIDGE HEIGHT	27"			18"			18" DEEP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			3.3'		
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	18.75	11.25	15	12.53	7.5	15	12.53	7.5
PEAK HYDRAULIC CAPACITY	1.0			1.0			1.8		
INLET PERMANENT POOL LEVEL (A)	1'-0"			1'-0"			2'-0"		
OVERALL STRUCTURE HEIGHT (B)	4'-9"			3'-9"			4'-9"		

\* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY

**GENERAL NOTES**

- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- FOR SITE SPECIFIC DRAWINGS WITH DETAILED STORMFILTER CATCHBASIN STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. WWW.CONTECHES.COM
- STORMFILTER CATCHBASIN WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
- INLET SHOULD NOT BE LOWER THAN OUTLET. INLET (IF APPLICABLE) AND OUTLET PIPING TO BE SPECIFIED BY ENGINEER AND PROVIDED BY CONTRACTOR.
- MANUFACTURER TO APPLY A SURFACE BEAD WELD IN THE SHAPE OF THE LETTER "O" ABOVE THE OUTLET PIPE STUB ON THE EXTERIOR SURFACE OF THE STEEL SFCB.
- STORMFILTER CATCHBASIN EQUIPPED WITH 4 INCH (APPROXIMATE) LONG STUBS FOR INLET (IF APPLICABLE) AND OUTLET PIPING. STANDARD OUTLET STUB IS 8 INCHES IN DIAMETER. MAXIMUM OUTLET STUB IS 15 INCHES IN DIAMETER. CONNECTION TO COLLECTION PIPING CAN BE MADE USING FLEXIBLE COUPLING BY CONTRACTOR.
- STEEL STRUCTURE TO BE MANUFACTURED OF 1/4 INCH STEEL PLATE. CASTINGS SHALL MEET AASHTO M306 LOAD RATING. TO MEET HS20 LOAD RATING ON STRUCTURE, A CONCRETE COLLAR IS REQUIRED. WHEN REQUIRED, CONCRETE COLLAR WITH #4 REINFORCING BARS TO BE PROVIDED BY CONTRACTOR.
- FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
- SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).

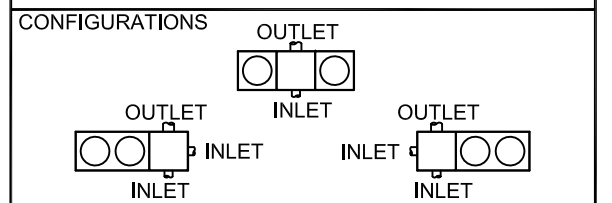
**INSTALLATION NOTES**

- ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CATCHBASIN (LIFTING CLUTCHES PROVIDED).
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

**2-CARTRIDGE DEEP CATCHBASIN STORMFILTER DATA**

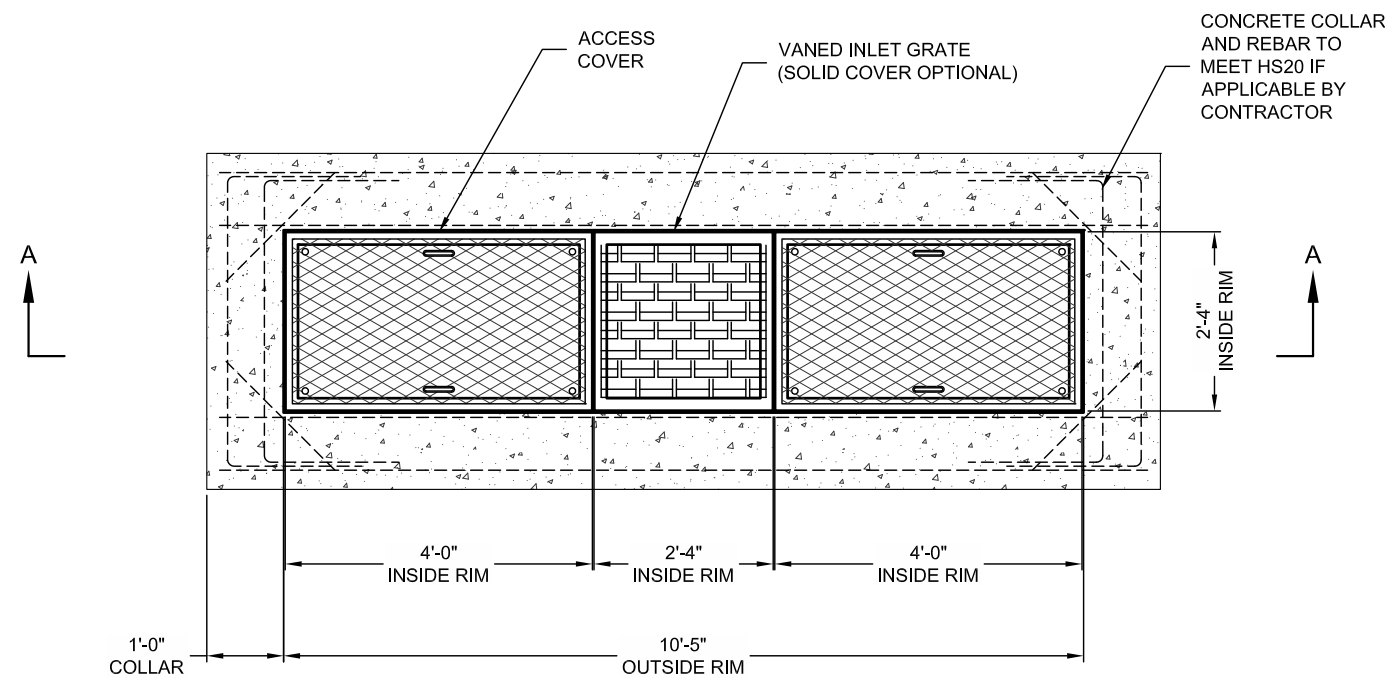
STRUCTURE ID	XXX
WATER QUALITY FLOW RATE (cfs)	X.XX
PEAK FLOW RATE (<1.8 cfs)	X.XX
RETURN PERIOD OF PEAK FLOW (yrs)	XXX
CARTRIDGE FLOW RATE (gpm)	XX
MEDIA TYPE (PERLITE, ZPG, PSORB)	XXXXX
RIM ELEVATION	XXX.XX'

PIPE DATA:	I.E.	DIAMETER
INLET STUB	XXX.XX'	XX"
OUTLET STUB	XXX.XX'	XX"

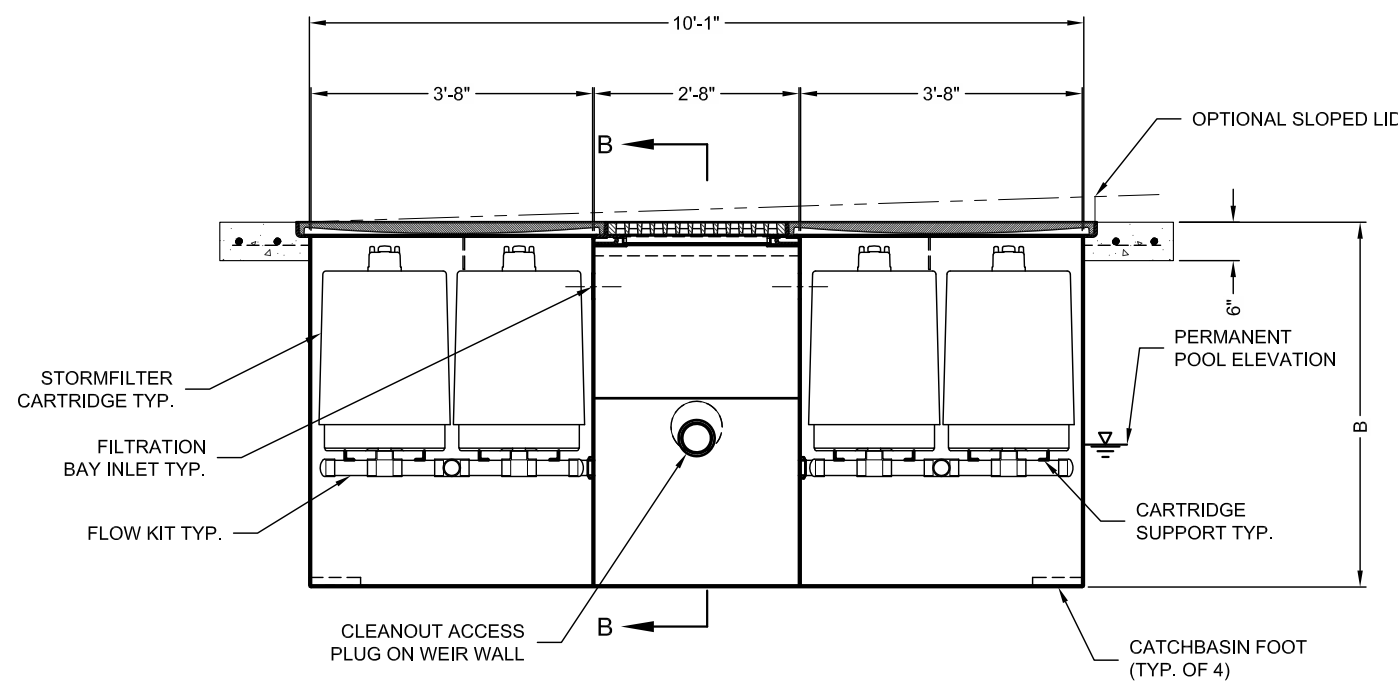


SLOPED LID	YES/NO
SOLID COVER	YES/NO
NOTES/SPECIAL REQUIREMENTS:	





**PLAN VIEW**  
27" CARTRIDGES



**SECTION A-A**

STORMFILTER STEEL CATCHBASIN DESIGN NOTES									
STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. 4 CARTRIDGE CATCHBASIN HAS A MAXIMUM OF FOUR CARTRIDGES. SYSTEM IS SHOWN WITH A 27" CARTRIDGE, AND IS ALSO AVAILABLE WITH AN 18" CARTRIDGE. STORMFILTER CATCHBASIN CONFIGURATIONS ARE AVAILABLE WITH A DRY INLET BAY FOR VECTOR CONTROL. PEAK HYDRAULIC CAPACITY PER TABLE BELOW. IF THE SITE CONDITIONS EXCEED PEAK HYDRAULIC CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.									
CARTRIDGE SELECTION									
CARTRIDGE HEIGHT	27"			18"			18" DEEP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			3.3'		
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	18.79	11.25	15	12.53	7.5	15	12.53	7.5
PEAK HYDRAULIC CAPACITY	1.0			1.0			1.8		
INLET PERMANENT POOL LEVEL (A)	1'-0"			1'-0"			2'-0"		
OVERALL STRUCTURE HEIGHT (B)	4'-9"			3'-9"			4'-9"		

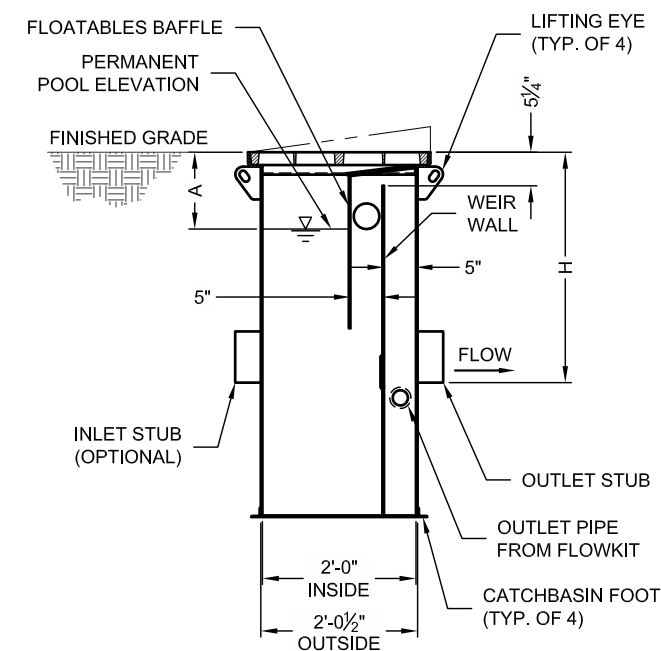
\* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY

**GENERAL NOTES**

- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- FOR SITE SPECIFIC DRAWINGS WITH DETAILED STORMFILTER CATCHBASIN STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. [www.contechES.com](http://www.contechES.com)
- STORMFILTER CATCHBASIN WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
- INLET SHOULD NOT BE LOWER THAN OUTLET. INLET (IF APPLICABLE) AND OUTLET PIPING TO BE SPECIFIED BY ENGINEER AND PROVIDED BY CONTRACTOR.
- MANUFACTURER TO APPLY A SURFACE BEAD WELD IN THE SHAPE OF THE LETTER "O" ABOVE THE OUTLET PIPE STUB ON THE EXTERIOR SURFACE OF THE STEEL SFCB.
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- FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
- SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).

**INSTALLATION NOTES**

- ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CATCHBASIN (LIFTING CLUTCHES PROVIDED).
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

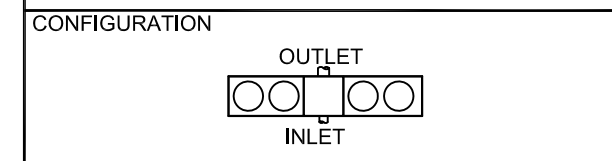


**SECTION C-C**

**4-CARTRIDGE CATCHBASIN  
STORMFILTER DATA**

STRUCTURE ID	XXX
WATER QUALITY FLOW RATE (cfs)	X.XX
PEAK FLOW RATE (<1 cfs)	X.XX
RETURN PERIOD OF PEAK FLOW (yrs)	XXX
CARTRIDGE FLOW RATE (gpm)	XX
MEDIA TYPE (PERLITE, ZPG, PSORB)	XXXXX
RIM ELEVATION	XXX.XX'

PIPE DATA:	I.E.	DIAMETER
INLET STUB	XXX.XX'	XX"
OUTLET STUB	XXX.XX'	XX"



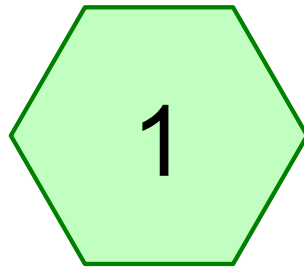
SLOPED LID	YES/NO
SOLID COVER	YES/NO

NOTES/SPECIAL REQUIREMENTS:

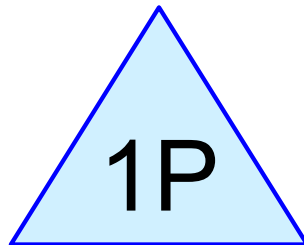
\*PER ENGINEER OF RECORD

**Appendix C.3:  
Post-Developed Hydrograph and Flow  
Information 2, 10, & 25-Year Storm Event**

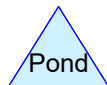
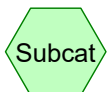
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POST-DEVELOPED



UNDERGROUND  
DETENTION SYSTEM



# 9010 HydroCAD Post

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Page 2

## Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
7,670	74	>75% Grass cover, Good, HSG C (1)
24,030	98	Impervious (1)
<b>31,700</b>	<b>92</b>	<b>TOTAL AREA</b>

**9010 HydroCAD Post**

Type IA 24-hr 2-YR Rainfall=2.50"

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Page 3

Time span=0.00-24.00 hrs, dt=0.15 hrs, 161 points

Runoff by SBUH method, Split Pervious/Imperv.

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1: POST-DEVELOPED**

Runoff Area=31,700 sf 75.80% Impervious Runoff Depth>1.86"

Tc=5.0 min CN=74/98 Runoff=0.33 cfs 4,927 cf

**Pond 1P: UNDERGROUNDDETENTION**

Peak Elev=101.63' Storage=525 cf Inflow=0.33 cfs 4,927 cf

Outflow=0.15 cfs 4,920 cf

**Total Runoff Area = 31,700 sf Runoff Volume = 4,927 cf Average Runoff Depth = 1.86"**  
**24.20% Pervious = 7,670 sf 75.80% Impervious = 24,030 sf**



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Type IA 24-hr 2-YR Rainfall=2.50"

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**Summary for Subcatchment 1: POST-DEVELOPED**

Runoff = 0.33 cfs @ 7.93 hrs, Volume= 4,927 cf, Depth> 1.86"

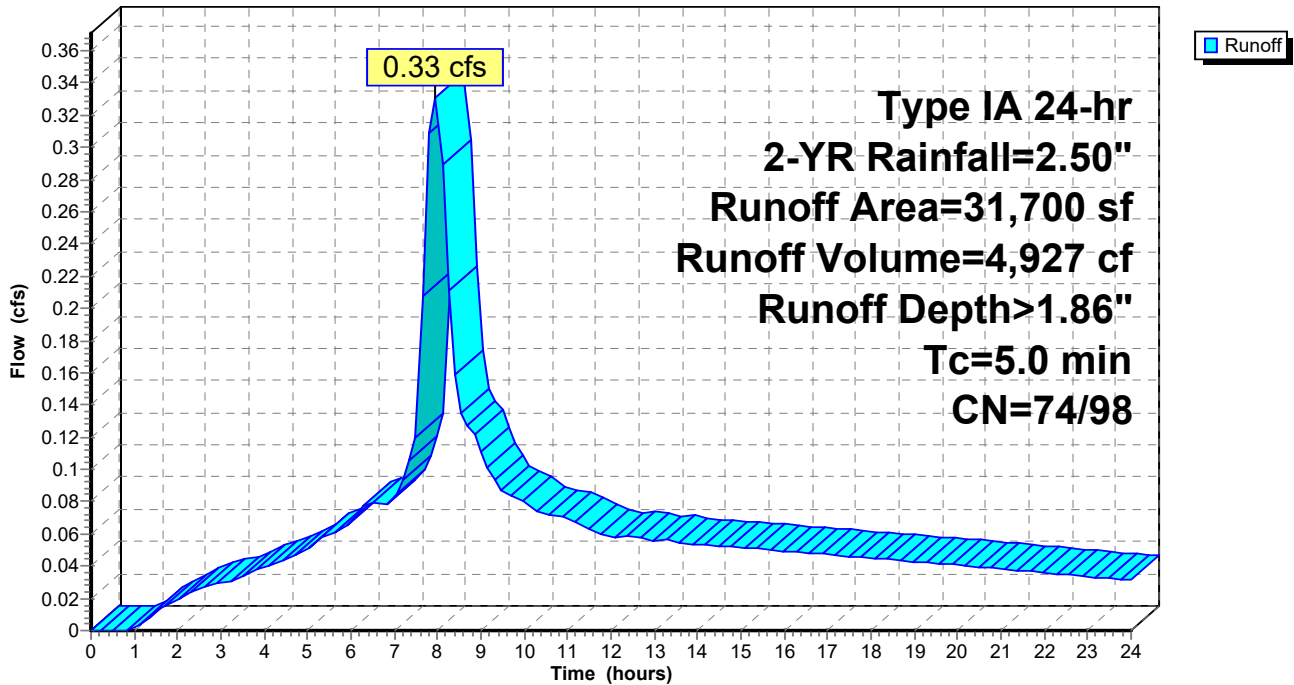
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.15 hrs  
Type IA 24-hr 2-YR Rainfall=2.50"

	Area (sf)	CN	Description
*	24,030	98	Impervious
	7,670	74	>75% Grass cover, Good, HSG C
	31,700	92	Weighted Average
	7,670		24.20% Pervious Area
	24,030		75.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

**Subcatchment 1: POST-DEVELOPED**

Hydrograph



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Type IA 24-hr 2-YR Rainfall=2.50"

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**Summary for Pond 1P: UNDERGROUND DETENTION SYSTEM**

Inflow Area = 31,700 sf, 75.80% Impervious, Inflow Depth > 1.86" for 2-YR event  
 Inflow = 0.33 cfs @ 7.93 hrs, Volume= 4,927 cf  
 Outflow = 0.15 cfs @ 8.47 hrs, Volume= 4,920 cf, Atten= 55%, Lag= 32.7 min  
 Primary = 0.15 cfs @ 8.47 hrs, Volume= 4,920 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.15 hrs  
 Peak Elev= 101.63' @ 8.47 hrs Surf.Area= 401 sf Storage= 525 cf

Plug-Flow detention time= 22.7 min calculated for 4,890 cf (99% of inflow)  
 Center-of-Mass det. time= 21.6 min ( 715.0 - 693.4 )

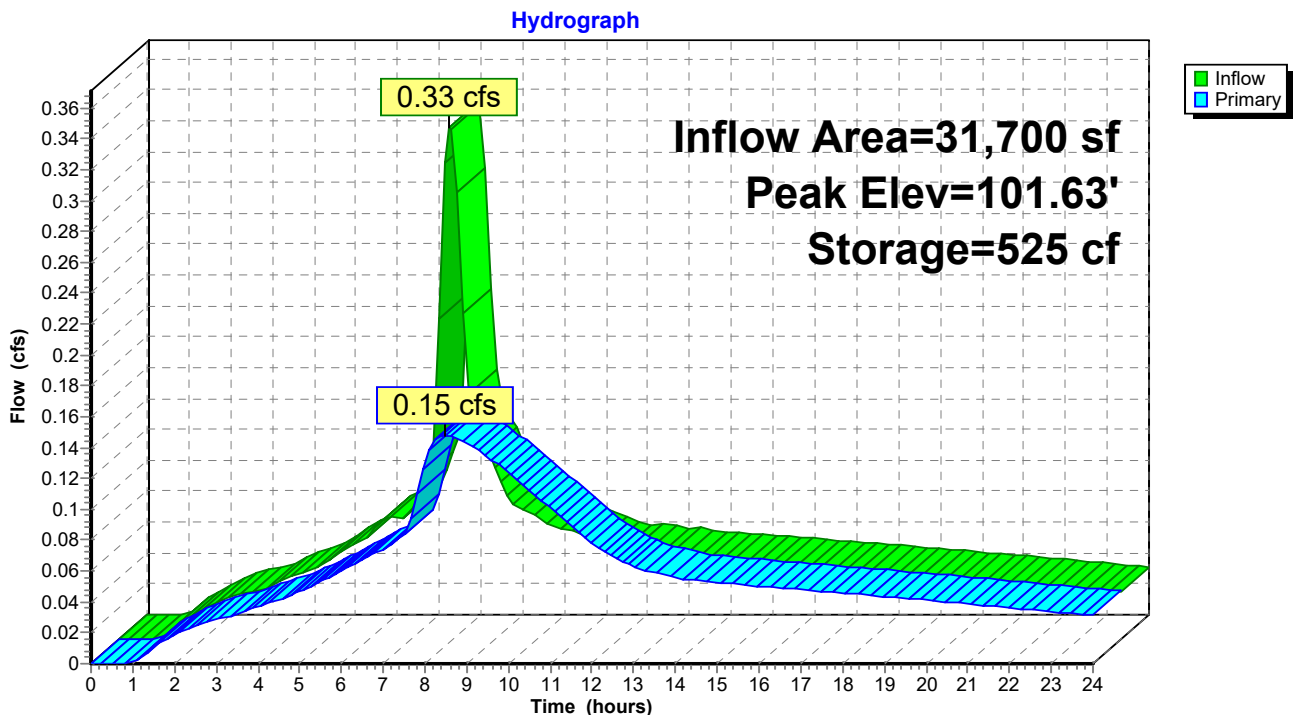
Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	947 cf	<b>36.0" Round Pipe Storage</b> L= 134.0'

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	<b>2.1" Horiz. Orifice/Grate</b> C= 0.600
#2	Primary	101.65'	<b>2.0" Horiz. Orifice/Grate</b> C= 0.600
#3	Primary	103.00'	<b>12.0" Horiz. Overflow Riser</b> C= 0.600

**Primary OutFlow** Max=0.15 cfs @ 8.47 hrs HW=101.62' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 0.15 cfs @ 6.13 fps)
- 2=Orifice/Grate ( Controls 0.00 cfs)
- 3=Overflow Riser ( Controls 0.00 cfs)

**Pond 1P: UNDERGROUND DETENTION SYSTEM**



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Type IA 24-hr 10-YR Rainfall=3.45"

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Time span=0.00-24.00 hrs, dt=0.15 hrs, 161 points

Runoff by SBUH method, Split Pervious/Imperv.

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1: POST-DEVELOPED**

Runoff Area=31,700 sf 75.80% Impervious Runoff Depth>2.73"

Tc=5.0 min CN=74/98 Runoff=0.49 cfs 7,199 cf

**Pond 1P: UNDERGROUNDDETENTION**

Peak Elev=102.36' Storage=800 cf Inflow=0.49 cfs 7,199 cf

Outflow=0.27 cfs 7,180 cf

**Total Runoff Area = 31,700 sf Runoff Volume = 7,199 cf Average Runoff Depth = 2.73"**  
**24.20% Pervious = 7,670 sf 75.80% Impervious = 24,030 sf**

**9010 HydroCAD Post**

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Type IA 24-hr 10-YR Rainfall=3.45"

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**Summary for Subcatchment 1: POST-DEVELOPED**

Runoff = 0.49 cfs @ 7.92 hrs, Volume= 7,199 cf, Depth> 2.73"

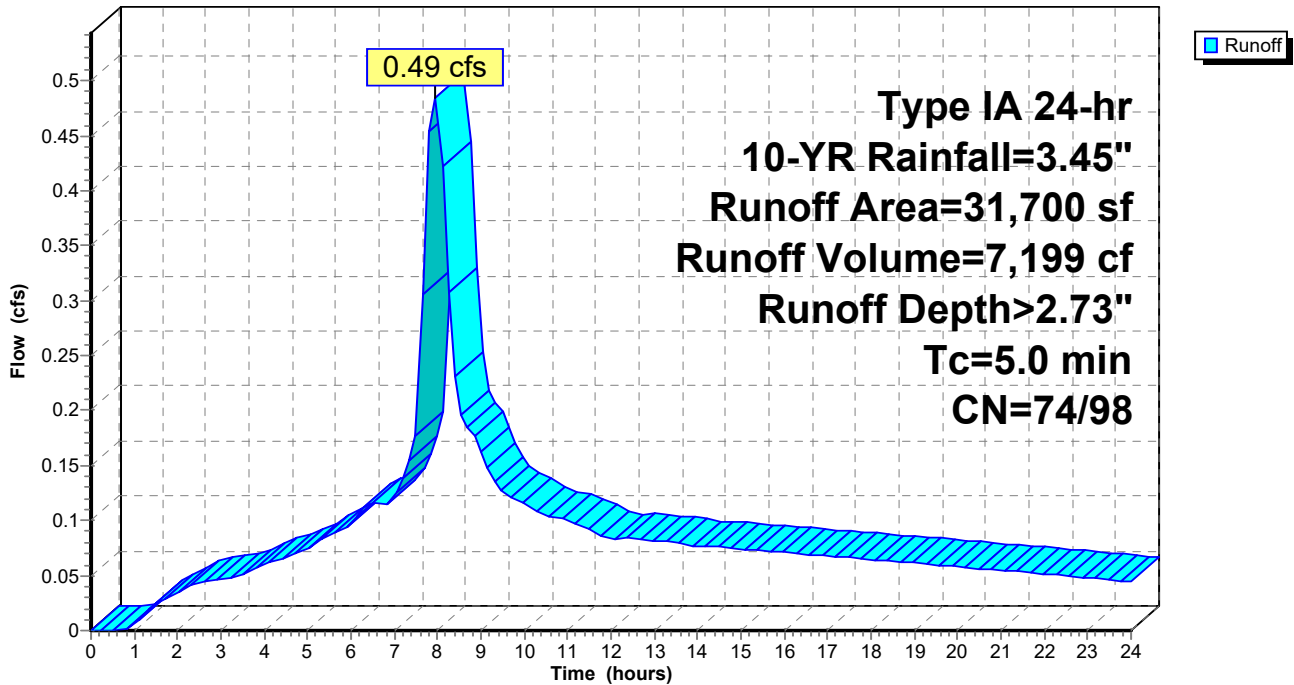
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.15 hrs  
Type IA 24-hr 10-YR Rainfall=3.45"

	Area (sf)	CN	Description
*	24,030	98	Impervious
	7,670	74	>75% Grass cover, Good, HSG C
	31,700	92	Weighted Average
	7,670		24.20% Pervious Area
	24,030		75.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

**Subcatchment 1: POST-DEVELOPED**

Hydrograph



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Type IA 24-hr 10-YR Rainfall=3.45"

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Page 8

**Summary for Pond 1P: UNDERGROUND DETENTION SYSTEM**

Inflow Area = 31,700 sf, 75.80% Impervious, Inflow Depth > 2.73" for 10-YR event  
 Inflow = 0.49 cfs @ 7.92 hrs, Volume= 7,199 cf  
 Outflow = 0.27 cfs @ 8.34 hrs, Volume= 7,180 cf, Atten= 45%, Lag= 24.8 min  
 Primary = 0.27 cfs @ 8.34 hrs, Volume= 7,180 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.15 hrs  
 Peak Elev= 102.36' @ 8.34 hrs Surf.Area= 329 sf Storage= 800 cf

Plug-Flow detention time= 30.5 min calculated for 7,136 cf (99% of inflow)  
 Center-of-Mass det. time= 28.4 min ( 714.7 - 686.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	947 cf	<b>36.0" Round Pipe Storage</b> L= 134.0'

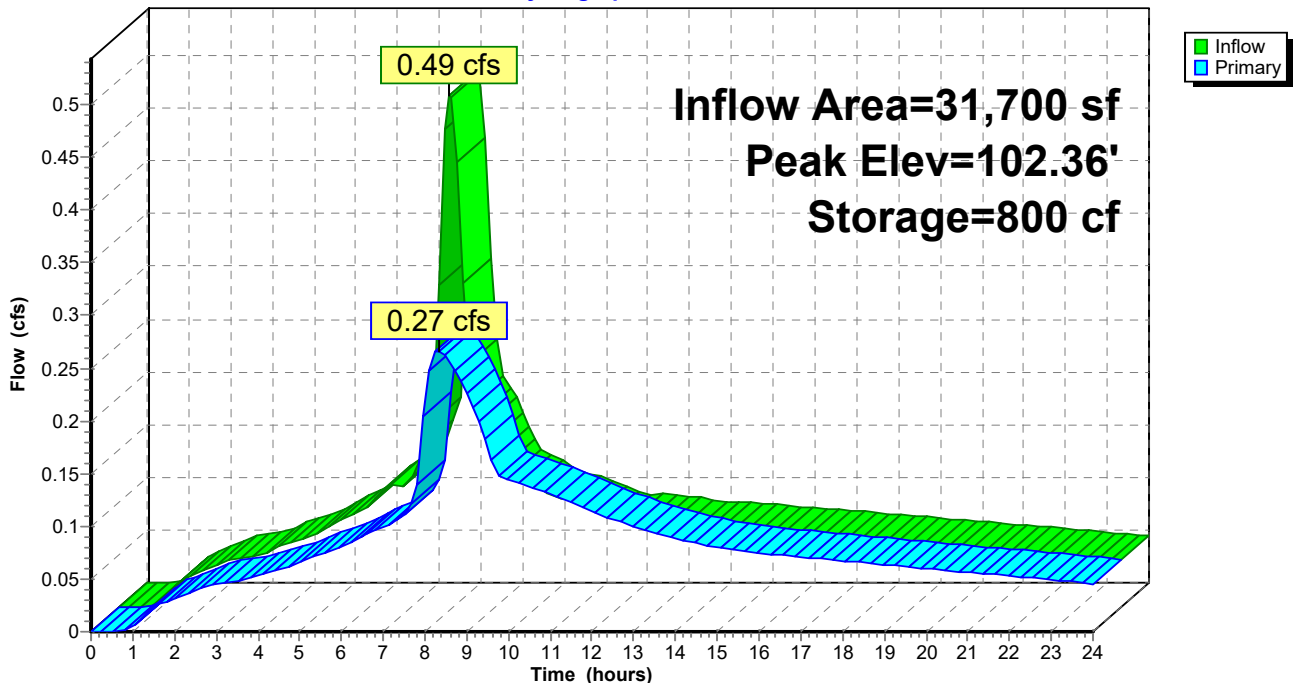
Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	<b>2.1" Horiz. Orifice/Grate</b> C= 0.600
#2	Primary	101.65'	<b>2.0" Horiz. Orifice/Grate</b> C= 0.600
#3	Primary	103.00'	<b>12.0" Horiz. Overflow Riser</b> C= 0.600

**Primary OutFlow** Max=0.27 cfs @ 8.34 hrs HW=102.35' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 0.18 cfs @ 7.38 fps)
- 2=Orifice/Grate (Orifice Controls 0.09 cfs @ 4.03 fps)
- 3=Overflow Riser ( Controls 0.00 cfs)

**Pond 1P: UNDERGROUND DETENTION SYSTEM**

Hydrograph



**9010 HydroCAD Post**

*Type IA 24-hr 25-YR Rainfall=3.90"*

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Time span=0.00-24.00 hrs, dt=0.15 hrs, 161 points

Runoff by SBUH method, Split Pervious/Imperv.

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1: POST-DEVELOPED**

Runoff Area=31,700 sf 75.80% Impervious Runoff Depth>3.14"

Tc=5.0 min CN=74/98 Runoff=0.56 cfs 8,298 cf

**Pond 1P: UNDERGROUNDDETENTION**

Peak Elev=102.96' Storage=945 cf Inflow=0.56 cfs 8,298 cf

Outflow=0.32 cfs 8,270 cf

**Total Runoff Area = 31,700 sf Runoff Volume = 8,298 cf Average Runoff Depth = 3.14"**  
**24.20% Pervious = 7,670 sf 75.80% Impervious = 24,030 sf**

**9010 HydroCAD Post**

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Type IA 24-hr 25-YR Rainfall=3.90"

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**Summary for Subcatchment 1: POST-DEVELOPED**

Runoff = 0.56 cfs @ 7.92 hrs, Volume= 8,298 cf, Depth> 3.14"

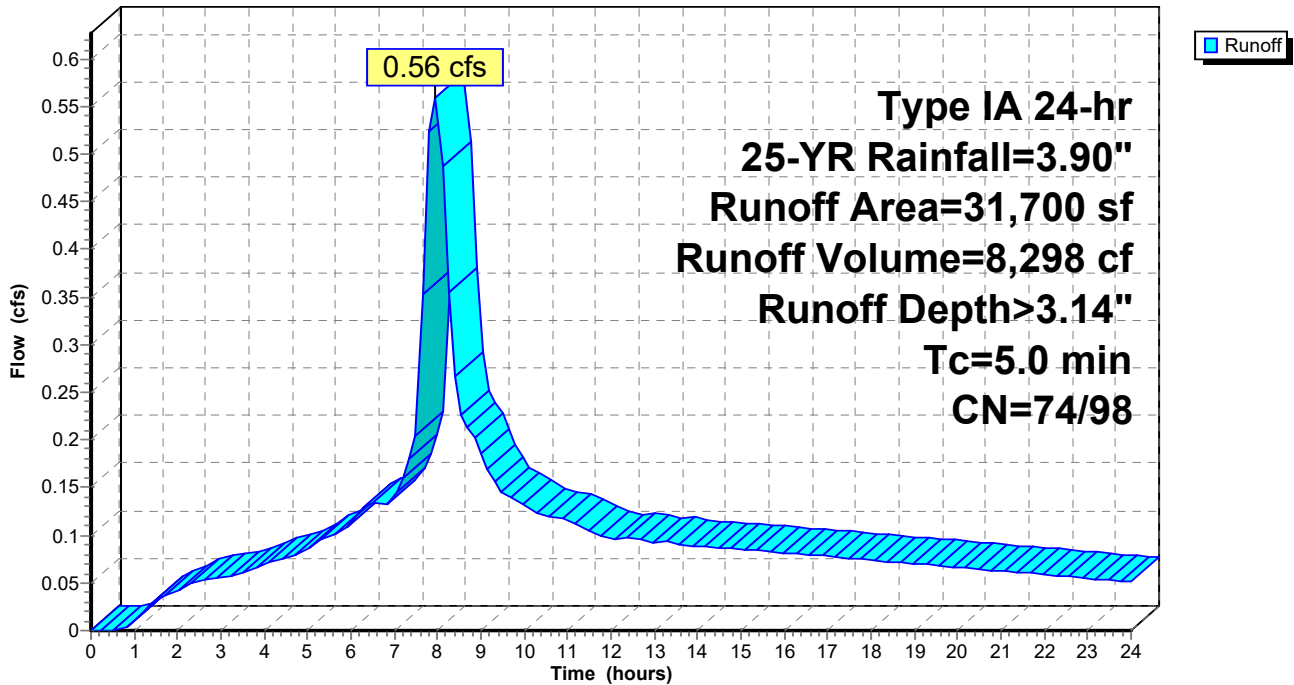
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.15 hrs  
Type IA 24-hr 25-YR Rainfall=3.90"

	Area (sf)	CN	Description
*	24,030	98	Impervious
	7,670	74	>75% Grass cover, Good, HSG C
	31,700	92	Weighted Average
	7,670		24.20% Pervious Area
	24,030		75.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

**Subcatchment 1: POST-DEVELOPED**

Hydrograph



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Type IA 24-hr 25-YR Rainfall=3.90"

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**Summary for Pond 1P: UNDERGROUND DETENTION SYSTEM**

Inflow Area = 31,700 sf, 75.80% Impervious, Inflow Depth > 3.14" for 25-YR event  
 Inflow = 0.56 cfs @ 7.92 hrs, Volume= 8,298 cf  
 Outflow = 0.32 cfs @ 8.31 hrs, Volume= 8,270 cf, Atten= 43%, Lag= 23.4 min  
 Primary = 0.32 cfs @ 8.31 hrs, Volume= 8,270 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.15 hrs  
 Peak Elev= 102.96' @ 8.31 hrs Surf.Area= 90 sf Storage= 945 cf

Plug-Flow detention time= 33.9 min calculated for 8,270 cf (100% of inflow)  
 Center-of-Mass det. time= 31.3 min ( 715.0 - 683.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	947 cf	<b>36.0" Round Pipe Storage</b> L= 134.0'

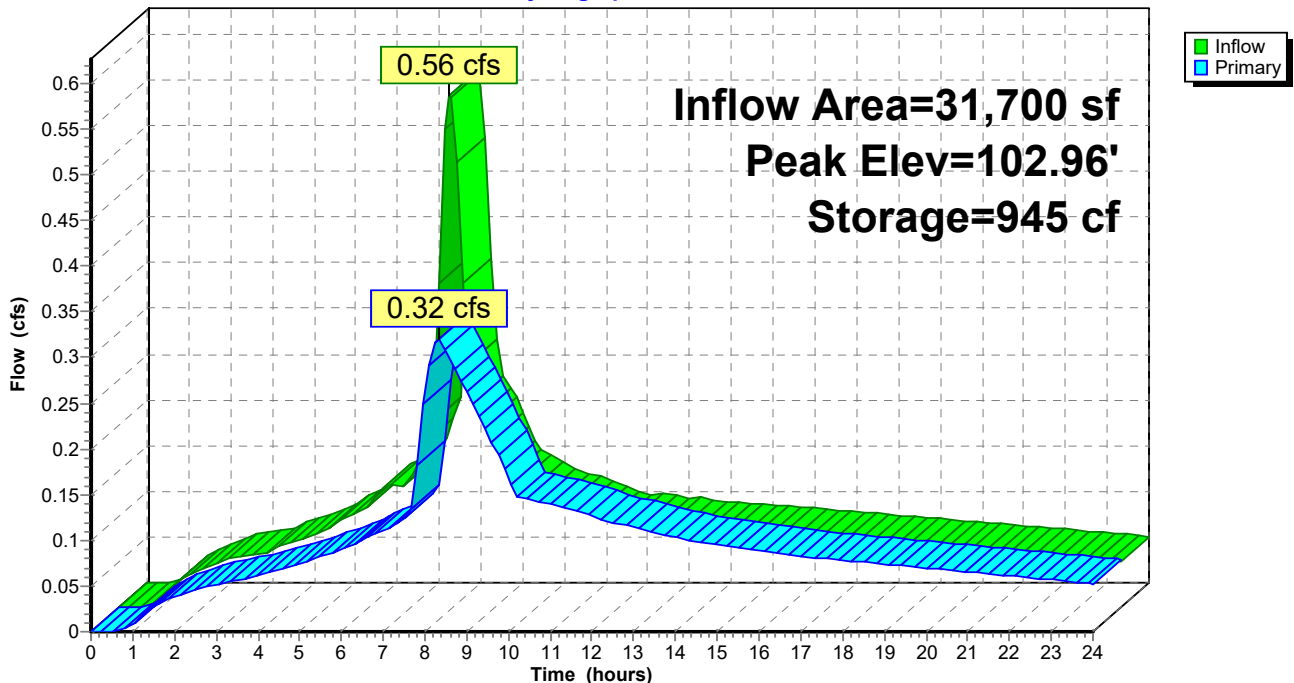
Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	<b>2.1" Horiz. Orifice/Grate</b> C= 0.600
#2	Primary	101.65'	<b>2.0" Horiz. Orifice/Grate</b> C= 0.600
#3	Primary	103.00'	<b>12.0" Horiz. Overflow Riser</b> C= 0.600

**Primary OutFlow** Max=0.32 cfs @ 8.31 hrs HW=102.92' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 0.20 cfs @ 8.23 fps)
- 2=Orifice/Grate (Orifice Controls 0.12 cfs @ 5.43 fps)
- 3=Overflow Riser ( Controls 0.00 cfs)

**Pond 1P: UNDERGROUND DETENTION SYSTEM**

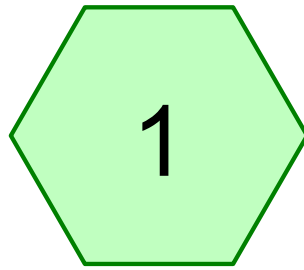
Hydrograph



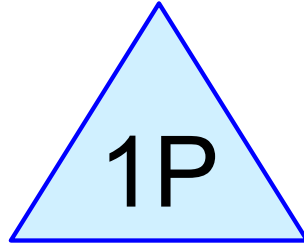


## **Appendix D: Emergency Overflow Calculations**

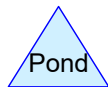
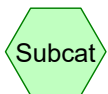
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POST-DEVELOPED



UNDERGROUND  
DETENTION SYSTEM



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### Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
7,670	74	>75% Grass cover, Good, HSG C (1)
24,030	98	Impervious (1)
<b>31,700</b>	<b>92</b>	<b>TOTAL AREA</b>

**9010 HydroCAD Overflow**

Type IA 24-hr 100-YR Rainfall=4.50"

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Time span=0.00-24.00 hrs, dt=0.15 hrs, 161 points

Runoff by SBUH method, Split Pervious/Imperv.

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1: POST-DEVELOPED**

Runoff Area=31,700 sf 75.80% Impervious Runoff Depth>3.70"

Tc=5.0 min CN=74/98 Runoff=0.66 cfs 9,782 cf

**Pond 1P: UNDERGROUNDDETENTION**

Peak Elev=103.03' Storage=947 cf Inflow=0.66 cfs 9,782 cf

Outflow=0.65 cfs 7,940 cf

**Total Runoff Area = 31,700 sf Runoff Volume = 9,782 cf Average Runoff Depth = 3.70"**  
**24.20% Pervious = 7,670 sf 75.80% Impervious = 24,030 sf**

**9010 HydroCAD Overflow**

Type IA 24-hr 100-YR Rainfall=4.50"

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**Summary for Subcatchment 1: POST-DEVELOPED**

Runoff = 0.66 cfs @ 7.92 hrs, Volume= 9,782 cf, Depth> 3.70"

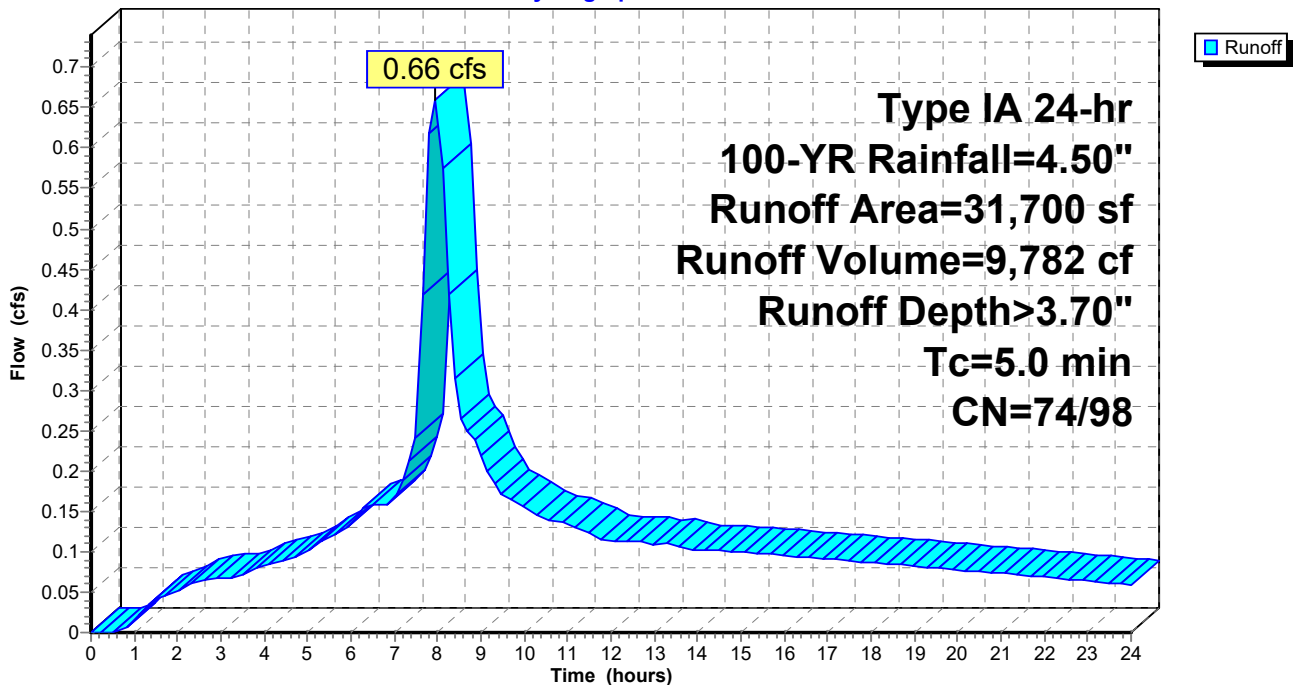
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.15 hrs  
Type IA 24-hr 100-YR Rainfall=4.50"

Area (sf)	CN	Description
24,030	98	Impervious
7,670	74	>75% Grass cover, Good, HSG C
31,700	92	Weighted Average
7,670		24.20% Pervious Area
24,030		75.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

**Subcatchment 1: POST-DEVELOPED**

Hydrograph



**9010 HydroCAD Overflow**

Type IA 24-hr 100-YR Rainfall=4.50"

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**Summary for Pond 1P: UNDERGROUND DETENTION SYSTEM**

Inflow Area = 31,700 sf, 75.80% Impervious, Inflow Depth > 3.70" for 100-YR event  
 Inflow = 0.66 cfs @ 7.92 hrs, Volume= 9,782 cf  
 Outflow = 0.65 cfs @ 7.92 hrs, Volume= 7,940 cf, Atten= 2%, Lag= 0.0 min  
 Primary = 0.65 cfs @ 7.92 hrs, Volume= 7,940 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.15 hrs / 2  
 Peak Elev= 103.03' @ 7.92 hrs Surf.Area= 0 sf Storage= 947 cf

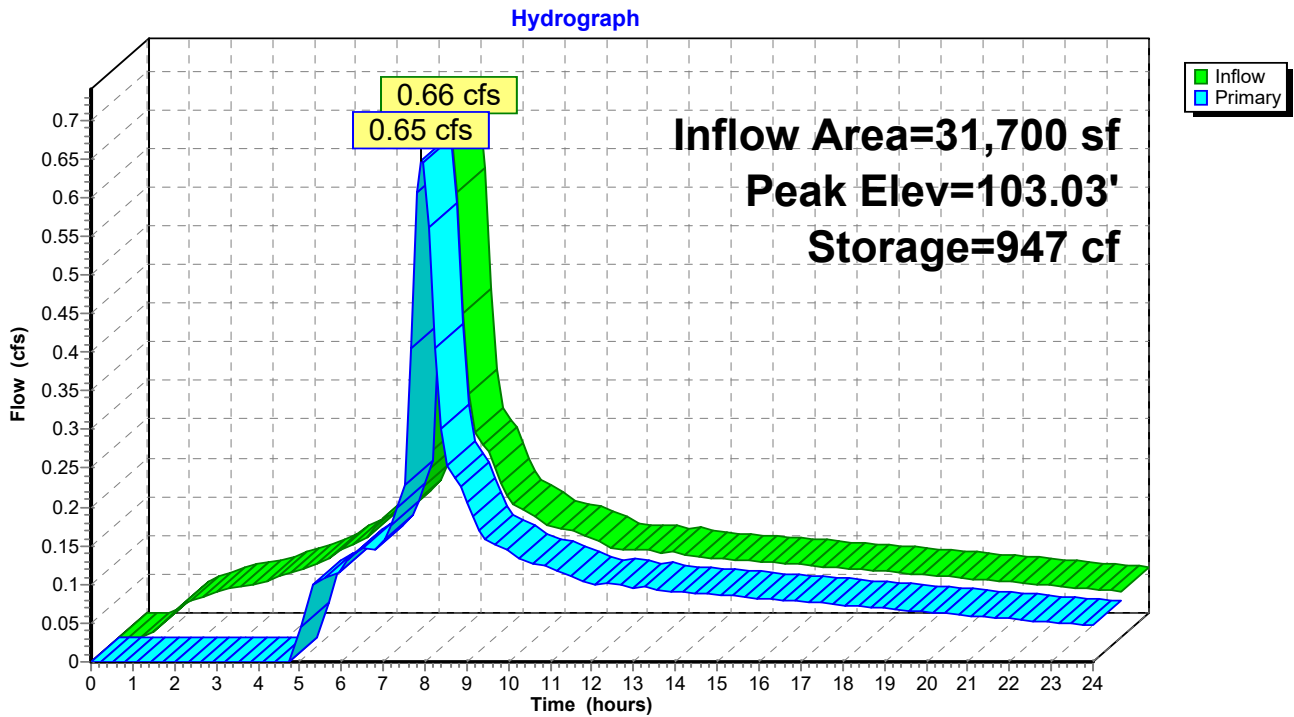
Plug-Flow detention time= 162.3 min calculated for 7,940 cf (81% of inflow)  
 Center-of-Mass det. time= 36.9 min ( 717.7 - 680.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	947 cf	<b>36.0" Round Pipe Storage</b> L= 134.0'

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	<b>12.0" Horiz. Overflow Riser</b> C= 0.600

**Primary OutFlow** Max=0.65 cfs @ 7.92 hrs HW=103.03' (Free Discharge)  
 ↑1=Overflow Riser (Orifice Controls 0.65 cfs @ 0.82 fps)

**Pond 1P: UNDERGROUND DETENTION SYSTEM**



**Appendix E:  
Soils Information from the USDA NRCS Soil  
Survey of Clackamas County, Oregon**

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# Custom Soil Resource Report for **Clackamas County Area, Oregon**





# Preface

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Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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# How Soil Surveys Are Made

---

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

## Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

## Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

---

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

# Custom Soil Resource Report Soil Map



Map Scale: 1:515 if printed on A portrait (8.5" x 11") sheet.

0 5 10 20 30 Meters

0 25 50 100 150 Feet


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 18, Oct 27, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 19, 2015—Sep 13, 2016

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
17	Clackamas silt loam	0.1	8.8%
79B	Sawtell silt loam, 0 to 8 percent slopes	0.8	91.2%
<b>Totals for Area of Interest</b>		<b>0.9</b>	<b>100.0%</b>

## Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

## Custom Soil Resource Report

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Clackamas County Area, Oregon

### 17—Clackamas silt loam

#### Map Unit Setting

*National map unit symbol:* 223h  
*Elevation:* 150 to 700 feet  
*Mean annual precipitation:* 40 to 60 inches  
*Mean annual air temperature:* 52 to 54 degrees F  
*Frost-free period:* 165 to 210 days  
*Farmland classification:* Prime farmland if drained

#### Map Unit Composition

*Clackamas and similar soils:* 85 percent  
*Minor components:* 4 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Clackamas

##### Setting

*Landform:* Terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Mixed gravelly alluvium

##### Typical profile

*H1 - 0 to 7 inches:* silt loam  
*H2 - 7 to 36 inches:* silty clay loam  
*H3 - 36 to 60 inches:* extremely gravelly silty clay loam

##### Properties and qualities

*Slope:* 0 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Somewhat poorly drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.57 in/hr)  
*Depth to water table:* About 6 to 18 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 6.9 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 2w  
*Land capability classification (nonirrigated):* 2w  
*Hydrologic Soil Group:* C/D  
*Ecological site:* R002XC005OR - High Floodplain Group  
*Forage suitability group:* Somewhat Poorly Drained (G002XY005OR)  
*Other vegetative classification:* Somewhat Poorly Drained (G002XY005OR)  
*Hydric soil rating:* No

#### Minor Components

##### Conser

*Percent of map unit:* 4 percent  
*Landform:* Terraces

## Custom Soil Resource Report

*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* Poorly Drained (G002XY006OR)  
*Hydric soil rating:* Yes

### 79B—Sawtell silt loam, 0 to 8 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2275  
*Elevation:* 150 to 500 feet  
*Mean annual precipitation:* 40 to 55 inches  
*Mean annual air temperature:* 50 to 54 degrees F  
*Frost-free period:* 165 to 210 days  
*Farmland classification:* All areas are prime farmland

#### Map Unit Composition

*Sawtell and similar soils:* 90 percent  
*Minor components:* 4 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Sawtell

##### Setting

*Landform:* Terraces  
*Landform position (three-dimensional):* Tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Old gravelly alluvium

##### Typical profile

*H1 - 0 to 13 inches:* silt loam  
*H2 - 13 to 20 inches:* gravelly clay loam  
*H3 - 20 to 43 inches:* very gravelly clay loam  
*H4 - 43 to 60 inches:* very gravelly clay

##### Properties and qualities

*Slope:* 0 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Moderately well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.57 in/hr)  
*Depth to water table:* About 18 to 36 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Moderate (about 7.7 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 2w  
*Land capability classification (nonirrigated):* 2w  
*Hydrologic Soil Group:* C

## Custom Soil Resource Report

*Ecological site:* R002XC011OR - Low Hill Group

*Forage suitability group:* Moderately Well Drained < 15% Slopes (G002XY004OR)

*Other vegetative classification:* Moderately Well Drained < 15% Slopes  
(G002XY004OR)

*Hydric soil rating:* No

### Minor Components

#### Dayton

*Percent of map unit:* 3 percent

*Landform:* Terraces

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* Poorly Drained (G002XY006OR)

*Hydric soil rating:* Yes

#### Concord

*Percent of map unit:* 1 percent

*Landform:* Terraces

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* Poorly Drained (G002XY006OR)

*Hydric soil rating:* Yes

# Soil Information for All Uses

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## Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

## Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

## Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

## Custom Soil Resource Report

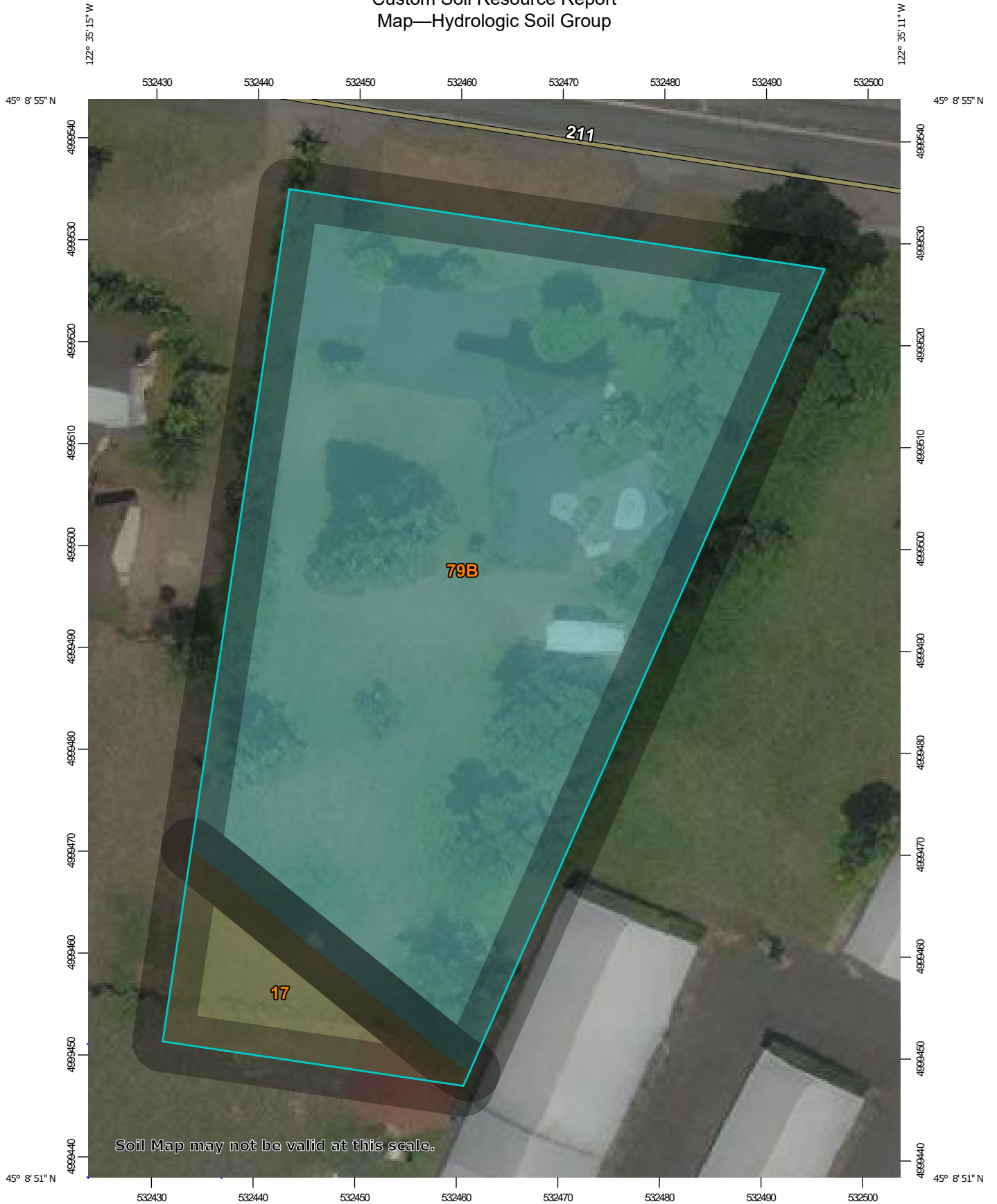
Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.



Custom Soil Resource Report  
Map—Hydrologic Soil Group




Map Scale: 1:515 if printed on A portrait (8.5" x 11") sheet.



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 Rating Polygons**


-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available


**Soil Rating Lines**


-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available


**Soil Rating Points**

-  A
-  A/D
-  B
-  B/D


 C

 C/D






 D

 Not rated or not available


**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 18, Oct 27, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 19, 2015—Sep 13, 2016

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.

**Table—Hydrologic Soil Group**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
17	Clackamas silt loam	C/D	0.1	8.8%
79B	Sawtell silt loam, 0 to 8 percent slopes	C	0.8	91.2%
<b>Totals for Area of Interest</b>			<b>0.9</b>	<b>100.0%</b>

**Rating Options—Hydrologic Soil Group**

*Aggregation Method: Dominant Condition*

*Component Percent Cutoff: None Specified*

*Tie-break Rule: Higher*

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- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

## Custom Soil Resource Report

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United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053624](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624)

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**Appendix F:  
Relevant Information from Technical Release  
55 Urban Hydrology for Small Watersheds,  
ODOT Hydraulics Manual, City of Molalla  
Public Works Design Standard, and City of  
Molalla Stormwater Master Plan**

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United States  
Department of  
Agriculture

Soil  
Conservation  
Service

Engineering  
Division

Technical  
Release 55

June 1986



# Urban Hydrology for Small Watersheds

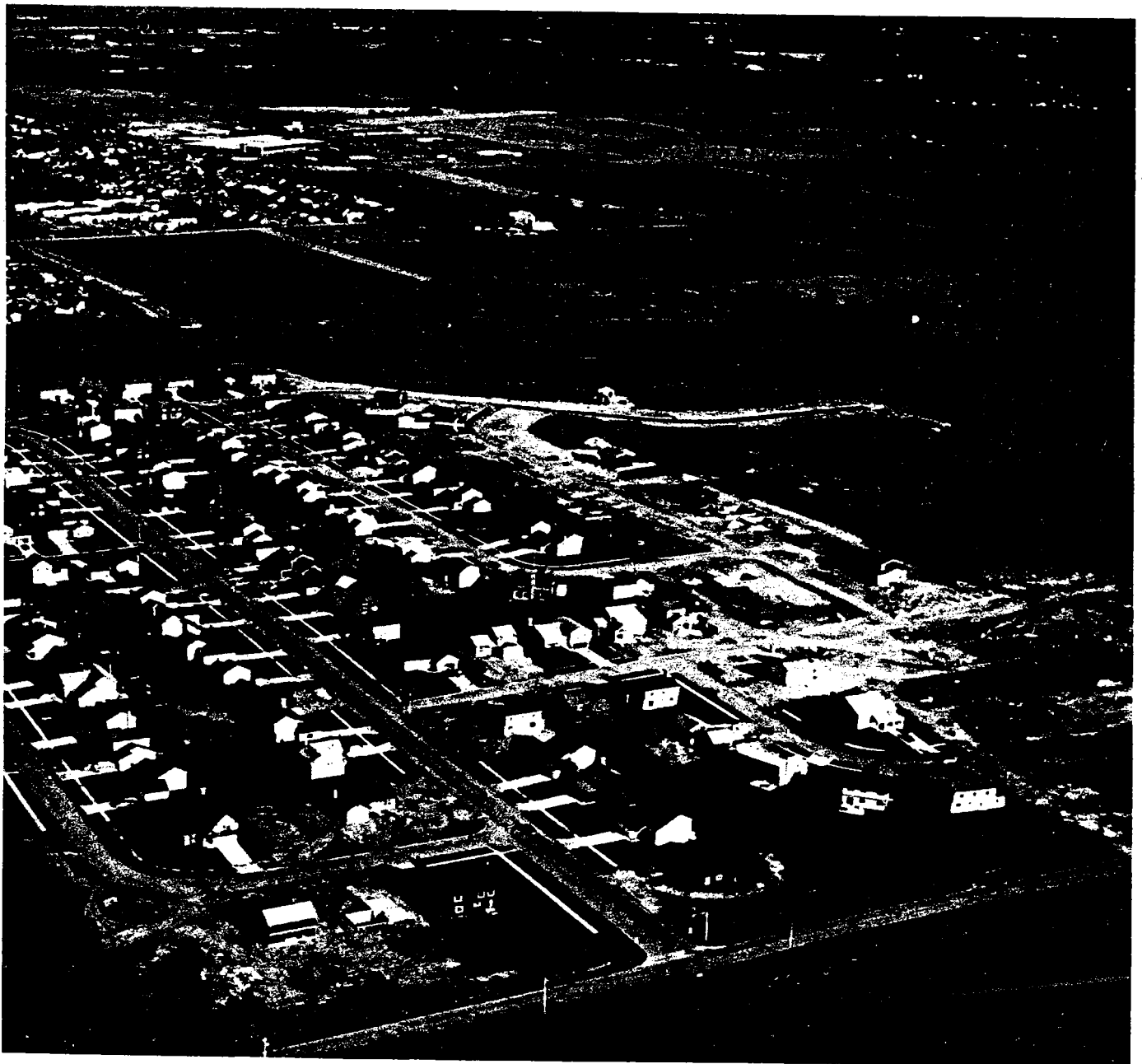


Table 2-2a.—Runoff curve numbers for urban areas<sup>1</sup>

Cover description		Curve numbers for hydrologic soil group—			
		A	B	C	D
Cover type and hydrologic condition	Average percent impervious area <sup>2</sup>				
<i>Fully developed urban areas (vegetation established)</i>					
Open space (lawns, parks, golf courses, cemeteries, etc.) <sup>3</sup> :					
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) <sup>4</sup> ...		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
<i>Developing urban areas</i>					
Newly graded areas (pervious areas only, no vegetation) <sup>5</sup> .....		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

<sup>1</sup>Average runoff condition, and  $I_a = 0.2S$ .

<sup>2</sup>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.

<sup>3</sup>CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

<sup>4</sup>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.

<sup>5</sup>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 2-2b.—Runoff curve numbers for cultivated agricultural lands<sup>1</sup>

Cover description			Curve numbers for hydrologic soil group—			
Cover type	Treatment <sup>2</sup>	Hydrologic condition <sup>3</sup>	A	B	C	D
Fallow	Bare soil	—	77	86	91	94
	Crop residue cover (CR)	Poor	76	85	90	93
		Good	74	83	88	90
Row crops	Straight row (SR)	Poor	72	81	88	91
		Good	67	78	85	89
	SR + CR	Poor	71	80	87	90
		Good	64	75	82	85
	Contoured (C)	Poor	70	79	84	88
		Good	65	75	82	86
	C + CR	Poor	69	78	83	87
		Good	64	74	81	85
	Contoured & terraced (C&T)	Poor	66	74	80	82
		Good	62	71	78	81
	C&T + CR	Poor	65	73	79	81
		Good	61	70	77	80
Small grain	SR	Poor	65	76	84	88
		Good	63	75	83	87
	SR + CR	Poor	64	75	83	86
		Good	60	72	80	84
	C	Poor	63	74	82	85
		Good	61	73	81	84
	C + CR	Poor	62	73	81	84
		Good	60	72	80	83
	C&T	Poor	61	72	79	82
		Good	59	70	78	81
	C&T + CR	Poor	60	71	78	81
		Good	58	69	77	80
Close-seeded or broadcast legumes or rotation meadow	SR	Poor	66	77	85	89
		Good	58	72	81	85
	C	Poor	64	75	83	85
		Good	55	69	78	83
	C&T	Poor	63	73	80	83
		Good	51	67	76	80

<sup>1</sup>Average runoff condition, and  $I_n = 0.2S$ .

<sup>2</sup>Crop residue cover applies only if residue is on at least 5% of the surface throughout the year.

<sup>3</sup>Hydrologic condition is based on combination of factors that affect infiltration and runoff, including (a) density and canopy of vegetative areas, (b) amount of year-round cover, (c) amount of grass or close-seeded legumes in rotations, (d) percent of residue cover on the land surface (good  $\geq 20\%$ ), and (e) degree of surface roughness.

*Poor*: Factors impair infiltration and tend to increase runoff.

*Good*: Factors encourage average and better than average infiltration and tend to decrease runoff.

Table 2-2c.—Runoff curve numbers for other agricultural lands<sup>1</sup>

Cover description		Curve numbers for hydrologic soil group—			
		A	B	C	D
Cover type	Hydrologic condition				
Pasture, grassland, or range—continuous forage for grazing. <sup>2</sup>	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. <sup>3</sup>	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30	48	65	73
Woods—grass combination (orchard or tree farm). <sup>5</sup>	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods. <sup>6</sup>	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

<sup>1</sup>Average runoff condition, and  $I_a = 0.2S$ .

<sup>2</sup>*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.

<sup>3</sup>*Poor:* < 50% ground cover.  
*Fair:* 50 to 75% ground cover.  
*Good:* > 75% ground cover.

<sup>4</sup>Actual curve number is less than 30; use CN = 30 for runoff computations.

<sup>5</sup>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.

<sup>6</sup>*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.

Table 2-2d.—Runoff curve numbers for arid and semiarid rangelands<sup>1</sup>

Cover description		Curve numbers for hydrologic soil group—			
Cover type	Hydrologic condition <sup>2</sup>	A <sup>3</sup>	B	C	D
Herbaceous—mixture of grass, weeds, and low-growing brush, with brush the minor element.	Poor		80	87	93
	Fair		71	81	89
	Good		62	74	85
Oak-aspen—mountain brush mixture of oak brush, aspen, mountain mahogany, bitter brush, maple, and other brush.	Poor		66	74	79
	Fair		48	57	63
	Good		30	41	48
Pinyon-juniper—pinyon, juniper, or both; grass understory.	Poor		75	85	89
	Fair		58	73	80
	Good		41	61	71
Sagebrush with grass understory.	Poor		67	80	85
	Fair		51	63	70
	Good		35	47	55
Desert shrub—major plants include saltbush, greasewood, creosotebush, blackbrush, bursage, palo verde, mesquite, and cactus.	Poor	63	77	85	88
	Fair	55	72	81	86
	Good	49	68	79	84

<sup>1</sup>Average runoff condition, and  $I_{at} = 0.2S$ . For range in humid regions, use table 2-2c.

<sup>2</sup>*Poor*: <30% ground cover (litter, grass, and brush overstory).

*Fair*: 30 to 70% ground cover.

*Good*: >70% ground cover.

<sup>3</sup>Curve numbers for group A have been developed only for desert shrub.

These projects must treat all new ODOT impervious area and contiguous existing ODOT impervious area whose runoff flows over the new impervious surface (See Figure 14-4).

### **14.10.2 Water Quality Design Storm, Flow, and Volume**

A stormwater treatment facility is sized based on a water quality design flow rate or water quality design volume. The hydrologic analysis needed to determine a design flow rate or volume is discussed in **Chapter 7**. The water quality design storm is discussed below.

#### **Water Quality Design Storm**

The water quality design storm is designated as a percentage of the 2-year 24-hour storm and is used to determine the water quality design flow rate or water quality design volume. The maximum design storm depth is 2.5 inches and the minimum water quality design storm depth is 0.7 inches.

The following steps outline how to select the design storm for a project:

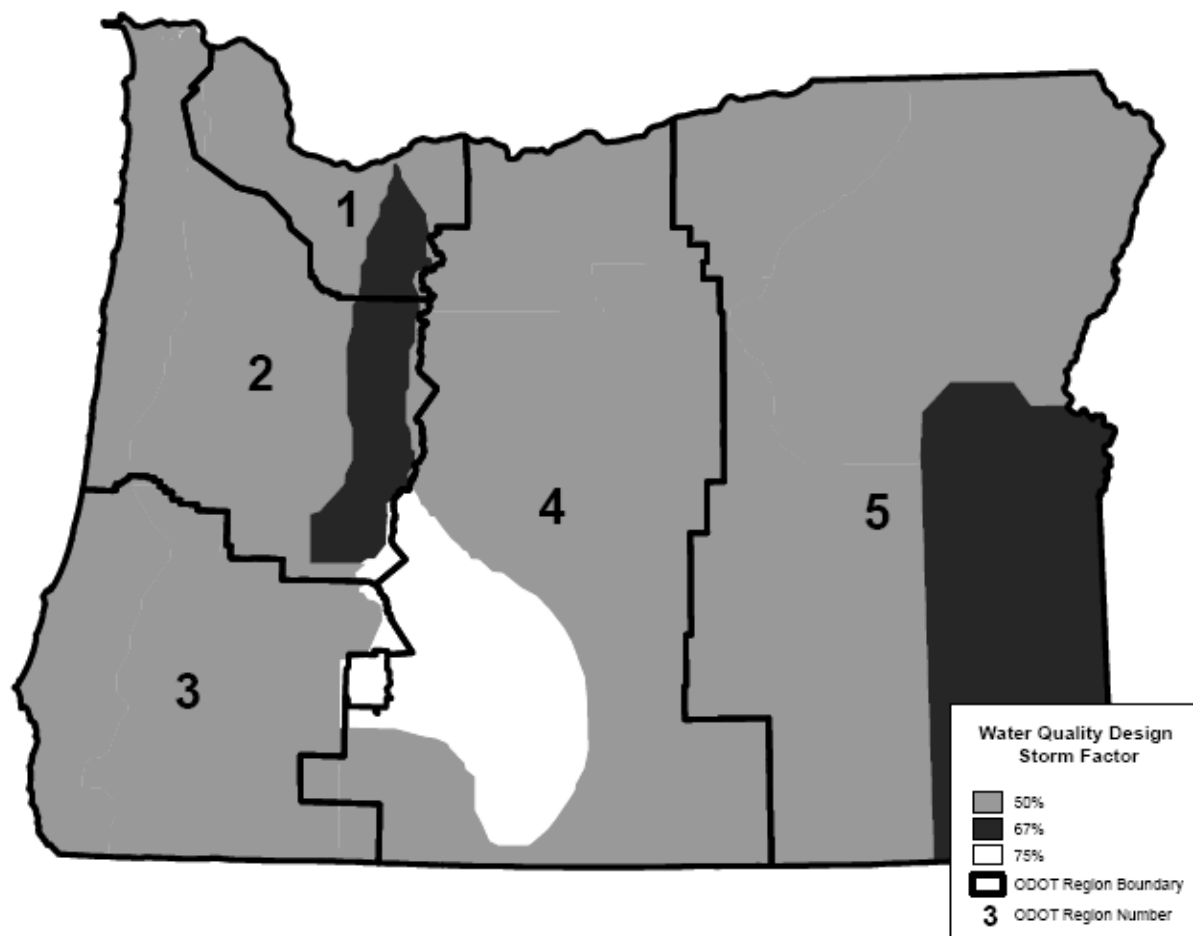
- Step 1: Determine the 2-year, 24-hour storm for the project. Use the precipitation maps to determine the project's 2-year, 24-hour storm or the GIS project created for use to view Oregon's precipitation data. See **Chapter 7** for more information.
- Step 2: Determine the water quality design storm factor. Figure 14-5 outlines the storm factor to use for each climate zone in the state.
- Step 3: Determine the water quality design storm. It is determined by multiplying the project's 2-year, 24-hour storm (step 1) times the design storm factor (step 2).

#### **Water Quality Design Flow**

The water quality design flow rate is the predicted peak discharge for the proposed conditions using the water quality design storm determined from the steps noted above. The design flow rate is calculated using hydrology guidance in **Chapter 7**. Flow-through stormwater quality facilities discussed in this chapter, such as swales and filter strips, are sized using this flow rate.

#### **Water Quality Design Volume**

The water quality design volume is the predicted volume of runoff for the proposed conditions using the water quality design storm determined from the steps noted above. The design volume is calculated using hydrology guidance in **Chapter 7**. Stormwater quality facilities discussed in this chapter that temporarily store runoff, such as stormwater treatment wetlands, wet ponds, extended dry detention ponds, bioretention facilities, and infiltration facilities are sized using this design volume.



**Figure 14-5 Design Storm Factors**

Figure 14-6a illustrates an on-line treatment facility.

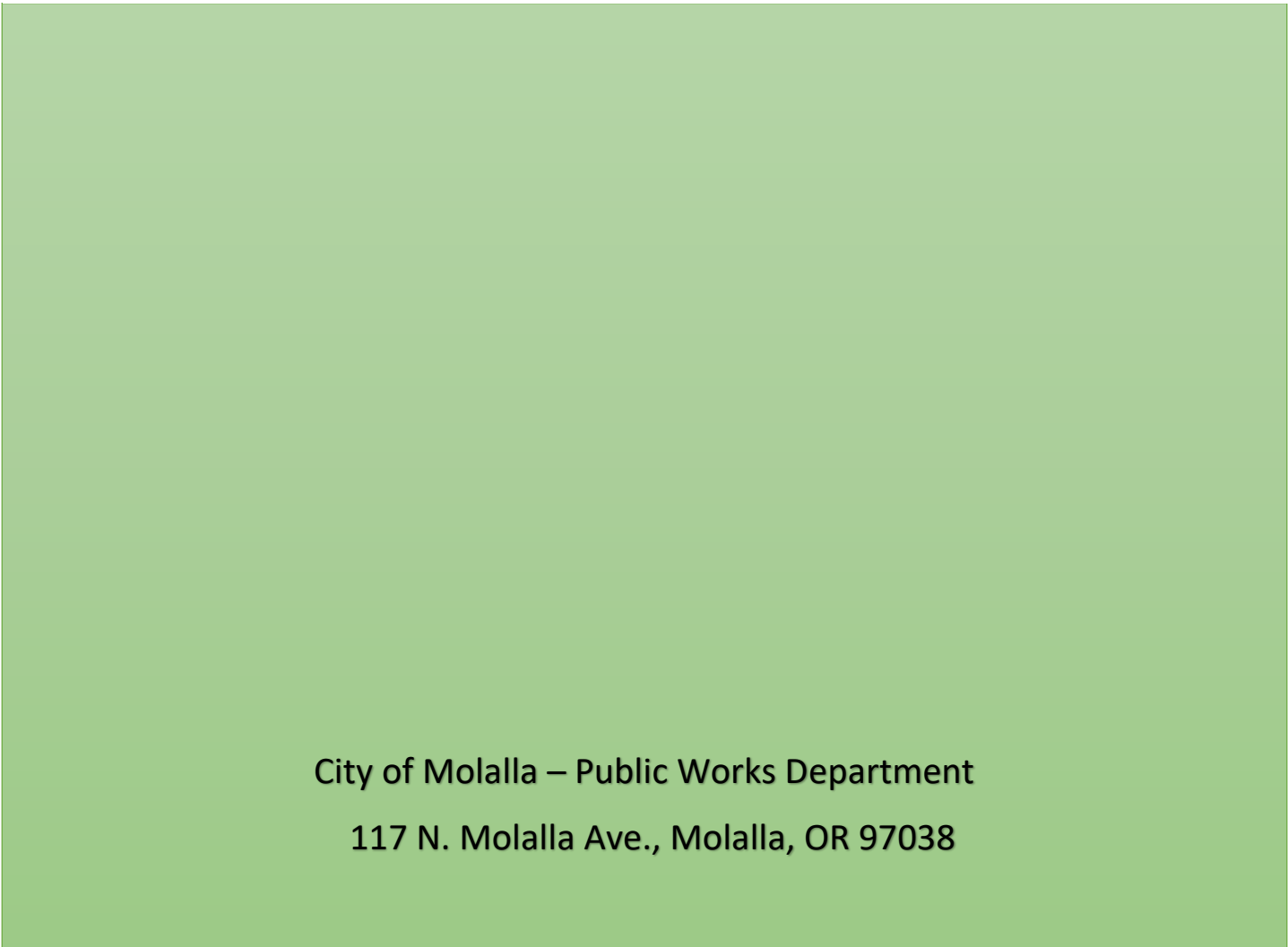
A single treatment and storage capacity facility is an option when both water quality and water quantity must be provided because of receiving water requirements. This application is considered to be an “on-line” facility and in many situations the most cost-effective stormwater management approach. Use the water quality design guidance in this chapter when designing combination facilities. Combination facilities are examples of units that can provide treatment and storage capacity in a single unit. Additional information on combination facilities is discussed in Section 14.10.7. Storage facility design guidance is discussed in **Chapter 12**.

A single treatment and high flow conveyance facility is an option when:

- Water quality must be provided because of receiving water requirements, and
- Regulating the quantity of stormwater is not required.



# 2020 MOLALLA STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION



City of Molalla – Public Works Department  
117 N. Molalla Ave., Molalla, OR 97038

180 or more	0.35	0.40	0.50	0.60	0.70	0.85
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1. Data for east Washington County; data from Clean Water Services.

### 3.3.3 Unit Hydrograph Method

- a. **Hydrograph Analysis:** To obtain a realistic and consistent hydrologic analysis for each development site, all developments shall use the hydrograph analysis method for drainage planning and design unless otherwise approved in advance by the Public Works Department authorized representative. The physical characteristics of the site and the design storm shall be used to determine the magnitude, volume, and duration of the runoff hydrograph. The Santa Barbara Urban Hydrograph (SBUH) will be the primary acceptable unit hydrograph method.

The HYD computer program, developed by King County, Washington, in its “Surface Water Design Manual,” January 1990, uses these methods to generate, add, and route hydrographs. The Public Works Department authorized representative may check all hydrologic calculations using the King County HYD program. However, the City will allow the use of the rational method for analysis of drainage basins of 25 acres or less.

- b. **Design Storm:** Return frequency and duration specify the design storm event. The design storms shall be based on two parameters:
  1. Total rainfall (depth in inches).
  2. Rainfall distribution (dimensionless).
- c. **Design Storm Distribution:** The total depth of rainfall for storms of 24-hour duration is shown in **Table 3.2** The rainfall distribution to be used in the City is the design storm of 24-hour duration based on the standard National Resource Conservation Service (NRCS), formerly known as the Soil Conservation Service (SCS), type 1A rainfall distribution using **Table 3.3**.

**Table 3.2. RAINFALL DISTRIBUTION**

Recurrence Interval (years)	Total Precipitation Depth (inches)
2	2.50
5	3.10
10	3.45
25	3.90
50	4.20
100	4.50

n = Manning's effective roughness coefficient for sheet flow.  
 L = flow length (feet).  
 I = rainfall intensity (inches per hour).  
 S = slope of hydraulic grade line (feet per foot [ft./ft.]

Sheet flow shall not be used for distances over 300 feet.

(2) **Shallow Concentrated Flow:** For slopes less than 0.005 ft./ft. (0.5%), the following equations can be used:

(a) For unpaved surfaces:  $V=16.1345 (S)^{0.5}$

(b) For paved surfaces:  $V=20.3282 (S)^{0.5}$

Where: V = velocity (feet per second).

S = slope (ft./ft.).

(3) **Channel Flow:** A commonly used method of computing average velocity of flow, once it has measurable depth, is the following equation:

$$V = (1.486 / n) \times R^{0.6} \times S^{0.5}$$

Where: V = velocity (ft./s).

n = Manning's roughness coefficient.

S = slope of flow path (ft./ft.).

R = area/perimeter.

### 3.3.4 Water Quality Volume and Flow

The water quality storm is the storm required by regulations to be treated. The storm defines both the volume and rate of runoff.

- a. Water Quality Storm: Total precipitation of 0.36 inches falling in four hours, with a storm return period of 96 hours.
- b. Water Quality Volume (WQV) is the volume of water that is produced by the water quality storm. WQV is equal to 0.36 inches of rainfall over 100% of the new impervious area:

$$\text{Water quality volume (cf)} = \frac{0.36(\text{in}) \times \text{area (sf)}}{12 (\text{in./ft.})}$$

- c. Water Quality Flow (WQF) is the average design flow anticipated from the water quality storm:

$$\text{Water quality flow (cfs)} = \frac{\text{Water quality volume (cf)}}{14,400 \text{ sec}}$$

or

$$\text{Water quality flow (cfs)} = \frac{0.36(\text{in}) \times \text{area (sf)}}{12(\text{in./ft.})(4 \text{ hr.})(60 \text{ min/hr.})(60 \text{ sec/min})}$$

### 3.3.5 Hydraulics

Catch Basins and inlets collect water from an adjacent ditch, gutter line, or pavement and convey the water to a storm sewer or culvert. The inlet systems are to be designed in accordance with the following criteria:

- a. Subsection 3.9.7, "Drain Inlet Design Standards."
- b. The following sources shall be used to locate catch basins and inlets:
  1. ODOT's "Hydraulics Manual."
  2. Hydraulic Engineering Circular 12 (Federal Highway Administration, FHWA-84-202), "Drainage of Highway Pavements."

### 3.3.6 Area Drains

The maximum acceptable intake flow rate for Type II area drains and ditch inlets is shown in **Table 3.4**.



### **3.4 WATER QUANTITY FACILITY DESIGN**

#### **3.4.1 Mitigation Requirement for Quantity**

Each new development is responsible for mitigating its impacts on the public stormwater system. The Public Works Department authorized representative shall determine which of the following techniques may be used to satisfy this requirement. Mitigation requirements shall meet applicable federal, state, and local standards and regulations.

- a. Construction of permanent on-site stormwater quantity detention/retention facilities, designed in accordance with Subsection 3.5, "Water Quality Facility Design."
- b. Enlargement or improvement of the downstream conveyance system shall be done in accordance with Subsection 3.5, "Water Quality Facility Design."

#### **3.4.2 Criteria for Requiring On-Site Detention/Retention**

On-site facilities shall be constructed when any of the following conditions exist:

- a. The proposed development establishes or increases the impervious surface area by more than 5,000 square feet. Development includes new development, redevelopment, and/or partial redevelopment.
- b. There is an identified downstream deficiency, and detention/retention rather than conveyance system enlargement is determined to be the more effective solution.
- c. There is an identified regional detention/retention site within the boundary of the development.
- d. A site within the boundary of the development would qualify as a regional detention/retention site under the criteria or capital plan adopted by the City.
- e. Water quantity facilities are required by City-adopted stormwater master plans or adopted sub-basin master plans.

#### **3.4.3 Water Quantity Facility Design Standards**

- a. **When required, stormwater quantity on-site detention/retention facilities shall be designed to capture runoff so the post-development runoff rates from the site do not exceed the predevelopment runoff rates, based on a 2- through 25-year, 24-hour return storm. Specifically, the 2-, 10-, and 25-year post-development runoff rates shall not exceed their respective 2-, 10-, and 25-year predevelopment runoff rates; unless other criteria are identified in an adopted stormwater master plan or sub-basin master plan.**
- b. Water quantity facilities shall be designed to include inlet energy dissipation and a sediment forebay. The sediment forebay shall consist of an area in which heavier sediments can accumulate and receive periodic maintenance to remove these sediments. The forebay size shall be engineered with respect to the anticipated flow rate, and have a durable surface, such as concrete or rock, suitable for periodic maintenance. A minimum size of 20 square feet of water area is anticipated. Some type of barrier shall separate the forebay area from the main area of the water quantity facility. The invert of the incoming storm drain pipe shall be set at or above the top of the forebay barrier elevation and shall consider the pipe wall thickness. Pond inlets with a drainage area of less than one third-acre ( $\frac{1}{3}$  AC) may not require a sediment forebay.
- c. Water quantity facilities shall be designed to allow for proper functioning with full sediment accumulation as allowed in Subsection 3.6.6, "Sediment Management/Pollutant Control"
- d. When required because of an identified downstream deficiency, stormwater quantity on-site detention/retention facilities shall be designed so the peak runoff rates will not exceed predevelopment rates for the range of storms that cause the downstream deficiency.
- e. The average, wet-season groundwater elevation shall be determined for the proposed stormwater quantity facility. Groundwater elevation may be established through

# **Exhibit I: Geotechnical Report**

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**Real-World Geotechnical Solutions**  
**Investigation • Design • Construction Support**

October 28, 2021  
Project No. 21-5901

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Subject: **GEOTECHNICAL ENGINEERING REPORT**  
**MOLALLA FUEL STATION**  
**710 W MAIN STREET**  
**MOLALLA, OREGON**

This report presents the results of a geotechnical engineering study conducted by GeoPacific Engineering, Inc. (GeoPacific) for the above-referenced project. The purpose of our investigation was to evaluate subsurface conditions at the site and to provide geotechnical recommendations for site development. This geotechnical study was performed in accordance with GeoPacific Proposal No. P-7872, dated September 21, 2021, and your subsequent authorization of our proposal and *General Conditions for Geotechnical Services*.

## **SITE DESCRIPTION AND PROPOSED DEVELOPMENT**

The subject site is located on the south side of West Main Street in the City of Molalla, Clackamas County, Oregon (Figure 1). The site consists of two tax lots that total approximately 0.87 acres in size. Topography is flat to very gently sloping and vegetation consists primarily of short grasses and sparse trees. The site is currently occupied by one home, detached garage, and outbuilding.

Preliminary site plans indicate that the proposed development will consist of a fueling station, convenience store structure, gas pumps and canopy, underground storage tanks, parking areas, and associated underground utilities (Figure 2). A grading plan has not been provided for our review; however, we anticipate cuts and fills will be minimal due to the gently sloping topography.

## REGIONAL GEOLOGIC SETTING

Regionally, the subject site lies within the Willamette Valley/Puget Sound lowland, a broad structural depression situated between the Coast Range on the west and the Cascade Range on the east. A series of discontinuous faults subdivide the Willamette Valley into a mosaic of fault-bounded, structural blocks (Yeats et al., 1996). Uplifted structural blocks form bedrock highlands, while down-warped structural blocks form sedimentary basins.

The subject site is underlain by the Quaternary age (last 1.6 million years) Willamette Formation, a catastrophic flood deposit associated with repeated glacial outburst flooding of the Willamette Valley (Madin, 1990). The last of these outburst floods occurred about 10,000 years ago. These deposits typically consist of horizontally layered, micaceous, silt to coarse sand forming poorly-defined to distinct beds less than 3 feet thick.

Underlying the Willamette Formation is the Miocene to Pleistocene aged (16 to 0.5 million years ago) terrigenous sedimentary rocks belonging to the Troutdale Formation (Hampton, 1972; Gannett and Caldwell, 1998; O'Connor et al., 2001). The Troutdale Formation is informally divided into an upper and lower member. Lithologies in the upper member include lenticular layers of volcanoclastic (vitric) sand, quartzite-bearing gravel, fine-grained sand, silt and clay, micaceous quartz-rich sand, and conglomerate with a cumulative average thickness of 100 to 150 feet. The lower member consists primarily of laminated silty clay and sand with reported thicknesses in water well logs of up to 800 feet. These sediments vary from weakly-consolidated to well-indurated. The Troutdale Formation rests on a thick sequence of Oligocene to Miocene age (about 30 to 14.5 million years old) lava flows of the Columbia River Basalt Group, which forms the crystalline basement of the basin.

## REGIONAL SEISMIC SETTING

At least three potential source zones capable of generating damaging earthquakes are thought to exist in the region. These include the Portland Hills Fault Zone, the Gales Creek-Newberg-Mt. Angel Structural Zone, and the Cascadia Subduction Zone, as discussed below.

### Portland Hills Fault Zone

The Portland Hills Fault Zone is a series of NW-trending faults that include the central Portland Hills Fault, the western Oatfield Fault, and the eastern East Bank Fault. These faults occur in a northwest-trending zone that varies in width between 3.5 and 5.0 miles. The combined three faults vertically displace the Columbia River Basalt by 1,130 feet and appear to control thickness changes in late Pleistocene (approx. 780,000 years) sediment (Madin, 1990). The Portland Hills Fault occurs along the Willamette River at the base of the Portland Hills and is approximately 14.6 miles northeast of the site. The East Bank Fault is oriented roughly parallel to the Portland Hills Fault, on the east bank of the Willamette River, and is located approximately 25.4 miles northeast of the site. The Oatfield Fault occurs along the western side of the Portland Hills and is approximately 14.8 miles north of the site. The Oatfield Fault is considered to be potentially seismogenic (Wong, et al., 2000). Madin and Mabey (1996) indicate the Portland Hills Fault Zone has experienced Late Quaternary (last 780,000 years) fault movement; however, movement has not been detected in the last 20,000 years. The accuracy of the fault mapping is stated to be within 500 meters (Wong, et al., 2000). No historical seismicity is correlated with the mapped portion of the Portland Hills Fault Zone, but in 1991 a M3.5 earthquake occurred on a NW-trending shear plane located 1.3 miles east of the fault (Yelin, 1992). Although there is no definitive evidence of recent activity, the Portland Hills Fault Zone is assumed to be potentially active (Geomatrix Consultants, 1995).

### **Gales Creek-Newberg-Mt. Angel Structural Zone**

The Gales Creek-Newberg-Mt. Angel Structural Zone is a 50-mile-long zone of discontinuous, NW-trending faults that lies about 10.6 miles southwest of the subject site. These faults are recognized in the subsurface by vertical separation of the Columbia River Basalt and offset seismic reflectors in the overlying basin sediment (Yeats et al., 1996; Werner et al., 1992). A geologic reconnaissance and photogeologic analysis study conducted for the Scoggins Dam site in the Tualatin Basin revealed no evidence of deformed geomorphic surfaces along the structural zone (Unruh et al., 1994). No seismicity has been recorded on the Gales Creek Fault or Newberg Fault; however, these faults are considered to be potentially active because they may connect with the seismically active Mount Angel Fault and the rupture plane of the 1993 M5.6 Scotts Mills earthquake (Werner et al., 1992; Geomatrix Consultants, 1995).

### **Cascadia Subduction Zone**

The Cascadia Subduction Zone is a 680-mile-long zone of active tectonic convergence where oceanic crust of the Juan de Fuca Plate is subducting beneath the North American continent at a rate of 4 cm per year (Goldfinger et al., 1996). A growing body of geologic evidence suggests that prehistoric subduction zone earthquakes have occurred (Atwater, 1992; Carver, 1992; Peterson et al., 1993; Geomatrix Consultants, 1995). This evidence includes: (1) buried tidal marshes recording episodic, sudden subsidence along the coast of northern California, Oregon, and Washington, (2) burial of subsided tidal marshes by tsunami wave deposits, (3) paleoliquefaction features, and (4) geodetic uplift patterns on the Oregon coast. Radiocarbon dates on buried tidal marshes indicate a recurrence interval for major subduction zone earthquakes of 250 to 650 years with the last event occurring 300 years ago (Atwater, 1992; Carver, 1992; Peterson et al., 1993; Geomatrix Consultants, 1995). The inferred seismogenic portion of the plate interface lies approximately 50 miles west of the Portland Basin at depths of between 20 and 40 kilometers below the surface.

## **FIELD EXPLORATION**

The site-specific exploration for this study was conducted on October 25, 2021. Three exploratory test pits, designated TP-1 through TP-3, were excavated with a medium sized trackhoe to depths of 8 to 10 feet at the approximate location presented on Figure 2. It should be noted that exploration locations were determined in the field by pacing or taping distances from apparent property corners and other site features shown on the plans provided. As such, the locations of the explorations should be considered approximate.

Explorations were conducted under the full-time observation of a GeoPacific Engineering Geologist. Soil samples obtained from the test pits were classified in the field and representative portions were placed in relatively air-tight plastic bags. These soil samples were then returned to the laboratory for further examination and laboratory testing. Pertinent information including soil sample depths, stratigraphy, soil engineering characteristics, and groundwater occurrence was recorded. Soils were classified in general accordance with the Unified Soil Classification System (USCS).

Summary test pit logs are attached. The stratigraphic contacts shown on the individual logs represent the approximate boundaries between soil types. The actual transitions may be more gradual. The soil and groundwater conditions depicted are only for the specific dates and locations reported, and therefore, are not necessarily representative of other locations and times.

## SUBSURFACE CONDITIONS

The following discussion is a summary of subsurface conditions encountered in our explorations. For more detailed information regarding subsurface conditions at specific exploration locations, refer to the attached exploration logs. Also, please note that subsurface conditions can vary between exploration locations, as discussed in the *Uncertainty and Limitations* section at the conclusion of this report.

### Soils

On-site soils consist of topsoil horizon, Willamette Formation, and Troutdale Formation materials as described below.

**Undocumented Fill:** Undocumented fill was not encountered in our explorations. Areas of fill may be present in areas beyond the exploration locations, especially in the vicinity of the existing structures and driveway.

**Topsoil Horizon:** The ground surface in test pits TP-1 through TP-3 was directly underlain by a topsoil horizon. The topsoil horizon generally consisting of moderately to highly organic, brown silt (ML-OL) that contained fine roots throughout. The topsoil horizon was approximately 9 to 11 inches thick in test pits TP-1 and TP-3 and 18 inches in test pit TP-2.

**Willamette Formation:** Underlying the topsoil horizon in test pits TP-1 through TP-3 were soils belonging to the Willamette Formation. These soils typically consisted of light brown silt (ML) that displayed subtle to strong orange and gray mottling. Willamette Formation soils were generally stiff to very stiff and extended to a depth of approximately 2 to 2.5 feet in test pits.

**Troutdale Formation:** In test pits, the Willamette Formation was underlain by dense to very dense, silty gravel (GM) with trace clay belonging to the Troutdale Formation. The gravels were subrounded, up to 9 inches in diameter, and transitioned to dense to very dense, sandy gravel (GW) with silt and clay below a depth of approximately 7 feet. Gravel belonging to the Troutdale Formation extended beyond the maximum depth of exploration in test pits (8 to 10 feet).

### Groundwater

On October 25, 2021, neither groundwater nor groundwater seepage was encountered in explorations excavated to a maximum depth of 10 feet. Based on our review of available well logs, groundwater is commonly encountered at depths ranging from 10 to 20 feet below the ground surface within the site vicinity (Oregon Water Resources Department, 2021). Experience has shown that temporary perched storm-related groundwater conditions often occur within the surface soils over fine-grained native deposits such as those beneath the site, particularly during the wet season. It is anticipated that groundwater conditions will vary depending on the season, local subsurface conditions, changes in site utilization, and other factors.

## INFILTRATION TESTING

Soil infiltration testing was performed using the open-hole infiltration method in test pit TP-1 at depths of 6 and 10 feet. The soil was pre-saturated for a period of over 3 hours. The water level was measured to the nearest tenth of an inch every fifteen minutes to half hour with reference to the ground surface. Table 1 presents the results of our falling head infiltration tests.

**Table 1. Summary of Infiltration Test Results**

Test Pit	Depth (feet)	Soil Type	Ultimate Infiltration Rate (in/hr)	Hydraulic Head Range (inches)
TP-1	6	Silty Gravel (GM)	0	13
	10	Sandy Gravel (GW) with silt and clay	0.1	19-20

**CONCLUSIONS AND RECOMMENDATIONS**

Results of this study indicate the proposed development is geotechnically feasible, provided the recommendations of this report are incorporated into the design and construction phases of the project. In our opinion, the primary geotechnical constraint to the project is the presence of low permeability soils.

Recommendations are presented below for site preparation and undocumented fill removal; engineered fill; excavating conditions and utility trench backfill; erosion control considerations; wet weather earthwork; pavement design; structural foundations; permanent below-grade walls; concrete slabs-on-grade; and seismic design.

**Site Preparation and Undocumented Fill Removal**

The proposed structure areas should be cleared of debris. If encountered, undocumented fill within the proposed building footprints, beneath pavements or other settlement-sensitive improvements, should be completely removed and replaced with engineered fill. Fill was not encountered in our explorations; however, areas of fill may exist in the vicinity of the existing structures and driveway.

Following removal of surficial debris and any encountered undocumented fill, the exposed subgrade should be ripped or tilled to a depth of 12 inches, moisture conditioned, and compacted in-place prior to the placement of engineered fill or crushed aggregate base for pavement. Exposed subgrade soils should be evaluated by GeoPacifc. For large areas, this evaluation is normally performed by proof-rolling the exposed subgrade with a fully loaded scraper or dump truck. For smaller areas where access is restricted, the subgrade should be evaluated by probing the soil with a steel probe. Soft/loose soils identified during subgrade preparation should be compacted to a firm and unyielding condition or over-excavated and replaced with engineered fill, as described below. The depth of overexcavation, if required, should be evaluated by GeoPacifc at the time of construction.

Following removal, portions of the undocumented fill soils that do not contain organic or other deleterious material may be re-used as engineered fill during dry-weather construction. GeoPacifc should be on-site during fill removal and recompaction efforts, to verify the suitability of soils for recompaction and to monitor the fill placement and compaction efforts. During wet weather, the predominantly silt undocumented fill soils will likely not be usable as engineered fill due to their moisture-sensitive nature.



### **Engineered Fill**

In general, we anticipate that soils from planned cuts and utility trench excavations will be suitable for use as engineered fill provided they are adequately moisture conditioned prior to compacting. Imported fill material should be reviewed by GeoPacific prior to being imported to the site. Oversize material greater than 6 inches in size should not be used within 3 feet of foundation footings, and material greater than 12 inches in diameter should not be used in engineered fill.

Engineered fill should be compacted in horizontal lifts not exceeding 8 inches using standard compaction equipment. We recommend that engineered fill be compacted to at least 95 percent of the maximum dry density determined by ASTM D698 (Standard Proctor) or equivalent. On-site soils may be wet or dry of optimum; therefore, we anticipate that moisture conditioning of native soil will be necessary for compaction operations.

Proper test frequency and earthwork documentation usually requires daily observation and testing during stripping, rough grading, and placement of engineered fill. Field density testing should generally conform to ASTM D2922 and D3017, or D1556. Engineered fill should be periodically observed and tested by the project geotechnical engineer or his representative. Typically, one density test is performed for at least every 2 vertical feet of fill placed or every 500 cubic yards, whichever requires more testing. Because testing is performed on an on-call basis, we recommend that the earthwork contractor be held contractually responsible for test scheduling and frequency.

### **Excavating Conditions and Utility Trench Backfill**

We anticipate that on-site soils can be excavated using conventional heavy equipment to a depth of 10 feet. Maintenance of safe working conditions, including temporary excavation stability, is the responsibility of the contractor. Actual slope inclinations at the time of construction should be determined based on safety requirements and actual soil and groundwater conditions. All temporary cuts in excess of 4 feet in height should be sloped in accordance with U.S. Occupational Safety and Health Administration (OSHA) regulations (29 CFR Part 1926), or be shored. The existing native near surface soils classify as Type B Soil and temporary excavation side slope inclinations as steep as 1H:1V may be assumed for planning purposes. This cut slope inclination is applicable to excavations above the water table only.

Shallow, perched groundwater may be encountered during the wet weather season and should be anticipated in excavations and utility trenches.

Vibrations created by traffic and construction equipment may cause some caving and raveling of excavation walls. In such an event, lateral support for the excavation walls should be provided by the contractor to prevent loss of ground support and possible distress to existing or previously constructed structural improvements.

PVC pipe should be installed in accordance with the procedures specified in ASTM D2321. We recommend that structural trench backfill be compacted to at least 95% of the maximum dry density obtained by Standard Proctor (ASTM D698) or equivalent. Initial backfill lift thicknesses for a ¾"-0 crushed aggregate base may need to be as great as 4 feet to reduce the risk of flattening underlying flexible pipe. Subsequent lift thickness should not exceed 1 foot. If imported granular fill material is used, then the lifts for large vibrating plate-compaction equipment (e.g. hoe compactor attachments) may be up to 2 feet, provided that proper compaction is being achieved and each lift is tested. Use of large vibrating compaction equipment should be carefully monitored near existing structures and improvements due to the potential for vibration-induced damage.



Adequate density testing should be performed during construction to verify that the recommended relative compaction is achieved. Typically, at least one density test is taken for every 4 vertical feet of backfill on each 200-lineal-foot section of trench.

### **Erosion Control Considerations**

During our field exploration program, we did not observe soil types that would be considered highly susceptible to erosion. In our opinion, the primary concern regarding erosion potential will occur during construction, in areas that have been stripped of vegetation. Erosion at the site during construction can be minimized by implementing the project erosion control plan, which should include judicious use of silt fences, straw wattles, and fiber rolls. If used, these erosion control devices should be in place and remain in place throughout site preparation and construction.

Erosion and sedimentation of exposed soils can also be minimized by quickly re-vegetating exposed areas of soil, and by staging construction such that large areas of the project site are not denuded and exposed at the same time. Areas of exposed soil requiring immediate and/or temporary protection against exposure should be covered with either mulch or erosion control netting/blankets. Areas of exposed soil requiring permanent stabilization should be seeded with an approved grass seed mixture, or hydroseeded with an approved seed-mulch-fertilizer mixture.

### **Wet Weather Earthwork**

Soils underlying the site are likely to be moisture sensitive and may be difficult to handle or traverse with construction equipment during periods of wet weather. Earthwork is typically most economical when performed under dry weather conditions. Earthwork performed during the wet-weather season will probably require expensive measures such as cement treatment or imported granular material to compact fill to the recommended engineering specifications. If earthwork is to be performed or fill is to be placed in wet weather or under wet conditions when soil moisture content is difficult to control, the following recommendations should be incorporated into the contract specifications.

- Earthwork should be performed in small areas to minimize exposure to wet weather. Excavation or the removal of unsuitable soils should be followed promptly by the placement and compaction of clean engineered fill. The size and type of construction equipment used may have to be limited to prevent soil disturbance. Under some circumstances, it may be necessary to excavate soils with a backhoe to minimize subgrade disturbance caused by equipment traffic;
- The ground surface within the construction area should be graded to promote run-off of surface water and to prevent the ponding of water;
- Material used as engineered fill should consist of clean, granular soil containing less than 5 percent fines. The fines should be non-plastic. Alternatively, cement treatment of on-site soils may be performed to facilitate wet weather placement;
- The ground surface within the construction area should be sealed by a smooth drum vibratory roller, or equivalent, and under no circumstances should be left uncompacted and exposed to moisture. Soils which become too wet for compaction should be removed and replaced with clean granular materials;
- Excavation and placement of fill should be observed by the geotechnical engineer to verify that all unsuitable materials are removed and suitable compaction and site drainage is achieved; and

- Geotextile silt fences, straw wattles, and fiber rolls should be strategically located to control erosion.

If cement or lime treatment is used to facilitate wet weather construction, GeoPacific should be contacted to provide additional recommendations and field monitoring.

**Pavement Design**

For design purposes, we used an estimated resilient modulus of 9,000 for compacted native soil. Table 2 presents our recommended minimum pavement section for dry weather construction for the proposed parking lot and access driveway.

**Table 2. Recommended Minimum Dry-Weather Pavement Section**

Material Layer	Parking Lots and Access Driveways	Compaction Standard
Asphaltic Concrete (AC)	4 in.	92% of Rice Density AASHTO T-209
Crushed Aggregate Base ¾"-0 (leveling course)	2 in.	95% of Modified Proctor AASHTO T-180
Crushed Aggregate Base 1½"-0	8 in.	95% of Modified Proctor AASHTO T-180
Subgrade	12 in.	95% of Standard Proctor AASHTO T-99 or equivalent

Subgrade in pavement areas should be ripped or tilled to a minimum depth of 12 inches, moisture conditioned, and recompact in-place to at least 95 percent of ASTM D698 (Standard Proctor) or equivalent. Any pockets of organic debris or loose fill encountered during subgrade preparation should be removed and replaced with engineered fill (see *Site Preparation* Section). In order to verify subgrade strength, we recommend proof-rolling directly on subgrade with a loaded dump truck during dry weather and on top of base course in wet weather. Soft areas that pump, rut, or weave should be stabilized prior to paving.

The moisture sensitive subgrade soils make the site a difficult wet weather construction project. General recommendations for wet weather construction are provided in the following report section. However, the subgrade and construction plan should be evaluated at the time of construction so that condition-specific recommendations can be provided.

During placement of pavement section materials, density testing should be performed to verify compliance with project specifications. Generally, one subgrade, one base course, and one asphalt compaction test is performed for every 100 to 200 linear feet of paving.

**Structural Foundations**

Based on our understanding of the proposed project and the results of our exploration program, and assuming our recommendations for site preparation are followed, native deposits and/or engineered fill soils should be encountered at or near the foundation level of the proposed structures. These soils are generally medium dense to dense and should provide adequate support of the structural loads.

Shallow, conventional isolated or continuous spread footings may be used to support the proposed structures, provided they are founded on competent native soils, or compacted engineered fill placed directly upon the competent native soils. We recommend a maximum allowable bearing pressure of 2,000 pounds per square foot (psf).

The recommended maximum allowable bearing pressures may be increased by 1/3 for short term transient conditions such as wind and seismic loading. All footings should be founded at least 18 inches below the lowest adjacent finished grade. Minimum footing widths should be determined by the project engineer/architect in accordance with applicable design codes.

Assuming construction is accomplished as recommended herein, and for the foundation loads anticipated, we estimate total settlement of spread foundations of less than about 1 inch and differential settlement between two adjacent load-bearing components supported on competent soil of less than about ½ inch. We anticipate that the majority of the estimated settlement will occur during construction, as loads are applied.

Wind, earthquakes, and unbalanced earth loads will subject the proposed structure to lateral forces. Lateral forces on a structure will be resisted by a combination of sliding resistance of its base or footing on the underlying soil and passive earth pressure against the buried portions of the structure. For use in design, a coefficient of friction of 0.42 may be assumed along the interface between the base of the footing and subgrade soils. Passive earth pressure for buried portions of structures may be calculated using an equivalent fluid weight of 320 pounds per cubic foot (pcf), assuming footings are cast against dense, natural soils or engineered fill. The recommended coefficient of friction and passive earth pressure values do not include a safety factor. The upper 12 inches of soil should be neglected in passive pressure computations unless it is protected by pavement or slabs on grade.

Footing excavations should be trimmed neat and the bottom of the excavation should be carefully prepared. Loose, wet or otherwise softened soil should be removed from the footing excavation prior to placing reinforcing steel bars.

The above foundation recommendations are for dry weather conditions. Due to the high moisture sensitivity of on-site soils, construction during wet weather may require overexcavation of footings and backfill with compacted, crushed aggregate. GeoPacific should observe foundation excavations prior to placing formwork and reinforcing steel, to verify that adequate bearing soils have been reached.

### **Permanent Below-Grade Walls**

Lateral earth pressures against below-grade retaining walls will depend upon the inclination of any adjacent slopes, type of backfill, degree of wall restraint, method of backfill placement, degree of backfill compaction, drainage provisions, and magnitude and location of any adjacent surcharge loads. At-rest soil pressure is exerted on a retaining wall when it is restrained against rotation. In contrast, active soil pressure will be exerted on a wall if its top is allowed to rotate or yield a distance of roughly 0.001 times its height or greater.

If the subject retaining walls will be free to rotate at the top, they should be designed for an active earth pressure equivalent to that generated by a fluid weighing 35 pcf for level backfill against the wall. For restrained wall, an at-rest equivalent fluid pressure of 55 pcf should be used in design, again assuming level backfill against the wall. These values assume that the recommended drainage provisions are incorporated, and hydrostatic pressures are not allowed to develop against the wall.

During a seismic event, lateral earth pressures acting on below-grade structural walls will increase by an incremental amount that corresponds to the earthquake loading. Based on the Mononobe-Okabe equation and peak horizontal accelerations appropriate for the site location, seismic loading should be modeled using the active or at-rest earth pressures recommended above, plus an incremental rectangular-shaped seismic load of magnitude  $6.5H$ , where  $H$  is the total height of the wall.

We assume relatively level ground surface below the base of the walls. As such, we recommend passive earth pressure of 390 pcf for use in design, assuming wall footings are cast against competent native soils or engineered fill. If the ground surface slopes down and away from the base of any of the walls, a lower passive earth pressure should be used and GeoPacific should be contacted for additional recommendations.

A coefficient of friction of 0.42 may be assumed along the interface between the base of the wall footing and subgrade soils. The recommended coefficient of friction and passive earth pressure values do not include a safety factor, and an appropriate safety factor should be included in design. The upper 12 inches of soil should be neglected in passive pressure computations unless it is protected by pavement or slabs on grade.

The above recommendations for lateral earth pressures assume that the backfill behind the subsurface walls will consist of properly compacted structural fill, and no adjacent surcharge loading. If the walls will be subjected to the influence of surcharge loading within a horizontal distance equal to or less than the height of the wall, the walls should be designed for the additional horizontal pressure. For uniform surcharge pressures, a uniformly distributed lateral pressure of 0.3 times the surcharge pressure should be added. Traffic surcharges may be estimated using an additional vertical load of 250 psf (2 feet of additional fill), in accordance with local practice.

The recommended equivalent fluid densities assume a free-draining condition behind the walls so that hydrostatic pressures do not build-up. This can be accomplished by placing a 12- to 18-inch wide zone of sand and gravel containing less than 5 percent fines against the walls. A 3-inch minimum diameter perforated, plastic drain pipe should be installed at the base of the walls and connected to a suitable discharge point to remove water in this zone of sand and gravel. The drain pipe should be wrapped in filter fabric (Mirafi 140N or other as approved by the geotechnical engineer) to minimize clogging.

GeoPacific should be contacted during construction to verify subgrade strength in wall keyway excavations, to verify that backslope soils are in accordance with our assumptions, and to take density tests on the wall backfill materials.

Structures should be located a horizontal distance of at least  $1.5H$  away from the back of the retaining wall, where  $H$  is the total height of the wall. GeoPacific should be contacted for additional foundation recommendations where structures are located closer than  $1.5H$  to the top of any wall.

### **Concrete Slabs-on-Grade**

Preparation of areas beneath concrete slab-on-grade floors should be performed as recommended in the *Site Preparation and Undocumented Fill Removal* section. Care should be taken during excavation for foundations and floor slabs, to avoid disturbing subgrade soils. If subgrade soils have been adversely impacted by wet weather or otherwise disturbed, the surficial soils should be scarified to a minimum depth of 8 inches, moisture conditioned to within about 3 percent of

optimum moisture content, and compacted to engineered fill specifications. Alternatively, disturbed soils may be removed and the removal zone backfilled with additional crushed rock.

For evaluation of the concrete slab-on-grade floors using the beam on elastic foundation method, a modulus of subgrade reaction of 150 kcf (87 pci) should be assumed for the medium stiff native silt soils anticipated at subgrade depth. This value assumes the concrete slab system is designed and constructed as recommended herein, with a minimum thickness of crushed rock of 8 inches beneath the slab.

Interior slab-on-grade floors should be provided with an adequate moisture break. The capillary break material should consist of ODOT open graded aggregate per ODOT Standard Specifications 02630-2. The minimum recommended thickness of capillary break materials on re-compacted soil subgrade is 8 inches. The total thickness of crushed aggregate will be dependent on the subgrade conditions at the time of construction, and should be verified visually by proof-rolling. Under-slab aggregate should be compacted to at least 90% of its maximum dry density as determined by ASTM D1557 or equivalent.

In areas where moisture will be detrimental to floor coverings or equipment inside the proposed structure, appropriate vapor barrier and damp-proofing measures should be implemented. A commonly applied vapor barrier system consists of a 10-mil polyethylene vapor barrier placed directly over the capillary break material. Other damp/vapor barrier systems may also be feasible. Appropriate design professionals should be consulted regarding vapor barrier and damp proofing systems, ventilation, building material selection and mold prevention issues, which are outside GeoPacific's area of expertise.

**Seismic Design**

The Oregon Department of Geology and Mineral Industries (DOGAMI), Oregon HazVu: 2021 Statewide GeoHazards Viewer indicates that the site is in an area where *very strong* ground shaking is anticipated during an earthquake (DOGAMI HazVu, 2021). Structures should be designed to resist earthquake loading in accordance with the methodology described in the 2018 International Building Code (IBC) with applicable Oregon Structural Specialty Code (OSSC) revisions (current 2020). We recommend Site Class D be used for design as defined in ASCE 7, Chapter 20, Table 20.3-1. Design values determined for the site using the ATC (Applied Technology Council) *ASCE7-16 Hazards by Location online Tool* website are summarized in Table 3.

**Table 3. Recommended Earthquake Ground Motion Parameters (ATC 2021)**

Parameter	Value
Location (Lat, Long), degrees	45.148, -122.587
Mapped Spectral Acceleration Values (MCE):	
Peak Ground Acceleration $PGA_M$	0.419 g
Short Period, $S_s$	0.727 g
1.0 Sec Period, $S_1$	0.343 g
Soil Factors for Site Class D:	
$F_a$	1.218
$F_v$	*1.957
$SD_s = 2/3 \times F_a \times S_s$	0.59 g
$SD_1 = 2/3 \times F_v \times S_1$	*0.447 g
Seismic Design Category	D

\* The  $F_v$  value reported in the above table is a straight-line interpolation of mapped spectral response acceleration at 1-second period,  $S_1$  per Table 1613.2.3(2) of OSSC 2019 with the assumption that Exception 2 of ASCE 7-16 Chapter 11.4.8 is met.  $SD_1$  is based on the  $F_v$  value. The structural engineer should evaluate exception 2 and determine whether or not the exception is met. If Exception 2 is not met, and the long-period site coefficient ( $F_v$ ) is required for design, GeoPacific Engineering can be consulted to provide a site-specific procedure as per ASCE 7-16, Chapter 21.

Soil liquefaction is a phenomenon wherein saturated soil deposits temporarily lose strength and behave as a liquid in response to earthquake shaking. Soil liquefaction is generally limited to loose, granular soils located below the water table. According to the Oregon HazVu: Statewide Geohazards Viewer, the subject site is regionally characterized as not having a risk of soil liquefaction (DOGAMI: HazVu, 2021). Based on our explorations, soils underlying the site are not prone to liquefaction.



## UNCERTAINTIES AND LIMITATIONS

We have prepared this report for the owner and their consultants for use in design of this project only. This report should be provided in its entirety to prospective contractors for bidding and estimating purposes; however, the conclusions and interpretations presented in this report should not be construed as a warranty of the subsurface conditions. Experience has shown that soil and groundwater conditions can vary significantly over small distances. Inconsistent conditions can occur between explorations that may not be detected by a geotechnical study. If, during future site operations, subsurface conditions are encountered which vary appreciably from those described herein, GeoPacifc should be notified for review of the recommendations of this report, and revision of such if necessary.

Sufficient geotechnical monitoring, testing and consultation should be provided during construction to confirm that the conditions encountered are consistent with those indicated by explorations. The checklist attached to this report outlines recommended geotechnical observations and testing for the project. Recommendations for design changes will be provided should conditions revealed during construction differ from those anticipated, and to verify that the geotechnical aspects of construction comply with the contract plans and specifications.

Within the limitations of scope, schedule and budget, GeoPacifc attempted to execute these services in accordance with generally accepted professional principles and practices in the fields of geotechnical engineering and engineering geology at the time the report was prepared. No warranty, expressed or implied, is made. The scope of our work did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous or toxic substances in the soil, surface water, or groundwater at this site.

We appreciate this opportunity to be of service.

Sincerely,

**GEOPACIFIC ENGINEERING, INC.**



Beth K. Rapp, C.E.G.  
Senior Engineering Geologist



Reviewed by: James D. Imbrie, G.E., C.E.G.  
Principal Geotechnical Engineer

Attachments: References  
Figure 1 – Vicinity Map  
Figure 2 – Site and Exploration Plan  
Test Pit Logs (TP-1 – TP-3)

## REFERENCES

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Molalla Fuel Station  
Project No. 21-5901

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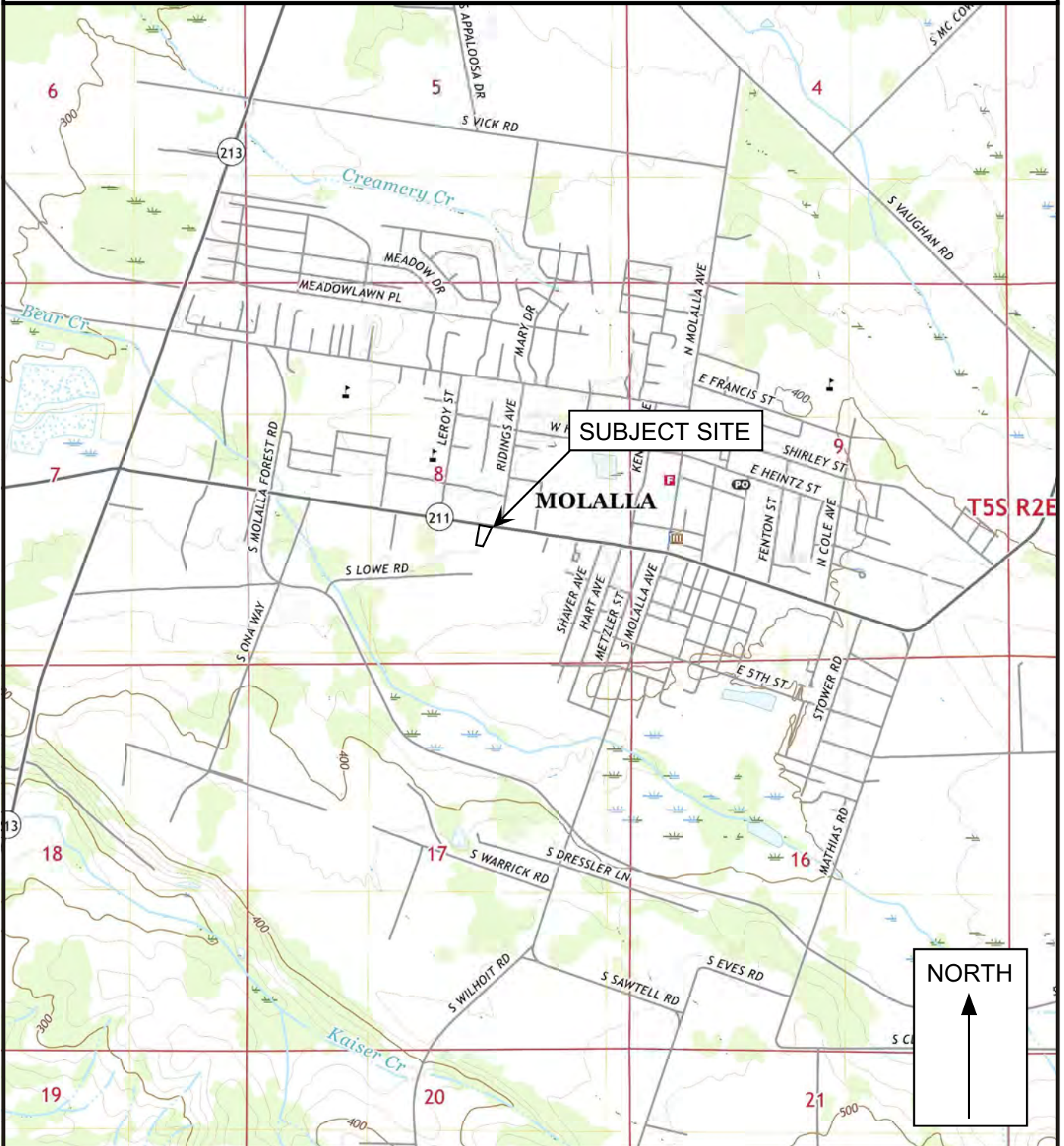
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14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445

VICINITY MAP



**Legend** Date: 10/28/2021  
 Approximate Scale 1 in = 2,000 feet Drawn by: EKR  
 Base map: U.S. Geological Survey 7.5 minute Topographic Map Series, Molalla, Oregon Quadrangle, 2020.

Project: Molalla Fuel Station  
 Molalla, Oregon

Project No. 21-5901

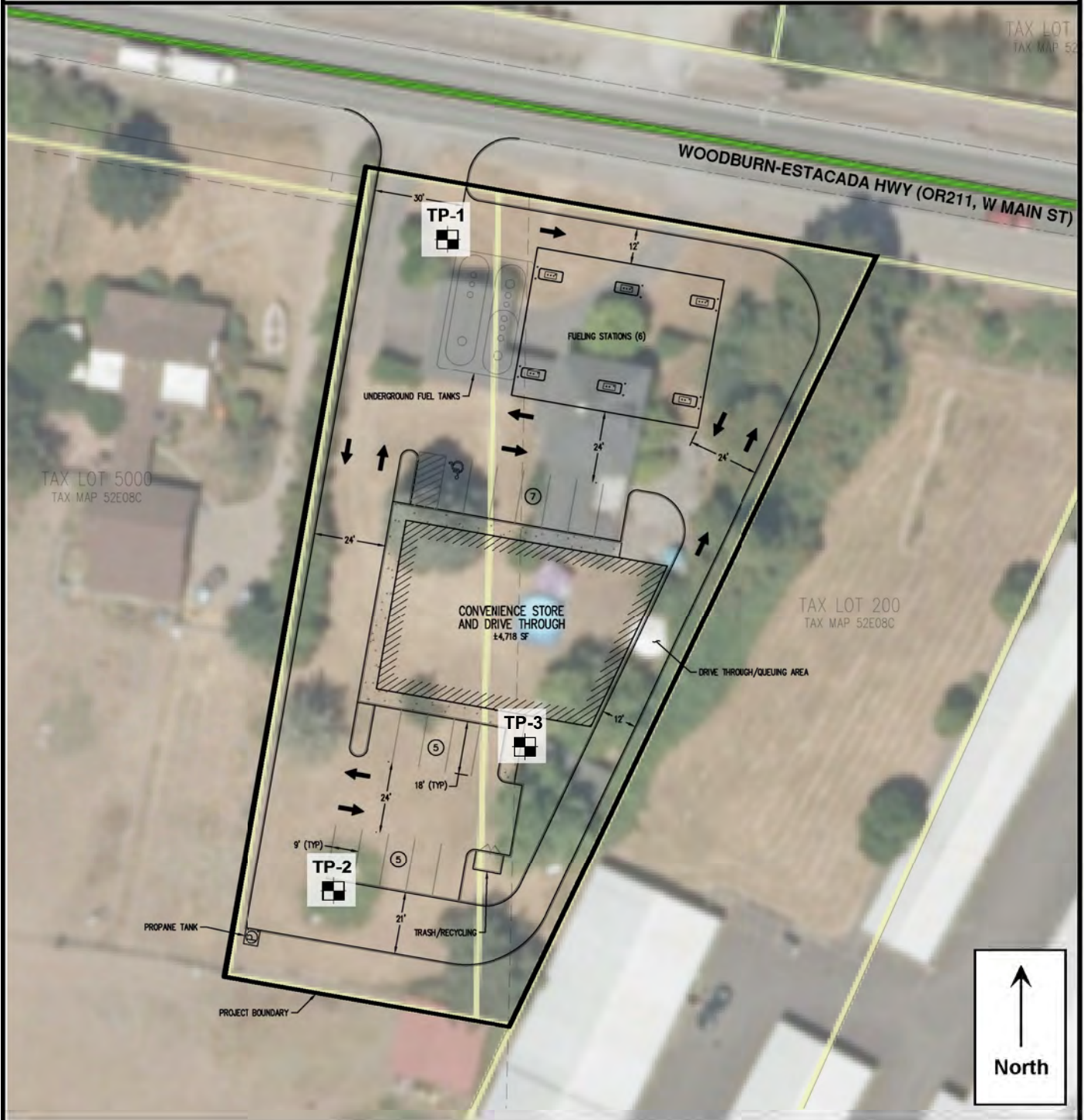
FIGURE 1





14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445

# SITE PLAN AND EXPLORATION LOCATIONS



## Legend

**TP-1** Test Pit Designation and Approximate Location

Date: 10/28/2021  
 Drawn by: EKR



Project: Molalla Fuel Station  
 Molalla, Oregon

Project No. 21-5901

FIGURE 2



14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445

# TEST PIT LOG

Project: Molalla Fuel Station  
 Molalla, Oregon

Project No. 21-5901

Test Pit No. **TP-1**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1	2.5					Moderately organic SILT (OL-ML), dark brown, trace fine roots throughout, loose, moist (Topsoil Horizon)
2	1.5					Very stiff, SILT (ML), light brown, micaceous, trace roots throughout, subtle orange and gray mottling, damp (Willamette Formation)
3						
4						
5						Dense to very dense, silty GRAVEL (GM), trace clay, gray to light brown, subtle to strong orange and gray mottling, subrounded, trace black staining, moist (Troutdale Formation)
6						
7						
8						Dense to very dense, sandy GRAVEL (GW), with silt and clay, gray to light brown, subtle to strong orange and gray mottling, subrounded, trace black staining, moist (Troutdale Formation)
9						
10						Test Pit Terminated at 10 Feet.
11						Note: No seepage or groundwater encountered.
12						

**LEGEND**



Bag Sample



Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 10/25/2021

Logged By: B. Rapp

Surface Elevation:



14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445

# TEST PIT LOG

Project: Molalla Fuel Station  
 Molalla, Oregon

Project No. 21-5901

Test Pit No. **TP-2**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1	2.0					Moderately to highly organic SILT (OL-ML), dark brown, trace fine roots throughout, loose, moist (Topsoil Horizon)
2	2.0					Very stiff, SILT (ML), light brown, micaceous, trace roots throughout, subtle to strong orange and gray mottling, moist (Willamette Formation)
3						
4						
5						Dense to very dense, silty GRAVEL (GM), trace clay, gray to light brown, subtle to strong orange and gray mottling, subrounded, gravel is up to 9 inches in diameter, trace black staining, moist (Troutdale Formation)
6						
7						
8						Dense to very dense, sandy GRAVEL (GW), with silt and clay, gray to light brown, subtle to strong orange and gray mottling, subrounded, trace black staining, moist (Troutdale Formation)
9						
10						Test Pit Terminated at 10 Feet.
11						Note: No seepage or groundwater encountered.
12						

**LEGEND**



100 to 1,000 g  
Bag Sample



5 Gal. Bucket  
Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 10/25/2021

Logged By: B. Rapp

Surface Elevation:



14835 SW 72nd Avenue  
 Portland, Oregon 97224  
 Tel: (503) 598-8445

# TEST PIT LOG

Project: Molalla Fuel Station  
 Molalla, Oregon

Project No. 21-5901

Test Pit No. **TP-3**

Depth (ft)	Pocket Penetrometer (tons/ft <sup>2</sup> )	Sample Type	In-Situ Dry Density (lb/ft <sup>3</sup> )	Moisture Content (%)	Water Bearing Zone	Material Description
1	2.0					Moderately to highly organic SILT (OL-ML), dark brown, trace fine roots throughout, loose, moist (Topsoil Horizon)
2	1.5					Very stiff, SILT (ML), trace clay, light brown, micaceous, trace roots throughout, subtle orange and gray mottling, moist (Willamette Formation)
3						
4						
5						Dense to very dense, silty GRAVEL (GM), trace clay, gray to light brown, subtle to strong orange and gray mottling, subrounded, trace black staining, moist (Troutdale Formation)
6						
7						
8						Dense to very dense, sandy GRAVEL (GW), with silt and clay, gray to light brown, subtle to strong orange and gray mottling, subrounded, trace black staining, moist (Troutdale Formation)
9						Test Pit Terminated at 8 Feet.
10						Note: No seepage or groundwater encountered.
11						
12						

**LEGEND**



Bag Sample



Bucket Sample



Shelby Tube Sample



Seepage



Water Bearing Zone



Water Level at Abandonment

Date Excavated: 10/25/2021

Logged By: B. Rapp

Surface Elevation:

## Exhibit D:

*EXHIBIT D: Loading Comments For SDR04-2022  
Submitted By Applicant – 6/28/2022*

## Dan Zinder

---

**From:** Daisy Goebel <goebeld@aks-eng.com>  
**Sent:** Tuesday, June 28, 2022 9:26 AM  
**To:** Dan Zinder  
**Cc:** Zach Pelz; Jacki Herb  
**Subject:** RE: Staff Report Question for SDR04-2022 - Loading Areas

Good morning, Dan-

Sounds great, thanks for the heads up. The underground storage tanks are accessible for fueling trucks with a wheelbase greater than 40'. We don't anticipate having regular deliveries to the convenience store via 40+' trucks that would require a commercial loading zone.

Thank you,

**Daisy Goebel**

**AKS ENGINEERING & FORESTRY, LLC**

P: 503.400.6028 Ext. 420 | F: 503.400.7722 | [www.aks-eng.com](http://www.aks-eng.com) | [Goebeld@aks-eng.com](mailto:Goebeld@aks-eng.com)

---

**From:** Dan Zinder <dzinder@cityofmolalla.com>  
**Sent:** Tuesday, June 28, 2022 9:04 AM  
**To:** Zach Pelz <pelzz@aks-eng.com>  
**Cc:** Jacki Herb <herbj@aks-eng.com>; Daisy Goebel <goebeld@aks-eng.com>  
**Subject:** RE: Staff Report Question for SDR04-2022 - Loading Areas

**EXTERNAL EMAIL:** This email originated from outside AKS Engineering & Forestry.

AKS team,

I'm finalizing the staff report today. Please review below and respond. Thanks.

Best,  
*Dan Zinder*  
503.759.0226

---

**From:** Dan Zinder  
**Sent:** Friday, June 24, 2022 5:06 PM  
**To:** 'Zach Pelz' <[pelzz@aks-eng.com](mailto:pelzz@aks-eng.com)>  
**Subject:** Staff Report Question for SDR04-2022 - Loading Areas

Good afternoon Zach,

I'm making my way through the staff report. One question that came up – your narrative did not respond to the loading section of the code.



## 17-3.5.040 Loading Areas

- A. **Purpose.** The purpose of Section 17-3.5.050 is to provide adequate loading areas commercial and industrial uses that do not interfere with the operation of adjacent streets.
- B. **Applicability.** Section 17-3.5.050 applies to uses that are expected to have service delivery truck visits. It applies only to uses visited by trucks with a 40-foot or longer wheelbase, at a frequency of one or more vehicles per week. The Planning Official

---

determine through a Type I review the number, size, and location of required loading areas, if any.

Do you expect deliveries from trucks with a wheelbase greater than 40'? If so, please respond to the criteria below what I just pasted and we can add it to the report. If not, then I can hit it with a Does Not Apply.

We anticipate having the report posted on our website by midday Wednesday next week and I'll let you know when it's up.

Best,

**Dan Zinder**

*Senior Planner, City of Molalla*

117 N Molalla Ave | PO Box 248

Direct: 503.759.0226 | Office: 503.829.6855

**Exhibit E:**

*Molalla Public Works Comments*



**Public Works Department**

117 N Molalla Avenue

PO Box 248

Molalla, Oregon 97038

Phone: (503) 829-6855

Fax: (503) 829-3676

June 22, 2022

TO: Mac Corthell, Planning Director  
Dan Zinder, Assistant Planner  
Ronda Lee, Planning Specialist

FROM: Sam Miller, Sr Engineer Tech.

**RE: 710 W Main Street (SDR04-2022 Molalla Petroleum) Tax Lot 52E08C00300 & 390**

Based on a review of the materials submitted, Staff has prepared the following comments. These comments are applicable to the subject application; any subsequent modifications may require amendments and/or additions. These conditions do not include requirements already set forth in the municipal code.

**CONDITIONS**

1. Specific Requirements To This Site:

A. Transportation – in accordance with MMC 17-3.6.020 Transportation Standards:

1. A Traffic Impact Analysis analyzing all warrants for the OR-211 and Leroy Ave Intersection is required. Applicant has prepared and submitted a Traffic Impact Analysis for the proposed development which has been analyzed and accepted by the City and ODOT. The Proposed development does not meet signal threshold at the OR 211/Leroy intersection and therefor no signal improvements will be required.
2. OR 211 (W Main Street): OR 211 (W Main Street) is a arterial street under Oregon Department of Transportation (ODOT) jurisdiction. Applicant will be required to abandon the two existing driveways access points to the property and relocate existing east access on the west side of adjacent property and take access from a shared connection off OR 211 (W Main Street) between the subject site and the commercial development to the west, minimizing the number of driveways taking access directly from W Main Street. Driveway access shall extend to the southern edge of the parcel and connect to adjacent Multi-Family development.
3. Access to the State highway is regulated by OAR 734.51. Applicant is required to obtain a State Highway Approach Road Permit; donate right of way to ODOT to implement the OR 211 cross section in the city's TSP, construct frontage improvements consistent with the TSP, and obtain permits for work in the ODOT right of way.
4. Right-of-way Dedications/Donations: On ODOT rights of way, applicant will be required to donate sufficient right-of-way along variable width improvements and construct curb,

sidewalk, and bike lanes as necessary to be consistent with Molalla TSP, ODOT and ADA standards. ODOT requires donations of right-of-way to follow the requirements of Chapter 5.322. Developer Mitigation Donation in the ODOT Right-of-Way Manual.

5. Access to public streets shall be limited to the location identified on the application materials or as required by ODOT. All accesses shall be constructed in such a manner as to eliminate turning conflicts. The proposed width for access shall meet ODOT requirements.
6. Applicant will be required to dedicate a 10-foot-wide public utility easement fronting the public right-of-way if one does not exist. Applicant shall provide proof of existing dedication.
7. Roadway lighting is required on all new development. Applicant shall be required to install roadway lighting. Location and number shall be determined during design review.
8. Transportation SDC's – In accordance with MMC 13.14 this design review does increase the impacts to the public improvement facility and is therefore not exempt from transportation SDC charges. SDC's shall be calculated and payable in accordance with the SDC methodology at the time of building permit authorization.

B. Storm - in Accordance with MMC 17-3.6.050 Storm Drainage and Surface Water Management:

1. Applicant proposes to collect and detain all stormwater onsite and discharge to Cascade Center Development facilities. Onsite private storm system shall comply with plumbing code requirements. The detention and flow control facilities shall be reviewed, permitted, and inspected by Public Works. The onsite storm conveyance system shall be reviewed and inspected by Clackamas County Building under a plumbing permit, in Accordance with MMC 13.13 Surface Water Management
2. Stormwater SDC's – In accordance with MMC 13.14 this design review does increase the impacts to the public improvement facility and is therefore not exempt from stormwater SDC charges. SDC's shall be calculated and payable in accordance with the SDC methodology at the time of building permit authorization.

C. Sanitary- in accordance with MMC 17-3.6.040 Sanitary Sewer Service Improvements:

1. Applicant proposes to connect to existing 6-inch sanitary lateral located on the property. Applicant will be required to construct a public sanitary sewer cleanout meeting Molalla Standard Specifications for Public Works Construction.
2. Sanitary SDC's – In accordance with MMC 13.14 this design review does not increase the impacts to the public improvement facility and is therefore exempt from sanitary SDC charge.

D. Water- in accordance with MMC 17-3.6.040 Water Service Improvements:

1. Applicant proposes to connect to existing water service and provide separate fire

protection DCDA Vault with FDC. Extension of fire protection will be from main line connection located on OR 211 (W Main Street). If upsizing of water service is required during the review process, SDC will apply in accordance with MMC 13.14 for water and sanitary along with crediting for existing service.

2. Should Fire Department regulations require additional fire flow that results in looping the water line through the site, then applicants engineer shall coordinate with Public Works for the extension of a public water line, and dedication of easements.
3. Water SDC's – In accordance with MMC 13.14 this design review does not increase the impacts to the public improvement facility and is therefore exempt from water SDC charges

E. Parks:

1. Parks SDC's – In accordance with SMC 13.70.110 this commercial design review is exempt from parks SDC charges.

F. Franchise Utility Services:

1. All utilities to the project shall be served underground services. No overhead crossings of public right of way shall be approved by the city.

## **DESIGN REQUIREMENTS & POLICIES**

1. General Requirements:

- A. For commercial and industrial development projects, No building permit may be issued until all required public facility improvements are in place and approved by the City Engineer, or otherwise bonded, in conformance with the provision of the Code and the Public Works Design Standards in accordance with MMC 17-3.6 Public Facilities. All public facilities shall be completed and accepted by the Public Works Department prior to issuance of final occupancy.
- B. From the materials submitted, it appears that the storm drain, domestic water and sanitary sewer facilities will be obtained from main line connections and/or extensions. Separate engineering drawings reflecting the installation of these public utilities will be required.
- C. No construction of, or connection to, any existing or proposed public utility/improvements will be permitted until all plans are approved by Staff, all fees have been paid, all necessary permits, bonding, right-of-way and easements have been obtained and approved by staff, and Staff is notified a minimum of 24 hours in advance.
- D. Staff reserves the right to require revisions/modifications to the public improvement construction plans and completed street improvements, if additional modifications or expansion of the sight distance onto adjacent streets is required.
- E. All public utility/improvement plans submitted for review shall be based upon a 22"x 34" format and shall be prepared in accordance with the City of Molalla Public Work's Standards.
- F. All survey monuments on the subject site or that may be subject to disturbance within the construction area, or the construction of any off-site improvements shall be adequately

referenced and protected prior to commencement of any construction activity. If the survey monuments are disturbed, moved, relocated or destroyed as a result of any construction, the project shall, at its cost, retain the services of a registered professional land surveyor in the State of Oregon to restore the monument to its original condition and file the necessary surveys as required by Oregon State law. A copy of any recorded survey shall be submitted to Staff.

- G. Plans submitted for review shall meet the requirements described in Section 1 of the Molalla Standard Specifications for Public Works Construction.
- H. The applicant shall contact the Oregon Water Resources Department and inform them of any existing wells located on the subject site. Any existing well shall be limited to irrigation purposes only. Proper separation, in conformance with applicable State standards, shall be maintained between irrigation systems, public water systems, and public sanitary systems. Should the project abandon any existing wells, they shall be properly abandoned in conformance with State standards and supply the City with a copy of the final document.
- I. All utilities will be stubbed out to the far end of each street for future extension. The project shall utilize existing water, sewer, and storm water 'stub-outs' wherever possible. Water for domestic and fire protection shall be looped through the proposed site. Any 'stub-outs' determined to be not needed for the proposed development or any future development of the subject property shall be abandoned in accordance with the Molalla Standard Specifications for Public Works Construction.
- J. All public improvement designs shall meet the requirements of the Molalla Standard Specifications for Public Works Construction as amended by the Community Development Director.
- K. General Easements – A 10-foot-wide public utility easement shall be dedicated to the City adjacent to all public right-of-way and no structures are allowed to encroach into the easement. Applicant shall be required to submit a legal description and exhibit map for review and sign City easements. Once completed, applicant will be required to record easements with the County Recorder's Office and return the original document to the City prior to final occupancy.
- L. General Erosion Control – The applicant shall install, operate, and maintain adequate erosion control measures in conformance with the standards adopted by the City of Molalla and DEQ during the construction of any public/private utility and building improvements until such time as approved permanent vegetative materials have been installed. Applicant or Applicant's Contractor shall be responsible for all erosion control requirements under the 1200-C permit and shall coordinate directly with DEQ for questions related to 1200-C permit compliance.

**Exhibit F:**

*Molalla Fire Department Comments*



# Molalla Rural Fire Protection District #73

P.O. Box 655 • Molalla, OR 97038  
320 N Molalla Ave. Molalla, OR 97038

Telephone: 503-829-2200  
Fax: 503-829-5794

Comments/Questions for 710 W. main Street Molalla June 6<sup>th</sup> 2022

1. We need to discuss moving hydrant and FDC from current location due to traffic flow and fuel truck filling. Vault can stay just move hydrant and FDC. Have you thought about an inline check valve in the riser room in order to eliminate the need for a vault, low voltage for monitoring and line voltage for the pump? This could be a cost savings.
2. Why is building being sprinklered?
3. Please show riser location on plans. Riser room will need to be identified as per NFPA 13
4. Please check turning radius for site with engine specs provided. For 20 wide access radius is 28/48. For 12-foot-wide surface radius is 44/56. It appears that on the current plans we will be over the curb with the turning envelop. Apparatus is 8 foot 4 inches at outside front wheel.
5. A Knox box will be required. The box shall be mounted at the front entrance and shall not exceed 84 inches (+/- an inch) inches in height from ground plane.
6. Please advise if deep frying/grills ect.
7. Please advise of CO2 storage and required monitoring.
8. On the back side of the architectural drawing, there appears to be a canopy. Please confirm what this is for.
9. Is this a 24-hour operation?
10. There are measurements on the site plan from the curb to the fuel stations. Are these to the canopy or to the boundary of the fuel area? If so, how tall is the canopy and can our fire apparatus fit under it?
11. All area less than 26 feet in width shall be marked as NO Parking. Areas less than 32 feet in width but more than 26 feet in width shall be posted on one side as NO PARKING.
12. Fuel trucks can be quite large. How will trucks deliver fuel and not block entrance or exit point?
13. How big is the bulk propane tank?

*The above comments are based solely on the site plan provided. Molalla Fire reserves the right to review and comment on the plans that are to be submitted for full review or revisions to plans that have already been reviewed.*

*Review of submitted plans is not an approval of omissions, oversights or authorization of non-compliance with any regulations of this agency or of the regulations of any other agency. These decision/comments should not be considered a precedent setting recommendation, as we will review each project on a case-by-case basis.*

Michael C. Penunuri



[www.molallafire.org](http://www.molallafire.org)





**Exhibit G:**  
*Oregon Department of Transportation*  
*Comments*



# 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 23<sup>rd</sup>, 2022

ODOT #12262

## ODOT Response

<b>Project Name:</b> Gas Station 710 W Main St	<b>Applicant:</b> Molalla Petroleum
<b>Jurisdiction:</b> City of Molalla	<b>State Highway:</b> OR 211
<b>Site Address:</b> 710 W Main St, Molalla	<b>Legal Description:</b> 05S 02E 08C <b>Tax Lot(s):</b> 00300

The site of this proposed land use action is adjacent to W Main St (OR 211). ODOT has permitting authority for this facility and an interest in ensuring that this proposed land use is compatible with its safe and efficient operation. **Please direct the applicant to the District Contact indicated below to determine permit requirements and obtain application information.**

### COMMENTS/FINDINGS

The applicant proposes to construct a gas station and convenience store with direct access to the highway. The applicant has submitted a State Highway Approach Road Permit for the proposed access to ODOT that is currently under review. Any onsite circulation concerns raised by ODOT in relationship to the safe operation of the access have been addressed. ODOT is requesting that frontage improvements and right of way donation be required as necessary to be consistent with the city's adopted Transportation System Plan. Please direct the applicant to contact the Development Review Planner identified below if there are any questions relating to these comments.

As development occurs in Molalla, ODOT and city engineers have been monitoring signal warrants at the OR 211/Leroy St intersection. ODOT has review the Traffic Impact Study prepared by Lancaster/Mobley for this proposed development. The traffic signal warrant analysis done for the OR 211/Leroy St intersection demonstrates that signal warrants have not been met.

All alterations within the State highway right of way are subject to the ODOT Highway Design Manual (HDM) standards. Alterations along the State highway but outside of ODOT right-of-way may also be subject to ODOT review pending its potential impact to safe operation of the highway. If proposed alterations deviate from ODOT standards a Design Exception Request must be prepared by a licensed engineer for review by ODOT Technical Services. Preparation of a Design Exception request does not guarantee its ultimate approval. Until more detailed plans have been reviewed, ODOT cannot make a determination whether design elements will require a Design Exception.

Note: Design Exception Requests may take up to 3 months to process.

All ODOT permits and approvals must reach 100% plans before the District Contact will sign-off on a local jurisdiction building permit, or other necessary requirement prior to construction.

## **ODOT RECOMMENDED LOCAL CONDITIONS OF APPROVAL**

### Frontage Improvements and Right of Way

- Curb, sidewalk, and bike lane shall be constructed as necessary to be consistent with local, ODOT and ADA standards.
- Right of way donated to ODOT as necessary to accommodate the planned cross section shall be provided. The deed must be to the State of Oregon, Oregon Department of Transportation. The ODOT District contact will assist in coordinating the transfer. ODOT should provide verification to the local jurisdiction that this requirement has been fulfilled. The property owner must be the signatory for the deed and will be responsible for a certified environmental assessment of the site prior to transfer of property to the Department.

Note: It may take up to **3 months** to transfer ownership of property to ODOT.

### Access to the State Highway

- A State Highway Approach Road Permit from ODOT for access to the state highway for the proposed use is required. Truck turning templates shall be provided as needed to ensure vehicles can enter and exit the approach safely. Site access to the state highway is regulated by OAR 734.51. For application information go to <http://www.oregon.gov/ODOT/HWY/ACCESSMGT/Pages/Application-Forms.aspx>.

Note: It may take **2 to 3 months** to process a State Highway Approach Road Permit.

- The applicant shall record cross-over access easements to the adjacent properties with state highway frontage with the County Assessor to facilitate future shared access. Shared access will improve highway safety by reducing potential conflicts between vehicles and between vehicles and pedestrians and bicyclists at closely spaced driveways and will implement ODOT Access Management Program goals.

### Permits and Agreements to Work in State Right of Way

- An ODOT Miscellaneous Permit must be obtained for all work in the highway right of way. When the total value of improvements within the ODOT right of way is estimated to be \$100,000 or more, an agreement with ODOT is required to address the transfer of ownership of the improvement to ODOT. An Intergovernmental Agreement (IGA) is required for agreements involving local governments and a Cooperative Improvement Agreement (CIA) is required for private sector agreements. The agreement shall address the work standards that must be followed, maintenance responsibilities, and compliance with ORS 276.071, which includes State of Oregon prevailing wage requirements.

Note: If a CIA is required, it may take up to **6 months** to process.

- An ODOT Miscellaneous Permit is required for connection to state highway drainage facilities. Connection will only be considered if the site's drainage naturally enters ODOT right of way. The applicant must provide ODOT District with a preliminary drainage plan showing impacts to the highway right of way.

A drainage study prepared by an Oregon Registered Professional Engineer is usually required by ODOT if:

1. Total peak runoff entering the highway right of way is greater than 1.77 cubic feet per second; or
2. The improvements create an increase of the impervious surface area greater than 10,758 square feet.

**Please send a copy of the 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.oregon.gov](mailto:ODOT_R1_DevRev@odot.oregon.gov)

Development Review Planner: Marah Danielson	503.731.8258, marah.b.danielson@odot.oregon.gov
Traffic Contact: Avi Tayar, P.E.	503.731.8221 Abraham.tayar@odot.state.or.us
District Contact: Robby Cox	D2CAP.odot.oregon.gov