AGENDA

MOLALLA PLANNING COMMISSION MEETING

May 15, 2019

6:30 PM
Molalla Adult Center
315 Kennel Ave., Molalla, OR 97038

Chairman Rae Lynn Botsford

Commissioner Steve Deller
Commissioner Debbie Lumb
Commissioner Doug Eaglebear
Commissioner Jennifer Satter
Commissioner Connie Farrens
Commissioner Jacob Giberson

CALL TO ORDER

Convene Meeting and Roll Call
Pledge of Allegiance

PUBLIC COMMENT/COMMUNICATIONS AND PRESENTATIONS

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

ADOPTION OF AGENDA

CONSENT AGENDA

PUBLIC HEARING

1. File Number DRW01-2019, Tax Lots 52E08C, 400, 500, 600, 700, 800, 801 & 900

NEW BUSINESS

OLD BUSINESS

REPORTS AND ANNOUNCEMENTS

ADJOURN

Agenda posted at City Hall, Senior Center, Library and the City Website at http//www.cityofmolalla.com/meetings
This meeting location is wheelchair accessible. Disabled individuals requiring other assistance must make their request known 48 hours preceding the meeting by contacting the City Recorder's Office at 503-829-6855

City of Molalla
City Council Meeting

Agenda Category:
Public Hearing

Subject:	File Number DRW01-2019, Tax Lots 52E08C, 400, 500, 600, 700, 800, 801 & 900
Recommendation:	N/A
Date of Meeting to be Presented:	May 15, 2019
Fiscal Impact:	N/A
Submitted By:	City Planner, Alice Cannon
Approved By:	City Manager, Dan Huff

Background:
Public Hearing; DRW01-2019 Ivanoff Investment Group. Subdivision and Site Design Review for a new commercial subdivision.

Planning & Community Dev.
117 N Molalla Avenue
PO Box 248
Molalla, Oregon 97038
Phone: (503) 759-0219
communityplanner@cityofmolalla.com

AGENDA
Molalla Planning Commission
6:30 PM, May 15, 2019

Meeting Location: Molalla Adult 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:

- None - Minutes from the December 5, 2018 meeting will be presented at the June 5, 2019 meeting.

V. PUBLIC HEARINGS:

- Cascade Center (File No. DRW-01-2019) – Site Design Review and Subdivision

VI. DISCUSSION ITEM:

- None

VII. REPORTS AND ANNOUNCEMENTS

- None

VIII. ADJOURNMENT

Planning & Community Dev.
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CITY OF MOLALLA PLANNING DEPARTMENT

STAFF REPORT

Date:	May 8, 2019
File No.:	DRW01-2019
Request:	Subdivision and Site Design Review for a new commercial subdivision. No buildings are being proposed at this time.
Address:	718 W. Main St. (tax lot 400), 724 W. Main St. (tax lot 600), 728 W. Main St. (tax lot 700), 104 S. Hezzie Ln. (tax lot 900), and 121 S. Hezzie Ln. (tax lot 800). Tax lots 500 and 800 currently do not have an assigned address
Tax Lots:	52E08C; Tax Lots 400, 500, 600, 700, 800, 801, and 900
Applicant:	I & E Construction 9550 SE Clackamas Road Clackamas, OR 97015
Property Owners:	Ivanov Investment Group, LLC (tax lots 400 and 800), Scott and Carol Maloy (tax lot 801), Torsen Patricia Louise (tax lot 900), and Price Automotive Refinishing, LLC (tax lots 500, 600, and 700)
Engineer:	I & E Construction 9550 SE Clackamas Road Clackamas, OR 97015

I. APPLICABLE STANDARDS AND CRITERIA:

A. Molalla Municipal Code, Title 17, Development Code

1. Division II, Zoning Regulations

*** Chapter 17-2.2.030 Allowed Uses**

2. Division III, Community Design Standards

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, and**
4. **Chapter 17-3.6 Public Facilities**

3. Division IV, Application Review Procedures and Approval Criteria

*** Chapter 17-4.1.030 Type III Procedure (Quasi-Judicial Review – Public Hearing)**

*** Chapter 17-4.3.020 General Requirements**

*** Chapter 17-4.3.070 Preliminary Plat Approval Criteria**

4. Title 18 Signs

*** Chapter 18.02 Signs**

II. FINDINGS OF FACT:

A. **Location:** The site is located in west Molalla along the south side of State Hwy. 211 (i.e. W. Main St.). The site is located east of Hezzie Ln., west of Ridings Ave., north of Lowe Rd., and south of Hwy. 211.

B. **Zoning:** The current zoning of the properties is General Commercial (C-2), and no change to the zoning designation is being proposed.

C. **Site Description:** The project site is a collection of seven (7) tax lots, some of which have homes on them, while others are vacant. The lots have access from State Highway 211. There are trees scattered over the property. The site slopes from south east to north west away from the back of the properties towards the street.

D. **Surrounding Zoning and Land Uses:** Property to the south and west are developed with an apartment complex, properties to the east have a range of uses from, vacant, single-family residential, and a storage facility, and property to the north across Hwy. 211 is developed

with a convenience store and doctor offices. Except for the property that the apartment complexes are located on, which are zoned Medium-High Density Residential (R-3), all other surrounding properties are zoned General Commercial (C-2), similar to the subject site.

E. **Proposal:** The Applicants/Owners propose to re-plat the existing seven (7) lots into a 13-lot commercial subdivision. Lots one through seven will have retail/restaurant/office building pads with associated parking. Lot eight will be a mixture of recreational vehicle and self-storage units. Lot nine will be additional parking for the adjacent Stone Place apartment complex. Lots ten thru twelve will be developed in the future. Lot thirteen will be developed by a different developer. Access to these new commercial lots will come of either the existing Highway 211 or a new proposed roadway which is the extension of Leroy Avenue. There will be shared access driveways that will serve all the internal lots of the commercial subdivision. All these lots will be serviced with storm, sanitary and water for domestic use as well as fire protection.

F. **Public/Private Agency Responses:** Staff sent notice of the project to the City's Public Works Director, Fire Marshal, and the Oregon Department of Transportation. Staff received comments back from the City's Public Works Director and the Oregon Department of Transportation.

G. **Exhibits to this Report:**

Exhibit A: Cascade Center Plans
Exhibit B: Cascade Center Narrative
Exhibit C: ODOT Recommendations
Exhibit D: Fire Department Comments
Exhibit E: Public Comment -- Letter from Bear Creek Recovery
Exhibit F: Public Comment – Letter from Susan Hansen
Exhibit G: Cascade Center Traffic Impact Analysis
Exhibit H: Cascade Center Stormwater Management Report

H. **Public Notice and Comments:** Notice of the public hearing was sent to all landowners within 300 feet of the parcel and to a group of interested parties. Staff received one written comment on April 26, 2019 Susan Hansen, representing Bear Creek Recovery.

The submitted letter (See Exhibit "E") questions the intent behind sending the notice to property owners prior to receiving comments from agencies. Ms. Hansen also questions why the City would seek public comment on the application prior to posting a staff report and recommendation. Staff reviewed these concerns and finds that the City met code requirements relating to public notice.

The second issue raised states that input from the Division of State Lands (DSL) and DEQ (Department of Environmental Quality) should have been sought by the City in advance of writing a Staff Report and/or holding a public hearing on the proposal. The letter asserts

that mapped wetlands may be present on the property for which DSL has jurisdiction. As a condition of approval, the applicant will be required to obtain all state, federal and local permits prior to development, providing a copy of approvals to the City.
Ms. Hansen also asks who will pay for a future traffic signal and other transportation improvements related to the development. Traffic improvements that are required as a result of impacts created by the proposed development will be installed by the applicant. Since Leroy Street is not yet proposed to extend to Lowe Road, questions about Lowe Road are not related to this development.

Lastly, Ms. Hansen asks about the status of whether the applicant for the Stoneplace Apartments has met its conditions of approval. This issue is unrelated to this application.

Ms. Hansen submitted a second letter (See Exhibit F) on May 7, stating that a Planning Commissioner had participated in ex-parte contact. She states that the Commissioner is responsible for disclosing this communication at the hearing and questions whether this Commissioner can participate in the hearing as an impartial member of Planning Commission, given this communication.

III. FINDINGS & DECISION

The application will be reviewed based on criteria set forth by the Molalla Municipal Code, section 17-4.2.050 Site Design Review—Approval criteria (in bold and italics), and Staff findings, are as follow:

DIVISION II – ZONING 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.

FINDING: The Applicant's proposal consists of a re-plat of the existing seven (7) lots into thirteen (13) new lots for commercial use. Lots 1 through 7 will have retail/restaurant/office building pads with associated parking. Lot 8 will be a mixture of recreational vehicle and self-storage units. Lot 9 will be additional parking for the adjacent Stone Place apartment complex. Lots 10 thru 12 will be developed in the future. Lot 13 is being developed by someone else.

The current zoning of the properties is General Commercial (C-2). Staff finds that the proposed uses for Lots 1 – 7 (i.e. retail/restaurant/office) are permitted or specially permitted uses in the C-2 zone. Prior to issuance of a building permit for the future uses on these lots, the City will need to review each proposed use to determine if any addition land-use review is required prior to construction. The use proposed for Lot 8, Self-Storage units/RV storage, is a permitted use in the C-2 zone. However, prior to obtaining a building permit, the proposed structure will need to be reviewed pursuant to the City's Design Review guidelines. Staff recommends that this be made a condition of any final approval. The Applicant is proposing that Lot 9 be additional parking for the adjacent Stone Place apartment complex. Staff finds that as proposed Lot 9 should not be platted as a new lot and, instead, should be part of a Lot Line Adjustment with the adjacent property (i.e. 52E08C 01800) that contains the Stone Place apartment complex. Staff recommends that this be made a condition of any final approval. Lots 10 – 13 are all being created for future development. As such, all future development of these lots will need to be vetted by the Planning Department prior to any development occurring on these lots. Staff recommends that this be made a condition of any final approval.

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.

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.

FINDING: All applicable sections of the Molalla Development Code (MDC) that pertain to the Applicant's request are outlined in this Staff Report and necessary findings are made indicating how the proposal either complies with the criteria or how it can be met through a recommended condition of final approval.

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.

Table 17-2.2.040.E Lot and Development Standards for Non-Residential Zones

Standard	C Zones
Minimum Lot Area (square feet) *Development must conform to lot width, depth, yard setback, and coverage standards.	None
Minimum Lot Width and Depth	None
Building and Structure Height	
Standard maximum height	55 ft
*[Height Increase. The City may increase the standard height, above, for specific projects with approval of a Conditional Use Permit (CUP), per Chapter 17-4.4.]	Yes
Fences and Non-Building Walls	
Maximum Height – Front Yard	4 ft
Maximum Height – Interior Side	6 ft
Maximum Height – Rear Yard	6 ft
Maximum Height – Street-Side or Reverse Frontage Lot (rear)	4 ft, or 6 ft with 5 ft landscape buffer
(See also Section 17-3.4.040.)	
Lot Coverage. Maximum Lot Coverage (foundation plane as % of site area)	100%
Minimum Landscape Area (% site area), includes required parking lot landscaping and any required screening. This standard does not apply to individual, detached single-family dwellings. Landscape area may include street trees and civic space improvements in some zones, per Sections 17-3.2.050 and 17-3.4.030.	5%

Table 2.2.040.E Lot and Development Standards for Non-Residential Zones

Standard	C Zones
Minimum Setback Yards (feet): (See also Section 17-2.2.050)	
Front, Street-Side, Interior Side, and Rear property lines, except garage or carport, or as required by other code provisions	0 ft
Garage or Carport Entry, set back from street	20 ft
Alley	3 ft
Adjacent to R Districts	10 ft
Build-To Line (feet):	0 ft; may be increased when pedestrian amenities are provided between a primary building entrance and street
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.	

FINDING: The Applicant is proposing to re-plat the existing seven (7) tax lots into thirteen (13) new lots in the General Commercial (C-2) zone. Except for Lot 9, which Staff has recommended to be lot-line adjusted with the adjacent parcel to the south (i.e. Tax Lot 52E08C01800), the proposed lots range is size from 29,951 sq. ft. (0.69 Acres) to 125,537 sq. ft. (2.88 Acres). As noted in the above table, the C Zones does not have a minimum lot area or minimum lot width requirement. As such, Staff finds that the proposed lots comply with the C Zones standards for creating new lots.

No buildings are being proposed at this time, so building heights and setbacks will be checked during the building permit review for each new building. The Applicant has indicated in the submitted narrative that a landscape plan will be submitted at a later date with the development of the lots. Staff recommends as a condition of any final approval that the Applicant be required to submit a detailed landscape plan for lots 1 – 8 demonstrating compliance with Section 17-3.4 prior to final plat.

DIVISION III – COMMUNITY DESIGN STANDARDS

Chapter 17-3.1 DESIGN STANDARDS ADMINISTRATION

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.

FINDING: As mentioned previously in this Staff Report the Applicant is proposing to re-plat the existing seven (7) tax lots into thirteen (13) new lots for future development. Even though no buildings are being proposed at this time, the Applicant is proposing to create the shopping center complex (i.e. parking and maneuvering areas, parking lot landscaping, etc.) as part of this current request. As such, Staff finds that the Division III Community Design Standards apply to the creation of the shopping center complex since they are intended to protect the public health, safety, and welfare through the provision of parking, landscaping, and adequate public facilities to assure that the complex functions in a safe and efficient manner.

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.

FINDING: Since no buildings are being proposed at this time, the above criterion does not apply to the Applicant's request at this time. However, Staff recommends, as a condition of final approval, that all future buildings be required to comply with Chapter 17-3.2 Building Orientation and Design prior to issuance of a building permit.

Chapter 17-3.3 ACCESS AND CIRCULATION

17-3.3.020 Applicability

Chapter 17-3.3 applies to new development and changes in land use necessitating a new or modified street or highway connection. Except where the standards of a roadway authority other than the City supersede City standards, Chapter 17-3.3 applies to all connections to a street or highway, and to driveways and walkways. The Planning Official, through a Type II procedure, may grant adjustments to Chapter 17-3.3, pursuant to the criteria of Chapter 17-4.7 Adjustments and Variances. For street improvement requirements, refer to Section 17-3.6.020.

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.

FINDING: Staff recommends, as a condition of any final approval, that the Applicant be required to obtain an approach permit from the City for any access to a public city street.

Staff provided notice to the Oregon Department of Transportation (ODOT) since the applicant is proposing both a new street connection and driveway access to State Highway 211. ODOT submitted a letter dated April 26, 2019 into the record addressing the Applicant's Traffic Impact Analysis (TIA). In ODOT's letter they note that the improvement details mentioned in the Applicant's TIA will need to be reviewed and approved through ODOT's State Highway Approach Road Permit review and Construction Plan Review Process. Thus, as a condition of any final approval, Staff recommends that the applicant/property owner be required to obtain all necessary ODOT permits for the project. Copies of all ODOT approvals shall be provided to the City prior to commencing any 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.

FINDING: The Applicant has submitted a Transportation Impact Analysis (TIA), prepared by Kittelson & Associates, as part of the overall application materials. This criterion has been 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.

FINDING: As noted above, the Applicant is proposing two (2) approaches on a higher classification street (i.e. State Highway 211), which require review and approval by the Oregon Department of Transportation. Staff has already recommended previously that the Applicant/property owner be required, as a condition of any final approval, to obtain all necessary ODOT permits for the project. Copies of all ODOT approvals shall be provided to the City prior to commencing any construction. This condition will assure that the burden remains with the Applicant/property owner to acquire all necessary permits/approvals prior to beginning construction of the project.

Should ODOT approve the Applicant's proposed extension of Leroy Ave. south through the project site, then three (3) additional approaches are being proposed for the project from Leroy Ave. By extending Leroy Ave. through the site it will help to minimize future approaches on higher classification streets (i.e. Hwy. 211) since Leroy Ave. will be classified as a major collector street. The Applicant's proposal is consistent with the intent of minimizing approaches on higher classification streets.

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.***

FINDING: Staff finds that the approaches proposed along the extension of Leroy Ave. conform to the spacing standards of subsections E and F, as well as the sight distance and channelization standards for a local street. The Applicant's proposal satisfies this criterion.

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.***

FINDING: The Applicant is proposing to have all driveways paved to meet applicable construction standards. No permeable paving surfaces are being proposed. The proposal satisfies this criterion.

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.***

FINDING: Staff has received comments from the City's Engineer on the proposed project and they did not include comments limiting the number or locations of the proposed connections to a street, or to limit directional travel at an approach to on-way, right-turn only, or other restrictions. As such, Staff finds that the above criterion does not apply to the Applicant's request.

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).***

FINDING: ODOT has jurisdictional authority over Hwy. 211 and they have reviewed and commented on the Applicant's proposal. As part of the proposed project, the Applicant is proposing to extend Leroy Ave. south through the project site and stubbing it at the site's southern boundary for its future extension. ODOT did not indicate in their submitted comments that they had a spacing concern with the proposed extension of Leroy Ave. Nevertheless, as recommended previously, the Applicant/property owner should be required, as a condition of any final approval, to obtain all necessary ODOT permits/approvals for the project. Copies of the approved ODOT permits shall be provided to the City prior to commencing construction.

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.***

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

FINDING: Staff finds that as proposed the re-plat and associated shopping complex have been designed to accommodate emergency vehicle access by having the approaches and driveways designed and constructed to accommodate emergency vehicle apparatuses. The proposal satisfies the above criterion.

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.***

FINDING: The above criterion does not apply to the Applicant's proposal because no open access with perpendicular or angled parking, driveways are being proposed that would allow 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.***

FINDING: The Applicant's proposal satisfies the above criterion because all proposed driveway areas, including, but not limited to, drive-up and drive-through facilities and vehicle storage and service areas have been designed so that vehicle areas do not obstruct any public right-of-way.

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.***

FINDING: Staff finds that all proposed approaches and driveways are the minimum necessary to safely accommodate the projected peak hour trips and turning movements and have been designed to minimize crossing distances for pedestrians. The Applicant's proposal satisfies the above criterion.

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.***

FINDING: Staff finds that the above criterion will be reviewed and approved through ODOT's State Highway Approach Road Permit review and Construction Plan Review Process. Through ODOT's permitting process the City Engineer and ODOT will work together to determine the appropriate pedestrian safety measures for the development. Staff has already recommended previously, as a condition of any final approval, that the Applicant/property owner obtain all required ODOT approvals for the project.

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.

FINDING:

Applicants Response: There is a deceleration/right turn lane that leads to the driveway approach at the west end of the project site, which is unavoidable. There are two things to consider here. First the deceleration/right turn lane is necessary to move traffic away from the thru lane, this would be considered a safety operation. Second if the driveway approach was not located there, then a deceleration/right turn lane would not be necessary, unfortunately the two go hand in hand.

Staff Response: Staff concurs with the Applicant that the creation of a deceleration lane for the project is unavoidable as it will be necessary to help separate through traffic from vehicles turning right into the project site. However, because the deceleration lane would be located on Hwy. 211, Staff finds that ODOT will be the ultimate decision maker regarding any acceleration/deceleration lanes on Hwy. 211. As mentioned previously, Staff has recommended, as a condition of any final approval, that the applicant obtain all necessary approvals from ODOT and provide copies of those approvals to the City's Planning Department prior to beginning any construction. Staff finds that the above criterion can be satisfied by obtaining all necessary ODOT permits for the project.

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.

FINDING: Staff finds the Applicant's proposal satisfies the above criterion because the proposed approaches and driveways have been designed to work harmoniously with the parking and maneuvering areas in and around the loading areas. The loading areas are located at the rear of Lots 1 – 3 and they have a separate egress point to help reduce conflicts between delivery vehicles, cars, and pedestrians.

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.

FINDING: Staff recommends, as a condition of approval, that any sidewalks or walkways occurring adjacent to a roadway, driveway aprons constructed of concrete shall be installed between the driveway and roadway edge. Additionally, all sidewalks and walkway shall be designed to meet Americans with Disabilities Act (ADA) requirements and to manage surface water run-off and protect the roadway surface. These standards will be reviewed during the civil plan review process by the City's Engineer.

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

FINDING: As a condition of any final approval, Staff recommends that where an accessible route is required pursuant to ADA, approaches and driveways shall meet 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.

FINDING: Staff finds that the above criteria will be reviewed by the City Engineer in detail during the required civil plan review process prior to beginning any construction. Should it be determined during the civil plan review that the proposed design of an approach needs to be changed, then the changes will be noted as "redline" comments on the plan set and returned to the Applicant to make the necessary changes prior to issuance of any grading permit.

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.

FINDING: As noted previously, the Applicant is proposing two (2) approaches onto a state highway (i.e. State Highway 211), which requires review and approval by the Oregon Department of Transportation. Staff has already recommended previously that the Applicant/property owner be required, as a condition of any final approval, to obtain all necessary ODOT permits for the project. Copies of all ODOT approvals shall be provided to the City prior to commencing any construction. This condition will assure that the burden remains with the Applicant/property owner to acquire all necessary permits/approvals prior to beginning construction of the project.

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.

FINDING: Staff recommends that the above criteria be made a condition of any final approval and for them to be reviewed for compliance during the required Engineering civil plan review process. The condition of approval can simply state that all required public improvements shall comply with the Public Works Design Standards prior to issuance of a grading permit.

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.

FINDING: Should the project be approved by the Planning Commission, then Staff finds that the above criteria will be addressed during the required Engineering civil plan review process, as well as through the ODOT permitting process for the project.

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

FINDGIN: As noted in the comments submitted by the City's Public Works Director, the Applicant/property owners shall be required, as a condition of any final approval, to provide water quality and detention in accordance with the Molalla Standard Specifications for Public Works Construction. Staff recommends that the City's Public Works Director's proposed storm water conditions be made conditions of any final approval by the Planning Commission.

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.

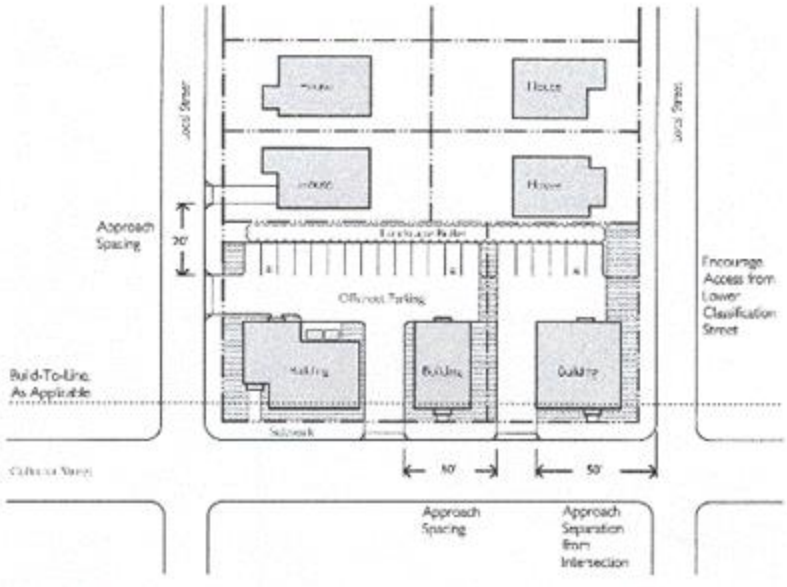


Figure 17-3.3-1 Approach Spacing

FINDING: Staff finds that the applicant's proposal complies with the City's approach separation from street intersections as the proposed driveway approach will be approximately 190-feet from the proposed Hwy. 211 / Leroy Ave. intersection. However, because Hwy. 211 is a State highway under ODOT's jurisdiction, staff finds that the approach and proposed intersection will require review and approval by ODOT ultimately. Staff has already recommended that the Applicant/property owner be required to obtain all necessary ODOT review's and approvals prior to beginning any construction.

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.

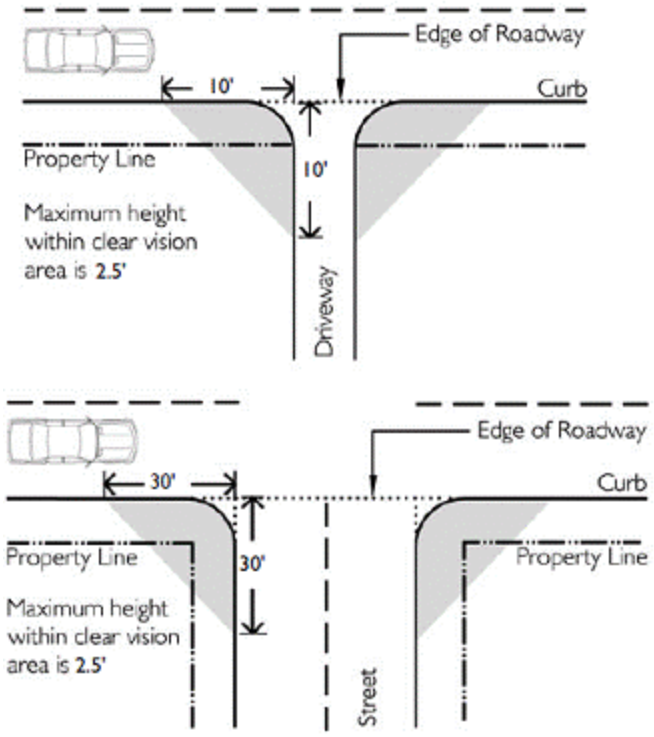


Figure 17-3.3-2 Vision Clearance

FINDING: Staff recommends, as a condition of any final approval, that the Applicant/property owner be required to continuously maintain all required Vision Clearance areas as shown in Figure 17-3.3-2.

<u>17-3.3.040 Pedestrian Access and Circulation</u>

A. Purpose and Intent. Section 17-3.3.040 implements the pedestrian access and connectivity policies of the City of Molalla Transportation System. It is intended to provide for safe, reasonably direct, and convenient 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.

FINDING: Staff finds that the first phase of the project has been designed with a continuous pedestrian walkway system that extends throughout the first phase of the project and connects to the proposed adjacent sidewalks along the existing and proposed public streets. Since the second phase will be located on the east side of the Leroy Ave. street extension, the first phase only needs to provide pedestrian walkway systems that connects with the adjacent street sidewalks, which will provide connectivity with the second phase. Staff finds the Applicant's proposal satisfies the above criterion.

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.

FINDING: Staff finds that as proposed the Applicant pedestrian walkways have been designed and located in order to provide safe, reasonably direct, and convenient connections between primary building entrances and all adjacent parking areas and public rights-of-way. However, Staff recommends as a condition of any final approval, that all walkways and primary building entrances shall be designed consistent with the building design standards of Chapter 17-3.2 and, where required, Americans with Disabilities Act (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.

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.***

FINDING: Phase I of the project has been designed with vehicle and walkway separation in mind. The site plan shows that there will be concrete walkways throughout the parking and maneuvering areas with crosswalks where a walkway crosses a parking area or driveway. Walkways that abut a driveway are shown as raised sidewalks with curbs along the edge of the driveway or street. Staff finds that the parking and maneuvering area has been designed with pedestrian safety in mind and it complies with the above criteria.

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.***

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.***

FINDING: Staff recommends, as a condition of any approval, that all proposed walkways shall be constructed of concrete, and not less than six feet in width. Additionally, Multi-use paths (i.e., designed for shared use by bicyclists and pedestrians) shall be also concrete and shall conform to the current version of the Public Works Design Standards and Transportation System Plan.

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

17-3.4.010 Purpose

Chapter 17-3.4 contains standards for landscaping and screening, fences, and accessory walls, and outdoor lighting. The regulations are intended to protect public health, safety, and welfare by reducing development impacts (e.g., glare, noise, and visual impacts) on adjacent uses; minimizing erosion; slowing the rate of surface water runoff, thereby reducing infrastructure costs; buffering pedestrians from vehicle maneuvering areas; cooling buildings and parking lots in summer months with shade; and enhancing the City's appearance.

17-3.4.020 Applicability

A. Section 17-3.4.030 establishes design standards for landscaping and screening. Projects requiring Site Design Review or Land Division approval shall meet the landscape standards of the applicable zone, including the standards in Tables 17-2.2.040.D and 17-2.2.040.E and any Special Use requirements under Chapter 17-2.3, and the requirements of Section 17-3.4.030. Property owners are required to maintain landscaping and screening pursuant to Section 17-3.4.030.G.

B. Section 17-3.4.040 establishes design standards for when a fence, or a wall not attached to a building, is to be erected, extended, or otherwise altered. It also applies to situations where this Code requires screening or buffering (e.g., outdoor or unenclosed storage uses). The standards of Section 17-3.4.040 supplement the development standards in Tables 17-2.2.030 and 17-2.2.040 and any applicable Special Use requirements under Chapter 17-2.3.

C. Section 17-3.4.050, Outdoor Lighting, applies to all new outdoor lighting, i.e., lighting that is installed after November 10, 2017.

D. The Planning Official, through a Type II procedure, may grant adjustments to Chapter 17-3.4, pursuant to the criteria of Chapter 17-4.7 Adjustments and Variances.

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.

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.

FINDING: A landscape plan has not been submitted by the Applicant as this time. Staff finds that the submitted site plan shows where landscaping will be provided, but it does not specify the plant selection, percentage of area to be landscaped, or compliance with the other landscaping requirements of section 17-3.4.030. As such, Staff recommends, as a condition of any final approval, that the Applicant/property owner shall be required to provide a detailed landscape plan

stamped by an authorized landscape architect that demonstrates compliance with all applicable landscaping requirements prior to beginning any construction.

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.

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.

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.

FINDING: Staff finds that at this stage of the proposed development that the above criterion does not apply to the Applicant's proposal because no buildings and/or associated outdoor areas that may require screening are being proposed at this time. When the Applicant/property owner submits for Design Review for each future building, then Staff will have the opportunity to review and determine at that time what level of screening is required for any outdoor storage areas, blank walls, trash enclosures, etc. associated with the building.

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

FINDING: Staff recommends, as a condition of any final approval, that all required landscaping shall be required to be maintained in good condition at all times, or otherwise replaced by the property owner.

<u>17-3.4.040 Fences and Walls</u>

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.

FINDING: The Applicant has indicated in the submitted narrative that the only proposed fences will be the security fences located around the storage facility site (i.e. Lot 8). As such, Staff recommends, as a condition of any final approval, that all proposed or future fencing be required to comply with the non-residential fencing standards listed in Section 17-3.4.040 Fences and Walls.

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.

FINDING: Staff recommends, as a condition of any final approval, that all fences and walls shall comply with the vision clearance standards of Section 17-3.3.030.G.

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.

FINDING: Staff recommends, as a condition of any final approval, that no prohibited fencing materials shall be allowed.

F. Maintenance. Fences and walls shall be maintained in good condition, or otherwise replaced by the property owner.

FINDING: Staff recommends, as a condition of any final approval, that the applicant/property owner shall be required to maintain any fences and walls on the property in good condition, or otherwise have them replaced.

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.***

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

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.***

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.***

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

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.***

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

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

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.***

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.***

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

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

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.

FINDING: A lighting plans has not been submitted by the Applicant, but the Applicant indicates in the submitted narrative that "The outdoor lighting for the project site shall be designed by a lighting design professional". Staff finds that a comprehensive lighting plan is required for the project pursuant to the above criteria. Thus, Staff recommends, as a condition of any final approval, that the Applicant/property owner be required to submit a professional outdoor lighting plan demonstrating compliance with Section 17-3.4.050 Outdoor Lighting prior to commencing any site development work.

E. Maintenance. For public health and safety, outdoor lighting shall be maintained in good condition, or otherwise replaced by the property owner.

FINDING: Staff recommends, as a condition of any final approval, that the applicant/property owner shall be required to maintain all required outdoor lighting in good condition, or otherwise it shall be replaced by the property owner.

Chapter 17-3.5 PARKING AND LOADING

17-3.5.010 Purpose

Chapter 17-3.5 contains requirements for automobile and bicycle parking. This Code is intended to be flexible in requiring adequate parking, rather than a minimum number of parking spaces, for each use. It provides standards for the location, size, and design of parking areas to ensure such areas can be accessed safely and efficiently. This Code also encourages non-motorized transportation by requiring bicycle parking for some uses.

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
(Chapter 17-5 contains examples of uses and definitions.)	(Fractions are rounded down to the closest whole number.)
Residential Categories	
Household Living	
Single-Family Dwelling, including manufactured homes on lots	1 space per dwelling
Duplex	3 spaces per duplex
Accessory Dwelling (second dwelling on a single-family lot)	1 space total for primary dwelling and accessory dwelling
Multifamily	1.5 spaces for a 1-bedroom unit
	2 spaces for a 2-bedroom unit
	2.5 spaces for 3 bedrooms or more
Group Living, such as nursing or convalescent homes, rest homes, assisted living, congregate care, and similar special needs housing	0.5 space per 4 bedrooms
Commercial Categories	
Commercial Outdoor Recreation	per Conditional Use Permit review (Chapter 17-4.4)
Bed and Breakfast Inn	1 space per use, plus 1 space for each bedroom offered as lodging
Educational Services, not a school (e.g., tutoring or similar services)	1 space per 300 sq. ft. floor area
Entertainment, Major Event	per Conditional Use Permit review (Chapter 17-4.4)
Hotels, Motels, and similar uses	0.75 space per guest room. See also parking requirements for associated uses, such as restaurants, entertainment uses, drinking establishments, assembly facilities.
Mortuary or Funeral Home	1 space per 300 sq. ft. floor area
Offices	General Office: 1 space per 500 sq. ft. floor area
	Medical or Dental Office: 1 space per 500 sq. ft. floor area

FINDING:

Applicant's Response: The calculated number of parking spaces required is as follows. The total square footage for the proposed restaurants is 7,700 square feet and at 1 parking space per 200 square feet, the total spaces required is 38.5 (39). The total square footage for the proposed retail space is 44,861 square feet and at 1 parking space per 400 square feet the total spaces required is 111.70 (112). The total square footage for the proposed retail/office space is 18,600 square feet and at 1 parking space per 450 square feet the total spaces required is 41.33 (42). The amount of public parking spaces required is 193 parking spaces. The total amount of public parking spaces provided is 275. This is a ratio of 1.42 of additional parking.

Staff Response: Staff concurs with the Applicant's calculations for determining the necessary off-street parking requirement for Phase I of the project at 193 parking spaces. However, there is a discrepancy in the Applicant's submitted application materials regarding the number of parking spaces that will be provided for the project. As noted above, the Applicant indicates in the submitted narrative that a total of 275 parking spaces will be provided for the project, yet the submitted site plan notes a total of 263 parking space are provided. Staff notes that 263 parking spaces still exceeds the required parking required for the project, but that number also includes the 54 spaces that will be available for the apartment units to the south. Since Staff has already recommended that Lot 9 not be part of the re-plat, and instead be lot line adjusted into the

apartment complex property, the 54 parking spaces for the apartment complex can't be counted towards the required parking for the shopping complex. By subtracting the 54 parking spaces for the apartment units to the south from the proposed 263 parking spaces shown on the site plan, Staff finds that a total of 209 parking spaces will be available for Phase I of the project. Staff finds that 209 off-street parking spaces for Phase I exceeds the number of parking spaces required by code for the shopping complex. Nevertheless, Staff finds that the Applicant should still clarify during the Public Hearing exactly how many off-street parking spaces will be made available for the shopping complex in order to eliminate any confusion.

Staff recommends, as a condition of any final approval, that the Applicant/property owner shall be required to provide a minimum of 193 off-street parking spaces for the shopping complex. The required number of off-street parking spaces cannot include any parking spaces designated for the apartment complex to the south.

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.

FINDING:

Applicant's Response: Each building(s) on the project site sit on their own lot, with their own allocated parking spaces, sized to meet the needs of that building. There should be no need for shared parking.

Staff Response: Based on the submitted application materials, Staff concurs with the Applicant's response that each individual lot will have adequate parking for each use proposed on the lot and shared parking is not required for the project.

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.

FINDING: All proposed parking for the project is designed as 90˚ parking stalls. No angled or parallel parking stalls are being proposed. Staff finds that all proposed parking stalls comply with the minimum dimensions for 90˚ parking stalls. However, as a condition of any final approval, staff

recommends that all parking stalls abutting a pedestrian walkway or landscaped area shall be equipped with a parking bumper to prevent vehicles from damaging buildings or encroaching into walkways, sidewalks, landscapes, or the public right-of-way.

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.

FINDING:

Applicant's Response: There are two van accessible ADA parking spaces in the near vicinity of each retail/restaurant/office building and they are all less than 80 feet from the pedestrian access point to each building.

Staff Response: Staff believes that adequate ADA parking is being provided for each lot/proposed use based on the submitted site plan. Nevertheless, Staff recommends, as a condition of any final approval, that the Applicant/property owner shall be required to provided ADA parking spaces 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.

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
Multifamily Residential (not required for parcels with fewer than 4 dwelling units)	2 bike spaces per 4 dwelling units
Commercial	2 bike spaces per primary use or 1 per 5 vehicle spaces, whichever is greater
Industrial	2 bike spaces per primary use or 1 per 10 vehicle spaces, whichever is greater
Community Service	2 bike spaces
Parks (active recreation areas only)	4 bike spaces
Schools (all types)	2 bike spaces per classroom
Institutional Uses and Places of Worship	2 bike spaces per primary use or 1 per 10 vehicle spaces, whichever is greater
Transit Transfer Stations and Park-and-Ride Lots	5 bike spaces per acre
Other Uses	2 bike spaces per primary use or 1 per 10 vehicle spaces, whichever is greater

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 so as to not conflict with the vision clearance standards of Section 17-3.3.030.G.

FINDING:

Applicant's Response: Bicycle parking and the necessary number of bike racks will be incorporated into the design of the project site. Coordination and review with the appropriate authorities will be completed to ensure this condition will be met.

Staff Response: Staff finds that the appropriate review authority for determining the bicycle parking requirement for the project is the City of Molalla Planning Department, and that the appropriate timing for determining the required bicycle parking for the project is now with the Applicant's request for the shopping complex.

Based on Table 17-3.5.040.A above, Staff finds that all proposed uses fall under the category of "Commercial" for determining the number of required bicycle parking spaces for the project. As noted above under the off-street parking requirements for the project, the project is required to have a total of 193 off-street motor vehicle parking spaces. Based on the motor vehicle parking requirement, Staff finds that the bicycle parking requirement for the project is 38.6 or 39 bicycle parking spaces. Therefore, Staff recommends, as a condition of any final approval, that the Applicant/property owner be required to provide a minimum of 39 bicycle parking spaces for the project.

The submitted site plans shows bicycle parking racks located throughout the motor vehicle parking and maneuvering area in parking stalls. Staff finds that the Applicant's proposed location for the bicycle parking is hazardous since it can impede or create a hazard to pedestrians or vehicles. As such, Staff recommends that the bicycle parking spaces be relocated to the walkway areas near the front entrances of each building. This may require widening the walkways near the entrances of the buildings to accommodate the required bicycle parking for each building. Based on the information submitted by the Applicant, Staff recommends, as a condition of approval, that the Applicant shall provide a revised site plan demonstrating that the required bicycle parking spaces 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 and are located near the front entrance of each building and outside of the motor vehicle parking and maneuvering areas.

<u>17-3.5.050 Loading Areas</u>

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.

FINDING:

Applicant's Response: Loading areas are located internally on the project site close to the buildings that they will serve and will not interfere with traffic operations of the adjacent streets. They will be reviewed as part of the design review and building permit process for each individual building.

The loading area will be designed to accommodate a WB-67 interstate semi-trailer.

Loading areas are located internally on the project site close to the buildings that they will serve and will not interfere with traffic operations of the adjacent streets. They will be reviewed as part of the design review and building permit process for each individual building.

Loading areas are located internally on the project site close to the buildings that they will serve and will not interfere with traffic operations of the adjacent streets. No adjustments are necessary.

Staff's Response: The submitted site plan shows only one (1) loading dock area for the use/building to be located on Lot 1, which will accommodate a retail use. No other loading dock areas are being proposed for the project. Because it's unclear at this time what future uses will be located in each building, Staff can't determine as this time if additional load dock areas should be required for the project. As such, each future use/building will need to be reviewed against the above standards to determine of a loading dock area should be required for the use/building prior to issuance of a building permit. Staff recommends that this be made a condition of any final approval.

Chapter 17-3.6 PUBLIC FACILITIES

17-3.6.010 Purpose and Applicability

A. Purpose. The standards of Chapter 17-3.6 implement the public facility policies of the City of Molalla Comprehensive Plan and adopted City plans.

B. Applicability. Chapter 17-3.6 applies to all new development, including projects subject to Land Division (Subdivision or Partition) approval and developments subject to Site Design Review where public facility improvements are required. All public facility improvements within the city shall occur in accordance with the standards and procedures of this chapter. When a question arises as to the intent or application of any standard, the City Engineer shall interpret the Code pursuant to Chapter 17-1.5.

C. Public Works Design Standards. All public facility improvements, including, but not limited to, sanitary sewer, water, transportation, surface water and storm drainage and parks projects, whether required as a condition of development or provided voluntarily, shall conform to the City of Molalla Public Works Design Standards. Where a conflict occurs between this Code and the Public Works Design Standards, the provisions of the Public Works Design Standards shall govern.

D. Public Improvement Requirement. 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 provisions of this Code and the Public Works Design Standards. Improvements required as a condition of development approval, when not voluntarily provided by the applicant, shall be roughly proportional to the impact of the development on public facilities. Findings in the development approval shall indicate how the required improvements directly relate to and are roughly proportional to the impact of development.

FINDING:

Applicant's Response: The frontage improvements on Highway 211 shall be designed in conformance with the ODOT Highway Design Standards. The remainder of the public improvements shall be designed in conformance with the City of Molalla Public Works Design Standards.

Due to the magnitude of this project. The frontage improvements on Highway 211, the new roadway extension of Leroy Avenue, the private and public improvements on-site and the construction of the buildings must run concurrently in order for this project to be completed in a timely manner.

Staff's Response: Staff finds that the Purpose statement and Applicability statements are not actual approval criteria for the project but are guiding statements meant to provide clarity for the actual approval criteria. Nevertheless, Staff recommends, as a condition of any final approval, that the Applicant/property owner be required to comply with statements C and D above.

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.***

FINDING:

Applicants Response: This project will include the frontage improvements on Highway 211 and the new roadway extension of Leroy Avenue.

Staff Response: Staff finds that the only existing substandard street abutting the proposed development is State Hwy. 211. The City's Public Works Director has provided the following comments regarding the site's Hwy. 211 frontage:

OR 211 (W. Main Street): OR 211 (W. Main Street) is an arterial street under the Oregon Department of Transportation (ODOT) jurisdiction. Current right-of-way width is approximately 60 feet and approximate pavement width varies from 26 to 45 feet. Arterial streets on state facilities (w/TL, w/buffered BL, w/o PK) require 68 feet of right-of-way and 52 feet of pavement. Applicant will be required to dedicate approximately 4 feet of right-of-way and, at a minimum, construct road improvements to ODOT standards for 38 feet of travel lanes (two through and one left turn lane), 2-foot wide buffer and 5-foot bike lane on south side, curb and gutter on south side, and 6-foot curb tight sidewalk on south side. ODOT may require additional shoulder improvements on the north side of the roadway as part of their conditions of approval. ODOT and City

may require a median barrier for accesses with only right-in/right-out access. If required during design review, additional striping and pavement tapers may be necessary to allow for a roadway transition outside of the project limits. Applicant will be required to dedicate a 10-foot wide public utility easement along all OR 211 frontage as part of the subdivision plat.

OR 211 (W. Main Street) Transit: Applicant will designate east bound bus stop location as part of future phase in accordance with TSP project T7. Future phase will provide bus stop easement for placement of shelter near southeast corner of intersection of OR 211/Leroy Avenue.

Staff recommends, as a condition of any final approval, to adopt the Public Works Director's recommendations regarding Hwy. 211 improvements. Additionally, as noted previously, Staff has recommended that the Applicant/property owner be required to obtain all ODOT permits prior to commencing any site development work.

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.***

FINDING: Staff recommends that the above criterion be made a condition of final approval for the project.

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.***

FINDING:

Applicant's Response: Right-of Way will be dedicated for the frontage improvements on Highway 211 and the new roadway extension of Leroy Avenue.

Staff Response: Staff finds that the only proposed new street is the extension of Leroy Ave. south through the site and being stubbed and the site's southern property boundary. The City's Public Works Director has provided the following comments regarding the extension of Leroy Ave. through the site:

Leroy Avenue (North): Leroy Avenue is a major collector under City of Molalla jurisdiction. Current right-of-way width is approximately 60 feet and approximate pavement width is 42 feet with curb and gutter on the east side and mountable curb on the west side. Major collector streets on city facilities have three different cross sections. The cross section at the approach to OR 211 includes a 12-foot turn lane, two 11-foot travel lanes, two 6-foot bike lanes, revised curb and gutter and 6-foot wide curb tight sidewalks on west side to eliminate the mountable curb. Right of way width is 60 feet in all cross sections. Applicant will be required to construct a three-lane intersection approach and revise the west side curb and sidewalk to ODOT standards for distance of access to the signalized intersection. Signage and striping will be required through the taper to the two-lane cross section.

Leroy Avenue (South): Leroy Avenue is a major collector under City of Molalla jurisdiction. Applicant will be required to dedicate approximately 60 feet of right-of-way and construct road improvements to City standards for 46 feet of pavement curb to curb. Cross section will include one 12-foot turn lane, two 11-foot travel lanes, two 6-foot bike lanes, curb and gutter, and 6-foot curb tight sidewalk on the west side only. Development of sidewalks on the east side will be a requirement of development of Lots 10 and 13. Roadway will extend south to southerly project limits and include type three barricades at the south end. A temporary "No Outlet" sign will be posted in the southbound direction until the connection to S. Lowe Road is constructed. The marked pedestrian crosswalk on the south leg of the Leroy Avenue access, between lots 1, 10, & 13, shall be constructed with crosswalk signage per City requirements. The developer shall be responsible to install all associated signing for this and other crosswalks along with 25 mph speed signs. Applicant will be required to dedicate a 10-foot wide public utility easement along all Leroy Avenue frontage as part of the subdivision plat.

Intersection improvements: Applicant will be required to construct the turn lane improvements at the West Access and East Access and the signalized intersection at OR 211/Leroy Avenue (protected-permitted phasing Transportation System Plan (TSP) project S6) with ADA ramps and bicycle skip striping (TSP project B39). Applicant will be required to enter into a development agreement with the City for its proportionate share of the OR 211/Molalla Avenue intersection signal improvements (TSP project M25) or to construct the signal improvements in cooperation with the City.

Right-of-way Dedications/Donations: If right of way dedication fronts streets under the jurisdiction of the City of Molalla, Applicant shall submit dedication on formats approved by the Public Works Department. On ODOT rights of way, applicant will be required to donate sufficient right-of-way along variable width improvements and construct sidewalk widening to ODOT 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. Applicant is advised that donation must be completed and recorded prior to submission of final subdivision plat or final partition plat in order for Public Works to process plat documents.

Access to public streets shall be limited to the accesses shown on Sheet P2.2 of the plans and attached to these conditions. Access spacing shall conform to the Transportation Systems Plan. The proposed width of accesses shall meet the Molalla Standard Specifications for Public Works Construction.

Transportation SDC's – In accordance with MMC 13.14 this design review does increase the impacts to the public improvement facility and therefore the applicant shall pay adopted transportation SDC charges. SDC's shall be calculated in accordance with the adopted SDC methodology.

Staff recommends, as a condition of any final approval, to adopt the Public Works Director's recommendations regarding improvements associated with the extension of Leroy Ave.

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.***

FINDING: Staff finds that the above criterion has been satisfied as the Applicant has submitted a TIA statement and City Staff has coordinated with ODOT on improvements required for Hwy. 211 as a result of the proposed development.

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.***

FINDING: The Applicants is proposing the extension of Leroy Ave. south of Hwy. 211 through the project site, which would be considered a new street. The street will connect with Hwy. 211, as well as be stubbed out at the site's southern boundary for its future extension and connection with S. Lowe Rd. Based on the submitted application materials, Staff finds that the Applicants proposal satisfies the above criterion.

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.***

FINDING: As note previously in this Staff Report, the Applicant will be required to dedicate 4-feet of right-of-way along the sites Hwy. 211 frontage, and 60-feet of right-of-way to accommodate the extension of Leroy Ave. through the site. Staff recommends that the dedication of right-of-way be made a condition of any final approval.

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.

FINDING: As noted previously in this Staff Report, Staff has recommended, as a condition of any final approval, that the Applicant/property owner be required to comply with all Public Works Director's recommendations for street improvements associated with the proposal, as well as all ODOT requirements for Hwy. 211. Staff finds that with the recommended conditions of approval, the Applicant's proposal will satisfy the above criterion.

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.

B. Sewer and Water Plan Approval. Development permits for sewer and water improvements shall not be issued until the City Engineer has approved all sanitary sewer and water plans in conformance with City standards.

C. Over-Sizing. The City may require as a condition of development approval that sewer and water lines serving new development be sized to accommodate future development within the area as projected by the applicable facility master plans, and the City may authorize other cost-recovery or cost-sharing methods as provided under state law.

D. Inadequate Facilities. Development permits may be restricted or rationed by the Planning Commission where a deficiency exists in the existing water or sewer system that cannot be rectified by the development and which, if not rectified, will result in a threat to public health or safety, surcharging of existing mains, or violations of state or federal standards pertaining to operation of domestic water and sewerage treatment systems. The City Engineer may require water booster pumps, sanitary sewer lift stations, and other critical facilities be installed with backup power.

FINDING: Below are the recommend sanitary and water improvements for the project from the City's Public Works Director. Staff recommends adopting the Public Works Director's recommended improvements as a condition of any final approval.

Sanitary:

An 8-inch sanitary main exists on private drive known as Hezzie Lane south. Applicant proposes to realign sanitary main to avoid the building shown on Lot 7. Applicant proposes to connect to realigned sewer with laterals. Current number of connections is three and applicant intends to exchange the existing connections for connections to the building on Lots 5, 6, and 7. Lots 1-4 will connect via laterals. The sewer realignment will require review by DEQ but does not constitute a need for a Certificate of Capacity based on DEQ's position not to require review of individual sewer lateral connections.

Sanitary main shall extend to south on Leroy Avenue to the south project limits. This sewer extension is a dry line for future extension to the properties south of S. Lowe Road. Because no connections are being proposed for this sewer extension, this sewer extension should not constitute a need for a Certificate of Capacity and the City will recommend the same to DEQ.

Sanitary SDCs – In accordance with MMC 13.14 this design review does increase the impacts to the public improvement facility and is therefore the applicant shall pay sanitary SDC charges. SDCs shall be calculated in accordance with the adopted SDC methodology.

Water:

Applicant proposes to extend a water main along the Leroy Avenue (South) extension. Lots 1 through 7 can be served from the extension and will need to be looped through Lot 4 or Lot 5 and connected to the waterline on OR 211. All waterlines shall be 8-inch. The waterline serving Lot 8 and Lot 9 may require a loop to the waterline on Lot 3 or Lot 4.

The waterline on the Leroy Avenue (South) extension shall be 12-inch and the developer will receive credits towards the upsizing from 8-inch to 12-inch.

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.

Water SDC's – In accordance with MMC 13.14 this design review does increase the impacts to the public improvement facility and is therefore the applicant shall pay water SDC charges. SDCs shall be calculated in accordance with adopted SDC methodology.

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.

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.

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.

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.

FINDING: Below are the recommend stormwater improvements for the project from the City's Public Works Director. Staff recommends adopting the Public Works Director's recommended improvements as a condition of any final approval.

Storm:

City Streets: Applicant proposes to connect to the storm improvements on OR 211 for the Leroy Avenue (South) Extension. Applicant will be required to meet connection requirements to the ODOT system.

Onsite improvements: Applicant will be required to provide water quality and detention in accordance with the Molalla Standard Specifications for Public Works Construction. Applicant proposes to connect to the storm improvements on OR 211 and will be required to meet connection requirements to the ODOT system.

ODOT Streets: Storm improvements shall meet ODOT requirements.

Stormwater SDC's – In accordance with MMC 13.14 this design review does increase the impacts to the public improvement facility and is therefore the applicant shall pay stormwater SDC charges. SDC's shall be calculated in accordance with the adopted SDC methodology.

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.

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.

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

a. The developer shall make all necessary arrangements with the serving utility to provide the underground services. Care shall be taken to ensure that no aboveground equipment obstructs vision clearance areas for vehicular traffic, per Chapter 17-3.3 Access and Circulation.

b. The City Engineer reserves the right to approve the location of all surface-mounted facilities.

c. All underground utilities installed in streets must be constructed and approved by the applicable utility provider prior to the surfacing of the streets.

d. Stubs for service connections shall be long enough to avoid disturbing the street improvements when service connections are made.

FINDING:

Applicants Response: All utilities on the project site will be placed underground. Coordination and review with the appropriate authorities will be completed to ensure this condition will be met.

Staff's Response: Even though the Applicant has indicated that all utilities for the project will be placed underground, Staff recommends that this should be made a condition of any final approval.

17-3.6.070 Easements

A. Provision. The developer shall make arrangements with the City and applicable utility providers for each utility franchise for the provision and dedication of utility easements necessary to provide full services to the development.

B. Standard. Utility easements shall conform to the requirements of the utility service provider. All other easements shall conform to the City of Molalla Public Works Design Standards.

C. Recordation. All easements for sewers, storm drainage and water quality facilities, water mains, electric lines, or other utilities shall be recorded and referenced on a survey or final plat, as applicable. See Chapter 17-4.2 Site Design Review, and Chapter 17-4.3 Land Divisions and Property Line Adjustments.

FINDING:

Applicants Response: The location and description of the utility easements shall be included as part of the recording of the subdivision plat for this project.

Staff's Response: Staff concurs with the Applicant that the location and description of required utility easements for the project shall be included on the final subdivision plat for recording purposes. Staff recommends that this be made a condition of any final approval.

DIVISION IV – APPLICATION REVIEW PROCEDURES AND APPROVAL CRITERIA

Chapter 17-4.3 LAND DIVISIONS AND PROPERTY LINE ADJUSTMENTS

17-4.3.020 General Requirements

A. Subdivision and Partition Approval Through Two-Step Process. Applications for subdivision or partition approval shall be processed by means of a preliminary plat evaluation and a final plat evaluation, according to the following two steps:

1. The preliminary plat must be approved before the final plat can be submitted for approval consideration; and

2. The final plat must demonstrate compliance with all conditions of approval of the preliminary plat.

Note: Property line adjustments and lot consolidation requests (i.e., no new lot is created) are subject to Section 17-4.3.120; they are not subject to Sections 17-4.3.020 through 17-4.3.110.

FINDING: Staff finds that this is step-one of the two-step process outlined above (i.e. preliminary plat approval). Should the Planning Commission approve the Applicant's preliminary plat request, then the next step would be to file for final plat approval.

B. Compliance With Oregon Revised Statutes (ORS) Chapter 92. All subdivision and partition proposals shall conform to state regulations in ORS Chapter 92 Subdivisions and Partitions.

FINDING: Staff finds that the City's Municipal Code is in compliance with ORS Chapter 92 and, therefore, by demonstrating compliance with the City's code the project is also in compliance with State Law ORS Chapter 92.

C. Future Re-Division Plan. When subdividing or partitioning tracts into large lots (i.e., greater than three times or 300 percent the minimum lot size allowed by the underlying land use district), the lots shall be of such size, shape, and orientation as to facilitate future re-division and extension of streets and utilities. The applicant shall submit a future re-division plan, or shadow plan, indicating how re-division of oversized lots and extension of planned public facilities to adjacent parcels can occur in the future. (See also Section 17-4.3.040 Pre-Planning for Large Sites.)

FINDING: Staff finds that the above criterion does not apply to the Applicant's proposal because the proposed subdivision will not be creating large tracts (i.e., greater than three times or 300 percent the minimum lot size allowed by the underlying land use district) as part of this proposal.

D. Adequate Utilities. All lots created through land division shall have adequate public utilities and facilities such as streets, water, sewer, gas, and electrical systems, pursuant to Chapter 17-3.6. These systems shall be located and constructed underground where feasible.

E. Adequate Drainage. All subdivision and partition proposals shall have adequate surface water drainage facilities that reduce exposure to flood damage and improve water quality. Water quality or quantity control improvements may be required, pursuant to Chapter 17-3.6.

F. Adequate Access. All lots created or reconfigured shall have adequate vehicle access and parking, as may be required, pursuant to Chapter 17-3.3.

FINDING: The appropriate sections of Chapters 17-3.3 and 17-3.6 regarding adequate utilities, drainage, and access for the project have been addressed above in this Staff Report.

<u>17-4.3.070 Preliminary Plat Approval Criteria</u>

A. Approval Criteria. The Planning Commission may approve, approve with conditions, or deny a preliminary plat. The Planning Commission decision shall be based on findings of compliance with all of the following approval criteria:

1. The land division application shall conform to the requirements of Chapter 17-4.3;

2. ***All proposed lots, blocks, and proposed land uses shall conform to the applicable provisions of Division II Zoning Regulations, except as modified by the provisions of Chapter 17-4.3 (e.g., lot size averaging);***

3. ***Access to individual lots, and public improvements necessary to serve the development, including, but not limited to, water, sewer, and streets, shall conform to Division III Community Design Standards;***

4. ***The proposed plat name is not already recorded for another subdivision, and satisfies the provisions of ORS Chapter 92;***

5. ***The proposed streets, utilities, and surface water drainage facilities conform to City of Molalla adopted master plans and applicable engineering standards, and allow for transitions to existing and potential future development on adjacent lands. The preliminary plat shall identify all proposed public improvements and dedications;***

6. ***All proposed private common areas and improvements, if any, are identified on the preliminary plat and maintenance of such areas is assured through appropriate legal instrument;***

7. ***Evidence that any required state and federal permits, as applicable, have been obtained or can reasonably be obtained prior to development;***

8. ***Evidence that improvements or conditions required by the City, road authority, Clackamas County, special districts, utilities, and/or other service providers, as applicable to the project, have been or can be met; and***

9. ***The architectural standards of Section 17-3.2.030.D are met.***

B. Conditions of Approval. The Planning Commission may attach such conditions as are necessary to carry out provisions of this Code, and other applicable ordinances and regulations.

FINDING: Staff finds that all applicable sections from Division II Zoning Regulations and Division III Community Design Standards have been previously addressed above with appropriate recommendations for conditions of any final approval. The proposed plat name will be reviewed during final plat approval should the Planning Commission approval the current proposal. Additionally, Staff has determined that any required state and federal permits can be reasonably obtained by the Applicant for the project prior to development and has recommended this be made a condition of any final approval. Lastly, no buildings are being proposed at this time, therefore, Staff has recommended as a condition of any final approval that all future buildings be required to obtain Design Review approval to address the architectural standards of Section 17-3.2.030D prior to issuance of a building permit.

Chapter 18.02 SIGNS

A. Permit Required. All signs erected after the effective date of the ordinance codified in this chapter, other than signs exempt from permit requirements of this chapter shall require a sign permit.

FINDING: Staff notes that the Applicant has addressed the sign code section of the Molalla Municipal Code (MMC) in their submitted narrative, however, a sign applicant has not been submitted as part of the overall application materials. Thus, all future signs for the project shall require the submittal of a City of Molalla sign application together with all required submittal materials before any signage can be erected on site. Staff recommends that this be made a condition of any final approval.

IV. STAFF RECOMMENDATION TO THE PLANNING COMMISSION:

Based on the Findings and Conclusions, the City of Molalla hereby recommends **APPROVAL** of the applicant's proposed re-plat (City File #DRW01-2019), subject to the following conditions of approval. This approval is based on the applicant's submitted plans, written narrative, and any supplemental application materials. Any change to the approved plans other than those required by this decision will require a new land use application and approval:

A. Conditions Requiring Resolution before submitting Final Subdivision Plat:

a. Reach resolution with staff about how to plat Lot 9. Consider a lot line adjustment with the adjacent property associated Stone Place apartment complex in lieu of including this property with this subdivision.

b. No building permit or final plat may be issued until all required public facility improvements are in place and approved by the Public Works Department, or otherwise bonded, in conformance with the provisions of this Code and the Public Works Design Standards.

c. Dedicate approximately four feet of right-of-way along the OR-211/W. Main Street to accommodate ODOT-required improvements to the OR-211. Applicant shall donate enough right-of-way along variable width improvements. 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. Donation must be completed and recorded prior to submitting the subdivision plat to the City of Molalla. Applicant shall provide copies of recorded right-of-way dedications with the final plat application.

d. Dedicate a 10-foot wide public utility easement along all OR-211 frontage.

e. Dedicate bus stop easement for future placement of a transit shelter near southeast corner of OR-211/Leroy Avenue, consistent with Transportation System Plan project T7.

f. Dedicate 60 feet of right-of-way to accommodate the extension of Leroy Avenue through the site. Right-of-way Dedications/Donations: If right of way dedication fronts streets under the jurisdiction of the City of Molalla, Applicant shall submit dedication on formats approved by the Public Works Department.

g. Dedicate a 10-foot wide public utility easement along all Leroy Avenue frontages as part of the subdivision plat.

h. Detailed engineering plans demonstrating compliance with the MMC and City of Molalla Public Works Standards. All public improvement designs shall meet the requirements of the Molalla Standard Specifications for Public Works Construction as amended by the Public Works Director. All public utility/improvement plans submitted for review shall be submitted in a 22"x 34" format. The engineering plans shall also include design for the following improvements for review and approval of the City:

   i. Based on ODOT's comments, the intersection of OR 211 and Molalla Avenue will likely meet warrants for signalization. As described above, this proposed signal will also have to go through a roundabout analysis with ODOT staff. Because the intersection is in the downtown commercial core, the potential of a roundabout being recommended by ODOT staff, which would require condemnation and removal of downtown businesses and buildings associated within a roundabout footprint, is not likely. Therefore, applicant will be required to enter into a development agreement with the City for its proportionate share of and to construct the OR 211/Molalla Avenue intersection signal improvements (TSP project M25).

   ii. Design and construct a traffic signal and intersection improvements at OR-211/Molalla Avenue.

   iii. Design and construct east-bound right-turn lane with 100 feet of storage at the OR-211/West Access.

   iv. Based on ODOT's comments regarding right turn movement deductions and congestion tolerance for Cities with a population of 10,000 or greater, ODOT may not allow for the construction of the signal until congestion, accidents, and conflicts at this intersection reach a threshold to warrant construction of a signal. Additionally, per discussion with ODOT staff all new signals must go through an analysis for roundabouts in lieu of signalization. If ODOT determines that a roundabout is a better solution for this intersection, then applicant will be required to construct a roundabout and dedicate right-of-way sufficient to facilitate construction of the roundabout. If a signal is the preferred option versus a roundabout and allowed by

ODOT, applicant will be required to design and construct the signalized intersection at OR 211/Leroy Avenue (protected-permitted phasing Transportation System Plan (TSP project S6) with ADA ramps and bicycle skip striping (TSP project B39).

v. Design and construct west-bound left turn lane with 75 feet of storage at the OR 211/West access.

vi. Design and construct a traffic signal at OR 211/Leroy Avenue with left turn lane on all legs and east-bound right-turn lane.

vii. Design and construct west-bound left turn lane with 75 feet of storage at the OR-211/East Access.

viii. Design and construct Leroy Avenue (North) as a north-south major collector. Leroy Avenue (North) is a major collector under City of Molalla jurisdiction. Current right-of-way width is approximately 60 feet and approximate pavement width is 42 feet with curb and gutter on the east side and mountable curb on the west side. Major collector streets on city facilities have three different cross sections. The cross section at the approach to OR-211 includes a 12-foot turn lane, two 11-foot travel lanes, two six-foot bike lanes, revised curb and gutter and six-foot wide curb tight sidewalks on west side to eliminate the mountable curb. Right of way width is 60 feet in all cross sections. Applicant will be required to construct a three-lane intersection approach and revise the west side curb and sidewalk to ODOT standards for distance of access to the signalized intersection. Signage and striping will be required through the taper to the two-lane cross section.

ix. Design and construct Leroy Avenue (South) as a north-south major collector. Leroy Avenue is a major collector under City of Molalla jurisdiction. Applicant will be required to dedicate approximately 60 feet of right-of-way and construct road improvements to City standards for 46 feet of pavement curb to curb. Cross section will include one 12-foot turn lane, two 11-foot travel lanes, two 6-foot bike lanes, curb and gutter, and 6-foot curb tight sidewalk on the west side only. Development of sidewalks on the east side will be a requirement of development of Lots 10 and 13. Roadway will extend south to southerly project limits and include type three barricades at the south end. A temporary "No Outlet" sign will be posted in the southbound direction until the connection to S. Lowe Road is constructed. The marked pedestrian crosswalk on the south leg of the Leroy Avenue access, between lots 1, 10, & 13, shall be constructed with crosswalk signage per City requirements. The developer shall be responsible to install all associated signing for this and other crosswalks along with 25 mph speed signs.

x. Applicant proposes to connect to the storm improvements on OR 211 for the Leroy Avenue (South) Extension. Applicant shall meet connection requirements to the

ODOT system. All storm improvements in ODOT right-of-way shall be designed shall meet shall be designed to meet ODOT requirements.

xi. An 8-inch sanitary main exists on private drive known as Hezzie Lane south. Applicant proposes to realign sanitary main to avoid the building shown on Lot 7. Applicant proposes to connect to realigned sewer with laterals. Current number of connections is three and applicant intends to exchange the existing connections for connections to the building on Lots 5, 6, and 7. Lots 1-4 will connect via laterals. The sewer realignment will require review by DEQ but does not constitute a need for a Certificate of Capacity based on DEQ's position not to require review of individual sewer lateral connections.

xii. Sanitary main shall extend to south on Leroy Avenue to the south project limits. This sewer extension is a dry line for future extension to the properties south of S. Lowe Road. Because no connections are being proposed for this sewer extension, this sewer extension should not constitute a need for a Certificate of Capacity and the City will recommend the same to DEQ.

xiii. Applicant proposes to extend a water main along the Leroy Avenue (South) extension. Lots 1 through 7 can be served from the extension and will need to be looped through Lot 4 or Lot 5 and connected to the waterline on OR 211. All waterlines shall be 8-inch. The waterline serving Lot 8 and Lot 9 may require a loop to the waterline on Lot 3 or Lot 4.

xiv. The waterline on the Leroy Avenue (South) extension shall be 12-inch and the developer will receive credits towards the upsizing from 8-inch to 12-inch.

xv. 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.

xvi. 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.

B. Conditions Requiring Resolution before Building or Grading Permit Application with Clackamas County:

1. Prior to application for building permit, the applicant shall submit to the City of Molalla:

a. A Site Plan Review application with final building permit plans for review and approval by City of Molalla. The plans shall address all issues outlined in Section "A" of these conditions of approval.

b. All building elevations and final site plans for Lots 1-13 shall be reviewed and approved by the City of Molalla, complying with Molalla Municipal Code Section 17-2.2.040 Development Standards, and Section 17-3.2 Building Orientation.

c. A landscaping plan that complies with the provisions of 17-3.4.030. Landscaping plans shall also comply with vision screening requirements outlined in Section 17-3.3-1.G and 17-3.4.030.C

d. Site and building design plans showing consistency with required vision clearance areas as shown in Figure 17-3.3-2.

e. Walkways and primary building entrances shall be designed consistent with building design standards of Section 17-3.2 and, where required, ADA requirements.

f. All outdoor storage areas, ground-mounted mechanical equipment, trash enclosures, and blank walls shall be screened from view from adjacent rights-of-way and residential uses by a sight-obscuring fence, wall, landscape screen of combination of screening methods. Section 17-3.4.030.A, B, and F.

g. A professional lighting plan demonstrating compliance with Section 17-3.4.050

h. All proposed fencing and walls shall be designed to be consistent with the non-residential fencing standards listed in section 17-3.4.040 and maintain vision clearance standards of Section 17-3.3.030.G.

i. A parking site plan showing that the entire shopping complex shall provide a minimum of 193 off-street parking spaces. Required parking to the shopping center shall not be designated for the apartment complex on adjacent property to the west and south. Section 17-3.5.030.A

j. A revised site plan showing all parking stalls abutting pedestrian walkways shall be equipped with a curbs or parking bumper to prevent vehicles from damaging buildings or encroaching into walkways, sidewalks, landscaping or public right-of-way. Section 17-3.5.030F

k. A revised site plan showing required minimum ADA parking stalls and be designed consistent with standards outlined in Section 17-3.5.030.H.

l. A revised site plan showing that the entire shopping complex shall provide a minimum of 39 bicycle parking spaces -- Section 17-3.5.040.A. Bicycle parking spaces shall be relocated to the walkway areas near the front entrances of each building. This may

require widening the walkways near the entrances of buildings to accommodate required bicycle parking for each building. Bicycle parking shall consist of stape-design steel racks or other City-approved racks, lockers or storage lids providing a safe and secure place to store bicycles, consistent with the City's Public Works Standards.

m. A revised site plan showing off-street loading areas in compliance with Section 17-3.5.050.

n. Pay applicable system development charges (SDCs), in accordance with Molalla Municipal Code (MMC) Section 13.14. Transportation, Water, Stormwater and Sanitary Sewer SDCs will be calculated with adopted fee methodology. The proposed development is exempt from Parks SDCs.

o. Detailed engineering plans demonstrating compliance with the MMC and City of Molalla Public Works Standards. All public improvement designs shall meet the requirements of the Molalla Standard Specifications for Public Works Construction as amended by the Public Works Director. All public utility/improvement plans submitted for review shall be submitted in a 22"x 34" format. The engineering plans shall also resolve these issues:

    i. Apply and receive approval for an approach permit for any access to ODOT highway.

    ii. Be designed consistent with an approved Oregon Department of Transportation (ODOT) permit. Submit three copies of the approved ODOT permit and conditions to City staff.

    iii. Be designed consistent with any approvals needed from the Oregon Division of State Lands (DSL). Submit three copies of the approved DSL permit or letter indicating that the final plans are consistent with DSL regulations, relating to wetland impacts**.**

    iv. All public and private walkways and driveway aprons shall be constructed of concrete, as approved by the City Engineer, and not less than six feet wide and be designed to meet Americans with Disabilities Act (ADA) requirements and to manage surface water run-off. Section 17-3.3.C.14-15

    v. All multi-use paths (designed for shared use by bicyclists and pedestrians) shall be concrete and conform to Public Works Design Standards and the Transportation System Plan.

    vi. Submit a revised plan showing all improvements required by ODOT and City. OR-211 right-of-way width is approximately 60 feet and approximate pavement width varies from 26 to 45 feet. Arterial streets on state facilities (w/TL, w/buffered BL, w/o PK) require 68 feet of right-of-way and 52 feet of pavement.

Applicant will be required to dedicate approximately 4 feet of right-of-way and, at a minimum, construct road improvements to ODOT standards for 38 feet of travel lanes (two through and one left turn lane), 2-foot wide buffer and 5-foot bike lane on south side, curb and gutter on south side, and 6-foot curb tight sidewalk on south side. ODOT may require additional shoulder improvements on the north side of the roadway as part of their conditions of approval. ODOT and City may require a median barrier for accesses with only right-in/right-out access. If required during design review, additional striping and pavement tapers may be necessary to allow for a roadway transition outside of the project limits.

vii. Submit a revised site plan designating east-bound bus stop location in accordance with the City's Transportation System Plan project T7.

viii. Access to public streets shall be limited to the accesses shown on Sheet P2.2 of the plans submitted with this development review application. Access spacing shall conform to the Transportation Systems Plan. The proposed width of accesses shall meet the Molalla Standard Specifications for Public Works Construction.

ix. Applicant will be required to provide water quality and detention in accordance with the Molalla Standard Specifications for Public Works Construction. Applicant proposes to connect to the storm improvements on OR 211 and will be required to meet connection requirements to the ODOT system.

x. An 8-inch sanitary main exists on private drive known as Hezzie Lane south. Applicant proposes to realign sanitary main to avoid the building shown on Lot 7. Applicant proposes to connect to realigned sewer with laterals. Current number of connections is three and applicant intends to exchange the existing connections for connections to the building on Lots 5, 6, and 7. Lots 1-4 will connect via laterals. The sewer realignment will require review by DEQ but does not constitute a need for a Certificate of Capacity based on DEQ's position not to require review of individual sewer lateral connections Applicant shall be responsible for submission of plans to state agency and all associated fees. Applicant's Engineer will be required to submit final report to DEQ and provide a copy of the report to the City.

xi. Applicant proposes to extend a water main along the Leroy Avenue (South) extension. Lots 1 through 7 can be served from the extension and will need to be looped through Lot 4 or Lot 5 and connected to the waterline on OR 211. All waterlines shall be 8-inch. The waterline serving Lot 8 and Lot 9 may require a loop to the waterline on Lot 3 or Lot 4.

xii. The waterline on the Leroy Avenue (South) extension shall be 12-inch and the developer will receive credits towards the upsizing from 8-inch to 12-inch.

xiii. 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.

xiv. All franchise utilities shall be provided underground. No overhead crossing of public right-of-way will be approved by the City.

xv. 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. Conditions to be Met During Construction:

1. Plans submitted for review shall meet the requirements described in Section 1 of the Molalla Standard Specifications for Public Works Construction.

2. 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.

3. 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.

4. 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.

5. 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.

6. Sanitary sewer designs require review by Oregon Department of Environmental Quality. Applicant shall be responsible for submission of plans to state agency and all associated fees. Applicant's Engineer will be required to submit final report to DEQ and provide a copy of the report to the City.

7. 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.

8. 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.

D. Ongoing Conditions

1. The property owner shall maintain landscaping and screening pursuant to section 17-3.4.030.G. 17-3.4.030.B

2. Fencing and walls shall be maintained on the property in good condition. section 17-3.4.040.F

3. The property owner shall maintain all required outdoor lighting in good condition. Section 17-3.4.050.E

CASCADE CENTER
COMMERCIAL DEVELOPMENT
MOLALLA, OREGON

PROJECT INFORMATION

PROPERTY INFORMATION

Address: 121 S Hezzie Lane, Molalla, OR
Tax Maps: 52E08C00800, 52E08C00801, 52E08C00900, 52E08C00700, 52E08C00400
Development Site Area: 19 Acres
Current Zone: General Commercial
Location: South Side of State Highway 211 Between N Hezzie Lane and Ridings Avenue.

APPLICANT/OWNER

I & E CONSTRUCTION
9550 SE Clackamas Road
Clackamas, OR. 97015
503-655-7933
CONTACT: Karl Ivanov

PROJECT SURVEYOR

MULTI TECH ENGINEERING SERVICES INC.
1151 13th Street S.E.
Salem, OR. 97302
503-363-9227
CONTACT: Robert Hamman P.L.S.

PROJECT CIVIL ENGINEER

I & E CONSTRUCTION
9550 SE Clackamas Road
Clackamas, OR. 97015
503-655-7933
CONTACT: George Snegirev P.E.

PROJECT TRAFFIC ENGINEER

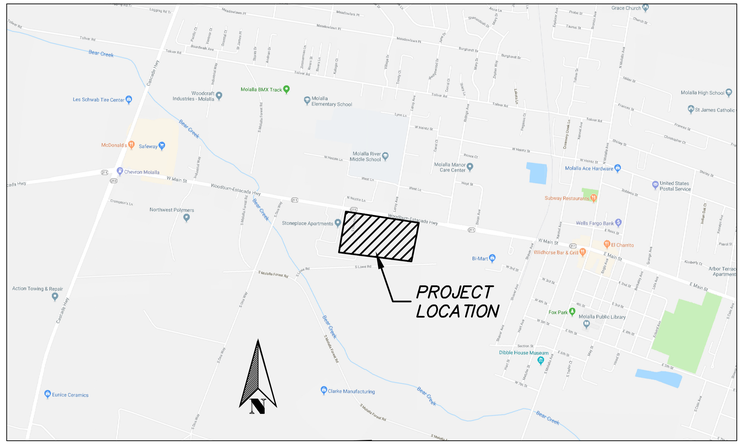
KITTELSON & ASSOCIATES, INC
851 SW 6th Avenue, Suite 600
Portland, OR. 97204
503-228-5230
CONTACT: Chris Brehmer P.E.

PROJECT ENVIRONMENTAL CONSULTANT

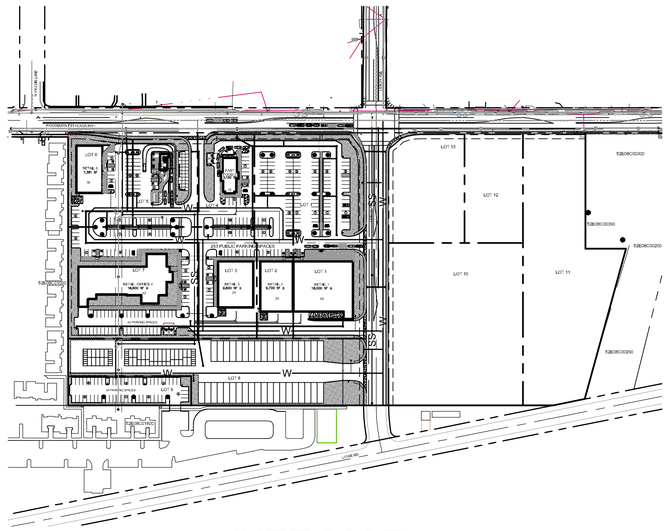
REDMOND GEOTECHNICAL SERVICES, LLC
PO Box 20547
Portland, OR. 97294
503-285-0598
CONTACT: Daniel M. Redmond P.E., G.E.

UTILITIES / SERVICES

WATER: CITY OF MOLALLA
SEWER: CITY OF MOLALLA
POWER: PORTLAND GENERAL ELECTRIC (PGE)
GAS: N.W. NATURAL GAS
PHONE: MOLALLA COMMUNICATIONS
CABLE: WAVE BROADBAND



VICINITY MAP



SITE MAP

SHEET INDEX

I&E CONSTRUCTION
9550 SE Clackamas Rd.
Clackamas, OR 97015
(503) 655-7933
www.iandeconstruction.com

REGISTERED PROFESSIONAL ENGINEER 55530 PRELIMINARY OREGON SEPT. 10, 2001 GEORGE SNEGIREV
EXPIRES 6-30-2020

CASCADE CENTER
MOLALLA, OREGON
COMMERCIAL DEVELOPMENT
COVER SHEET

REV.	DATE	BY

PROJECT NUMBER
18-016

DATE:	01/28/19
SCALE:	AS SHOWN
DRAWN BY:	GS
DESIGNED BY:	GS
CHECKED BY:	GS
FILE:	CCCD01P0.dwg

SHEET NUMBER
P0

CITY OF MOLALLA
X

XREF LIST
Ltscale: 1
Psltscale: 1
Resolved
CCCD01CX01
MOLCP1CX20
MOLCP1PX10
Unresolved

SITE DEMOLITION AND TREE REMOVAL NOTES

1. EXISTING MAILBOX TO BE REMOVED
2. EXISTING WATER METER TO BE REMOVED
3. EXISTING DRIVEWAY TO BE REMOVED
4. THE REMOVAL OF EXISTING DRAINAGE STRUCTURES IN THE RIGHT OF WAY IN HIGHWAY 211 WILL BE DETERMINED AT FINAL DESIGN OF THE HIGHWAY 211 IMPROVEMENTS
5. EXISTING SIGN TO BE RELOCATED
6. EXISTING TREES TO BE REMOVED
7. EXISTING BUILDING TO BE REMOVED
8. EXISTING OVERHEAD UTILITY LINES TO BE REMOVED
9. EXISTING UTILITY POLES TO BE REMOVED
10. EXISTING STORM DRAIN CULVERTS TO BE REMOVED
11. EXISTING FENCE TO BE REMOVED
12. EXISTING TREES TO BE PROTECTED
13. COORDINATE WITH UTILITY PROVIDERS FOR THE REMOVAL OF EXISTING UTILITIES (GAS, POWER, PHONE ETC.)
14. ANY SEPTIC TANKS OR WATER WELLS ON SITE ARE TO BE DECOMMISSIONED PER STATUTORY REGULATIONS

50' 25' 0 50'
SCALE: 1" = 50'

HIGHWAY 211 (60')
LEROY AVE (50')
LOWE ROAD (60')

52E08C00900
52E08C00801
52E08C01000
52E08C00800
52E08C00700
52E08C00600
52E08C00500
52E08C00400
52E08C00390
52E08C00300
52E08C00200
52E08C00290
52E08C01800
86-026162
82-010941
86-005434

I&E CONSTRUCTION
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REGISTERED PROFESSIONAL ENGINEER 55530 PRELIMINARY OREGON SEPT. 10, 2019 GEORGE SNEGIREV
EXPIRES 6-30-2020

CASCADE CENTER
MOLALLA, OREGON
COMMERCIAL DEVELOPMENT
EXISTING CONDITIONS PLAN

REV.	DATE	BY

PROJECT NUMBER
18-016

DATE:	01/28/19
SCALE:	AS SHOWN
DRAWN BY:	GS
DESIGNED BY:	GS
CHECKED BY:	GS
FILE:	CCCD01P11.dwg

SHEET NUMBER
P1.1

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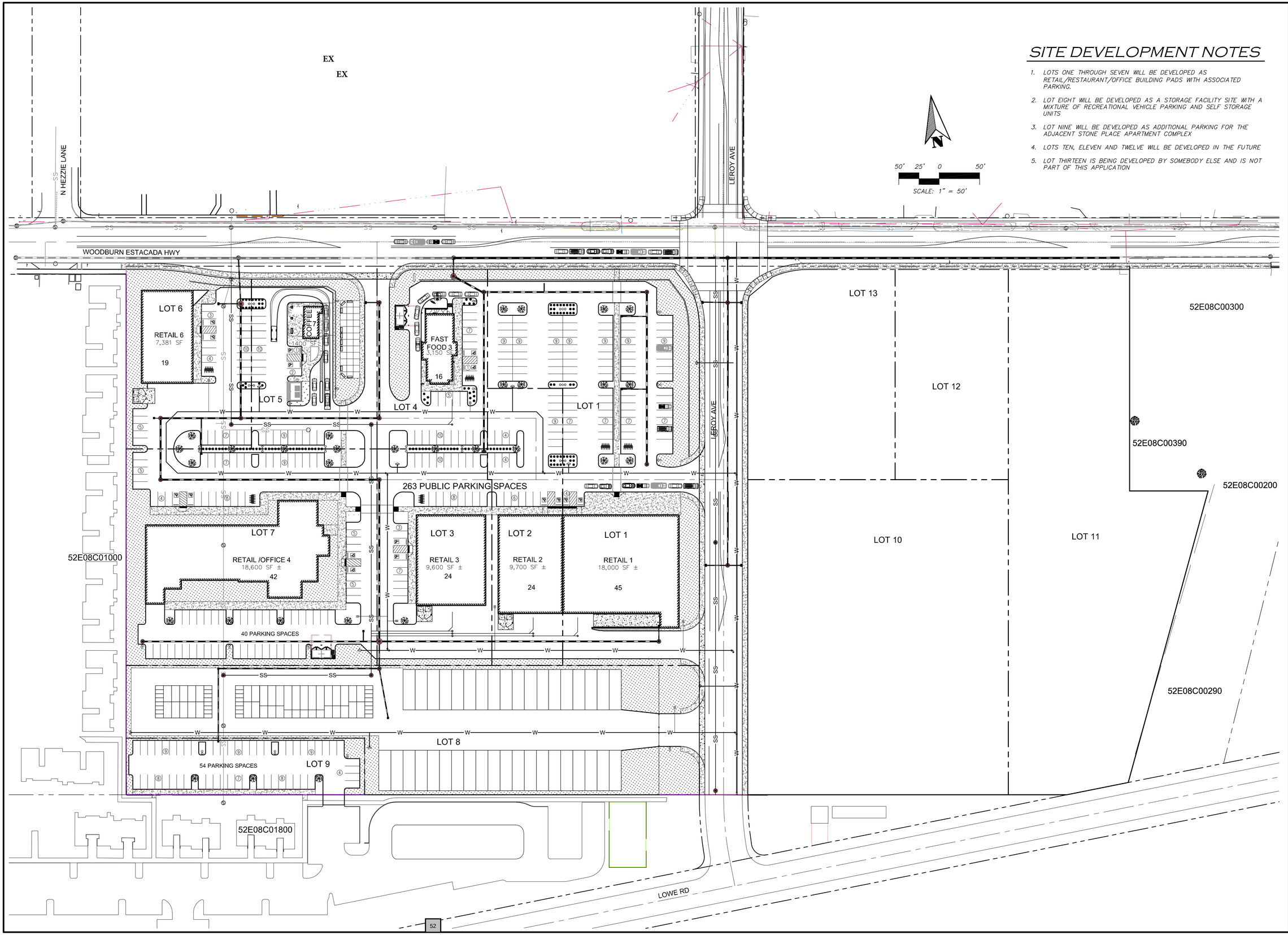

SITE DEVELOPMENT NOTES

1. LOTS ONE THROUGH SEVEN WILL BE DEVELOPED AS RETAIL/RESTAURANT/OFFICE BUILDING PADS WITH ASSOCIATED PARKING.
2. LOT EIGHT WILL BE DEVELOPED AS A STORAGE FACILITY SITE WITH A MIXTURE OF RECREATIONAL VEHICLE PARKING AND SELF STORAGE UNITS
3. LOT NINE WILL BE DEVELOPED AS ADDITIONAL PARKING FOR THE ADJACENT STONE PLACE APARTMENT COMPLEX
4. LOTS TEN, ELEVEN AND TWELVE WILL BE DEVELOPED IN THE FUTURE
5. LOT THIRTEEN IS BEING DEVELOPED BY SOMEBODY ELSE AND IS NOT PART OF THIS APPLICATION

I&E CONSTRUCTION
9550 SE Clackamas Rd.
Clackamas, OR 97015
(503) 655-7933
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REGISTERED PROFESSIONAL ENGINEER 55530 PRELIMINARY OREGON SEPT. 10, 2001 GEORGE SNEGIREV
EXPIRES 6-30-2020

CASCADE CENTER
MOLALLA, OREGON
COMMERCIAL DEVELOPMENT
OVERALL DEVELOPMENT PLAN

REV.	DATE	BY

PROJECT NUMBER
18-016

DATE:	01/28/19
SCALE:	AS SHOWN
DRAWN BY:	GS
DESIGNED BY:	GS
CHECKED BY:	GS
FILE:	CCCD01P21.dwg

SHEET NUMBER
P2.1

CITY OF MOLALLA
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Psltscale: 1

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MOLCP1PX50

Unresolved

N HEZZIE LANE

LEROY AVE

WOODBURN ESTACADA HWY

40' 20' 0 40'
SCALE: 1" = 40'

SITE FEATURES

1. CIVIC SPACE: BENCHES, SCORED CONCRETE
2. SHOPPING CENTER SIGN
3. CIVIC SPACE: FLAG POLE, MONUMENT, STATUE
4. BICYCLE PARKING
5. PEDESTRIAN WALKWAY
6. CONCRETE DRIVEWAY APRON
7. ADA VAN ACCESSIBLE PARKING
8. SECURITY FENCE AROUND STORAGE FACILITY

LOT 6
RETAIL 6
7,381 SF
19

COFFEE 7
1400 SF
16

FAST FOOD 3
3,150 SF
16

LOT 5
LOT 4
LOT 1
LOT 13
LOT 12
LOT 10

263 PUBLIC PARKING SPACES

LOT 7
RETAIL /OFFICE 4
18,600 SF ±
42

LOT 3
RETAIL 3
9,600 SF ±
24

LOT 2
RETAIL 2
9,700 SF ±
24

LOT 1
RETAIL 1
18,000 SF ±
45

40 PARKING SPACES

LOT 8
LOT 9
54 PARKING SPACES

52E08C01000
52E08C01800

LOT AREA BREAKDOWN

Lot No.	Total Area in sq ft	Paved Driveway Aisle / Parking		Buildings		Landscaping		Hardscaping	
		Paved area in sq ft	% of Total	Building area in sq ft	% of Total	Landscaping area in sq ft	% of Total	Hardscaping area in sq ft	% of Total
Lot 1	95,738.10	49,131.43	51.32 %	18,000.00	18.80 %	18,223.97	19.04 %	10,382.70	10.84 %
Lot 2	30,615.03	18,026.01	58.88 %	9,759.64	31.88 %	1,748.22	5.71 %	1,081.16	3.53 %
Lot 3	37,802.16	22,096.84	58.45 %	9,632.00	25.48 %	3,662.57	9.69 %	2,410.75	6.38 %
Lot 4	29,951.99	17,528.06	58.52 %	3,148.00	10.51 %	6,304.66	21.05 %	2,971.27	9.92 %
Lot 5	32,626.60	19,590.69	60.05 %	818.00	2.51 %	5,679.53	17.41 %	6,538.38	20.04%
Lot 6	33,636.94	16,655.50	49.52 %	7,381.00	21.94 %	7,557.93	22.47 %	2,042.51	6.07 %
Lot 7	83,062.34	35,916.08	43.24 %	18,620.00	22.42 %	21,252.86	25.59 %	7,273.40	8.76 %
Lot 8	92,771.35	36,938.38	39.82 %	38,100.00	41.07 %	17,191.20	18.53 %	541.77	0.58 %
Lot 9	20,649.85	15,875.25	76.88 %	0.00	N/A	3,161.35	15.31 %	1,613.25	7.81 %

I&E CONSTRUCTION
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REGISTERED PROFESSIONAL ENGINEER 55530 OREGON SEPT. 10, 2001 GEORGE SNEGIREV
EXPIRES 6-30-2020

PRELIMINARY

CASCADE CODE CENTER
MOLALLA, OREGON
COMMERCIAL DEVELOPMENT
WESTERN HALF SITE PLAN

REV.	DATE	BY

PROJECT NUMBER
18-016
DATE: 01/28/19
SCALE: AS SHOWN
DRAWN BY: GS
DESIGNED BY: GS
CHECKED BY: GS
FILE: CCCD01P22.dwg

SHEET NUMBER
P2.2

CITY OF MOLALLA
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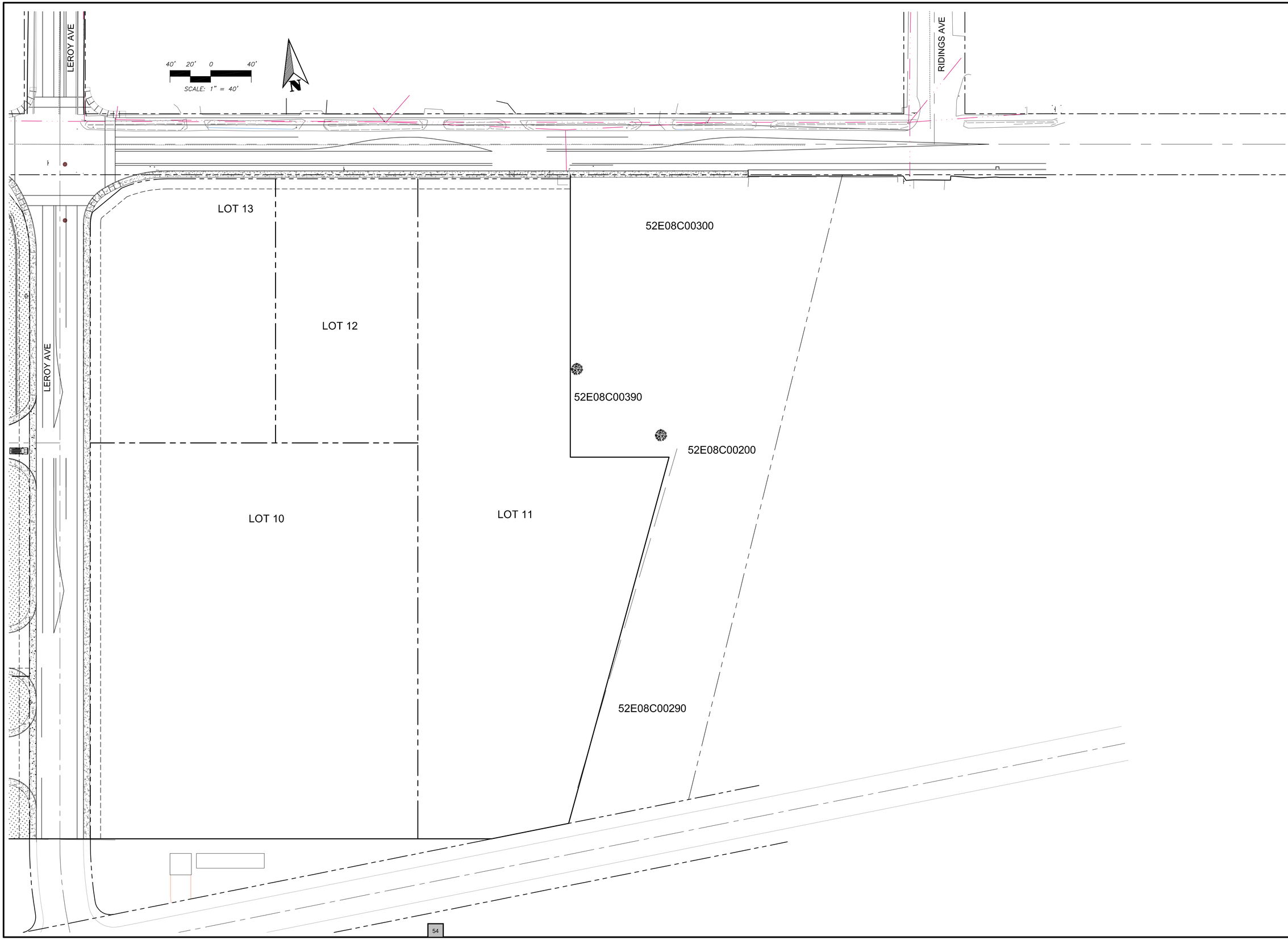

I&E CONSTRUCTION
9550 SE Clackamas Rd.
Clackamas, OR 97015
(503) 655-7933
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REGISTERED PROFESSIONAL ENGINEER
55530
PRELIMINARY
OREGON
SEPT. 10, 2001
GEORGE SNEGIREV
EXPIRES 6-30-2020

CASCADE CENTER
MOLALLA, OREGON
COMMERCIAL DEVELOPMENT
EASTERN HALF SITE PLAN

REV.	DATE	BY

PROJECT NUMBER
18-016

DATE:	01/28/19
SCALE:	AS SHOWN
DRAWN BY:	GS
DESIGNED BY:	GS
CHECKED BY:	GS
FILE: CCCD01P23.dwg	

SHEET NUMBER
P2.3

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XREF LIST
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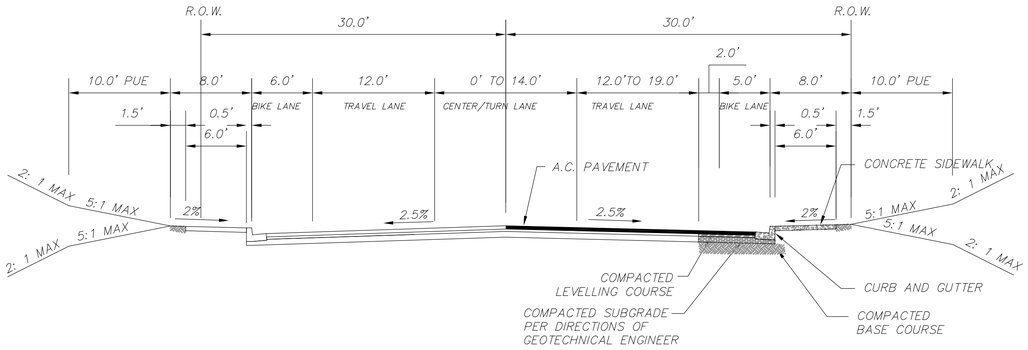
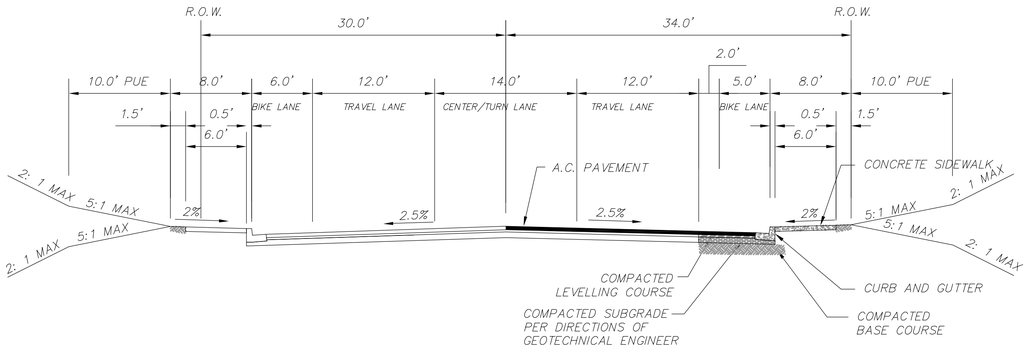
Psltscale: 1
Resolved
CCCD01CX01
Unresolved

NOTE: THE EXISTING ROADWAY ON THE NORTH SIDE OF STATE HIGHWAY 211 VARIES FROM PAVEMENT, CURB AND GUTTER AND SIDEWALK TO PAVEMENT, DRAINAGE DITCH AND NO SIDEWALK. TO SIMPLIFY MATTERS PAVEMENT, CIRB AND GUTTER AND SIDEWALK IS ONLY SHOWN.



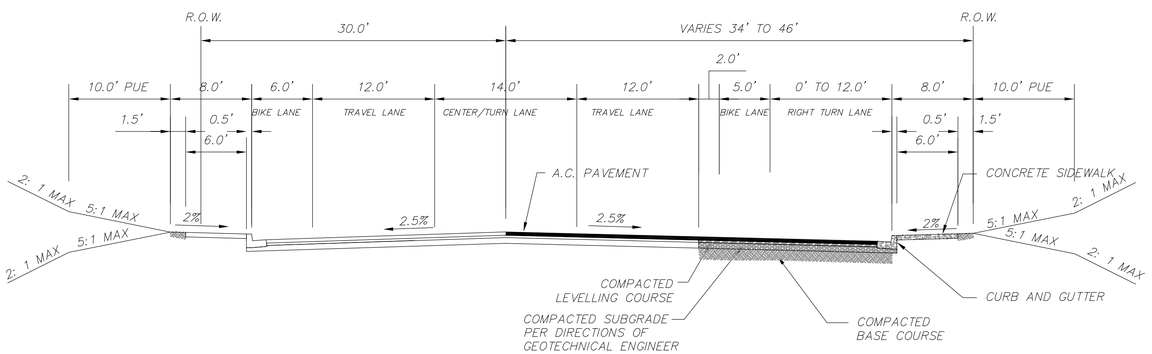
HIGHWAY 211
STA 16+69 TO STA 19+14

SCALE: NTS



HIGHWAY 211
STA 5+86 TO STA 16+69

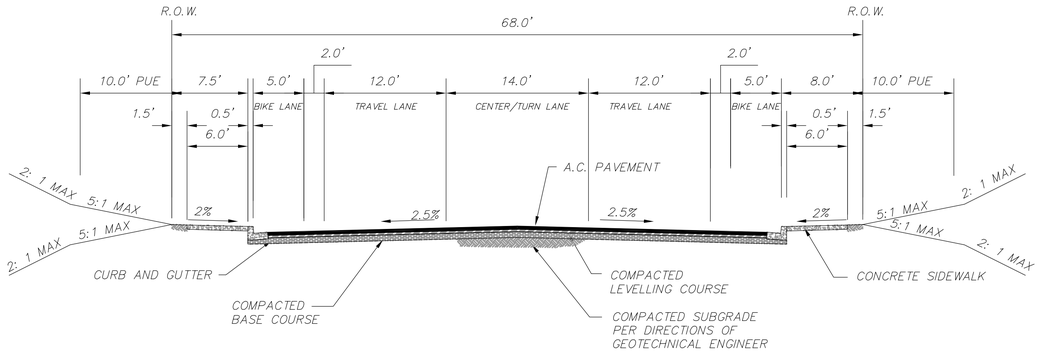
SCALE: NTS



HIGHWAY 211
STA 2+62.00 TO STA 5+86

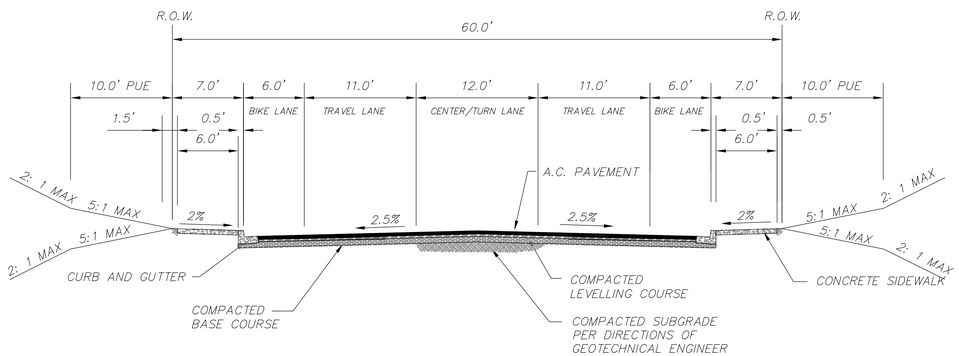
SCALE: NTS

NOTE: THE INTERSECTION OF STATE HIGHWAY 211 AND LEROY AVENUE HAS THE FOLLOWING STATIONING
STA 10+00.00 FOR STATE HIGHWAY 211
STA 5+00.00 FOR LEROY AVENUE



HIGHWAY 211 ULTIMATE ROADWAY SECTION

SCALE: NTS



LEROY AVENUE EXTENSION
STA 5+00.00 TO STA 11+83.70

SCALE: NTS

I&E CONSTRUCTION
9550 SE Clackamas Rd.
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REGISTERED PROFESSIONAL ENGINEER 55530 PRELIMINARY OREGON SEPT. 10, 2019 GEORGE SNEGIREV
EXPIRES 6-30-2020

CASCADE CENTER
MOLALLA, OREGON
COMMERCIAL DEVELOPMENT
TYPICAL ROADWAY SECTIONS

REV.	DATE	BY

PROJECT NUMBER
18-016

DATE:	01/28/19
SCALE:	AS SHOWN
DRAWN BY:	GS
DESIGNED BY:	GS
CHECKED BY:	GS
FILE: CCCD01P24.dwg	

SHEET NUMBER
P2.4

CITY OF MOLALLA
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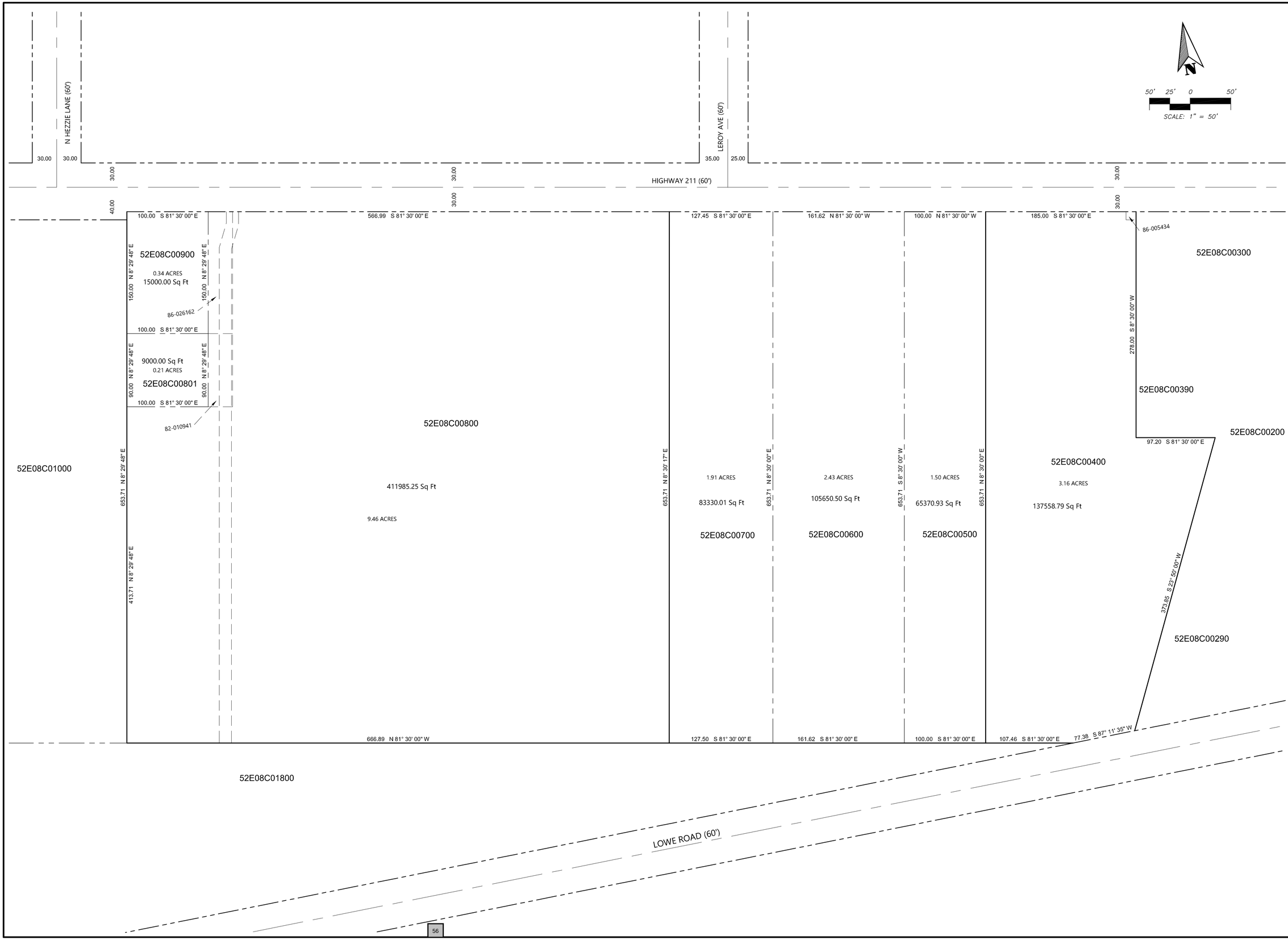

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REGISTERED PROFESSIONAL ENGINEER
55530
OREGON
SEPT. 10, 2001
GEORGE SNEGIREV
PRELIMINARY
EXPIRES 6-30-2020

CASCADE CENTER
MOLALLA, OREGON
COMMERCIAL DEVELOPMENT
EXISTING BOUNDARIES PLAN

REV.	DATE	BY

PROJECT NUMBER
18-016

DATE:	01/28/19
SCALE:	AS SHOWN
DRAWN BY:	GS
DESIGNED BY:	GS
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SHEET NUMBER
P2.5

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Resolved
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MOLCP1PX57
Unresolved

EASEMENT NOTES

1. 10' WIDE PUE ALONG FRONTAGE OF STATE HIGHWAY 211 AND LEROY AVENUE
2. 8' WIDE PUE ALONG WESTERN AND SOUTHERN PROPERTY LINE OF LOTS 1 THRU 7
3. ACCESS, SANITARY SEWER, STORM DRAINAGE AND WATER LINE EASEMENT FOR THE BENEFITS OF LOTS 1 THRU 7

N

50' 25' 0 50'

SCALE: 1" = 50'

N HEZZIE LANE

LEROY AVE

WOODBURN ESTACADA HIGHWAY (OR 211, MAIN STREET)

LOT 6 — 33636.94 Sq Ft — 0.77 ACRES

LOT 5 — 32626.60 Sq Ft — 0.75 ACRES

LOT 4 — 29951.99 Sq Ft — 0.69 ACRES

95738.10 Sq Ft — 2.20 ACRES

LOT 7 — 83062.34 Sq Ft — 1.91 ACRES

LOT 3 — 37802.16 Sq Ft — 0.87 ACRES

LOT 2 — 30615.03 Sq Ft — 0.70 ACRES

LOT 1

LOT 8 — 92771.35 Sq Ft — 2.13 ACRES

LOT 9 — 20649.85 Sq Ft — 0.47 ACRES

LOT 13 — 46510.73 Sq Ft — 1.07 ACRES

LOT 12 — 36435.04 Sq Ft — 0.84 ACRES

LOT 10 — 125537.25 Sq Ft — 2.88 ACRES

LOT 11 — 114079.01 Sq Ft — 2.62 ACRES

52E08C01000

52E08C01800

52E08C00300

52E08C00390

52E08C00200

52E08C00290

LOWE ROAD

I&E CONSTRUCTION
9550 SE Clackamas Rd.
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REGISTERED PROFESSIONAL ENGINEER 55530 OREGON SEPT. 10, 2001 GEORGE SNEGIREV

PRELIMINARY

EXPIRES 6-30-2020

CASCADE CENTER
MOLALLA, OREGON
COMMERCIAL DEVELOPMENT
PRELIMINARY PLAT

REV.	DATE	BY

PROJECT NUMBER
18-016

DATE:	01/28/19
SCALE:	AS SHOWN
DRAWN BY:	GS
DESIGNED BY:	GS
CHECKED BY:	GS
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SHEET NUMBER
P2.6

CITY OF MOLALLA
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MOLCP1CX15
MOLCP1PX50
Unresolved

N HEZZIE LANE

WOODBURN ESTACADA HWY

LEROY AVE

40' 20' 0 40'
SCALE: 1" = 40'

LOT 6
RETAIL 6
7,381 SF
FFE 348.00
19

LOT 5

400 SF
FFE 348.50

FFE 349.00
FAST FOOD 3
3,150 SF
16

LOT 4

LOT 1

LOT 13

LOT 12

263 PUBLIC PARKING SPACES

LOT 7
FFE 351.25
RETAIL /OFFICE 4
18,600 SF ±
42

52E08C01000

LOT 3
RETAIL 3
9,600 SF ±
24
FFE 352.75

LOT 2
RETAIL 2
9,700 SF ±
24
FFE 353.25

LOT 1
RETAIL 1
18,000 SF ±
45
FFE 353.25

LOT 10

40 PARKING SPACES

LOT 8

54 PARKING SPACES

LOT 9

52E08C01800

58

I&E CONSTRUCTION
9550 SE Clackamas Rd.
Clackamas, OR 97015
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REGISTERED PROFESSIONAL ENGINEER
55530
OREGON
PRELIMINARY
SEPT. 10, 2019
GEORGE SNEGIREV
EXPIRES 6-30-2020

CASCADE CENTER
MOLALLA, OREGON
COMMERCIAL DEVELOPMENT
WESTERN HALF GRADING PLAN

REV.	DATE	BY

PROJECT NUMBER
18-016

DATE:	01/28/19
SCALE:	AS SHOWN
DRAWN BY:	GS
DESIGNED BY:	GS
CHECKED BY:	GS
FILE:	CCCD01P31.dwg

SHEET NUMBER
P3.1

CITY OF MOLALLA
X

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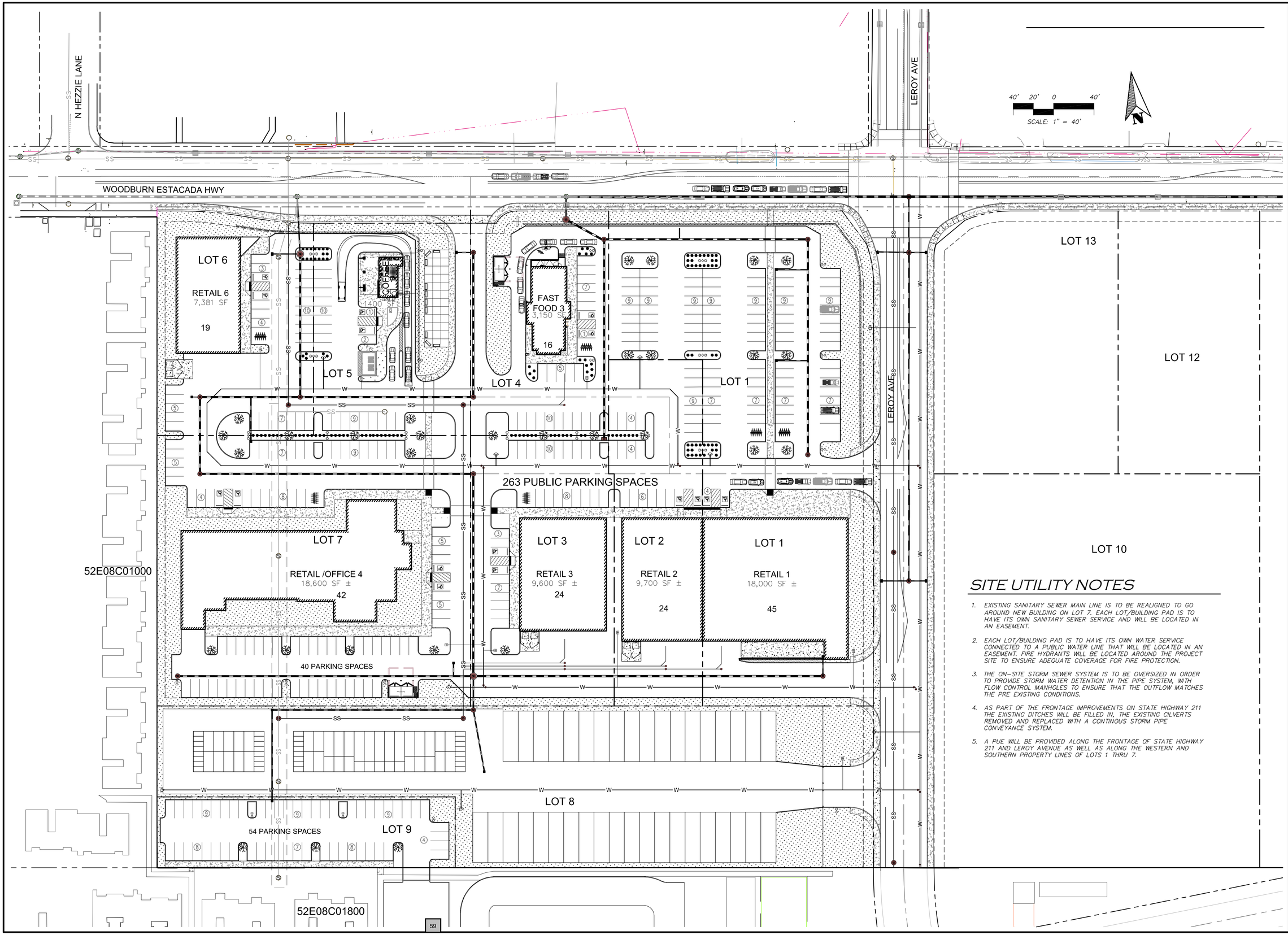

SITE UTILITY NOTES

1. EXISTING SANITARY SEWER MAIN LINE IS TO BE REALIGNED TO GO AROUND NEW BUILDING ON LOT 7. EACH LOT/BUILDING PAD IS TO HAVE ITS OWN SANITARY SEWER SERVICE AND WILL BE LOCATED IN AN EASEMENT.
2. EACH LOT/BUILDING PAD IS TO HAVE ITS OWN WATER SERVICE CONNECTED TO A PUBLIC WATER LINE THAT WILL BE LOCATED IN AN EASEMENT. FIRE HYDRANTS WILL BE LOCATED AROUND THE PROJECT SITE TO ENSURE ADEQUATE COVERAGE FOR FIRE PROTECTION.
3. THE ON-SITE STORM SEWER SYSTEM IS TO BE OVERSIZED IN ORDER TO PROVIDE STORM WATER DETENTION IN THE PIPE SYSTEM, WITH FLOW CONTROL MANHOLES TO ENSURE THAT THE OUTFLOW MATCHES THE PRE EXISTING CONDITIONS.
4. AS PART OF THE FRONTAGE IMPROVEMENTS ON STATE HIGHWAY 211 THE EXISTING DITCHES WILL BE FILLED IN, THE EXISTING CILVERTS REMOVED AND REPLACED WITH A CONTINOUS STORM PIPE CONVEYANCE SYSTEM.
5. A PUE WILL BE PROVIDED ALONG THE FRONTAGE OF STATE HIGHWAY 211 AND LEROY AVENUE AS WELL AS ALONG THE WESTERN AND SOUTHERN PROPERTY LINES OF LOTS 1 THRU 7.

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55530
OREGON
SEPT. 10, 2001
GEORGE SNEGIREV
PRELIMINARY
EXPIRES 6-30-2020

CASCADE CENTER
MOLALLA, OREGON
COMMERCIAL DEVELOPMENT
PRELIMINARY UTILITY PLAN

REV.	DATE	BY

PROJECT NUMBER
18-016

DATE:	01/28/19
SCALE:	AS SHOWN
DRAWN BY:	GS
DESIGNED BY:	GS
CHECKED BY:	GS
FILE:	CCCD01P41.dwg

SHEET NUMBER
P4.1

CITY OF MOLALLA
X

NAME: PJE Construction\Molalla\CCCD01P41.dwg DATE: JAN 28, 2019 TIME: 3:19 PM

XREF LIST
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Psltscale: 1
Resolved
CCCD01CX01
MOLCP1CX15
MOLCP1PX50
Unresolved

N HEZZIE LANI

WOODBURN ESTACADA HWY

LEROY AVE

40' 20' 0 40'
SCALE: 1" = 40'

N

LOT 6
RETAIL 6
7,381 SF
19

COFFEE
1400 SF
16

LOT 5

FAST FOOD 3
3,150 SF
16

LOT 4

LOT 1

LOT 13

LOT 12

LOT 10

263 PUBLIC PARKING SPACES

LOT 7
RETAIL /OFFICE 4
18,600 SF ±
42

40 PARKING SPACES

LOT 3
RETAIL 3
9,600 SF ±
24

LOT 2
RETAIL 2
9,700 SF ±
24

LOT 1
RETAIL 1
18,000 SF ±
45

52E08C01000

LOT 8

54 PARKING SPACES

LOT 9

52E08C01800

60

LANDSCAPING AND LIGHTING NOTES

1. 3.5' HIGH HEDGE
2. TREES, 25' TO 30' MATURE HEIGHT
3. SHRUBS, 3' TO 4' MATURE HEIGHT
4. GRASS/GROUNDCOVER
5. SINGLE ARM LIGHT POLE, 16' TO 20' MAST HEIGHT
6. DOUBLE ARM LIGHT POLE, 16' TO 20' MAST HEIGHT
7. EXTERIOR BUILDING LIGHTS TO ILLUMINATE ADJACENT SIDEWALKS

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REGISTERED PROFESSIONAL ENGINEER 55530 OREGON
PRELIMINARY
SEPT. 10, 2019
GEORGE SNEGIREV
EXPIRES 6-30-2020

CASCADE CENTER
MOLALLA, OREGON
COMMERCIAL DEVELOPMENT
WESTERN HALF LANDSCAPING , LIGHTING PLAN

REV.	DATE	BY

PROJECT NUMBER
18-016

DATE:	01/28/19
SCALE:	AS SHOWN
DRAWN BY:	GS
DESIGNED BY:	GS
CHECKED BY:	GS
FILE:	CCCD01P51.dwg

SHEET NUMBER
P5.1

CITY OF MOLALLA
X

NAME: PIE Construction\Molalla\CCCD01P51.dwg DATE: JAN 28, 2019 TIME: 3:41 PM

EXHIBIT B

Preliminary Subdivision Narrative

Cascade Center Commercial Development

Preliminary Subdivision Narrative

Cascade Center Commercial Development

City of Molalla, Oregon

Prepared for:

IE Construction
9550 SE Clackamas Road
Clackamas, OR 97015

Prepared By:

George Snegirev

IE Construction
9550 SE Clackamas Road
Clackamas, OR 97015

October 8th, 2018

Table of Contents

DESCRIPTION

This project is a development of a thirteen lot commercial subdivision on a 19 total acre property located at 121 S Hezzie Lane in Molalla, Oregon. The properties can also be located by the Clackamas County Map under the following information: 52E08C00800, 52E08C00801, 52E08C00900, 52E08C00700, 52E08C00400, 52R08C00600 and 52E08C00500

EXISTING CONDITIONS

The project site is a collection of seven lots, some have homes on them, while others are empty. The lots have access from State Highway 211. There are trees scattered over the property. The site slopes from south east to north west away from the back of the properties towards the street.

PROPOSED DEVELOPMENT

The proposed development will consist of a re-plat of the existing seven lots into thirteen new lots for commercial use. Lots one through seven will have retail/restaurant/office building pads with associated parking. Lot eight will be a mixture of recreational vehicle and self storage units. Lot nine will be additional parking for the adjacent Stone Place apartment complex. Lots ten thru twelve will be developed in the future. Lot thirteen is being developed by someone else. Access to these new commercial lots will come of either the existing Highway 211 or a new proposed roadway which is the extension of Leroy Avenue. There will be shared access driveways that will serve all the internal lots of the commercial subdivision. All these lots will be serviced with storm, sanitary and water for domestic use as well as fire protection.

CODE COMPLIANCE

This section will demonstrate that this project is in either compliance with the criteria of the Molalla Development Code or if any Zoning Adjustments or Variances will be required.

17-4.2 SITE DESIGN REVIEW

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).

Applicants Response: Information is being submitted for a Type III review.

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).

Applicants Response: a Storm water Management Plan and Traffic Impact Analysis is provided with this submittal.

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.

Applicants Response: a Site Analysis Map is provided as part of this submittal.

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;

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.

Applicants Response: a Site Plan of the proposed development is provided as part of this submittal

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.

Applicants Response: Building plans and elevations are provided as part of this submittal

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.

Applicants Response: a Grading Plan is provided as part of this submittal

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.

Applicants Response: a Landscaping Plan will be provided at a later date.

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

Applicants Response: The shared access and utility easements will be maintained under separate agreements. The agreements will be provided at a later date.

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

Applicants Response: This document will serve as the narrative report documenting compliance with the applicable approval criteria.

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

Applicants Response: a Traffic Impact Analysis is provided as part of this submittal

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.

Applicants Response: a Phase I Environmental Site Assessment is provided as part of this submittal

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;

Applicants Response: A completed application is provided as part of this submittal

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;

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;

Applicants Response: Not Applicable

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

5. Chapter 17-3.7 Signs;

Applicants Response: The development and design standards of Article 17-3 will be addressed in other sections of this application which are provided as part of this submittal

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

Applicants Response: All adverse impacts to adjacent properties will be avoided or minimized to the fullest extent as feasible.

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

Applicants Response: Not Applicable

17-4.2.060 Assurances

Public improvement required as part of a Site Design Review approval shall be subject to the performance guarantee and warranty bond provisions of Section 17-3.6.090, as applicable.

Applicants Response: A performance guarantee and warranty bond for the public improvements will be provided as required.

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.

Applicants Response: The completed application forms are provided as part of this submittal

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;

Applicants Response: The completed application forms are provided as part of this submittal

b. Plans and exhibits required for the specific approval(s) being sought;

Applicants Response: The necessary plans and exhibits are provided as part of this submittal

c. A written statement or letter explaining how the application satisfies each and all of the relevant criteria and standards in sufficient detail;

Applicants Response: This narrative explains how the application satisfies each and all of the relevant criteria and standards

d. Information demonstrating compliance with prior decision(s) and conditions of approval for the subject site, as applicable; and

Applicants Response: Not Applicable

e. The required fee.

Applicants Response: A payment amount for the appropriate fees is provided as part of this submittal

f. Comments, if obtained from neighborhood contact per Section 17-4.1.070.

Applicants Response: The criteria of Neighborhood Contact will be complied with per Section 17-4.0.070

17-3 COMMUNITY DESIGN STANDARDS

17-3.1 DESIGN STANDARDS ADMINISTRATION

17-3.1.010 Purpose

Division III contains design standards for the built environment. The standards are intended to protect the public health, safety, and welfare through multimodal accessibility and interconnectivity, and through the provision of parking, landscaping, and adequate public facilities.

17-3.1.020 Applicability

The provisions of Division III apply to permits and approvals granted under this Code, and other City actions, as summarized in Table 17-3.1.020.

17-3.2 BUILDING ORIENTATION AND DESIGN

17-3.2.010 Purpose

Chapter 17-3.2 regulates the placement, orientation, and design of buildings. The regulations are intended to protect public health, safety, and welfare through clear and objective standards that promote land use compatibility and livability, while protecting property values and ensuring predictability in the development process. In summary, Chapter 17-3.2 is intended to create and maintain a built environment that:

A. Is conducive to walking and bicycling;

B. Provides natural surveillance of public spaces, or “eyes on the street,” for crime prevention and security;

C. Reduces dependency on the automobile for short trips, thereby conserving energy and reducing unwanted congestion;

D. Encourages the use of water-conserving landscaping;

E. Allows for the integration of surface water management facilities within parking lots and landscape areas; and

F. Creates a sense of place that is consistent with the character of the community, including historical development patterns and the community vision.

17-3.2.020 Applicability

Chapter 17-3.2 applies to all new buildings, including single-family detached homes, and exterior alterations to existing buildings. The Planning Official, through a Type II procedure, may grant adjustments to Chapter 17-3.2, pursuant to the criteria of Chapter 17-4.7 Adjustments and Variances.

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.

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.

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.
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.

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.

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.

Applicants Response: The above conditions for Building Orientation have been considered and adhered to as much as possible. But there is also the needs of the prospective tenants/owners of these commercial subdivision lots that factor in on the layout of the site. A compromise will be necessary to make sure all parties concerned will be met with their needs to make this a viable project.

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.

1. The site plan or preliminary subdivision plan, as applicable, shall comply with the street connectivity standards of Section 17-3.6.020. The plan approval shall bind on all future phases of the development, if any, to the approved block layout.

2. Except as provided by subsections C.6 through 9, the site shall be configured into blocks with building pads that have frontage onto improved streets meeting City standards, and shall contain interior parking courts and with interconnected pedestrian walkways.

3. The build-to line standards in Table 17-2.2.040.E shall be met across not less than 75 percent of the site's street frontage, consistent with subsection 17-3.2.040.B, except the build-to standard does not apply where a railroad, expressway, water body, topographic constraint, or similar physical constraint makes it impractical to orient buildings to a particular street or highway.

4. Walkways shall connect the street right-of-way to all primary building entrances, and shall connect all primary building entrances to one another, including required pedestrian crossings through interior parking areas, if any, in accordance with Section 17-3.3.040. The Planning Official may condition development to provide facilities exceeding those required by Section 17-3.3.040, including a requirement for lighting, stairways, ramps, and midblock pedestrian access ways (e.g., to break up an otherwise long block) to ensure reasonably safe, direct, and convenient pedestrian circulation. Development in the right-of-way shall be approved by the City Engineer.

5. Buildings placed at a block corner shall have a primary entrance oriented to the block corner. That entrance shall be located no more than 20 feet from the corner, as measured from the street curb and shall have a direct and convenient pedestrian walkway connecting to the corner sidewalk.

6. All buildings shall orient to a street, pursuant to subsection B. Where it is not practical to orient all buildings to streets due to existing parcel configuration or a similar site constraints, buildings may orient to a "shopping street" providing, at a minimum, on-street parking (parallel or angled parking), 10-foot sidewalks (which shall include a four-foot zone for street trees and furnishings such as benches and other street furniture), and pedestrian-scale lighting. Shopping street dimensions do not apply to the public right-of-way.

7. Each building that is proposed as orienting to a shopping street shall comply with the orientation standards of subsection B in reference to the shopping street, and shall have at least one primary entrance oriented to the shopping street.

8. Where a building fronts both a shopping street and a public street, that building shall contain at least one primary entrance oriented to each street; except that an entrance is not required where the public street is not improved with a sidewalk and the City determines that sidewalk improvements to the public street cannot be required as a condition of approval.

9. All other provisions of this Code apply to large-format developments.

Applicants Response: The above conditions for Large-Format Developments have been considered and adhered to as much as possible. But there is also the needs of the prospective tenants/owners of these commercial subdivision lots that factor in on the layout of the site. A compromise will be necessary to make sure all parties concerned will be met with their needs to make this a viable project.

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 to 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.

Applicants Response: This condition will be considered and will be reviewed as part of the design review and building permit process for each individual building.

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.

Applicants Response: This condition will be considered and will be reviewed as part of the design review and building permit process for each individual building.

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.

Applicants Response: There are no buildings located on corner lots.

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.

Applicants Response: Each buildings primary entrances are at street level and are ADA accessible from parking lots and street sidewalk.

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.

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.

Applicants Response: Each buildings internal functionality and operational procedures may not allow for incorporating 60 percent transparency for the storefront windows. This condition will be considered and will be reviewed as part of the design review and building permit process for each individual building.

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.

Applicants Response: The buildings on this project site will be of a one-story design

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.

Applicants Response: All buildings are adjacent to a shopping street

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.

Applicants Response: Each buildings internal functionality and operational procedures may not allow for incorporating transparency for the side and rear elevation windows. This condition will be considered and will be reviewed as part of the design review and building permit process for each individual building.

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.

Applicants Response: This condition will be considered and will be reviewed as part of the design review and building permit process for each individual building.

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.

Applicants Response: This condition will be considered and will be reviewed as part of the design review and building permit process for each individual building.

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).

Applicants Response: This condition will be considered and will be reviewed as part of the design review and building permit process for each individual building.

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.

Applicants Response: This condition will be considered and will be reviewed as part of the design review and building permit process for each individual building.

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.

Applicants Response: This condition will be considered and will be reviewed as part of the design review and building permit process for each individual building.

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.

Applicants Response: This condition will be considered and will be reviewed as part of the design review and building permit process for each individual building.

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.

Applicants Response: The buildings on this project site will be of a one-story design

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.

Applicants Response: This condition will be considered and will be reviewed as part of the design review and building permit process for each individual bu

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.

Applicants Response: This condition will be considered and will be reviewed as part of the design review and building permit process for each individual building.

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.

Applicants Response: This condition will be considered and will be reviewed as part of the design review and building permit process for each individual building.

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.

Applicants Response: This condition will be considered and will be reviewed as part of the design review and building permit process for each individual building.

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

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

17-3.2.050 Civic Space and Pedestrian Amenities

A. **Purpose.** This section provides standards for civic spaces where such areas are required or provided voluntarily. Civic spaces allow for light and air circulation, visual relief, pedestrian resting areas, and opportunities for socialization in the most densely developed parts of the City. The code allows projects to meet minimum landscape area standards of Chapter 17-3.4 by providing civic space adjacent to street frontages or in courtyards or plazas between buildings, instead of with planted areas elsewhere on a lot as is typically done for residential developments.

B. **Applicability.** All new commercial and mixed use developments with more than 10,000 square feet of gross leasable floor area within the Central Commercial C-1 and General Commercial C-2 zones are required to meet the standards of this section.

C. **Standards.**

1. Civic Space Standards. Except as provided by subsections C.3 and 4, at least three percent of every development site shall be designated and improved as civic space (plaza, landscaped courtyard, or similar space) that is accessible to the general public, pursuant to all of the following standards in subdivisions a through e, and as generally illustrated in Figure 17-3.2-12:

a. The highest priority locations for civic space improvements are those with the highest pedestrian activity (e.g., street corners and pedestrian access ways), as generally illustrated.

b. Civic spaces shall abut a public right-of-way or otherwise be connected to and visible from a public right-of-way by a sidewalk or pedestrian access way. Access ways shall be identifiable with a change in paving materials (e.g., pavers inlaid in concrete or a change in pavement scoring patterns or texture).

c. Where public access to a civic space is not practical due to existing development patterns, physical site constraints, or other hardship presented by the applicant, the City may allow a private area, such as an outdoor eating area attached to a restaurant, in finding the project complies with the standard.

d. All civic spaces shall have dimensions that allow for reasonable pedestrian access. For example, by extending the width of an existing sidewalk by four feet, a developer might provide space for an outdoor eating area; whereas a larger development at a street corner could meet the standard by creating a plaza adjacent to a building entrance.

e. Civic space improvements shall conform to Chapter 17-3.4 Landscaping, Fences and Walls, Outdoor Lighting.

Applicants Response: Civic space improvements have been incorporated into the design of the project site as shown on the site plans.

2. **Pedestrian Improvements in Civic Spaces.** Except as provided by subsections C.3 and 4, where this section requires the provision of civic space, such space shall be improved with pedestrian amenities, pursuant to the following standards in subdivisions a through e:

a. Pedestrian amenities shall be provided in an amount equal to or greater than one-half of one percent of the estimated construction cost of the proposed building(s). A licensed architect, landscape architect, or other qualified professional, shall prepare cost estimates for civic space improvements, which shall be subject to review and approval by the Planning Official.

b. Pedestrian amenities include plaza surfaces (e.g., pavers, landscapes, etc.), sidewalk extensions (e.g., with outdoor café space), street furnishings (e.g., benches, public art, pedestrian-scale lighting, water fountains, trash receptacles, bus waiting shelters, shade structures, or others), way-finding signs, or similar amenities, as approved by the Planning Official.

c. Where a civic space adjoins a building entrance it should incorporate a permanent weather protection canopy, awning, pergola, or similar feature, consistent with Section 17-3.2.040.F.

d. The City may accept pedestrian amenities proposed within a public right-of-way (e.g., street corner or mid-block pedestrian access way) and grant the developer credit toward fulfilling the above improvement standard.

e. The cost of a proposed public parking facility may be subtracted from building costs used in the assessment of civic space improvements.

Applicants Response: Pedestrian amenities for the civic space improvements have been incorporated into the design of the project site as shown on the site plans.

3. **Exception for Minor Projects.** Building additions and remodels are not required to provide civic space where the estimated cost of the proposed building improvement is less than 50 percent of the existing assessed value of improvements on the subject site. Cost estimates are based on those used to estimate building permit fees, or other independent and credible source, subject to review and approval by the Planning Official. Assessed values shall be the market value of record at the Clackamas County Assessor's Office.

Applicants Response: Not applicable.

4. **Exception for In Lieu Fee.** Where the City finds that the creation of civic space is not practicable based on the project location or other relevant factors, it may accept an in lieu fee, to be paid to the City of Molalla Parks Improvement Fund, which shall be proportionate to the estimated cost of land and improvements (on-site) that otherwise would have been required. In such case, a licensed architect, landscape architect, or other qualified professional, shall prepare cost estimates for civic space improvements, which shall be subject to review and approval by the City Planning Official.

Applicants Response: If civic space improvements are deemed less than sufficient per 17-3.2.050, then the applicant would consider paying the in lieu fee.

17-3.2.060 Drive-Up and Drive-Through Uses and Facilities

A. **Purpose.** Where drive-up or drive-through uses and facilities are allowed, they shall conform to all of the following standards, which are intended to calm traffic, provide for adequate vehicle queuing space, prevent automobile turning movement conflicts, and provide for pedestrian comfort and safety.

B. **Standards.** Drive-up and drive-through facilities (i.e., driveway queuing areas, customer service windows, teller machines, kiosks, drop-boxes, or similar facilities) shall meet all of the following standards, as generally illustrated in Figure 17-3.2-13:

1. The drive-up or drive-through facility shall orient to and receive access from a driveway that is internal to the development and not a street, as generally illustrated.

2. The drive-up or drive-through portion of the establishment or drive-through window shall not be oriented to street corner.

3. The entry into a drive-up or drive-through portion of the establishment or drive-through window shall be located a sufficient distance from a street right-of-way so as not to allow for queue into a street right-of-way during any time of the year. Applicant shall provide a section within the Traffic Impact Analysis or supply the City with a traffic engineer's report demonstrating that the drive-up or drive-through will have no impact to the street right-of-way.

4. Drive-up and drive-through queuing areas shall be designed so that vehicles will not obstruct any street, fire lane, walkway, bike lane, or sidewalk.

5. In the General Commercial C-2 district, a new drive-up or drive-through facility must comply with the access control distance requirements identified in the City's Transportation System Plan in relation to existing drive-up or drive-through facilities.

Applicants Response: The drive-up and drive-through facilities conditions shall be met and will be reviewed as part of the design review and building permit process for each individual building.

17-3.3 ACCESS AND CIRCULATION

17-3.3.010 Purpose

Chapter 17-3.3 contains standards for vehicular and pedestrian access, circulation, and connectivity. The standards promote safe, reasonably direct, and convenient options for walking and bicycling, while accommodating vehicle access to individual properties, as needed.

17-3.3.020 Applicability

Chapter 17-3.3 applies to new development and changes in land use necessitating a new or modified street or highway connection. Except where the standards of a roadway authority other than the City supersede City standards, Chapter 17-3.3 applies to all connections to a street or highway, and to driveways and walkways. The Planning Official, through a Type II procedure, may grant adjustments to Chapter 17-3.3, pursuant to the criteria of Chapter 17-4.7 Adjustments and Variances. For street improvement requirements, refer to Section 17-3.6.020.

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.

Applicants Response: The permits for the frontage improvements on Highway 211 and new street construction for the extension of Leroy Avenue will be applied for to the appropriate authorities.

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.

Applicants Response: a Traffic Impact Analysis is provided as part of this submittal

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.

Applicants Response: There are two access points coming off Highway 211. One is to the west of Leroy Avenue for the main development site and the other is to the east of Leroy Avenue to the storage facility site. Both access points meet the required spacing standards. There is also several access points coming off the new extension of Leroy Avenue, which is the lower classification street.

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.

Applicants Response: spacing, sight distance and channelization standards will be met and reviewed by the appropriate roadway authority.

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.

Applicants Response: The driveways will be paved to meet the applicable construction standards.

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.

Applicants Response: All access points to the project site are being proposed as full access conditions.

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).

Applicants Response: A shared access agreement will be in place to ensure access to all lots on the project site. The agreement will be provided at a later date.

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.

Applicants Response: Emergency vehicle access and circulation has been incorporated into the design of the project site. Coordination and review with the local fire department will be completed to ensure this condition will be met.

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

Applicants Response: Service vehicle access and circulation, which include a garbage truck and a WB-67 interstate semi-trailer has been incorporated into the design of the project site. Coordination and review with the appropriate authorities will be completed to ensure this condition will be 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.

Applicants Response: Proposed access points have been designed to provide adequate que lengths for vehicles leaving the project site.

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.

Applicants Response: All driveways are located internally on the project site and do not obstruct any public right-of-way.

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.

Applicants Response: Approaches and driveways are not wider than necessary to safely accommodate the turning movements of emergency and service vehicles while also minimizing the crossing distance for pedestrians where possible.

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.

Applicants Response: Cross walks across driveways will be marked. Coordination and review with the appropriate authorities will be completed to ensure this condition will be 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.

Applicants Response: There is a deceleration/right turn lane that leads to the driveway approach at the west end of the project site, which is unavoidable. There are two things to consider here. First the deceleration/right turn lane is necessary to move traffic away from the thru lane, this would be considered a safety operation. Second if the driveway approach was not located there, then a deceleration/right turn lane would not be necessary, unfortunately the two go hand in hand.

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.

Applicants Response: Loading areas are located away from the main access points to the project site.

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.

Applicants Response: Concrete driveway aprons are proposed.

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

Applicants Response: The project site will be ADA accessible. Coordination and review with the appropriate authorities will be completed to ensure this condition will be met.

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.

Applicants Response: Coordination and review with the appropriate authorities will be completed to ensure this condition will be 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.

Applicants Response: The frontage improvements on Highway 211 will require a permit from ODOT. A permit for this work will be applied for.

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.

Applicants Response: Filling in the ditch and placing a piped storm water conveyance system will be part of the frontage improvements on Highway 211 and will require a permit from ODOT. A permit for this work will be applied for.

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.

Applicants Response: Filling in the ditch and placing a piped storm water conveyance system will be part of the frontage improvements on Highway 211 and will require a permit from ODOT. A permit for this work will be applied for.

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.

Applicants Response: Gravel construction entrances will be in place at the access points to the project site during construction. Other erosion and sediment control practices will be implemented 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.

Applicants Response: A storm water management plan for the project site will be implemented to the requirements of 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.

Applicants Response: The distance from N Hezzie Lane to the west entrance of the project site is approximately 400 feet. The distance from the west entrance to the project site to Leroy Avenue is approximately 430 feet. The distance from Leroy Avenue to the east entrance to the project site is approximately 460 feet and the distance from the east entrance to the project site to Ridings Avenue is approximately 400 feet. These distances exceed the minimum distance requirement between street intersections and driveway approaches.

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.

Applicants Response: The distance between approaches to the site on Highway 211 and the proposed extension of Leroy Avenue exceeds the minimum distance requirements between approaches.

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.

Applicants Response: No objects greater than 2.5 feet in height shall be placed in the vision clearance areas. Coordination and review with the appropriate authorities will be completed to ensure this condition will be 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.

Applicants Response: The spacing standards of subsections E and F, above, can be met. No exceptions and adjustments will be necessary.

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.

Applicants Response: A shared access and maintenance agreement will be in place to ensure access to all lots on the project site. This agreement will be provided at a later date.

17-3.3.040 Pedestrian Access and Circulation

A. **Purpose and Intent.** Section 17-3.3.040 implements the pedestrian access and connectivity policies of the City of Molalla Transportation System. It is intended to provide for safe, reasonably direct, and convenient 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.

Applicants Response: A pedestrian walkway system has been incorporated into the design of the project site. The site plan shows sidewalks adjacent to buildings and connections to the sidewalk on the public street improvements.

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.

Applicants Response: A pedestrian walkway system has been incorporated into the design of the project site. Coordination and review with the appropriate authorities will be completed to ensure this condition will be met.

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.

Applicants Response: A pedestrian walkway system shall be raised six inches and curbed along the edge of the driveway or street. Coordination and review with the appropriate authorities will be completed to ensure this condition will be 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.

Applicants Response: Crosswalks shall be clearly marked or differentiated from surrounding material. Coordination and review with the appropriate authorities will be completed to ensure this condition will be 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.

Applicants Response: All pedestrian walkways shall be a minimum of six feet in width and be made of material that is most appropriate for its location. Coordination and review with the appropriate authorities will be completed to ensure this condition will be 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.

Applicants Response: All pedestrian walkways shall be a minimum of six feet in width and be made of material that is most appropriate for its location. Coordination and review with the appropriate authorities will be completed to ensure this condition will be 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.

Applicants Response: Not Applicable

17-3.4 LANDSCAPING, FENCES AND WALLS, OUTDOOR LIGHTING

17-3.4.010 Purpose

Chapter 17-3.4 contains standards for landscaping and screening, fences, and accessory walls, and outdoor lighting. The regulations are intended to protect public health, safety, and welfare by reducing development impacts (e.g., glare, noise, and visual impacts) on adjacent uses; minimizing erosion; slowing the rate of surface water runoff, thereby reducing infrastructure costs; buffering pedestrians from vehicle maneuvering areas; cooling buildings and parking lots in summer months with shade; and enhancing the City's appearance.

17-3.4.020 Applicability

A. Section 17-3.4.030 establishes design standards for landscaping and screening. Projects requiring Site Design Review or Land Division approval shall meet the landscape standards of the applicable zone, including the standards in Tables 17-2.2.040.D and 17-2.2.040.E and any Special Use requirements under Chapter 17-2.3, and the requirements of Section 17-3.4.030. Property owners are required to maintain landscaping and screening pursuant to Section 17-3.4.030.G.

Applicants Response: All the landscaping and screening on the project site will be designed to meet the specifications of Section 17-3.4.030.

B. Section 17-3.4.040 establishes design standards for when a fence, or a wall not attached to a building, is to be erected, extended, or otherwise altered. It also applies to situations where this Code requires screening or buffering (e.g., outdoor or unenclosed storage uses). The standards of Section 17-3.4.040 supplement the development standards in Tables 17-2.2.030 and 17-2.2.040 and any applicable Special Use requirements under Chapter 17-2.3.

Applicants Response: All the fences and walls on the project site will be designed to meet the specifications of Section 17-3.4.050.

C. Section 17-3.4.050, Outdoor Lighting, applies to all new outdoor lighting, i.e., lighting that is installed after November 10, 2017.

Applicants Response: All the outdoor lighting on the project site will be designed to meet the specifications of Section 17-3.4.050.

D. The Planning Official, through a Type II procedure, may grant adjustments to Chapter 17-3.4, pursuant to the criteria of Chapter 17-4.7 Adjustments and Variances.

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.

Applicants Response: All the areas designated as open space 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.

Applicants Response: The minimum landscape area will be 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.

Applicants Response: All the above design guidelines for plant selection shall be considered. Coordination and review with the appropriate authorities will be completed to ensure this condition will be met.

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.

Applicants Response: Not Applicable, project site is located in the C-2 Commercial District.

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.

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.

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.

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.

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

Applicants Response: All the above design guidelines for parking lot landscaping shall be considered. Coordination and review with the appropriate authorities will be completed to ensure this condition will be 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.

Applicants Response: All outdoor storage and unenclosed uses shall meet the screening requirements and will be reviewed as part of the design review and building permit process for each individual building.

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.

Applicants Response: This condition can be met. Coordination and review with the appropriate authorities will be completed to ensure this condition will be 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.

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

Applicants Response: Landscaping will be maintained by property owners.

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.

Applicants Response: This condition can be met. The only fences proposed will be the security fences around the storage facility sites.

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.

Applicants Response: No objects greater than 2.5 feet in height shall be placed in the vision clearance areas. Coordination and review with the appropriate authorities will be completed to ensure this condition will be 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.

Applicants Response: Only approved materials shall be used in the construction of fences and walls.

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.

Applicants Response: Fences and walls shall go through the appropriate building permit process and if necessary be designed by a Professional Engineer licensed in the State of Oregon.

F. **Maintenance.** Fences and walls shall be maintained in good condition, or otherwise replaced by the property owner.

Applicants Response: Fences and walls will be maintained by property owners.

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.

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

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.

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.

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

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.

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

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

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.

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.

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

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

Applicants Response: The outdoor lighting for the project site shall be designed by a lighting design professional. All the above design guidelines for outdoor lighting shall be considered. Coordination and review with the appropriate authorities will be completed to ensure this condition will be 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.

Applicants Response: All the necessary permits shall be obtained for the installation of the outdoor lighting.

E. **Maintenance.** For public health and safety, outdoor lighting shall be maintained in good condition, or otherwise replaced by the property owner.

Applicants Response: Outdoor lighting will be maintained by property owners.

17-3.5 PARKING AND LOADING

17-3.5.010 Purpose

Chapter 17-3.5 contains requirements for automobile and bicycle parking. This Code is intended to be flexible in requiring adequate parking, rather than a minimum number of parking spaces, for each use. It provides standards for the location, size, and design of parking areas to ensure such areas can be accessed safely and efficiently. This Code also encourages non-motorized transportation by requiring bicycle parking for some uses.

17-3.5.020 Applicability and General Regulations

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.

Applicants Response: The calculated number of parking spaces required is as follows. The total square footage for the proposed restaurants is 7,700 square feet and at 1 parking space per 200 square feet, the total spaces required is 38.5 (39). The total square footage for the proposed retail space is 44,861 square feet and at 1 parking space per 400 square feet the total spaces required is 111.70 (112). The total square footage for the proposed retail/office space is 18,600 square feet and at 1 parking space per 450 square feet the total spaces required is 41.33 (42). The amount of public parking spaces required is 193 parking spaces. The total amount of public parking spaces provided is 275. This is a ratio of 1.42 of additional parking.

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.

Applicants Response: The parking provided is for employees and customer use. The parking is free of any fees.

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.

Applicants Response: There are parking spaces in the near vicinity of each retail/restaurant/office building and they are all less than 800 feet from the pedestrian access point to each building.

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.

Applicants Response: The site plans show the proposed parking areas for the project site.

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.

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

1. There is no minimum number of required automobile parking spaces for uses within the Central Commercial C-1 zone.

2. The applicant may propose a parking standard that is different than the standard under subsections A.1 and 2, for review and action by the Planning Official through a Type I or II procedure. The applicant's proposal shall consist of a written request and a parking analysis prepared by a qualified professional. The parking analysis, at a minimum, shall assess the average parking demand and available supply for existing and proposed uses on the subject site; opportunities for shared parking with other uses in the vicinity; existing public parking in the vicinity; transportation options existing or planned near the site, such as frequent bus service, carpools, or private shuttles; and other relevant factors. This parking analysis applies to a request in the reduction or an increase in parking ratios.

3. The Planning Official, through a Type II procedure, may reduce the off-street parking standards of Table 17-3.5.030.A for sites with one or more of the following features:

a. Site has a bus stop with frequent transit service located adjacent to it, and the site's frontage is improved with a bus stop waiting shelter, consistent with the standards of the applicable transit service provider: Allow up to a 20 percent reduction to the standard number of automobile parking spaces.

b. Site has dedicated parking spaces for carpool or vanpool vehicles: Allow up to a 10 percent reduction to the standard number of automobile parking spaces.

c. Site has dedicated parking spaces for motorcycles, scooters, or electric carts: Allow reductions to the standard dimensions for parking spaces.

d. Site has more than the minimum number of required bicycle parking spaces: Allow up to a 10 percent reduction to the number of automobile parking spaces.

e. Site has off-street parking or other public parking in the vicinity of the site.

4. The number of required off-street parking spaces may be reduced through the provision of shared parking, pursuant to subsection D.

5. The Planning Official through a Type I procedure may reduce the off-street parking standards of Table 3.5.030.A by one parking space for every two on-street parking spaces located adjacent to the subject site, provided the parking spaces meet the dimensional standards of subsection E.

Applicants Response: There are an adequate number of parking spaces on the project site. No exceptions or reductions are necessary.

C. **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, 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.

Applicants Response: There are two adjacent streets to the project site, Highway 211 (an Arterial) and the proposed Leroy Avenue extension (a Collector) which do not allow on-street parking. This allows us to use a factor of 1.5 to determine the maximum number of parking spaces. The required amount of 193 parking spaces multiplied by 1.5 gives us the maximum amount of 289.5 (290). We have 275 parking spaces which is below the threshold of the maximum allowed.

D. **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.

Applicants Response: Each building(s) on the project site sit on their own lot, with their own allocated parking spaces, sized to meet the needs of that building. There should be no need for shared parking.

E. **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.E 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.

Applicants Response: All parking stall design meet or exceed the minimum requirements.

F. **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.

Applicants Response: No adjustments are necessary to the parking area dimensions.

G. **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.

Applicants Response: There are two van accessible ADA parking spaces in the near vicinity of each retail/restaurant/office building and they are all less than 80 feet from the pedestrian access point to each building.

H. **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.

Applicants Response: There are no electric charging stations proposed at this time unless an analysis is done to show the demand for these is there.

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.B, 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.

Applicants Response: Bicycle parking and the necessary number of bike racks will be incorporated into the design of the project site. Coordination and review with the appropriate authorities will be completed to ensure this condition will be met.

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

Applicants Response: 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.

Applicants Response: Bicycle parking and their required locations will be incorporated into the design of the project site. Coordination and review with the appropriate authorities will be completed to ensure this condition will be met.

17-3.5.050 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.

Applicants Response: Loading areas are located internally on the project site close to the buildings that they will serve and will not interfere with traffic operations of the adjacent streets.They will be reviewed as part of the design review and building permit process for each individual building.

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.

Applicants Response: The loading area will be designed to accommodate a WB-67 interstate semi-trailer.

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.

Applicants Response: Loading areas are located internally on the project site close to the buildings that they will serve and will not interfere with traffic operations of the adjacent streets. They will be reviewed as part of the design review and building permit process for each individual building.

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.

Applicants Response: Loading areas are located internally on the project site close to the buildings that they will serve and will not interfere with traffic operations of the adjacent streets. No adjustments are necessary.

17-3.6 PUBLIC FACILITIES

17-3.6.010 Purpose and Applicability

A. **Purpose.** The standards of Chapter 17-3.6 implement the public facility policies of the City of Molalla Comprehensive Plan and adopted City plans.

B. **Applicability.** Chapter 17-3.6 applies to all new development, including projects subject to Land Division (Subdivision or Partition) approval and developments subject to Site Design Review where public facility improvements are required. All public facility improvements within the city shall occur in accordance with the standards and procedures of this chapter. When a question arises as to the intent or application of any standard, the City Engineer shall interpret the Code pursuant to Chapter 17-1.5.

C. **Public Works Design Standards.** All public facility improvements, including, but not limited to, sanitary sewer, water, transportation, surface water and storm drainage and parks projects, whether required as a condition of development or provided voluntarily, shall conform to the City of Molalla Public Works Design Standards. Where a conflict occurs between this Code and the Public Works Design Standards, the provisions of the Public Works Design Standards shall govern.

Applicants Response: The frontage improvements on Highway 211 shall be designed in conformance with the ODOT Highway Design Standards. The remainder of the public improvements shall be designed in conformance with the City of Molalla Public Works Design Standards.

D. **Public Improvement Requirement.** 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 provisions of this Code and the Public Works Design Standards. Improvements required as a condition of development approval, when not voluntarily provided by the applicant, shall be roughly proportional to the impact of the development on public facilities. Findings in the development approval shall indicate how the required improvements directly relate to and are roughly proportional to the impact of development.

Applicants Response: Due to the magnitude of this project. The frontage improvements on Highway 211, the new roadway extension of Leroy Avenue, the private and public improvements on-site and the construction of the buildings must run concurrently in order for this project to be completed in a timely manner.

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.

Applicants Response: This project will include the frontage improvements on Highway 211 and the new roadway extension of Leroy Avenue.

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.

Applicants Response: The frontage improvements on Highway 211 shall be designed in conformance with the ODOT Highway Design Standards. The remainder of the roadway improvements shall be designed in conformance with the City of Molalla Public Works Design Standards.

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.

Applicants Response: Right-of Way will be dedicated for the frontage improvements on Highway 211 and the new roadway extension of Leroy Avenue.

4. The purpose of this subsection is 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 Traffic Impact Analysis 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 Traffic Impact Analysis; and who is qualified to prepare the analysis.

a. **When a Traffic Impact Analysis is Required.** The City or other road authority with jurisdiction may require a Traffic Impact Analysis (TIA) as part of an application for development, a change in use, or a change in access. A TIA shall be required where a change of use or a development would involve one or more of the following:

(1) A change in zoning or a plan amendment designation;

(2) Operational or safety concerns documented in writing by a road authority;

(3) An increase in site traffic volume generation by 300 Average Daily Trips (ADT) or more;

(4) An increase in peak hour volume of a particular movement to and from a street or highway by 20 percent or more;

(5) An increase in the use of adjacent streets by vehicles exceeding the 20,000 pound gross vehicle weights by 10 vehicles or more per day;

(6) Existing or proposed approaches or access connections that do not meet minimum spacing or sight distance requirements or are located where vehicles entering or leaving the property are restricted, or such vehicles are likely to queue or hesitate at an approach or access connection, creating a safety hazard;

(7) A change in internal traffic patterns that may cause safety concerns; or

(8) A TIA required by ODOT pursuant to OAR 734-051.

b. **Traffic Impact Analysis Preparation.** A professional engineer registered by the State of Oregon, in accordance with the requirements of the road authority, shall prepare the Traffic Impact Analysis.

Applicants Response: a Traffic Impact Analysis is provided as part of this submittal

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.

Applicants Response: No waiver or deferral of standard street improvements are necessary

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 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.

Applicants Response: The new roadway extension of Leroy Avenue will directly line up with the existing alignment of Leroy Avenue and will closely follow the recommendations and guidelines of the Transportation System Plan for the City of Molalla. The roadway improvements shall be designed in conformance with the City of Molalla Public Works Design Standards.

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.

Applicants Response: Right-of Way will be dedicated for the frontage improvements on Highway 211 and the new roadway extension of Leroy Avenue.

2. All streets shall be improved in accordance with the construction standards and specifications of the applicable roadway authority, including requirements for pavement, curbs, drainage, striping, and traffic control devices. Where a planter strip is provided it shall consist of a minimum five foot-wide strip between the sidewalk and the curb or roadway. Where a swale is provided, it shall either be placed between the roadway and sidewalk or behind the sidewalk on private property, subject to City Engineer approval and recording of required public drainage way and drainage way maintenance easements. Streets with parking on one side only should be avoided. When used, they must be posted NO PARKING.

Applicants Response: The frontage improvements on Highway 211 shall be designed in conformance with the ODOT Highway Design Standards. The remainder of the roadway improvements shall be designed in conformance with the City of Molalla Public Works Design Standards.

3. Where a range of street width or improvement options is indicated, the City Engineer shall determine requirements based on the advice of a qualified professional and all of the following factors:

a. Street classification and requirements of the roadway authority, if different than the City's street classifications and requirements;

b. Existing and projected street operations relative to applicable standards;

c. Safety of motorists, pedestrians, bicyclists, and South Clackamas Transit District (SCTD) users, including consideration of accident history;

d. Convenience and comfort for pedestrians, bicyclists, and SCTD users;

e. Provision of on-street parking;

f. Placement of utilities;

g. Street lighting;

h. Slope stability, erosion control, and minimizing cuts and fills;

i. Surface water management and storm drainage requirements;

j. Emergency vehicles or apparatus and emergency access, including evacuation needs;

k. Transitions between varying street widths (i.e., existing streets and new streets); and

l. Other factors related to public health, safety, and welfare.

Applicants Response: The frontage improvements on Highway 211 shall be designed in conformance with the ODOT Highway Design Standards. The remainder of the roadway improvements shall be designed in conformance with the City of Molalla Public Works Design Standards.

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

1. **Intersections.** Streets shall be located and designed to intersect as nearly as possible to a right angle. Street intersections shall meet the current requirements of the Public Works Design Standards and Transportation System Plan.

Applicants Response: The new roadway extension of Leroy Avenue will directly line up with the existing alignment of Leroy Avenue and will closely follow the recommendations and guidelines of the Transportation System Plan for the City of Molalla. The roadway improvements shall be designed in conformance with the City of Molalla Public Works Design Standards.

2. **Access Ways.** The Planning Commission, in approving a land use application with conditions shall require a developer to provide an access way where the creation of a cul-de-sac or dead-end street is unavoidable and the access way connects or may in the future connect, the end of the street to another street, a park, or a public access way, except where the City Engineer and City Planner determine the access way is not feasible. Where an access way is required, it shall be not less than 10 feet wide and shall contain a minimum eight-foot-wide concrete surface or other all-weather surface approved by the City Engineer. Access ways shall be contained within a public right-of-way or public access easement, as required by the City.

Applicants Response: The layout of the roadway for the Leroy Avenue extension has been designed in order to provide a future connection to an existing street. An access way will not be necessary

3. **Connectivity to Abutting Lands.** The street system of a proposed subdivision shall be designed to connect to existing, proposed, and planned streets adjacent to the subdivision. Wherever a proposed development abuts unplatted land or a future development phase of an existing development, street stubs shall be provided to allow access to future abutting subdivisions and to logically extend the street system into the surrounding area. Street ends shall be designed to facilitate future extension in terms of grading, width, and temporary barricades.

Applicants Response: The layout of the roadway for the Leroy Avenue extension has been designed in order to provide a future connection to an existing street and will provide access points to the adjacent properties.

4. **Street Connectivity and Formation of Blocks.** In order to promote efficient vehicular and pedestrian circulation throughout the City, subdivisions and site developments shall be served by an interconnected street network, pursuant to the current version of the Public Works Design Standards and Transportation System Plan. Where a street connection cannot be made due to physical site constraints, approach spacing requirements, access management requirements, or similar restrictions; where practicable, a pedestrian access way connection shall be provided pursuant to Chapter 17-3.3.

Applicants Response: The new roadway extension of Leroy Avenue will directly line up with the existing alignment of Leroy Avenue , it has been designed in order to provide a future connection to an existing street and will closely follow the recommendations and guidelines of the Transportation System Plan for the City of Molalla.

5. **Cul-de-Sac Streets**. A cul-de-sac street shall only be used where the City Engineer determines that environmental or topographical constraints, existing development patterns, or compliance with other applicable City requirements preclude a street extension. Where the City determines that a cul-de-sac is allowed, cul-de-sac length, turn-around type, and pedestrian access to adjoining properties shall meet the requirements of the current version of the Public Works Design Standards and Transportation System Plan and subsection D.2.

Applicants Response: The new roadway extension of Leroy Avenue will not be a cul-de-sac street.

6. **Future Street Plan.** Where a subdivision is proposed adjacent to other developable land, a future street plan shall be filed by the applicant in conjunction with an application for a subdivision in order to facilitate orderly development of the street system. The plan shall show the pattern of existing and proposed future streets from the boundaries of the proposed land division and shall include other divisible parcels within 600 feet surrounding and adjacent to the proposed subdivision. The street plan is binding when part of a multi-phased master planned development. The plan must demonstrate, pursuant to City standards, that the proposed development does not preclude future street connections to adjacent development land.

Applicants Response: The layout of the roadway for the Leroy Avenue extension has been designed in order to provide a future connection to an existing street.

7. **Private Streets and Gated Drives.** Private streets and gated drives serving more than two dwellings (i.e., where a gate limits access to a development from a public street), are prohibited.

Applicants Response: No private street or gated drive is proposed for this project

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.

Applicants Response: The frontage improvements on Highway 211 shall be designed in conformance with the ODOT Highway Design Standards. The remainder of the roadway improvements shall be designed in conformance with the City of Molalla Public Works Design Standards.

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.

Applicants Response: Coordination will be required with the Fire Marshal in order for the Fire Code standards to 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.

Applicants Response: Right-of Way will be dedicated for the frontage improvements on Highway 211 and the new roadway extension of Leroy Avenue.

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.

Applicants Response: Traffic calming is not anticipated and may not be necessary. However the roadway improvements shall be designed in conformance with the City of Molalla Public Works Design Standards and will be reviewed as part of the construction permit process for the roadway improvements.

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.

Applicants Response: Sidewalks, planter strips, and bicycle lanes will be included in the design of the frontage improvements on Highway 211 and the new roadway extension of Leroy Avenue.

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.

Applicants Response: There are no Railroads nearby the project site.

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.

Applicants Response: No new street names will be required.

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.

Applicants Response: Survey monuments shall be included as part of the recording of the subdivision plat for this project.

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.

Applicants Response: All necessary signage shall be installed per the MUTCD and the appropriate governing jurisdiction.

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.

Applicants Response: The street lighting for the project site shall be designed by a lighting design professional. Coordination and review with the appropriate authorities will be completed to ensure this condition will be met.

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

Applicants Response: The location and type of mailboxes to be used on the project site shall be in coordination with the United States Postal Service to ensure this condition will 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.

Applicants Response: This condition can be met.

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.

Applicants Response: The construction of the sanitary sewer and water mains shall be included as part of the roadway improvements for the Leroy Avenue extension. Water mains will also be necessary on-site to provide domestic water services and fire protection and a realignment of the existing sanitary sewer on site will be necessary to provide service to all the buildings.

B. **Sewer and Water Plan Approval.** Development permits for sewer and water improvements shall not be issued until the City Engineer has approved all sanitary sewer and water plans in conformance with City standards.

Applicants Response: Permits shall be obtained prior to commencement of construction of the sanitary sewer and water mains.

C. **Over-Sizing.** The City may require as a condition of development approval that sewer and water lines serving new development be sized to accommodate future development within the area as projected by the applicable facility master plans, and the City may authorize other cost-recovery or cost-sharing methods as provided under state law.

Applicants Response: Coordination with the City of Molalla will be required on the issue of over-sizing sanitary sewer and water mains in order to meet the possible needs of future adjacent development.

D. **Inadequate Facilities.** Development permits may be restricted or rationed by the Planning Commission where a deficiency exists in the existing water or sewer system that cannot be rectified by the development and which, if not rectified, will result in a threat to public health or safety, surcharging of existing mains, or violations of state or federal standards pertaining to operation of domestic water and sewerage treatment systems. The City Engineer may require water booster pumps, sanitary sewer lift stations, and other critical facilities be installed with backup power.

Applicants Response: Coordination with the City of Molalla will be required on the issue of existing capacity of the sanitary sewer and water mains

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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.

Applicants Response: The storm water management plan for the project site will comply with the City of Molalla Public Works Design Standards and the 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.

Applicants Response: Coordination with the City of Molalla will be required on the issue of over-sizing sanitary sewer and water mains in order to meet the possible needs of future adjacent development

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.

Applicants Response: Coordination with the City of Molalla will be required on the issue of downstream capacity issues for the storm drainage system. If capacity issues exist then a detention will be designed to overcome these capacity issues.

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.

Applicants Response: Coordination with the City of Molalla will be required on the issue of over-sizing the storm drainage system in order to meet the possible needs of future adjacent development

E. **Existing Watercourse.** Where a proposed development is traversed by a watercourse, drainage way, channel, or stream, the City may require a storm water 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.

Applicants Response: Filling in the ditch and placing a piped storm water conveyance system will be part of the frontage improvements on Highway 211 and will require a permit from ODOT. A permit for this work will be obtained.

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.

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.

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

a. The developer shall make all necessary arrangements with the serving utility to provide the underground services. Care shall be taken to ensure that no aboveground equipment obstructs vision clearance areas for vehicular traffic, per Chapter 17-3.3 Access and Circulation.

b. The City Engineer reserves the right to approve the location of all surface-mounted facilities.

c. All underground utilities installed in streets must be constructed and approved by the applicable utility provider prior to the surfacing of the streets.

d. Stubs for service connections shall be long enough to avoid disturbing the street improvements when service connections are made.

Applicants Response: All utilities on the project site will be placed underground. Coordination and review with the appropriate authorities will be completed to ensure this condition will be met.

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.

17-3.6.070 Easements

A. **Provision.** The developer shall make arrangements with the City and applicable utility providers for each utility franchise for the provision and dedication of utility easements necessary to provide full services to the development.

B. **Standard.** Utility easements shall conform to the requirements of the utility service provider. All other easements shall conform to the City of Molalla Public Works Design Standards.

C. **Recordation.** All easements for sewers, storm drainage and water quality facilities, water mains, electric lines, or other utilities shall be recorded and referenced on a survey or final plat, as applicable. See Chapter 17-4.2 Site Design Review, and Chapter 17-4.3 Land Divisions and Property Line Adjustments.

Applicants Response: The location and description of the utility easements shall be included as part of the recording of the subdivision plat for this project.

17-3.6.080 Construction Plan Approval

No development, including sanitary sewers, water, streets, parking areas, buildings, or other development, shall commence without plans having been approved by the City of Molalla Public Works Department and permits issued. Permit fees are required to defray the cost and expenses incurred by the City for construction and other services in connection with the improvement. Permit fees are as set by City Council resolution.

Applicants Response: Construction documents shall be approved and construction permits shall be obtained prior to commencement of any construction activities on the project site.

17-3.6.090 Facility Installation

A. **Conformance Required.** Improvements installed by the developer, either as a requirement of these regulations or at the developer's option, shall conform to the requirements of this chapter, approved construction plans, and to improvement standards and specifications adopted by the City.

B. **Adopted Installation Standards.** The City of Molalla has adopted Public Works Design Standards for public improvements and private utility installation within the public right-of-way.

Applicants Response: The City of Molalla Public Works Design Standards shall be clearly adhered to

C. **Commencement.** Work in a public right-of-way shall not begin until all applicable agency permits have been approved and issued.

Applicants Response: Construction documents shall be approved and construction permits shall be obtained prior to commencement of any construction activities on the project site.

D. **Resumption.** If work is discontinued for more than six months, it shall not be resumed until the Public Works Director is notified in writing and grants approval of an extension.

Applicants Response: No break in construction is anticipated.

E. **City Inspection.** Improvements shall be constructed under the inspection of the City Engineer. The City Engineer may approve minor changes in typical sections and details if unusual conditions arising during construction warrant such changes in the public interest, except that substantive changes to the approved design shall be subject to review under Chapter 17-4.5 Modifications to Approved Plans and Conditions of Approval. Any survey monuments that are disturbed before all improvements are completed by the developer or subdivider shall be replaced at the developer or subdivider's expense prior to final acceptance of the improvements.

Applicants Response: The Contractor shall coordinate with the City Inspectors to ensure any unforeseen, but necessary field changes are approved in a timely manner as not to impact the construction schedule.

F. **Engineer's Certification and As-Built Plans.** In accordance with the current version of the Public Works Design Standards, a registered civil engineer shall provide written certification in a form required by the City that all improvements, workmanship, and materials meet current and standard engineering and construction practices, conform to approved plans and conditions of approval, and are of high grade, prior to City's acceptance of the public improvements, or any portion thereof, for operation and maintenance. The developer's engineer shall also provide two sets of "as-built" plans, one paper set and one electronic set for permanent filing with the City. If required by the City, the developer or subdivider shall provide a warranty bond pursuant to Section 17-3.6.100.

Applicants Response: An Engineers's Certification and As-Built Plans will be provided at the completion and the acceptance of the project by the City of Molalla

17-3.6.100 Performance Guarantee and Warranty

A. **Performance Guarantee Required.** The City at its discretion may approve a final plat or building permit when it determines that all of the public improvements required for the site development or land division, or phase thereof, are complete and the applicant has an acceptable assurance for the balance of said improvements. The applicant shall provide a performance and payment bond in accordance with the current version of the Public Works Design Standards.

Applicants Response: A performance guarantee and warranty bond that is agreeable to all parties concerned, for the public improvements will be provided as required.

B. **Determination of Sum**. The assurance of performance shall be for a sum determined by the City Engineer as required to cover the cost of the improvements and repairs, including related engineering and incidental expenses, plus reasonable inflationary costs. The assurance shall not be less than 150 percent of the estimated improvement costs.

C. **Itemized Improvement Estimate.** The applicant shall furnish to the City an itemized improvement estimate, certified by a registered civil engineer, to assist the City in calculating the amount of the performance assurance.

Applicants Response: An itemized improvement estimate for the public works construction shall be provided to the City of Molalla.

D. **Agreement.** A written agreement between the City and applicant shall be signed recorded. The agreement may include a provision for the construction of the improvements in stages and for the extension of time under specific conditions. The agreement shall contain all of the following:

1. The period within which all required improvements and repairs shall be completed;

2. A provision that if work is not completed within the period specified, the City may complete the work and recover the full cost and expenses from the applicant;

3. The required improvement fees and deposits.

Applicants Response: A performance guarantee and warranty bond that is agreeable to all parties concerned, for the public improvements will be provided as required.

E. **When Applicant Fails to Perform.** In the event the applicant fails to carry out all provisions of the agreement and the City has un-reimbursed costs or expenses resulting from such failure, the City shall call on the bond, cash deposit, or letter of credit for reimbursement.

Applicants Response: Not anticipated. Failure is not an option.

F. **Termination of Performance Guarantee.** The applicant shall not cause termination, nor allow expiration, of the guarantee without first securing written authorization from the City.

Applicants Response: Not anticipated.

G. **Warranty Bond.** A warranty bond good for two years is required on all public improvements and landscaping when installed in the public right-of-way. The warranty bond shall equal 120 percent of the total cost of improvements and begin upon acceptance of said improvements by the City.

Applicants Response: A performance guarantee and warranty bond that is agreeable to all parties concerned, for the public improvements will be provided as required.

18.02 SIGNS

18.02.010 Purpose.

A. **The purpose of the sign regulations is to:**

1. Protect the health, safety, property and welfare of the public;

2. Provide a neat, clean, orderly and attractive appearance in the community;

3. Provide for safe construction, location, erection and maintenance of signs;

4. Encourage signs to be well designed and wisely located;

5. Prevent sign clutter, minimize adverse visual safety factors to travelers in the public right-of-way;

6. Provide a simple and efficient regulatory process; and

7. Achieve these purposes consistent with state and federal constitutional limits on the regulation of speech.

B. To achieve this purpose, it is necessary to regulate the design, quality of materials, construction, location, electrification, illumination, and maintenance of signs that are visible to the public.

C. Nothing in these regulations is intended to control the construction or location of directional or informational signs installed by the city, county or state for the purpose of controlling traffic, indicating street names, providing legal or public notice, or other public purposes.

18.02.020 Rules for reading and applying sign code language.

A. **Reading and Applying the Code**. Literal readings of the code language will be used. Regulations are no more or less strict than as stated. Application of the regulations that are consistent with the rules of this sign code are non-discretionary actions of the Planning Director to implement the code.

B. **Situations Where the Code is Silent**. Proposals for signs where the code is silent, or where the rules of this chapter do not provide a basis for concluding that the sign is allowed, are prohibited.

18.02.030 Area of signs.

Sign area includes the area within a perimeter enclosing the limits of lettering, writing, representation, emblem, figure, essential sign structure, foundations or supports. For a multiple-face (more than 2-sided) sign, the sign area shall be the total of all faces. If the sign consists of more than 1 section or module, all areas will be totaled. For a double-faced sign in a single cabinet, the allowed area shall be the dimension of the cabinet, not the total of the area of the message.

18.02.040 Permit requirements.

A. **Permit Required**. All signs erected after the effective date of the ordinance codified in this chapter, other than signs exempt from permit requirements of this chapter shall require a sign permit.

B. **Permit Application**.

1. Application for a sign permit shall be made on forms provided by the Planning Director.

2. An application shall include all plans and information necessary to establish that the proposed sign complies with the applicable requirements of this chapter and applicable building, structural and life safety codes.

3. Sign permits shall be reviewed pursuant to a Type I Land Use Procedure.

4. An approved sign review does not replace, supersede, or waive structural or electrical standards and permits required. These other permits must also be obtained prior to work on the installation of the sign.

5. Signs requested to be placed in any public right-of-way must first obtain permission from the jurisdiction having control of said right-of-way.

6. A sign review permit issued under this chapter is void if substantial physical action is not taken in accordance with the conditions of the permit and the applicable provisions of this chapter, and the finding that the applicant did not misrepresent or falsify any information supplied in the application.

7. Site plan and/or building elevation plans drawn to scale and dimension showing:

a. Existing structures;

b. Driveways;

c. Street and right-of-way;

d. Existing signs;

e. Proposed sign;

f. Vision clearance;

g. All incidental signs.

8. A proposed sign plan drawn to scale and dimension showing:

a. Height;

b. Width;

c. Square footage;

d. Thickness;

e. Size and style of letters;

f. Color;

g. Type of illumination;

h. Materials.

C. **Fees**. A fee as established by resolution of the City Council shall be paid upon the filing of an application. Such fees shall not be refundable.

D. **Permit Conditions**. The Planning Department shall attach conditions in conjunction with the approval of a sign permit in order to ensure the intent of this Code is met. The Planning Department may also require guarantees and evidence to ensure that such conditions will be complied with.

E. **Permit Appeal**. A decision may be appealed to the Planning Commission. A written appeal must be filed with the Planning Department within 10 days of the notice of the decision. The appeal shall be conducted pursuant to a Type I Land Use appeals process.

F. **Permit Suspension or Revocation**. The Planning Director or duly authorized representative may, in writing, suspend or revoke a permit issued under provisions of this chapter whenever the permit is issued on the basis of incorrect information supplied, or in violation of applicable ordinance or regulation or any of the provisions of this chapter.

G. Adjustments to portions of the sign code may be allowed pursuant to compliance with Chapter 20.16.

Applicants Response: permits will be obtained and permit requirements adhered to prior to any signs being constructed or installed on the project site.

18.02.050 Construction and maintenance.

A. Signs shall be constructed, erected and maintained to meet the requirements of the Oregon Structural Specialty Code, National Electric Code and Oregon Mechanical Code. In addition, all illuminated signs shall be subject to the provisions of the Underwriters' Standards, as defined in Underwriters' Laboratories, "Standards for Safety, Electric Signs." For purposes of this section, "illuminated sign" means any sign which has characters, letters, figures, designs or outlines illuminated by electric lights or luminous tubes as part of the sign property.

B. All signs and component parts shall be kept in good repair and maintained in a safe, neat, clean and attractive condition.

C. All signs shall be located entirely within the boundaries of the subject property unless specifically authorized by this code.

D. No sign shall be erected or maintained in such a manner that any portion will interfere in any way with the free use of, or any access to, any fire escape, or be erected or maintained so as to obstruct any window of light or ventilation required by any applicable law or building code.

E. It is unlawful to erect or maintain a sign which, by reason of its size or location, pose immediate danger to the health, safety and welfare of the citizens of the city, either pedestrian or motorists, at public and/or private roadways, intersections, and driveways.

F. All signs shall be able to withstand a wind pressure at a minimum of 20 pounds per square foot of exposed surface.

G. All signs shall be constructed securely and shall not constitute a fire hazard.

H. When wood is used which comes into contact with the ground, the wood must be pressure treated.

Applicants Response: All signs on the project site shall be constructed and maintained per the recommended guidelines and regulations.

18.02.060 Sign removal.

The Planning Department may order removal of any sign erected, replaced, reconstructed or maintained in violation of these regulations.

A. The Planning Department shall deliver written notice by certified mail (return receipt requested) to the owner of the sign, or, if the owner of the sign cannot be located, to the owner of the lot(s) as shown on the tax rolls of Clackamas County, on which such sign is located, directing that the sign shall be removed or brought into compliance with these standards.

B. If the owner of such sign or the owner of the lot(s) on which the sign is located fails to remove the sign or remedy the violation within 30 days after receipt of written notice from the city, the Planning Director shall cause such sign to be removed at the expense of the property owner. Such costs shall be entered by the City Recorder on the docket of city liens against the property owner and shall be collectible in the same manner as liens for public improvements.

C. If the condition of the sign presents an immediate threat to the safety of the public, the Planning Director may cause removal of the sign immediately, without prior notice, and the expenses for such removal shall be paid by the owner of the sign or the permit applicant. If such persons cannot be found, the expense shall be paid by the owner of the building, structure or property.

Applicants Response: Not Applicable. There are no signs that need to be removed.

18.02.070 Nonconforming signs.

A. A nonconforming sign lawfully existed prior to the adoption of applicable zoning requirements with which it does not comply. Except, however, signs shall be considered to be nonconforming where the sign, by reason of its size, location, construction, or lack of maintenance creates a public hazard or nuisance. In the case of such public hazard or nuisance, the city may begin immediate abatement procedures, as provided in this chapter and other city ordinances.

B. Relocation, replacement, structural alteration or expansion of a nonconforming sign is subject to the same limitations, application procedures and requirements set forth in this chapter for other nonconforming structures. Except, approval of a nonconforming structure application is not required for the following:

1. Normal repair and maintenance, where the cost to repair the sign does not exceed 50% of the replacement cost of the sign using new materials, as determined by the Building Official.

2. Change of sign copy.

3. Structural alteration when the alteration is necessary for structural safety, as determined by the Building Official.

4. A nonconforming sign may be reconstructed if it is required to be temporarily removed to accommodate construction or repair of public utilities or public works and the sign reconstruction is completed within 90 days after the completion of the public utilities or public works construction activity.

C. Signs installed in violation of any prior sign code or applicable laws or regulations, and which are in violation of this chapter, shall be removed, replaced or altered in order to conform to the requirements of this chapter.

D. Signs recognized as historical element of a historical landmark are exempt from this chapter.

E. All nonconforming signs shall be altered to conform to the requirements of this chapter by January 1, 2025.

F. A sign for which a variance is granted under the provisions of this chapter is not considered nonconforming.

G. If a nonconforming sign is damaged by wind, fire, neglect or by any other cause, and such damage exceeds 60% of its replacement value, the nonconforming sign shall be removed.

H. An unlawful sign shall be removed or made to conform within 60 days after written notice from the Planning Department. Said 60-day period may be extended if the owner of an unlawful sign submits to the Planning Department a declaration signed under penalty of perjury, on forms provided by the Department, stating that he or she intends to terminate the business identified by said sign within 12 months of the date of the notice and agrees to remove the sign upon the expiration of the 12-month period or the date he or she terminates his or her business, whichever occurs first.

Applicants Response: Not Applicable.

18.02.080 Exempt signs.

All signs which are placed inside a structure or building, which are not visible through windows or building openings and are not intended to be visible to the public are exempt from the provisions of the sign code.

Applicants Response: Not Applicable.

18.02.090 Prohibited signs.

A. No sign, unless exempt or allowed pursuant to this chapter shall be permitted except as may be permitted pursuant to a variance procedure (Chapter 20.04).

B. In a commercial or industrial zone no sign shall be placed inside or outside a structure so as to obscure more than 25% of any individual window surface. In a residential zone no sign shall be placed so as to obscure more than 10% of any individual window surface. Glass doors shall be considered an individual window surface. Holiday paintings and temporary specials painted on windows shall be exempt from this percentage of limitation.

C. No permanent sign, other than a public sign, may be placed within or over any portion of the public right-of-way, except those signs which are consistent with the provisions of this chapter.

D. No sign shall be allowed within 2 feet of any area subject to vehicular travel.

E. No temporary sign, except for banner signs for which a permit has been issued and those necessary for temporary traffic control shall be placed within or over any portion of the public right-of-way of a major collector or arterial street.

F. No sign shall be located in a manner which could impede travel on any pedestrian or vehicular travel surface.

G. No temporary signs, bench signs. Banners, pennants, wind signs, balloon signs, flags, or any other temporary sign structure shall be allowed as except specifically authorized by this chapter.

H. Except as otherwise provided herein, no sign shall be equipped or displayed with moving, flashing or intermittent illumination except athletic scoreboards.

I. No sign shall be or consist of any moving, rotating, or otherwise animated part.

J. No signs on buildings shall be placed on the roof or extend above the roof line or parapet of the structure.

K. No sign shall be attached to a tree or vegetation.

L. No non-public sign which purports to be, is an imitation of, or resembles an official traffic sign or signal, or which attempts to direct the movement of traffic on the street, or which hides from view any official traffic sign or signal shall be permitted.

M. No public address system or sound devices shall be used in conjunction with any sign or advertising device.

N. No signs that are internally illuminated shall be permitted in any residential zone.

O. No sign that obstructs free and clear vision of the traveling public at the intersection of any street or driveway shall be permitted.

P. A sign with lighting of such intensity or brilliance as to cause glare on adjoining properties or roadways or impair the vision of a driver of a motor vehicle or otherwise to interfere with the operations thereof or allows light to be directed upward.

Q. A sign erected or maintained on public property or within the public right-of-way without permission of the public body having jurisdiction.

R. Any sign larger than 32 square feet (counting both sides) on an undeveloped lot or parcel of property.

S. Signs larger than 3 square feet on fences or fencing.

T. Signs placed on, affixed to, or painted on any motor vehicle, trailer or other mobile structure not registered, licensed and insured for use on public highways, city and/or parked with the primary purpose of providing a sign not otherwise allowed by this chapter.

U. Video signs.

V. Signs in violation of the other chapters of the Molalla Development Code.

Applicants Response: Not Applicable. No prohibited signs shall be used on the project site.

18.02.100 Design standards.

A. All illuminated signs must be installed by a licensed sign contractor, subject to provisions of the State Electrical Code. All electrically illuminated signs shall bear the Underwriters' Laboratory label or equivalent.

B. Building and electrical permits shall be the responsibility of the applicant. Prior to obtaining permits the applicant bears the burden of providing an approved sign permit or demonstrating exemption from the permit requirements of this chapter.

C. Signs shall be designed to be compatible with nearby signs, other elements of street and site furniture and with adjacent structures. Compatibility shall be determined by the relationship of the elements of form, proportion, scale, color, materials, surface treatment, overall sign size and the size and style of lettering.

D. Content on signs visible from streets shall be designed to minimize distractions to motorists. Signs may be reviewed for clarity and readability

E. **Setbacks.** Signs are required to meet the setback requirements of the applicable zoning district, except however the street yard setback for signs may be reduced to 50% of that required for other structures in the zone. Signs shall not obstruct a vision clearance area.

F. **Size of Sign.** The maximum size of all signs per building shall not exceed the totals listed in the table below:

Street Frontage (ft)	Maximum Display Surface Area (sq ft)	Maximum Area of Any One Sign Face (sq ft)	Maximum Height Freestanding Signs (ft)
1 – 50	50	25	30
50 – 200	100	50	30
201+	300	150	30

On a building containing multiple tenants signage requirements shall meet the maximum below as an entire building not as individual business.

G. **Illumination.**

1. External illumination is allowed. The external illumination may be either “direct” or “indirect,” provided that the source of light (e.g., bulb) is shielded such that it is not directly seen by the public. External light sources shall be carefully located, directed and shielded in order to avoid direct illumination of any off-site object or property.

2. Internal illumination is allowed.

3. Sign illumination shall not result in glare onto neighboring properties or onto public right-of-way, such that due to level of brightness, lack of shielding, or high contrast with surrounding light levels, the sign illumination results in “light intrusion” onto adjacent properties.

a. Direct lighting means exposed lighting or neon tubes on the sign face.

b. Indirect lighting means the light source is separate from the sign face or cabinet and is directed so as to shine on the sign.

c. Internal lighting means the light source is concealed within the sign.

4. Signs shall not flash, undulate, pulse, or portray explosions, fireworks, flashes of light, or blinking or chasing lights.

5. Exposed incandescent bulbs may be used on the exterior surface of a sign if each of such bulbs do not exceed 25 watts or unless each of such bulbs is screened by a diffusing lens, sun screen or similar shading device.

H. **Monument Signs**.

1. Monument signs shall have a distinct base, middle, and top. These elements of the sign shall vary from one another in terms of their thickness, materials, or color.

2. Monument signs shall incorporate the following materials, unless otherwise approved pursuant to subsection (H)(4) of this section.

a. The base and top shall be constructed of stone, brick, or wood;

b. The middle shall be constructed of stone, brick, wood, metal with a matte/non-reflective finish, vinyl, or other materials as noted in subsection (H)(2)(c);

c. Other materials may be used for bulletin board or electronic message board components in the middle portion of a monument sign, as needed to allow the bulletin board or electronic message board to function.

3. Monument signs shall provide street addresses when street addresses are not visible from the street.

4. A monument sign which does not meet 1 or more of the standards detailed above in subsections (H)(1) through (3), may be approved by the Planning Director pursuant to the Type II Land Use Procedure. A discretionary monument sign application may be approved if the applicant demonstrates compliance with all of the following criteria:

a. The overall design of the sign exhibits a sense of structure; and

b. Materials, similar to stone, brick, or wood are used; and

c. The proposed sign is in conformance with all other applicable city ordinances concerning its location, construction, and design.

I. **Blade/Overhang Signs.**

1. Blade/overhang sign shall not extend more than 8 feet from the building face.

2. The outer edge of a blade/overhang sign shall be set back a minimum of 2 feet from the curb.

3. A minimum 9-foot clearance shall be provided between grade and the bottom of a blade/overhang sign.

J. **Wall Signs**.

1. A wall sign shall not project more than 18 inches from the wall to which it is attached (or 12 inches from a wall directly abutting an alley). An encroachment permit is required prior to encroachment into any public right-of-way.

2. The surface area of a wall sign shall not be more than 2 square feet per lineal foot of the wall on which it is erected. For shopping centers, the footage will be counted on the entire surface of the wall on which the sign is being erected and include all signs erected on that wall in the total footage.

K. **Reader Boards and Electronic Message Boards.**

1. The rate of change for sign copy on a bulletin or electronic message board from 1 message to another message shall be no more frequent than every 8 seconds. Once changed, content shall remain static until the next change.

2. Displays may travel horizontally or scroll vertically onto electronic message boards but must hold a static position after completing the travel or scroll.

3. Sign content shall not appear to flash, undulate, pulse, or portray explosions, fireworks, flashes of light, or blinking or chasing lights. Content shall not appear to move toward or away from the viewer, expand or contract, bounce, rotate, spin, twist, or otherwise portray graphics or animation as it moves onto, is displayed on or leaves the electronic message board.

4. No electronic message board may be illuminated to a degree of brightness that is greater than necessary for adequate visibility.

5. Electronic reader boards may be placed in commercial, industrial and public zones only.

6. No electronic message board may be located closer than 500 feet from another electronic message board.

7. These signs are only allowed as part of a blade/overhang sign, marquee sign, monument sign, pole sign, or wall sign.

L. **A-Frame Signs.**

1. Dimensions. The A-frame sign area shall not exceed 3 feet high by 2 feet wide. The top of the sign shall be no more than 42 inches from the ground (including feet and hinge mechanisms).

2. Construction. Shall be constructed of wood, plastic, or metal with a matte/non-reflective finish.

3. Location. Shall not be located further than 100 feet from the primary business. Signs must not obstruct vehicle sight clearances or be placed so as to obscure permanent signs.

4. Quantity. No more than 1 A-frame sign per business.

5. No A-frame sign shall include any parts or attachments that extend beyond the edge of the sign dimensions.

6. No reflective materials shall be incorporated into the A-frame sign.

7. Neon colors shall not be incorporated into the A-frame sign.

8. No A-frame sign shall be placed along any designated sidewalk, or walkway in such a manner as to impede pedestrian passage.

9. A-frames shall not be placed in landscaped areas.

10. All A-frames shall comply with the requirements of this code within 1 year of adoption of this code.

11. Time Period. A-frame signs may be displayed only during public business hours and shall be promptly removed from public display when the business is closed, or at dusk, whichever comes first. For enforcement purposes, dusk is when nearby street lights turn on.

12. An A-frame sign which does not meet 1 or more of the standards detailed in this section above, may be approved by the Planning Director pursuant to a Type II Land Use Procedure. A discretionary A-frame sign application may be approved if the applicant demonstrates compliance with all of the following criteria: The proposed materials, colors, and dimensions of the A-frame sign do not pose a hazard concerning its location, construction, and design.

Applicants Response: All signs on the project site will comply with the guidelines and regulations as stated above

M. **Signs in Residential Zones.** In addition to the temporary and permanent signage allowed without a permit in the residential zones the following signage is allowed subject to permit and fee:

Applicants Response: Not Applicable. The project site is not located in a Residential Zone

N. **Signs in the Central Business District.** In addition to the temporary and permanent signage allowed without permit in the following Central Business District zones the following signage is allowed subject to permit and fee:

Applicants Response: Not Applicable. The project site is not located in the Central Business District

O. **Signs in the Commercial District**. In addition to the temporary and permanent signage allowed without permit in the following commercial zones the following signage is allowed subject to permit and fee:

1. Monument Signs.

a. Church, School, or Public Facility.

i. Size. Maximum 48 square feet per sign face up to 2 sign faces.

ii. Maximum height 9 feet.

iii. Location/Number. One sign may be located adjacent on each street frontage.

b. Minor Business Complex.

i. Size. Maximum 100 square feet per sign face up to 2 sign faces.

ii. Maximum height 12 feet.

iii. Location/Number. One sign, except on site abutting a collector or arterial street, 1 sign may be located adjacent to each collector/arterial street frontage.

c. Major Business Complex.

i. Size. Maximum 150 square feet per sign face up to 2 sign faces.

ii. Maximum height 12 feet.

iii. Location/Number. One sign, except on site abutting a collector or arterial street, 1 sign may be located adjacent to each collector/arterial street frontage.

d. All Other Uses.

i. Size. Maximum 48 square feet per sign face up to 2 sign faces.

ii. Maximum height 12 feet.

iii. Location/Number. One sign, except on site abutting a collector or arterial street, 1 sign may be located adjacent to each collector/arterial street frontage.

2. Blade/Overhang Signs.

a. All Other Uses.

i. Size. Each sign shall have a maximum sign face area of 48 square feet. The total combined area of wall and blade/overhang signs on a primary frontage shall not exceed 12% of the building elevation area.

ii. Maximum Height. The height of the sign shall not project above the roofline or top of the parapet wall, whichever is higher.

iii. Location/Number. One sign per building frontage for each business license on file with the city at that location.

3. Wall Signs.

a. All Uses.

i. Size. Maximum sign area of all signage allowed on a primary building frontage is 8% of the building elevation area of the primary building frontage, up to a maximum of 120 square feet.

(A) The total combined area of marquee signs, awning or canopy signs, and wall signs on a primary frontage shall not exceed the maximum percentage of building elevation area allowed.

(B) The maximum sign face area of all signage allowed on a secondary building frontage is 6% of the building elevation area of the secondary building frontage, up to a maximum of 60 square feet.

(C) If the building elevation area of a primary or secondary building frontage exceeds 5,000 square feet, the total sign face area allowed on that frontage is 130 square feet.

ii. Maximum Height. Shall not project above the roofline or top of the parapet wall, whichever is higher.

iii. Location/Number. One sign per building frontage for each business license on file with the city at that location.

4. Reader Boards and Electronic Message Board Signs.

a. Bulletin Board for Church, School, Public/Semi-Public Facility.

i. Size. May encompass up to 75% of the sign face area.

ii. Maximum height determined by height of sign.

iii. Location/Number. Only allowed as a permitted sign.

b. Bulletin Board—All Other Uses.

i. Size. May encompass up to 50% of sign face area.

ii. Maximum height determined by height of sign.

iii. Location/Number. Only allowed as part of a permitted sign.

c. Electronic Message Board—All Uses.

i. Size. May be no larger than 8-foot horizontal by 3-foot vertical from the ground.

ii. Maximum height determined by height of sign.

iii. Location/Number. Only allowed as part of permitted sign.

5. Pole Signs.

a. Church, School, Public/Semi-Public Facili

i. Size. Maximum 48 square feet per sign face (up to 2 faces).

ii. Maximum height 18 feet.

iii. Location/Number. One sign may be located adjacent each street frontage.

b. Minor Business Complex.

i. Size. Maximum 100 square feet per sign face (up to 2 faces).

ii. Maximum height 20 feet.

iii. Location/Number. One sign; except on a site with more than 1 street frontage, 1 sign may be located adjacent each collector or arterial street frontage that is at least 500 feet in length. Where more than 1 sign is permitted on a site, the signs must be separated by at least 300 feet.

c. Major Business Complex.

i. Size. Maximum 130 square feet per sign face (up to 2 faces).

ii. Maximum height 26 feet.

iii. Location/Number. One sign; except on a site with more than 1 street frontage, 1 sign may be located adjacent each collector or arterial street frontage that is at least 500 feet in length. Where more than 1 sign is permitted on a site, the signs must be separated by at least 300 feet.

d. All Other Uses.

i. Size. Maximum 48 square feet per sign face (up to 2 faces).

ii. Maximum height 18 feet.

iii. Location/Number. One sign; except 1 sign may be located adjacent each collector or arterial street frontage.

6. Awning Sign and Canopy Sign.

a. Use on Site—All Uses.

i. Size. Maximum sign face area of all signage allowed on a primary building frontage is 12% of the building elevation area of the primary building frontage, up to a maximum of 120 square feet.

(A) The total combined area of marquee signs, awning or canopy signs, and wall signs on a primary frontage shall not exceed the maximum percentage of building elevation area allowed.

(B) The maximum sign face area of all signage allowed on a secondary building frontage is 8% of the building elevation area of the secondary frontage, up to a maximum of 30 square feet.

ii. Maximum Height. Shall not project above the roof line or parapet wall whichever is higher.

iii. Location/Number. One sign per building frontage for each business license on file with the city at that location. Sign shall not project above the roof line. Sign shall not extend more than 8 feet from the building face. Outer edge of sign shall be set back a minimum of 2 feet from a curb. A minimum 8½ foot clearance shall be provided between grade and bottom of sign.

7. Marquee Sign.

a. Use on Site—All Uses.

i. Size. Maximum sign face area of all signage allowed on a primary building frontage is 12% of the building elevation area of the primary building frontage, up to a maximum of 120 square feet. The total combined area of marquee signs, awning or canopy signs, and wall signs on a primary frontage shall not exceed the maximum percentage of the building elevation area allowed.

ii. Maximum Height. Shall not project more than 8 feet above the roofline or parapet wall, whichever is higher the blade/overhang portion of the sign may extend above the roof line or parapet wall.

iii. Location/Number. Outer edge of sign shall be setback a minimum of 2 feet from a curb. A minimum 8½ foot clearance shall be provided between grade and bottom of sign.

8. Window Signs.

a. Use on Site—All Other Uses.

i. Size. See Section 18.02.090(B).

ii. Maximum height determined by height of window.

iii. Location/Number. Only allowed in ground floor or 2nd floor windows.

Applicants Response: The project site is located in a Commercial District. All signs on the project site will comply with the guidelines and regulations as stated above

P. **Signs in the Community Planning Area**. In addition to the temporary and permanent signage allowed without permit in the Community Planning Area the following signage is allowed subject to a permit and fee.

Applicants Response: Not Applicable. The project site is not located in the Community Planning Area

Q. **Signs in Industrial Districts**. In addition to the temporary and permanent signage allowed without permit in the following industrial zones the following signage is allowed subject to permit and fee:

Applicants Response: Not Applicable. The project site is not located in an Industrial District

18.02.110 Permanent signs exempt from permit and fee.

The following signs shall comply with all provisions and regulations of this chapter; however, no fee, permit or application is required:

A. One sign not exceeding 1 square foot in area hung from a building.

B. One sign not exceeding 2 square feet in area placed on any occupied residential lot.

C. **Incidental Signs**. Not exceeding 6 square feet in area shall be allowed on any parcel that a multiple dwelling is constructed.

D. **Public Signs**. For hospitals or emergency services, legal notices, railroad signs, and danger signs. Signs or tablets (including names of buildings, and the date of erection) when cut into any masonry surface, or constructed of bronze or other noncombustible surface not to exceed 8 square feet in area.

E. **Athletic Field Signs**. Rigid signs located on the outfield fence of athletic fields may be installed. Each individual sign shall be no more than 32 square feet in area. There shall be no more than 32 square feet of area for any 8 linear feet of fence. The maximum height shall not exceed 8 feet above grade. The signs shall be placed so as to be visible from the interior of the field and/or viewing stands. One sign located at 1 end of the field visible to spectators shall have a maximum height of 15 feet above grade and shall be a maximum of 64 square feet.

F. Accessory signs within a commercial or industrial zone which are permanent and an internal part of permitted outdoor accessory or display structures such as soft drink machines, fuel pumps, and newspaper dispensers.

G. No “solicitation” sign pursuant to size.

H. Signs attached to or carried by a person limited to 6 square feet in total size.

I. Flags as outlined in Chapter 21.30.

18.02.120 Regulation of temporary signs.

The following signs shall comply with all provisions and regulations of this chapter; however, no fee, permit or application is required. Temporary signs are prohibited signs except as provided by this section.

A. **Generally.**

1. Illumination. No temporary sign shall be internally or externally illuminated.

2. Location.

a. No temporary sign shall extend into or over the public right-of-way of any street.

b. Signs allowed in the right-of-way for temporary traffic control shall provide a minimum of 5 feet of clear passage of pedestrians on the sidewalk where a sidewalk exists and shall come no closer than 2 feet from areas subject to vehicular travel.

c. No temporary sign shall extend into the vision clearance area.

3. Maintenance. Temporary signs shall be kept neat, clean and in good repair. Signs which are faded, torn, damaged or otherwise unsightly or in a state of disrepair shall be immediately repaired or removed.

4. Placement. Except as provided by this section, temporary signs shall not be attached to trees, shrubbery, utility poles, or traffic control signs or devices. They shall not obstruct or obscure primary signs on adjacent premises.

5. Sign Collection and Retrieval.

a. The city may collect temporary signs placed in the public right-of-way without a permit.

b. Each sign collected will be stored for a minimum of 30 days.

c. Notice will be mailed within 3 business days of the date of collection to the owner of each sign if the ownership is reasonably discernible from the sign or as previously filed by the owner of the sign with the Planning Department.

d. The owner of a sign may retrieve a sign collected by the city within 30 days of the collection date. The owner must present proof of ownership of the sign and pay a sign retrieval fee in the amount established by City Council resolution.

e. The owner of the sign may request a hearing before the Planning Commission to contest the sign removal. To request a hearing, the owner of a sign must file an application for a hearing and pay a hearing fee in an amount established by resolution of the City Council within 15 days of the date of mailing of the notice as provided in subsection (A)(5)(c) above. The hearing fee and the sign retrieval fee are refunded if the Planning Commission finds that the sign was removed improperly. At the hearing, testimony and evidence begins with the city, followed by the owner, and concludes with rebuttal by the city. After the evidence has been provided, the Planning Commission will close testimony and issue a written decision that states the facts of the case and the conclusions of the decision.

B. **Allowed Signage.**

1. To any residential zone temporary signage shall be allowed for each and every lot. This signage shall not be restricted by content, but is usually and customarily used to advertise real estate sales, political or ideological positions, garage sales, home construction or remodeling, etc. Signage shall be allowed for each lot as follows:

a. Temporary signs not exceeding 6 square feet, provided the signs are erected not more than 90 days prior to an election and removed within 5 days following the election.

b. One temporary sign not exceeding 6 square feet provided the sign is removed within 15 days from the sale, lease or rental of the property or within 7 days of completion of any construction or remodeling. An additional sign of the same size may be erected if the property borders a second street and the signs are not visible simultaneously. On tracts of land of more than 2 acres in residential zones the sign area may be increased to 32 square feet. In no case shall the sign or signs be erected for more than 12 months.

c. One temporary sign not exceeding 4 square feet in area which is erected for a maximum of 8 days in any calendar month and is removed by sunset on any day it is erected.

d. Temporary signs erected within a building which do not obstruct more than 10% of any individual window surface.

2. In any commercial or industrial zone temporary signage shall be allowed for each and every lot. This signage shall not be restricted by content, but is usually and customarily used to advertise real estate signs, political or ideological positions, construction or remodeling, etc. The signage shall be allowed for each lot as follows:

a. Temporary signs not exceeding 6 square feet, provided the signs are erected not more than 90 days prior to an election and removed within 5 days following the election.

b. Temporary sign not exceeding 32 square feet provided said signs are removed within 15 days from the sale, lease or rental of the property or within 7 days of completion of any construction or remodeling. An additional sign of the same size may be erected if the property borders a second street and the signs are not visible simultaneously.

c. Temporary non-illuminated signs not exceeding 16 square feet for charitable fundraising events placed by nonprofit and charitable organizations. Such signs shall not be placed more than 7 days prior to the event and must be removed within 2 days following the event. No more than 3 such events shall be advertised in this manner per lot per year.

d. Temporary signs not exceeding 16 square feet in area erected in association with the temporary uses allowed by code including Christmas tree sales, pushcart vendors, Saturday market and sidewalk sales. This signage shall be allowed for the same duration as the temporary use.

Applicants Response: If temporary signs are needed then the temporary signs on the project site will comply with the guidelines and regulations as stated above

18.02.130 Temporary signs requiring a permit.

A. The City Manager may allow temporary signs larger than those allowed by this code to be erected. This signage shall not be restricted by content, but is usually and customarily used to advertise special events and store openings on banners. The City Manager shall allow the erection of such signs only if the City Manager finds that the proposed sign will not materially impair the purposes of the Sign Code. Seasonal decorations erected within the public right-of-way shall be considered to be such signs. These signs shall meet all applicable City Code provisions. Lighting of such signs will be reviewed as part of the application and may be allowed depending on impact to surrounding development.

B. The following requirements shall be met, as applicable:

1. Written consent from the property owner where the sign will be located shall be provided. The consent shall identify any restrictions that the property owner requires of the permit holder. Banners hung from utility poles shall require written approval from Portland General Electric. Banners hung over a state highway will require written approval from the Oregon Department of Transportation.

2. Plans or a description showing the location of the sign; banner height above the right-of-way; support devices for the banner; and proposed dates shall be provided.

3. The display period shall not exceed 25 consecutive days in duration and no more than once in any 12-month period. All such signs shall be removed no later than 1 day following the event being advertised.

4. A copy of any liability and/or property damage insurance required by the property owner where the sign or banner will be located.

5. A signed rebate and indemnity agreement shall be provided if placing a banner over the public right-of-way.

6. The extent of signage allowed and the location of the signage is at the discretion of the City Manager.

C. The extent of signage allowed and the location of the signage is at the discretion of the City Manager.

D. Any temporary sign that exceeds 6 square feet in size.

Applicants Response: If temporary signs are needed then a temporary sign permit will be obtained.

18.02.140 Signs requiring a permit.

A. It is unlawful and a civil infraction for any person to erect, construct, alter or relocate any sign without first obtaining a permit pursuant to the provisions of this chapter unless a provision of this chapter specifically exempts a sign from the permit requirement.

B. It is unlawful and a civil infraction for any person to construct a sign that is not specifically allowed by this chapter or to erect, construct, maintain or allow to exist a sign in violation of the terms of the permit issued pursuant to this chapter.

Applicants Response: If a permit is required to construct or install a particular sign then a permit will be obtained for that particular sign

18.02.150 Automobile service station sign standards.

Sign denoting gasoline prices, as provided for in Oregon Revised Statutes 649.030, are permitted subject to the following provisions:

A. Maximum area on 1 sign face is 20 square feet.

B. Maximum height is 25 feet or that required under freestanding signs whichever is less.

C. Only 1 gasoline sign shall be allowed per business location street frontage.

Applicants Response: Not Applicable.

18.02.160 Signage on cars.

Signs on cars not otherwise discussed in the MDC shall meet the following requirements:

A. Shall not project beyond the original frame of the vehicle more than 1/4 inch; exceptions: pizza delivery, taxi, and the like;

B. Shall not be larger than 6 square feet; car wraps are exempt from the size requirements; and

C. Shall not be parked in a right-of-way for periods of time to be used as a portable sign.

Applicants Response: Not Applicable.

18.02.170 Garage/household sales.

Signs advertising household goods, such as a garage sale, are permitted, subject to the following provisions:

A. Maximum area on 1 sign face is 6 square feet.

B. Height of 3 square feet.

C. On premises sign—One sign.

D. Three off-premises A-frame signs.

E. Placement no earlier than 8:00 a.m. on the first day and removal no later than 7:00 p.m. on the last day.

F. Sign cannot create a traffic hazard, impede pedestrian passage or create a public nuisance.

G. All garage sale signs shall include the address of the location of the garage sale.

H. The city shall have available a reasonable supply of professional sale signs that can be rented by individuals. In addition, the city may secure a deposit to recover the cost of replacing the sign in the event of damage or loss.

Applicants Response: Not Applicable.

18.02.180 Nameplates.

Nameplates identifying the occupant of a residence are permitted outright when not exceeding 1 square foot in size.

Applicants Response: Not Applicable.

18.02.190 Open house signs/for sale signs.

A. Additional temporary single or double-faced open house signs shall be permitted on private property during daylight hours provided such additional temporary signs are removed prior to sunset the day of placement. Such signs are permitted only on private property with the consent of the occupant. Units displaying an open house sign must remain unlocked during the time the sign is posted. An open house is to be attended by the seller or representative at all times during the open house. This section does not apply to model homes within subdivisions or model apartment units. An open house sign may not be displayed for the same address for more than 2 consecutive weekends.

B. One temporary sign per frontage, not exceeding 6 square feet in area, during the time of sale, lease or rental of the lot/structure provided that the sign is removed within 30 days of the sale, lease or rental of the lot/structure.

Applicants Response: Not Applicable.

Oregon
Kate Brown, Governor

Department of Transportation
Region 1 Headquarters
123 NW Flanders Street
Portland, Oregon 97209
(503) 731.8200
FAX (503) 731.8259

EXHIBIT C

April 26, 2019 ODOT #8484

ODOT Response

Project Name: Cascade Commercial	**State Highway:** OR 211
Jurisdiction: City of Molalla	
Site Address: 121 S Hezzie Lane, Molalla, OR 97038	**Legal Description:** 05S 02E 08C **Tax Lot(s):** 00400

The site of this proposed land use action is adjacent to 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

ODOT has reviewed the Traffic Impact Analysis for the proposed development prepared by Kittelson & Associates (KAI) and the DKS Associates review letter on behalf of the City of Molalla. The TIA included signal warrant analysis for two locations on OR 211 at Molalla Ave and Leroy Ave. The signal warrant analysis did not include the critical warrant analysis spreadsheet data used in the signal warrant evaluation. The supporting spreadsheet data was requested from the consultant (KAI) to demonstrate that signal warrant analysis was done in accordance with ODOT's Analysis Procedures Manual (APM). The spreadsheet data that was submitted including breakdown of left, through and right turns for all movements for each hour of the day used for both signal warrant evaluation at Molalla Ave and at Leroy Ave. Once the spreadsheet data was submitted by KAI the following concerns were identified:

- The traffic signal warrant submitted did not include any discount for minor street (Molalla Ave and Leroy Ave) right turn volumes from the overall warrant volumes. For a shared through-right lane (as proposed in the mitigations) the right turn discount is 85% of the shared lane unsignalized capacity (ODOT's APM Chapter 7).
- Leroy Ave will not meet the signal warrant based on the right turn discount discussed above. Future growth anticipated in the City's Transportation System Plan will lead to signalization of the Leroy Ave intersection at a later date.
- The traffic signal warrant included discount adjustment for populations that are under 10,000. Portland State University population forecast for the City of Molalla suggests the population will exceed 10,000 by the year of opening. The anticipated growth is consistent with the update TSP, which will lead to signalizing Leroy Ave at a later date.
- Once the signal warrant is reevaluated with the right turn discount, Molalla Ave most likely will meet the warrant in the current year.

The issue related to the "size of population" is discussed above in order to show ODOT support to signalize Molalla Ave first and once the development at Leroy Ave is in place, Leroy Ave signalization can be reevaluated at a later date.

ODOT recommends that the city work with Area Manager Paul Scarlett on a strategy for collecting contributions from this and other future developments to collaborate on the construction of a signal at Main St and Leroy St, once it becomes approvable.

The TIA recommends other improvements relating to the access and extension of Leroy Ave to the south. The improvement details will be reviewed and approved through ODOT's State Highway Approach Road Permit review and Construction Plan Review Process.

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, cross walk ramps, bike lanes and road widening shall be constructed as necessary to be consistent with local, ODOT and ADA standards.

☒ Right of way deeded 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 or written determination (e-mail, fax or mail acceptable) from ODOT that the existing approaches are legal 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

Region1_DEVREV_Applications@odot.state.or.us

Development Review Planner: Marah Danielson	503.731.8258, marah.b.danielson@odot.state.or.us
Traffic Contact: Avi Tayar, P.E.	503.731.8221
District Contact: Loretta Kieffer	503.667.7441

EXHIBIT D

Alice Cannon

From: Aldo Rodriguez
Subject: FW: New Application Transmittal - File # DRW01-2019

From: Mike Penunuri <penunuri@molallafire.org>
Sent: Thursday, March 28, 2019 1:59 PM
Subject: RE: New Application Transmittal - File # DRW01-2019

Good afternoon Steve. My comments are below regarding the new development.

1) Lot 7 and lot 1 will require fire suppression systems
2) Please double check the turning radii of this complex to assure that we can get in and out. Please note that turning radii for a driving surface of 12 feet in width is 44/56 feet respectively.
3) There are some areas that will need to be marked as no parking. Signage will need to be placed for these areas that meet current Oregon standards and state the ORS that allows the vehicles parked illegally to be towed.
4) There are no fire hydrants listed on the plans. Molalla Fire will place the hydrant is the contractor wishes. Please note that Molalla Fire District uses 4" stortz connections and not 5 inch. This is a very common mistake made by contractors.
5) They water line that feeds the fire hydrants will need to be looped back into the system in order not to impede fire flow.
6) The city of Molalla has very specific requirements on brand/make of fire hydrants. The contractor will need to see the public works director for those requirements.
7) Lots 1 through 7 are obvious as to the occupancies. Is lot 8 storage units, additional parking? I will need to know this so that hydrants can be placed/spaced appropriately. The same goes for lot 10,11,12 and 13.

These are preliminary comments based off of the information provided at the time of this e-mail. Molalla Fire reserves the right to add additional comments as additional information becomes available.

Michael C. Penunuri
Lieutenant/Paramedic

EXHIBIT E

April 26, 2019

Re: Cascade Center development "plans"

Dear Molalla Planning,

It was clearly premature for Molalla Planning to ask for comments regarding Cascade Center. The City of Molalla has failed to provide a hearing date, staff notes, or to post any information at all on the Planning website regarding this very large development. Why were interested parties noticed about a "plan" that the City of Molalla completely failed to provide technical information about?

Bear Creek Recovery, at this time, notes that there is a glaring lack of input for Division of State Lands regarding BC 18, a wetlands prominent in the middle of the proposed site. Why have the developer and City of Molalla failed to provide the necessary wetlands survey and failed to contact Division of State Lands? See attached photo from April 2019 that clearly shows one of the two wetlands channels shown on the Molalla wetland survey map on file at Division of State Lands. This is not "high water table" but is instead a listed/mapped wetlands. **Also, it appears that in the development of Stoneplace phase three the developer altered the flow of BC 18. Did the City note this and is there a permit in place for the alteration and fill of BC 18 between proposed site and Lowe Road – BC 18 is shown as connecting to BC 20 on the south side of Lowe Road.**

The City has still failed to post a link to the ODOT feedback letter – I had to ask for it to be provided. Given the grave congestion and pedestrian crossing concerns in that area and given Molalla's weak finances when it comes to implementing needed transportation improvements, the ODOT reports raises many questions, including:

How will the City of Molalla pay for the two needed stoplights noted in the ODOT report?

If any connection/use of the so-called Lowe Road is proposed, how will Molalla pay for the improvements needed to make Lowe Road into a functional two lane road? There are extensive wetlands on the south side of Lowe Road – BC 20 - and it currently is a one car width gravel path for most of its length. See attached.

Other questions regard DEQ:

Where is input from DEQ regarding the needed infrastructure for this site and where is approval from DEQ for the added burden on the already over –capacity wastewater plant? When this notice was received, DEQ was contacted by Bear Creek Recovery and DEQ confirmed it had not been noticed.

Other questions arise about the failure of the developer of the proposed project to follow through on former projects:

The developer of this site has failed to implement all the final conditions of his Stoneplace phase three agreement – where are the trails that were supposed to surround that Stoneplace Phase three site and why is a large building still encroaching on the Ona Way property that was supposed to be Molalla parkland, donated by the developer in lieu of paying into the Parks fund. Does the City plan to ignore that the developer failed to fulfill all conditions of Stoneplace and let developer begin another large project?

Again, this notice calling for comments to be in by April 26 was premature. Bear Creek Recovery looks forward to commenting once the City provide ALL the required approvals and documents to ALL interested parties via posting on the Planning website and providing a hearing date. Molalla has yet again failed at transparency and at providing access to ALL the technical reports needed.

Molalla Planning has also failed to respond to email questions raised by the development map. How can Molalla claim to be meeting Goal One when it can't respond to simple questions from the public about a noticed development?

Susan Hansen
Bear Creek Recovery
PO Box 50, Molalla 97038


Oregon
888LJM

EXHIBIT F

May 7, 2019

Open letter to Molalla City Council re: Planning Commission Membership

Dear Molalla City Council,

As you work to modify your PC membership profile please consider the following:

PC Membership: Many cities allow business owners/ owners of city property who don't live in the city limits to serve on a PC. Your proposed ordinance just outlines 3 mile residence limit. Why not allow property/business owners to be on your PC?

Citizen Involvement Committee: What will serve as the state mandated Citizen Involvement Committee since that is stricken from the proposed language? Every city must have a Citizen Involvement per Goal One. Molalla's failure to have vigorous involvement in city issues is likely directly related to Molalla's failure to have an active Citizen Involvement Committee per DLCD's Goal One mandate:

"Opportunities for widespread public involvement

Effective two-way communication with the public

The ability for the public to be involved in all phases of the planning process

Making technical information easy to understand

Feedback mechanisms for policy-makers to respond to public input, and adequate financial support for public involvement efforts

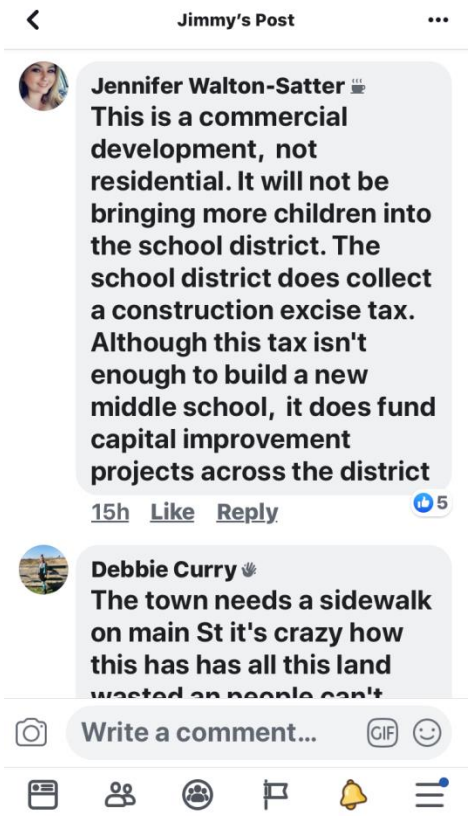
The goal also calls for local governments to have a committee for citizen involvement (CCI) to monitor and encourage public participation in planning."

https://www.oregon.gov/lcd/OP/Pages/Goal-1.aspx

PC Members unfit to serve because of ethical conflicts of interest/ ex parte contact in violation of hearing rules: A current member of your PC, Jennifer Walton-Satter, is also an elected member of the School Board. That always seemed like a potential direct conflict of interest/ethical problem because the School Board is often concerned about development stressing the ability of the School District to absorb more students. This conflict of interest has now been graphically illustrated on social media on Molalla Now Facebook.

Ms. Walton-Satter has violated the rules of ex parte contact for quasi-legislative hearings and expressed her bias as a Molalla School board with the opinion that proposed

development will not burden schools with students but will provide needed revenue for the Molalla School District:



Further examples of Ms. Walton-Satter's **ex-parte contact and bias in favor** of the proposed Cascade development include:

Ms. Walton-Satter's extensive discussion on Molalla Now Facebook social media is clearly a violation of hearing rules on ex parte contact and demonstrates bias in favor of a plan that has not been through a Planning Commission hearing she is scheduled to participate in on May 15. **Ms. Walton-Satter should at least be required to recluse**

herself from participating at the May 15 hearing. Given the past dismissals of PC members for unexcused absences and for asking questions at PC meetings, it would seem the City Council and Mayor should consider whether Ms. Walton-Satter should be dismissed from the PC because the demonstrated bias in the above ex-parte contacts shows she is not fit to serve on the Molalla Planning Commission while serving on the Molalla School Board.

It is long overdue for Molalla to have a stable, well trained and independent Planning Commission and to promote citizen involvement. Allowing people to serve on a PC who have hidden agendas because they serve on other boards and commissions defeats the any hope of having a fair and unbiased Planning Commission.

Sincerely,
Susan Hansen

EXHIBIT G

Cascade Center

Molalla, Oregon

March 2019

Transportation Impact Analysis

Cascade Center

Molalla, Oregon

Prepared For:
I&E Construction
9550 SE Clackamas Rd
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Project No. 23301

March 2019

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Section 1
Executive Summary

EXECUTIVE SUMMARY

I&E Construction proposes to develop up to 256 storage units, a 9,100 square-foot Dollar General, and up to 70,981 square feet of other retail, office, and restaurant uses on an approximately 15-acre site on OR 211 between Hezzie Lane and Ridings Avenue in Molalla, Oregon. The site will be served by three full-movement accesses, including a southward extension of Leroy Avenue across OR 211. The anticipated build-out year is 2020.

The results of this study indicate that the proposed Cascade Center development can be constructed while maintaining acceptable traffic operations and safety at the study intersections, assuming provision of the recommended mitigation measures.

FINDINGS

Existing Conditions

- All of the study intersections currently meet ODOT mobility standards during the weekday AM and PM peak hours.
- A review of historical crash data did not reveal any patterns or trends in the site vicinity that require mitigation associated with this project.

Year 2020 Background Traffic Conditions

- A 2.5-percent annual growth rate was applied to the existing traffic volumes to account for regional growth in the area.
- The *City of Molalla Transportation System Plan* identifies the future need to signalize the OR 211/Leroy Avenue intersection. The traffic signal was identified to provide motor vehicle capacity at the intersection to serve anticipated traffic growth and also serves as a north-south pedestrian crossing opportunity linking residents south of OR 211 with Molalla River Middle School to the north. Signalization is not currently funded.
- All but one of the study intersections are expected to continue meeting ODOT mobility standards during the weekday AM and PM peak hours prior to site development:
    - The all-way stop-controlled OR 211/Molalla Avenue intersection is projected to experience a volume-to-capacity (v/c) ratio greater than 0.90 on the eastbound approach during the PM peak hour. The *City of Molalla Transportation System Plan* identifies the future need to signalize the intersection; however, signalization is not currently funded.

Proposed Development Plan

- The proposed development is expected to generate approximately 4,112 weekday net new trips, of which 330 (193 in, 137 out) will occur during the AM peak hour and 349 (192 in, 157 out) will occur during the PM peak hour. The development is also expected to generate approximately 3,488 weekday pass-by trips, of which 226 (113 in, 113 out) will occur during the AM peak hour and 262 (131 in, 131 out) will occur during the PM peak hour.
- The City of Molalla has requested I&E Construction signalize the OR 211/Leroy Avenue intersection in conjunction with site development. Signalization requires ODOT approval; therefore, intersection operations were analyzed without and with a traffic signal in place for study purposes.

Year 2020 Total Traffic Conditions

- All but two of the study intersections are expected to continue meeting ODOT mobility standards during the weekday AM and PM peak hours after site development:
  - The northbound left turn at OR 211/Leroy Avenue is projected to experience a v/c ratio above the ODOT mobility target of 0.95 during the weekday PM peak hour, and projected northbound delays are expected to reach Level of Service "F".
  - Consistent with background conditions, the all-way stop-controlled OR 211/Molalla Avenue intersection is projected to continue to experience a v/c ratio greater than 0.90 on the eastbound approach during the PM peak hour as a result of full site buildout.

Traffic Signal and Turn Lane Considerations

- Per the MUTCD signal warrants and the estimated 24-hour volume profile of the OR 211/Molalla Avenue intersection, a traffic signal will be warranted at OR 211/Molalla Avenue prior to site development.
- Per the MUTCD signal warrants and the estimated 24-hour volume profile of the OR 211/Leroy Avenue intersection, a traffic signal will be warranted at OR 211/Leroy Avenue after the site is developed.
- A right turn lane with at least 100 feet of storage should be installed on eastbound OR 211 at the west site access per ODOT criteria. The eastbound OR 211 approach at Leroy Avenue also meets ODOT right turn lane criteria if unsignalized.
- A left turn lane with at least 75 feet of storage should be installed on westbound OR 211 at both the west site access and the east site access per ODOT criteria.

Year 2020 Total Traffic Conditions with Mitigation

- The OR 211/Leroy Avenue intersection satisfies ODOT v/c ratio mobility standards with signalization. Projected side street delays are much higher under stop control (resulting in weekday PM peak hour northbound approach Level of Service "F") as compared to a condition with signalization (resulting in weekday AM and PM peak hour intersection Level of Service "A").

95th-Percentile Queueing Analysis

- The proposed storage lengths at the study intersections are expected to accommodate each of the 95th-percentile queues in the AM and PM peak hours under 2020 total traffic conditions, assuming provision of the identified turn lanes and signalization.

RECOMMENDATIONS

The following are recommended in conjunction with site redevelopment:

- OR 211/Molalla Avenue:
  - Provide a traffic signal.
- OR 211/West Site Access:
  - Provide an eastbound right turn lane with at least 100 feet of storage.
  - Provide a westbound left turn lane with at least 75 feet of storage.
- OR 211/Leroy Avenue:
  - Restripe the north leg of the intersection to provide an exclusive left turn lane with at least 100 feet of storage and a shared thought/right lane on southbound Leroy Avenue.
  - Collaborate with City and ODOT staff to determine if and when signalization of the OR 211/Leroy Avenue intersection should be completed considering the following:
    - the City of Molalla's *Transportation System Plan* identifies the need for future signalization;
    - the City's desire for signalization in conjunction with site development;
    - the northbound left turn v/c ratio at the OR 211/Leroy Avenue intersection is forecast to exceed ODOT mobility targets after site build-out without signalization, but the intersection would meet ODOT mobility targets with signalization;
    - the projected intersection traffic volumes satisfy traffic signal warrants at site buildout; and

    - installation of a traffic signal would serve pedestrian crossings of OR 211, facilitating pedestrian access to Molalla River Middle School on Leroy Avenue and the Molalla Elementary School to the northwest.
  - Collaborate with the City and ODOT to further assess the need for an eastbound right turn lane at the OR 211/Leroy Avenue intersection pending decisions regarding signalization of the intersection.

- OR 211/East Site Access:
  - Provide a westbound left turn lane with at least 75 feet of storage.

- All landscaping, signage, and utilities near the site access points should be placed and maintained to provide adequate sight distance.

Additional details of the study methodology, findings, and recommendations are provided within this report.

Section 2
Introduction

INTRODUCTION

PROJECT DESCRIPTION

I&E Construction proposes to develop up to 256 storage units, a 9,100 square-foot Dollar General, and up to 70,981 square feet of other retail, office, and restaurant uses on an approximately 15-acre site on OR 211 between Hezzie Lane and Ridings Avenue in Molalla, Oregon. Figure 1 illustrates the site vicinity. The site will be served by three full-movement accesses, including a southward extension of Leroy Avenue across OR 211. The anticipated build-out year is 2020. Figure 2 illustrates the proposed site plan.

SCOPE OF THE REPORT

This analysis determines the transportation-related impacts associated with the proposed Cascade Center and was prepared in accordance with the City of Molalla and Oregon Department of Transportation (ODOT) requirements for traffic impact studies. The study intersections and scope of this project were selected in consultation with City and ODOT staff. Operational analyses were performed at these intersections:

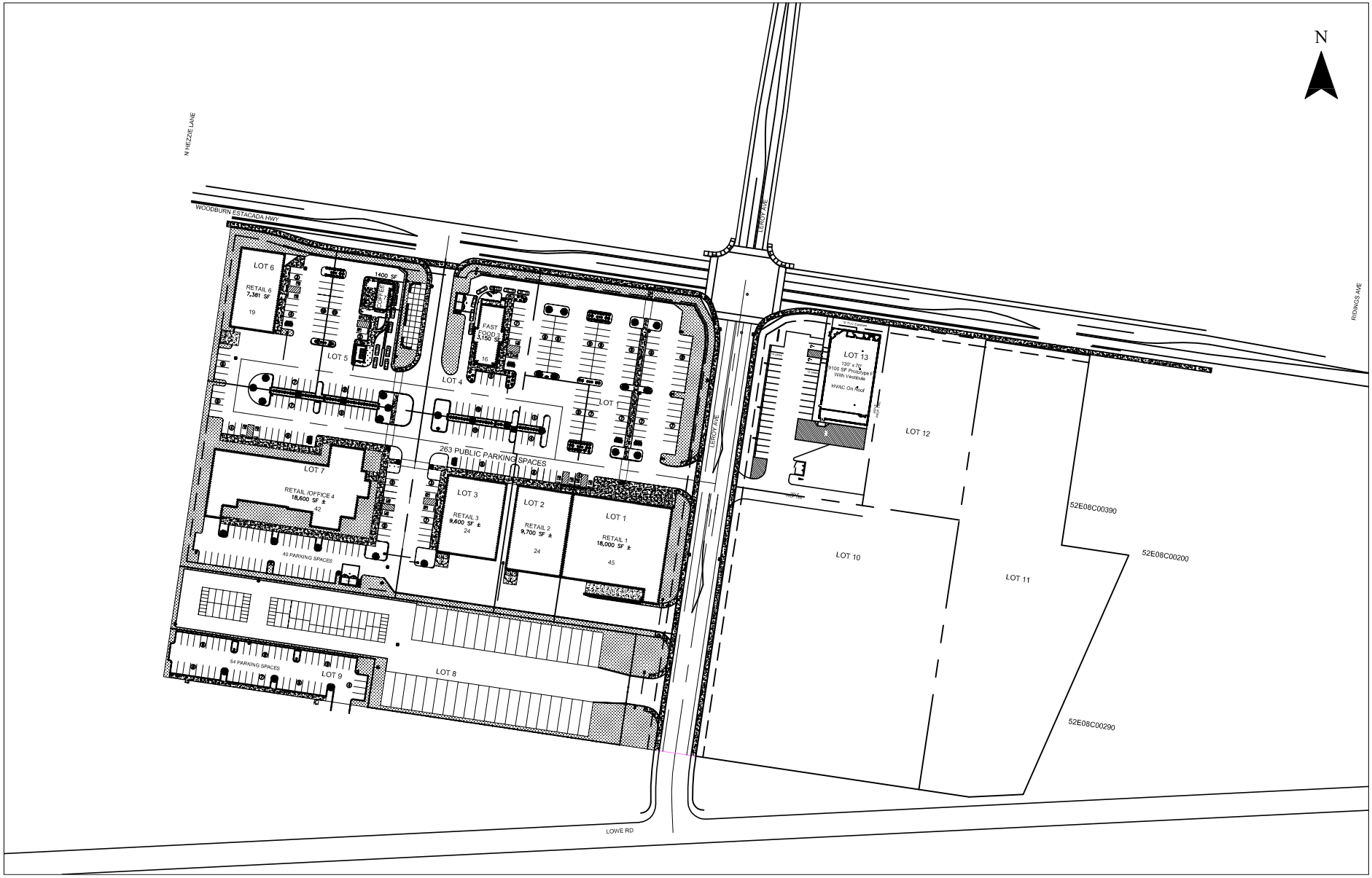
1. OR 211 (Woodburn-Estacada Highway/Main Street)/OR 213 (Cascade Highway)
2. OR 211 (Woodburn-Estacada Highway/Main Street)/Hezzie Lane
3. OR 211 (Woodburn-Estacada Highway/Main Street)/West Site Access
4. OR 211 (Woodburn-Estacada Highway/Main Street)/Leroy Avenue
5. OR 211 (Woodburn-Estacada Highway/Main Street)/East Site Access
6. OR 211 (Woodburn-Estacada Highway/Main Street)/Dixon Avenue/Lowe Rd
7. OR 211 (Woodburn-Estacada Highway/Main Street)/Molalla Avenue

This report evaluates these transportation issues:

- Existing land-use and transportation-system conditions within the site vicinity during the weekday AM and PM peak hours;
- Developments and transportation improvements planned in the study area;
    - Forecast year 2020 background traffic conditions (without the proposed development) during the weekday AM and PM peak hours;
- Trip generation and distribution estimates for the proposed Cascade Center development;
- Forecast year 2020 (including the proposed development) total traffic conditions during the weekday AM and PM peak hours with build-out of the site;
- Traffic signal and turn lane considerations; and
- On-site traffic operations and circu

Site Vicinity Map
Molalla, Oregon

Figure
1



Site plan provided by I&E Construction on 2/25/2019

SCALE

0 200' 400'

Proposed Site Plan
Molalla, Oregon

Figure
2

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Section 3
Existing Conditions

EXISTING CONDITIONS

The existing conditions analysis identifies the site conditions and current operational and geometric characteristics of the roadways within the study area. These conditions will be compared with future conditions later in this report.

Kittelson & Associates, Inc. (KAI) staff visited and inventoried the proposed development site and surrounding study area in October 2018. At that time, KAI collected information regarding site conditions, adjacent land uses, existing traffic operations, and transportation facilities in the study area.

SITE CONDITIONS AND ADJACENT LAND USES

The proposed site is within the City of Molalla limits, is currently occupied by nine single-family homes, and is zoned for commercial use. Adjacent land uses are predominantly residential and include the Stoneplace Apartments to the west and south. Northwest Self Storage borders the site to the east. Molalla River Middle School is located approximately one block north of OR 211 on the west side of Leroy Avenue.

TRANSPORTATION FACILITIES

Table 1 lists the existing transportation facilities and roadways in the study area.

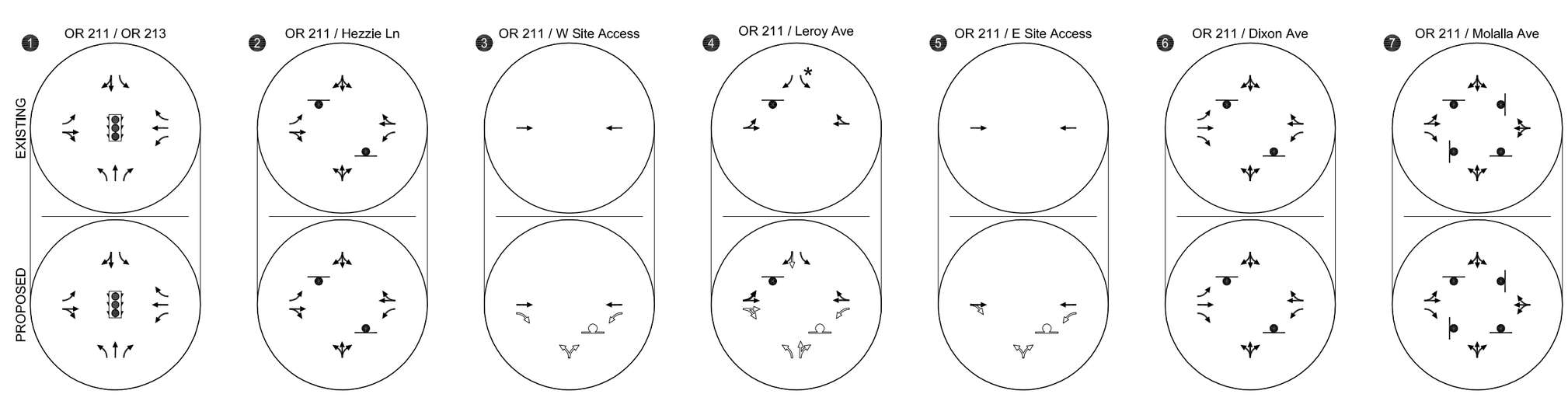
Table 1. Existing Transportation Facilities

Roadway	Functional Classification[1]	Number of Lanes	Posted Speed	Sidewalks	Bicycle Lanes	On-Street Parking
OR 211	Arterial (W of Molalla Forest Rd) Major Collector (E of Molalla Forest Rd)	2	45 mph (W of OR 213) 35 mph (OR 213 to Thelander Ln) 25 mph (E of Thelander Ln)	Partial[2]	Partial[3]	No
OR 213	Arterial	2-3	45 mph (N of OR 211) 40 mph (S of OR 211)	East Side	Yes	No
Hezzie Lane	Neighborhood Street	2	Not Posted	Both Sides	No	No
Leroy Avenue	Major Collector	2	Not Posted	Both Sides	No	Yes
Dixon Avenue	Local Street	2	Not Posted	No	No	Yes
Molalla Avenue	Arterial	2	25 mph	Both Sides	No	Yes

[1]Per City of Molalla Transportation System Plan (Reference 1)
[2]Sidewalks are provided on the north side from OR 213 to Commercial Parkway and east of Hezzie Lane. Sidewalks are provided on the south side along the Stoneplace Apartments frontage and east of Ridings Avenue.
[3]Bike lanes are provided west of Commercial Parkway, and paved shoulders are provided in some other areas of the corridor.

Roadway Facilities

Figure 3 illustrates the existing lane configurations and traffic control devices at the study intersections, as well as the proposed site improvements. All access to the site will be provided via OR 211 (Woodburn-Estacada Highway/Main Street), and the main site access will be a southward extension of Leroy Avenue across the intersection with OR 211. Leroy Avenue may be extended southward to Lowe Road as part of a future development.



*Sufficient roadway width is currently available for a separate left turn lane

- STOP SIGN
- TRAFFIC SIGNAL
- EXISTING
- PROPOSED

Existing and Proposed Lane Configurations and Traffic Control Devices
Molalla, Oregon

Figure 3

Pedestrian and Bicycle Facilities

No pedestrian or bicycle facilities are currently provided along the proposed site frontage. Sidewalks are provided on the north side from OR 213 to Commercial Parkway and east of Hezzie Lane. Sidewalks are provided on the south side along the Stoneplace Apartments frontage and east of Ridings Avenue. Bike lanes are provided on OR 211 west of Commercial Parkway, and paved shoulders are provided in some other areas of the corridor.

Transit Facilities

Local bus service is provided by South Clackamas Transportation District, which operates the Molalla City Route and the Molalla to Clackamas Community College route, both of which stop at OR 211/Leroy Avenue (Reference 2). Molalla City service is provided Monday through Friday from 7:30 AM to 5:35 PM, and Molalla to Clackamas Community College service is provided Monday through Friday from 5:00 AM to 8:30 PM and Saturday from 7:00 AM to 5:00 PM. Headways are approximately 30 minutes in peak periods and 60 minutes in off-peak periods.

TRAFFIC VOLUMES AND PEAK HOUR OPERATIONS

Turning movement count data were collected at the study intersections in October 2018 when school was in session. Counts were performed on a typical mid-week day from 7:00 to 9:00 AM and from 4:00 to 6:00 PM. The system-wide peak hours were identified as 7:00 to 8:00 AM and 4:15 to 5:15 PM.

Seasonal Adjustment

The ODOT Analysis Procedures Manual (APM), Chapter 5 describes how to develop existing year volumes (Reference 3). The nearest ODOT Automated Traffic Recorder (ATR) to the site is 03-014, which is located on OR 211 approximately 12 miles east of the site. This ATR is likely too far away from the development site to provide a meaningful seasonal adjustment, and traffic volumes there are likely more recreational and less influenced by commuter patterns.

The ODOT ATR Characteristic Table was used to identify an ATR with a similar volume, geometry, and seasonal trend to the development site. ATR 24-001 was selected due to its 2016 AADT (12,000) being similar to the 2017 AADT on OR 211 near the site (13,400), as well as having a similar geometry (two lanes) and seasonal trend (commuter pattern). Table 2 displays the percent of AADT experienced during the peak month (typically July through September) and the count month (October) for ATR 24-001. The years shaded in dark grey represent the highest and lowest values and were removed from the average percent of AADT calculation per the APM.

Table 2. ODOT ATR 24-001 (Characteristic) Percent of AADT by Year

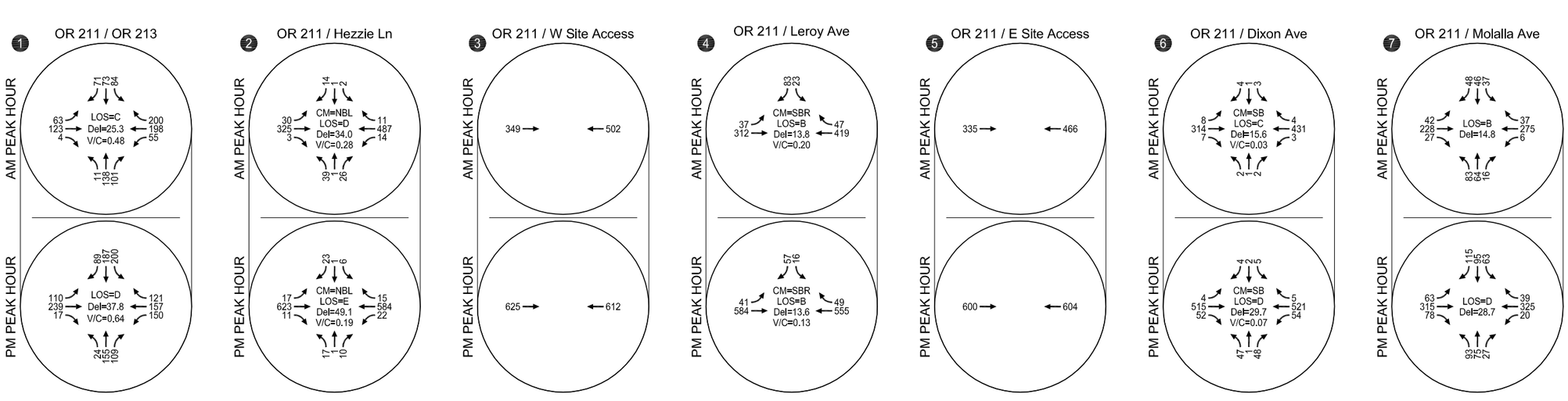
Year	2016	2015	2014	2013	2012
Peak Month	109	110	110	109	111
Count Month (October)	103	105	110	108	105

The seasonal adjustment was then calculated as (110 + 110 + 109) / (105 + 108 + 105) = 1.035 and applied to mainline traffic volumes along OR 211 and OR 213. Figure 4 provides a summary of the seasonally-adjusted turning movement counts at the study intersections. *Appendix "A" contains the traffic count worksheets used in this study.*

Current Intersection Operations

All traffic operations analyses described in this report were performed in accordance with the procedures stated in the 2000 *Highway Capacity Manual* (Reference 4) for signalized intersections and the *2010 Highway Capacity Manual* (Reference 5) for unsignalized intersections. Each of the study intersections is under the maintenance and jurisdiction of ODOT. The Oregon Highway Plan (Reference 6), Policy 1F establishes mobility targets for state highways based on volume-to-capacity ratio. Within the study area, OR 211 is a Regional Highway with a posted speed limit of 35 mph or less, which corresponds to a mobility target of 0.90. To meet ODOT standards, signalized intersections must not exceed an overall v/c ratio of 0.90. At unsignalized intersections, approaches on OR 211 must not exceed a v/c ratio of 0.90, and approaches on side streets must not exceed a v/c ratio of 0.95.

Figure 4 summarizes the operations analysis for the study intersections under the weekday AM and PM peak hour existing traffic conditions. All of the study intersections currently meet ODOT mobility standards during the weekday AM and PM peak hours. *Appendix "B" includes the level-of-service worksheets under existing traffic conditions.*



CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = CRITICAL MOVEMENT LEVEL OF SERVICE (SIGNALIZED)/
CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/
CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

Existing Traffic Conditions
Weekday AM and PM Peak Hours
Molalla, Oregon

Figure
4

Traffic Safety

ODOT-reported crash data was reviewed for the most recent five-year period, from January 1, 2012 through December 31, 2016. Table 3 summarizes the crash data at the study intersections, as well as the intersection crash rates and critical crash rates (based on a 95 percent confidence level). None of the observed crash rates exceed the respective critical crash rates.

Table 3. Summary of Reported Crash Data (January 1, 2012 through December 31, 2016)

Intersection	Crash Severity		Crash Type				Total Crashes	Crash Rate[2]	Critical Crash Rate[2]
	Injury	PDO[1]	Angle	Rear End	Turning	Sideswipe			
OR 211 / OR 213	11	7	4	4	10	0	18	0.63	1.04
OR 211 / Hezzie Ln	1	0	0	0	1	0	1	0.04	0.63
OR 211 / Leroy Ave	5	3	0	6	1	1	8	0.34	0.51
OR 211 / Dixon Ave	2	0	1	0	1	0	2	0.09	0.65
OR 211 / Molalla Ave	1	7	3	2	3	0	8	0.33	*

[1]Property Damage Only

[2]Per million entering vehicles

ODOT maintains a ranking of intersections with potential safety issues known as the Safety Priority Index System (SPIS). Based upon a 2016 analysis, none of the study intersections ranked within the top five percent of the highest-scoring intersections in Region 1.

No other crash trends were identified at the study intersections.

Appendix "C" contains the reported crash data from ODOT.

Section 4
Transportation Impact Analysis

TRANSPORTATION IMPACT ANALYSIS

The transportation impact analysis identifies how the study area's transportation system will operate in the year the proposed development is expected to be fully built, year 2020. The impact of traffic generated by the proposed Cascade Center during the typical weekday AM and PM peak hours was examined as follows:

- Background conditions were developed by applying a 2.5-percent annual growth rate to the existing traffic volumes to account for regional growth in the site vicinity.
- Site-generated trips were estimated for build-out of the site.
- Site trip-distribution patterns were derived considering the existing traffic patterns and the major trip origins and destinations in the study area.
- Site-generated trips and pass-by trips were assigned to the study intersections and site accesses.
- Year 2020 (build-out year of the Cascade Center) total traffic conditions were analyzed at each of the study intersections and site-access points during the weekday AM and PM peak hours.
- On-site circulation issues and site-access operations were evaluated.
- Traffic signal warrant and turn lane needs were evaluated where appropriate.

YEAR 2020 BACKGROUND TRAFFIC CONDITIONS

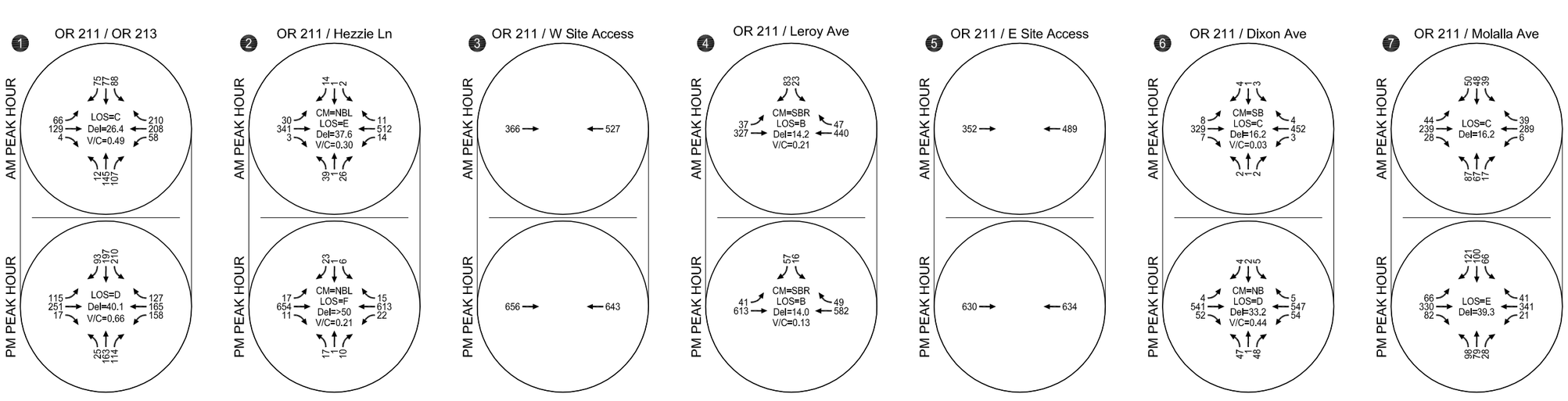
The year 2020 background traffic analysis identifies how the study area's transportation system will operate without the proposed Cascade Center. This analysis includes traffic attributed to planned developments within the study area and to general growth in the region but does not include traffic from the proposed development.

Traffic Volumes

The year 2020 background traffic volumes were developed by applying a 2.5-percent annual growth rate to the existing (seasonally adjusted) traffic volumes shown in Figure 4. This growth rate was identified from population and employment data in the Molalla TSP. Figure 5 displays the resulting 2020 background traffic volumes.

Operations Analysis

The weekday AM and PM peak-hour turning-movement volumes shown in Figure 5 were used to conduct an operational analysis at each study intersection to determine the year 2020 background traffic levels of service. All of the study intersections are expected to continue meeting ODOT mobility standards, with the exception of the OR 211/Molalla Avenue, which is expected to experience a v/c ratio above the ODOT



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CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

Year 2020 Background Traffic Conditions
Weekday AM and PM Peak Hours
Molalla, Oregon

Figure 5

mobility target of 0.90 on the eastbound approach during the PM peak hour. Appendix "D" contains the year 2020 background traffic level-of-service worksheets.

PROPOSED DEVELOPMENT PLAN

I&E Construction proposes to develop up to 256 storage units, a 9,100 square-foot Dollar General, and up to 70,981 square feet of other retail, office, and restaurant uses on the study site. The existing on-site structures will be removed with redevelopment. The site will be served by three full-movement accesses, including a southward extension of Leroy Avenue across OR 211. Leroy Avenue may be extended southward to Lowe Road as part of a future development. The anticipated build-out year is 2020.

It is assumed that the Applicant will restripe the north leg of Leroy Avenue at OR 211 to provide an exclusive left turn lane with at least 100 feet of storage and a shared through/right lane on southbound Leroy Avenue, mirroring the proposed new northbound approach.

The City of Molalla requested that I&E Construction signalize the OR 211/Leroy Avenue intersection in conjunction with site development based in part on the *City of Molalla Transportation System Plan (TSP).* The TSP identifies the future signal need to provide motor vehicle capacity at the intersection serving anticipated traffic growth and also to serve as a north-south pedestrian crossing opportunity linking residents south of OR 211 with Molalla River Middle School and other points to the north along Leroy Avenue. Recognizing signalization requires ODOT approval, intersection operations were analyzed without and with a traffic signal in place.

Trip Generation

The projected weekday daily, AM, and PM peak-hour vehicle trip ends for the proposed development were based on the *Trip Generation Manual*, *10th Edition* (Reference 7). Pass-by trips for the retail and restaurant land uses, as well as internal trips between the retail and restaurant land uses, were estimated from *Trip Generation Handbook, 3rd Edition* (Reference 8). No pass-by or internal trips were assumed to be associated with the RV parking/storage units, and no internal trips were assumed to be associated with the Dollar General. As the split between the office and retail uses in Lot 4 is currently unknown, all 18,600 square feet of Lot 4 were assumed to be retail. Table 4 summarizes the anticipated number of trips that will be generated by the proposed Cascade Center.

As shown, the proposed development is expected to generate approximately 4,112 weekday net new trips, of which 330 will occur during the AM peak hour and 349 will occur during the PM peak hour. The development is also expected to generate approximately 3,488 weekday pass-by trips, of which 226 will occur during the AM peak hour and 262 will occur during the PM peak hour.

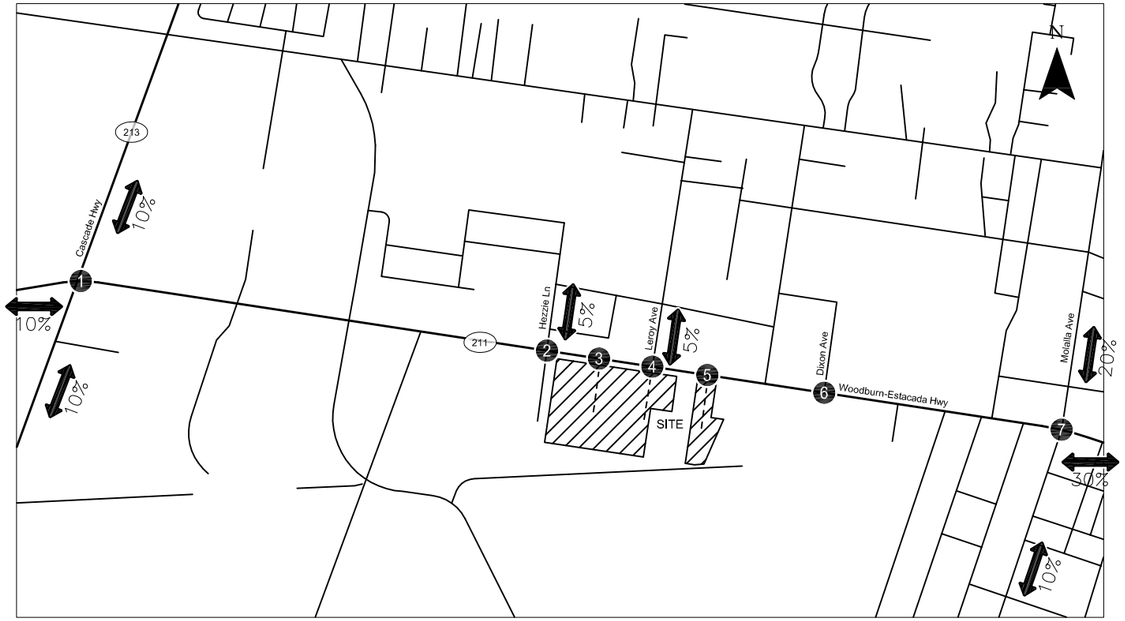
Table 4. Trip Generation

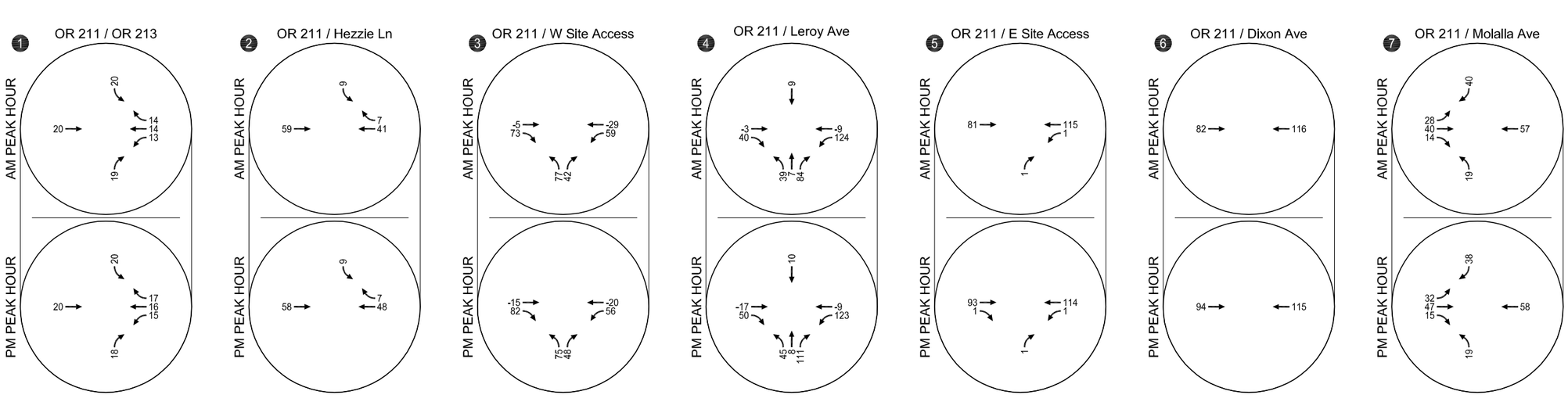
Land Use	ITE Code	Size	Weekday Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Fast Food Restaurant with Drive Through	934	6,300 ft²	2,966	253	129	124	206	107	99
Less Internal (16% Daily, 3% AM, 13% PM)			*504*	*8*	*4*	*4*	*29*	*15*	*14*
Less Pass-by (50% Daily, 49% AM, 50% PM)			*1,232*	*120*	*60*	*60*	*88*	*44*	*44*
Coffee Shop with Drive Through	937	1,400 ft²	1,148	124	63	61	61	30	31
Less Internal (16% Daily, 3% AM, 13% PM)			*196*	*4*	*2*	*2*	*9*	*4*	*5*
Less Pass-by (89% Daily, 89% AM, 89% PM)			*848*	*106*	*53*	*53*	*46*	*23*	*23*
Shopping Center (fitted)*	820	63,281 ft²	4,404	184	114	70	387	209	178
Less Internal (16% Daily, 3% AM, 13% PM)			*748*	*6*	*3*	*3*	*54*	*29*	*25*
Less Pass-by (34% Daily, 34% PM)			*1,244*	*0*	*0*	*0*	*114*	*57*	*57*
Free-Standing Discount Store	815	9,100 ft²	484	11	8	3	44	22	22
Less Pass-by (34% Daily, 34% PM)			*164*	*0*	*0*	*0*	*14*	*7*	*7*
Storage Units	151	256 units	46	2	1	1	5	3	2
Gross Trips			9,048	574	315	259	703	371	332
Less Internal			*1,448*	*18*	*9*	*9*	*92*	*48*	*44*
Less Pass-by			*3,488*	*226*	*113*	*113*	*262*	*131*	*131*
Net New Trips			**4,112**	**330**	**193**	**137**	**349**	**192**	**157**

*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 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

YEAR 2020 TOTAL TRAFFIC CONDITIONS

The total traffic conditions analysis forecasts how the study area's transportation system will operate with the traffic generated by the proposed Cascade Center development. The year 2020 background traffic volumes for the weekday AM and PM peak hours (shown in Figure 5) were added to the site-generated trips (shown in Figure 6) to arrive at the year 2020 total traffic volumes that are shown in Figure 7.

Intersection Operations

The weekday AM and PM peak hour turning-movement volumes shown in Figure 7 were used to conduct an operational analysis at each study intersection to determine the year 2020 total traffic levels of service. The results of the total traffic analysis shown in Figure 7 indicate that all of the study intersections and site access points are expected to continue meeting ODOT mobility standards, with the following exceptions:

- The northbound left turn at OR 211/Leroy Avenue is projected to experience a v/c ratio above the ODOT mobility target of 0.95 during the weekday PM peak hour, and projected northbound delays are expected to reach Level of Service "F".
- Consistent with background traffic conditions, the OR 211/Molalla Avenue intersection is projected to continue to experience a v/c ratio above the ODOT mobility target of 0.90 on the eastbound and westbound approaches during the weekday AM and PM peak hours.

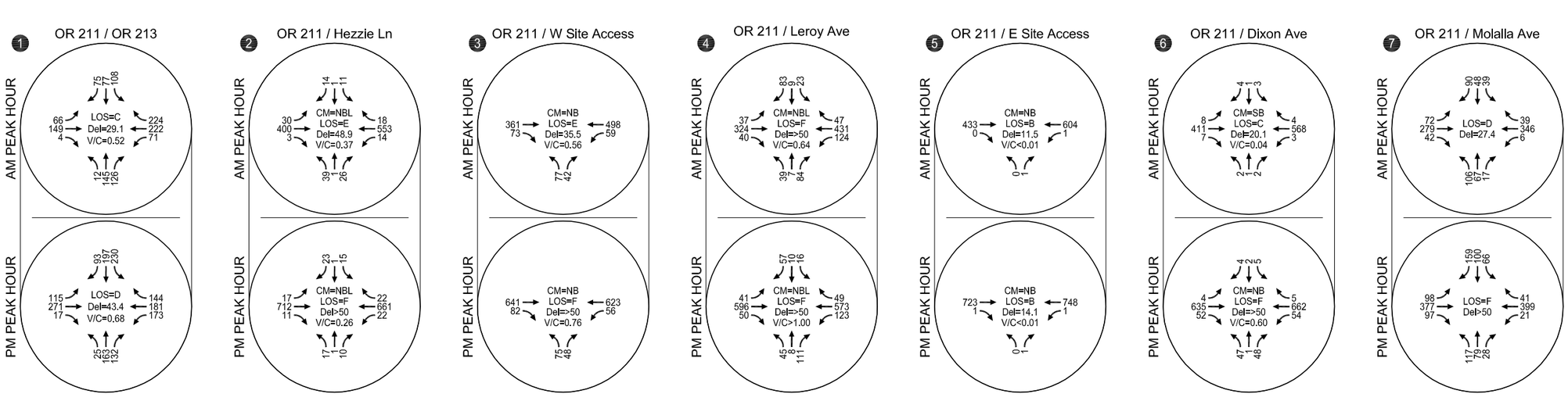
Appendix "E" contains the year 2020 total traffic level-of-service worksheets.

TRAFFIC SIGNAL AND TURN LANE CONSIDERATIONS

As previously noted, the *Molalla Transportation System Plan* (Reference 1) identifies an anticipated need for future signalization of the OR 211/Leroy Avenue and OR 211/Molalla Avenue intersections. This section of the report provides an assessment of potential intersection signalization and turn lane considerations associated with the proposed site development.

MUTCD Signal Warrants

The *Manual on Uniform Traffic Control Devices* (MUTCD, Reference 9) identifies nine warrants for traffic signal installation. The first two volume-based warrants (#1-Eight Hour and #2-Four Hour) were evaluated based on the existing and future traffic volumes at OR 211/Leroy Avenue and OR 211/Molalla Avenue. Weekday daily 24-hour volumes were estimated based on a 16-hour traffic volume count at the OR 211/Leroy Avenue intersection and peak hour volumes at the OR 211/Molalla Avenue intersection. Table 5 summarizes the warrant analysis results. As shown, the OR 211/Molalla Avenue intersection warrants



CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = CRITICAL MOVEMENT LEVEL OF SERVICE (SIGNALIZED)/
CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/
CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

Year 2020 Total Traffic Conditions
Weekday AM and PM Peak Hours
Molalla, Oregon

Figure
7

signalization prior to build-out of the site, and motor vehicle traffic volumes at the OR 211/Leroy Avenue intersection are forecast to warrant signalization with site build-out[1].

Table 5. Signal Warrant Analysis Results

Intersection	Scenario	Warrant Met?	
		Warrant #1: Eight Hour	Warrant #2: Four Hour
OR 211/Leroy Avenue	Existing	No	No
	2020 Background	No	No
	2020 Total	Yes	Yes
OR 211/Molalla Avenue	Existing	Yes	Yes
	2020 Background	Yes	Yes
	2020 Total	Yes	Yes

The City of Molalla requested signalization of the OR 211/Leroy Avenue intersection with site redevelopment to address both motor vehicle demand at the intersection and to provide a signalized pedestrian crossing of OR 211. The signalized pedestrian crossing would facilitate pedestrian connectivity between residential areas south of OR 211 and Molalla River Middle School, located on the west side of Leroy Avenue one block north of OR 211. The signalized crossing could also facilitate pedestrian connectivity with Molalla Elementary School to the northwest of the Middle School.

We recommend I&E Construction collaborate with City and ODOT staff to determine if and when signalization should be completed considering the following:

- the City of Molalla's *Transportation System Plan* identifies the need for future signalization;
- the City's desire for signalization in conjunction with site development;
- the northbound left turn v/c ratio at the OR 211/Leroy Avenue intersection is forecast exceed ODOT mobility standards during the PM peak hour after site build-out without signalization;
- projected side street delays at the OR 211/Leroy Avenue intersection are much higher under stop control (resulting in weekday PM peak hour northbound approach Level of Service "F") as compared to a condition with signalization (resulting in weekday AM and PM peak hour intersection Level of Service "A");
- the projected intersection traffic volumes satisfy traffic signal warrants at site buildout; and

[1] Currently there are no marked or signalized crosswalks of OR 211 within the site vicinity. Depending on Molalla School District busing and walking requirements, future pedestrian volumes at the OR 211/Leroy Avenue intersection may satisfy Warrant #5-School Crossing pending connectivity needs associated with the Molalla River Middle School (0.1 mile north of the intersection), Molalla Elementary School located to the northwest, and residential areas south of OR 211.

- installation of a traffic signal would serve pedestrian crossings of OR 211, facilitating pedestrian access to Molalla River Middle School and other points along Leroy Avenue.

Appendix "F" contains the signal warrant analysis worksheets.

ODOT Turn Lane Criteria

The *ODOT Analysis Procedures Manual* (Reference 3) identifies volume-based turn lane criteria at unsignalized intersections. The two proposed site accesses on OR 211 east and west of Leroy Avenue were evaluated for turn lane needs based on the 2020 total traffic AM and PM peak hour volumes. Based on this analysis, the right turn lane criteria are satisfied on eastbound OR 211 at the west site access, and the left turn lane criteria are satisfied on westbound OR 211 at the west site access. The Applicant proposes to construct a center left-turn lane along OR 211 providing a left-turn area for each of the three site accesses to provide a consistent three-lane section on OR 211 across the site frontage.

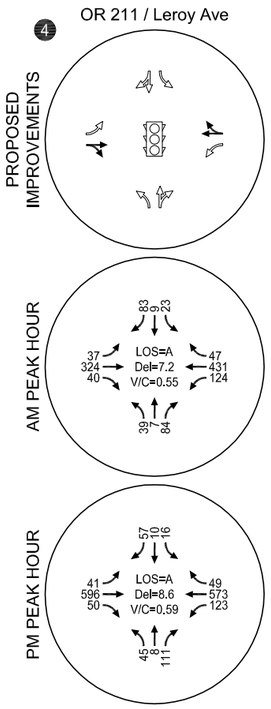
The ODOT right turn lane criteria are satisfied on eastbound OR 211 at Leroy Avenue if the intersection remains unsignalized; however, constructing a right-turn lane increases the north-south pedestrian crossing distance and would not be needed from a capacity perspective if the intersection is signalized. As such, we recommend the I&E Construction collaborate work with the City and ODOT to further assess the need for an eastbound right turn lane at the OR 211/Leroy Avenue intersection in conjunction with evaluation of intersection signalization requirements. *Appendix "G" contains the ODOT turn lane criteria analysis worksheets*.

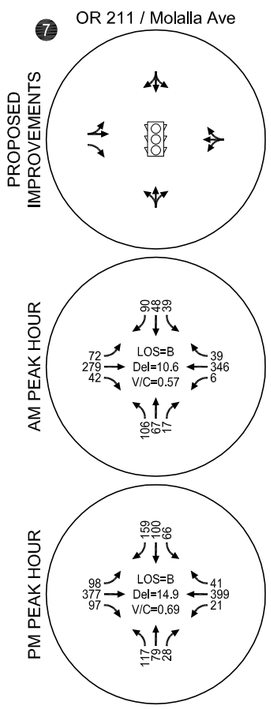
YEAR 2020 TOTAL TRAFFIC CONDITIONS WITH MITIGATION

Figure 8 displays the year 2020 total traffic conditions with signalization of the OR 211/Leroy Avenue and OR 211/Molalla Avenue intersections. With signalization, the OR 211/Molalla Avenue intersection is projected to operate with a v/c ratio of 0.57 during the weekday AM peak hour and a v/c ratio of 0.69 during the weekday PM peak hour, satisfying ODOT mobility standards. The OR 211/Leroy intersection is projected to operated well under capacity during both periods. *Appendix "H" contains the year 2020 total traffic with mitigation level-of-service worksheets.*

ON-SITE CIRCULATION/SITE-ACCESS OPERATIONS

KAI staff performed a preliminary field review of stopping and intersection sight distance based upon the proposed access locations shown on the project site plan and found that adequate sight lines can be provided. Landscaping, signage, and utilities near the site accesses and frontage should be placed and maintained to allow adequate site distance per applicable City and ODOT standards.





CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = CRITICAL MOVEMENT LEVEL OF SERVICE (SIGNALIZED)/ CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/ CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

↙ - EXISTING
↙ - PROPOSED IMPROVEMENTS

Year 2020 Total Traffic Conditions (with Mitigation)
Weekday AM and PM Peak Hours
Molalla, Oregon

Figure 8

Site Access Spacing

The Oregon Highway Plan establishes a minimum access spacing standard of 350 feet for district highways with an Annual Average Daily Traffic (AADT) of more than 5,000 vehicles per day. The site access spacing shown on the proposed site plan satisfies this standard, as the proposed site accesses on OR 211 west and east of Leroy Avenue are both more than 350 feet from existing intersections along OR 211.

95th-percentile Queuing Analysis

95th-percentile queues at the study intersections were analyzed in Synchro for the weekday AM and PM peak hours for the existing, 2020 background, and 2020 total (before and after mitigation) conditions. Table 6 displays the results. As shown, all but one of the existing and proposed turn lane storage lengths is expected to accommodate the 95th-percentile queues under 2020 total traffic conditions, with the identified mitigations in place. The southbound left-turn 95th-percentile queue at OR 211/OR 213 is expected to exceed the striped storage length by 2020 background conditions, but the queue can still be accommodated by the upstream two-way left-turn lane. No additional mitigation measures are recommended to address 95th-percentile queues at the study intersections.

Table 6. Summary of 95th-percentile Queues

Intersection	Movement	Storage (ft)	AM Peak Hour 95th-percentile Queue (ft)			PM Peak Hour 95th-percentile Queue (ft)			Adequate Storage Provided?
			Existing	2020 Background	2020 Total Before/After Mitigation	Existing	2020 Background	2020 Total Before/After Mitigation	
1: OR 213/ OR 211	EB L	290	100	100	100	200	200	200	Yes
	EB T/R	>500	125	150	175	350	375	400	Yes
	WB L	330	100	100	125	250	250	275	Yes
	WB T	>400	200	225	250	200	225	250	Yes
	WB R	240	75	75	75	75	75	75	Yes
	NB L	250	50	50	50	75	75	75	Yes
	NB T	>400	175	175	200	225	250	250	Yes
	NB R	270	50	50	75	75	75	75	Yes
	SB L	310*	125	125	150	300	350	400	Yes
	SB T/R	>400	150	150	150	350	375	400	Yes
2: OR 211/ Hezzie Ln	EB L	210	25	25	25	25	25	25	Yes
	WB L	180	<25	<25	<25	25	25	25	Yes
	NB L	50	50	50	50	25	25	25	Yes
	NB T/R	>50	25	25	25	25	25	25	Yes
	SB L/T/R	>100	25	25	25	25	25	50	Yes
3: OR 211/ W Site Access	EB R	100	-	-	<25	-	-	<25	Yes
	WB L	75	-	-	25	-	-	25	Yes
	NB L/R	150	-	-	100	-	-	125	Yes
4: OR 211/ Leroy Ave	EB L	100	25	25	25 / 25	25	25	25 / 25	Yes
	EB T/R	>500	-	-	- / 100	-	-	- / 225	Yes
	WB L	100	-	-	25 / 50	-	-	25 / 50	Yes
	WB T/R	>500	-	-	- / 150	-	-	- / 200	Yes
	NB L	120	-	-	75 / 50	-	-	125 / 50	Yes
	NB T/R	>200	-	-	25 / 50	-	-	50 / 50	Yes
	SB L**	100**	25	25	50 / 25	25	25	50 / 25	Yes
	SB T/R	>500	25	25	50 / 50	25	25	50 / 50	Yes
5: OR 211/ E Site Access	WB L	70	-	-	<25	-	-	<25	Yes
	NB L/R	25	-	-	<25	-	-	<25	Yes
6: OR 211/ Dixon Ave	EB L	100	<25	<25	<25	<25	<25	<25	Yes
	EB R	130	<25	<25	<25	<25	<25	<25	Yes
	WB L	170	<25	<25	<25	25	25	25	Yes
	NB L/T/R	100	<25	<25	25	50	75	100	Yes
	SB L/T/R	>75	25	25	25	25	25	25	Yes
7: OR 211/ Molalla Ave	EB L/T	>350	100	100	200 / 200	225	275	500 / 350	Yes
	EB R	180	25	25	25 / 25	25	25	25 / 25	Yes
	WB L/T/R	>300	100	125	225 / 200	200	250	400 / 300	Yes
	NB L/T/R	>250	50	50	75 /125	75	75	100 / 200	Yes
	SB L/T/R	>250	25	50	50 /100	100	125	175 / 225	Yes

*Additional storage available in two-way left-turn lane (over 425 feet)
**Sufficient roadway width is currently available for a separate left turn lane. The left turn queues for existing and background conditions are shown to provide a baseline for assessment of queues after site build-out.

Section 5
Conclusions and Recommendations

CONCLUSIONS AND RECOMMENDATIONS

The results of the traffic impact analysis indicate that the proposed Cascade Center development can be constructed while maintaining acceptable study intersection operations as long as the appropriate mitigations are in place. The findings of this analysis and our recommendations are discussed below.

FINDINGS

Existing Conditions

- All of the study intersections currently meet ODOT mobility standards during the weekday AM and PM peak hours.
- A review of historical crash data did not reveal any patterns or trends in the site vicinity that require mitigation associated with this project.

Year 2020 Background Traffic Conditions

- A 2.5-percent annual growth rate was applied to the existing traffic volumes to account for regional growth in the area.
- The *City of Molalla Transportation System Plan* identifies the future need to signalize the OR 211/Leroy Avenue intersection. The traffic signal was identified to provide motor vehicle capacity at the intersection to serve anticipated traffic growth and also serves as a north-south pedestrian crossing opportunity linking residents south of OR 211 with Molalla River Middle School to the north. Signalization is not currently funded.
- All but one of the study intersections are expected to continue meeting ODOT mobility standards during the weekday AM and PM peak hours prior to site development:
    - The all-way stop-controlled OR 211/Molalla Avenue intersection is projected to experience a volume-to-capacity (v/c) ratio greater than 0.90 on the eastbound approach during the PM peak hour. The *City of Molalla Transportation System Plan* identifies the future need to signalize the intersection; however, signalization is not currently funded.

Proposed Development Plan

- The proposed development is expected to generate approximately 4,112 weekday net new trips, of which 330 (193 in, 137 out) will occur during the AM peak hour and 349 (192 in, 157 out) will occur during the PM peak hour. The development is also expected to generate approximately 3,488 weekday pass-by trips, of which 226 (113 in, 113 out) will occur during the AM peak hour and 262 (131 in, 131 out) will occur during the PM peak hour.
- The City of Molalla has requested I&E Construction signalize the OR 211/Leroy Avenue intersection in conjunction with s elopment. Signalization requires ODOT approval;

therefore, intersection operations were analyzed without and with a traffic signal in place for study purposes.

Year 2020 Total Traffic Conditions

- All but two of the study intersections are expected to continue meeting ODOT mobility standards during the weekday AM and PM peak hours after site development:
  - The northbound left turn at OR 211/Leroy Avenue is projected to experience a v/c ratio above the ODOT mobility target of 0.95 during the weekday PM peak hour, and projected northbound delays are expected to reach Level of Service "F".
  - Consistent with background conditions, the all-way stop-controlled OR 211/Molalla Avenue intersection is projected to continue to experience a v/c ratio greater than 0.90 on the eastbound approach during the PM peak hour as a result of full site buildout.

Traffic Signal and Turn Lane Considerations

- Per the MUTCD signal warrants and the estimated 24-hour volume profile of the OR 211/Molalla Avenue intersection, a traffic signal will be warranted at OR 211/Molalla Avenue prior to site development.
- Per the MUTCD signal warrants and the estimated 24-hour volume profile of the OR 211/Leroy Avenue intersection, a traffic signal will be warranted at OR 211/Leroy Avenue after the site is developed.
- A right turn lane with at least 100 feet of storage should be installed on eastbound OR 211 at the west site access per ODOT criteria. The eastbound OR 211 approach at Leroy Avenue also meets ODOT right turn lane criteria if unsignalized.
- A left turn lane with at least 75 feet of storage should be installed on westbound OR 211 at both the west site access and the east site access per ODOT criteria.

Year 2020 Total Traffic Conditions with Mitigation

- The OR 211/Leroy Avenue intersection satisfies ODOT v/c ratio mobility standards with signalization. Projected side street delays are much higher under stop control (resulting in weekday PM peak hour northbound approach Level of Service "F") as compared to a condition with signalization (resulting in weekday AM and PM peak hour intersection Level of Service "A").

95th-Percentile Queueing Analysis

- The proposed storage lengths at the study intersections are expected to accommodate each of the 95th-percentile queues in the AM and PM peak hours under 2020 total traffic conditions, assuming provision of the identified turn lanes and signalization.

RECOMMENDATIONS

The following are recommended in conjunction with site redevelopment:

- OR 211/Molalla Avenue:
  - Provide a traffic signal.
- OR 211/West Site Access:
  - Provide an eastbound right turn lane with at least 100 feet of storage.
  - Provide a westbound left turn lane with at least 75 feet of storage.
- OR 211/Leroy Avenue:
  - Restripe the north leg of the intersection to provide an exclusive left turn lane with at least 100 feet of storage and a shared thought/right lane on southbound Leroy Avenue.
  - Collaborate with City and ODOT staff to determine if and when signalization of the OR 211/Leroy Avenue intersection should be completed considering the following:
    - the City of Molalla's *Transportation System Plan* identifies the need for future signalization;
    - the City's desire for signalization in conjunction with site development;
    - the northbound left turn v/c ratio at the OR 211/Leroy Avenue intersection is forecast to exceed ODOT mobility targets after site build-out without signalization, but the intersection would meet ODOT mobility targets with signalization;
    - the projected intersection traffic volumes satisfy traffic signal warrants at site buildout; and
    - installation of a traffic signal would serve pedestrian crossings of OR 211, facilitating pedestrian access to Molalla River Middle School on Leroy Avenue and the Molalla Elementary School to the northwest.
  - Collaborate with the City and ODOT to further assess the need for an eastbound right turn lane at the OR 211/Leroy Avenue intersection pending decisions regarding signalization of the intersection.

- OR 211/East Site Access:
  - Provide a westbound left turn lane with at least 75 feet of storage.
- All landscaping, signage, and utilities near the site access points should be placed and maintained to provide adequate sight distance.

Section 6
References

REFERENCES

1. City of Molalla, OR. *City of Molalla Transportation System Plan*. 2018.
2. South Clackamas Transportation District. "Routes & Schedules." 2018. < http://sctd.org/routes.html>.
3. Oregon Department of Transportation (ODOT). *Analysis Procedures Manual, Version 2*. 2018.
4. Transportation Research Board of the National Academies. *Highway Capacity Manual 2000*.
5. Transportation Research Board of the National Academies. *Highway Capacity Manual 2010*.
6. Oregon Department of Transportation (ODOT). *Oregon Highway Plan*. 1999.
7. Institute of Transportation Engineers. *Trip Generation, 10th Edition*. 2017.
8. Institute of Transportation Engineers. *Trip Generation Handbook, 3rd Edition*. 2017.
9. *Manual on Uniform Traffic Control Devices.* 2009 Edition. 2009.

Appendix A
Turning Movement Counts

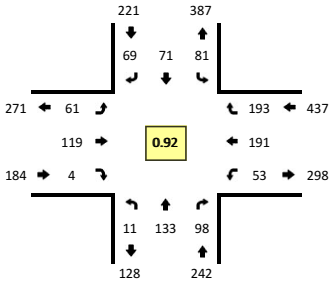
Type of peak hour being reported: User-Defined

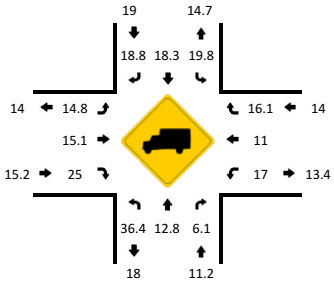
Method for determining peak hour: Total Entering Volume

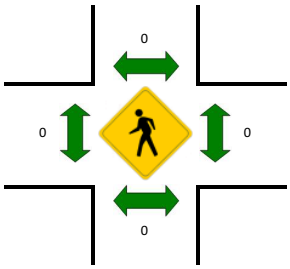
LOCATION: OR-213 -- OR-211
CITY/STATE: Molalla, OR

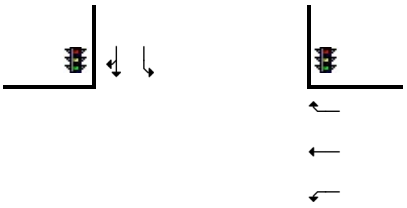
QC JOB #: 14815601
DATE: Tue, Oct 9 2018

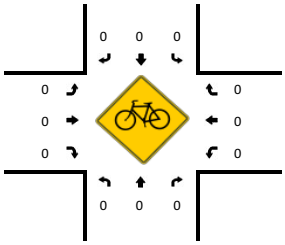
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:20 AM -- 7:35 AM

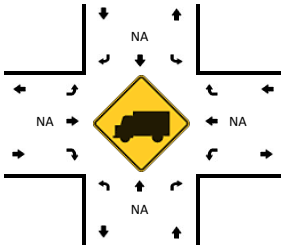


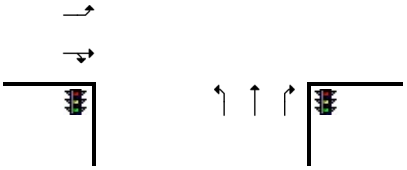


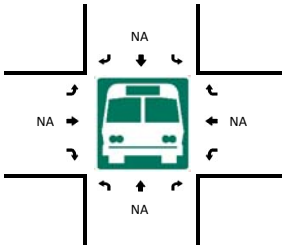












5-Min Count Period Beginning At	OR-213 (Northbound)				OR-213 (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	11	11	0	4	1	6	0	4	11	0	0	4	13	14	0	79	
7:05 AM	1	5	4	0	6	10	10	0	8	10	0	0	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

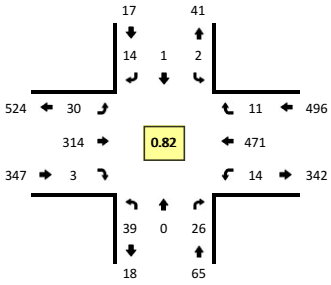
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	16	156	80	0	72	56	76	0	72	96	0	0	76	268	216	0	1184
Heavy Trucks	4	12	4		16	4	20		4	16	0		16	36	40		172
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

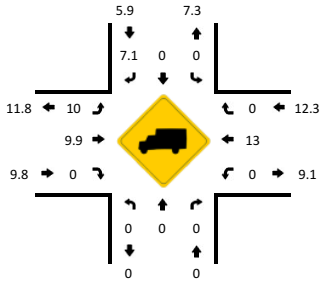
Comments:

LOCATION: N Hezzie Ln -- OR-211
CITY/STATE: Molalla, OR

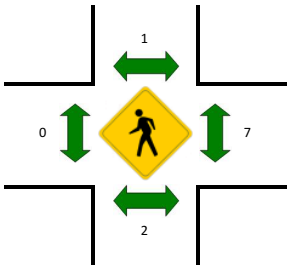
QC JOB #: 14815603
DATE: Tue, Oct 9 2018

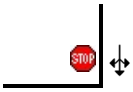
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:15 AM -- 7:30 AM

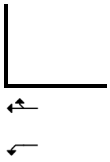


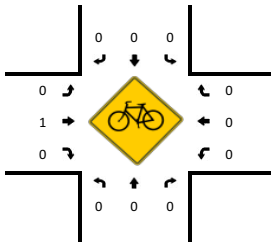


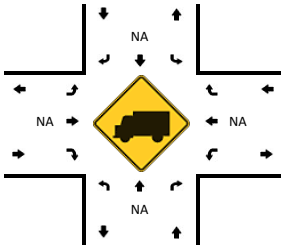
Quality Counts
DATA THAT DRIVES COMMUNITIES

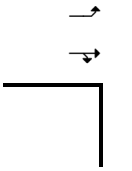


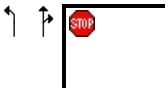


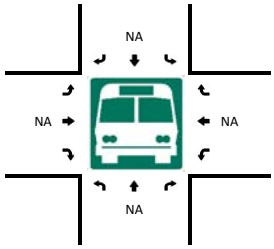












5-Min Count Period Beginning At	N Hezzie Ln (Northbound)				N Hezzie Ln (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	5	0	0	0	0	0	3	0	1	31	0	0	1	34	0	0	75	
7:05 AM	5	0	3	0	0	0	1	0	2	30	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

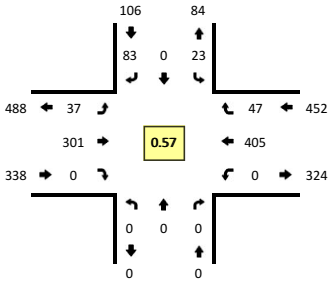
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	56	0	44	0	4	4	16	0	40	300	0	0	24	628	16	0	1132
Heavy Trucks	0	0	0		0	0	0		4	24	0		0	100	0		128
Pedestrians		4				0				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

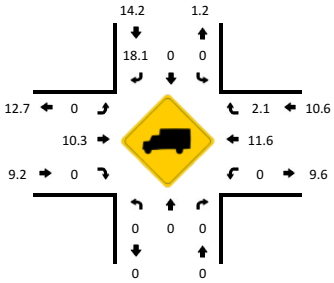
Comments:

LOCATION: Leroy Ave -- OR-211
CITY/STATE: Molalla, OR

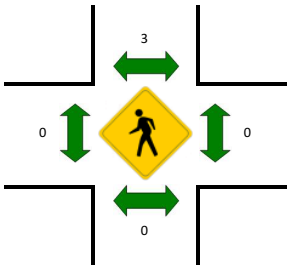
QC JOB #: 14815609
DATE: Tue, Oct 9 2018

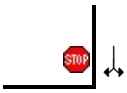
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:15 AM -- 7:30 AM

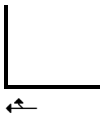


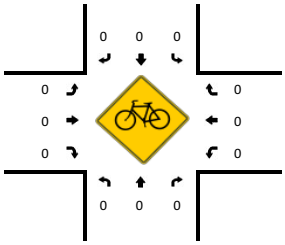


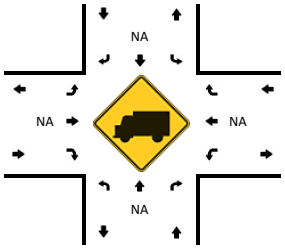
Quality Counts
DATA THAT DRIVES COMMUNITIES

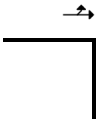


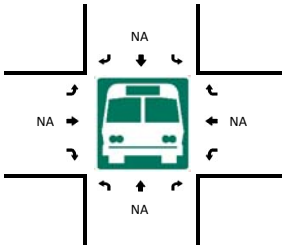












5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	0	0	0	0	0	2	0	1	12	0	0	0	41	2	0	58	
6:05 AM	0	0	0	0	0	0	1	0	1	14	0	0	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	0	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
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1:10 PM	0	0	0	0	2	0	4	0	2	28	0	0	0	37	4	0	77	920
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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	0	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
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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
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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
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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
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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	2	15	0	0	0	8	0	0	25	410
9:15 PM	0	0	0	0	1	0	0	0	2	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																	

Comments:

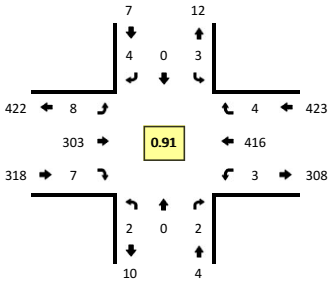
Report generated on 1/11/2019 9:16 AM

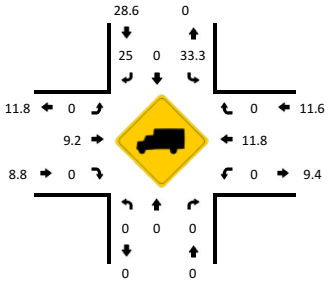
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined | Method for determining peak hour: Total Entering Volume

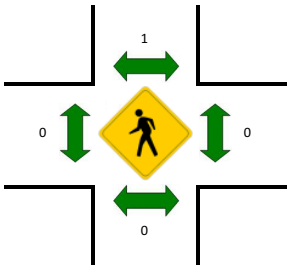
LOCATION: Dixon Ave -- OR-211 | **QC JOB #:** 14815605
CITY/STATE: Molalla, OR | **DATE:** Tue, Oct 9 2018

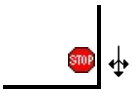
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:15 AM -- 7:30 AM

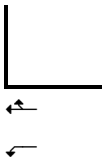


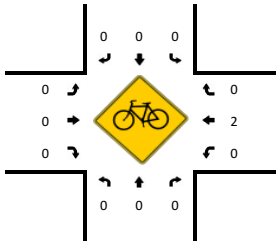


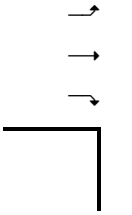
Quality Counts
DATA THAT DRIVES COMMUNITIES

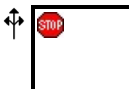


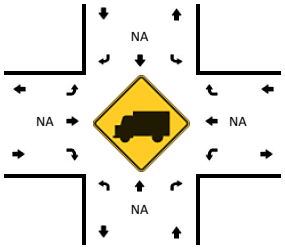


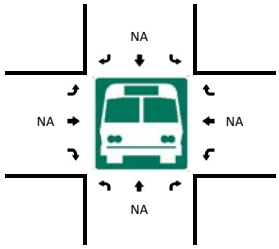












5-Min Count Period Beginning At	Dixon Ave (Northbound)				Dixon Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	0	0	0	25	0	0	0	32	1	0	58	
7:05 AM	0	0	0	0	0	0	0	0	1	30	0	0	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

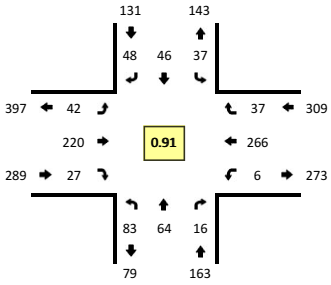
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	0	0	0	4	0	4	0	12	268	16	0	0	512	4	0	824
Heavy Trucks	0	0	0		0	0	0		0	20	0		0	60	0		80
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	1	0		1
Railroad																	
Stopped Buses																	

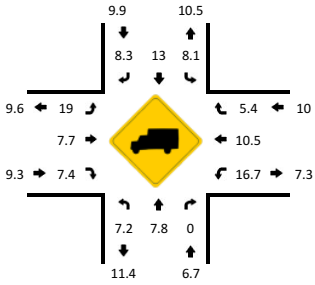
Comments:

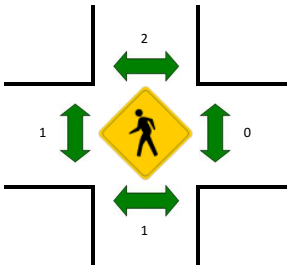
LOCATION: Molalla Ave -- OR-211
CITY/STATE: Molalla, OR

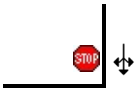
QC JOB #: 14815607
DATE: Tue, Oct 9 2018

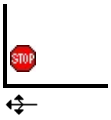
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:00 AM -- 7:15 AM

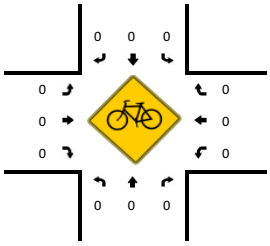


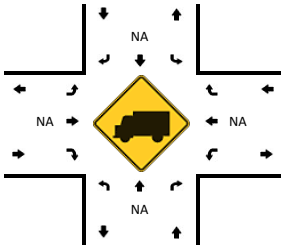


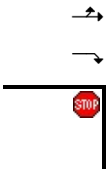


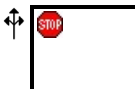


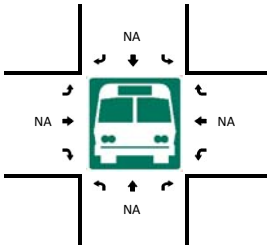












5-Min Count Period Beginning At	Molalla Ave (Northbound)				Molalla Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	11	8	2	0	2	2	5	0	5	19	0	0	1	21	0	0	76	
7:05 AM	6	9	3	0	3	2	5	0	4	21	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

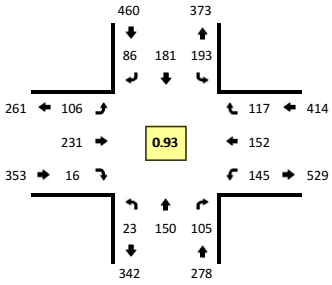
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	92	104	36	0	28	28	52	0	72	232	8	0	4	268	52	0	976
Heavy Trucks	4	4	0		0	0	12		16	36	0		4	28	4		108
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

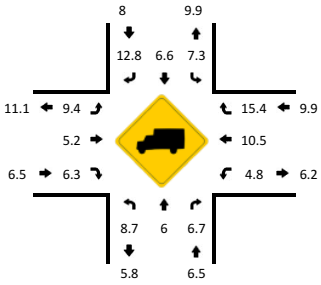
Comments:

Type of peak hour being reported: User-Defined | Method for determining peak hour: Total Entering Volume

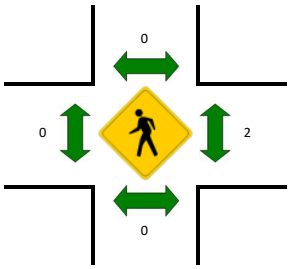
LOCATION: OR-213 -- OR-211 | **QC JOB #:** 14815602
CITY/STATE: Molalla, OR | **DATE:** Tue, Oct 9 2018

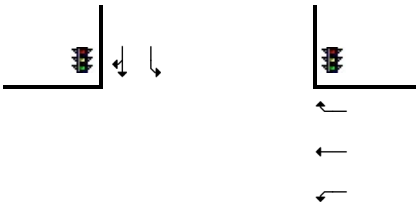
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 4:50 PM -- 5:05 PM

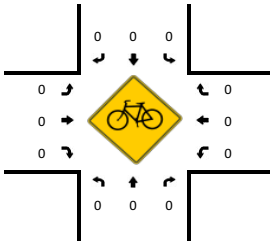


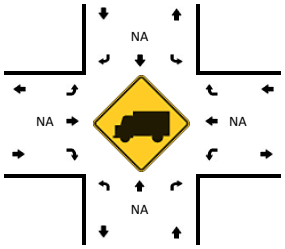


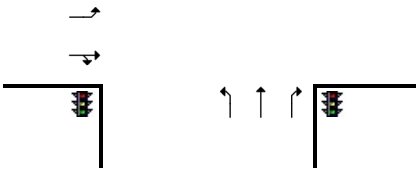
Quality Counts
DATA THAT DRIVES COMMUNITIES

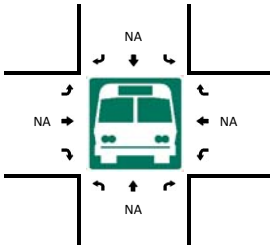












5-Min Count Period Beginning At	OR-213 (Northbound)				OR-213 (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	11	5	0	25	14	14	0	8	22	2	0	8	14	8	0	132	
4:05 PM	1	11	13	0	10	21	10	0	12	16	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

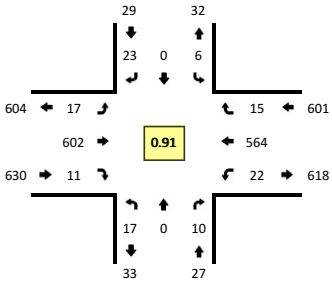
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	36	188	100	0	224	176	100	0	96	212	20	0	120	220	132	0	1624
Heavy Trucks	4	16	4		16	4	12		8	20	0		0	20	8		112
Pedestrians		0				0				0				4			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

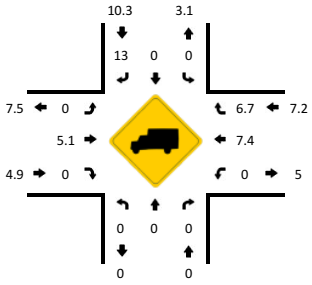
Comments:

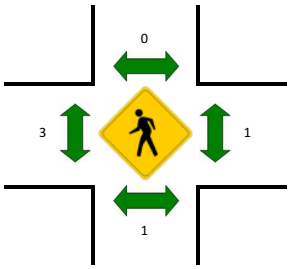
Type of peak hour being reported: User-Defined | Method for determining peak hour: Total Entering Volume

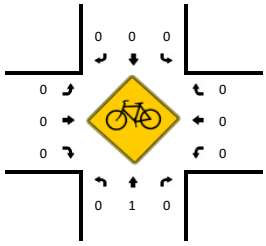
LOCATION: N Hezzie Ln -- OR-211 | **QC JOB #:** 14815604
CITY/STATE: Molalla, OR | **DATE:** Tue, Oct 9 2018

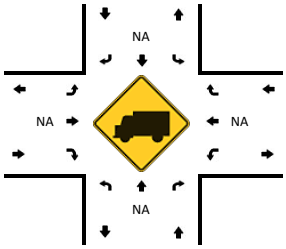
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

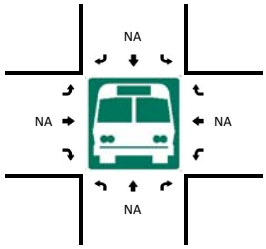












5-Min Count Period Beginning At	N Hezzie Ln (Northbound)				N Hezzie Ln (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	0	2	0	0	0	3	0	2	55	2	0	2	41	1	0	109	
4:05 PM	0	0	0	0	0	0	1	0	2	50	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

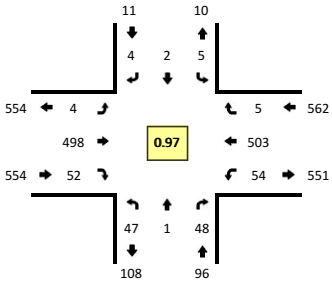
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	28	0	12	0	4	0	28	0	20	620	16	0	16	628	40	0	1412
Heavy Trucks	0	0	0		0	0	4		0	40	0		0	12	4		60
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

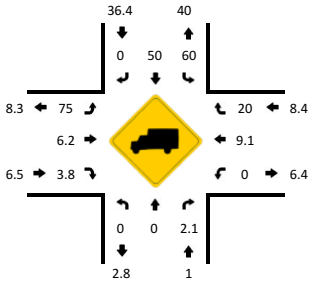
Comments:

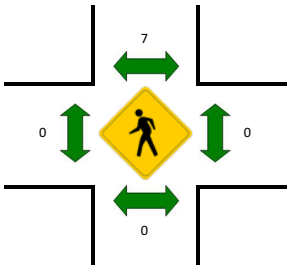
LOCATION: Dixon Ave -- OR-211
CITY/STATE: Molalla, OR

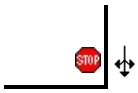
QC JOB #: 14815606
DATE: Tue, Oct 9 2018

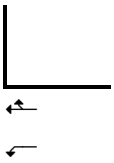
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 4:30 PM -- 4:45 PM

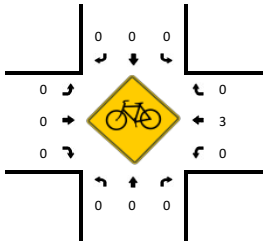


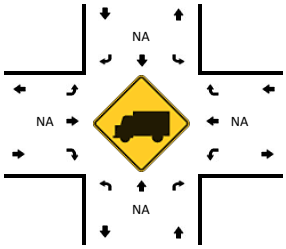


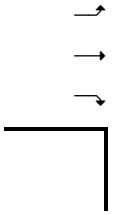


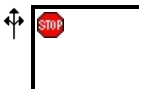


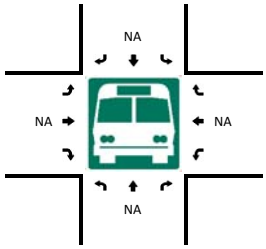












5-Min Count Period Beginning At	Dixon Ave (Northbound)				Dixon Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	4	0	3	0	0	0	0	0	0	38	7	0	2	32	0	0	86	
4:05 PM	3	0	4	0	1	0	1	0	0	50	7	0	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

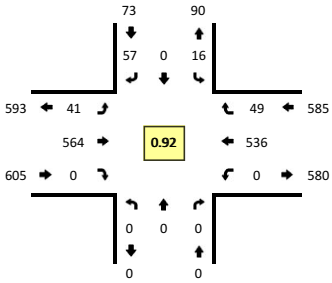
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	28	0	56	0	4	0	0	0	0	504	72	0	52	540	8	0	1264
Heavy Trucks	0	0	0		0	0	0		0	20	4		0	76	0		100
Pedestrians		0				12				0				0			12
Bicycles	0	0	0		0	0	0		0	0	0		0	1	0		1
Railroad																	
Stopped Buses																	

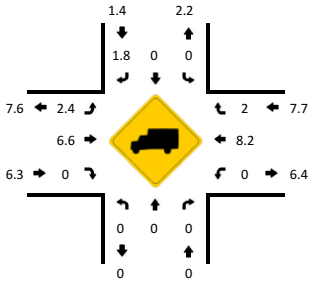
Comments:

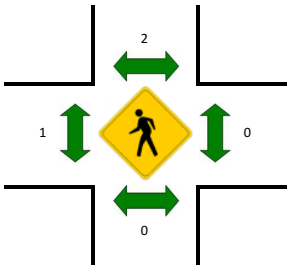
LOCATION: Leroy Ave -- OR-211
CITY/STATE: Molalla, OR

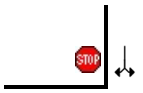
QC JOB #: 14815609
DATE: Tue, Oct 9 2018

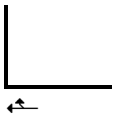
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

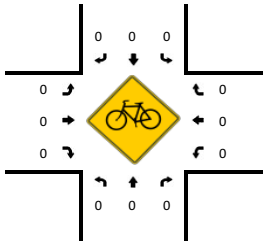


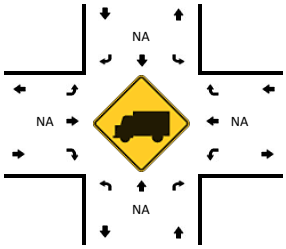


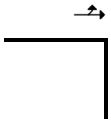


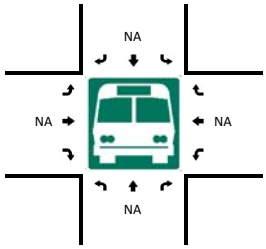












5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	0	0	0	0	0	2	0	1	12	0	0	0	41	2	0	58	
6:05 AM	0	0	0	0	0	0	1	0	1	14	0	0	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	0	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
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1:30 PM	0	0	0	0	1	0	2	0	3	55	0	0	0	30	1	0	92	956
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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	0	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	[illegible]	9	0	0	0	9	0	0	20	438
9:10 PM	0	0	0	0	0	0	1	0	[illegible]	15	0	0	0	8	0	0	25	410
9:15 PM	0	0	0	0	1	0	0	0	[illegible]	17	0	0	0	14	0	0	36	409

195

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																	

Comments:

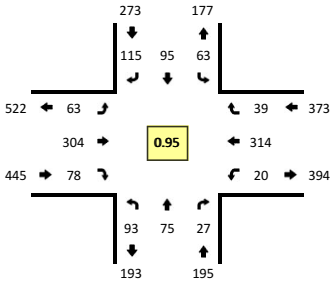
Report generated on 1/11/2019 9:18 AM

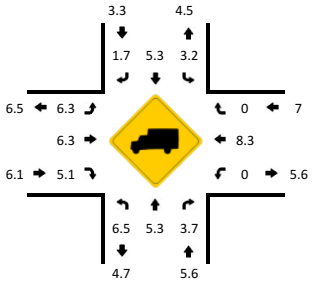
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

LOCATION: Molalla Ave -- OR-211
CITY/STATE: Molalla, OR

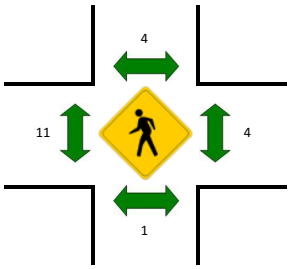
QC JOB #: 14815608
DATE: Tue, Oct 9 2018

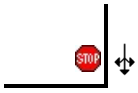
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 4:40 PM -- 4:55 PM

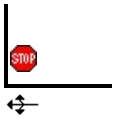


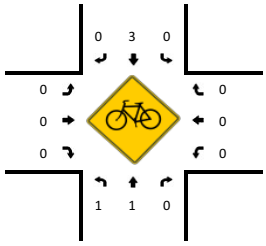


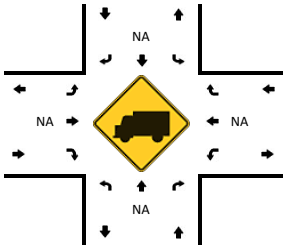
Quality Counts
DATA THAT DRIVES COMMUNITIES

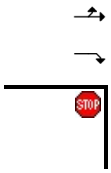


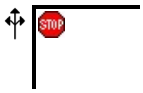


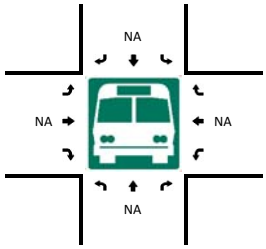












5-Min Count Period Beginning At	Molalla Ave (Northbound)				Molalla Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	5	9	3	0	11	10	10	0	5	30	4	0	3	10	7	0	107	
4:05 PM	6	5	2	0	9	10	7	0	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:

Appendix B
Existing Conditions
Traffic Analysis Worksheets

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	68	138	60	215	217	12	150	110	91	156
v/c Ratio	0.34	0.29	0.32	0.45	0.40	0.11	0.49	0.30	0.41	0.32
Control Delay	40.6	26.3	40.9	28.9	6.5	43.0	37.8	9.5	40.0	19.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.6	26.3	40.9	28.9	6.5	43.0	37.8	9.5	40.0	19.9
Queue Length 50th (ft)	29	49	25	82	0	5	62	0	38	38
Queue Length 95th (ft)	87	124	79	192	55	27	155	46	107	128
Internal Link Dist (ft)		465		3507			611			497
Turn Bay Length (ft)	260		320		230	260		280	260	
Base Capacity (vph)	717	1068	704	1113	968	612	1104	1032	680	964
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.13	0.09	0.19	0.22	0.02	0.14	0.11	0.13	0.16

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	123	4	55	198	200	11	138	101	84	73	71
Future Volume (vph)	63	123	4	55	198	200	11	138	101	84	73	71
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%			0%			-2%			2%	
Total Lost time (s)	5.0	5.3		5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.3	
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	1.00		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	1511		1421	1577	1282	1235	1564	1417	1372	1354	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1446	1511		1421	1577	1282	1235	1564	1417	1372	1354	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	68	134	4	60	215	217	12	150	110	91	79	77
RTOR Reduction (vph)	0	1	0	0	0	154	0	0	85	0	18	0
Lane Group Flow (vph)	68	137	0	60	215	63	12	150	25	91	138	0
Heavy Vehicles (%)	15%	15%	25%	17%	11%	16%	36%	13%	6%	20%	18%	19%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	7.3	22.2		6.9	21.8	21.8	1.1	17.1	17.1	8.7	24.7	
Effective Green, g (s)	7.3	22.2		6.9	21.8	21.8	1.1	17.1	17.1	8.7	24.7	
Actuated g/C Ratio	0.10	0.29		0.09	0.29	0.29	0.01	0.23	0.23	0.12	0.33	
Clearance Time (s)	5.0	5.3		5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.3	
Vehicle Extension (s)	2.3	5.0		2.3	5.0	5.0	2.3	2.0	2.0	2.3	2.0	
Lane Grp Cap (vph)	139	444		129	455	370	17	354	320	158	442	
v/s Ratio Prot	c0.05	0.09		0.04	c0.14		0.01	c0.10		c0.07	0.10	
v/s Ratio Perm						0.05			0.02			
v/c Ratio	0.49	0.31		0.47	0.47	0.17	0.71	0.42	0.08	0.58	0.31	
Uniform Delay, d1	32.3	20.7		32.5	22.1	20.1	37.0	25.0	23.0	31.7	19.0	
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	1.6	0.8		1.5	1.6	0.5	76.6	0.3	0.0	3.7	0.1	
Delay (s)	33.9	21.5		34.1	23.7	20.5	113.7	25.3	23.0	35.4	19.2	
Level of Service	C	C		C	C	C	F	C	C	D	B	
Approach Delay (s)		25.6			23.6			28.3			25.1	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	75.5	Sum of lost time (s)	20.6
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	325	3	14	487	11	39	1	26	2	1	14
Future Vol, veh/h	30	325	3	14	487	11	39	1	26	2	1	14
Conflicting Peds, #/hr	1	0	2	2	0	1	0	0	7	7	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	190	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	2	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	10	10	0	0	13	0	0	0	0	0	0	7
Mvmt Flow	37	396	4	17	594	13	48	1	32	2	1	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	608	0	0	402	0	0	1117	1115	407	1131	1111	602
Stage 1	-	-	-	-	-	-	473	473	-	636	636	-
Stage 2	-	-	-	-	-	-	644	642	-	495	475	-
Critical Hdwy	4.2	-	-	4.1	-	-	7.1	6.5	6.2	7.5	6.9	6.47
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.5	5.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.5	5.9	-
Follow-up Hdwy	2.29	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.363
Pot Cap-1 Maneuver	933	-	-	1168	-	-	186	210	648	161	186	474
Stage 1	-	-	-	-	-	-	576	562	-	437	443	-
Stage 2	-	-	-	-	-	-	465	472	-	530	532	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	933	-	-	1160	-	-	171	198	642	145	176	474
Mov Cap-2 Maneuver	-	-	-	-	-	-	171	198	-	145	176	-
Stage 1	-	-	-	-	-	-	552	539	-	419	436	-
Stage 2	-	-	-	-	-	-	440	465	-	480	510	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.2	24.8	16
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	171	593	933	-	-	1160	-	-	347
HCM Lane V/C Ratio	0.278	0.056	0.039	-	-	0.015	-	-	0.06
HCM Control Delay (s)	34	11.4	9	-	-	8.2	-	-	16
HCM Lane LOS	D	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.1	0.2	0.1	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	37	312	419	47	23	83
Future Vol, veh/h	37	312	419	47	23	83
Conflicting Peds, #/hr	3	0	0	3	0	0
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	82	82	82	82	82	82
Heavy Vehicles, %	0	10	12	2	0	18
Mvmt Flow	45	380	511	57	28	101

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	571	0	-	0	1014	543
Stage 1	-	-	-	-	543	-
Stage 2	-	-	-	-	471	-
Critical Hdwy	4.1	-	-	-	6.4	6.38
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.462
Pot Cap-1 Maneuver	1012	-	-	-	267	510
Stage 1	-	-	-	-	586	-
Stage 2	-	-	-	-	632	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1012	-	-	-	251	509
Mov Cap-2 Maneuver	-	-	-	-	251	-
Stage 1	-	-	-	-	584	-
Stage 2	-	-	-	-	595	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	15.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1012	-	-	-	251	509
HCM Lane V/C Ratio	0.045	-	-	-	0.112	0.199
HCM Control Delay (s)	8.7	0	-	-	21.1	13.8
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4	0.7

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	314	7	3	431	4	2	1	2	3	1	4
Future Vol, veh/h	8	314	7	3	431	4	2	1	2	3	1	4
Conflicting Peds, #/hr	1	0	0	0	0	1	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	90	-	120	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	9	0	0	12	0	0	0	0	33	0	25
Mvmt Flow	9	345	8	3	474	4	2	1	2	3	1	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	479	0	0	345	0	0	848	849	345	847	846	477
Stage 1	-	-	-	-	-	-	363	363	-	483	483	-
Stage 2	-	-	-	-	-	-	485	486	-	364	363	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.43	6.5	6.45
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.43	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.43	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.797	4	3.525
Pot Cap-1 Maneuver	1094	-	-	1225	-	-	284	300	702	250	301	544
Stage 1	-	-	-	-	-	-	660	628	-	511	556	-
Stage 2	-	-	-	-	-	-	567	554	-	596	628	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1094	-	-	1225	-	-	279	297	702	246	298	543
Mov Cap-2 Maneuver	-	-	-	-	-	-	279	297	-	246	298	-
Stage 1	-	-	-	-	-	-	655	623	-	506	554	-
Stage 2	-	-	-	-	-	-	560	552	-	588	623	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.1	14.8	15.6
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	374	1094	-	-	1225	-	-	349
HCM Lane V/C Ratio	0.015	0.008	-	-	0.003	-	-	0.025
HCM Control Delay (s)	14.8	8.3	-	-	7.9	-	-	15.6
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Intersection	
Intersection Delay, s/veh	14.8
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	42	228	27	0	6	275	37	0	83	64	16
Future Vol, veh/h	0	42	228	27	0	6	275	37	0	83	64	16
Peak Hour Factor	0.92	0.91	0.91	0.91	0.92	0.91	0.91	0.91	0.92	0.91	0.91	0.91
Heavy Vehicles, %	2	19	8	7	2	17	11	5	2	7	8	0
Mvmt Flow	0	46	251	30	0	7	302	41	0	91	70	18
Number of Lanes	0	0	1	1	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	15.7	16.5	12.4
HCM LOS	C	C	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	51%	16%	0%	2%	28%
Vol Thru, %	39%	84%	0%	86%	35%
Vol Right, %	10%	0%	100%	12%	37%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	163	270	27	318	131
LT Vol	83	42	0	6	37
Through Vol	64	228	0	275	46
RT Vol	16	0	27	37	48
Lane Flow Rate	179	297	30	349	144
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.316	0.532	0.045	0.569	0.251
Departure Headway (Hd)	6.356	6.45	5.47	5.858	6.266
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	561	558	650	612	569
Service Time	4.446	4.221	3.241	3.929	4.359
HCM Lane V/C Ratio	0.319	0.532	0.046	0.57	0.253
HCM Control Delay	12.4	16.4	8.5	16.5	11.5
HCM Lane LOS	B	C	A	C	B
HCM 95th-tile Q	1.3	3.1	0.1	3.6	1

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	37	46	48
Future Vol, veh/h	0	37	46	48
Peak Hour Factor	0.92	0.91	0.91	0.91
Heavy Vehicles, %	2	8	13	8
Mvmt Flow	0	41	51	53
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	11.5
HCM LOS	B

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	118	275	161	169	130	26	167	117	215	297
v/c Ratio	0.57	0.66	0.63	0.38	0.29	0.25	0.61	0.36	0.67	0.54
Control Delay	59.7	46.2	57.2	36.5	7.9	62.5	54.4	11.7	53.3	33.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.7	46.2	57.2	36.5	7.9	62.5	54.4	11.7	53.3	33.7
Queue Length 50th (ft)	73	160	99	89	0	17	103	0	129	157
Queue Length 95th (ft)	176	337	226	200	51	58	223	55	293	328
Internal Link Dist (ft)		465		3507			611			497
Turn Bay Length (ft)	260		320		230	260		280	260	
Base Capacity (vph)	466	840	484	803	722	470	849	754	470	779
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.33	0.33	0.21	0.18	0.06	0.20	0.16	0.46	0.38

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	239	17	150	157	121	24	155	109	200	187	89
Future Volume (vph)	110	239	17	150	157	121	24	155	109	200	187	89
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%			0%			-2%			2%	
Total Lost time (s)	5.0	5.3		5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.3	
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	1.00	1.00	1.00	0.98	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)	1525	1649		1583	1577	1293	1540	1667	1371	1538	1513	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1525	1649		1583	1577	1293	1540	1667	1371	1538	1513	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	118	257	18	161	169	130	26	167	117	215	201	96
RTOR Reduction (vph)	0	1	0	0	0	94	0	0	95	0	8	0
Lane Group Flow (vph)	118	274	0	161	169	36	26	167	22	215	289	0
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	9%	5%	6%	5%	11%	15%	9%	6%	7%	7%	7%	13%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	14.3	26.7		17.0	29.4	29.4	4.3	20.1	20.1	22.2	38.0	
Effective Green, g (s)	14.3	26.7		17.0	29.4	29.4	4.3	20.1	20.1	22.2	38.0	
Actuated g/C Ratio	0.13	0.25		0.16	0.28	0.28	0.04	0.19	0.19	0.21	0.36	
Clearance Time (s)	5.0	5.3		5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.3	
Vehicle Extension (s)	2.3	5.0		2.3	5.0	5.0	2.3	2.0	2.0	2.3	2.0	
Lane Grp Cap (vph)	204	413		252	434	356	62	314	258	320	539	
v/s Ratio Prot	0.08	c0.17		c0.10	c0.11		0.02	0.10		c0.14	c0.19	
v/s Ratio Perm						0.03			0.02			
v/c Ratio	0.58	0.66		0.64	0.39	0.10	0.42	0.53	0.09	0.67	0.54	
Uniform Delay, d1	43.3	35.9		41.9	31.3	28.8	49.9	39.0	35.7	38.8	27.3	
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	2.9	5.2		4.3	1.2	0.3	2.7	0.9	0.1	4.7	0.5	
Delay (s)	46.2	41.1		46.2	32.5	29.0	52.6	39.9	35.7	43.6	27.8	
Level of Service	D	D		D	C	C	D	D	D	D	C	
Approach Delay (s)		42.7			36.3			39.4			34.4	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	37.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	106.6	Sum of lost time (s)	20.6
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	623	11	22	584	15	17	1	10	6	1	23
Future Vol, veh/h	17	623	11	22	584	15	17	1	10	6	1	23
Conflicting Peds, #/hr	0	0	1	1	0	0	3	0	1	1	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	190	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	2	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	5	0	0	7	7	0	0	0	0	0	13
Mvmt Flow	19	685	12	24	642	16	19	1	11	7	1	25

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	658	0	0	698	0	0	1444	1436	693	1433	1433	653
Stage 1	-	-	-	-	-	-	729	729	-	698	698	-
Stage 2	-	-	-	-	-	-	715	707	-	735	735	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.5	6.9	6.53
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.5	5.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.5	5.9	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.417
Pot Cap-1 Maneuver	939	-	-	908	-	-	111	135	447	96	115	432
Stage 1	-	-	-	-	-	-	417	431	-	402	412	-
Stage 2	-	-	-	-	-	-	425	441	-	382	395	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	936	-	-	907	-	-	100	129	446	90	110	431
Mov Cap-2 Maneuver	-	-	-	-	-	-	100	129	-	90	110	-
Stage 1	-	-	-	-	-	-	408	422	-	394	401	-
Stage 2	-	-	-	-	-	-	387	429	-	364	387	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.3	35.8	23.1
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	100	365	936	-	-	907	-	-	232
HCM Lane V/C Ratio	0.187	0.033	0.02	-	-	0.027	-	-	0.142
HCM Control Delay (s)	49.1	15.2	8.9	-	-	9.1	-	-	23.1
HCM Lane LOS	E	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.6	0.1	0.1	-	-	0.1	-	-	0.5

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	41	584	555	49	16	57
Future Vol, veh/h	41	584	555	49	16	57
Conflicting Peds, #/hr	2	0	0	2	0	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	92	92	92	92	92	92
Heavy Vehicles, %	2	7	8	2	0	2
Mvmt Flow	45	635	603	53	17	62

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	659	0	-	0	1356	633
Stage 1	-	-	-	-	632	-
Stage 2	-	-	-	-	724	-
Critical Hdwy	4.12	-	-	-	6.4	6.22
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.218	-	-	-	3.5	3.318
Pot Cap-1 Maneuver	929	-	-	-	166	480
Stage 1	-	-	-	-	534	-
Stage 2	-	-	-	-	484	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	928	-	-	-	153	479
Mov Cap-2 Maneuver	-	-	-	-	153	-
Stage 1	-	-	-	-	533	-
Stage 2	-	-	-	-	447	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	17.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	928	-	-	-	153	479
HCM Lane V/C Ratio	0.048	-	-	-	0.114	0.129
HCM Control Delay (s)	9.1	0	-	-	31.5	13.6
HCM Lane LOS	A	A	-	-	D	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.4	0.4

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	515	52	54	521	5	47	1	48	5	2	4
Future Vol, veh/h	4	515	52	54	521	5	47	1	48	5	2	4
Conflicting Peds, #/hr	7	0	0	0	0	7	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	90	-	120	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	75	6	4	0	9	20	0	0	2	60	50	0
Mvmt Flow	4	531	54	56	537	5	48	1	49	5	2	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	549	0	0	531	0	0	1193	1200	531	1222	1197	547
Stage 1	-	-	-	-	-	-	539	539	-	658	658	-
Stage 2	-	-	-	-	-	-	654	661	-	564	539	-
Critical Hdwy	4.85	-	-	4.1	-	-	7.1	6.5	6.22	7.7	7	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.7	6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.7	6	-
Follow-up Hdwy	2.875	-	-	2.2	-	-	3.5	4	3.318	4.04	4.45	3.3
Pot Cap-1 Maneuver	738	-	-	1047	-	-	165	187	548	120	151	541
Stage 1	-	-	-	-	-	-	530	525	-	370	395	-
Stage 2	-	-	-	-	-	-	459	463	-	421	451	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	738	-	-	1047	-	-	155	175	548	103	141	537
Mov Cap-2 Maneuver	-	-	-	-	-	-	155	175	-	103	141	-
Stage 1	-	-	-	-	-	-	527	522	-	366	371	-
Stage 2	-	-	-	-	-	-	429	435	-	380	449	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.8	29.8	29.7
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	242	738	-	-	1047	-	-	157
HCM Lane V/C Ratio	0.409	0.006	-	-	0.053	-	-	0.072
HCM Control Delay (s)	29.8	9.9	-	-	8.6	-	-	29.7
HCM Lane LOS	D	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	1.9	0	-	-	0.2	-	-	0.2

Intersection	
Intersection Delay, s/veh	28.7
Intersection LOS	D

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	63	315	78	0	20	325	39	0	93	75	27
Future Vol, veh/h	0	63	315	78	0	20	325	39	0	93	75	27
Peak Hour Factor	0.92	0.95	0.95	0.95	0.92	0.95	0.95	0.95	0.92	0.95	0.95	0.95
Heavy Vehicles, %	2	6	6	5	2	0	8	0	2	6	5	4
Mvmt Flow	0	66	332	82	0	21	342	41	0	98	79	28
Number of Lanes	0	0	1	1	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	34.3	33.1	17.8
HCM LOS	D	D	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	48%	17%	0%	5%	23%
Vol Thru, %	38%	83%	0%	85%	35%
Vol Right, %	14%	0%	100%	10%	42%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	195	378	78	384	273
LT Vol	93	63	0	20	63
Through Vol	75	315	0	325	95
RT Vol	27	0	78	39	115
Lane Flow Rate	205	398	82	404	287
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.459	0.84	0.155	0.8	0.596
Departure Headway (Hd)	8.046	7.603	6.797	7.122	7.469
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	445	473	525	505	483
Service Time	6.129	5.368	4.563	5.189	5.543
HCM Lane V/C Ratio	0.461	0.841	0.156	0.8	0.594
HCM Control Delay	17.8	39.1	10.8	33.1	21.1
HCM Lane LOS	C	E	B	D	C
HCM 95th-tile Q	2.4	8.3	0.5	7.5	3.8

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	63	95	115
Future Vol, veh/h	0	63	95	115
Peak Hour Factor	0.92	0.95	0.95	0.95
Heavy Vehicles, %	2	3	5	2
Mvmt Flow	0	66	100	121
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	21.1
HCM LOS	C

Appendix C
ODOT Crash Data

160 CASCADE HWY SOUTH

Crashes Occurring at the Intersection of Cascade Hwy 160 (MP 16.10) and Woodburn-Estacada Hwy 161(MP 11.31), near Molalla OR, 2012-2016

SER# / INVEST / UNLOC?	SPEED	ALCOHOL	DRUGS	SCHOOL BUS	WORK ZONE	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
02061	N	N	N	N	N	06/11/2013	CLACKAMAS	1	16	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	0	STRGHT											07
COUNTY						Tue 11A		MN	0	N		L-GRN-SIG	N	DRY	REAR		PRVTE		N S										000	00
							MOLALLA UA	16.10		06	0		N	DAY	INJ		PSNGR CAR			01	DRVR	NONE	23	M	OR-Y		043,026	000		07
No	*45*	*9*	*2.53*	*-122*	*36 22.92*			016000100S00																	OR<25					
																02	NONE	0	STOP											
																	PRVTE		N S										012	00
																	PSNGR CAR			01	DRVR	INJC	61	F	OR-Y		000	000		00
																									OR<25					
05335	N	N	N			12/31/2014	CLACKAMAS	1	16	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	0	STRGHT											29
NONE						Wed 5P		MN	0	N		TRF SIGNAL	N	DRY	REAR		PRVTE		N S										000	00
							MOLALLA UA	16.10		06	0		N	DLIT	PDO		PSNGR CAR			01	DRVR	NONE	51	F	OR-Y		026	000		29
No	*45*	*9*	*2.53*	*-122*	*36 22.92*			016000100S00																	OR<25					
																02	NONE	0	STOP											
																	UNKN		N S										011	00
																	PSNGR CAR			01	DRVR	NONE	00	M	UNK		000	000		00
																									UNK					
02845	N	N	N			08/03/2012	CLACKAMAS	1	16	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	0	STRGHT											07
NONE						Fri 7A		MN	0	E		TRF SIGNAL	N	DRY	REAR		UNKN		E W										000	00
							MOLALLA UA	16.10		06	0		N	DAY	INJ		PSNGR CAR			01	DRVR	NONE	00	M	OR-Y		026	000		07
No	*45*	*9*	*2.53*	*-122*	*36 22.92*			016000100S00																	UNK					
																02	NONE	0	STOP											
																	PRVTE		E W										011	00
																	PSNGR CAR			01	DRVR	INJC	38	F	OR-Y		000	000		00
																									OR<25					
03184	N	N	N	N	N	07/15/2016	CLACKAMAS	1	16	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	0	STRGHT											07
CITY						Fri 3P		MN	0	W		TRF SIGNAL	N	DRY	REAR		RENTL		W E										000	00
							MOLALLA UA	16.10		06	0		N	DAY	INJ		PSNGR CAR			01	DRVR	NONE	51	M	OR-Y		043	000		07
No	*45*	*9*	*2.53*	*-122*	*36 22.92*			016000100S00																	OR>25					
																02	NONE	0	STOP											
																	PRVTE		W E										011	00
																	PSNGR CAR			01	DRVR	INJC	17	F	OR-Y		000	000		00
																									OR<25					
04148	N	N	N	N	N	09/09/2016	CLACKAMAS	1	16	INTER	CROSS	N	N	CLR	ANGL-STP	01	NONE	9	TURN-L											08,32
CITY						Fri 6P		MN	0	W		TRF SIGNAL	N	DRY	TURN		N/A		S W										000	00
							MOLALLA UA	16.10		06	0		N	DAY	PDO		PSNGR CAR			01	DRVR	NONE	00	U	UNK		000	000		00
No	*45*	*9*	*2.53*	*-122*	*36 22.92*			016000100S00																	UNK					
																02	NONE	9	STOP											
																	N/A		W E										011	00
																	PSNGR CAR			01	DRVR	NONE	00	U	UNK		000	000		00
																									UNK					

160 CASCADE HWY SOUTH

Crashes Occurring at the Intersection of Cascade Hwy 160 (MP 16.10) and Woodburn-Estacada Hwy 161(MP 11.31), near Molalla OR, 2012-2016

SER# / INVEST / UNLOC?	SPEED	ALC	DRUG	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL TRAF-CNTL	OFFRD RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
02891	N	N	N			08/06/2012	CLACKAMAS	1	16	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											02
NONE						Mon 6P		MN 0		CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N S										000		00
							MOLALLA UA	16.10		01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	52	M	OR-Y		000	000		00
No	*45*	*9*	*2.53*	*-122*	*36 22.92*			016000100S00																OR<25					
																02	NONE 0	TURN-L											
																	PRVTE	S W									000		00
																	PSNGR CAR		01	DRVR	INJC	26	F	OR-Y		028,004	000		02
																								OR<25					
																			02	PSNG	INJC	13	F			000	000		00
																			03	PSNG	NO<5	04	M			000	000		00
																			04	PSNG	NO<5	02	M			000	000		00
02238	N	N	N	N	N	06/11/2014	CLACKAMAS	1	16	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											04
CITY						Wed 1P		MN 0		CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	E W									000		00
							MOLALLA UA	16.10		01	9		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	63	M	OR-Y		097	000		00
No	*45*	*9*	*2.53*	*-122*	*36 22.92*			016000100S00																OR<25					
																02	NONE 0	STRGHT											
																	PRVTE	N S									000		00
																	PSNGR CAR		01	DRVR	NONE	53	M	OTH-Y		097	000		00
																								N-RES					
04924	N	N	N	N	N	12/05/2014	CLACKAMAS	1	16	INTER	CROSS	N	N	FOG	O-1 L-TURN	01	NONE 0	STRGHT											02,08
CITY						Fri 5P		MN 0		CN		TRF SIGNAL	N	WET	TURN		PRVTE	N S									000		00
							MOLALLA UA	16.10		01	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	29	M	OR-Y		000	000		00
No	*45*	*9*	*2.53*	*-122*	*36 22.92*			016000100S00																OR<25					
																02	NONE 0	TURN-L											
																	PRVTE	S W									000		00
																	PSNGR CAR		01	DRVR	INJC	24	F	OR-Y		028,004	000		02,08
																								OR<25					
																			02	PSNG	INJC	07	M			000	000		00
04937	N	N	N			12/05/2014	CLACKAMAS	1	16	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											02
NONE						Fri 5P		MN 0		CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N S									000		00
							MOLALLA UA	16.10		01	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	24	M	UNK		000	000		00
No	*45*	*9*	*2.53*	*-122*	*36 22.92*			016000100S00																OR<25					
																02	NONE 0	TURN-L											
																	PRVTE	S W									000		00
																	PSNGR CAR		01	DRVR	NONE	21	F	OR-Y		028,004	000		02
																								OR<25					
02424	N	N	N			07/06/2012	CLACKAMAS	1	16	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	TURN-L											02
CITY						Fri 8P		MN 0		CN		TRF SIGNAL	N	DRY	TURN		PRVTE	E S									000		00
							MOLALLA UA	16.10		03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	19	M	OR-Y		028,004	000		02
No	*45*	*9*	*2.53*	*-122*	*36 22.92*			016000100S00																OR<25					

160 CASCADE HWY SOUTH

Crashes Occurring at the Intersection of Cascade Hwy 160 (MP 16.10) and Woodburn-Estacada Hwy 161(MP 11.31), near Molalla OR, 2012-2016

SER# / INVEST / UNLOC?	S P E L D C / D A U C O G S H R L K (S D P R S W E A U C O E L G H R D C S L K)	DATE / DAY/TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# FC / CMPT/MLG / MILEPNT / LRS	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL / TRAF- CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE TRLR QTY / OWNER / VEH TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
												02	NONE 0	STRGHT										
													PRVTE	W E									000	00
													PSNGR CAR		01	DRVR	NONE	18	M	OR-Y		000	000	00
																				OR<25				
04026	N N N N N	10/27/2012	CLACKAMAS	1 16		INTER	CROSS	N	N	RAIN	O-1 L-TURN	01	NONE 0	STRGHT										02
CITY		Sat 7A		MN 0		CN		TRF SIGNAL	N	WET	TURN		PRVTE	W E									000	00
			MOLALLA UA	16.10		03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	29	M	SUSP		000	000	00
No		45 9 2.53 -122 36 22.92		016000100S00																OR<25				
												02	NONE 0	TURN-L										
													PRVTE	E S									000	00
													PSNGR CAR		01	DRVR	INJC	31	M	OR-Y		028,004	000	02
																				OR<25				
															02	PSNG	INJB	11	U			000	000	00
00851	N N N	02/28/2014	CLACKAMAS	1 16		INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT										02
NONE		Fri 3P		MN 0		CN		TRF SIGNAL	N	DRY	TURN		PRVTE	W E									000	00
			MOLALLA UA	16.10		03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	25	M	OR-Y		000	000	00
No		45 9 2.53 -122 36 22.92		016000100S00																OR<25				
												02	NONE 0	TURN-L										
													PRVTE	E S									000	00
													PSNGR CAR		01	DRVR	NONE	72	M	OR-Y		028,004	000	02
																				OR<25				
02542	N N N	06/30/2014	CLACKAMAS	1 16		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										04
CITY		Mon 2P		MN 0		CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	N S									000	00
			MOLALLA UA	16.10		03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	17	M	OR-Y		020	000	04
No		45 9 2.53 -122 36 22.92		016000100S00																OR<25				
															02	PSNG	INJC	36	F			000	000	00
															03	PSNG	NONE	05	M			000	000	00
												02	NONE 0	STRGHT										
													PRVTE	W E									000	00
													PSNGR CAR		01	DRVR	NONE	24	M	OR-Y		000	000	00
																				OR>25				
05191	N N N N N	12/06/2015	CLACKAMAS	1 16		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										04
CITY		Sun 10A		MN 0		CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	W E									000	00
			MOLALLA UA	16.10		03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	39	F	OR-Y		020	000	04
No		45 9 2.53 -122 36 22.92		016000100S00																OR<25				
												02	NONE 0	STRGHT										
													PRVTE	N S									000	00
													PSNGR CAR		01	DRVR	NONE	62	F	OR-Y		000	000	00
																				OR<25				

160 CASCADE HWY SOUTH

Crashes Occurring at the Intersection of Cascade Hwy 160 (MP 16.10) and Woodburn-Estacada Hwy 161(MP 11.31), near Molalla OR, 2012-2016

SER# / INVEST / UNLOC?	SPEED	ALC	DRUGS	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / SECOND STREET / INTERSECTION SEQ#	CONN # / FIRST STREET	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
01405	N	N	N	N	N	03/27/2016	CLACKAMAS	1	16		INTER	CROSS	N	N	CLD	O-1 L-TURN	01	NONE 0	STRGHT											02
CITY						Sun 8P		MN 0			CN		TRF SIGNAL	N	WET	TURN		PRVTE	W E										000	00
							MOLALLA UA	16.10			03	0		N	DUSK	INJ		PSNGR CAR		01	DRVR	INJC	20	F	OR-Y		000	000		00
No	*45 9 2.53*		*-122 36 22.92*					016000100S00																	OR<25					
																	02	NONE 0	TURN-L											
																		PRVTE	E S									000	00
																		PSNGR CAR		01	DRVR	INJC	54	F	OR-Y		028,004	000		02
																									OR<25					
																				02	PSNG	INJC	22	F			000	000		00
02329	N	N	N			05/23/2016	CLACKAMAS	1	16		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 9	STRGHT											04
NONE						Mon 4A		MN 0			CN		TRF SIGNAL	N	DRY	ANGL		N/A	N S										000	00
							MOLALLA UA	16.10			03	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No	*45 9 2.53*		*-122 36 22.92*					016000100S00																	UNK					
																	02	NONE 9	STRGHT											
																		N/A	E W									000	00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																									UNK					
04052	N	N	N	N	N	08/30/2016	CLACKAMAS	1	16		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											04
CITY						Tue 6P		MN 0			CN		L-GRN-SIG	N	DRY	TURN		PRVTE	N S										000	00
							MOLALLA UA	16.10			03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	64	M	OR-Y		020	000		04
No	*45 9 2.53*		*-122 36 22.92*					016000100S00																	OR<25					
																	02	NONE 0	TURN-L											
																		PRVTE	W N									000	00
																		PSNGR CAR		01	DRVR	NONE	61	M	OR-Y		000	000		00
																									OR<25					
																				02	PSNG	INJB	61	F			000	000		00
05284	N	N	N			11/14/2016	CLACKAMAS	1	16		INTER	CROSS	N	N	RAIN	O-1 L-TURN	01	NONE 0	STRGHT											02
CITY						Mon 11A		MN 0			CN		TRF SIGNAL	N	WET	TURN		PRVTE	S N										000	00
							MOLALLA UA	16.10			04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	20	F	OR-Y		000	000		00
No	*45 9 2.53*		*-122 36 22.92*					016000100S00																	OR<25					
																	02	NONE 0	TURN-L											
																		PRVTE	N E									000	00
																		PSNGR CAR		01	DRVR	NONE	28	M	OR-Y		028,004	000		02
																									OR<25					

161 WOODBURN-ESTACADA

Crashes at the Intersection of Main St (Hwy 161; MP 12.04) & Hezzie Ln, 2012-2016

SER# / INVEST / UNLOC?	SPEED	ALCOHOL	DRUGS	SCHL BUS	WORK ZONE	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# CMPT/MLG MILEPNT LRS	FC / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	CONN # / RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
04863	N	N	N		Y	12/16/2013	CLACKAMAS	1 16		INTER	3-LEG	N		N	CLD	ANGL-OTH	01	NONE 0	STRGHT										02
CITY						Mon 10A	MOLALLA	MN 0	S HEZZIE LN	CN		NONE		N	WET	TURN		PRVTE	W E								000	00
							MOLALLA UA	12.00	MAIN ST	04	0			Y	DAY	INJ		PSNGR CAR		01	DRVR	INJB	80	F	OR-Y		000	000	00
No						*45 8 56.95 -122 35 32.48*		016100100S00	1																OR<25				
																	02	NONE 0	TURN-L										
																		PRVTE	S W								018	00
																		PSNGR CAR		01	DRVR	NONE	23	M	OR-Y		028	000	02
																									OR<25				

161 WOODBURN-ESTACADA   Crashes at the Intersection of Main St (Hwy 161; MP 12.16) & Leroy Ave, 2012-2016

```
      S  D
      P   R S W                                    RD#  FC   CONN #                       INT-TYP                                       SPCL USE
SER#  E A U C O  DATE        COUNTY               CMPT/MLG  FIRST  STREET        RD CHAR (MEDIAN)  INT-REL  OFFRD WTHR  CRASH TYP   TRLR QTY  MOVE                      A  S
INVEST E L G H R DAY/TIME    CITY                 MILEPNT   SECOND STREET        DIRECT    LEGS    TRAF-    RNDBT SURF  COLL TYP    OWNER     FROM       PRTC  INJ    G  E  LICNS PED
UNLOC? D C S L K LAT/LONG    URBAN AREA           LRS       INTERSECTION SEQ#    LOCTN   (#LANES)  CNTL     DRVWY LIGHT SVRTY    V# VEH TYPE  TO      P# TYPE  SVRTY  E  X  RES   LOC  ERROR        ACTN EVENT        CAUSE

02968  N N N     07/25/2012  CLACKAMAS            1    16                        INTER      3-LEG  N           N CLR   S-1STOP   01 NONE    0 STRGHT                                                            07
NONE             Wed    5P   MOLALLA              MN    0    LEROY AVE           W                 UNKNOWN     N DRY   REAR         PRVTE      W  E                                                  000              00
                             MOLALLA UA            12.16     MAIN ST             06          0                 N DAY   PDO         PSNGR CAR          01 DRVR NONE  20 M OR-Y       026          000              07
No     45  8 55.77   -122 35 21.09                016100100S00               1                                                                                 OR<25

                                                                                                                                 02 NONE    0 STOP
                                                                                                                                    PRVTE      W  E                                                  012              00
                                                                                                                                   PSNGR CAR          01 DRVR NONE  40 M OR-Y       000          000              00
                                                                                                                                                                     OR<25

02996  N N N     08/14/2012  CLACKAMAS            1    16                        INTER      3-LEG  N           N CLR   S-1STOP   01 NONE    0 STRGHT                                                            07
NO RPT           Tue   12P   MOLALLA              MN    0    LEROY AVE           W                 UNKNOWN     N DRY   REAR         PRVTE      W  E                                                  000              00
                             MOLALLA UA            12.16     MAIN ST             06          0                 N DAY   INJ         PSNGR CAR          01 DRVR NONE  21 M OR-Y       026          000              07
No     45  8 55.77   -122 35 21.09                016100100S00               1                                                                                 OR<25

                                                                                                                                 02 NONE    0 STOP
                                                                                                                                    PRVTE      W  E                                                  012              00
                                                                                                                                   PSNGR CAR          01 DRVR INJC  37 F OR-Y       000          000              00
                                                                                                                                                                     OR<25

02379  N N N     07/03/2013  CLACKAMAS            1    16                        INTER      3-LEG  N           N CLR   S-1STOP   01 NONE    0 STRGHT                                                            07
NONE             Wed    7P   MOLALLA              MN    0    LEROY AVE           W                 UNKNOWN     N DRY   REAR         PRVTE      W  E                                                  000              00
                             MOLALLA UA            12.16     MAIN ST             06          0                 N DAY   PDO         PSNGR CAR          01 DRVR NONE  22 M OR-Y       026          000              07
No     45  8 55.77   -122 35 21.09                016100100S00               1                                                                                 OR<25

                                                                                                                                 02 NONE    0 STOP
                                                                                                                                    PRVTE      W  E                                                  012              00
                                                                                                                                   PSNGR CAR          01 DRVR NONE  22 M OR-Y       000          000              00
                                                                                                                                                                     OR<25

00645  Y N N N N 02/19/2015  CLACKAMAS            1    16                        INTER      3-LEG  N           N CLR   S-1STOP   01 NONE    0 STRGHT                                                      013   01,07,29
CITY             Thu    6P   MOLALLA              MN    0    LEROY AVE           W                 NONE        N DRY   REAR         PRVTE      W  E                                                  000              00
                             MOLALLA UA            12.16     MAIN ST             06          0                 N DARK  INJ         PSNGR CAR          01 DRVR INJC  18 M OR-Y       047,043,026  038              01,07,29
No     45  8 55.77   -122 35 21.09                016100100S00               1                                                                                 OR<25

                                                                                                                                 02 NONE    0 STOP
                                                                                                                                    PRVTE      W  E                                                  011  013         00
                                                                                                                                   PSNGR CAR          01 DRVR INJC  40 F OR-Y       000          000              00
                                                                                                                                                                     OR>25

                                                                                                                                 03 NONE    0 STOP
                                                                                                                                    PRVTE      W  E                                                  022              00
                                                                                                                                   PSNGR CAR          01 DRVR INJC  32 F OR-Y       000          000              00
                                                                                                                                                                     OR<25
                                                                                                                                                      02 PSNG NO<5  01 F            000          000              00

02552  N N N N N 06/07/2016  CLACKAMAS            1    16                        INTER      3-LEG  N           N CLR   S-1STOP   01 NONE    0 STRGHT                                                            07,29
CITY             Tue    9A   MOLALLA              MN    0    LEROY AVE           W                 NONE        N DRY   REAR         PRVTE      W  E                                                  000              00
                             MOLALLA UA            12.16     MAIN ST             06          0                 N DAY   INJ         PSNGR CAR          01 DRVR NONE  29 F OR-Y       043,026      000              07,29
No     45  8 55.77   -122 35 21.09                016100100S00               1                                                                                 OR<25
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161 WOODBURN-ESTACADA

Crashes at the Intersection of Main St (Hwy 161; MP 12.16) & Leroy Ave, 2012-2016

SER# / INVEST / UNLOC?	S P E D	R A U C	S W O H	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# FC / CMPT/MLG / MILEPNT / LRS	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
														02	NONE 0	STOP										
															PRVTE	W E									012	00
															PSNGR CAR		01	DRVR	INJB	32	F	OR-Y OR<25		000	000	00
00603	N	N	N N N	02/21/2013	CLACKAMAS	1 16		INTER	3-LEG	N	N	RAIN	O-1 L-TURN	01	NONE 0	STRGHT										02
CITY				Thu 1P	MOLALLA	MN 0	LEROY AVE	CN		NONE	N	WET	TURN		PRVTE	E W									000	00
					MOLALLA UA	12.16	MAIN ST	02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	23	M	OR-Y OR<25		000	000	00
No				*45 8 55.77 -122 35 21.09*		016100100S00	1										02	PSNG	INJC	18	M			000	000	00
														02	NONE 0	TURN-L										
															PRVTE	W N									000	00
															TRUCK		01	DRVR	NONE	58	M	OR-Y OR<25		028,004	000	02
03095	N	N	N N N	08/09/2014	CLACKAMAS	1 16		INTER	3-LEG	N	N	CLR	O-STRGHT	01	NONE 0	STRGHT										27,05
COUNTY				Sat 6P	MOLALLA	MN 0	LEROY AVE	CN		UNKNOWN	N	DRY	SS-M		PRVTE	W E									000	00
					MOLALLA UA	12.16	MAIN ST	02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	59	M	OR-Y OR<25		016,080	038	27,05
No				*45 8 55.77 -122 35 21.09*		016100100S00	1																			
														02	NONE 0	STRGHT										
															PRVTE	E W									000	00
															PSNGR CAR		01	DRVR	INJB	19	F	OR-Y OR<25		000	000	00
00673	N	N	N	02/21/2012	CLACKAMAS	1 16		INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT										07
NO RPT				Tue 4P	MOLALLA	MN 0	LEROY AVE	CN		UNKNOWN	N	WET	REAR		PRVTE	W E									000	00
					MOLALLA UA	12.16	MAIN ST	03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	18	M	OR-Y OR<25		026	000	07
No				*45 8 55.77 -122 35 21.09*		016100100S00	1																			
														02	NONE 0	STOP										
															PRVTE	W E									012	00
															PSNGR CAR		01	DRVR	NONE	21	M	OR-Y OR<25		000	000	00
																	02	PSNG	NO<5	02	M			000	000	00

161 WOODBURN-ESTACADA

Crashes at the Intersection of Main St (Hwy 161; MP 12.41) & Dixon Ave, 2012-2016

SER# / INVEST / UNLOC?	SPEED	ALCOHOL	DRUGS	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / STREET / SECOND STREET / INTERSECTION	CONN # / SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
02547	N	N	N	N	N	06/07/2016	CLACKAMAS	1 16			INTER	3-LEG	N	N	CLR	BIKE	01	NONE 0	TURN-L											084	
CITY						Tue 1P	MOLALLA	MN 0	DIXON AVE		NE		STOP SIGN	N	DRY	TURN		PRVTE	NE SE										015		00
							MOLALLA UA	12.41	MAIN ST		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	70	M	OR-Y		027	000	084	02
No						*45 8 53.84 -122 35 2.84*		016100100	S00	1																OR<25					
																			STRGHT	01	BIKE	INJA	42	F		01	055	034	084	00
																			NW SE											
04089	N	N	N	N	N	10/15/2014	CLACKAMAS	1 16			INTER	3-LEG	N	N	UNK	ANGL-OTH	01	NONE 1	STRGHT												02
CITY						Wed 1P	MOLALLA	MN 0	DIXON AVE		CN		STOP SIGN	N	WET	ANGL		PRVTE	SE NW										000		00
							MOLALLA UA	12.41	MAIN ST		01	0		N	DAY	INJ		SEMI TOW		01	DRVR	NONE	56	M	OR-Y		000	000		00
No						*45 8 53.84 -122 35 2.84*		016100100	S00	1																OR<25					
																	02	NONE 0	STRGHT											
																		PRVTE	NE SW										015		00
																		PSNGR CAR		01	DRVR	INJB	67	F	OR-Y		028	000		02
																									OR<25					

161 WOODBURN-ESTACADA

Crashes at the Intersection of Main St (Hwy 161; MP 12.76) & Molalla Ave, 2012-2016

SER# / INVEST / UNLOC?	SPEED	ALCOHOL	DRUGS	SCHL BUS	WORK ZONE	DATE / DAY / TIME / LAT/LONG	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / MILEPNT / LRS	FC / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	CONN #	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00674	N	N	N	N	N	02/26/2013	CLACKAMAS	1 16			INTER	CROSS	N	N	CLD	O-OTHER	01	NONE 0	TURN-L										013	
CITY						Tue 3P	MOLALLA	MN 0	MAIN ST		NW		FLASHBCN-R	N	DRY	TURN		PRVTE	SW NW									015		00
							MOLALLA UA	12.76	MOLALLA AVE		05	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	34	F	OR-Y		028,004	000		08,02
No						*45 8 51.09 -122 34 37.54*		016100100S00		1															OR<25					
																	02	NONE 0	TURN-R											
																		PRVTE	NE NW									015	013	00
																		PSNGR CAR		01	DRVR	NONE	84	M	OR-Y		000	000		00
																									OR<25					
																	03	NONE 0	PRKD-P											
																		PRVTE	SE NW									008		00
																		PSNGR CAR												
03966	N	N	N			10/17/2013	CLACKAMAS	1 16			INTER	CROSS	N	N	FOG	S-1STOP	01	NONE 0	STRGHT											07
NO RPT						Thu 8A	MOLALLA	MN 0	MAIN ST		NW		STOP SIGN	N	DRY	REAR		PRVTE	NW SE									000		00
							MOLALLA UA	12.76	MOLALLA AVE		06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	71	F	OR-Y		026	000		07
No						*45 8 51.09 -122 34 37.54*		016100100S00		1															OR<25					
																	02	NONE 0	STOP											
																		PRVTE	NW SE									012		00
																		PSNGR CAR		01	DRVR	NONE	64	F	OR-Y		000	000		00
																									OR<25					
02613	N	N	N			06/09/2016	CLACKAMAS	1 16			INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
NONE						Thu 9A	MOLALLA	MN 0	MAIN ST		NW		STOP SIGN	N	DRY	REAR		N/A	NW SE									000		00
							MOLALLA UA	12.76	MOLALLA AVE		06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No						*45 8 51.09 -122 34 37.54*		016100100S00		1															UNK					
																	02	NONE 9	STOP											
																		N/A	NW SE									011		00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																									UNK					
02518	N	N	N			06/04/2016	CLACKAMAS	1 16			INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 9	STRGHT											02
NONE						Sat 10A	MOLALLA	MN 0	MAIN ST		CN		STOP SIGN	N	DRY	ANGL		N/A	NE SW									015		00
							MOLALLA UA	12.76	MOLALLA AVE		01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
No						*45 8 51.09 -122 34 37.54*		016100100S00		1															UNK					
																	02	NONE 9	STRGHT											
																		N/A	SE NW									015		00
																		PSNGR CAR		01	DRVR	NONE	00	U	UNK		000	000		00
																									UNK					
00342	N	N	N			01/25/2012	CLACKAMAS	1 16			INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT											02
NONE						Wed 7P	MOLALLA	MN 0	MAIN ST		CN		FLASHBCN-R	N	WET	ANGL		PRVTE	W E									000		00
							MOLALLA UA	12.76	MOLALLA AVE		03	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	00	U	OR-Y		028	000		02
No						*45 8 51.09 -122 34 37.54*		016100100S00		1															OR<25					

161 WOODBURN-ESTACADA

Crashes at the Intersection of Main St (Hwy 161; MP 12.76) & Molalla Ave, 2012-2016

SER# / INVEST / UNLOC?	SPEED	ALCOHOL	DRUGS	SCHOOL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MLG / LRS	FC / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	CONN # / RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																02	NONE 0 PRVTE	STRGHT N S										015	00
																	PSNGR CAR		01	DRVR	INJC	48	F	OR-Y OR<25		000	000		00
04041	N	N	N			10/22/2013 Tue 10A	CLACKAMAS MOLALLA	1 16 MN 0	MAIN ST	INTER CN	CROSS	N TRF SIGNAL	N	CLR DRY	S-1TURN TURN	01	NONE 0 PRVTE	TURN-R NW SW										000	08 00
NO RPT							MOLALLA UA	12.76	MOLALLA AVE	03	0		N	DAY	PDO		TRUCK		01	DRVR	NONE	29	M	OR-Y OR<25		006,001	000		08
No	*45 8 51.09*		*-122 34 37.54*					016100100S00	1																				
																02	NONE 0 PRVTE	TURN-R NW SW										000	00
																	PSNGR CAR		01	DRVR	NONE	31	M	OR-Y OR<25		000	000		00
																			02	PSNG	NO<5	01	F			000	000		00
01579	N	N	N			05/07/2013 Tue 11A	CLACKAMAS MOLALLA	1 16 MN 0	MAIN ST	INTER CN	CROSS	N FLASHBCN-R	N	CLR DRY	ANGL-OTH TURN	01	NONE 0 PRVTE	STRGHT W E										015	04 00
NONE							MOLALLA UA	12.76	METZLER AVE	04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	UNK OR<25		003	000		04
No	*45 8 51.09*		*-122 34 37.54*					016100100S00	1																				
																02	NONE 0 PRVTE	TURN-L S W										015	00
																	PSNGR CAR		01	DRVR	NONE	30	M	OR-Y OR<25		000	000		00
04906	N	Y	N			10/23/2016 Sun 9P	CLACKAMAS MOLALLA	1 16 MN 0	MAIN ST	INTER CN	CROSS	N STOP SIGN	N	CLR DRY	ANGL-OTH ANGL	01	NONE 9 N/A	STRGHT S N										000	03 00
NO RPT							MOLALLA UA	12.76	MOLALLA AVE	04	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00
No	*45 8 51.09*		*-122 34 37.54*					016100100S00	1																				
																02	NONE 9 N/A	STRGHT W E										000	00
																	PSNGR CAR		01	DRVR	NONE	00	U	UNK UNK		000	000		00

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
000	NONE	NO ACTION OR NON-WARRANTED
001	SKIDDED	SKIDDED
002	ON/OFF V	GETTING ON OR OFF STOPPED OR PARKED VEHICLE
003	LOAD OVR	OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC.
006	SLOW DN	SLOWED DOWN
007	AVOIDING	AVOIDING MANEUVER
008	PAR PARK	PARALLEL PARKING
009	ANG PARK	ANGLE PARKING
010	INTERFERE	PASSENGER INTERFERING WITH DRIVER
011	STOPPED	STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN
012	STP/L TRN	STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC.
013	STP TURN	STOPPED WHILE EXECUTING A TURN
014	EMR V PKD	EMERGENCY VEHICLE LEGALLY PARKED IN THE ROADWAY
015	GO A/STOP	PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED.
016	TRN A/RED	TURNED ON RED AFTER STOPPING
017	LOSTCTRL	LOST CONTROL OF VEHICLE
018	EXIT DWY	ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY
019	ENTR DWY	ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY
020	STR ENTR	BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER
021	NO DRVR	CAR RAN AWAY - NO DRIVER
022	PREV COL	STRUCK, OR WAS STRUCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED
023	STALLED	VEHICLE STALLED OR DISABLED
024	DRVR DEAD	DEAD BY UNASSOCIATED CAUSE
025	FATIGUE	FATIGUED, SLEEPY, ASLEEP
026	SUN	DRIVER BLINDED BY SUN
027	HDLGHTS	DRIVER BLINDED BY HEADLIGHTS
028	ILLNESS	PHYSICALLY ILL
029	THRU MED	VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER
030	PURSUIT	PURSUING OR ATTEMPTING TO STOP A VEHICLE
031	PASSING	PASSING SITUATION
032	PRKOFFRD	VEHICLE PARKED BEYOND CURB OR SHOULDER
033	CROS MED	VEHICLE CROSSED EARTH OR GRASS MEDIAN
034	X N/SGNL	CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT
035	X W/ SGNL	CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT
036	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
037	BTWN INT	CROSSING BETWEEN INTERSECTIONS
038	DISTRACT	DRIVER'S ATTENTION DISTRACTED
039	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
040	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
041	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
042	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
043	PLAYINRD	PLAYING IN STREET OR ROAD
044	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
045	WORK ON	WORKING IN ROADWAY OR ALONG SHOULDER
046	W/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. WITH TRAFFIC
047	A/ TRAFIC	NON-MOTORIST WALKING, RUNNING, RIDING, ETC. FACING TRAFFIC
050	LAY ON RD	STANDING OR LYING IN ROADWAY
051	ENT OFFRD	ENTERING / STARTING IN TRAFFIC LANE FROM OFF ROAD
052	MERGING	MERGING

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
055	SPRAY	BLINDED BY WATER SPRAY
088	OTHER	OTHER ACTION
099	UNK	UNKNOWN ACTION

CAUSE CODE TRANSLATION LIST

CAUSE CODE	SHORT DESCRIPTION	LONG DESCRIPTION
00	NO CODE	NO CAUSE ASSOCIATED AT THIS LEVEL
01	TOO-FAST	TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED
02	NO-YIELD	DID NOT YIELD RIGHT-OF-WAY
03	PAS-STOP	PASSED STOP SIGN OR RED FLASHER
04	DIS SIG	DISREGARDED TRAFFIC SIGNAL
05	LEFT-CTR	DROVE LEFT OF CENTER ON TWO-WAY ROAD; STRADDLING
06	IMP-OVER	IMPROPER OVERTAKING
07	TOO-CLOS	FOLLOWED TOO CLOSELY
08	IMP-TURN	MADE IMPROPER TURN
09	DRINKING	ALCOHOL OR DRUG INVOLVED
10	OTHR-IMP	OTHER IMPROPER DRIVING
11	MECH-DEF	MECHANICAL DEFECT
12	OTHER	OTHER (NOT IMPROPER DRIVING)
13	IMP LN C	IMPROPER CHANGE OF TRAFFIC LANES
14	DIS TCD	DISREGARDED OTHER TRAFFIC CONTROL DEVICE
15	WRNG WAY	WRONG WAY ON ONE-WAY ROAD; WRONG SIDE DIVIDED RO
16	FATIGUE	DRIVER DROWSY/FATIGUED/SLEEPY
17	ILLNESS	PHYSICAL ILLNESS
18	IN RDWY	NON-MOTORIST ILLEGALLY IN ROADWAY
19	NT VISBL	NON-MOTORIST NOT VISIBLE; NON-REFLECTIVE CLOTHIN
20	IMP PKNG	VEHICLE IMPROPERLY PARKED
21	DEF STER	DEFECTIVE STEERING MECHANISM
22	DEF BRKE	INADEQUATE OR NO BRAKES
24	LOADSHFT	VEHICLE LOST LOAD OR LOAD SHIFTED
25	TIREFAIL	TIRE FAILURE
26	PHANTOM	PHANTOM / NON-CONTACT VEHICLE
27	INATTENT	INATTENTION
28	NM INATT	NON-MOTORIST INATTENTION
29	F AVOID	FAILED TO AVOID VEHICLE AHEAD
30	SPEED	DRIVING IN EXCESS OF POSTED SPEED
31	RACING	SPEED RACING (PER PAR)
32	CARELESS	CARELESS DRIVING (PER PAR)
33	RECKLESS	RECKLESS DRIVING (PER PAR)
34	AGGRESV	AGGRESSIVE DRIVING (PER PAR)
35	RD RAGE	ROAD RAGE (PER PAR)
40	VIEW OBS	VIEW OBSCURED
50	USED MDN	IMPROPER USE OF MEDIAN OR SHOULDER
51	FAIL LN	FAILED TO MAINTAIN LANE
52	OFF RD	RAN OFF ROAD

COLLISION TYPE CODE TRANSLATION LIST

COLL CODE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OTH	MISCELLANEOUS
-	BACK	BACKING
0	PED	PEDESTRIAN
1	ANGL	ANGLE
2	HEAD	HEAD-ON
3	REAR	REAR-END
4	SS-M	SIDESWIPE - MEETING
5	SS-O	SIDESWIPE - OVERTAKING
6	TURN	TURNING MOVEMENT
7	PARK	PARKING MANEUVER
8	NCOL	NON-COLLISION
9	FIX	FIXED OBJECT OR OTHER OBJECT

CRASH TYPE CODE TRANSLATION LIST

CRASH TYPE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OVERTURN	OVERTURNED
0	NON-COLL	OTHER NON-COLLISION
1	OTH RDWY	MOTOR VEHICLE ON OTHER ROADWAY
2	PRKD MV	PARKED MOTOR VEHICLE
3	PED	PEDESTRIAN
4	TRAIN	RAILWAY TRAIN
6	BIKE	PEDALCYCLIST
7	ANIMAL	ANIMAL
8	FIX OBJ	FIXED OBJECT
9	OTH OBJ	OTHER OBJECT
A	ANGL-STP	ENTERING AT ANGLE - ONE VEHICLE STOPPED
B	ANGL-OTH	ENTERING AT ANGLE - ALL OTHERS
C	S-STRGHT	FROM SAME DIRECTION - BOTH GOING STRAIGHT
D	S-1TURN	FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT
E	S-1STOP	FROM SAME DIRECTION - ONE STOPPED
F	S-OTHER	FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING
G	O-STRGHT	FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT
H	O-1 L-TURN	FROM OPPOSITE DIRECTION-ONE LEFT TURN,ONE STRAIGHT
I	O-1STOP	FROM OPPOSITE DIRECTION - ONE STOPPED
J	O-OTHER	FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING

DRIVER LICENSE CODE TRANSLATION LIST

LIC CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NOT LICENSED (HAD NEVER BEEN LICENSED)
1	OR-Y	VALID OREGON LICENSE
2	OTH-Y	VALID LICENSE, OTHER STATE OR COUNTRY
3	SUSP	SUSPENDED/REVOKED
4	EXP	EXPIRED
8	N-VAL	OTHER NON-VALID LICENSE
9	UNK	UNKNOWN IF DRIVER WAS LICENSED AT TIME OF CRASH

DRIVER RESIDENCE CODE TRANSLATION LIST

RES CODE	SHORT DESC	LONG DESCRIPTION
1	OR<25	OREGON RESIDENT WITHIN 25 MILE OF HOME
2	OR>25	OREGON RESIDENT 25 OR MORE MILES FROM HOME
3	OR-?	OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME
4	N-RES	NON-RESIDENT
9	UNK	UNKNOWN IF OREGON RESIDENT

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
000	NONE	NO ERROR
001	WIDE TRN	WIDE TURN
002	CUT CORN	CUT CORNER ON TURN
003	FAIL TRN	FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS
004	L IN TRF	LEFT TURN IN FRONT OF ONCOMING TRAFFIC
005	L PROHIB	LEFT TURN WHERE PROHIBITED
006	FRM WRNG	TURNED FROM WRONG LANE
007	TO WRONG	TURNED INTO WRONG LANE
008	ILLEG U	U-TURNED ILLEGALLY
009	IMP STOP	IMPROPERLY STOPPED IN TRAFFIC LANE
010	IMP SIG	IMPROPER SIGNAL OR FAILURE TO SIGNAL
011	IMP BACK	BACKING IMPROPERLY (NOT PARKING)
012	IMP PARK	IMPROPERLY PARKED
013	UNPARK	IMPROPER START LEAVING PARKED POSITION
014	IMP STRT	IMPROPER START FROM STOPPED POSITION
015	IMP LGHT	IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC)
016	INATTENT	INATTENTION (FAILURE TO DIM LIGHTS PRIOR TO 4/1/97)
017	UNSF VEH	DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT)
018	OTH PARK	ENTERING/EXITING PARKED POSITION W/ INSUFFICIENT CLEARANCE; OTHER IMPROPER PARKING MANEUVER
019	DIS DRIV	DISREGARDED OTHER DRIVER'S SIGNAL
020	DIS SGNL	DISREGARDED TRAFFIC SIGNAL
021	RAN STOP	DISREGARDED STOP SIGN OR FLASHING RED
022	DIS SIGN	DISREGARDED WARNING SIGN, FLARES OR FLASHING AMBER
023	DIS OFCR	DISREGARDED POLICE OFFICER OR FLAGMAN
024	DIS EMER	DISREGARDED SIREN OR WARNING OF EMERGENCY VEHICLE
025	DIS RR	DISREGARDED RR SIGNAL, RR SIGN, OR RR FLAGMAN
026	REAR-END	FAILED TO AVOID STOPPED OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS
027	BIKE ROW	DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST
028	NO ROW	DID NOT HAVE RIGHT-OF-WAY
029	PED ROW	FAILED TO YIELD RIGHT-OF-WAY TO PEDESTRIAN
030	PAS CURV	PASSING ON A CURVE
031	PAS WRNG	PASSING ON THE WRONG SIDE
032	PAS TANG	PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS
033	PAS X-WK	PASSED VEHICLE STOPPED AT CROSSWALK FOR PEDESTRIAN
034	PAS INTR	PASSING AT INTERSECTION
035	PAS HILL	PASSING ON CREST OF HILL
036	N/PAS ZN	PASSING IN "NO PASSING" ZONE
037	PAS TRAF	PASSING IN FRONT OF ONCOMING TRAFFIC
038	CUT-IN	CUTTING IN (TWO LANES - TWO WAY ONLY)
039	WRNGSIDE	DRIVING ON WRONG SIDE OF THE ROAD (2-WAY UNDIVIDED ROADWAYS)

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
040	THRU MED	DRIVING THROUGH SAFETY ZONE OR OVER ISLAND
041	F/ST BUS	FAILED TO STOP FOR SCHOOL BUS
042	F/SLO MV	FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE
043	TOO CLOSE	FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT)
044	STRDL LN	STRADDLING OR DRIVING ON WRONG LANES
045	IMP CHG	IMPROPER CHANGE OF TRAFFIC LANES
046	WRNG WAY	WRONG WAY ON ONE-WAY ROADWAY; WRONG SIDE DIVIDED ROAD
047	BASCRULE	DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED)
048	OPN DOOR	OPENED DOOR INTO ADJACENT TRAFFIC LANE
049	IMPEDING	IMPEDING TRAFFIC
050	SPEED	DRIVING IN EXCESS OF POSTED SPEED
051	RECKLESS	RECKLESS DRIVING (PER PAR)
052	CARELESS	CARELESS DRIVING (PER PAR)
053	RACING	SPEED RACING (PER PAR)
054	X N/SGNL	CROSSING AT INTERSECTION, NO TRAFFIC SIGNAL PRESENT
055	X W/SGNL	CROSSING AT INTERSECTION, TRAFFIC SIGNAL PRESENT
056	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
057	BTWN INT	CROSSING BETWEEN INTERSECTIONS
059	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
060	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
061	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
062	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
063	PLAYINRD	PLAYING IN STREET OR ROAD
064	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
065	WORK IN RD	WORKING IN ROADWAY OR ALONG SHOULDER
070	LAY ON RD	STANDING OR LYING IN ROADWAY
071	NM IMP USE	IMPROPER USE OF TRAFFIC LANE BY NON-MOTORIST
073	ELUDING	ELUDING / ATTEMPT TO ELUDE
079	F NEG CURV	FAILED TO NEGOTIATE A CURVE
080	FAIL LN	FAILED TO MAINTAIN LANE
081	OFF RD	RAN OFF ROAD
082	NO CLEAR	DRIVER MISJUDGED CLEARANCE
083	OVRSTEER	OVER-CORRECTING
084	NOT USED	CODE NOT IN USE
085	OVRLOAD	OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS
097	UNA DIS TC	UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
001	FEL/JUMP	OCCUPANT FELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE
002	INTERFER	PASSENGER INTERFERED WITH DRIVER
003	BUG INTF	ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER
004	INDRCT PED	PEDESTRIAN INDIRECTLY INVOLVED (NOT STRUCK)
005	SUB-PED	"SUB-PED": PEDESTRIAN INJURED SUBSEQUENT TO COLLISION, ETC.
006	INDRCT BIK	PEDALCYCLIST INDIRECTLY INVOLVED (NOT STRUCK)
007	HITCHIKR	HITCHHIKER (SOLICITING A RIDE)
008	PSNGR TOW	PASSENGER OR NON-MOTORIST BEING TOWED OR PUSHED ON CONVEYANCE
009	ON/OFF V	GETTING ON/OFF STOPPED/PARKED VEHICLE (OCCUPANTS ONLY; MUST HAVE PHYSICAL CONTACT W/ VEHIC
010	SUB OTRN	OVERTURNED AFTER FIRST HARMFUL EVENT
011	MV PUSHD	VEHICLE BEING PUSHED
012	MV TOWED	VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE
013	FORCED	VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN
014	SET MOTN	VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.)
015	RR ROW	AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL)
016	LT RL ROW	AT OR ON LIGHT-RAIL RIGHT-OF-WAY
017	RR HIT V	TRAIN STRUCK VEHICLE
018	V HIT RR	VEHICLE STRUCK TRAIN
019	HIT RR CAR	VEHICLE STRUCK RAILROAD CAR ON ROADWAY
020	JACKNIFE	JACKKNIFE; TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE
021	TRL OTRN	TRAILER OR TOWED VEHICLE OVERTURNED
022	CN BROKE	TRAILER CONNECTION BROKE
023	DETACH TRL	DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT
024	V DOOR OPN	VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE
025	WHEELOFF	WHEEL CAME OFF
026	HOOD UP	HOOD FLEW UP
028	LOAD SHIFT	LOST LOAD, LOAD MOVED OR SHIFTED
029	TIREFAIL	TIRE FAILURE
030	PET	PET: CAT, DOG AND SIMILAR
031	LVSTOCK	STOCK: COW, CALF, BULL, STEER, SHEEP, ETC.
032	HORSE	HORSE, MULE, OR DONKEY
033	HRSE&RID	HORSE AND RIDER
034	GAME	WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK)
035	DEER ELK	DEER OR ELK, WAPITI
036	ANML VEH	ANIMAL-DRAWN VEHICLE
037	CULVERT	CULVERT, OPEN LOW OR HIGH MANHOLE
038	ATENUATN	IMPACT ATTENUATOR
039	PK METER	PARKING METER
040	CURB	CURB (ALSO NARROW SIDEWALKS ON BRIDGES)
041	JIGGLE	JIGGLE BAR OR TRAFFIC SNAKE FOR CHANNELIZATION
042	GDRL END	LEADING EDGE OF GUARDRAIL
043	GARDRAIL	GUARD RAIL (NOT METAL MEDIAN BARRIER)
044	BARRIER	MEDIAN BARRIER (RAISED OR METAL)
045	WALL	RETAINING WALL OR TUNNEL WALL
046	BR RAIL	BRIDGE RAILING OR PARAPET (ON BRIDGE OR APPROACH)
047	BR ABUTMNT	BRIDGE ABUTMENT (INCLUDED "APPROACH END" THRU 2013)
048	BR COLMN	BRIDGE PILLAR OR COLUMN
049	BR GIRDR	BRIDGE GIRDER (HORIZONTAL BRIDGE STRUCTURE OVERHEAD)
050	ISLAND	TRAFFIC RAISED ISLAND
051	GORE	GORE
052	POLE UNK	POLE - TYPE UNKNOWN
053	POLE UTL	POLE - POWER OR TELEPHONE
054	ST LIGHT	POLE - STREET LIGHT ONLY
055	TRF SGNL	POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY
056	SGN BRDG	POLE - SIGN BRIDGE
057	STOPSIGN	STOP OR YIELD SIGN

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
058	OTH SIGN	OTHER SIGN, INCLUDING STREET SIGNS
059	HYDRANT	HYDRANT
060	MARKER	DELINEATOR OR MARKER (REFLECTOR POSTS)
061	MAILBOX	MAILBOX
062	TREE	TREE, STUMP OR SHRUBS
063	VEG OHED	TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC.
064	WIRE/CBL	WIRE OR CABLE ACROSS OR OVER THE ROAD
065	TEMP SGN	TEMPORARY SIGN OR BARRICADE IN ROAD, ETC.
066	PERM SGN	PERMANENT SIGN OR BARRICADE IN/OFF ROAD
067	SLIDE	SLIDES, FALLEN OR FALLING ROCKS
068	FRGN OBJ	FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL)
069	EQP WORK	EQUIPMENT WORKING IN/OFF ROAD
070	OTH EQP	OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT)
071	MAIN EQP	WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT
072	OTHER WALL	ROCK, BRICK OR OTHER SOLID WALL
073	IRRGL PVMT	OTHER BUMP (NOT SPEED BUMP), POTHOLE OR PAVEMENT IRREGULARITY (PER PAR)
074	OVERHD OBJ	OTHER OVERHEAD OBJECT (HIGHWAY SIGN, SIGNAL HEAD, ETC.); NOT BRIDGE
075	CAVE IN	BRIDGE OR ROAD CAVE IN
076	HI WATER	HIGH WATER
077	SNO BANK	SNOW BANK
078	LO-HI EDGE	LOW OR HIGH SHOULDER AT PAVEMENT EDGE
079	DITCH	CUT SLOPE OR DITCH EMBANKMENT
080	OBJ FRM MV	STRUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS)
081	FLY-OBJ	STRUCK BY ROCK OR OTHER MOVING OR FLYING OBJECT (NOT SET IN MOTION BY VEHICLE)
082	VEH HID	VEHICLE OBSCURED VIEW
083	VEG HID	VEGETATION OBSCURED VIEW
084	BLDG HID	VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC.
085	WIND GUST	WIND GUST
086	IMMERSED	VEHICLE IMMERSED IN BODY OF WATER
087	FIRE/EXP	FIRE OR EXPLOSION
088	FENC/BLD	FENCE OR BUILDING, ETC.
089	OTHR CRASH	CRASH RELATED TO ANOTHER SEPARATE CRASH
090	TO 1 SIDE	TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE
091	BUILDING	BUILDING OR OTHER STRUCTURE
092	PHANTOM	OTHER (PHANTOM) NON-CONTACT VEHICLE
093	CELL PHONE	CELL PHONE (ON PAR OR DRIVER IN USE)
094	VIOL GDL	TEENAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGM
095	GUY WIRE	GUY WIRE
096	BERM	BERM (EARTHEN OR GRAVEL MOUND)
097	GRAVEL	GRAVEL IN ROADWAY
098	ABR EDGE	ABRUPT EDGE
099	CELL WTNSD	CELL PHONE USE WITNESSED BY OTHER PARTICIPANT
100	UNK FIXD	FIXED OBJECT, UNKNOWN TYPE.
101	OTHER OBJ	NON-FIXED OBJECT, OTHER OR UNKNOWN TYPE
102	TEXTING	TEXTING
103	WZ WORKER	WORK ZONE WORKER
104	ON VEHICLE	PASSENGER RIDING ON VEHICLE EXTERIOR
105	PEDAL PSGR	PASSENGER RIDING ON PEDALCYCLE
106	MAN WHLCHR	PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR
107	MTR WHLCHR	PEDESTRIAN IN MOTORIZED WHEELCHAIR
108	OFFICER	LAW ENFORCEMENT / POLICE OFFICER
109	SUB-BIKE	"SUB-BIKE": PEDALCYCLIST INJURED SUBSEQUENT TO COLLISION, ETC.
110	N-MTR	NON-MOTORIST STRUCK VEHICLE
111	S CAR VS V	STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE
112	V VS S CAR	VEHICLE STRUCK STREET CAR/TROLLEY (ON RAILS OR OVERHEAD WIRE SYSTEM)
113	S CAR ROW	AT OR ON STREET CAR OR TROLLEY RIGHT-OF-WAY

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
114	RR EQUIP	VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS
115	DSTRCT GPS	DISTRACTED BY NAVIGATION SYSTEM OR GPS DEVICE
116	DSTRCT OTH	DISTRACTED BY OTHER ELECTRONIC DEVICE
117	RR GATE	RAIL CROSSING DROP-ARM GATE
118	EXPNSN JNT	EXPANSION JOINT
119	JERSEY BAR	JERSEY BARRIER
120	WIRE BAR	WIRE OR CABLE MEDIAN BARRIER
121	FENCE	FENCE
123	OBJ IN VEH	LOOSE OBJECT IN VEHICLE STRUCK OCCUPANT
124	SLIPPERY	SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE (NOT GRAVEL)
125	SHLDR	SHOULDER GAVE WAY
126	BOULDER	ROCK(S), BOULDER (NOT GRAVEL; NOT ROCK SLIDE)
127	LAND SLIDE	ROCK SLIDE OR LAND SLIDE
128	CURVE INV	CURVE PRESENT AT CRASH LOCATION
129	HILL INV	VERTICAL GRADE / HILL PRESENT AT CRASH LOCATION
130	CURVE HID	VIEW OBSCURED BY CURVE
131	HILL HID	VIEW OBSCURED BY VERTICAL GRADE / HILL
132	WINDOW HID	VIEW OBSCURED BY VEHICLE WINDOW CONDITIONS
133	SPRAY HID	VIEW OBSCURED BY WATER SPRAY
134	TORRENTIAL	TORRENTIAL RAIN (EXCEPTIONALLY HEAVY RAIN)

FUNCTIONAL CLASSIFICATION TRANSLATION LIST

FUNC CLASS	DESCRIPTION
01	RURAL PRINCIPAL ARTERIAL - INTERSTATE
02	RURAL PRINCIPAL ARTERIAL - OTHER
06	RURAL MINOR ARTERIAL
07	RURAL MAJOR COLLECTOR
08	RURAL MINOR COLLECTOR
09	RURAL LOCAL
11	URBAN PRINCIPAL ARTERIAL - INTERSTATE
12	URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP
14	URBAN PRINCIPAL ARTERIAL - OTHER
16	URBAN MINOR ARTERIAL
17	URBAN MAJOR COLLECTOR
18	URBAN MINOR COLLECTOR
19	URBAN LOCAL
78	UNKNOWN RURAL SYSTEM
79	UNKNOWN RURAL NON-SYSTEM
98	UNKNOWN URBAN SYSTEM
99	UNKNOWN URBAN NON-SYSTEM

HIGHWAY COMPONENT TRANSLATION LIST

CODE	DESCRIPTION
0	MAINLINE STATE HIGHWAY
1	COUPLET
3	FRONTAGE ROAD
6	CONNECTION
8	HIGHWAY - OTHER

INJURY SEVERITY CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
1	KILL	FATAL INJURY
2	INJA	INCAPACITATING INJURY - BLEEDING, BROKEN BONES
3	INJB	NON-INCAPACITATING INJURY
4	INJC	POSSIBLE INJURY - COMPLAINT OF PAIN
5	PRI	DIED PRIOR TO CRASH
7	NO<5	NO INJURY - 0 TO 4 YEARS OF AGE
9	NONE	PARTICIPANT UNINJURED, OVER THE AGE OF 4

LIGHT CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	DAY	DAYLIGHT
2	DLIT	DARKNESS - WITH STREET LIGHTS
3	DARK	DARKNESS - NO STREET LIGHTS
4	DAWN	DAWN (TWILIGHT)
5	DUSK	DUSK (TWILIGHT)

MEDIAN TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NO MEDIAN
1	RSDMD	SOLID MEDIAN BARRIER
2	DIVMD	EARTH, GRASS OR PAVED MEDIAN

MILEAGE TYPE CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
0	REGULAR MILEAGE
T	TEMPORARY
Y	SPUR
Z	OVERLAPPING

MOVEMENT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	STRGHT	STRAIGHT AHEAD
2	TURN-R	TURNING RIGHT
3	TURN-L	TURNING LEFT
4	U-TURN	MAKING A U-TURN
5	BACK	BACKING
6	STOP	STOPPED IN TRAFFIC
7	PRKD-P	PARKED - PROPERLY
8	PRKD-I	PARKED - IMPROPERLY
9	PARKNG	PARKING MANEUVER

NON-MOTORIST LOCATION CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
00	AT INTERSECTION - NOT IN ROADWAY
01	AT INTERSECTION - INSIDE CROSSWALK
02	AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK
03	AT INTERSECTION - IN ROADWAY, XWALK AVAIL UNKNWN
04	NOT AT INTERSECTION - IN ROADWAY
05	NOT AT INTERSECTION - ON SHOULDER
06	NOT AT INTERSECTION - ON MEDIAN
07	NOT AT INTERSECTION - WITHIN TRAFFIC RIGHT-OF-WAY
08	NOT AT INTERSECTION - IN BIKE PATH OR PARKING LANE
09	NOT-AT INTERSECTION - ON SIDEWALK
10	OUTSIDE TRAFFICWAY BOUNDARIES
13	AT INTERSECTION - IN BIKE LANE
14	NOT AT INTERSECTION - IN BIKE LANE
15	NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK
16	NOT AT INTERSECTION - IN PARKING LANE
18	OTHER, NOT IN ROADWAY
99	UNKNOWN LOCATION

ROAD CHARACTER CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	INTER	INTERSECTION
2	ALLEY	DRIVEWAY OR ALLEY
3	STRGHT	STRAIGHT ROADWAY
4	TRANS	TRANSITION
5	CURVE	CURVE (HORIZONTAL CURVE)
6	OPENAC	OPEN ACCESS OR TURNOUT
7	GRADE	GRADE (VERTICAL CURVE)
8	BRIDGE	BRIDGE STRUCTURE
9	TUNNEL	TUNNEL

PARTICIPANT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	OCC	UNKNOWN OCCUPANT TYPE
1	DRVR	DRIVER
2	PSNG	PASSENGER
3	PED	PEDESTRIAN
4	CONV	PEDESTRIAN USING A PEDESTRIAN CONVEYA
5	PTOW	PEDESTRIAN TOWING OR TRAILERING AN OB
6	BIKE	PEDALCYCLIST
7	BTOW	PEDALCYCLIST TOWING OR TRAILERING AN
8	PRKD	OCCUPANT OF A PARKED MOTOR VEHICLE
9	UNK	UNKNOWN TYPE OF NON-MOTORIST

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
000	NONE	NO CONTROL
001	TRF SIGNAL	TRAFFIC SIGNALS
002	FLASHBCN-R	FLASHING BEACON - RED (STOP)
003	FLASHBCN-A	FLASHING BEACON - AMBER (SLOW)
004	STOP SIGN	STOP SIGN
005	SLOW SIGN	SLOW SIGN
006	REG-SIGN	REGULATORY SIGN
007	YIELD	YIELD SIGN
008	WARNING	WARNING SIGN
009	CURVE	CURVE SIGN
010	SCHL X-ING	SCHOOL CROSSING SIGN OR SPECIAL SIGNAL
011	OFCR/FLAG	POLICE OFFICER, FLAGMAN - SCHOOL PATROL
012	BRDG-GATE	BRIDGE GATE - BARRIER
013	TEMP-BARR	TEMPORARY BARRIER
014	NO-PASS-ZN	NO PASSING ZONE
015	ONE-WAY	ONE-WAY STREET
016	CHANNEL	CHANNELIZATION
017	MEDIAN BAR	MEDIAN BARRIER
018	PILOT CAR	PILOT CAR
019	SP PED SIG	SPECIAL PEDESTRIAN SIGNAL
020	X-BUCK	CROSSBUCK
021	THR-GN-SIG	THROUGH GREEN ARROW OR SIGNAL
022	L-GRN-SIG	LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
023	R-GRN-SIG	RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
024	WIGWAG	WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE
025	X-BUCK WRN	CROSSBUCK AND ADVANCE WARNING
026	WW W/ GATE	FLASHING LIGHTS WITH DROP-ARM GATES
027	OVRHD SGNL	SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY)
028	SP RR STOP	SPECIAL RR STOP SIGN
029	ILUM GRD X	ILLUMINATED GRADE CROSSING
037	RAMP METER	METERED RAMPS
038	RUMBLE STR	RUMBLE STRIP
090	L-TURN REF	LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED)
091	R-TURN ALL	RIGHT TURN AT ALL TIMES SIGN, ETC.
092	EMR SGN/FL	EMERGENCY SIGNS OR FLARES
093	ACCEL LANE	ACCELERATION OR DECELERATION LANES
094	R-TURN PRO	RIGHT TURN PROHIBITED ON RED AFTER STOPPING
095	BUS STPSGN	BUS STOP SIGN AND RED LIGHTS

VEHICLE TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
00	PDO	NOT COLLECTED FOR PDO CRASHES
01	PSNGR CAR	PASSENGER CAR, PICKUP, LIGHT DELIVERY, ETC.
02	BOBTAIL	TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL)
03	FARM TRCTR	FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT
04	SEMI TOW	TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW
05	TRUCK	TRUCK WITH NON-DETACHABLE BED, PANEL, ETC.
06	MOPED	MOPED, MINIBIKE, SEATED MOTOR SCOOTER, MOTOR BIKE
07	SCHL BUS	SCHOOL BUS (INCLUDES VAN)
08	OTH BUS	OTHER BUS
09	MTRCYCLE	MOTORCYCLE, DIRT BIKE
10	OTHER	OTHER: FORKLIFT, BACKHOE, ETC.
11	MOTRHOME	MOTORHOME
12	TROLLEY	MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES)
13	ATV	ATV
14	MTRSCTR	MOTORIZED SCOOTER (STANDING)
15	SNOWMOBILE	SNOWMOBILE
99	UNKNOWN	UNKNOWN VEHICLE TYPE

099	UNKNOWN	UNKNOWN OR NOT DEFINITE

WEATHER CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	CLR	CLEAR
2	CLD	CLOUDY
3	RAIN	RAIN
4	SLT	SLEET
5	FOG	FOG
6	SNOW	SNOW
7	DUST	DUST
8	SMOK	SMOKE
9	ASH	ASH

Appendix D
Year 2020 Background Conditions
Traffic Analysis Worksheets

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	72	144	63	226	228	13	158	116	96	166
v/c Ratio	0.36	0.31	0.34	0.47	0.42	0.12	0.50	0.31	0.42	0.34
Control Delay	42.3	27.2	42.7	30.1	6.6	45.0	39.0	9.5	41.5	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.3	27.2	42.7	30.1	6.6	45.0	39.0	9.5	41.5	20.7
Queue Length 50th (ft)	32	53	28	90	0	6	68	0	42	42
Queue Length 95th (ft)	94	133	85	209	57	29	169	48	116	140
Internal Link Dist (ft)		465		3507			611			497
Turn Bay Length (ft)	260		320		230	260		280	260	
Base Capacity (vph)	701	1039	688	1084	952	598	1075	1010	665	939
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.14	0.09	0.21	0.24	0.02	0.15	0.11	0.14	0.18

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	129	4	58	208	210	12	145	107	88	77	75
Future Volume (vph)	66	129	4	58	208	210	12	145	107	88	77	75
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%			0%			-2%			2%	
Total Lost time (s)	5.0	5.3		5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.3	
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	1.00		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	1512		1421	1577	1282	1235	1564	1417	1372	1354	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1446	1512		1421	1577	1282	1235	1564	1417	1372	1354	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	140	4	63	226	228	13	158	116	96	84	82
RTOR Reduction (vph)	0	1	0	0	0	162	0	0	89	0	18	0
Lane Group Flow (vph)	72	143	0	63	226	66	13	158	27	96	148	0
Heavy Vehicles (%)	15%	15%	25%	17%	11%	16%	36%	13%	6%	20%	18%	19%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	7.6	23.1		7.2	22.7	22.7	1.1	18.0	18.0	9.1	26.0	
Effective Green, g (s)	7.6	23.1		7.2	22.7	22.7	1.1	18.0	18.0	9.1	26.0	
Actuated g/C Ratio	0.10	0.30		0.09	0.29	0.29	0.01	0.23	0.23	0.12	0.33	
Clearance Time (s)	5.0	5.3		5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.3	
Vehicle Extension (s)	2.3	5.0		2.3	5.0	5.0	2.3	2.0	2.0	2.3	2.0	
Lane Grp Cap (vph)	140	447		131	458	373	17	360	327	160	451	
v/s Ratio Prot	c0.05	0.09		0.04	c0.14		0.01	c0.10		c0.07	0.11	
v/s Ratio Perm						0.05			0.02			
v/c Ratio	0.51	0.32		0.48	0.49	0.18	0.76	0.44	0.08	0.60	0.33	
Uniform Delay, d1	33.4	21.3		33.6	22.9	20.7	38.3	25.7	23.5	32.7	19.5	
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	2.0	0.9		1.6	1.7	0.5	102.0	0.3	0.0	4.6	0.2	
Delay (s)	35.4	22.2		35.2	24.6	21.2	140.3	26.0	23.6	37.3	19.6	
Level of Service	D	C		D	C	C	F	C	C	D	B	
Approach Delay (s)		26.6			24.4			30.2			26.1	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	78.0	Sum of lost time (s)	20.6
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

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	30	341	3	14	512	11	39	1	26	2	1	14
Future Vol, veh/h	30	341	3	14	512	11	39	1	26	2	1	14
Conflicting Peds, #/hr	1	0	2	2	0	1	0	0	7	7	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	190	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	2	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	10	10	0	0	13	0	0	0	0	0	0	7
Mvmt Flow	37	416	4	17	624	13	48	1	32	2	1	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	639	0	0	422	0	0	1167	1166	427	1180	1161	632
Stage 1	-	-	-	-	-	-	493	493	-	666	666	-
Stage 2	-	-	-	-	-	-	674	673	-	514	495	-
Critical Hdwy	4.2	-	-	4.1	-	-	7.1	6.5	6.2	7.5	6.9	6.47
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.5	5.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.5	5.9	-
Follow-up Hdwy	2.29	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.363
Pot Cap-1 Maneuver	908	-	-	1148	-	-	172	196	632	148	173	455
Stage 1	-	-	-	-	-	-	562	550	-	420	428	-
Stage 2	-	-	-	-	-	-	448	457	-	517	520	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	908	-	-	1140	-	-	157	185	627	133	163	455
Mov Cap-2 Maneuver	-	-	-	-	-	-	157	185	-	133	163	-
Stage 1	-	-	-	-	-	-	538	527	-	403	421	-
Stage 2	-	-	-	-	-	-	424	450	-	467	498	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.2	27	16.8
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	157	576	908	-	-	1140	-	-	327
HCM Lane V/C Ratio	0.303	0.057	0.04	-	-	0.015	-	-	0.063
HCM Control Delay (s)	37.6	11.6	9.1	-	-	8.2	-	-	16.8
HCM Lane LOS	E	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.2	0.2	0.1	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	37	327	440	47	23	83
Future Vol, veh/h	37	327	440	47	23	83
Conflicting Peds, #/hr	3	0	0	3	0	0
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	82	82	82	82	82	82
Heavy Vehicles, %	0	10	12	2	0	18
Mvmt Flow	45	399	537	57	28	101

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	597	0	-	0	1057	568
Stage 1	-	-	-	-	568	-
Stage 2	-	-	-	-	489	-
Critical Hdwy	4.1	-	-	-	6.4	6.38
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.462
Pot Cap-1 Maneuver	989	-	-	-	251	493
Stage 1	-	-	-	-	571	-
Stage 2	-	-	-	-	621	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	989	-	-	-	235	492
Mov Cap-2 Maneuver	-	-	-	-	235	-
Stage 1	-	-	-	-	569	-
Stage 2	-	-	-	-	583	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	16
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	989	-	-	-	235	492
HCM Lane V/C Ratio	0.046	-	-	-	0.119	0.206
HCM Control Delay (s)	8.8	0	-	-	22.4	14.2
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4	0.8

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	329	7	3	452	4	2	1	2	3	1	4
Future Vol, veh/h	8	329	7	3	452	4	2	1	2	3	1	4
Conflicting Peds, #/hr	1	0	0	0	0	1	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	90	-	120	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	9	0	0	12	0	0	0	0	33	0	25
Mvmt Flow	9	362	8	3	497	4	2	1	2	3	1	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	502	0	0	362	0	0	887	888	362	887	885	500
Stage 1	-	-	-	-	-	-	379	379	-	506	506	-
Stage 2	-	-	-	-	-	-	508	509	-	381	379	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.43	6.5	6.45
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.43	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.43	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.797	4	3.525
Pot Cap-1 Maneuver	1073	-	-	1208	-	-	267	285	687	234	286	527
Stage 1	-	-	-	-	-	-	647	618	-	496	543	-
Stage 2	-	-	-	-	-	-	551	541	-	583	618	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1073	-	-	1208	-	-	262	282	687	230	283	526
Mov Cap-2 Maneuver	-	-	-	-	-	-	262	282	-	230	283	-
Stage 1	-	-	-	-	-	-	642	613	-	491	541	-
Stage 2	-	-	-	-	-	-	544	539	-	575	613	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.1	15.3	16.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	355	1073	-	-	1208	-	-	331
HCM Lane V/C Ratio	0.015	0.008	-	-	0.003	-	-	0.027
HCM Control Delay (s)	15.3	8.4	-	-	8	-	-	16.2
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Intersection	
Intersection Delay, s/veh	16.2
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	44	239	28	0	6	289	39	0	87	67	17
Future Vol, veh/h	0	44	239	28	0	6	289	39	0	87	67	17
Peak Hour Factor	0.92	0.91	0.91	0.91	0.92	0.91	0.91	0.91	0.92	0.91	0.91	0.91
Heavy Vehicles, %	2	19	8	7	2	17	11	5	2	7	8	0
Mvmt Flow	0	48	263	31	0	7	318	43	0	96	74	19
Number of Lanes	0	0	1	1	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	17.3	18.5	13.1
HCM LOS	C	C	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	51%	16%	0%	2%	28%
Vol Thru, %	39%	84%	0%	87%	35%
Vol Right, %	10%	0%	100%	12%	36%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	171	283	28	334	137
LT Vol	87	44	0	6	39
Through Vol	67	239	0	289	48
RT Vol	17	0	28	39	50
Lane Flow Rate	188	311	31	367	151
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.345	0.577	0.049	0.62	0.274
Departure Headway (Hd)	6.613	6.678	5.696	6.084	6.543
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	543	544	631	595	548
Service Time	4.658	4.389	3.407	4.095	4.59
HCM Lane V/C Ratio	0.346	0.572	0.049	0.617	0.276
HCM Control Delay	13.1	18.1	8.7	18.5	12.1
HCM Lane LOS	B	C	A	C	B
HCM 95th-tile Q	1.5	3.6	0.2	4.3	1.1

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	39	48	50
Future Vol, veh/h	0	39	48	50
Peak Hour Factor	0.92	0.91	0.91	0.91
Heavy Vehicles, %	2	8	13	8
Mvmt Flow	0	43	53	55
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	12.1
HCM LOS	B

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	124	288	170	177	137	27	175	123	226	312
v/c Ratio	0.60	0.68	0.66	0.40	0.30	0.27	0.64	0.38	0.67	0.55
Control Delay	63.0	48.7	60.2	37.7	7.7	65.8	58.2	11.9	54.8	35.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.0	48.7	60.2	37.7	7.7	65.8	58.2	11.9	54.8	35.5
Queue Length 50th (ft)	83	181	113	100	0	18	116	0	143	175
Queue Length 95th (ft)	189	358	241	210	51	61	241	57	#335	365
Internal Link Dist (ft)		465		3507			611			497
Turn Bay Length (ft)	260		320		230	260		280	260	
Base Capacity (vph)	441	796	457	760	694	445	803	723	444	737
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.36	0.37	0.23	0.20	0.06	0.22	0.17	0.51	0.42

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	251	17	158	165	127	25	163	114	210	197	93
Future Volume (vph)	115	251	17	158	165	127	25	163	114	210	197	93
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%			0%			-2%			2%	
Total Lost time (s)	5.0	5.3		5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.3	
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	1.00	1.00	1.00	0.98	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)	1525	1650		1583	1577	1293	1540	1667	1371	1538	1514	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1525	1650		1583	1577	1293	1540	1667	1371	1538	1514	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	124	270	18	170	177	137	27	175	123	226	212	100
RTOR Reduction (vph)	0	1	0	0	0	99	0	0	100	0	8	0
Lane Group Flow (vph)	124	287	0	170	177	38	27	175	23	226	304	0
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	9%	5%	6%	5%	11%	15%	9%	6%	7%	7%	7%	13%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	15.0	28.3		18.2	31.5	31.5	4.4	20.9	20.9	24.2	40.7	
Effective Green, g (s)	15.0	28.3		18.2	31.5	31.5	4.4	20.9	20.9	24.2	40.7	
Actuated g/C Ratio	0.13	0.25		0.16	0.28	0.28	0.04	0.19	0.19	0.22	0.36	
Clearance Time (s)	5.0	5.3		5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.3	
Vehicle Extension (s)	2.3	5.0		2.3	5.0	5.0	2.3	2.0	2.0	2.3	2.0	
Lane Grp Cap (vph)	203	416		256	442	363	60	310	255	331	549	
v/s Ratio Prot	0.08	c0.17		c0.11	c0.11		0.02	0.10		c0.15	c0.20	
v/s Ratio Perm						0.03			0.02			
v/c Ratio	0.61	0.69		0.66	0.40	0.11	0.45	0.56	0.09	0.68	0.55	
Uniform Delay, d1	45.8	38.0		44.1	32.7	29.9	52.7	41.5	37.8	40.5	28.5	
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	4.3	6.0		5.4	1.2	0.3	3.1	1.4	0.1	5.0	0.7	
Delay (s)	50.1	44.0		49.6	33.9	30.2	55.8	42.9	37.8	45.4	29.2	
Level of Service	D	D		D	C	C	E	D	D	D	C	
Approach Delay (s)		45.8			38.4			42.1			36.0	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	40.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	112.2	Sum of lost time (s)	20.6
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	654	11	22	613	15	17	1	10	6	1	23
Future Vol, veh/h	17	654	11	22	613	15	17	1	10	6	1	23
Conflicting Peds, #/hr	0	0	1	1	0	0	3	0	1	1	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	190	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	2	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	5	0	0	7	7	0	0	0	0	0	13
Mvmt Flow	19	719	12	24	674	16	19	1	11	7	1	25

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	690	0	0	732	0	0	1509	1501	727	1499	1499	685
Stage 1	-	-	-	-	-	-	763	763	-	730	730	-
Stage 2	-	-	-	-	-	-	746	738	-	769	769	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.5	6.9	6.53
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.5	5.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.5	5.9	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.417
Pot Cap-1 Maneuver	914	-	-	882	-	-	100	123	427	86	104	414
Stage 1	-	-	-	-	-	-	400	416	-	384	397	-
Stage 2	-	-	-	-	-	-	409	427	-	364	380	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	911	-	-	881	-	-	89	117	426	80	99	413
Mov Cap-2 Maneuver	-	-	-	-	-	-	89	117	-	80	99	-
Stage 1	-	-	-	-	-	-	391	407	-	376	386	-
Stage 2	-	-	-	-	-	-	371	415	-	346	372	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.3	40.1	25
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	89	344	911	-	-	881	-	-	213
HCM Lane V/C Ratio	0.21	0.035	0.021	-	-	0.027	-	-	0.155
HCM Control Delay (s)	55.9	15.8	9	-	-	9.2	-	-	25
HCM Lane LOS	F	C	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0.7	0.1	0.1	-	-	0.1	-	-	0.5

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	41	613	582	49	16	57
Future Vol, veh/h	41	613	582	49	16	57
Conflicting Peds, #/hr	2	0	0	2	0	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	92	92	92	92	92	92
Heavy Vehicles, %	2	7	8	2	0	2
Mvmt Flow	45	666	633	53	17	62

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	688	0	-	0	1416	662
Stage 1	-	-	-	-	661	-
Stage 2	-	-	-	-	755	-
Critical Hdwy	4.12	-	-	-	6.4	6.22
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.218	-	-	-	3.5	3.318
Pot Cap-1 Maneuver	906	-	-	-	153	462
Stage 1	-	-	-	-	517	-
Stage 2	-	-	-	-	468	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	905	-	-	-	140	461
Mov Cap-2 Maneuver	-	-	-	-	140	-
Stage 1	-	-	-	-	516	-
Stage 2	-	-	-	-	430	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	18.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	905	-	-	-	140	461
HCM Lane V/C Ratio	0.049	-	-	-	0.124	0.134
HCM Control Delay (s)	9.2	0	-	-	34.3	14
HCM Lane LOS	A	A	-	-	D	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.4	0.5

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	541	52	54	547	5	47	1	48	5	2	4
Future Vol, veh/h	4	541	52	54	547	5	47	1	48	5	2	4
Conflicting Peds, #/hr	7	0	0	0	0	7	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	90	-	120	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	75	6	4	0	9	20	0	0	2	60	50	0
Mvmt Flow	4	558	54	56	564	5	48	1	49	5	2	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	576	0	0	558	0	0	1247	1253	558	1276	1251	573
Stage 1	-	-	-	-	-	-	566	566	-	685	685	-
Stage 2	-	-	-	-	-	-	681	687	-	591	566	-
Critical Hdwy	4.85	-	-	4.1	-	-	7.1	6.5	6.22	7.7	7	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.7	6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.7	6	-
Follow-up Hdwy	2.875	-	-	2.2	-	-	3.5	4	3.318	4.04	4.45	3.3
Pot Cap-1 Maneuver	719	-	-	1023	-	-	152	174	529	109	140	523
Stage 1	-	-	-	-	-	-	513	511	-	357	383	-
Stage 2	-	-	-	-	-	-	444	450	-	406	438	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	719	-	-	1023	-	-	142	162	529	93	131	520
Mov Cap-2 Maneuver	-	-	-	-	-	-	142	162	-	93	131	-
Stage 1	-	-	-	-	-	-	510	508	-	353	360	-
Stage 2	-	-	-	-	-	-	414	423	-	365	436	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.8	33.2	32.3
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	224	719	-	-	1023	-	-	143
HCM Lane V/C Ratio	0.442	0.006	-	-	0.054	-	-	0.079
HCM Control Delay (s)	33.2	10	-	-	8.7	-	-	32.3
HCM Lane LOS	D	B	-	-	A	-	-	D
HCM 95th %tile Q(veh)	2.1	0	-	-	0.2	-	-	0.3

Intersection	
Intersection Delay, s/veh	39.3
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	66	330	82	0	21	341	41	0	98	79	28
Future Vol, veh/h	0	66	330	82	0	21	341	41	0	98	79	28
Peak Hour Factor	0.92	0.95	0.95	0.95	0.92	0.95	0.95	0.95	0.92	0.95	0.95	0.95
Heavy Vehicles, %	2	6	6	5	2	0	8	0	2	6	5	4
Mvmt Flow	0	69	347	86	0	22	359	43	0	103	83	29
Number of Lanes	0	0	1	1	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	48.9	47	20.6
HCM LOS	E	E	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	48%	17%	0%	5%	23%
Vol Thru, %	39%	83%	0%	85%	35%
Vol Right, %	14%	0%	100%	10%	42%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	205	396	82	403	287
LT Vol	98	66	0	21	66
Through Vol	79	330	0	341	100
RT Vol	28	0	82	41	121
Lane Flow Rate	216	417	86	424	302
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.516	0.937	0.175	0.893	0.667
Departure Headway (Hd)	8.601	8.093	7.284	7.576	7.952
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	419	450	495	479	453
Service Time	6.681	5.793	4.984	5.641	6.027
HCM Lane V/C Ratio	0.516	0.927	0.174	0.885	0.667
HCM Control Delay	20.6	56.7	11.5	47	25.7
HCM Lane LOS	C	F	B	E	D
HCM 95th-tile Q	2.9	10.9	0.6	9.8	4.8

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	66	100	121
Future Vol, veh/h	0	66	100	121
Peak Hour Factor	0.92	0.95	0.95	0.95
Heavy Vehicles, %	2	3	5	2
Mvmt Flow	0	69	105	127
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	25.7
HCM LOS	D

Appendix E
Year 2020 Total Conditions
Traffic Analysis Worksheets

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	72	166	77	241	243	13	158	137	117	166
v/c Ratio	0.40	0.39	0.41	0.53	0.45	0.13	0.55	0.37	0.51	0.30
Control Delay	46.4	30.3	46.2	32.6	6.9	48.8	42.9	10.0	45.0	20.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.4	30.3	46.2	32.6	6.9	48.8	42.9	10.0	45.0	20.4
Queue Length 50th (ft)	34	67	36	102	0	6	73	0	55	45
Queue Length 95th (ft)	100	165	104	235	62	31	179	54	143	145
Internal Link Dist (ft)		465		3507			611			497
Turn Bay Length (ft)	260		320		230	260		280	260	
Base Capacity (vph)	595	999	585	1042	929	508	1033	982	565	903
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.17	0.13	0.23	0.26	0.03	0.15	0.14	0.21	0.18

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	149	4	71	222	224	12	145	126	108	77	75
Future Volume (vph)	66	149	4	71	222	224	12	145	126	108	77	75
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%			0%			-2%			2%	
Total Lost time (s)	5.0	5.3		5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.3	
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	1.00		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	1513		1421	1577	1282	1235	1564	1417	1372	1354	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1446	1513		1421	1577	1282	1235	1564	1417	1372	1354	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	162	4	77	241	243	13	158	137	117	84	82
RTOR Reduction (vph)	0	1	0	0	0	176	0	0	105	0	17	0
Lane Group Flow (vph)	72	165	0	77	241	67	13	158	32	117	149	0
Heavy Vehicles (%)	15%	15%	25%	17%	11%	16%	36%	13%	6%	20%	18%	19%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	8.1	23.1		8.5	23.5	23.5	1.2	19.9	19.9	13.6	32.3	
Effective Green, g (s)	8.1	23.1		8.5	23.5	23.5	1.2	19.9	19.9	13.6	32.3	
Actuated g/C Ratio	0.09	0.27		0.10	0.27	0.27	0.01	0.23	0.23	0.16	0.38	
Clearance Time (s)	5.0	5.3		5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.3	
Vehicle Extension (s)	2.3	5.0		2.3	5.0	5.0	2.3	2.0	2.0	2.3	2.0	
Lane Grp Cap (vph)	136	407		140	432	351	17	363	329	217	510	
v/s Ratio Prot	0.05	0.11		c0.05	c0.15		0.01	c0.10		c0.09	0.11	
v/s Ratio Perm						0.05			0.02			
v/c Ratio	0.53	0.41		0.55	0.56	0.19	0.76	0.44	0.10	0.54	0.29	
Uniform Delay, d1	37.0	25.7		36.8	26.6	23.8	42.1	28.1	25.8	33.2	18.7	
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	2.4	1.4		3.3	2.6	0.6	102.0	0.3	0.0	1.7	0.1	
Delay (s)	39.4	27.1		40.1	29.3	24.4	144.1	28.4	25.9	34.9	18.8	
Level of Service	D	C		D	C	C	F	C	C	C	B	
Approach Delay (s)		30.8			28.6			32.2			25.5	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	85.7	Sum of lost time (s)	20.6
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	400	3	14	553	18	39	1	26	11	1	14
Future Vol, veh/h	30	400	3	14	553	18	39	1	26	11	1	14
Conflicting Peds, #/hr	1	0	2	2	0	1	0	0	7	7	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	190	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	2	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	10	10	0	0	13	0	0	0	0	0	0	7
Mvmt Flow	37	488	4	17	674	22	48	1	32	13	1	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	697	0	0	493	0	0	1294	1296	499	1307	1288	686
Stage 1	-	-	-	-	-	-	565	565	-	721	721	-
Stage 2	-	-	-	-	-	-	729	731	-	586	567	-
Critical Hdwy	4.2	-	-	4.1	-	-	7.1	6.5	6.2	7.5	6.9	6.47
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.5	5.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.5	5.9	-
Follow-up Hdwy	2.29	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.363
Pot Cap-1 Maneuver	863	-	-	1081	-	-	141	164	576	119	143	423
Stage 1	-	-	-	-	-	-	513	511	-	389	401	-
Stage 2	-	-	-	-	-	-	417	430	-	468	479	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	863	-	-	1074	-	-	128	154	571	106	134	423
Mov Cap-2 Maneuver	-	-	-	-	-	-	128	154	-	106	134	-
Stage 1	-	-	-	-	-	-	490	488	-	372	394	-
Stage 2	-	-	-	-	-	-	393	423	-	419	458	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.2	34	29.2
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	128	519	863	-	-	1074	-	-	180
HCM Lane V/C Ratio	0.372	0.063	0.042	-	-	0.016	-	-	0.176
HCM Control Delay (s)	48.9	12.4	9.4	-	-	8.4	-	-	29.2
HCM Lane LOS	E	B	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	1.5	0.2	0.1	-	-	0	-	-	0.6

Intersection	
Int Delay, s/veh	4.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	361	73	59	498	77	42
Future Vol, veh/h	361	73	59	498	77	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	75	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	10	0	0	12	0	0
Mvmt Flow	440	89	72	607	94	51

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	440	0	1191	440
Stage 1	-	-	-	-	440	-
Stage 2	-	-	-	-	751	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1131	-	209	621
Stage 1	-	-	-	-	653	-
Stage 2	-	-	-	-	470	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1131	-	196	621
Mov Cap-2 Maneuver	-	-	-	-	196	-
Stage 1	-	-	-	-	653	-
Stage 2	-	-	-	-	440	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	35.5
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	258	-	-	1131	-
HCM Lane V/C Ratio	0.562	-	-	0.064	-
HCM Control Delay (s)	35.5	-	-	8.4	-
HCM Lane LOS	E	-	-	A	-
HCM 95th %tile Q(veh)	3.2	-	-	0.2	-

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	37	324	40	124	431	47	39	7	84	23	9	83
Future Vol, veh/h	37	324	40	124	431	47	39	7	84	23	9	83
Conflicting Peds, #/hr	3	0	0	0	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	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	10	0	0	12	2	0	0	0	0	0	18
Mvmt Flow	45	395	49	151	526	57	48	9	102	28	11	101

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	586	0	0	444	0	0	1423	1398	420	1425	1394	557
Stage 1	-	-	-	-	-	-	510	510	-	860	860	-
Stage 2	-	-	-	-	-	-	913	888	-	565	534	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.38
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.462
Pot Cap-1 Maneuver	999	-	-	1127	-	-	115	142	638	114	143	501
Stage 1	-	-	-	-	-	-	550	541	-	353	376	-
Stage 2	-	-	-	-	-	-	330	365	-	513	528	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	999	-	-	1127	-	-	74	117	638	78	118	500
Mov Cap-2 Maneuver	-	-	-	-	-	-	74	117	-	78	118	-
Stage 1	-	-	-	-	-	-	525	517	-	336	325	-
Stage 2	-	-	-	-	-	-	220	315	-	404	504	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	1.8	45.4	29.7
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	74	475	999	-	-	1127	-	-	78	380
HCM Lane V/C Ratio	0.643	0.234	0.045	-	-	0.134	-	-	0.36	0.295
HCM Control Delay (s)	116.6	14.9	8.8	-	-	8.7	-	-	75.1	18.4
HCM Lane LOS	F	B	A	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	2.9	0.9	0.1	-	-	0.5	-	-	1.4	1.2

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	433	0	1	604	0	1
Future Vol, veh/h	433	0	1	604	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
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	82	82	82	82	82	82
Heavy Vehicles, %	10	0	0	12	0	0
Mvmt Flow	528	0	1	737	0	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	528	0	1267	528
Stage 1	-	-	-	-	528	-
Stage 2	-	-	-	-	739	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1049	-	188	554
Stage 1	-	-	-	-	596	-
Stage 2	-	-	-	-	476	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1049	-	188	554
Mov Cap-2 Maneuver	-	-	-	-	188	-
Stage 1	-	-	-	-	596	-
Stage 2	-	-	-	-	476	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	554	-	-	1049	-
HCM Lane V/C Ratio	0.002	-	-	0.001	-
HCM Control Delay (s)	11.5	-	-	8.4	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	411	7	3	568	4	2	1	2	3	1	4
Future Vol, veh/h	8	411	7	3	568	4	2	1	2	3	1	4
Conflicting Peds, #/hr	1	0	0	0	0	1	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	90	-	120	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	9	0	0	12	0	0	0	0	33	0	25
Mvmt Flow	9	452	8	3	624	4	2	1	2	3	1	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	630	0	0	452	0	0	1105	1105	452	1105	1103	627
Stage 1	-	-	-	-	-	-	469	469	-	634	634	-
Stage 2	-	-	-	-	-	-	636	636	-	471	469	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.43	6.5	6.45
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.43	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.43	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.797	4	3.525
Pot Cap-1 Maneuver	962	-	-	1119	-	-	190	213	612	164	213	444
Stage 1	-	-	-	-	-	-	579	564	-	419	476	-
Stage 2	-	-	-	-	-	-	469	475	-	519	564	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	962	-	-	1119	-	-	186	210	612	161	210	444
Mov Cap-2 Maneuver	-	-	-	-	-	-	186	210	-	161	210	-
Stage 1	-	-	-	-	-	-	574	559	-	415	474	-
Stage 2	-	-	-	-	-	-	462	473	-	511	559	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	18.8	20.1
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	266	962	-	-	1119	-	-	247
HCM Lane V/C Ratio	0.021	0.009	-	-	0.003	-	-	0.036
HCM Control Delay (s)	18.8	8.8	-	-	8.2	-	-	20.1
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Intersection Delay, s/veh	27.4
Intersection LOS	D

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	72	279	42	0	6	346	39	0	106	67	17
Future Vol, veh/h	0	72	279	42	0	6	346	39	0	106	67	17
Peak Hour Factor	0.92	0.91	0.91	0.91	0.92	0.91	0.91	0.91	0.92	0.91	0.91	0.91
Heavy Vehicles, %	2	19	8	7	2	17	11	5	2	7	8	0
Mvmt Flow	0	79	307	46	0	7	380	43	0	116	74	19
Number of Lanes	0	0	1	1	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	31	34.3	16.7
HCM LOS	D	D	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	56%	21%	0%	2%	22%
Vol Thru, %	35%	79%	0%	88%	27%
Vol Right, %	9%	0%	100%	10%	51%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	190	351	42	391	177
LT Vol	106	72	0	6	39
Through Vol	67	279	0	346	48
RT Vol	17	0	42	39	90
Lane Flow Rate	209	386	46	430	195
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.443	0.797	0.082	0.822	0.401
Departure Headway (Hd)	7.64	7.438	6.423	6.883	7.42
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	470	490	560	528	484
Service Time	5.701	5.154	4.14	4.898	5.482
HCM Lane V/C Ratio	0.445	0.788	0.082	0.814	0.403
HCM Control Delay	16.7	33.5	9.7	34.3	15.4
HCM Lane LOS	C	D	A	D	C
HCM 95th-tile Q	2.2	7.4	0.3	8.1	1.9

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	39	48	90
Future Vol, veh/h	0	39	48	90
Peak Hour Factor	0.92	0.91	0.91	0.91
Heavy Vehicles, %	2	8	13	8
Mvmt Flow	0	43	53	99
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	15.4
HCM LOS	C

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	124	309	186	195	155	27	175	142	247	312
v/c Ratio	0.63	0.72	0.71	0.42	0.32	0.29	0.67	0.43	0.68	0.54
Control Delay	68.2	52.5	65.4	38.7	7.1	69.9	63.3	12.0	55.6	36.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.2	52.5	65.4	38.7	7.1	69.9	63.3	12.0	55.6	36.5
Queue Length 50th (ft)	91	216	136	120	0	20	128	0	168	186
Queue Length 95th (ft)	193	388	268	231	54	62	248	62	#400	377
Internal Link Dist (ft)		465		3507			611			497
Turn Bay Length (ft)	260		320		230	260		280	260	
Base Capacity (vph)	403	729	418	699	659	407	735	682	407	676
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.42	0.44	0.28	0.24	0.07	0.24	0.21	0.61	0.46

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	271	17	173	181	144	25	163	132	230	197	93
Future Volume (vph)	115	271	17	173	181	144	25	163	132	230	197	93
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%			0%			-2%			2%	
Total Lost time (s)	5.0	5.3		5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.3	
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	1.00	1.00	1.00	0.98	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)	1525	1651		1583	1577	1293	1540	1667	1371	1538	1514	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1525	1651		1583	1577	1293	1540	1667	1371	1538	1514	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	124	291	18	186	195	155	27	175	142	247	212	100
RTOR Reduction (vph)	0	1	0	0	0	110	0	0	117	0	8	0
Lane Group Flow (vph)	124	308	0	186	195	45	27	175	25	247	304	0
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	9%	5%	6%	5%	11%	15%	9%	6%	7%	7%	7%	13%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	15.3	30.6		19.7	35.0	35.0	4.5	21.2	21.2	28.2	44.9	
Effective Green, g (s)	15.3	30.6		19.7	35.0	35.0	4.5	21.2	21.2	28.2	44.9	
Actuated g/C Ratio	0.13	0.25		0.16	0.29	0.29	0.04	0.18	0.18	0.23	0.37	
Clearance Time (s)	5.0	5.3		5.0	5.3	5.3	5.0	5.3	5.3	5.0	5.3	
Vehicle Extension (s)	2.3	5.0		2.3	5.0	5.0	2.3	2.0	2.0	2.3	2.0	
Lane Grp Cap (vph)	193	419		259	458	376	57	293	241	360	565	
v/s Ratio Prot	0.08	c0.19		c0.12	c0.12		0.02	0.10		c0.16	c0.20	
v/s Ratio Perm						0.03			0.02			
v/c Ratio	0.64	0.73		0.72	0.43	0.12	0.47	0.60	0.10	0.69	0.54	
Uniform Delay, d1	49.9	41.1		47.7	34.5	31.3	56.7	45.6	41.6	42.0	29.6	
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	5.9	7.9		8.2	1.3	0.3	3.6	2.2	0.1	4.7	0.5	
Delay (s)	55.8	49.0		55.9	35.9	31.6	60.3	47.8	41.6	46.7	30.1	
Level of Service	E	D		E	D	C	E	D	D	D	C	
Approach Delay (s)		51.0			41.6			46.2			37.4	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	43.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.3	Sum of lost time (s)	20.6
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	712	11	22	661	22	17	1	10	15	1	23
Future Vol, veh/h	17	712	11	22	661	22	17	1	10	15	1	23
Conflicting Peds, #/hr	0	0	1	1	0	0	3	0	1	1	0	3
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	190	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	2	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	5	0	0	7	7	0	0	0	0	0	13
Mvmt Flow	19	782	12	24	726	24	19	1	11	16	1	25

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	751	0	0	796	0	0	1630	1626	790	1620	1620	741
Stage 1	-	-	-	-	-	-	827	827	-	787	787	-
Stage 2	-	-	-	-	-	-	803	799	-	833	833	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.5	6.9	6.53
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.5	5.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.5	5.9	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.417
Pot Cap-1 Maneuver	868	-	-	835	-	-	82	103	393	70	87	383
Stage 1	-	-	-	-	-	-	369	389	-	355	372	-
Stage 2	-	-	-	-	-	-	380	401	-	334	352	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	866	-	-	834	-	-	73	98	392	65	83	382
Mov Cap-2 Maneuver	-	-	-	-	-	-	73	98	-	65	83	-
Stage 1	-	-	-	-	-	-	361	380	-	347	361	-
Stage 2	-	-	-	-	-	-	343	389	-	316	344	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.3	49.6	46.2
HCM LOS			E	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	73	308	866	-	-	834	-	-	129
HCM Lane V/C Ratio	0.256	0.039	0.022	-	-	0.029	-	-	0.332
HCM Control Delay (s)	70.5	17.2	9.2	-	-	9.4	-	-	46.2
HCM Lane LOS	F	C	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	0.9	0.1	0.1	-	-	0.1	-	-	1.3

Intersection	
Int Delay, s/veh	6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	641	82	56	623	75	48
Future Vol, veh/h	641	82	56	623	75	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	75	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	7	0	0	8	0	0
Mvmt Flow	697	89	61	677	82	52

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	697	0	1496	697
Stage 1	-	-	-	-	697	-
Stage 2	-	-	-	-	799	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	909	-	137	444
Stage 1	-	-	-	-	498	-
Stage 2	-	-	-	-	446	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	909	-	128	444
Mov Cap-2 Maneuver	-	-	-	-	128	-
Stage 1	-	-	-	-	498	-
Stage 2	-	-	-	-	416	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	70
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	177	-	-	909	-
HCM Lane V/C Ratio	0.755	-	-	0.067	-
HCM Control Delay (s)	70	-	-	9.2	-
HCM Lane LOS	F	-	-	A	-
HCM 95th %tile Q(veh)	4.9	-	-	0.2	-

Intersection	
Int Delay, s/veh	12.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	41	596	50	123	573	49	45	8	111	16	10	57
Future Vol, veh/h	41	596	50	123	573	49	45	8	111	16	10	57
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	0	0	1
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	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	7	2	2	8	2	2	2	2	0	2	2
Mvmt Flow	45	648	54	134	623	53	49	9	121	17	11	62

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	678	0	0	702	0	0	1718	1709	675	1748	1710	652
Stage 1	-	-	-	-	-	-	764	764	-	919	919	-
Stage 2	-	-	-	-	-	-	954	945	-	829	791	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.1	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.1	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.5	4.018	3.318
Pot Cap-1 Maneuver	914	-	-	895	-	-	71	91	454	68	91	468
Stage 1	-	-	-	-	-	-	396	413	-	328	350	-
Stage 2	-	-	-	-	-	-	311	340	-	368	401	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	913	-	-	895	-	-	~ 47	73	454	39	73	467
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 47	73	-	39	73	-
Stage 1	-	-	-	-	-	-	376	393	-	311	297	-
Stage 2	-	-	-	-	-	-	221	289	-	251	381	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	1.6	93.1	49.8
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	47	336	913	-	-	895	-	-	39	259
HCM Lane V/C Ratio	1.041	0.385	0.049	-	-	0.149	-	-	0.446	0.281
HCM Control Delay (s)	280.4	22.3	9.1	-	-	9.7	-	-	157.2	24.2
HCM Lane LOS	F	C	A	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	4.4	1.8	0.2	-	-	0.5	-	-	1.5	1.1

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	723	1	1	748	0	1
Future Vol, veh/h	723	1	1	748	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
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	92	92	92	92	92	92
Heavy Vehicles, %	7	0	0	8	0	0
Mvmt Flow	786	1	1	813	0	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	787	0	1601	786
Stage 1	-	-	-	-	786	-
Stage 2	-	-	-	-	815	-
Critical Hdwy	-	-	4.1	-	7.1	6.2
Critical Hdwy Stg 1	-	-	-	-	6.1	-
Critical Hdwy Stg 2	-	-	-	-	6.1	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	841	-	86	395
Stage 1	-	-	-	-	388	-
Stage 2	-	-	-	-	374	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	841	-	86	395
Mov Cap-2 Maneuver	-	-	-	-	86	-
Stage 1	-	-	-	-	388	-
Stage 2	-	-	-	-	374	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	395	-	-	841	-
HCM Lane V/C Ratio	0.003	-	-	0.001	-
HCM Control Delay (s)	14.1	-	-	9.3	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	635	52	54	662	5	47	1	48	5	2	4
Future Vol, veh/h	4	635	52	54	662	5	47	1	48	5	2	4
Conflicting Peds, #/hr	7	0	0	0	0	7	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	90	-	120	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	75	6	4	0	9	20	0	0	2	60	50	0
Mvmt Flow	4	655	54	56	682	5	48	1	49	5	2	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	695	0	0	655	0	0	1462	1469	655	1491	1466	692
Stage 1	-	-	-	-	-	-	663	663	-	803	803	-
Stage 2	-	-	-	-	-	-	799	806	-	688	663	-
Critical Hdwy	4.85	-	-	4.1	-	-	7.1	6.5	6.22	7.7	7	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.7	6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.7	6	-
Follow-up Hdwy	2.875	-	-	2.2	-	-	3.5	4	3.318	4.04	4.45	3.3
Pot Cap-1 Maneuver	640	-	-	942	-	-	108	129	466	76	101	447
Stage 1	-	-	-	-	-	-	454	462	-	303	335	-
Stage 2	-	-	-	-	-	-	382	398	-	355	393	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	640	-	-	942	-	-	100	120	466	64	94	444
Mov Cap-2 Maneuver	-	-	-	-	-	-	100	120	-	64	94	-
Stage 1	-	-	-	-	-	-	451	459	-	299	313	-
Stage 2	-	-	-	-	-	-	354	372	-	315	391	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.7	55.1	45.1
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	165	640	-	-	942	-	-	101
HCM Lane V/C Ratio	0.6	0.006	-	-	0.059	-	-	0.112
HCM Control Delay (s)	55.1	10.7	-	-	9.1	-	-	45.1
HCM Lane LOS	F	B	-	-	A	-	-	E
HCM 95th %tile Q(veh)	3.2	0	-	-	0.2	-	-	0.4

Intersection	
Intersection Delay, s/veh	82.7
Intersection LOS	F

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	98	377	97	0	21	399	41	0	117	79	28
Future Vol, veh/h	0	98	377	97	0	21	399	41	0	117	79	28
Peak Hour Factor	0.92	0.95	0.95	0.95	0.92	0.95	0.95	0.95	0.92	0.95	0.95	0.95
Heavy Vehicles, %	2	6	6	5	2	0	8	0	2	6	5	4
Mvmt Flow	0	103	397	102	0	22	420	43	0	123	83	29
Number of Lanes	0	0	1	1	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	115.4	100.6	26.7
HCM LOS	F	F	D

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	52%	21%	0%	5%	20%
Vol Thru, %	35%	79%	0%	87%	31%
Vol Right, %	12%	0%	100%	9%	49%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	224	475	97	461	325
LT Vol	117	98	0	21	66
Through Vol	79	377	0	399	100
RT Vol	28	0	97	41	159
Lane Flow Rate	236	500	102	485	342
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.597	1.192	0.221	1.093	0.788
Departure Headway (Hd)	9.954	8.903	8.069	8.542	9.027
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	365	410	447	427	404
Service Time	7.954	6.603	5.769	6.542	7.027
HCM Lane V/C Ratio	0.647	1.22	0.228	1.136	0.847
HCM Control Delay	26.7	136.3	13	100.6	38.3
HCM Lane LOS	D	F	B	F	E
HCM 95th-tile Q	3.7	19.1	0.8	15.8	6.8

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	66	100	159
Future Vol, veh/h	0	66	100	159
Peak Hour Factor	0.92	0.95	0.95	0.95
Heavy Vehicles, %	2	3	5	2
Mvmt Flow	0	69	105	167
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	38.3
HCM LOS	E

Appendix F
Signal Warrant Analysis Worksheets

KITTELSON & ASSOCIATES, INC.
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230

Project #: 23301
Project Name: Cascade Center
Analyst: ZHB
Date: 1/11/2019
File: K:\H_Projects\23\23301 - Molalla Commercial Project\excel\[Signal Warrant_OR 211 Leroy total.xls]Data Input
Intersection: OR 211/Leroy Ave
Scenario: Total Traffic

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-
#9	Intersection Near a Grade Crossing	No	-

Input Parameters

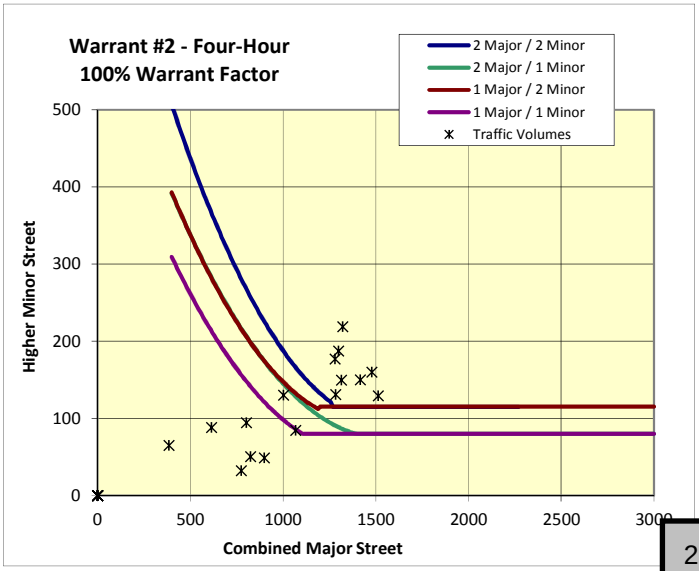
Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Daily

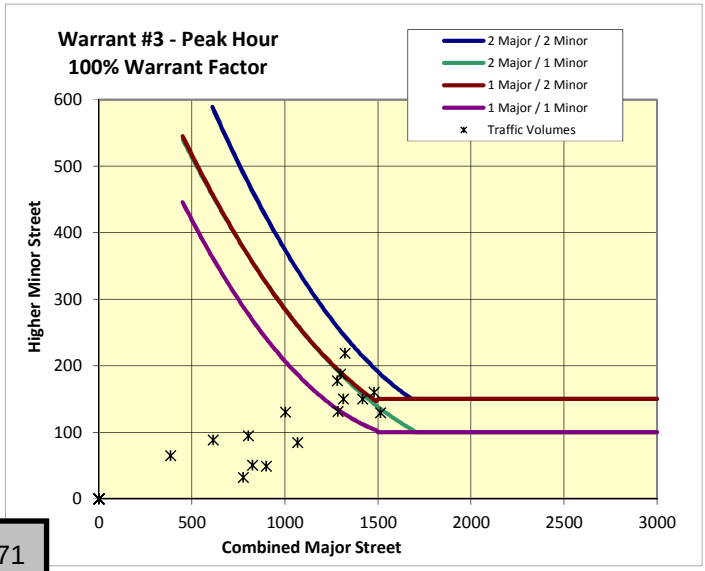
Analysis Traffic Volumes

Hour Begin	Hour End	Major Street EB	Major Street WB	Minor Street NB	Minor Street SB
12:00 AM	1:00 AM	0	0	0	0
1:00 AM		0	0	0	0
2:00 AM		0	0	0	0
3:00 AM		0	0	0	0
4:00 AM		0	0	0	0
5:00 AM		0	0	0	0
6:00 AM		287	489	3	32
7:00 AM		401	602	130	115
8:00 AM		370	455	25	50
9:00 AM		390	509	49	44
10:00 AM		452	617	85	33
11:00 AM		569	712	177	52
12:00 PM		643	680	219	59
1:00 PM		633	667	187	51
2:00 PM		629	685	150	80
3:00 PM		747	733	160	82
4:00 PM		786	728	129	73
5:00 PM		682	736	150	82
6:00 PM		697	588	131	97
7:00 PM		403	401	94	54
8:00 PM		301	315	88	30
9:00 PM		219	167	65	16
10:00 PM		0	0	0	0
11:00 PM		0	0	0	0

Warrant #1 - Eight Hour

Warrant Factor	Condition	Major Street Requirement	Minor Street Requirement	Hours That Condition Is Met	Condition for Warrant Factor Met?	Signal Warrant Met?
100%	A	500	150	6	No	**Yes**
	B	750	75	11	Yes	
80%	A	400	120	9	Yes	**Yes**
	B	600	60	12	Yes	
70%	A	350	105	9	Yes	**Yes**
	B	525	53	12	Yes	
56%	A	280	84	12	Yes	**Yes**
	B	420	42	14	Yes	





KITTELSON & ASSOCIATES, INC.
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230

Project #: 23301
Project Name: Cascade Center
Analyst: ZHB
Date: 1/14/2019
File: K:\H_Projects\23\23301 - Molalla Commercial Project\excel\[Signal Warrant_OR 211 Molalla.xls]Data Input
Intersection: OR 211/Molalla Ave
Scenario: Existing Traffic (No SF), Estimated

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	Yes
#2	Four-Hour Vehicular volume	Yes	Yes
#3	Peak Hour	Yes	Yes
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-
#9	Intersection Near a Grade Crossing	No	-

Analysis Traffic Volumes

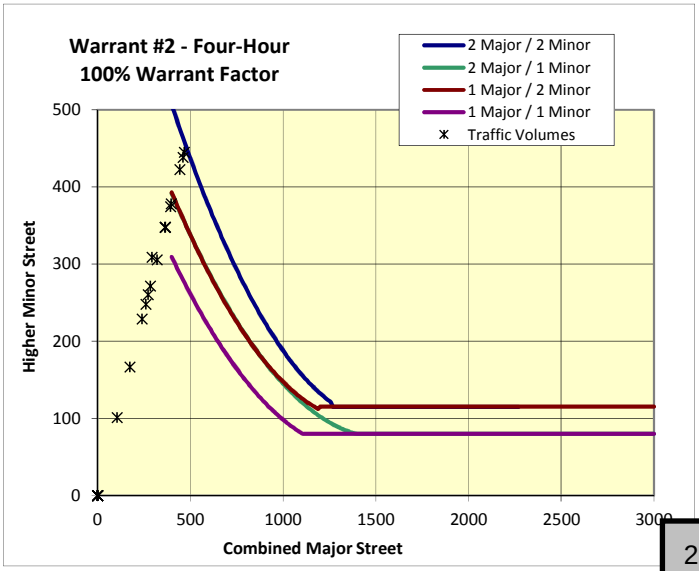
Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
12:00 AM	1:00 AM	0	0	0	0
1:00 AM		0	0	0	0
2:00 AM		0	0	0	0
3:00 AM		0	0	0	0
4:00 AM		0	0	0	0
5:00 AM		0	0	0	0
6:00 AM		109	152	248	208
7:00 AM		163	131	289	309
8:00 AM		114	160	260	218
9:00 AM		119	166	271	227
10:00 AM		134	187	306	256
11:00 AM		152	213	347	291
12:00 PM		152	213	348	292
1:00 PM		152	213	348	291
2:00 PM		164	230	374	314
3:00 PM		185	259	422	354
4:00 PM		192	269	438	367
5:00 PM		195	273	445	373
6:00 PM		166	232	378	317
7:00 PM		100	140	229	192
8:00 PM		73	102	167	140
9:00 PM		44	62	101	85
10:00 PM		0	0	0	0
11:00 PM		0	0	0	0

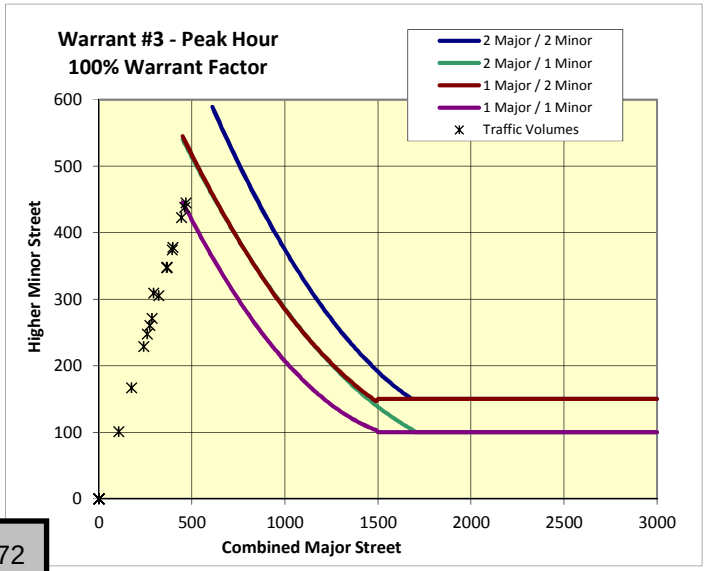
Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Minor
East-West Approach =	Major
Major Street Thru Lanes =	1
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	Yes
Warrant Factor	70%
Peak Hour or Daily Count?	Daily

Warrant #1 - Eight Hour

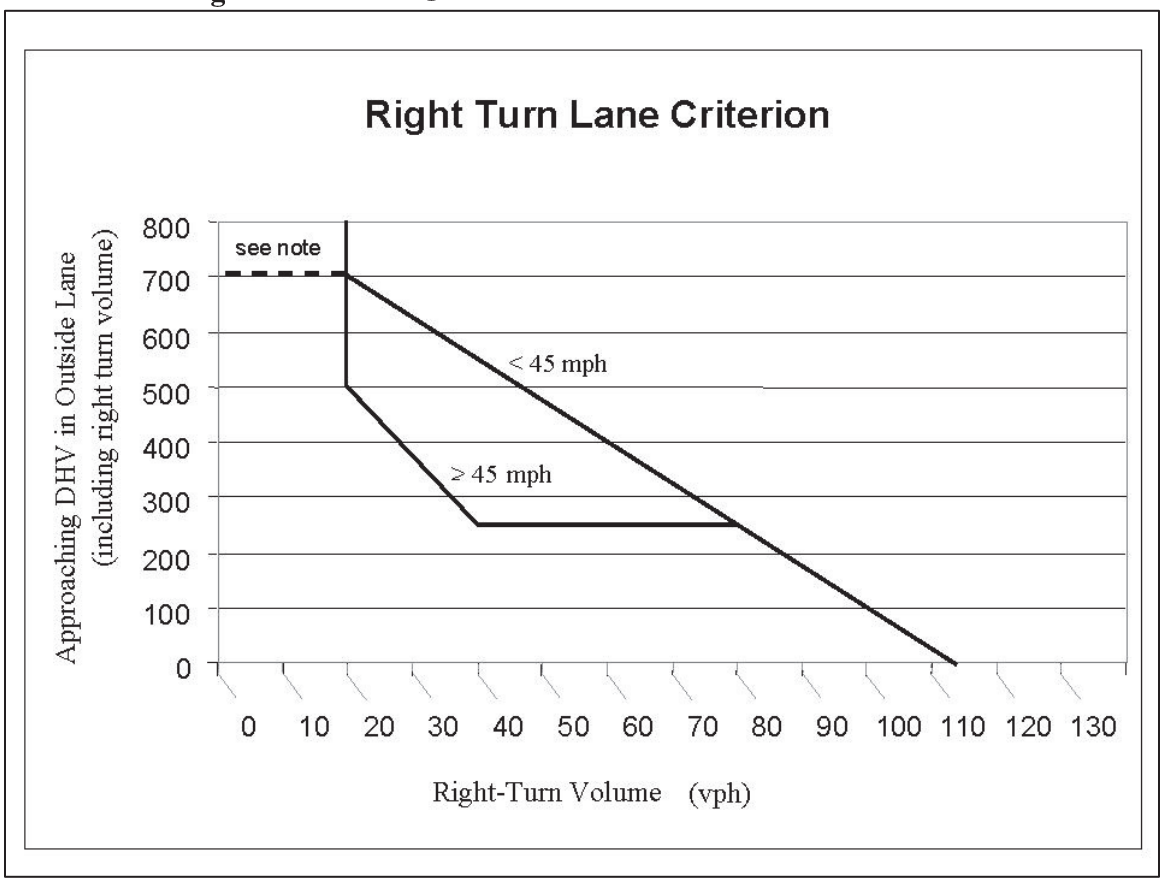
Warrant Factor	Condition	Major Street Requirement	Minor Street Requirement	Hours That Condition Is Met	Condition for Warrant Factor Met?	Signal Warrant Met?
100%	A	500	150	0	No	**No**
	B	750	75	0	No	
80%	A	400	120	3	No	**No**
	B	600	60	0	No	
70%	A	350	105	8	Yes	**Yes**
	B	525	53	0	No	
56%	A	280	84	11	Yes	**Yes**
	B	420	42	3	No	





Appendix G
Turn Lane Criteria Analysis Worksheets

Exhibit 12-2 Right Turn Lane Criterion



Note: 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.

Criterion 2: Crash Experience

The crash experience criterion is satisfied when:

1. Adequate trial of other remedies with satisfactory observance and enforcement has failed to reduce the accident frequency; **and**
2. A history of crashes of the type susceptible to correction by a right turn lane; **and**
3. The safety benefits outweigh the associated improvements costs; **and**
4. The installation of the right turn lane minimizes impacts to the safety of vehicles, bicycles or pedestrians along the roadway.

Criterion 3: Special Cases

1. **Railroad Crossings**: If a railroad is parallel to the roadway and adversely affects right turns, a worst case scenario should be used in determining the storage requirements for the right turn lane design. The right turn lane storage length depends on the amount of time the roadway is closed, the expected number of vehicle arrivals and the location of the crossing or other obstruction. The analysis should consider all of the variables influencing the design of the right turn lane and may allow a design for conditions other than the worst case storage requirements, providing safety is not compromised.

Appendix H
Year 2020 Total Conditions with Mitigation Traffic Analysis Worksheets

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	45	444	151	583	48	111	28	112
v/c Ratio	0.10	0.43	0.27	0.58	0.20	0.29	0.12	0.33
Control Delay	5.0	6.7	6.4	8.8	17.4	7.5	16.4	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.0	6.7	6.4	8.8	17.4	7.5	16.4	8.4
Queue Length 50th (ft)	4	45	14	69	8	1	5	2
Queue Length 95th (ft)	14	95	37	143	32	29	22	29
Internal Link Dist (ft)		324		325		335		304
Turn Bay Length (ft)	100		100		100		100	
Base Capacity (vph)	674	1538	855	1508	1059	1344	1059	1162
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.29	0.18	0.39	0.05	0.08	0.03	0.10

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	324	40	124	431	47	39	7	84	23	9	83
Future Volume (vph)	37	324	40	124	431	47	39	7	84	23	9	83
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.0	5.0		5.0	5.0		4.5	4.5		4.5	4.5	
Lane Util. Factor	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		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.86		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1661	1580		1662	1550		1662	1509		1662	1302	
Flt Permitted	0.40	1.00		0.50	1.00		0.68	1.00		0.69	1.00	
Satd. Flow (perm)	693	1580		878	1550		1198	1509		1200	1302	
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	45	395	49	151	526	57	48	9	102	28	11	101
RTOR Reduction (vph)	0	4	0	0	4	0	0	86	0	0	85	0
Lane Group Flow (vph)	45	440	0	151	579	0	48	25	0	28	27	0
Confl. Peds. (#/hr)	3					3						
Heavy Vehicles (%)	0%	10%	0%	0%	12%	2%	0%	0%	0%	0%	0%	18%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	23.5	23.5		23.5	23.5		6.3	6.3		6.3	6.3	
Effective Green, g (s)	23.5	23.5		23.5	23.5		6.3	6.3		6.3	6.3	
Actuated g/C Ratio	0.60	0.60		0.60	0.60		0.16	0.16		0.16	0.16	
Clearance Time (s)	5.0	5.0		5.0	5.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	414	944		525	926		192	241		192	208	
v/s Ratio Prot		0.28			c0.37			0.02			0.02	
v/s Ratio Perm	0.06			0.17			c0.04			0.02		
v/c Ratio	0.11	0.47		0.29	0.63		0.25	0.11		0.15	0.13	
Uniform Delay, d1	3.4	4.4		3.8	5.1		14.4	14.1		14.2	14.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.4		0.3	1.3		0.7	0.2		0.4	0.3	
Delay (s)	3.5	4.8		4.1	6.4		15.1	14.3		14.5	14.4	
Level of Service	A	A		A	A		B	B		B	B	
Approach Delay (s)		4.7			5.9			14.5			14.5	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	7.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	39.3	Sum of lost time (s)	9.5
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

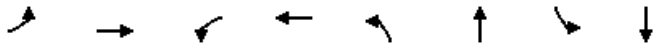
Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	386	46	430	209	195
v/c Ratio	0.64	0.07	0.62	0.51	0.41
Control Delay	15.3	3.3	13.8	17.6	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	15.3	3.3	13.8	17.6	11.7
Queue Length 50th (ft)	59	0	63	33	19
Queue Length 95th (ft)	179	14	187	117	83
Internal Link Dist (ft)	803		299	553	291
Turn Bay Length (ft)		190			
Base Capacity (vph)	1262	1267	1437	1058	1122
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.31	0.04	0.30	0.20	0.17

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	279	42	6	346	39	106	67	17	39	48	90
Future Volume (vph)	72	279	42	6	346	39	106	67	17	39	48	90
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.5	4.5		4.5			4.5			4.5	
Lane Util. Factor		1.00	1.00		1.00			1.00			1.00	
Frpb, ped/bikes		1.00	0.98		1.00			1.00			0.99	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		0.99			0.99			0.93	
Flt Protected		0.99	1.00		1.00			0.97			0.99	
Satd. Flow (prot)		1571	1362		1558			1576			1459	
Flt Permitted		0.86	1.00		0.99			0.78			0.90	
Satd. Flow (perm)		1361	1362		1549			1259			1324	
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)	79	307	46	7	380	43	116	74	19	43	53	99
RTOR Reduction (vph)	0	0	25	0	5	0	0	5	0	0	46	0
Lane Group Flow (vph)	0	386	21	0	425	0	0	204	0	0	149	0
Confl. Peds. (#/hr)	2		1	1		2	1					1
Heavy Vehicles (%)	19%	8%	7%	17%	11%	5%	7%	8%	0%	8%	13%	8%
Parking (#/hr)						2			2			2
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)		19.0	19.0		19.0			13.7			13.7	
Effective Green, g (s)		19.0	19.0		19.0			13.7			13.7	
Actuated g/C Ratio		0.46	0.46		0.46			0.33			0.33	
Clearance Time (s)		4.5	4.5		4.5			4.5			4.5	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		620	620		705			413			434	
v/s Ratio Prot												
v/s Ratio Perm		c0.28	0.02		0.27			c0.16			0.11	
v/c Ratio		0.62	0.03		0.60			0.49			0.34	
Uniform Delay, d1		8.6	6.3		8.5			11.2			10.6	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		2.0	0.0		1.5			0.9			0.5	
Delay (s)		10.6	6.3		10.0			12.2			11.1	
Level of Service		B	A		A			B			B	
Approach Delay (s)		10.1			10.0			12.2			11.1	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	10.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	41.7	Sum of lost time (s)	9.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	45	702	134	676	49	130	17	73
v/c Ratio	0.13	0.71	0.42	0.69	0.23	0.36	0.08	0.23
Control Delay	4.4	10.3	8.9	9.9	23.6	9.6	22.0	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.4	10.3	8.9	9.9	23.6	9.6	22.0	10.9
Queue Length 50th (ft)	4	92	14	86	11	2	4	2
Queue Length 95th (ft)	14	205	46	194	46	45	22	35
Internal Link Dist (ft)		283		285		255		304
Turn Bay Length (ft)	100		100		100		100	
Base Capacity (vph)	504	1478	478	1462	954	1184	926	1168
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.47	0.28	0.46	0.05	0.11	0.02	0.06

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	596	50	123	573	49	45	8	111	16	10	57
Future Volume (vph)	41	596	50	123	573	49	45	8	111	16	10	57
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	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		1.00	1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.86		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1629	1622		1630	1606		1630	1476		1662	1471	
Flt Permitted	0.32	1.00		0.31	1.00		0.71	1.00		0.67	1.00	
Satd. Flow (perm)	553	1622		525	1606		1217	1476		1179	1471	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	45	648	54	134	623	53	49	9	121	17	11	62
RTOR Reduction (vph)	0	3	0	0	3	0	0	99	0	0	51	0
Lane Group Flow (vph)	45	699	0	134	673	0	49	31	0	17	22	0
Confl. Peds. (#/hr)	2					2						1
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	2%	7%	2%	2%	8%	2%	2%	2%	2%	0%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	27.7	27.7		27.7	27.7		8.1	8.1		8.1	8.1	
Effective Green, g (s)	27.7	27.7		27.7	27.7		8.1	8.1		8.1	8.1	
Actuated g/C Ratio	0.62	0.62		0.62	0.62		0.18	0.18		0.18	0.18	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	341	1002		324	992		220	266		213	265	
v/s Ratio Prot		c0.43			0.42			0.02			0.02	
v/s Ratio Perm	0.08			0.26			c0.04			0.01		
v/c Ratio	0.13	0.70		0.41	0.68		0.22	0.12		0.08	0.08	
Uniform Delay, d1	3.6	5.7		4.4	5.6		15.7	15.4		15.3	15.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	2.1		0.9	1.9		0.5	0.2		0.2	0.1	
Delay (s)	3.7	7.9		5.2	7.5		16.2	15.5		15.4	15.4	
Level of Service	A	A		A	A		B	B		B	B	
Approach Delay (s)		7.6			7.1			15.7			15.4	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	44.8	Sum of lost time (s)	9.0
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	500	102	485	235	341
v/c Ratio	0.75	0.14	0.64	0.64	0.66
Control Delay	21.6	3.1	16.5	26.6	21.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	21.6	3.1	16.5	26.6	21.5
Queue Length 50th (ft)	119	0	105	61	75
Queue Length 95th (ft)	333	24	285	176	211
Internal Link Dist (ft)	803		299	553	291
Turn Bay Length (ft)		190			
Base Capacity (vph)	1097	1120	1244	714	959
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.46	0.09	0.39	0.33	0.36

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	377	97	21	399	41	117	79	28	66	100	159
Future Volume (vph)	98	377	97	21	399	41	117	79	28	66	100	159
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.5	4.5		4.5			4.5			4.5	
Lane Util. Factor		1.00	1.00		1.00			1.00			1.00	
Frpb, ped/bikes		1.00	0.98		1.00			1.00			0.98	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		0.99			0.98			0.93	
Flt Protected		0.99	1.00		1.00			0.97			0.99	
Satd. Flow (prot)		1634	1387		1610			1582			1543	
Flt Permitted		0.84	1.00		0.97			0.65			0.90	
Satd. Flow (perm)		1383	1387		1567			1060			1400	
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)	103	397	102	22	420	43	123	83	29	69	105	167
RTOR Reduction (vph)	0	0	52	0	4	0	0	6	0	0	41	0
Lane Group Flow (vph)	0	500	50	0	481	0	0	229	0	0	300	0
Confl. Peds. (#/hr)	4		1	1		4	11		4	4		11
Confl. Bikes (#/hr)									1			3
Heavy Vehicles (%)	6%	6%	5%	0%	8%	0%	6%	5%	4%	3%	5%	2%
Parking (#/hr)						2			2			2
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		
Actuated Green, G (s)		28.0	28.0		28.0			19.8			19.8	
Effective Green, g (s)		28.0	28.0		28.0			19.8			19.8	
Actuated g/C Ratio		0.49	0.49		0.49			0.35			0.35	
Clearance Time (s)		4.5	4.5		4.5			4.5			4.5	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		681	683		772			369			488	
v/s Ratio Prot												
v/s Ratio Perm		c0.36	0.04		0.31			c0.22			0.21	
v/c Ratio		0.73	0.07		0.62			0.62			0.61	
Uniform Delay, d1		11.4	7.6		10.5			15.4			15.3	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		4.1	0.0		1.6			3.2			2.3	
Delay (s)		15.6	7.6		12.1			18.6			17.6	
Level of Service		B	A		B			B			B	
Approach Delay (s)		14.2			12.1			18.6			17.6	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	56.8	Sum of lost time (s)	9.0
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

EXHIBIT H

Preliminary
Storm Water Management Report

Cascade Center Commercial Development

Preliminary
Storm Water Management Report

Cascade Center Commercial Development

Molalla, Oregon

Prepared for:

IE Construction
9550 SE Clackamas Road
Clackamas, OR 97015

Prepared By:

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IE Construction
9550 SE Clackamas Road
Clackamas, OR 97015

December 1st, 2018

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PROJECT DESCRIPTION

This project is a development of a fourteen lot commercial subdivision on a 17.9 total acre property located at 121 S Hezzie Lane in Molalla, Oregon. The properties can also be located by the Clackamas County Map under the following information: 52E08C00800, 52E08C00801, 52E08C00900, 52E08C00700, 52E08C00400, 52R08C00600 and 52E08C00500

Figure 1: Vicinity Map

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EXISTING CONDITIONS

The project site is a collection of tax lots that have a frontage onto the south side of Highway 211 (Woodburn Estacada Highway) between N Hezzie Lane and Ridings Avenue. The following tax lots are part of this development 52E08C00400, 52E08C00700, 52E08C00800, 52E08C00801 and 52E08C00900. Tax lots 52E08C00500 and 52E08C00600 will be developed in the future.

Tax lot 52E08C00400 currently has a residential home, a separate shed, a scattering of trees and has a lot of open space/pasture land. This site slopes from south to north towards Highway 211.

Tax lot 52E08C00700 does not have any structures on this site, but it does have a few trees and is mostly open space/pasture land. This site slopes from southeast to northwest towards Highway 211.

Tax lot 52E08C00800 is the biggest parcel of land amongst this development. This site has a gravel driveway formerly known as S Hezzie Lane that provides access to several residential use structures as well as Tax lots 52E08C00801 and 52E08C00900. There is also a scattering of trees but it is mostly open space/pasture land. This site borders the Stone Place apartment complex to the south and to the west. This site also slopes from southeast to northwest towards Highway 211.

Tax lot 52E08C00801 has a residential home and a few trees on this site.

Tax lot 52E08C00900 has a residential home, several clusters of trees and is located in the northwest corner of the development.

The roadway on Highway 211 for the most part is above the adjacent properties to the south. The drainage system on the south side of Highway 211 consists of open ditches, culverts and a piped conveyance system. Any storm water runoff from the roadway ends up in the ditch or a catch basin with a pipe that outlet in a ditch. Storm water runoff from the adjacent properties also makes it way towards the drainage system at the southern side of Highway 211.

For topography of the site, see Pre Development Basin Maps below.

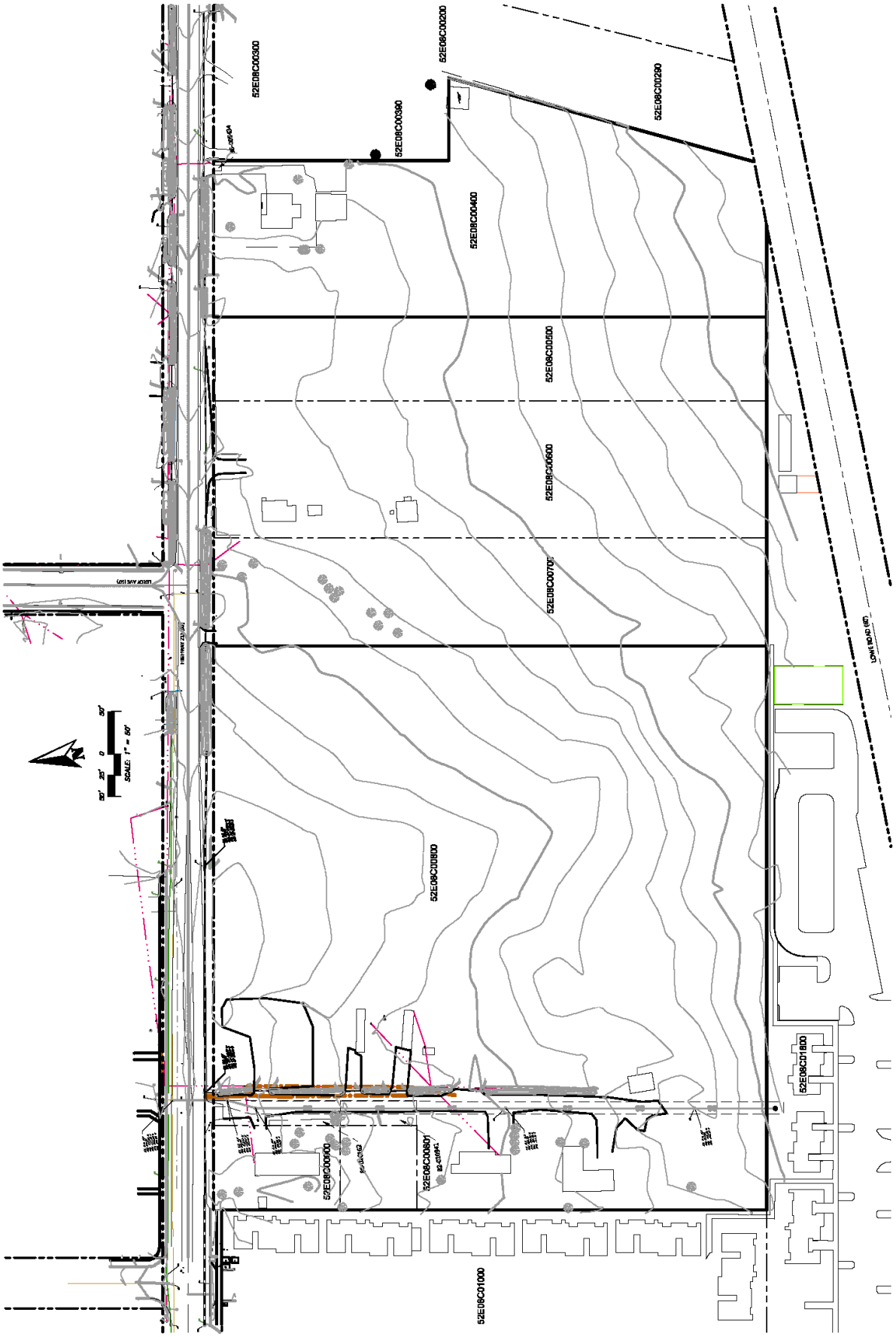

Figure 2: Pre-Developed Site Basin Map

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SOIL INFORMATION

According to the Soil Survey of Clackamas County, the soil on this site belongs to three soil types (77.7% of Clackamas silt loam, 13.2% of Dayton silt loam and 9.1% of Sawtell silt loam). The Hydrologic Soil Group for these soil types is D and C. These soils have a very slow rate of water transmission. For more descriptive information on the soil, see soil information in Appendix A.

Figure 3: Clackamas County Soil Map

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Table—Hydrologic Soil Group (Cascade Center Commercial Development)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
17	Clackamas silt loam	C/D	14.6	77.7%
29	Dayton silt loam	D	2.5	13.2%
79B	Sawtell silt loam, 0 to 8 percent slopes	C	1.7	9.1%
Totals for Area of Interest			**18.8**	**100.0%**

Figure 4: Area of Interest Soil Types

PROPOSED DRAINAGE

The proposed storm system is shown in Post Development Basin Map on the next page.
Since the project site is located at 121 S Hezzie Lane in Molalla, Oregon, the construction of the storm drainage system for the development must satisfy the design standards and guidelines of the City of Molalla.

The objective for now is to determine how much additional storm water runoff will be created by this proposed development, and since all the storm water runoff will end up connecting into the storm water conveyance system on the south side of State Highway 211, to simplify matters the proposed development will be looked at as one single drainage basin.

The project site falls in a southeast to northwest direction towards State Highway 211 with the storm water runoff being collected in the storm water conveyance system on the south side of State Highway 211. This direction of drainage flow works perfectly fine for the proposed development site, even though it will be broken up into a few smaller drainage basins. Each individual drainage basin will be required to have a method of limiting the amount of the additional storm water runoff that will discharge into the existing storm water conveyance system.

The two methods that would work in this situation is retention or detention. Retention can be achieved through infiltration back into the existing soils. This can be done several ways, in infiltration/storage chambers under the parking areas or infiltration trenches under the parking areas or landscape areas. Infiltration would also take care of the water quality requirements. Infiltration tests would need to done in order to be able to adequately design these facilities.

The other method is detention, once again, we have options, we can have above ground facilities in the form of ponds or swales or underground in the form of chambers or pipes. The preferred method would be to oversize the storm water conveyance system so it can provide detention storage as well as conveyance. Flow control structures would manage the amount of runoff that would be discharged back into the existing storm water conveyance system and proprietary water quality treatment devices would take care of the water quality requirements.

Each area of the project site will be evaluated as to which method would be more suitable, different areas of the project site might require different solutions for retention or detention.

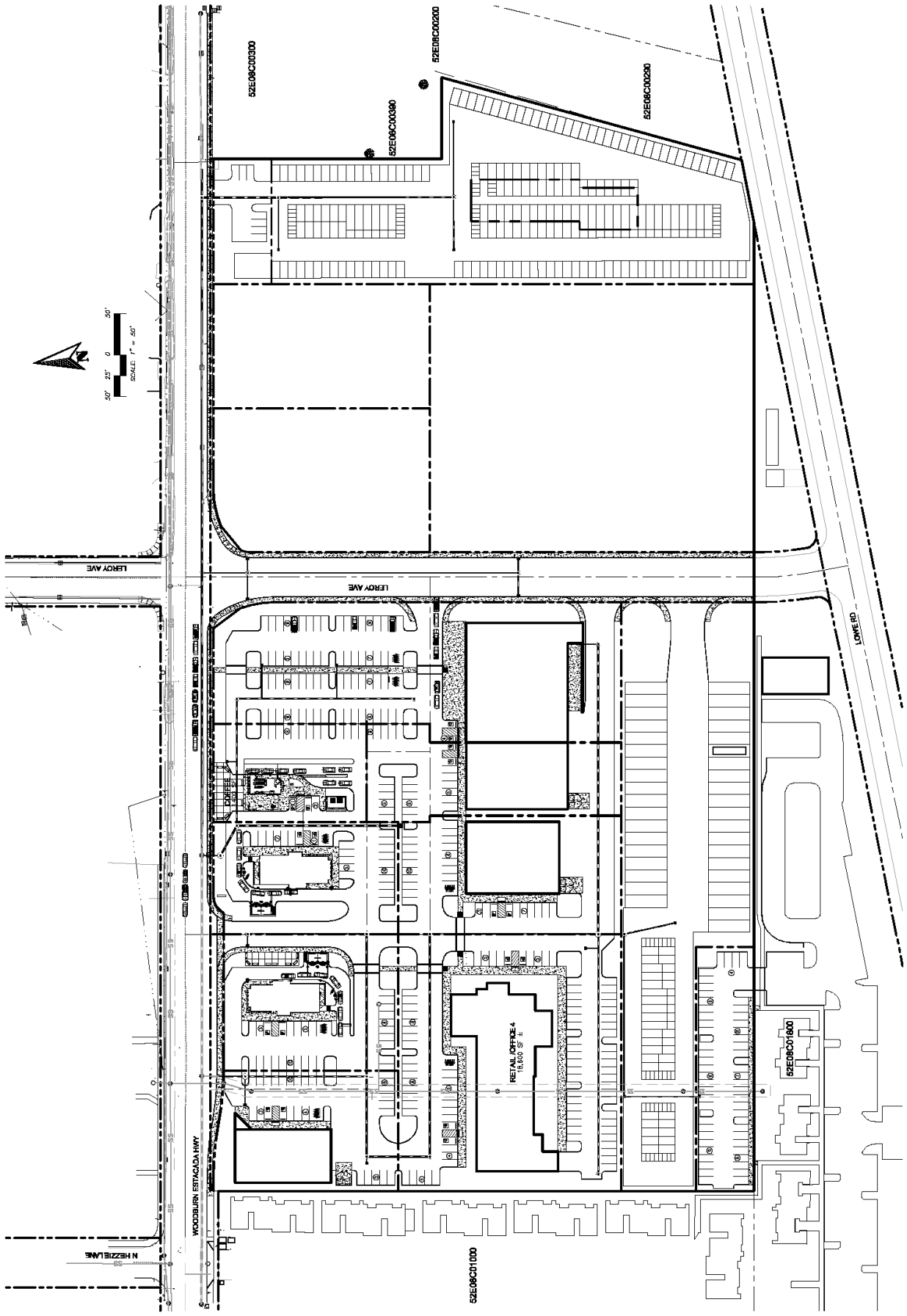

Figure 5: Post-Developed Site Basin Map 295

HYDROLOGIC ANALYSIS

Hydrologic analysis for the site have been completed following the SCS, Type IA Hydrograph method, with modeling by the Hydraflow Hydrographs computer program. This program enables the user to develop runoff hydrographs and determine detention requirements under a variety of stage-storage options. Analysis calculations, supporting information, and computer output are contained in Appendix B.

Following is our calculation process:

- **Determine the soil type and classification.**
- **Calculate Impervious and Pervious areas of the basin areas.**
- **Determine the Curve Numbers.**
- **Determine flow length and run-off slope.**
- **Determine the Time of Concentrations.**
- **Calculate Peak Flow Rates and Volumes.**
- **Perform Downstream Analysis**
- **Determine whether or not Detention Facility is required**
- **Design Water Quality/Quantity Facility**

RUN-OFF SUPPPORT INFORMATION AND ANALYSIS

1. Impervious and Pervious Surface Areas

The impervious and pervious surface areas of the pre-development conditions and post development conditions are the actual areas taken from the site plan.

Description	Pre Developed Site (ac)	Post Developed Site (ac)
Pervious Surface	18.50	6.95
Impervious Surface	1.47	13.02
Total Basin Area	19.97	19.97

Table 1: Pervious and Impervious Area

2. Curve Numbers

Curve numbers are derived from Table 10 Appendix B and were extracted from Technical Release 55 Urban Hydrology for Small Watersheds, Runoff curve numbers for urban areas. Curve numbers used for the analyses are based on characterization of the site's soils as Type C soils. The curve numbers represent values appropriate for wet antecedent moisture conditions, which is typical of the wet-weather conditions for the area. Curve numbers for both pre and post development pervious surfaces and impervious surfaces is shown below.

Description	Pre Developed Site CN	Post Developed Site CN
Pervious Surface	84	77
Impervious Surface	95	98

Table 2: Curve Number

3. Time of Concentration

Time of concentration is the time for run-off to travel from the hydraulically most distant point of the watershed to the point where the hydrograph is to be calculated. The time of concentration for the pre developed site is calculated as the time it takes storm water runoff to travel from the highest point to the lowest point of the site, which in this case the storm water runoff leave the southern property line as it makes it way to the northern property line and into the storm water conveyance system located on State Highway 211. The post developed time of concentration is calculated as the time it takes storm water runoff to leave the new road pavement of the private driveways, towards the curb and then along the gutter towards the catch basin and then through the new storm water conveyance system where it finally connects into the existing storm water conveyance system in State Highway 211. Calculations and calculated time of concentrations are presented in Appendix B.

Description	Pre Developed Site	Post Developed Site
Length (feet)	300	82
Average Slope (%)	1.47	5.0
Sheet Flow 2 Year Storm Event (minutes)	30.23	0.93
Shallow Concentrated Flow 2 Year Storm Event (minutes)	5.23	0.0
Channel Flow 2 Year Storm Event (minutes)	0.00	29.32
Total Travel Time	35.46	30.24

Table 3: Time of Concentration

4. Peak Discharge and Volume

Peak discharge rates for the prescribed rainfall events for pre-developed and post-developed site conditions. The rainfall depths are 24-hour rainfall depths and the computer model output is contained in Appendix B.

Description	Pre Developed Site	Post Developed Site
Q 2 Year Storm Event (cubic feet per second)	4.56	7.324
Q 10 Year Storm Event (cubic feet per second)	8.26	11.64
Q 25 Year Storm Event (cubic feet per second)	10.12	13.71
Q 100 Year Storm Event (cubic feet per second)	12.66	16.48

Table 4: Peak Flow Rates

Description	Pre Developed Site	Post Developed Site	Volume Difference
Q 2 Year Storm Event (cubic feet)	85,428	116,739	31,311
Q 10 Year Storm Event (cubic feet)	143,018	180,779	37,761
Q 25 Year Storm Event (cubic feet)	171,705	211,796	40,091
Q 100 Year Storm Event (cubic feet)	210,886	253,577	42,691

Table 5: Peak Volumes

5. Water Quality

Per the City of Molalla Design Standards, followings are the results from our calculations. See support and calculation information in Appendix B.

Description	Pre Developed Site	Post Developed Site
Impervious Surface Area (Acre)	1.47	13.02
Water Quality Flow (cubic feet per second)	0.134	1.182
Water Quality Volume (cubic feet)	1926	17,019

Table 6: Water Quality Flow and Volume

UPSTREAM CONDITIONS

The main storm water conveyance system near the project site is located on the south side of State Highway 211. It is a mixture of open ditches, culverts and a piped system. It stretches from the high point near Shaver Avenue to the discharge point at the creek just west of Ona Way. The upstream portion that is to the west of this project site is mostly developed and the storm water runoff and drainage system has no adverse impact on our project site. There are also properties to the south of the project site that are at a higher elevation that might have a storm water runoff impact on our site. An investigation was undertaken and what was found is that Lowe Road is higher than the surrounding properties has ditches on both sides of the road and acts as a dam to prevent storm water runoff from entering or having any impact on our project site.

DOWNSTREAM ANALYSIS

A Downstream Analysis has not been performed at this preliminary stage because for a project of this size the preferred method for storm water management is for retention or detention of the additional storm water runoff. However, it still needs to be done for the final design for the project. More data will be need to be obtained and an analysis completed in order to determine how much storm water runoff can be discharged into the existing storm water conveyance system and also determine the most economical method for the on-site storm water conveyance / detention system.

SUMMARY

The project site will have a mixture of public and private storm water conveyance systems and facilities.

Storm water runoff from the private site will need be to be treated, and possibly detained prior to discharging back into the existing storm water conveyance system.

There are several methods available for retention or detention facilities.

APPENDIX A

SOIL INFORMATION

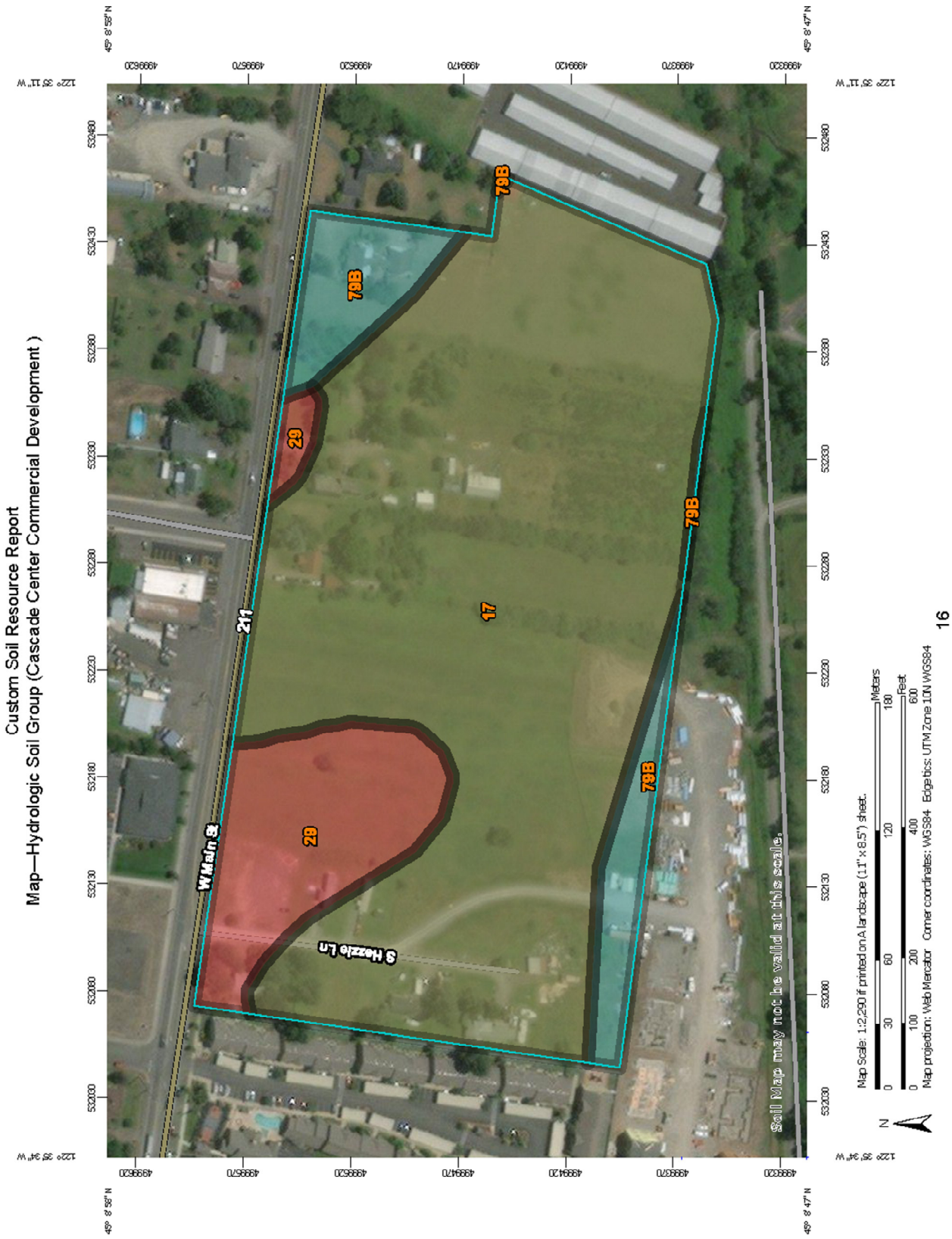

Figure 6: Soil Map for Project Site

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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 14, Sep 18, 2018

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.

Figure 7: Soil Map Legend for Project Site

Table—Hydrologic Soil Group (Cascade Center Commercial Development)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
17	Clackamas silt loam	C/D	14.6	77.7%
29	Dayton silt loam	D	2.5	13.2%
79B	Sawtell silt loam, 0 to 8 percent slopes	C	1.7	9.1%
Totals for Area of Interest			**18.8**	**100.0%**

Rating Options—Hydrologic Soil Group (Cascade Center Commercial Development)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Hydrologic Soil Group (Cascade Center Commercial Development)

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.

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.

Figure 8: Hydrologic Soil Group for Project Site

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APPENDIX B

SUPPORT INFORMATION AND CALCULATIONS FOR BASIN

Manning's n-Values

Description	Manning's "n"
Pipes	
Reinforced concrete	0.013
Vitrified clay pipe	0.013
Smooth welded pipe	0.011
Corrugated metal pipe	0.023
Polyvinyl chloride (PVC)	0.010
Natural Channels	
Gravel beds, Straight	0.025
Gravel beds, large boulders	0.040
Earth, straight, some grass	0.026
Earth, winding, no vegetation	0.030
Earth, winding	0.050
Miscellaneous	
Smooth surfaces (concrete, asphalt, bare soil)	0.011
Fallow (no residue)	0.05
Cultivated soils	0.06-0.17
Short grass	0.15
Dense grass	0.24
Bermuda grass	0.41
Light underbrush woods	0.40
Dense underbrush woods	0.80

Table 6: Manning's Numbers

Manning's "n" values shown above are derived from the help file from the Hydraflow Hydrographs computer program, which is based on the manufacturer's recommendations.

Table 2-2a Runoff curve numbers for urban areas [1/]

Cover description: Cover type and hydrologic condition	Average percent impervious area [2/]	Curve numbers for hydrologic soil group: A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3/]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) [4/]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation) [5/]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

[1] Average runoff condition, and $I_a = 0.2S$.

[2] The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas ar directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

[3] CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

[4] Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

[5] Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Table 7: SCS Curve Numbers

TR55 Tc Worksheet

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No. 1

Cascade Center predeveloped

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.150		0.150		0.011		
Flow length (ft)	= 300.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 2.50		0.00		0.00		
Land slope (%)	= 1.47		0.00		0.00		
Travel Time (min)	**= 30.23**	**+**	**0.00**	**+**	**0.00**	**=**	**30.23**
Shallow Concentrated Flow							
Flow length (ft)	= 604.00		0.00		0.00		
Watercourse slope (%)	= 1.42		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=1.92		0.00		0.00		
Travel Time (min)	**= 5.23**	**+**	**0.00**	**+**	**0.00**	**=**	**5.23**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**
Total Travel Time, Tc							**35.46 min**

Figure 9: Pre Developed Time of Concentration

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12 — Wednesday, 01 / 2 / 2019

Hyd. No. 1

Cascade Center predeveloped

Hydrograph type	= SCS Runoff	Peak discharge	= 4.559 cfs
Storm frequency	= 2 yrs	Time to peak	= 8.25 hrs
Time interval	= 1 min	Hyd. volume	= 85,428 cuft
Drainage area	= 19.970 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 35.50 min
Total precip.	= 2.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(18.500 x 84) + (0.860 x 98) + (0.610 x 91)] / 19.970

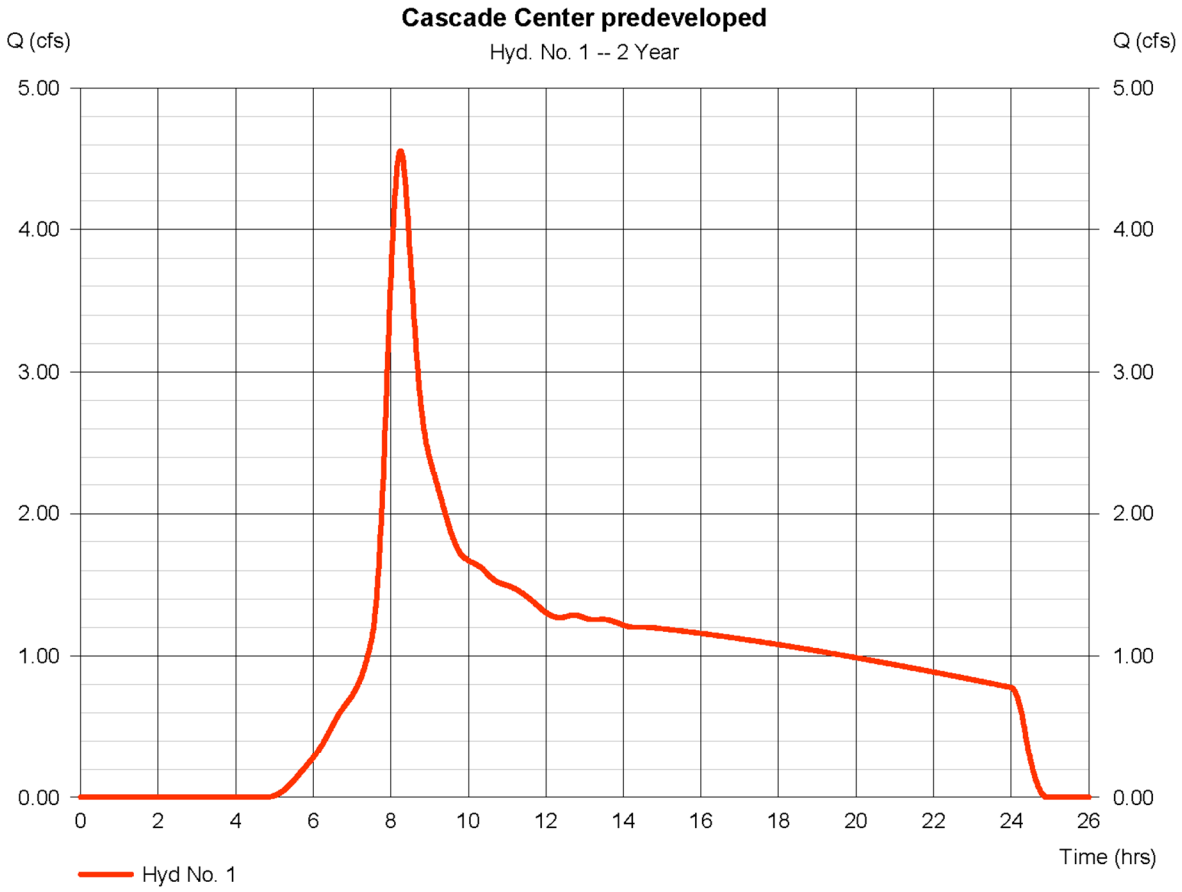


Figure 10: Pre Developed 2 year Storm Event Hydrograph

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12 — Wednesday, 01 / 2 / 2019

Hyd. No. 1

Cascade Center predeveloped

Hydrograph type	= SCS Runoff	Peak discharge	= 8.260 cfs
Storm frequency	= 10 yrs	Time to peak	= 8.23 hrs
Time interval	= 1 min	Hyd. volume	= 143,018 cuft
Drainage area	= 19.970 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 35.50 min
Total precip.	= 3.45 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(18.500 x 84) + (0.860 x 98) + (0.610 x 91)] / 19.970

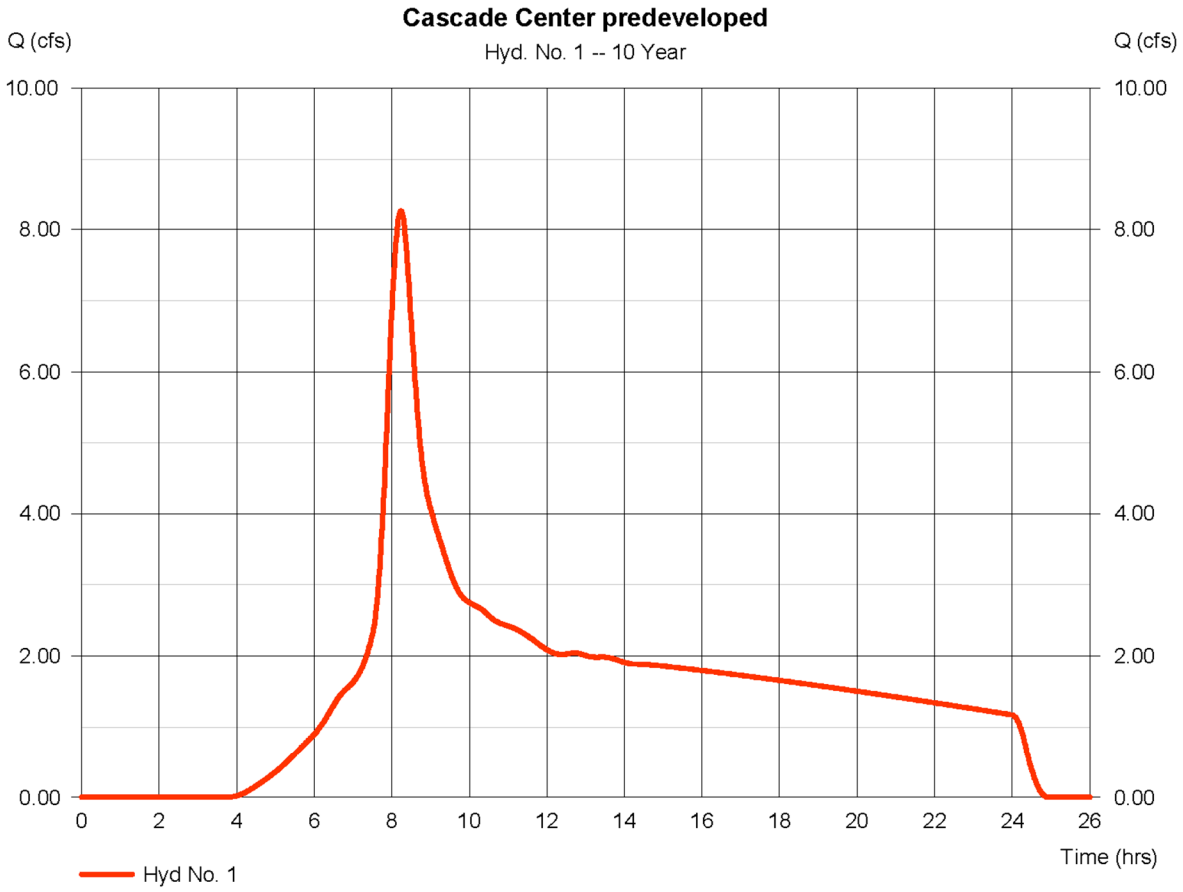


Figure 11: Pre Developed 10 year Storm Event hydrograph

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12 — Wednesday, 01 / 2 / 2019

Hyd. No. 1

Cascade Center predeveloped

Hydrograph type	= SCS Runoff	Peak discharge	= 10.12 cfs
Storm frequency	= 25 yrs	Time to peak	= 8.23 hrs
Time interval	= 1 min	Hyd. volume	= 171,705 cuft
Drainage area	= 19.970 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 35.50 min
Total precip.	= 3.90 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(18.500 x 84) + (0.860 x 98) + (0.610 x 91)] / 19.970

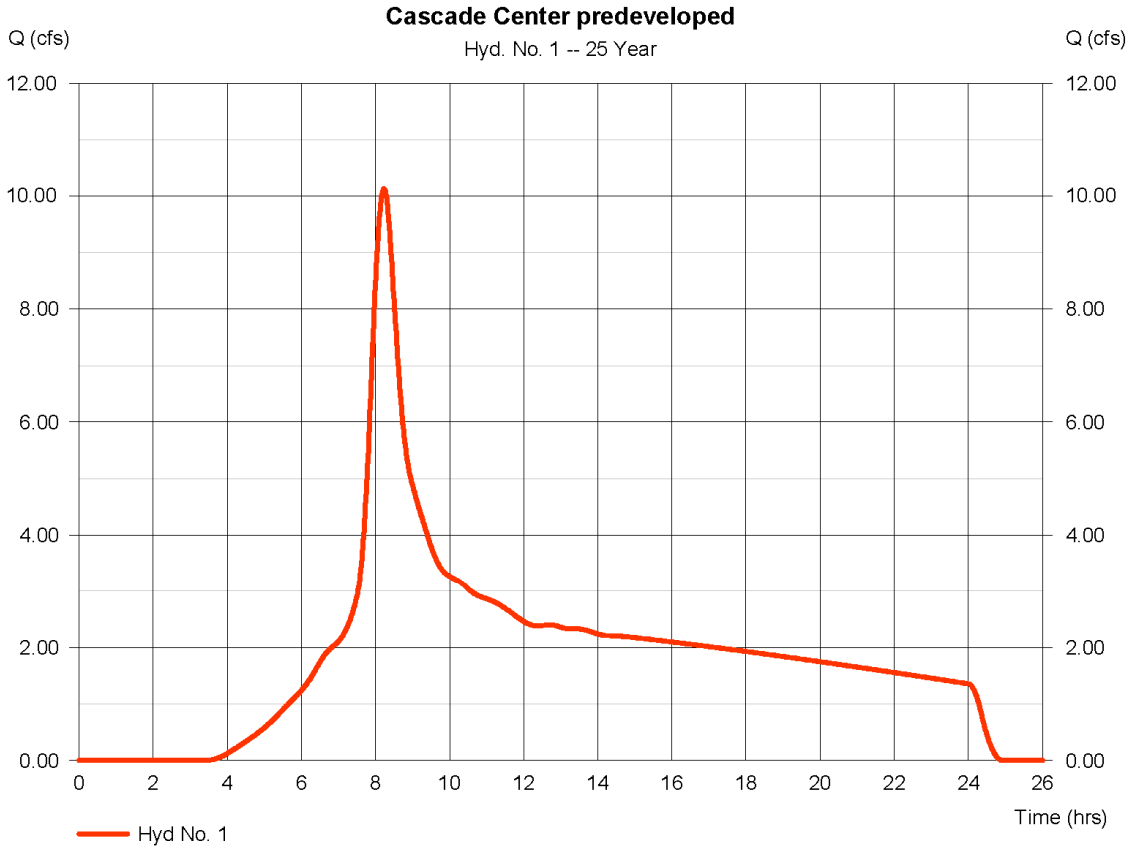


Figure 12: Pre Developed 25 year Storm Event Hydrograph

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12 Wednesday, 01 / 2 / 2019

Hyd. No. 1

Cascade Center predeveloped

Hydrograph type	= SCS Runoff	Peak discharge	= 12.66 cfs
Storm frequency	= 100 yrs	Time to peak	= 8.22 hrs
Time interval	= 1 min	Hyd. volume	= 210,886 cuft
Drainage area	= 19.970 ac	Curve number	= 85*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 35.50 min
Total precip.	= 4.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(18.500 x 84) + (0.860 x 98) + (0.610 x 91)] / 19.970

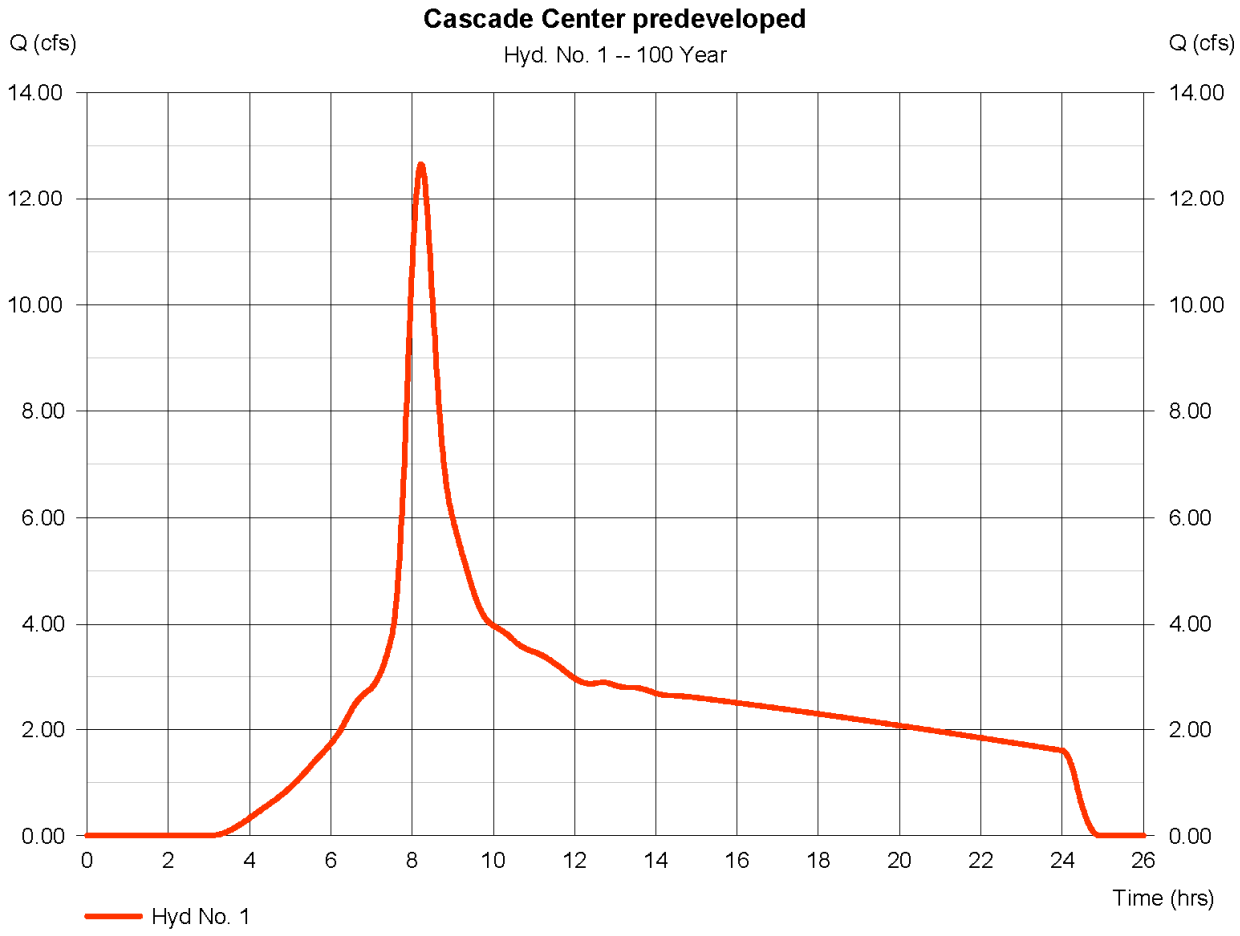


Figure 13: Pre Developed 100 year Storm Event Hydrograph

TR55 Tc Worksheet

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No. 4

Cascade Center Postdeveloped

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.013		0.011		0.011		
Flow length (ft)	= 82.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 2.50		0.00		0.00		
Land slope (%)	= 5.00		0.00		0.00		
Travel Time (min)	**= 0.93**	**+**	**0.00**	**+**	**0.00**	**=**	**0.93**
Shallow Concentrated Flow							
Flow length (ft)	= 0.00		0.00		0.00		
Watercourse slope (%)	= 0.00		0.00		0.00		
Surface description	= Paved		Paved		Paved		
Average velocity (ft/s)	=0.00		0.00		0.00		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**
Channel Flow							
X sectional flow area (sqft)	= 0.28		0.30		0.28		
Wetted perimeter (ft)	= 1.35		1.55		1.35		
Channel slope (%)	= 0.10		0.10		0.10		
Manning's n-value	= 0.023		0.023		0.023		
Velocity (ft/s)	=0.72						
			0.68				
					0.72		
Flow length (ft)	({0})18.0		1138.0		52.0		
Travel Time (min)	**= 0.42**	**+**	**27.70**	**+**	**1.20**	**=**	**29.32**
Total Travel Time, Tc							**30.24 min**

Figure 14: Post Developed Time of Concentration

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12 — Wednesday, 01 / 2 / 2019

Hyd. No. 4

Cascade Center Postdeveloped

Hydrograph type	= SCS Runoff	Peak discharge	= 7.324 cfs
Storm frequency	= 2 yrs	Time to peak	= 8.17 hrs
Time interval	= 1 min	Hyd. volume	= 116,739 cuft
Drainage area	= 19.970 ac	Curve number	= 91*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 30.00 min
Total precip.	= 2.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(13.020 x 98) + (6.950 x 77)] / 19.970

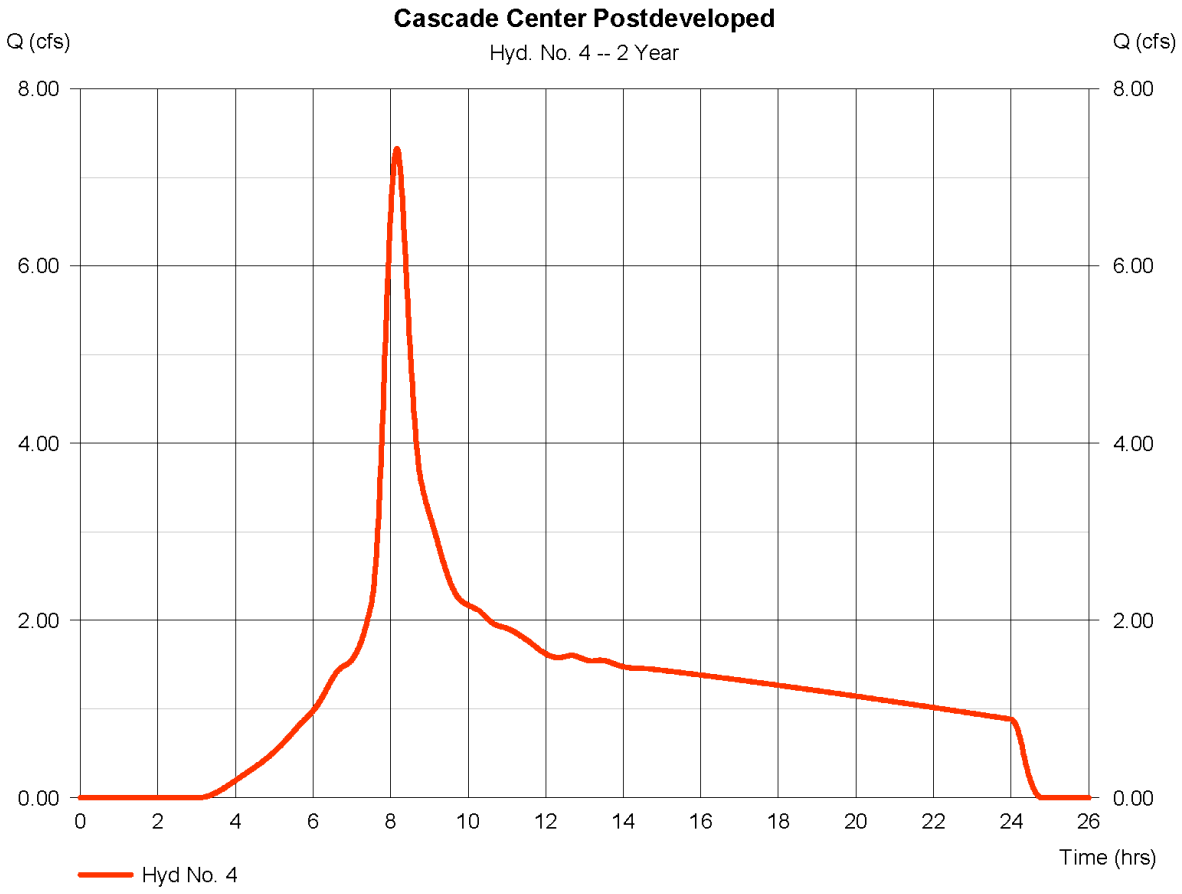


Figure 15: Post Developed 2 year Storm Event Hydrograph

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12 — Wednesday, 01 / 2 / 2019

Hyd. No. 4

Cascade Center Postdeveloped

Hydrograph type	= SCS Runoff	Peak discharge	= 11.64 cfs
Storm frequency	= 10 yrs	Time to peak	= 8.15 hrs
Time interval	= 1 min	Hyd. volume	= 180,779 cuft
Drainage area	= 19.970 ac	Curve number	= 91*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 30.00 min
Total precip.	= 3.45 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(13.020 x 98) + (6.950 x 77)] / 19.970

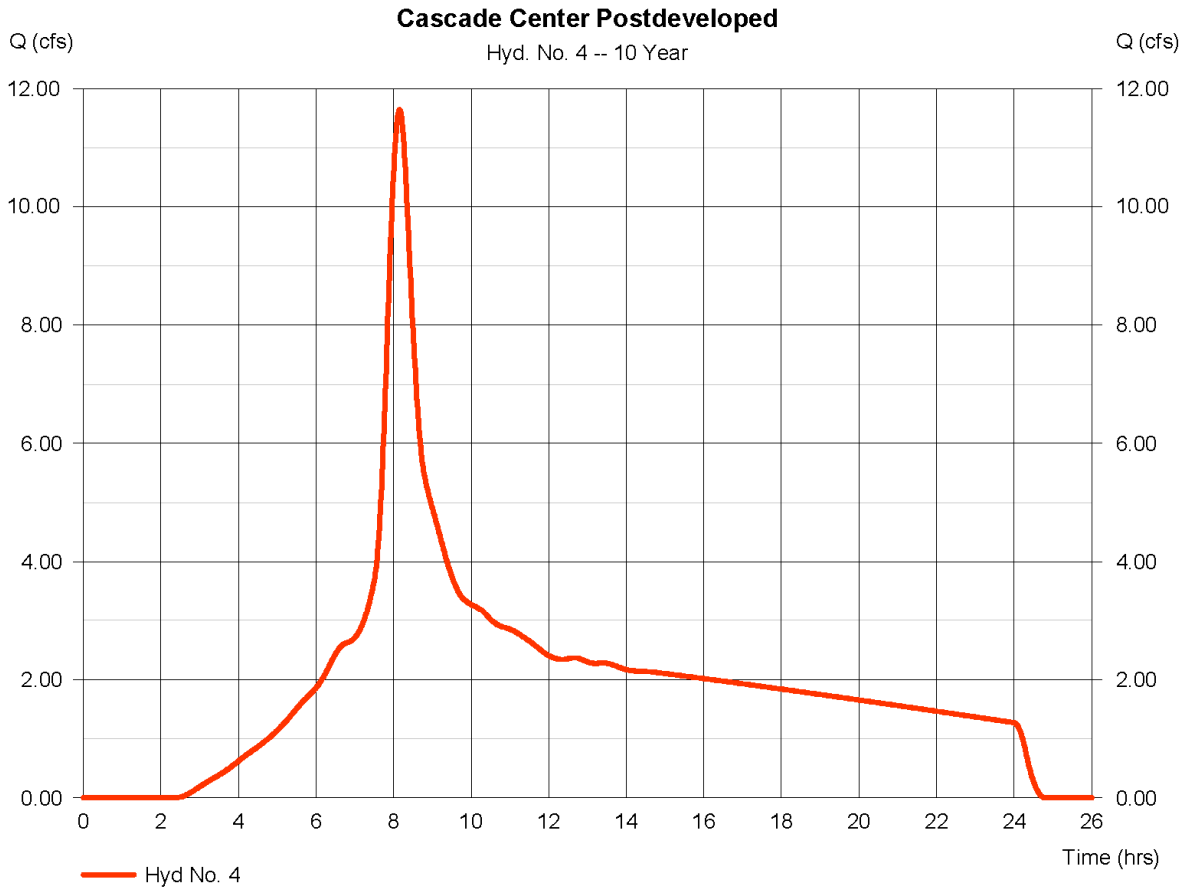


Figure 16: Post Developed 10 year Storm Event Hydrograph

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12 — Wednesday, 01 / 2 / 2019

Hyd. No. 4

Cascade Center Postdeveloped

Hydrograph type	= SCS Runoff	Peak discharge	= 13.71 cfs
Storm frequency	= 25 yrs	Time to peak	= 8.15 hrs
Time interval	= 1 min	Hyd. volume	= 211,796 cuft
Drainage area	= 19.970 ac	Curve number	= 91*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 30.00 min
Total precip.	= 3.90 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(13.020 x 98) + (6.950 x 77)] / 19.970

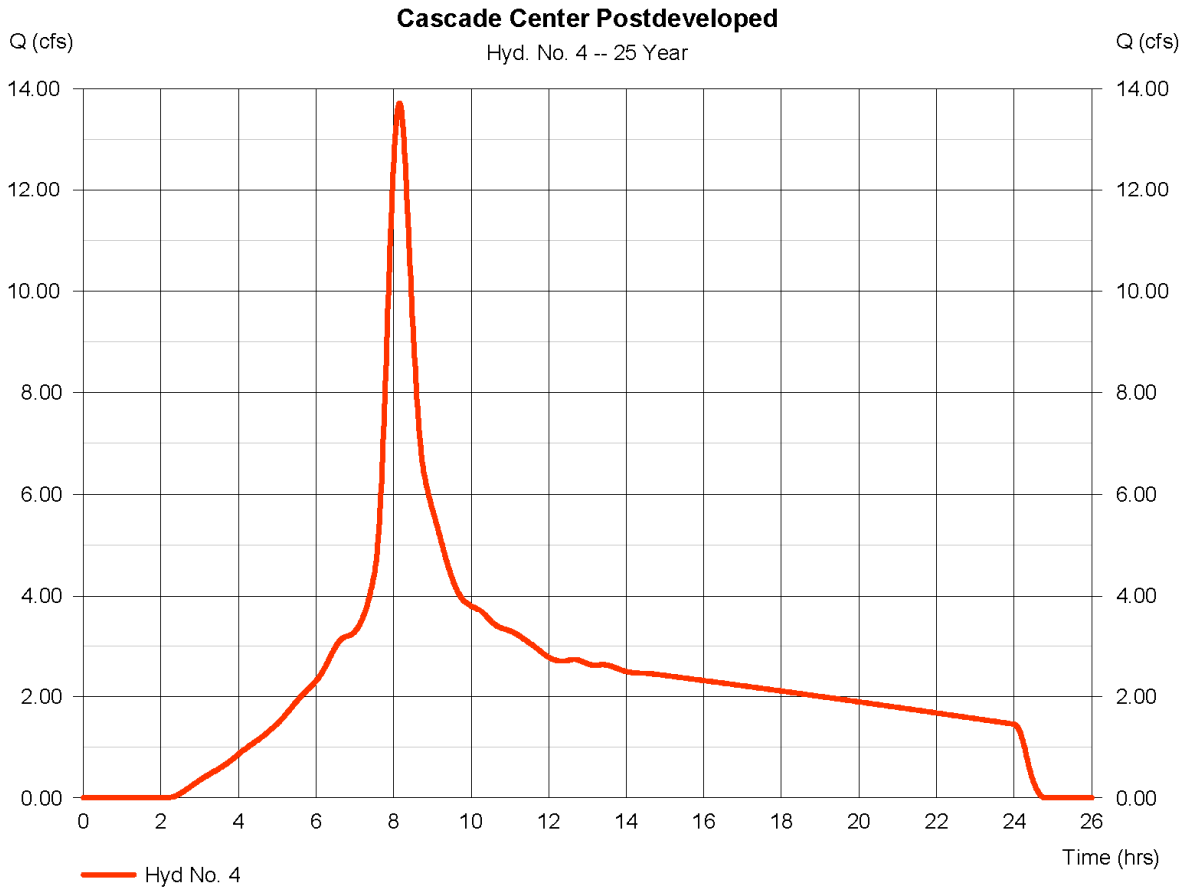


Figure 17: Post Developed 25 year Storm Event Hydrograph

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12 — Wednesday, 01 / 2 / 2019

Hyd. No. 4

Cascade Center Postdeveloped

Hydrograph type	= SCS Runoff	Peak discharge	= 16.48 cfs
Storm frequency	= 100 yrs	Time to peak	= 8.15 hrs
Time interval	= 1 min	Hyd. volume	= 253,577 cuft
Drainage area	= 19.970 ac	Curve number	= 91*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 30.00 min
Total precip.	= 4.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(13.020 x 98) + (6.950 x 77)] / 19.970

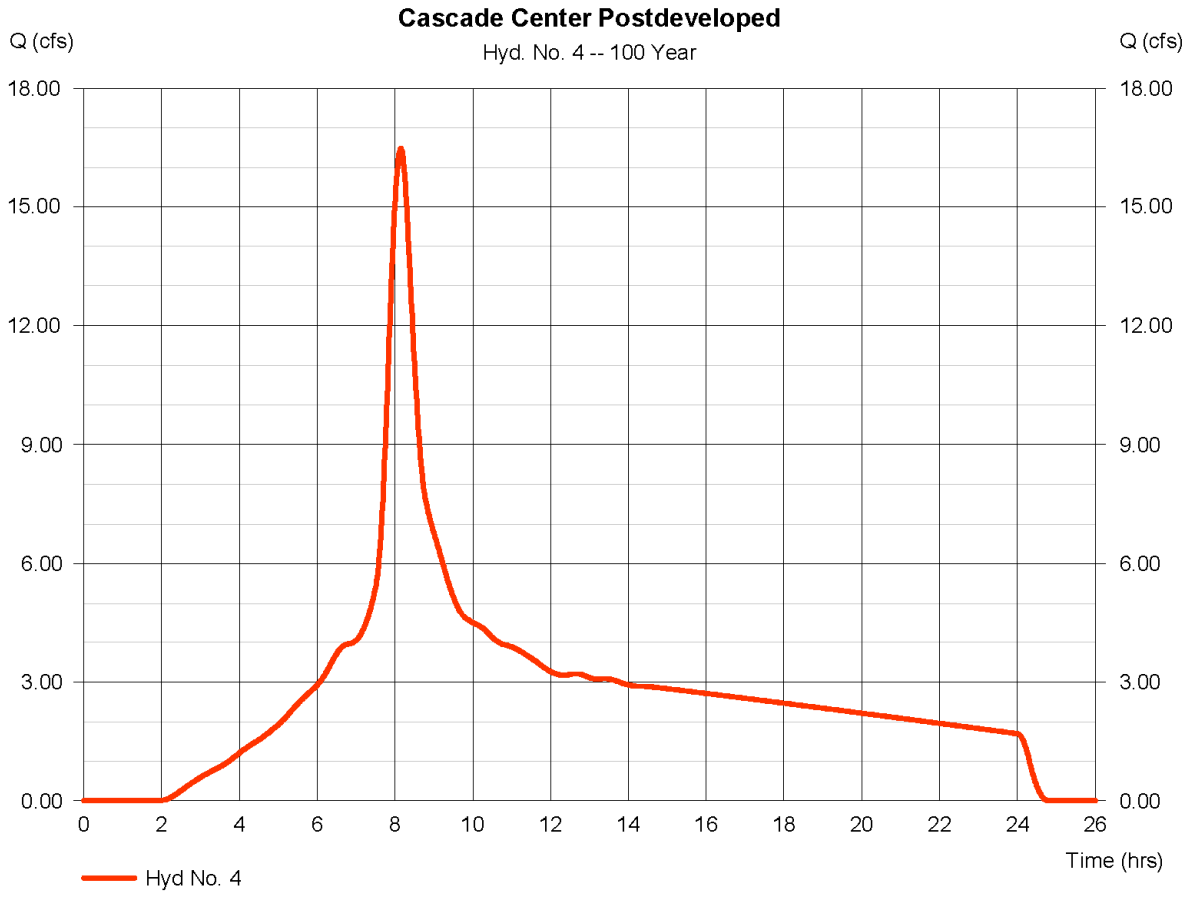


Figure 18: Post Developed 100 year Storm Event Hydrograph

Community Dev. & Planning
117 N Molalla Avenue
PO Box 248
Molalla, Oregon 97038
Phone: (503) 759-0219
communityplanner@cityofmolalla.com

Notice of Hearing for Proposed Development

Date of Notice:	*April 25, 2019*
Date of Hearing:	*May 15th, 2019 at 6:30 P.M.*
Location of Hearing:	Molalla Adult Center 315 Kennel Ave., Molalla, OR 97038
File No.:	*DRW01-2019*
Tax Lot(s):	52E08C; Tax Lots 400, 500, 600, 700, 800, 801, and 900
Address:	718 W. Main St. (tax lot 400), 724 W. Main St. (tax lot 600), 728 W. Main St. (tax lot 700), 104 S. Hezzie Ln. (tax lot 900), and 121 S. Hezzie Ln. (tax lot 800). Tax lots 500 and 800 currently do not have an assigned address
Applicants:	*Ivonoff Investment Group, LLC, Scott and Carol Maloy, Torsen Patricia Louise, and Price Automotive Refinishing, LLC*
Owners:	*Ivonoff Investment Group, LLC (tax lots 400 and 800), Scott and Carol Maloy (tax lot 801), Torsen Patricia Louise (tax lot 900), and Price Automotive Refinishing, LLC (tax lots 500, 600, and 700)*
Proposal:	*Subdivision and Site Design Review for a new commercial subdivision*
Current Use:	*The project is a collection of seven (7) lots with some having homes on them and other are vacant.*

Summary:

This notice is to inform you of a pending land use action for a property located at 718 W. Main St. (tax lot 400), 724 W. Main St. (tax lot 600), 728 W. Main St. (tax lot 700), 104 S. Hezzie Ln. (tax lot 900), and 121 S. Hezzie Ln. (tax lot 800). Tax lots 500 and 800 currently do not have an assigned address. The owner proposes to re-plat the existing seven (7) lots into a 13-lot commercial subdivision. Lots one through seven will have retail/restaurant/office building pads with associated parking. Lot eight will be a mixture of recreational vehicle and self-storage units. Lot nine will be additional parking for the adjacent Stone Place apartment complex. Lots ten thru twelve will be developed in the future. Lot thirteen will be developed by a different developer. Access to these new commercial lots will come of either the existing Highway 211 or a new proposed roadway which is the extension of Leroy Avenue. There will be shared

access driveways that will serve all the internal lots of the commercial subdivision. All these lots will be serviced with storm, sanitary and water for domestic use as well as fire protection

The current zoning of the properties is General Commercial (C-2), and no change to the zoning designation is proposed. The city will review the proposal pursuant to Division II, Zoning Regulations, Division III Community Design Standards, and Division IV, Application Review Procedures and Approval Criteria of the Molalla Municipal Code (MMC), the criteria are as follows:

17-4.2.050 Approval Criteria

An application for Subdivision and 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 complies with all of the applicable provisions of the underlying Zoning District (Division II);

B. 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
5. Chapter 17-3.7 Signs;

17-4.3.070 Preliminary Plat Approval Criteria

A. **Approval Criteria.** The Planning Commission may approve, approve with conditions, or deny a preliminary plat. The Planning Commission decision shall be based on findings of compliance with all of the following approval criteria:

1. The land division application shall conform to the requirements of Chapter 17-4.3;

2. All proposed lots, blocks, and proposed land uses shall conform to the applicable provisions of Division II Zoning Regulations, except as modified by the provisions of Chapter 17-4.3 (e.g., lot size averaging);

3. Access to individual lots, and public improvements necessary to serve the development, including, but not limited to, water, sewer, and streets, shall conform to Division III Community Design Standards;

4. The proposed plat name is not already recorded for another subdivision, and satisfies the provisions of ORS Chapter 92;

5. The proposed streets, utilities, and surface water drainage facilities conform to City of Molalla adopted master plans and applicable engineering standards and allow for transitions to existing

and potential future development on adjacent lands. The preliminary plat shall identify all proposed public improvements and dedications;

6. The architectural standards of Section 17-3.2.030.D are met.

Additional information about this application can be found by:

1. Visiting Molalla City Hall, 117 N. Molalla Ave., Molalla OR 97038
2. Contacting Senior Planner Alice Cannon, 503-759-0219, acannon@cityofmolalla.com (email is preferred to reduce car trips and save on paper)

Failure of an issue to be raised in a hearing, in person or by email/letter, or failure to provide statements or evidence sufficient to afford the decision maker an opportunity to respond to the issue precludes appeal to LUBA based on that issue.

A copy of the application, all documents and evidence submitted by or on behalf of the applicant and applicable criteria are available for inspection at no cost and will be provided at a reasonable cost.

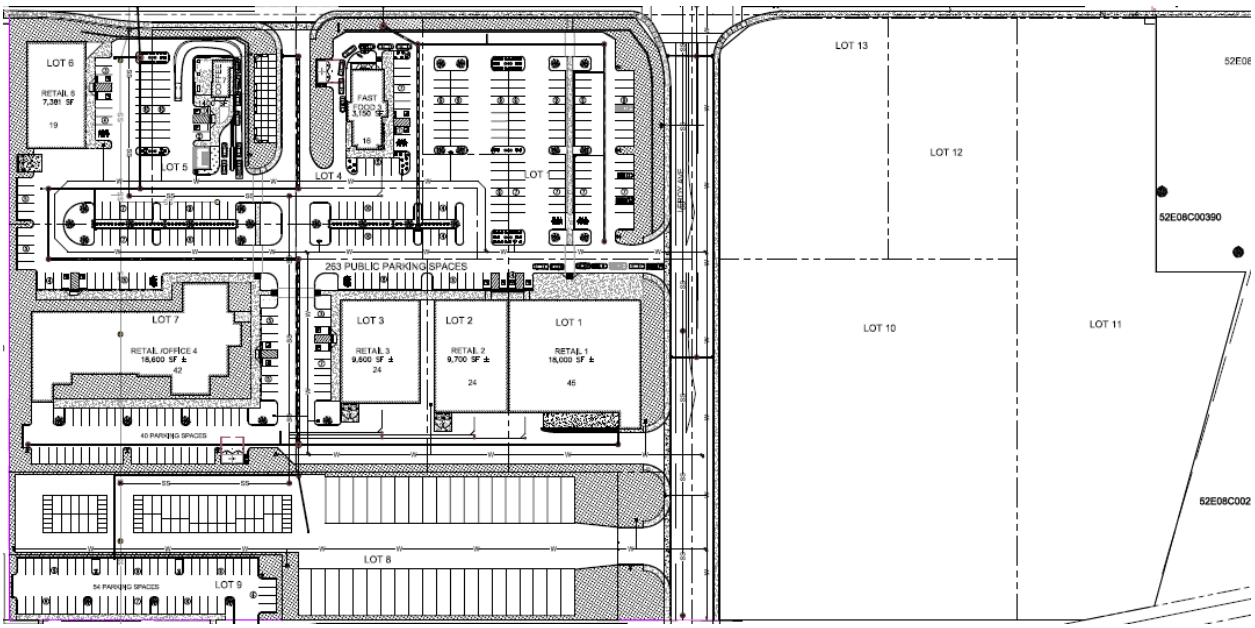
A copy of the staff report will be available for inspection at no cost at least seven (7) days prior to the hearing. Copies shall be provided at a reasonable cost upon request.

You may attend, offer testimony or seek information at the hearing. Any correspondence received in advance of the meeting will be forwarded to the hearing body.

Written testimony will be received by the City of Molalla until the day of the hearing, and should be addressed or emailed to: Senior Planner Alice Cannon, 117 N. Molalla Ave, Molalla OR, 97038, acannon@cityofmolalla.com; note that email is preferred. Please ensure your name and address are included in the written testimony.

Oral testimony may be offered during the hearing. The Planning Commission may set reasonable time limits for oral presentations and may limit or exclude cumulative, repetitious, irrelevant or personally derogatory testimony or evidence. Oral testimony will not be accepted after the close of the public hearing. Written testimony may be received after the close of the public hearing as allowed by the Planning Commission.

Proposed Site Plan attached:


LOT 6
RETAIL 5
7,381 SF
19
LOT 5
LOT 4
LOT 13
LOT 12
52E08C00390
263 PUBLIC PARKING SPACES
LOT 7
RETAIL/OFFICE 4
16,600 SF ±
42
40 PARKING SPACES
LOT 3
RETAIL 3
9,600 SF ±
24
LOT 2
RETAIL 2
9,700 SF ±
24
LOT 1
RETAIL 1
18,000 SF ±
46
LOT 10
LOT 11
52E08C002
LOT 8
54 PARKING SPACES
LOT 9