Planning & Community Dev.
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AGENDA
Molalla Planning Commission
6:30 PM, August 7, 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:

- Minutes from the December 5, 2018 meeting
- Minutes from the June 5, 2019 meeting

V. PUBLIC HEARINGS:

- Dollar General (File No. DRW-03-2019) – Site Design Review and Subdivision

VI. DISCUSSION ITEM:

- Project Updates

VII. REPORTS AND ANNOUNCEMENTS

- None

VIII. ADJOURNMENT

Minutes of the Molalla Planning Commission
Molalla Adult Center
315 Kennel Ave., Molalla, OR 97038
December 5, 2018

The December 5, 2018 meeting of the Molalla Planning Commission was called to order by Chair Rae Lynn Botsford at 6:30pm. This was followed by the flag salute and roll call.

COMMISSIONER ATTENDANCE:
Chair Rae Lynn Botsford – Present
Co-Chair Omar Reynaga - Absent
Commissioner Hardeep Singh Brar – Absent
Commissioner Steve Deller – Present
Commissioner Doug Eaglebear – Present
Commissioner Debbie Lumb – Absent
Commissioner Jennifer Satter -- Present

STAFF IN ATTENDANCE:
Dan Huff, City Manager - Absent
Aldo Rodriguez, Senior Planner – Present
Gerald Fisher, Public Works Director - Present
Spencer Parson, City Attorney - Absent

PUBLIC COMMENT ON MATTERS NOT ON THE MEETING AGENDA:
No one offered public comment.

MINUTES:
Chair Botsford confirmed with PC that they have received and reviewed the minutes. Chair Botsford calls for a motion to approve the minutes. A motion to approve the minutes, a second was received. Motion passes 4-0.

PUBLIC HEARING:

- Continuation hearing for updated language of the Wastewater Facility and Collection Systems Master Plan (File No. P86-2018)

Chair Botsford called the public hearing to order. She outlined how members of the public can participate in the hearing and summarized the hearing agenda.

CITY STAFF REPORT:
Senior Planner Rodriguez gave the staff report which can be found in the meeting packet. The staff report includes an attached memo outlining updates to the Facility Wastewater Treatment Facility and Collection Master Plan, along with a conditional DEQ approval letter. The purpose of tonight's hearing is to have the Planning Commission review DEQ and the consultant's proposed amendments to the Wastewater Treatment Facility and Collection Master Plan originally recommended for approval by the

Planning Commission at the August 15, 2018 meeting. The Planning Commission will be asked to make a recommendation to the City Council.

Public Works Director Fisher informed the Planning Commission that Steve Major and Ryan Quigley from Dyer Partnership are in attendance to give a brief presentation outlining the changes to the Master Plan, showing the modifications based on DEQ comments.

CONSULTANT'S PRESENTATION:

Please see the attached Power Point presentation for more detail about the presentation.

Commissioner Satter asked the reasoning for pushing forward with the plan without knowing the results of the permit modification request instead of waiting for the results.

Public Works Director Fisher answered that the City needs to have a plan that has been approved by DEQ, Planning Commission and City Council in place in order for the City to secure funding through the agencies. The City is following the requirements that DEQ has in place to develop a Master Plan. The City has started a funding discussion in September 2018 for the collections systems project and still has not received approval.

Commissioners also asked about the requested mass load increase is something that is easy to get from DEQ? Is it obtainable in the process?

Steve Major, Dyer Partnership answered that it does seem possible, Syntech in Portland measured the river conditions to see if increasing the mass load levels would have any effect on the river, and the model indicates that it does not. DEQ will look at that modeling. There are some questions about Oregon Administrative Rules referencing summer time basin limits, even though discharge is being done in the winter time. This is why it is the opinion that the City should be held to the winter time concentrations. The modeling and the scientific information show no effect.

PUBLIC COMMENT TESTIMONY:

Harlan Schoburg, 15050 S Herman Rd., Molalla, OR 97038; President of the Bear Creek Recovery, but speaking personally this evening. Mr. Schoburg stated that this master plan seems to be based on getting a permit modification from DEQ. He said DEQ is unlikely to give a permit modification. He expressed concern about setting up a master plan that is dependent on getting approval from DEQ, using the criteria of improving water quality. He is concerned about the large budget needed to complete this project. He also spoke to the impact to the river upstream from Canby, which gets their drinking water from the Molalla River. In addition, climate change and the fact that river flow will be lower due to hotter temperatures will also impact the results. The Molalla River already tends to be warmer than other rivers included in the presentation. He feels that changing the discharge criteria is setting up the City for lawsuits in the future. He stated that the City should get approval from DEQ and then come up with a plan.

Tom Derry, PO Box 627, Molalla, OR 97038; stated that before the pipe went into the river, residents were told that the City would never consider year-round discharge. He had spoken to Wade Pierman with DEQ and was told that the City was exploring that option. He stated that the river is the warmest tributary to the Willamette. This will impact ESA listed fish. Spoke to a lawsuit against the City of Medford for putting their wastewater in the Rogue River, which has caused a lot of problems. He feels year-round discharge will cause the city more lawsuits.

Joan Zumer, 44731 S Elk Prairie Rd, Molalla, OR 97038; talked about the impacts of discharge into the Molalla River affecting those living outside of City Limits as well. She is concerned for the fish in the river. Talked about OWAM & SWCD that put money into the Molalla River. She feels there should be a moratorium on building within the city. She feels the City needs to look at its water rights. She feels the water needed will exceed the amount able to be pulled from the river without there being issues with the City of Canby.

Connie Derry, PO Box 627, Molalla, OR 97038; stated that there should put a moratorium on building. Feels the services are inadequate to handle the growth. She said that the river needs to be protected and respected.

Chair Botsford closed the hearing for P86-2018, stating that the Commission can now deliberate to a discussion.

Commissioner Satter thanked the people that took the time to come and speak on this subject. She agrees that they need to be good stewards of the river but feels that a plan needs to be put in place so that some of these systems can be upgraded as soon as funding is received. This is the only way to address the way the City is discharging and treating water.

Chair Botsford agreed and discussed the plan changes will reduce violations and paying fees. We need to keep the money in the system to keep repairing infrastructure and the wastewater treatment plant.

Commissioner Satter stated that regardless of any changes from DEQ, staff has indicated that they need to start securing funding to make improvements that are already known. The plan has scenarios in place in case the plan modification is not approved by DEQ which makes the plan more flexible.

Public Works Director Fisher confirmed that statement to be true. He also reiterated that DEQ has already approved the updates to the master plan after modifications were made based on the comments from DEQ. He stated that if the Planning Commission approves it and recommends it to the City Council and it is approved there, it will allow the plan to be adopted, which will give 4 scenarios that will ultimately allow the plant to be rebuilt to support the growth that is projected to come. The plan requires that the city plan for 20 years of growth based on PSU projections.

A motion was made and seconded to approve the Wastewater Facility and Collection Systems Master Plan (File No. P86-2018). Motion passes 4-0.

DISCUSSION ITEMS:

There were no discussion items.

REPORTS AND ANNOUNCEMENTS:

Senior Planner Rodriguez stated that the January 2nd meeting may be moved to January 16th. He also informed the Planning Commission that he has accepted a position with Multnomah County and this will be his last meeting.

Chair Botsford thanked Senior Planner Rodriguez for all his work and wished him well with Multnomah County. She confirmed with the members that January 16, 2019 would work for the next meeting date.

Public Works Director Fisher stated that the January meeting will discuss the language update and the code based on the adoption of the TSP plan. This will align the code with the TSP. The changes revolve around transit and parking standards.

ADJOURNMENT:

Chair Botsford adjourned the meeting at 7:34 p.m.

_____ _____

Chair, Rae Lynn Botsford Date

ATTEST:_____

Alice Cannon, Senior Planner

Power Point will be added here after I convert it to a PDF

City of Molalla

Wastewater Facility and Collection System Master Plan (WWFCSMP) – Final

December 5, 2018

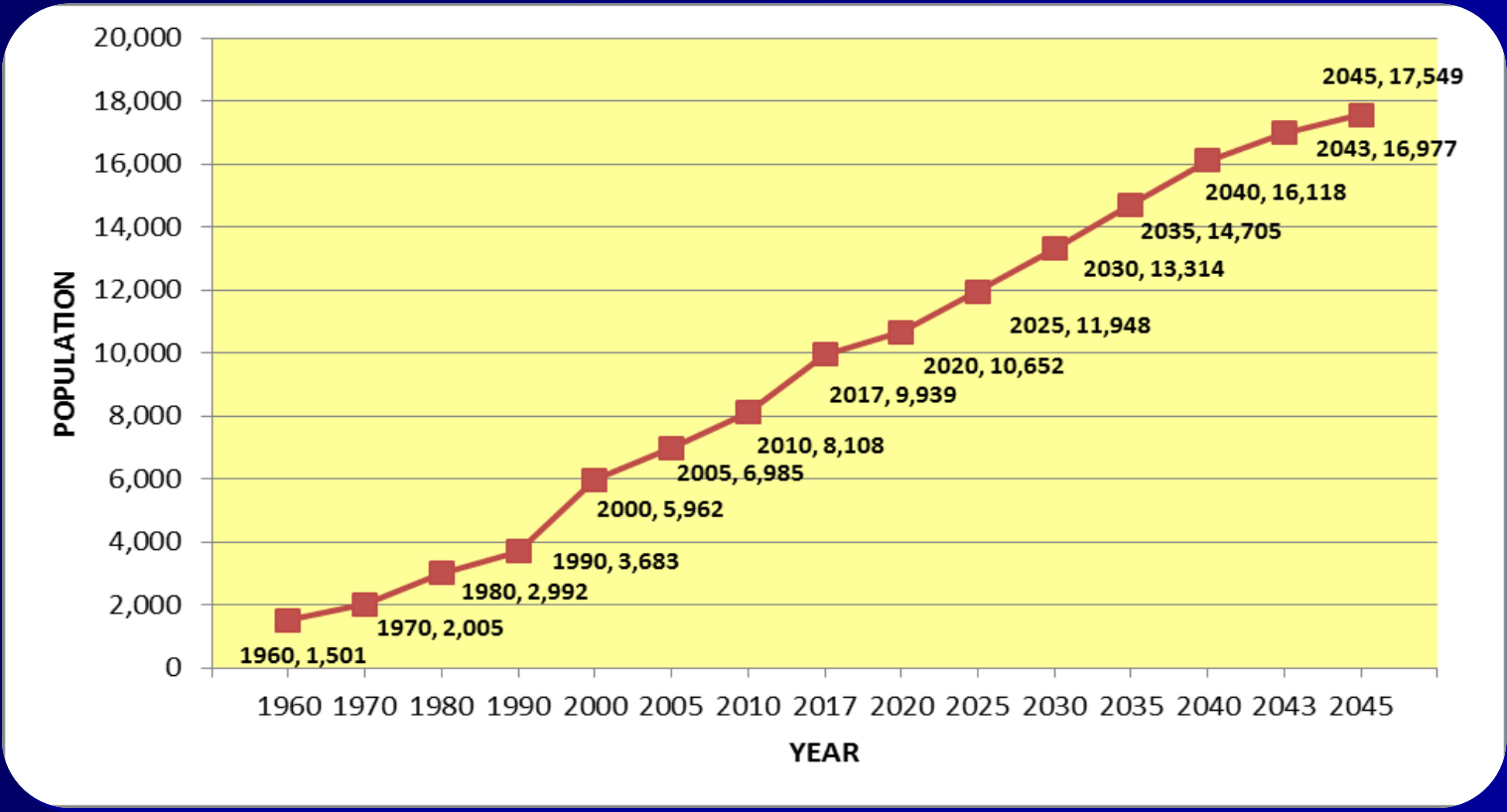
Pathway to Compliance

Key Milestones

• WWFCSMP Authorization	2017
• Recycled Water Use Plan Approval	2018
• Mutual Agreement Order (MAO) with DEQ	2018
• Permit Modification Applications	Pending
• Collection System Improvement Projects	On-going
• WWTP Biosolids Removal	On-going
• WWTP Improvement Design	2020-2021
• WWTP Improvement Construction	2022-2023

Population Projection

PSU Population Research and Census Center



Wastewater Flows

Existing and Projected Flows

PARAMETER	2017		2043			
Population	9,939		16,977			
Base Sewage	0.89	MGD	90	gpcd	1.52	MGD
Base Infiltration	0.22	MGD	23	gpcd	0.38	MGD
AAF	1.85	MGD	186	gpcd	3.16	MGD
ADWF	1.11	MGD	112	gpcd	1.90	MGD
AWWF	2.48	MGD	249	gpcd	4.24	MGD
$MMDWF_{10}$	1.91	MGD	192	gpcd	3.25	MGD
$MMWWF_5$	3.21	MGD	312	gpcd	5.30	MGD
Peak Average Week	4.51	MGD	401	gpcd	6.80	MGD
$PDAF_5$	6.62	MGD	524	gpcd	8.91	MGD
PIF	9.7	MGD	735	gpcd	12.48	MGD

WWTP Processes

Processes

- Influent Fine Screen
- Aerated Lagoon (1.3 MG)
- Transfer Pump Station
- Facultative Lagoons 1 and 2 (25 acres, 98 MG)
- Dissolved Air Flotation
- Gravity Sand Filters
- Calcium Hypochlorite Disinfection
- Chlorine Contact Chamber
- Effluent Pump Station

Existing System Summary

Overall Assessment

- Existing WWTP is unable to reliably perform in compliance with current NPDES permit limits.
- WWTP upgrade is necessary to meet current wastewater permit limits and to provide wastewater service for population growth.
- Recycled Water Use Plan amended for Class C.
- Permit modifications are necessary due to extremely low waste load allocation.

NPDES Permit Non-Compliance

Summary of NPDES Permit Violations

- Repeated TSS concentration and mass load violations.
- Per previous RWUP, repeated turbidity (Class A) and total coliform violations.
- Often discharge to Molalla River during summer months, in violation of NPDES permit.

NPDES Permit Modifications

Objective #1

- Molalla River Discharge Period
  - Currently Nov 1 – April 30
  - Objective Nov 1 – May 31 (when river conditions allow)

NPDES Permit Modifications

Objective #2

- Molalla River Outfall
  - Currently < 10/10 mg/L BOD/TSS (monthly average)
- Willamette Basin Standards (OAR 340-041)
  - < 30/30 mg/L BOD/TSS (monthly average)
  - Objective < 30/30 mg/L BOD/TSS (monthly average)

- Nearby Discharges
  - Tangent - < 30/50 mg/L BOD/TSS (Willamette Basin)
  - Stayton - < 30/30 mg/L BOD/TSS (Willamette Basin)
  - Woodburn - < 25/30 mg/L BOD/TSS (Willamette Basin)
  - Sheridan - < 30/50 mg/L BOD/TSS (Willamette Basin)
  - Dallas - < 25/30 mg/L BOD/TSS (Willamette Basin)

NPDES Permit Modifications

Objective #3

- Mass Load Limits
  - Currently based on deficient flows derived in 2003
    - Average Wet Weather Flow 1.92 MGD
  - Current flows
    - Average Wet Weather Flow 2.48 MGD
    - Max Month Wet Weather Flow 3.21 MGD
  - Objective is to realign them with 2007 design document flows
    - Average Wet Weather Flow 3 MGD
    - Max Month Wet Weather Flow 4.1 MGD

WWFCSMP – 1st Draft

- Future NPDES permit is primary basis of WWFCSMP.
- 1st Draft of WWFCSMP
  - Based on DEQ input during Project Kick-Off Meeting and at Technical Advisory Committee (TAC) meetings.
- Basis of 1st Draft
  - RWUP based on Class C
  - Willamette Basin standards
  - Mass load limits increased
  - May discharge (conditionally)

WWFCSMP – 2nd Draft

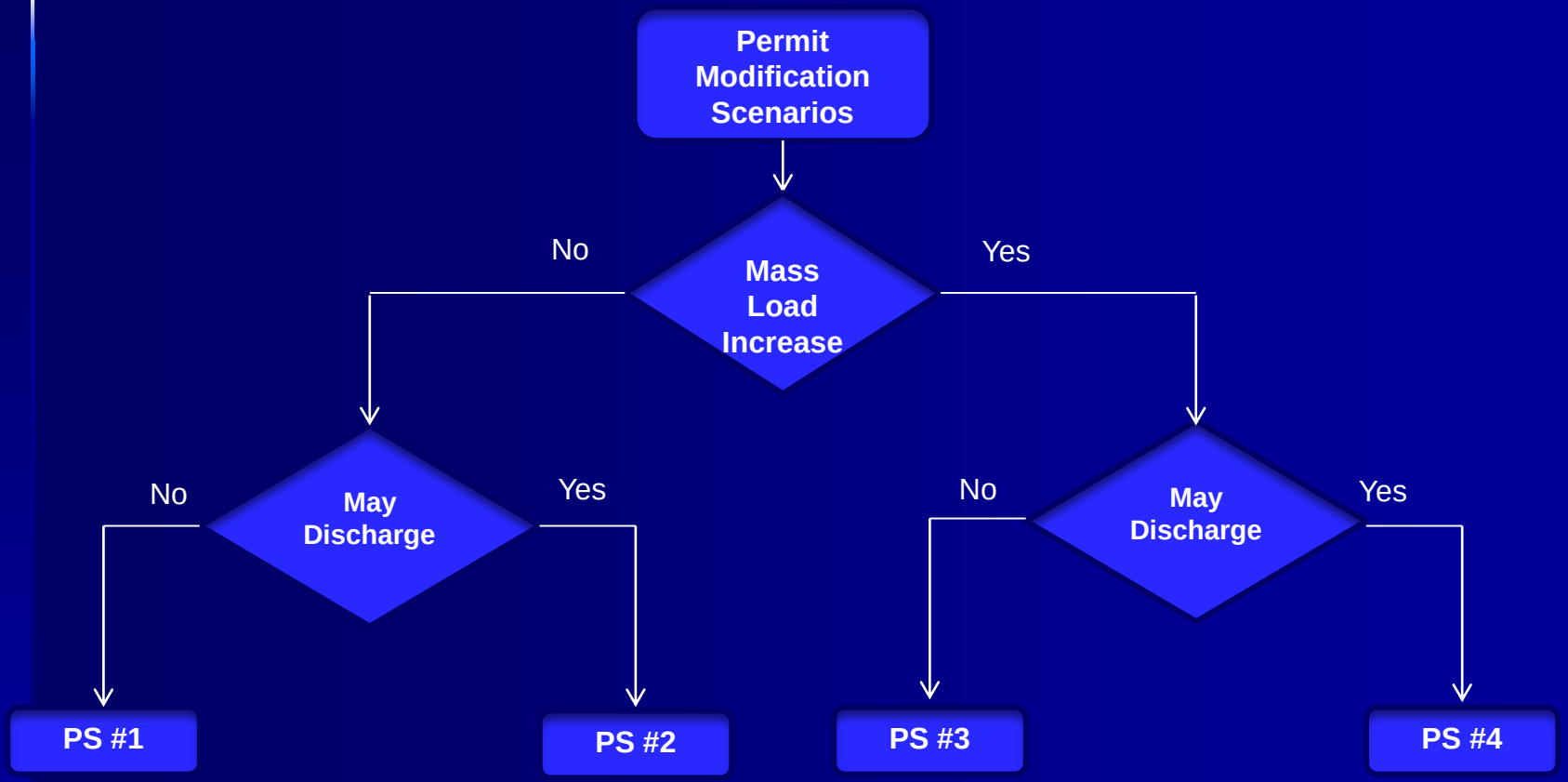
- Why are the changes necessary?
  - DEQ's second review letter requested that the WWFCSMP address the 'no change in permit' condition.
  - With pending permit modifications, there are four potential future permit scenarios.

Potential Permit Scenarios

- Permit Scenario #1 (PS #1)
  - No Permit Modifications
- PS #2
  - Mass Load Increase Not Approved, May Discharge Allowed
- PS #3
  - Mass Load Increase Approved, May Discharge Not Allowed
- PS #4 ⟸ **Basis of 1st draft WWFCSP**
  - Mass Load Increase Approved, May Discharge Allowed

NOTE: May discharge based on acceptable river conditions.

Potential Permit Scenarios



WWTP Alternatives Evaluation

WWTP Alternatives Evaluation

- Wetlands
- Lagoon enhancement processes
- I/I reduction only (no improvements of existing WWTP)
- No-action
- Sequencing Batch Reactor (SBR)
- SBR with Tertiary Filtration
- Conventional Activated Sludge (CAS)
- Oxidation Ditch
- Membrane Bioreactor (MBR)

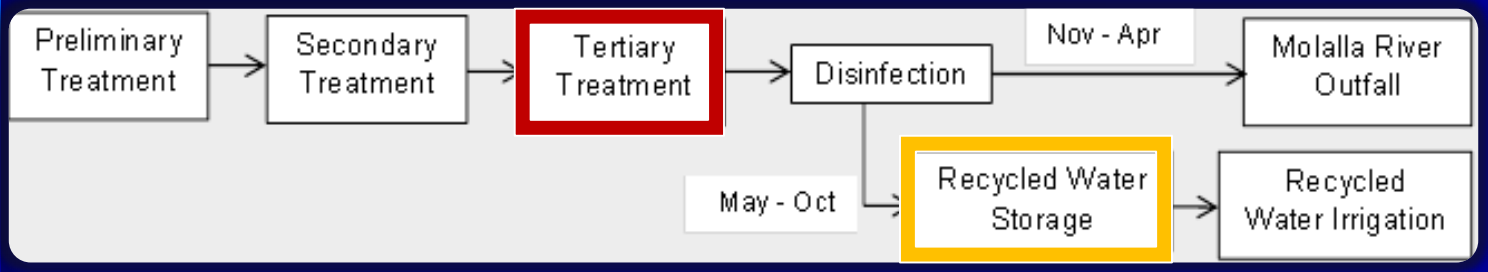
Permit Scenarios

Revisions from 1st Draft

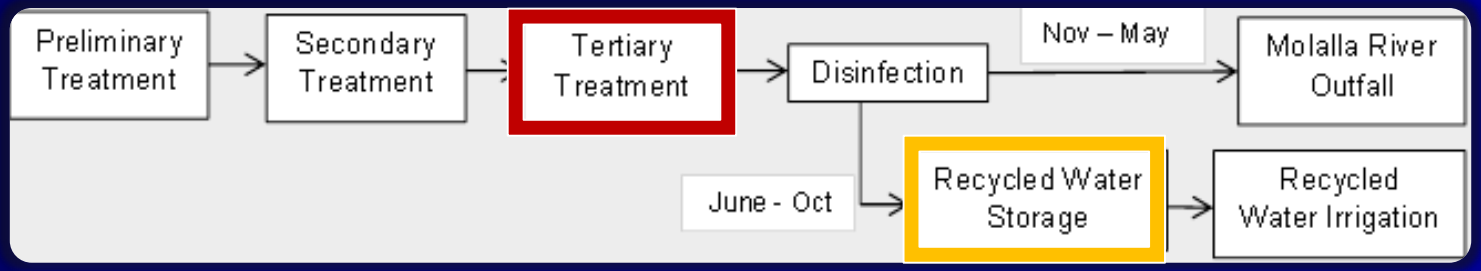
= Added Process

= Expanded Storage

PS #1 Process Schematic



PS #2 Process Schematic



NOTE: Added/expanded evaluation found in draft WWFCSMP.

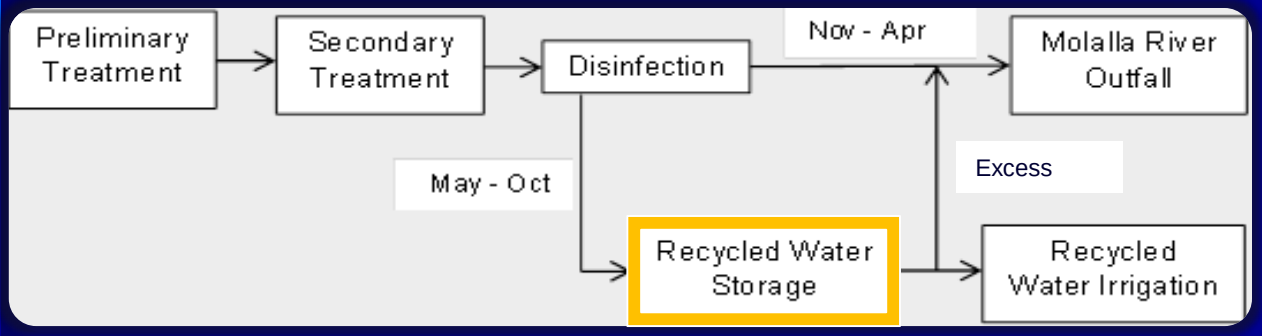
Permit Scenarios

Revisions from 1st Draft

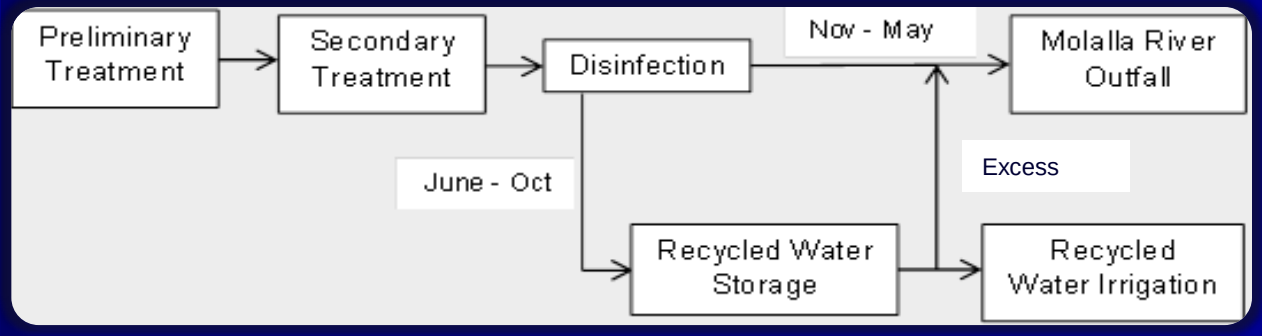
= Added Process

= Expanded Storage

PS #3 Process Schematic

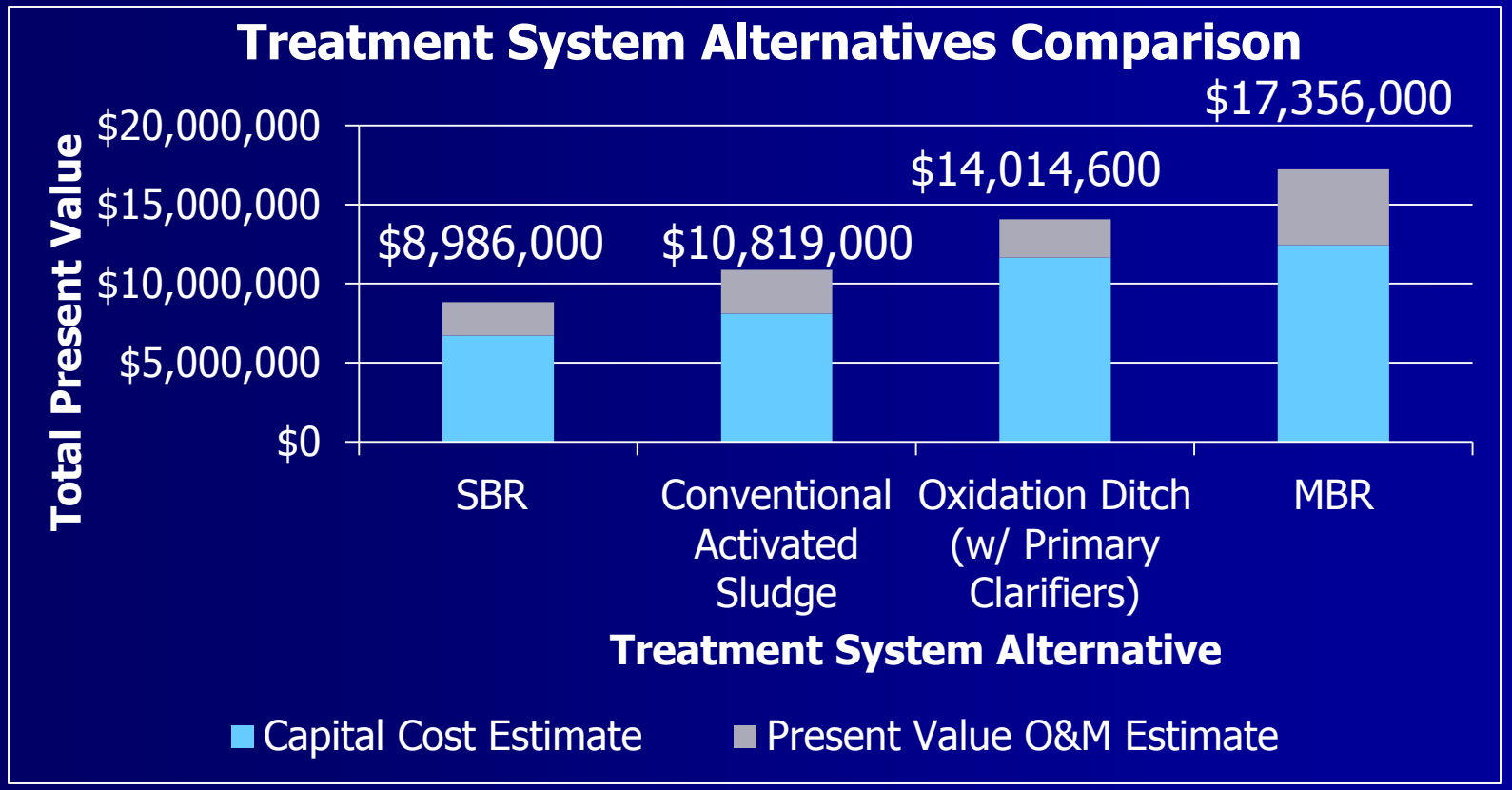


PS #4 Process Schematic (Basis of 1st Draft)



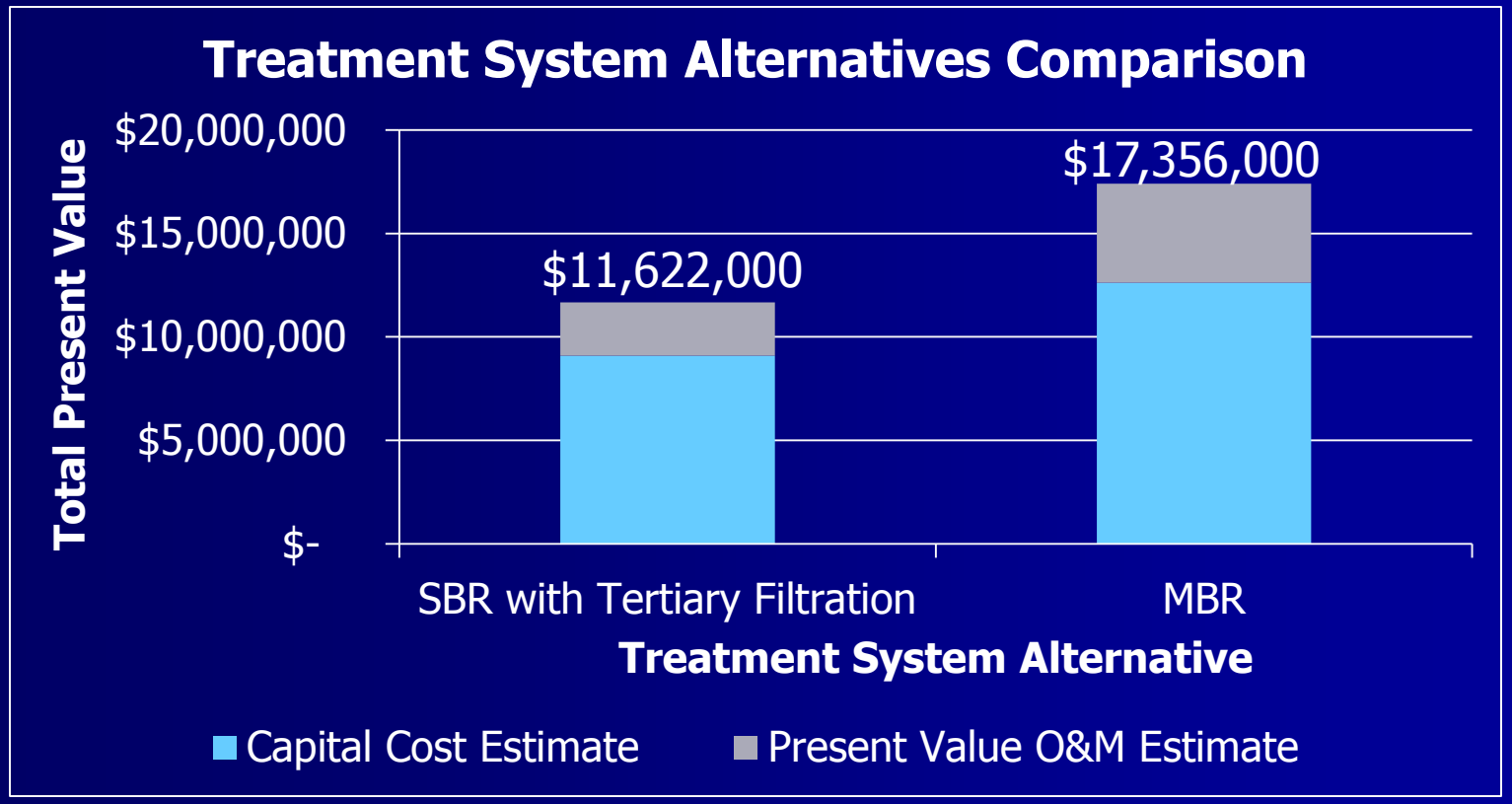
WWTP Improvements

Biological Treatment Cost Estimates (PS #3 and PS #4)



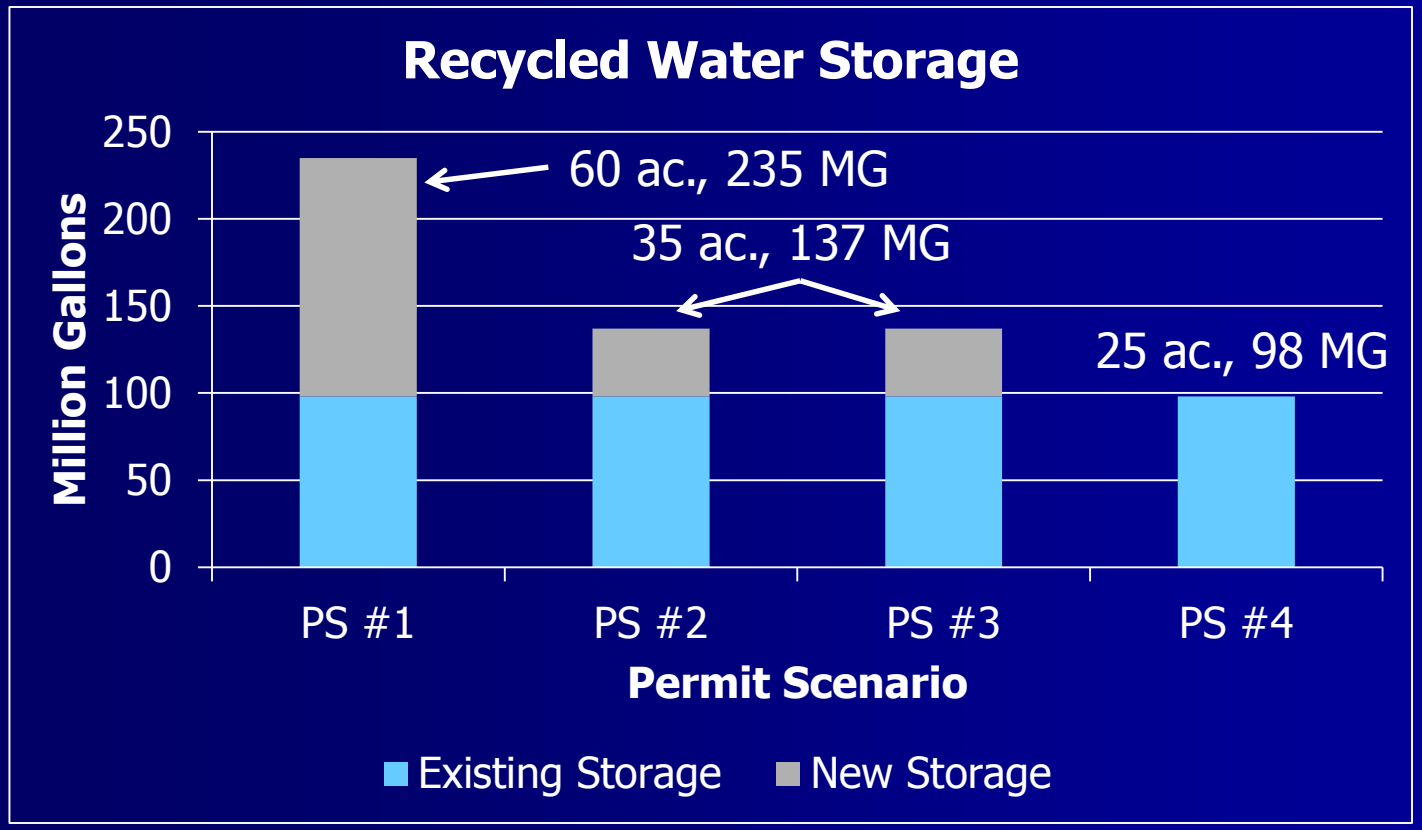
WWTP Improvements

Biological/Tertiary Cost Estimates (PS #1 and PS #2)



WWTP Improvements

Recycled Water Storage



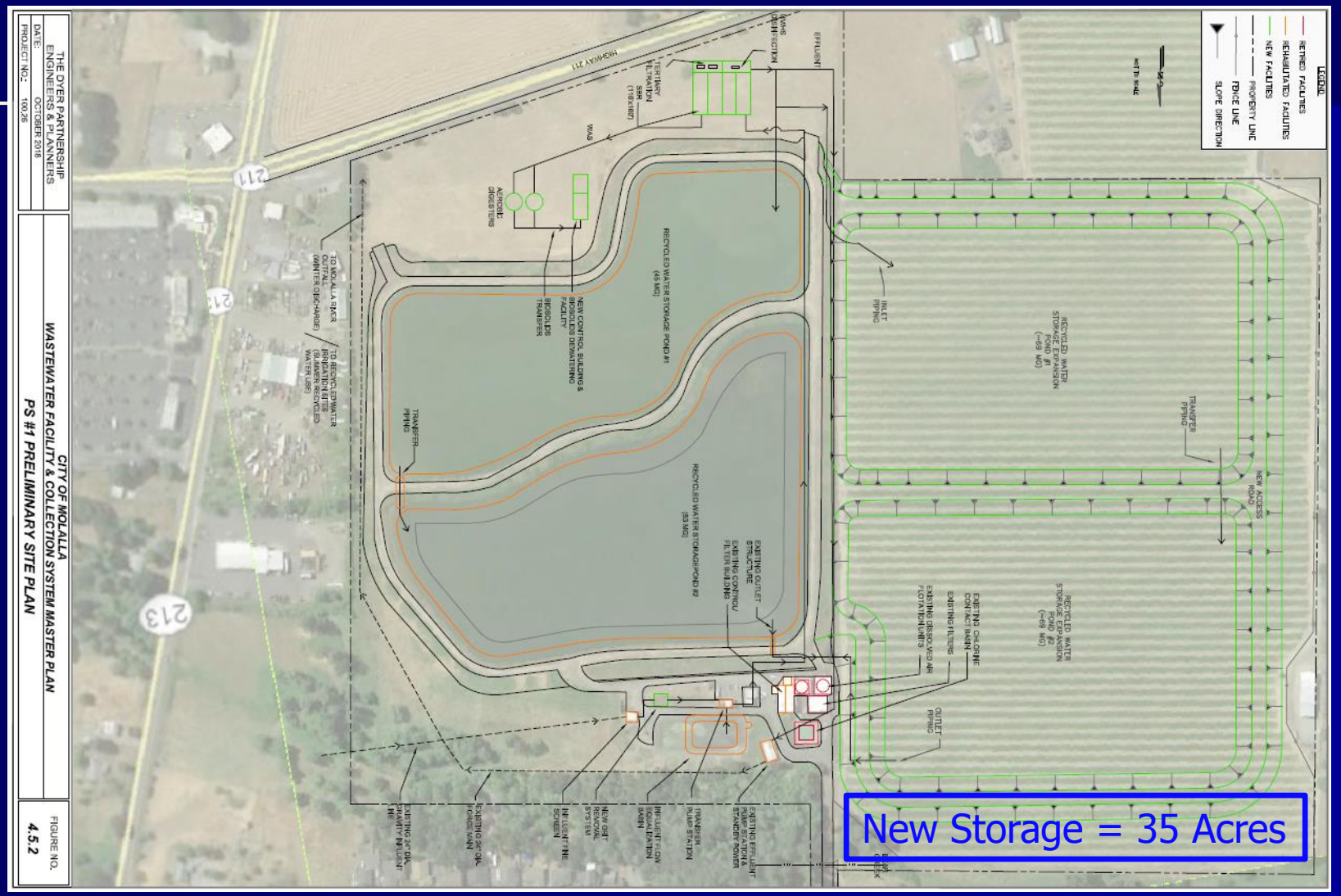
WWTP Improvements Summary

- Influent fine screen expansion (improvements underway)
- Grit removal system
- Influent flow equalization
- Transfer pump station upgrades
- Sequencing Batch Reactor (SBR)
- Tertiary Filtration
  - For PS #1 and #2 only
- Recycled water storage improvements (Lagoon #1 & #2)
  - PS #1, #2, #3, and #4
- Recycled water storage expansion systems
  - For PS #1, #2, and #3 only

WWTP Improvements Summary, Cont.

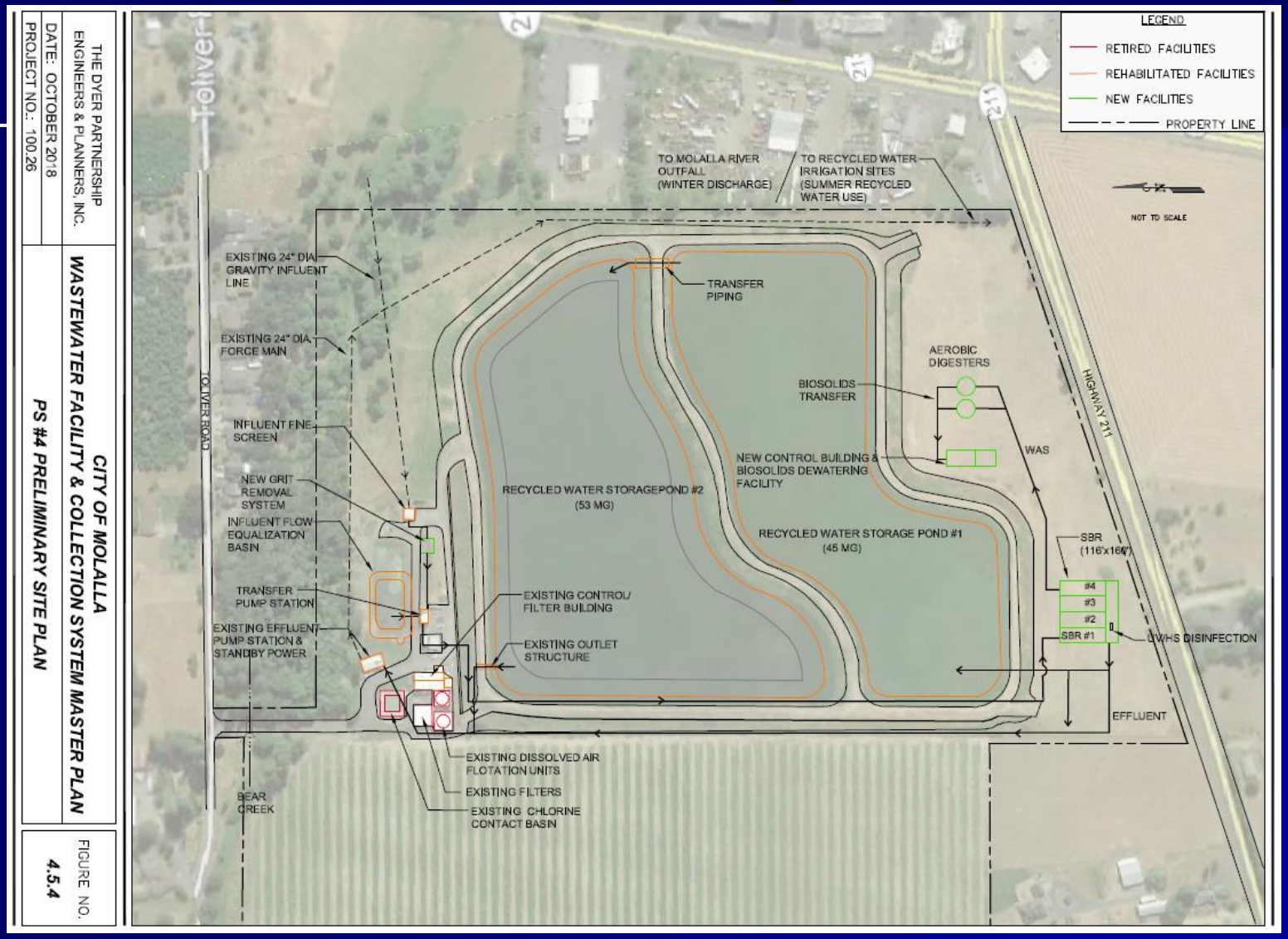
- Winter UV disinfection / summer sodium hypochlorite
- Effluent pump station improvements
- Discharge monitoring station improvements
- Aerobic digester & biosolids dewatering press
- Lagoon dredging, dewatering, and disposal

PS #1 Preliminary Site Plan

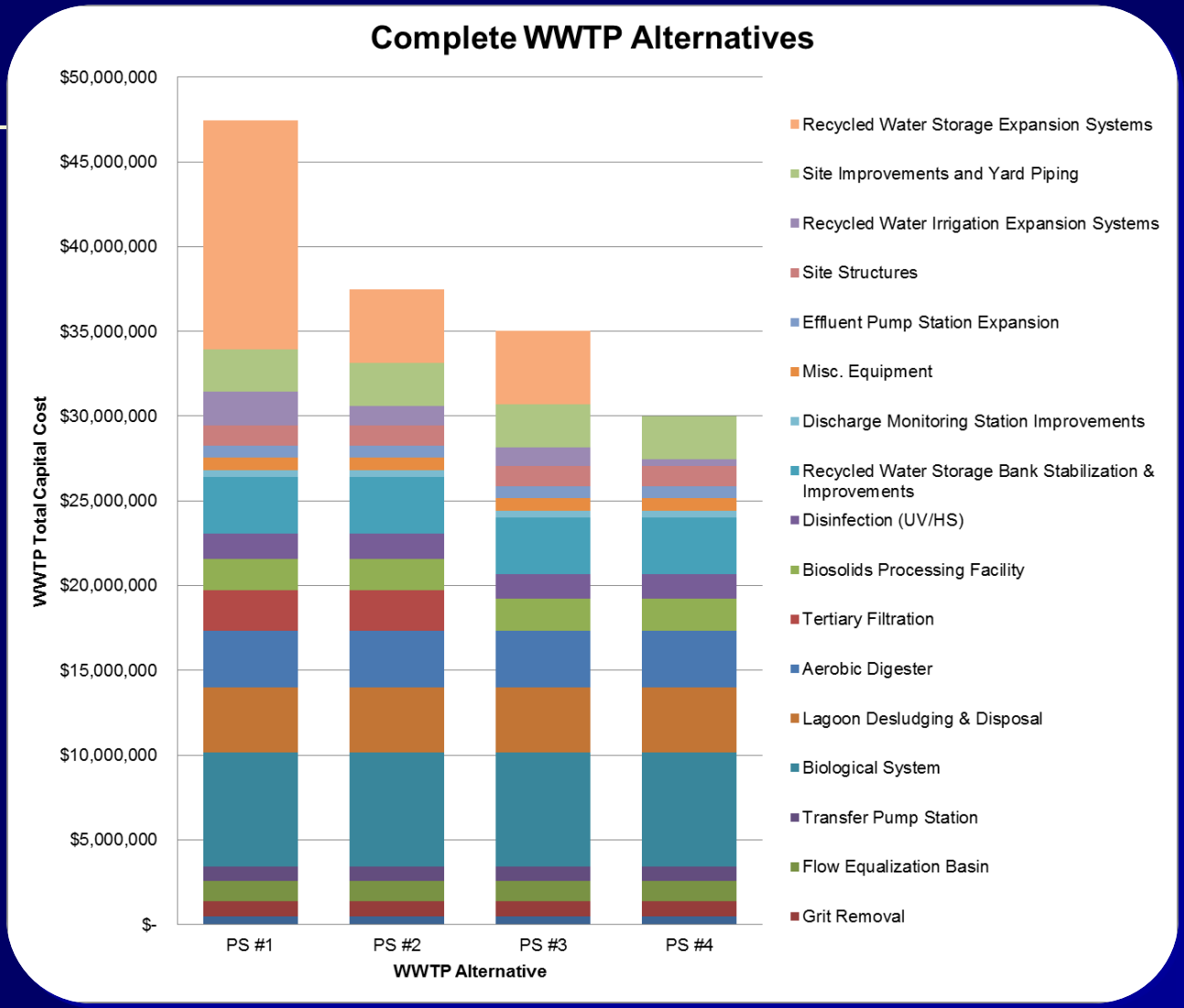


PS #2 & 3 Preliminary Site Plan

PS #4 Preliminary Site Plan



Total WWTP Cost Estimate



NOTE: Construction costs only.

Total Project Cost Estimate

Total Phase I Project Cost Estimate (2018 Dollars)

Item	PS #1	PS #2	PS #3	PS #4
Collection System	$4,669,900	$4,669,900	$4,669,900	$4,669,900
Pump Stations	$672,500	$672,500	$672,500	$672,500
WWTP	$66,456,000	$53,008,000	$49,704,000	$41,208,000
Total	**$71,798,400**	**$58,350,400**	**$55,046,400**	**$46,550,400**

Total Project Cost Estimate

Total Phase I Project Cost Estimate (2021 Dollars)

Item	PS #1	PS #2	PS #3	PS #4
Collection System	$5,103,000	$5,103,000	$5,103,000	$5,103,000
Pump Stations	$735,000	$735,000	$735,000	$735,000
WWTP	$72,619,000	$57,924,000	$54,313,000	$45,030,000
Total	**$78,457,000**	**$63,762,000**	**$60,151,000**	**$50,867,000**

Pathway to Compliance

Project Schedule

- Collection System Improvements (Phase I) Oct 2018
- WWFCSMP DEQ Approval Nov 2018
- Value Analysis April 2019
- Secure Funding 2019
- Start WWTP Improvements Design July 2019
- Predesign Report Jan 2020
- Value Engineering Mar 2020
- Design of WWTP 2020 - 2021
- WWTP Construction 2022 – 2023
- WWTP Commissioning 2023
- Performance Evaluation 2024

Questions and Comments

Minutes of the Molalla Planning Commission
Molalla Adult Center
315 Kennel Ave., Molalla, OR 97038
January 16, 2019

The January 16, 2019 meeting of the Molalla Planning Commission was called to order by Chair Rae Lynn Botsford at 6:30pm. This was followed by the flag salute and roll call.

COMMISSIONER ATTENDANCE:
Chair Rae Lynn Botsford – Present
Co-Chair Omar Reynaga - Absent
Commissioner Hardeep Singh Brar – Absent
Commissioner Steve Deller – Present
Commissioner Doug Eaglebear – Present
Commissioner Debbie Lumb – Present
Commissioner Jennifer Satter -- Present

STAFF IN ATTENDANCE:
Dan Huff, City Manager - Absent
Aldo Rodriguez, Senior Planner – Present
Gerald Fisher, Public Works Director - Present
Spencer Parson, City Attorney - Absent

PUBLIC COMMENT ON MATTERS NOT ON THE MEETING AGENDA:
No one offered public comment.

MINUTES:
Chair Botsford confirmed with PC that they have received and reviewed the minutes from the November 17, 2018 meeting. Chair Botsford called for a motion to approve the minutes. Commissioner Deller made a motion to approve the minutes, and Commissioner Lumb second was received. Motion passed 4-0.

PUBLIC HEARING:

- Updated language for Chapter 17, Sections 3.5.030. 3.5.040 and 3.6.020 of the Municipal Code.

Chair Botsford called the public hearing to order. She outlined how members of the public can participate in the hearing and summarized the hearing agenda. Botsford also made this statement:

CITY STAFF REPORT:
Public Works Director Fisher stated that at the September 26, 2018 City Council meeting a public hearing was held to adopt the transportation master plan. After the adoption of the plan, part of the plan was comparing the transportation master plan to the language in the code.

A couple of minor modifications were identified to the code, which was adopted in 2017 and the TSP that was adopted in 2018. The modifications were based around parking, the number of bicycle stalls and a change in the traffic impact.

He referred to a technical memorandum, number 7, that was part of the master plan. He spoke to page 21, section 17-3.5.030, automobile parking. This added a carpool parking requirement, which modified some of the sub-section numbers and letters.

The next section modified was in regards to bicycle parking, section 3.5.040, dealing with the minimum bicycle parking spaces table. It added in transit and transfer station parking lots.

Section 3.6.020 changes were made to the traffic impact statement requirements. Fisher talked about different criteria and the impact it would create. The modifications changed it to a tiered system, which will result in fewer traffic impact statements having to be done. ODOT has looked at the plan and had no issue with the tiered system.

Commissioner Deller asked if the threshold for traffic impact analysis used to be non-existent.

Public Works Director Fisher stated that there was a requirement for a traffic impact analysis, it just wasn't tiered. He explained the differences between how the code used to read in comparison to the tiered system.

Commissioner Deller asked if we are going to see an increase in required traffic impact analysis.

Public Works Director Fisher explained the peak traffic numbers and how they determine whether a traffic impact analysis or a traffic impact letter would be required. There is still an allowance for the City to require a traffic impact analysis under certain circumstances.

Commissioner Deller inquired about St. Helens and Oregon City being picked for comparisons.

Public Works Director Fisher stated that those are recent studies, so the consultants used them. Previously Wilsonville had been used as a comparison, but that data was 10 years old.

Commissioner Deller stated that it appears that Canby's threshold is 1,000 trips per day, which is higher than what the City is talking about.

Public Works Director Fisher explained that the higher the threshold, the higher number of developments that will be missed, which could have a significant impact on the intersections. Depending on the impact, it could result in the developers being required to make improvements to the affected intersections.

Commissioner Deller explained his concerns about setting the threshold too low and the economic impact it could have on developers wanting to do smaller projects.

Public Works Director Fisher explained that the new plan is based on a three-tier system and how that will affect different sized developments.

Commissioner Deller asked about the language being added for carpool parking, is that a cost that the developers will incur to put signs in their lots for preferred parking.

Public Works Director Fisher referred to page 21, E1, identifies the requirement for carpool parking spots for new commercial/industrial developments with 50 or more parking spaces, new institutional or assembly uses and transit park and ride facilities with 50 or more parking spaces. He explained that carpooling saves the number of trips on the roadways and reduces the amount of fuel consumed. The preferred carpool parking spaces are providing incentives to share rides.

Commissioner Deller said that he feels most people that live in Molalla drive out of town to go to work. Stated that he feels that destinations in Molalla are short drives for most people and doubts that many people will take advantage of carpooling. He stated that it seems like a regulation that doesn't quite fit the City. He asked if there would be parking enforcement on these spaces once the plan is implemented.

Public Works Director Fisher said that police will not be issuing citations on private property. This part of the plan is trying to give incentives to reduce the number of cars on the roadway. He explained that this is a 20-year plan, so even though it may not have a great affect now, it's better to get processes in place now for the future.

Chair Botsford asked if they hit the requirement for carpool spaces, will that reduce the number of handicap spaces they are required to have.

Public Works Director Fisher stated that ADA spaces are exclusive and they cannot be doubled as carpool spaces. He also said that once the plan is implemented, there will be a couple of carpool space in the parking lot behind City Hall, right by the transit stop.

Chair Botsford closed the public hearing.

DISCUSSION ITEMS:

Commissioner Deller stated that he likes the idea of the transportation impact analysis update. He is not a fan of the carpool spaces.

Chair Botsford clarified that the requirement for carpool spaces would be affective for developments with over 50 parking spaces.

Public Works Director Fisher confirmed that was correct.

Commissioner Deller asked if institutional referred to churches and schools.

Public Works Director Fisher said that is correct, it refers to schools and colleges. He is not sure if that includes Civic, City and Public, but doesn't think so.

Chair Botsford asked about page 33, regarding the street connectivity and formation of blocks regarding streets violating provisions of leases, easements, covenants existing as of May 1, 1995.

Public Works Director Fisher responded that it was probably legal wording used for a ballot measure. He will follow up with Angelo Planning to verify that it has to do with a TPR or a ballot measure requirement. If it isn't and it is a carryover from a different agency, as long as it isn't state law, it could be removed or modified to a language that the Planning Commission is happy with.

Commissioner Eaglebear made a motion to approve the amendments to Chapter 17 of the municipal code and recommend adoption to the City Council as of January 23, 2019 as amended by the planning commission, **Commissioner Satter** seconded the motion. Motion passed 4-0.

OLD BUSINESS:

None**.**

REPORTS AND ANNOUNCEMENTS:

Commissioner Eaglebear talked about the visioning plan and some of the strategies have been finalized. The is process is ongoing.

Public Works Director Fisher talked about having two master plans completed and will be starting the water master plan beginning in February. Should be done and to the planning commission by summer of 2020.

Chair Botsford confirmed that members of the Planning Commission are usually asked to participate in that process.

Public Works Director Fisher stated that is correct, they would become a member of the advisory committee. In addition that committee would include a City Council representative, a residential property owner, a commercial property/business owner and an industrial property/business owner. Members of the community are also allowed to join the committee. The group is limited to approximately eight members. That project will likely have four public meetings as well as some technical advisory meetings prior to those public meetings.

ADJOURNMENT:

Commissioner Eaglebear made a motion for adjournment. Commissioner Satter seconded the motion. Meeting adjourned at 7:24 p.m.

_____ _____

Chair, Rae Lynn Botsford Date

ATTEST:_____

Alice Cannon, Senior Planner

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

CITY OF MOLALLA STAFF REPORT
DRW03-2019 DOLLAR GENERAL

Date:	July 30, 2019
File No.:	DRW03-2019
Request:	Site Design Review of a new 9,100 SF commercial retail building with parking lot and landscaping
Address:	728 E Main St Molalla, OR 97038
Tax Lot(s):	52E08C; Tax Lot 700
Applicant:	SimonCRE SMO, LLC
Property Owners:	Price Automotive Refinishing, LLC

I. APPLICABLE STANDARDS AND CRITERIA

Molalla Municipal Code, Title 17, Development Code

1. Division II, Zoning Regulations

   Chapter 17-2.2.030 Allowed Uses
   Chapter 17-2.2.040 Lot and Development Standards

2. Division III, Community Design Standards

   Chapter 17-3.2.040 Non-Residential Buildings
   Chapter 17-3.3 Access and Circulation,

Chapter 17-3.4 Landscaping, Fences and Walls, Outdoor Lighting,
Chapter 17-3.5 Parking and Loading,
Chapter 17-3.6 Public Facilities, and
Chapter 18.02 Signs;

3. Division IV, Application Review Procedures and Approval Criteria

   Chapter 17-4.1.030 Type II Procedure (Administrative Review with Notice)
   Chapter 17-4.2.050 Approval Criteria

II. Executive Summary

Site Description:

The subject property is located on the south side of State Hwy 211 (W Main Street) in Molalla, directly southeast of Leroy Avenue. The project site is Lot 13 of the approved Cascade Center commercial subdivision (Molalla Planning file DRW01-2019). The 1.07- acre lot will consist northern portions 724 W Main Street and 728 W Main Street. 728 Main Street is currently vacant and 724 Main Street is the site of a vacant house, to be demolished. Several trees are scattered on the property. The site has a slight slope, descending from its high point in the southeast corner to its low point in the northwest corner.

Zoning:

Current zoning of the properties is General Commercial (C-2), and no change to the zoning designation is being proposed.

Surrounding Zoning and Land Uses:

The project site is directly surrounded by land to the east, west, and south by vacant properties that are part of the approved Cascade Center development, approved by the Planning Commission on June 5, 2019. These properties are all zoned General Commercial (C-2). Adjacent to these properties are a medium-high density (R-3) zoned apartment complex to the west and south and a storage facility to the east also zoned C-2. Across S HWY 211 to the north are two C-2 zoned non-conforming residential properties.

Proposal:

The Applicants/Owners propose a new 9,100 SF commercial retail building with parking lot. This building is being developed as the site of the national retail chain store -- Dollar General.

The site will take access from S. Leroy Ave, a major collector street to be dedicated and extended south, as part of the Cascade Center development, located directly across from the existing

Leroy Avenue to the north. These lots will be serviced with storm, sanitary and water for domestic use as well as fire protection from the extended Leroy Avenue.

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.

Public Notice and Comments:
Notice of the public hearing was sent to all property owners within 300 feet of the subject properties and to a group of interested parties on July 16, 2019. The notice was posted on the City's website on July 16 and published in the Molalla Pioneer on July 24, 2019. Signage containing public notice information was posted on the property by July 23, 2019. As of noon, on July 31, staff had received no public comments for this application.

III. Recommendation

Based on the application materials and findings demonstrating compliance with the applicable criteria, staff recommends approval of Site Design Review DRW03-2019, subject to the following conditions of approval. This approval is based on the applicant's submitted plans, written narrative, and supplemental application materials. Any modifications to the approved plans other than those required by this decision will require a new land use application and approval.

1. Conditions Requiring Resolution Prior To Submitting Building Permit Applications to Clackamas County:

The Applicant and/or Property Owner shall:

a. Revise Sheet A02 to wrap the brick façade from the north and south elevations to the eastern elevation, extending across the entirety of the eastern elevation. 17-3.2.040 (E)(2)

b. Revise Sheet A02 to show the dimensions of the parapet screening or location of the HVAC system on the east, west, and southern elevation plans. 17-3.2.040 (G)(2)

c. Revise Sheet La.01 to identify all pedestrian amenities on the submitted landscaping site plan, to justify a 10-foot "build to" from the OR-211 property line and the 94-foot "build to" setback from the Leroy Avenue property line. Sheet La.01 shows landscaping in the "pedestrian amenity area, appearing to discourage

its use a plaza space. Please provide a “detail” of this building entrance/” build to” area to demonstrate compliance with Section 17-2.2.040 (E) “Build-To Line.” Consider using tree wells, bicycle parking areas and other amenities to make this an inviting space for pedestrians.

d. Revise Sheet La.01, the Preliminary Grading and Drainage Plan, and the Preliminary Utility Plan to show pedestrian walkways and crossings interior to the site to meet continuous walkway requirements within the site and to create connectivity between the site and future developments. A continuous pedestrian walkway should be provided on the south and eastern edges of the site. 17-3.3.040 (B) (1-5)

e. Submit a site plan and product cut sheets showing illumination type, intensity, and precise locations of lighting to determine compliance with Molalla Municipal Code 17-3.4.050, 17-4.2.040 (B)(2)(k)

f. Revise plans to screen all rooftop mechanical, wall-mounted and ground-mounted mechanical equipment and show compliance with 17-3.2.040(G)

g. Revise Sheet La.01, the Preliminary Grading and Drainage Plan, and the Preliminary Utility Plan to ensure wheel stops, curbs, bollards, or other physical barriers are designed along the edges of all vehicle-maneuvering areas to protect landscaping from being damaged by vehicles. Section 17-3.4.030(E)(4)

h. Revise Sheet La.01, the Preliminary Grading and Drainage Plan, and the Preliminary Utility Plan to show a landscaping island on the southern end of this row, between the parking area and cross-hatched truck loading area. Section 17-3.4.030(E)

i. Revise Sheet La.01, the Preliminary Grading and Drainage Plan, and the Preliminary Utility Plan to show an area for six (6) bicycle parking spaces, as required by Section 17-3.5.040 (A). Bicycle parking design shall confirm with Section 17-3.5.040(B)&(D).

j. If wetlands are present on the site, provide staff with a letter of concurrence from the Oregon Department of State Lands regarding the status of wetlands on-site.

k. This proposal impacts the sanitary sewer, water and stormwater, and transportation systems and is therefore required to pay System Development Charges (SDCs) for all these utilities. SDCs shall be calculated in accordance with the SDC methodology. Section 13.14

l. Detailed engineering plans demonstrating compliance with the Molalla Municipal Code (MMC) and City of Molalla Public Works Standards. All public improvement designs -- including storm drain, domestic water and sanitary sewer facilities -- 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. Design and construct Leroy Avenue as a new major collector street under City of Molalla jurisdiction. Right-of-way width will be 60 feet and pavement width will be 34-46 feet. Cascade Center will be constructing Leroy Avenue with curb and gutter on the east side of the roadway. Applicant will be required to design and construct 6-foot wide sidewalks, a commercial driveway, and street lighting to complete the frontage improvements on the east side of the roadway to the south edge of the driveway wing for the private driveway to the east. Driveway centerline shall align with centerline of driveway on the west side of Leroy Avenue as proposed by Cascade Center. If Cascade Center does not develop, applicant shall be required to construction road improvements commensurate with Cascade Center conditions along project frontage.

ii. Design and construct frontage improvements along W. Main Street (OR 211). W Main Street (OR 211) is an arterial street under Oregon Department of Transportation (ODOT) jurisdiction. Cascade Center will be constructing the south half of W Main Street with curb and gutter. Applicant shall be required to design construct six-foot wide sidewalks and street lighting to complete the frontage improvements on the south side of the roadway to the east edge of the parcel. If Cascade Center does not develop, applicant shall be required to construct road improvements commensurate with Cascade Center conditions along project frontage.

iii. Transit – Per the Transportation System Plan, the southeast corner of W Main Street and Leroy Avenue is designated as a bus stop. Applicant shall install a concrete pad, size and location to be determined by South Clackamas Transit District, for future installation of a bus shelter. Location shall be identified on plans for approval by City and South Clackamas Transit District and be constructed as part of the public improvements. Section 17-3.6.020

iv. 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 enough 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 for Public Works to process plat documents. Section 17-3.6.020

v. Access to public streets shall be limited to the private road access shown in the Applicant's Narrative – Exhibit B. The private roadway shall be paved and include pedestrian connections into the site on the north side of the drive. Access spacing shall conform to the Transportation Systems Plan. The proposed width of accesses shall meet the Molalla Standard Specifications for Public Works Construction.

vi. Design and construct a pedestrian crosswalk on the south side of the Leroy Avenue/private driveway intersection with ADA ramps. Applicant shall coordinate construction of the improvements with Cascade Center. Applicant shall be responsible to install all associated signing for this crosswalk.

vii. Dedicate a 10-foot wide Public Utility Easement along all public rights of way if not already provided in the Cascade Center subdivision plat. Show the required PUE on the submitted plans. No structures can encroach into the easement. Applicant shall be required to submit a legal description and exhibit map for review and approval of the City. Once completed, applicant will be required to record easements with the County Recorder's Office and return the original document to the City prior to final occupancy. Section 17-3.5.020

viii. Applicant may be required to reimburse the City for costs associated with the construction of Leroy Avenue with costs based on frontage foot calculations or as determined by the City.

ix. Design and construct stormwater improvements to connect to ODOT's stormwater system in OR-211, meeting ODOT's standards. No stormwater system is available for connection in Leroy Avenue.

x. Design plans showing a connection to sewer in W Main Street via new sewer lateral or coordinate with Cascade Center to provide a viable sewer connection to reconstructed sewer main on Leroy Avenue. Section 17-3.6.040

xi. Design plans showing a connection to water in W Main Street via new water lateral or coordinate with Cascade Center to provide a viable water connection to water main on Leroy Avenue. Section 17-3.6.040

xii. Design and construct a new 8-inch waterline along the private drive for fire flow and extend to east limits of project. Applicant shall coordinate with Cascade Center for installation of a waterline cross to facilitate the extension of an 8-inch waterline. Applicant shall dedicate a 15-foot wide waterline easement per City requirements. 17-3.6.040

xiii. All utilities to the project shall be served with underground services. No overhead crossings of public right of way shall be approved by the city. All engineering drawings shall be designed to meet this requirement. 17-3.6.060

xiv. Design the proposed project to 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.

xv. Pay all associated fees and submit sanitary sewer design plans for review and approval by the Oregon Department of Environmental Quality (DEQ). Applicant's Engineer will be required to submit final report to DEQ and provide a copy of the report to the City.

m. Comply with all ODOT conditions and requirements, as outlined in Exhibit C.

2. Conditions to be met During Construction:

The Applicant and/or Property Owner shall:

a. Design all primary building entrances in conformance with Americans with Disabilities Act (ADA) requirements, as applicable. *17-3.2.040 (D)(4)*

b. Design and construct all walkways in conformance to ADA requirements as required. 17-3.3.040 (B)(6)

c. 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.

d. Be responsible for all erosion control requirements under the 1200-C permit and shall coordinate directly with DEQ for questions related to 1200-C permit compliance.

e. 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.

f. Comply with all ODOT conditions and requirements, as outlined in Exhibit C.

g. 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.

3. Conditions to be met Prior To Occupancy:

The Applicant and/or Property Owner shall:

a. Meet all existing conditions of approval for the site or use as prescribed by this document. Section 17-4.2.050 (E)

b. Make no connections to City service shall be allowed until public improvements are completed. For commercial and industrial development projects, all public improvements shall be completed and accepted by the Public Works Department prior to issuance of any occupancy.

c. As a condition of approval, the Applicant shall apply for and receive permits for any and all signs associated with this development.

4. Ongoing Conditions:

The Applicant and/or Property Owner shall:

a. Ensure no visual obstructions greater than 2.5 ft in height shall be placed in vision clearance areas. Section 17-3.3.030(G)

b. Maintain all landscaping in good condition, or otherwise replace it. Section 17-3.4.030(G)

c. Any fences or walls built on or around this property shall be maintained and adhere to the requirements of Section 17-3.4.040(F) "Maintenance."

Exhibits:

Exhibit A: Dollar General Application Package (including application, narrative, plans and Traffic Impact Analysis

Exhibit B: City of Molalla Public Works Director Recommendations and Conditions

Exhibit C: ODOT Recommendations

Exhibit D: Findings of Fact

Planning & Community Development
117 N. Molalla Avenue
Molalla, OR. 97038
(503) 759-0219
Fax: (503) 829-3676

FOR OFFICE USE ONLY:	
Planning File No. : _____	*City Approval:* _____
Date Received: 3/19/19 Fee: 2,500	*Title* _____
Land Use Type: II	*Date:* _____
Received by: Steve Miller	*Fee Paid:* _____

APPLICATION FOR LAND USE ACTION

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

- ☐ Annexation
- ☐ Plan Amendment (Proposed Zone_____)
- ☐ Planned Unit Development
- ☑ Site Plan (square footage of building and parking area)
- ☐ Variance (list standards to be varied in description
- ☐ Conditional Use
- ☐ Partition (# of lots _____)
- ☐ Subdivision (# of lots _____)
- ☑ Other: Site Design Review

Owner/Applicant:

Applicant: SimonCRE SMO, LLC Phone: 480.887.0644

Applicant Address: 6900 E 2nd St, Scottsdale, AZ 85251 Email: **peter.krahenbuhl@simoncre.com**

Owner: **Price Automotive Refinishing, LLC** Phone: (503) 260-5901

Owner Address: **12605 S Grosheng Rd, Molalla OR 97038** Email: **terry.warren.price@gmail.com**

Contact for additional info: **Tim Price**
tim.willard.price@gmail.com
503-351-6526

Property Information:

Address: **728 West Main Street, Molalla OR 97038**

Assessors Map/Taxlot #: **#01092178 & 01092187**

Current Use of Site: **Vacant Land**

Zoning Designation: **C-2 (GENERAL COMMERCIAL)**

Intended Use: **New construction for 9,100 SF general retail store**

Proposed Action:

New construction of a 9,100 SF general retail store with parking lot

Proposed Use: **New construction of a 9,100 SF general retail store with parking lot**

Proposed No. of Phases (one each year): 1

Authorizing Signatures:

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

Property Owner(s):

Attached Owner's Authorization

Print or Type | Signature

Print or Type | Signature

Applicant(s) or Authorized Agent:

Peter Krahenbuhl / SimonCRE SMO, LLC

Print or Type | Signature

Print or Type | Signature

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

■ **3 Copies of Application Form*** completely filled out and signed by the property owner (or person with authority to make decisions on the property.

■ **Copy of Deed** to verify ownership, easements, etc.

■ **At least 3 folded** sets of plans*

■ **At least 3 copies** of narrative addressing application criteria*

■ **Fee** (along with calculations utilized to determine fee if applicable)

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

October 31, 2018

Re: Clackamas County Assessor Parcel #01092178 & #01092187
728 West Main Street, Molalla, OR, 97038

To Whom It May Concern:

This letter will serve as authorization for **SimonCRE SMO, LLC.** and retained consultants listed here below in Exhibit A, to act as an agent with respect to the property under contract of approximately 1.1 acres and depicted more particularly on Exhibit B on behalf of **Price Automotive Refinishing LLC.**, for the purpose of preparing and processing the necessary documents relative to my property with the City of Molalla, County of Clackamas, State of Oregon.

Thank you,

Signature

503-260-5901
Phone

Warren Terry Price
Name (printed)

12605 S Grasshenry Rd.
Address

Terry.warren.Price@G-mail.com
Gmail.com
Email

Molalla OR. 97038
Address

Signature

503-351-6526
Phone

Willaxd Timothy Price
Name (printed)

26075 NE Butteville Rd
Address

tim.willard.price at G Mail
Email

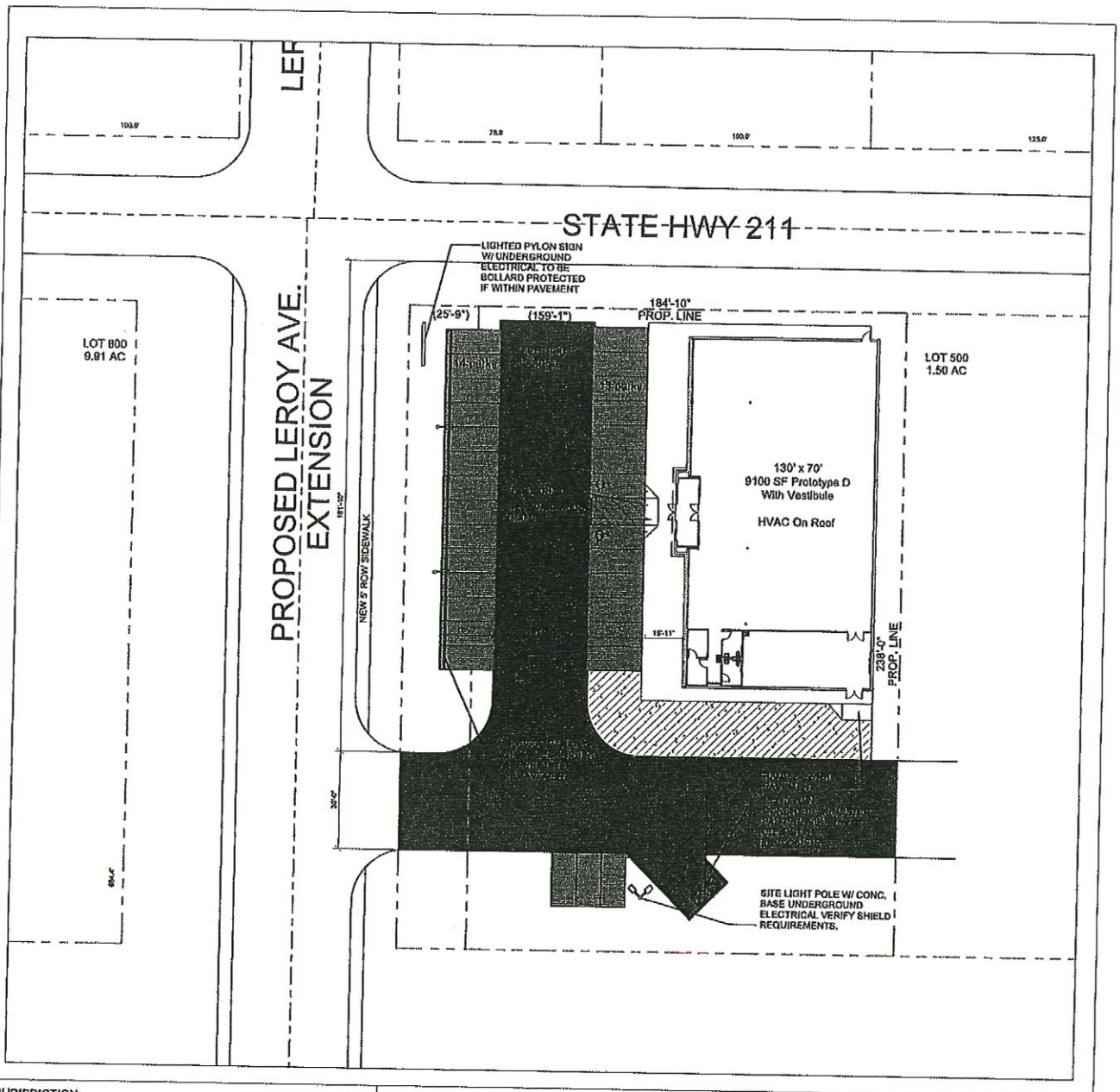
Aurora Ore 97002
Address

EXHIBIT A

CONTACT INFORMATION

SIMONCRE (ENTITY)	CIVIL ENGINEERING	ARCHITECTURAL	GENERAL CONTRACTOR
Joshua Simon	Alex Palm	Tony Brutsche'	
Manager	i.e. Engineering	ICON Architects	
(602) 672-4559	541.673.0166	817-946-7503	
joshua@simoncre.com	palm@ieengineering.com	icon-arch@outlook.com	
Peter Krahenbuhl	Brent Knapp		
Project Manager	i.e. Engineering		
(480) 887-0644	541.673.0166		
Peter.krahenbuhl@simoncre.com	knapp@ieengineering.com		

Exhibit B



JURISDICTION:	CLACKAMAS COUNTY
CURRENT ZONING:	C-2 - COMMERCIAL
REQUIRED ZONING:	C-2 - COMMERCIAL
BUILDING SETBACKS: FRONT:	0'-0" (NORTH)
REAR:	0'-0" (SOUTH)
SIDE:	0'-0" (EAST)
SIDE:	0'-0" (WEST)
STANDARD PARKING REQD:	9,100 SF / 250 SF = 37 REQUIRED
STANDARD PARKING PROV:	30 PROVIDED
ACCESSIBLE PARKING REQD:	2 REQUIRED
ACCESSIBLE PARKING PROV:	2 PROVIDED
STANDARD PARKING STALL:	9'-0" x 20'-0"
ACCESSIBLE PARKING STALL:	11'-0" x 20'-0"
DELIVERY TRUCK:	WB-67

NOTES:

1. SITE LAYOUT BASED ON AERIAL DATA ONLY. LOT LINES AND PROPERTY DIMENSIONS MUST BE VERIFIED BY ALTA SURVEY.
2. LANDSCAPE, UTILITY, SIGNAGE, DRAINAGE, EXISTING BUILDINGS, AND SITE ACCESS POINTS ARE SHOWN FOR REFERENCE ONLY AND WOULD NEED TO BE VERIFIED BY SITE SURVEY.
3. SITE LAYOUT SUBJECT TO CHANGE PENDING SITE SURVEY AND LOCAL JURISDICTION RESTRICTIONS AND APPROVALS.

LEGEND:

CONCRETE | HEAVY DUTY ASPHALT
LANDSCAPE | STAND. DUTY ASPHALT

SCALE: 1"-50'
10/1/18

		DEVELOPER		ARCHITECT	
PROTOTYPE:	9100-D				
BLDG/SALES SF:	9,100 SF / 7,422 SF	COMPANY:	SIMONCRE	COMPANY:	DLKARCHITECTS
ACREAGE:	1.01 (43,990 SF)	NAME:	AUSTIN GOTTSACKER	NAME:	DANA KING
PARKING SPACES:	30 SPACES	PHONE NUMBER:	480-745-1956	PHONE NUMBER:	817-946-7503

PRELIMINARY SITE PLAN

MOLALLA, OR
728 W MAIN ST. MOLALLA, OR 97038

THIS SPACE RESERVED FOR RECORDER'S USE

Clackamas County Official Records
Sherry Hall, County Clerk

2017-007181

01/31/2017 12:48:00 PM

D-D Cnt=1 Stn=0 CINDY
$16.00 $22.00 $15.00 $10.00

$63.00

After recording return to:
Price Automotive Refinishing, LLC
12605 S Groshong Road
Molalla, OR 97038

Until a change is requested all tax statements shall be sent to the following address:
Price Automotive Refinishing, LLC, an Oregon limited liability company
12605 S Groshong Road
Molalla, OR 97038

File No.: 7000-2804147 (DA)
Date: January 23, 2017

FIRST AMERICAN 2804147-DA

STATUTORY WARRANTY DEED

Edward J. Campy, Grantor, conveys and warrants to **Price Automotive Refinishing, LLC, an Oregon limited liability company** , Grantee, the following described real property free of liens and encumbrances, except as specifically set forth herein:

LEGAL DESCRIPTION: Real property in the County of Clackamas, State of Oregon, described as follows:

See Attached Legal Description Exhibit A

Subject to:

1. Covenants, conditions, restrictions and/or easements, if any, affecting title, which may appear in the public record, including those shown on any recorded plat or survey.

The true consideration for this conveyance is **$600,000.00.** (Here comply with requirements of ORS 93.030)

APN: **01092178** Statutory Warranty Deed - continued File No.: **7000-2804147 (DA)**

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR 215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010.

Dated this 30 day of January, 2017.

Edward J. Campy

STATE OF Oregon)
)ss.
County of Clackamas)

This instrument was acknowledged before me on this 30th day of January, 2017 by **Edward J. Campy**.

OFFICIAL STAMP
DENISE SUE ADLARD
NOTARY PUBLIC - OREGON
COMMISSION NO. 943910
MY COMMISSION EXPIRES OCTOBER 21, 2019

Notary Public for Oregon
My commission expires: 10/21/19

EXHIBIT A

LEGAL DESCRIPTION: Real property in the County of Clackamas, State of Oregon, described as follows:

PARCEL 1:

PART OF THE RACHEL LARKINS DONATION LAND CLAIM NO. 43, IN THE SOUTHWEST ONE-QUARTER OF THE SOUTHEAST ONE-QUARTER OF SECTION 8, TOWNSHIP 5 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, CLACKAMAS COUNTY, OREGON, DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE NORTH BOUNDARY OF SAID DONATION LAND CLAIM, WHICH POINT BEARS SOUTH 81° 30' EAST 1850.1 FEET FROM THE NORTHWEST CORNER OF SAID DONATION LAND CLAIM; THENCE SOUTH 81° 30' EAST 259.1 FEET; THENCE SOUTH 8° 30' WEST 684.4 FEET; THENCE NORTH 81° 30' WEST 259.1 FEET; THENCE NORTH 8° 30' EAST 684.4 FEET TO THE POINT OF BEGINNING.

EXCEPT THAT PORTION LYING WITHIN PUBLIC ROADS.

ALSO EXCEPT THE WEST 159.1 FEET, AS MEASURED AT RIGHT ANGLES TO THE EAST LINE THEREOF.

PARCEL 2:

PART OF THE RACHEL LARKINS DONATION LAND CLAIM NO. 43, IN THE SOUTHWEST ONE-QUARTER OF THE SOUTHEAST ONE-QUARTER OF SECTION 8, TOWNSHIP 5 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, CLACKAMAS COUNTY, OREGON, DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE NORTH BOUNDARY OF SAID DONATION LAND CLAIM, WHICH POINT BEARS SOUTH 81° 30' EAST 1850.01 FEET FROM THE NORTHWEST CORNER OF SAID DONATION LAND CLAIM; THENCE SOUTH 81° 30' EAST 259.1 FEET; THENCE SOUTH 8° 30' WEST 684.4 FEET; THENCE NORTH 81° 30' WEST 259.1 FEET; THENCE NORTH 8° 30' EAST 684.4 FEET TO THE POINT OF BEGINNING.

EXCEPT THAT PORTION LYING WITHIN PUBLIC ROADS.

ALSO EXCEPT THE EAST 100 FEET, AS MEASURED AT RIGHT ANGLES TO THE EAST LINE THEREOF.

NOTE: THIS LEGAL DESCRIPTION WAS CREATED PRIOR TO JANUARY 01, 2008.

52
21

Chicago Title Insurance Co.

Clackamas County Official Records
Sherry Hall, County Clerk
2010-066672

$52.00

01444184201000666720020029

10/21/2010 01:41:04 PM

D-D Cnt=1 Stn=10 LESLIE
$10.00 $10.00 $16.00 $16.00

CHICAGO TITLE INS. CO. #472510484376MH
L101DRZ

AFTER RECORDING RETURN TO:
Timothy Ryan Price
728 W. Main St.
Molalla, OR 97038
Until a change is requested all tax statements shall be sent to the following address:
Grantee as above

4725048437 6-55

SPECIAL WARRANTY DEED – STATUTORY FORM
(Individual or Corporation)

FEDERAL NATIONAL MORTGAGE ASSOCIATION organized and existing under laws of the United States of America

Grantor, conveys and specially warrants to TIMOTHY RYAN PRICE

Grantee, the following described real property free of encumbrances except as specifically set forth herein:
See attached legal description

Before signing or accepting this instrument, the person transferring fee title should inquire about the person's rights, if any, under ORS 195.300, 195.301 and 195.305 to 195.336 and Sections 5 to 11, Chapter 424, Oregon Laws 2007, and Sections 2 to 9 and 17, Chapter 855, Oregon Laws 2009. This instrument does not allow use of the property described in this instrument in violation of applicable land use laws and regulations. Before signing or accepting this instrument, the person acquiring fee title to the property should check with the appropriate city or county planning department to verify that the unit of land being transferred is a lawfully established lot or parcel, as defined in ORS 92.010 or 215.010, to verify the approved uses of the lot or parcel, to determine any limits on lawsuits against farming or forest practices as defined in ORS 30.930 and to inquire about the rights of neighboring property owners, if any, under ORS 195.300, 195.301 and 195.305 to 195.336 and Sections 5 to 11, Chapter 424, Oregon Laws 2007, and Sections 2 to 9 and 17, Chapter 855, Oregon Laws 2009.

ENCUMBRANCES:
See attached Exhibit "A"

The true consideration for this conveyance is $105,000.00.

Dated this 18th day of October, 2010; if a corporate grantor, it has caused its name to be signed by order of its board of directors.

FEDERAL NATIONAL MORTGAGE ASSOCIATION

By: _____
Christopher Irby, Assistant Vice-President

State of Texas, County of Dallas) ss.

This instrument was acknowledged before me on October 18, 2010,

by Christopher Irby as Assistant Vice-President of Federal National Mortgage Association.

Before me:

_____
Notary Public for Texas

FERRY ASKARI
Notary Public, State of Texas
My Commission Exp. 12-13-2011

LEGAL DESCRIPTION

A part of the Rachel Larkins Donation Land Claim No. 43 and the Southwest one-quarter of the Southeast one-quarter of Section 8, Township 5 South, Range 2 East, of the Willamette Meridian, in the City of Molalla, County of Clackamas and State of Oregon, described as follows:

Beginning at a point in the North boundary of said Donation Land Claim, which point bears South 81°31' East 26.10 chains from the Northwest corner of said Donation Land Claim, running thence South 81°30' East 127.5 feet; thence South 22°35' West 684.22 feet; thence North 81°30' West 127.5 feet; thence North 8°30' East 684.22 feet to the place of beginning.

EXHIBIT "A"

1. Rights of the public to any portion of the Land lying within the area commonly known as

   W. Main Street (State Highway 211)

Clackamas County Official Records
Sherry Hall, County Clerk 2013-000504

$53.00

01645514201300005040020023

01/04/2013 09:57:23 AM

D-D Cnt=1 Stn=9 DIANNAW
$10.00 $10.00 $16.00 $17.00

BARGAIN & SALE DEED

Grantor **TIMOTHY RYAN PRICE** conveys to *Grantees* **WILLARD TIM PRICE** and **WARREN TERRY PRICE, as tenants in common**, all Grantor's right, title and interest in the hereinafter described real property in **Clackamas** County, State of Oregon.

Consideration: The true and actual consideration for this transfer is the satisfaction and release of an Installment Note dated October 20, 2010.

Tax Statements: Until a change is requested, all tax statements shall be sent to the following address: Warren Terry Price, 12397 S. Groshong Rd., Molalla, OR 97038.

Person authorized to receive the instrument after recording: ~~Robert L. Engle~~ Amy Keith, 610 Glatt Circle, Woodburn, OR 97071.

[LEGAL DESCRIPTION]

A part of the Rachel Larkins Donation Land Claim No. 43 and the Southwest one-quarter of the Southeast one-quarter of Section 8, Township 5 South, Range 2 East, of the Willamette Meridian, in the City of Molalla, County of Clackamas and State of Oregon, described as follows:

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Situs: 728 W. Main Street, Molalla, Oregon 97038

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND ORS 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY

ENGLE & SCHMIDTMAN
ATTORNEYS AT LAW
NORTHWOOD OFFICE PARK - 610 GLATT CIRCLE , WOODBURN, OREGON 97071
TELEPHONE (503) 981-0155 * FAX: 503) 981-0158
ROBERT L. ENGLE E-MAIL: rengle@woodburnlaw.net - KIRK A. SCHMIDTMAN E-MAIL: kschmidtman@woodburnlaw.net

OR COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR 215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS AND 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010.

DATED this 26 day of December, 2012.

Timothy Ryan Price

Timothy Ryan Price

STATE OF OREGON)
) ss.
County of MARION)

The foregoing instrument was acknowledged before me this 26th day of December, 2012, by **TIMOTHY RYAN PRICE.**

OFFICIAL SEAL
TONI K HAIGHT
NOTARY PUBLIC-OREGON
COMMISSION NO. 464817
MY COMMISSION EXPIRES JANUARY 22, 2016

Toni Haight

Notary Public for Oregon

ENGLE & SCHMIDTMAN
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(2)

ICON Architects
incorporated

SIMON CRE

DOLLAR GENERAL

June 14, 2019

Reference: Dollar General
728 W Main Street
Molalla, OR

City of Molalla Community Development
117 N Molalla Ave
Molalla, OR 97038

Mr. Miller:

In accordance with the City of Molalla Site Design Review requirements, please consider the summary below and submittal documents as fulfilling section 17-4.2.040 of the Development Code.

Per the Molalla Development Section 17-4.2.050, the narrative below shows the submittal is compliant with the following sections:

General Description of Project:

This submittal is for the development of an approximately one-acre site to include a 9,100 commercial retail building for Dollar General, and associated parking as required. Dollar General is a variety retail store that sells a broad range of household goods, pre-packaged, and refrigerated foods. Typical store hours are 8am-10pm, ensuring late night noise is eliminated. Operation and customer interactions are conducted inside the store so no odors, smoke, vibrations are expected to surrounding neighbors. The proposed development meets all existing conditions of approval for the site or use, as required by prior land use decisions. The site is zoned Commercial (C-2) and commercial retail sales with a proposed Dollar General retail store is a permitted use under current zoning and ordinances.

Chapter 17-3.2 Building Orientation Access and Circulation:

17-3.2.040 Non-Residential Buildings

B. - Building Orientation.

1. Buildings subject to this section shall conform to the applicable build-to line in Table 17-2.2.040.E.

According to Table 17-2.2.040.E, the Build-to line in C-Zones is 0'. The Building setback shown on the proposed submittal is 15' from Property Line. There is a 10' Public Utility Easement along our North Property Line (Woodburn-Estacada Highway), and a 5' Building exit sidewalk. These required elements prohibit a 0' setback, and the building is placed as close to Woodburn-Estacada Highway as possible. Building orientation proposed was driven per the applicant's request due to truck turning navigation being unable to do so with a building storefront directly facing the highway and not allowing easy customer access. The corner entry facing both Leroy and the highway, while being pushed as close to the highway as possible was done to promote pedestrian walkability and connection. Safety is also increased by having storefronts pushed closer to the road to allow visibility into the store from the road and thus reduces potential for crime. Trash enclosure and Delivery areas are located on the south end of the building and are not directly visible from the Main (Woodburn-Estacada Highway) or Side Street (Leroy Ave). Landscape was increased along the corner intersection to reduce the paved island affect from road to parking lot and provide aesthetically pleasing natural surroundings to screen the parking lot in front of the storefront and road.

C. – Large Format Developments

Plans for new developments, or any phase thereof, with a t total floor plate area greater than 35,000 square feet….

Our proposed building is 9,100 sf, so this section is Non-Applicable.

D. - Primary Entrances and Windows

1. All elevations of Building. Architectural designs shall address all elevations of a building. Materials used on the front façade must turn the building corners and include at least a portion of the side elevations.

Our proposed building has a corner entry. We are also providing a 5' deep canopy at the entry that wraps around the corner entry. Our materials are painted CMU base with 2-types of metal panel finished in 2 complimentary colors.

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.

Our proposed building has a corner entry with the entry doors facing the intersection of Main Street & Leroy Avenue. This orientation provides the greatest potential visibility to both pedestrian travelers.

3. *Corner Entrances. Buildings on corner lots are encouraged to have corner entrances.*

Our proposed building is on a corner lot (SE corner of Main Street & Leroy Avenue), and we are providing a corner entry design.

4. *Street Level Entrances. All primary building entrances shall open to the sidewalk and shall conform to ADA requirements.*

Our proposed building entrance is at street level and will meet ADA requirements.

5. *Windows. Except as approved for parking structures or accessory structures, the front/street-facing elevations of building shall provide display windows…*

This section details the percentage Window Area required from 30" AFF to 72" AFF. We are required to have 60% of that Area in window form for the 2 street facing elevations (North & West). On the submitted elevations – We meet or exceed that required percentage on EACH elevation.

6. *Storefront Windows. Storefront windows shall consist of frame picture or bay windows, which may be recessed.*

This section mentions detailing (trim, piers or pilasters, lintels or hoods). We are not currently showing trim details around the windows.
As noted in section 5, the percentage Window Area required from 30" AFF to 72" AFF. We are required to have 60% of that Area in window form for the 2 street facing elevations (North & West). On the submitted elevations – We meet or exceed that required percentage on EACH elevation. Additionally, we have raised the top of the windows on each of the elevations above what is required, to further enhance the overall look and feel of the elevations. The North elevation has an additional 150 sf of window provided, and the West elevation has an additional 186 sf provided. We request consideration to the 'window trim' requirement, since we are providing a significant amount of additional window area.

7. *Defined Upper Story. Building elevations shall contain detailing that visually defines street level building spaces (storefronts) from upper stories. The distinction between street level and upper floor shall be established….*

Our proposed building is a single-story building. This section is non-applicable.

8. *Buildings Not Adjacent to 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 orientated*

to a civic space, shall meet the 60% transparency standard on all elevations abutting civil space and on elevations containing a primary entrance.

Our proposed building is on a corner lot. This section is non-applicable.

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% transparency.

On the side (East) and rear (South) elevations, we are required to have 30% Window Area. On the submitted elevations – the South elevation exceeds the required window Area, and the East elevation is a bit short by 3.5 sf. We are using the same pattern and type of windows on each elevation. Due to the change in panel material, and elevation detailing, we are unable to increase the size of the windows. Similarly, to the North and West elevations, we raised the top to the windows on the South and East to provide design consistency. This affords an additional 24 sf of window on the South elevation, and an additional 48 sf on the East elevation. We request consideration to the East elevation presented as 3.5 sf short of the requirement due to the overall additional window square footage we are showing.

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.

Around the windows, we are required to have (at a min. 4") trim detail around the windows. We are not currently showing trim details around the windows. Our East and South elevations are not required to have canopies over the windows, but in an effort offer other design features, we have included canopies on these elevations similar to the North and West elevations. We request consideration to the window trim requirement since we are showing additional canopies on these elevations.

11. Projecting Windows, Display Cases. Windows and display cases shall not break the front plane of the building…

Our proposed building does not have any projecting windows or display cases. This section is non-applicable.

E. - Articulation and Detailing

1. Articulation. All building elevations that orient to a street or civil space shall have breaks in the wall plane of not less than one break for every 30 feet of building length or width…

This section requires building elevations to have a break in the wall plane every 30'. We are not compliant with this requirement. We have longer stretches of wall based on PEMB limitations, and required area for building signage. Due to limitations in PEMB buildings, any parapet height change needs to occur on a gridline. Our North elevation has building signage that requires a run of panel

longer than 30'. To match the same 'corner design feature' of the North elevation, we are showing the same type of panel, parapet run, canopy type, and storefront window treatment on the West elevation. We feel this will announce the entry of our building to pedestrian and automotive traffic.
Our South elevation is not required to have a change in panel color/type, or parapet height. To continue the design theme of the building, we are showing the same elevation treatment on the South elevation as being show on the North and West elevations. We request consideration to the maximum 30' run of parapet on the North and West elevations due to the additional unrequired parapet breaks shown on the South elevation.

2. *Change in Materials. Elevations should incorporate changes in material that define a building's base, middle, and top…*

Our proposed building has a painted split-faced CMU block base, with 2-different metal panel profiles and colors to break up the horizontal lines of the elevations.

3. *Horizontal Line. New building and exterior remodels hall generally follow the prominent horizontal lines existing on adjacent buildings…*

Our proposed building is adjacent to a street. This section is non-applicable.

4. *Ground Floor and Upper Floor Division. A clear visual division shall be maintained between the ground level floor and upper floors…*

Our proposed building is a single-story building. This section is non-applicable.

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

Our proposed building is a PEMB structure and changes in the parapet must occur on structural gridlines. Our main elevations (North, West, and South) have 36" vertical changes in the parapet height, and a 5' deep canopy over the corner entry.

F. - Pedestrian Shelters

1. *Minimum Pedestrian Shelter Coverage. Permanent awnings, canopies, recesses, or similar pedestrian shelters shall be provided along at least 75 of the ground floor elevations of a building where the building abuts a sidewalk, civil space, or pedestrian access way.*

Our proposed building does not abut a public sidewalk, but we are providing a minimum 25' long by 5' deep canopy on each side of the corner entry elevations.

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.*

Our proposed building entry canopy is of a similar construction and color to the rest of the building.

G. - Mechanical Equipment

1. Building Walls. Where mechanical equipment, such a utility vaults, air compressors, etc, is permitting on a building wall that abuts a public ROW or civil space it shall be screened…

Any proposed mechanical equipment will be screened.

2. Rooftops. Except as provided below, rooftop mechanical units hall be set back or screened behind a parapet wall so that they are not visible from any public ROW or civil space.

Our proposed building has parapets on 3-sides of the building (North, West, and South). These parapets are sufficient height to screen roof top mounted equipment

3. Ground-Mounted Mechanical Equipment. Ground-mounted equipment shall be limited to side or rear yards.

Our proposed development does not currently have any ground mounted equipment.

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

Our proposed development is less than 10,000sf leasable area, so this section does not apply.

I. - Drive-Up and Drive-Thru Facilities.

Our project does not offer any drive-up or drive-thru facilities. This section is non-applicable.

Chapter 17-3.3 Access and Circulation:

17-3.3.030 Vehicular Access and Circulation

B. Permit Required. *Vehicular access to a public space requires an approach permit approved by the applicable roadway authority.*

Our project will be submitted, reviewed, and approved by all required 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…*

We have provided a Traffic Impact Analysis as part of our submittal.

D. Approach and Driveway Development Standards.

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

The curb cut to our proposed site is on Leroy Avenue and is approximately 250' from the intersection of Woodburn-Estacada Highway and Leroy Avenue. This is greater than the 50' minimum Approach spacing distance shown in Figure F 17-3.3-1.

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

The proposed Dollar General site has been designed to allow a WB-67 Truck/trailer movement on site. A truck turn exhibit can be provided if needed.

E. Approach Separation from Street Intersections. *Except as provide by subsection H, minimum distances shall be maintained between approaches and street intersections…*

The curb cut to our proposed site is on Leroy Avenue and is approximately 250' from the intersection of Woodburn-Estacada Highway and Leroy Avenue. This is greater than the 50' minimum Approach spacing distance shown in Figure F 17-3.3-1.

F. Approach Spacing. *Except as provided by subsection H or as required to maintain street operations and safety, the following min. distances shall be maintained…*

The curb cut to our proposed site is on Leroy Avenue and is approximately 250' from the intersection of Woodburn-Estacada Highway and Leroy Avenue. This is greater than the 50' minimum Approach spacing distance shown in Figure F 17-3.3-1.

G. Vision clearance.

We are not proposing any visual obstructions in the 30' 'vision clearance area' as noted in Figure 17-3.3-2

H. Exceptions and Adjustments. This section is non-applicable.

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 an cross access between adjacent properties.*

We do not believe our proposed development meets the criteria required to have a Joint Use Access Easement.

17-3.3.040 Pedestrian Access and Circulation

B. Standards.

1. Continuous walkway system. A pedestrian walkway system shall extend throughout the development site and connect to adjacent sidewalks.

We are providing concrete sidewalks along the entire front of our store and a connection to the ROW sidewalk along Main Street.

2. Safe, Direct, and Convenient. Walkways within development shall provide safe, reasonable direct, and convenient connections between building entrances and parking areas…

We are providing concrete sidewalks along the entire front of our store and a connection to the ROW sidewalk along Main Street.

3. Vehicle/walkway separation. Except as required for crosswalks, where a walkway abuts a driveway or street it shall be raise six inches and curbed along the edge of the driveway or street.

All sidewalks will be raised a min. 6" above the driving surface.

4. Crosswalks. Where a walkway crosses a parking area or driveway, it shall be clearly marked with a contrasting paving material.

Where the ROW sidewalk crosses our curb cut along Leroy Ave, we will follow all local design requirements.

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…

All proposed sidewalks are to be constructed of concrete.

6. Walkway Construction. Walkway surfaces may be concrete, asphalt, brick of masonry pavers meeting ADA requirements. Sidewalks shall not be less than six feet in width…

All proposed sidewalks will be min. 6' in width.

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….

This section is non-Applicable.

Chapter 17-3.4 Landscaping, Fences & Walls, Outdoor Lighting

17-3.4.030 Landscaping and Screening

B. *Table 17-2.2.040.E Lot and Development Standards for Non-Residential Zones. Minimum Landscape Area 5% for C-Zones.*

Our proposed site is 46,552 SF x 0.05= 2,328 SF of required Landscape Area. We are providing 14,903 SF of Landscape Area total on our site.

C. ***Plant Selection.*** *A combination of deciduous and evergreen trees, shrubs and ground covers shall be used for all planted areas…*

The proposed landscape plan provides a mix of (4) types of trees ranging from 1.5" to 2" caliper in size. We are showing (11) total trees along Leroy Ave and Woodburn-Estacada Highway, with an additional (8) trees planted at the interior of site. The balance of the landscape areas are filled in 5 gallon minimum plants, and covered with crushed rock mulch (2" in depth typical).

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.*

Street trees have been added along both street frontages to be consistent with adjacent developments. A combination of evergreen and deciduous trees have been specified to give seasonal interest and promote visibility to the adjacent retail while preserving all sight visibility for street traffic.

E. ***Parking lot landscaping.*** *All of the following standards shall be met for parking lots.*

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.*

10% of the parking lot are has been dedicated to landscape. Shade trees have been added around the parking lot area along with shrubs and ground cover as requested.

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.*

Trees shrubs and ground covers have been added in the parking areas so that there is no more than 10 continuous spaces with-out an island.

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.*

Islands have been planted such that there will be 50% of the island will be covered within a 2 year growth.

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.*

Wheel stops are at the edge of the parking lot areas to protect landscape from vehicles

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

Trees planted near paved areas have been identified for the need for root barriers.

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.*

1. Outdoor Storage and Unenclosed Uses.

The section is non-applicable.

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.*

Our parking areas have planting and trees between the parking area and the ROW/sidewalks.

17-3.4.040 Fences and Walls

There are no proposed fences or retaining walls in our development.

17-3.4.050 Outdoor Lighting

C. Standards.

Outdoor Lighting:
The proposed building will meet all municipal requirements or photometric plan, and when possible, lights are shielded down. Building mounted lights do not create excessive glare and no unusual operational noises are expected.
Our light poles will not exceed 20' in height (per 17-3.4.050 C.1).
We will provide a site photometric plan for review/approval (per 17-3.4.050 C.3)

Chapter 17-3.5 Parking and Loading

17-3.5.030 Automobile Parking

A. Table 17-3.5.030.A *Automobile Parking Spaces by Use*
Commercial (Retail): 1 space per 400 SF of floor area.

Our building is 9,100 SF total with 7,422 SF of Sales Area. 9,100/400= 23 required parking spaces. We are proposing 30 parking spaces.

B. Carpool and Vanpool Parking Requirements.

The section is non-applicable.

C. Exceptions and Reductions to Off-Street Parking.

The section is non-applicable.

D. Maximum Number of Off-Street Automobile Parking Spaces.

The section is non-applicable.

E. Shared Parking

The section is non-applicable.

F. Parking Stall Design and Minimum Dimensions.

Per Table 17-3.5.030 Parking Area Minimum Dimensions, our proposed parking stall dimensions of 9' wide by 20' deep exceed the minimum 90 degree parking of 8'-6" wide by 18' deep.

G. Adjustments to Parking Area Dimensions.

The section is non-applicable.

H. Americans with Disabilities Act (ADA).

Our proposed ADA parking stalls will meet or exceed all the minimum standards.

I. Electric Charging Stations.

The section is non-applicable.

17-3.5.040 Bicycle Parking

A. ***Standards.*** *Bicycle parking spaces shall be provided with new development and, where a change of use occurs, at a minimum, shall follow the standards in Table 17-3.5.040.A.*

Per Table 17-3.5.040A, Commercial projects are to provide 2 bike spaces, or 1 per 5 vehicle spaces, whichever is greater. We will provide a minimum 2 bike spaces in the sidewalk along our North elevation.

17-3.5.050 Loading Areas

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.*

Delivery Area:
Our proposed site access and Delivery Area are designed to accommodate a WB-67 truck turning radius. The truck will be parked out of the drive aisles and will not impact pedestrian walk ways. Traditional truck deliveries occur 1-2 times a week during open store hours only, and do not typically experience any acoustical disturbances beyond normal noise levels. Additionally, our site has a buffer of a highway to the north, future commercial to the west along Leroy Avenue, vacant land to the south to be developed into further commercial, and, residential to the east. Screening or a fence would be added between commercial and residential if required.

Chapter 17-3.6 Public Facilities

17-3.6.030 Dedication of Pubic Use Areas

This section is non-applicable.

17-3.6.040 Sewer and Water Mains Required

A. ***Sewers and Water Mains Required.*** *All new development is required to connect to City water and sanitary sewer systems.*

We are proposing to tie into the city water and sanitary sewer, and storm water systems. We will follow any city requirements and understand no development

permits will be issued until the City Engineer has reviewed and approved the sewer and water plans. Additionally, we will be utilizing electric and natural gas as available for our site.

17-3.6.050 Storm Drainage and Surface Water Management Facilities

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.*

The Civil engineer had a conversation with the city on 5/9/19, and has provided a Drainage Memo to detail the proposed 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.*

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. (Ord. 2017-08 §*

17-3.6.060 Utilities

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.

Our proposed development will follow the city requirements for all underground utilities.

17-3.6.070 Easements

B. ***Standard.*** *Utility easements shall conform to the requirements of the utility service provider. All other easements shall conform to the City of Molalla…*

Our proposed development will follow the city requirements for any required easements.

Chapter 17-3.7 Signs

Signage is supplied and installed by the Tenant. The Tenant will submit the proposed Building and Pylon sign under a separate Permit. The signage will be designed and permitted following the current signage ordinance.

Please feel free to contact me if you have any questions or need any more information.

Sincerely,

John Brutsche'
Icon Architects, Inc.

civil
structural
surveying
architecture
planning

809 SE Pine St
Roseburg, OR 97470

ieengineering.com
541.673.0166

MEMO

To: Alice Cannon

From: Nick Jones, EIT

cc: Gerald Fisher, Alex Palm, Peter Krahenbuhl, Ben Millick, Tony Brutsche, Tim McQueen

Date: 2019-05-09

Re: Molalla Dollar General Drainage

This memo is being written to address the conceptual drainage design for the proposed construction of a Dollar General store in Molalla, Oregon. The proposed project will be on a portion of a parcel located on Highway 211. The site is 1.07 Acres. Currently, the property is undeveloped and generally drains towards the northwest corner of the property. A roadside ditch runs along the north side of the property and drains to the east.

Development of the site will include a 9,100 square foot commercial building, impervious paved parking lot and sidewalks, underground utilities, and landscaping. All runoff from the parking lot, landscape areas, and roof will remain surface flow and collect in drains as shown on the attached exhibit. All drains will be piped to the rain gardens, biofiltration swales, or detention basins to address water quantity and quality and then discharge into the storm system in Highway 211. The storm system in Highway 211 is being designed and constructed by I&E Construction, Inc. i.e. Engineering will coordinate with I&E Construction to ensure compliance with water quantity and quality requirements. The storm system will be designed to comply with the 2017 Molalla Standard Specifications for Public Works Construction (Specifications) and the City of Molalla TMDL Implementation Plan (TMDL Plan). The stormwater system will be designed using the Unit Hydrograph Method per Section 3.3.3 of the Specifications. A drainage report will be provided with the final design per Section 3.3.10.

The water quantity facilities will be designed for 2-, 10-, and 25-year 24-hour storm events. The post-development runoff rates will not exceed the predevelopment runoff rates. The water quality facilities will be designed for a dry weather storm event totaling 0.36” of precipitation falling in 4 hours, with an average storm return period of 96 hours. The facilities will be designed to capture and treat 80% of the average annual runoff volume. The facilities will be privately owned and maintained.

During construction of the site, proper erosion control measures will be installed. Development of the site will not negatively impact existing drainage patterns or neighboring properties.

Sincerely,

Digitally signed by Nicholas R. Jones
DN: C=US, E=jones@ieengineering.com, O=i.e. Engineering, CN=Nicholas R. Jones
Date: 2019.05.09 10:20:50-07'00'

Nick Jones, EIT

civil
structural
surveying
architecture
planning

809 SE Pine St
Roseburg, OR 97470

ieengineering.com
541.673.0166

MEMO

To: Alice Cannon

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Date: 2019-05-09

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Sincerely,

Nick Jones, EIT

PRELIMINARY GRADING & DRAINAGE PLAN 5-9-19

LEROY AVE.

STATE HWY NO 211 (MAIN ST.) - MARKET ROAD NO. 32)

10' PUE Easement

356.50 AC

FLOW CONTROL STRUCTURE AREA DRAIN

355.50 AC

18 parks

12 parks

355.00 AC / CURB-CUT

DRAINAGE DIRECTION ARROWS (TYP.)

130' x 70'
9100 SF Prototype F
With Vestibule

HVAC On Roof

NEW FF= 357.00

355.50 AC

BIO FILTRATION SWALE

10' PUE Easement

356.00 AC

ROOF DRAIN STS

356.50 AC

356.00 AC

356.30 AC

355.00 AC / CURB-CUT

ROOF DRAIN STS

POTENTIAL RAIN GARDEN
INFILTRATION BASIN
DETENTION BASIN

356.00 AC

260'-0" PROP. LINE

182'-0" PROP. LINE

0' 10' 20' 40'
SCALE: 1" = 20'

809 SE Pine Street
Roseburg, Oregon 97470
PHONE (541) 673-0166
FAX (541) 440-9392
iemail@ieengineering.com

PROJECT NO. 2780-08
DWG BY: LAUB

PRELIMINARY GRADING & DRAINAGE PLAN 6-12-19

LEROY AVE.

STATE HWY NO 211 (MAIN ST.) - MARKET ROAD NO. 32)

10' PUE Easement

356.50 AC

FLOW CONTROL STRUCTURE AREA DRAIN

355.50 AC

18 parks

355.00 AC / CURB-CUT

DRAINAGE DIRECTION ARROWS (TYP.)

12 parks

130' x 70' 9100 SF Prototype F With Vestibule

HVAC On Roof

NEW FF= 357.00

10' PUE Easement

BIO FILTRATION SWALE

355.50 AC

356.00 AC

ROOF DRAIN STS

356.50 AC

356.00 AC

356.30 AC

355.00 AC / CURB-CUT

ROOF DRAIN STS

356.00 AC

POTENTIAL RAIN GARDEN INFILTRATION BASIN DETENTION BASIN

260'-0" PROP. LINE

182'-0" PROP. LINE

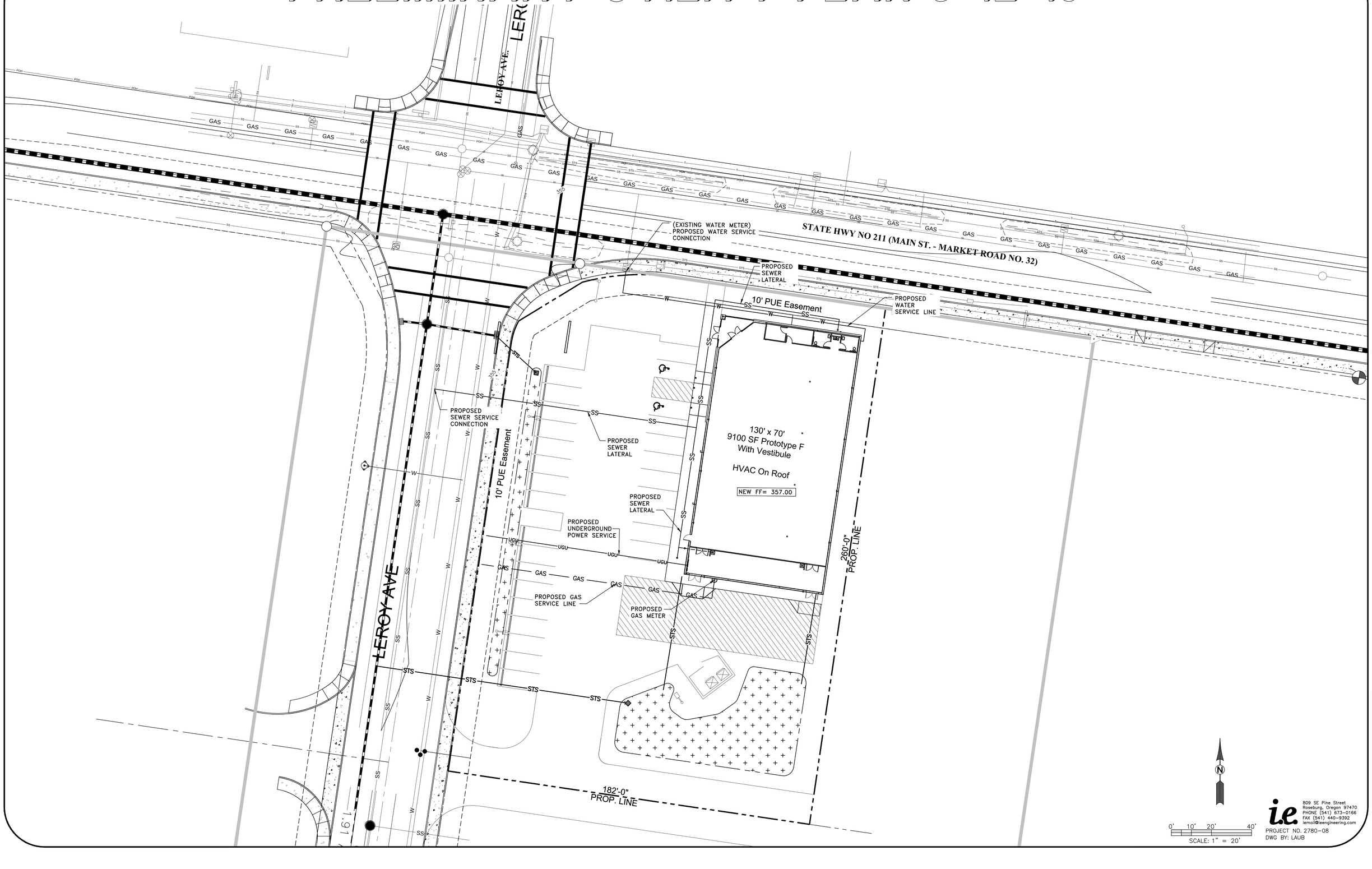
0' 10' 20' 40'

SCALE: 1" = 20'

809 SE Pine Street
Roseburg, Oregon 97470
PHONE (541) 673-0166
FAX (541) 440-9392
iemail@ieengineering.com

PROJECT NO. 2780-08
DWG BY: LAUB

PRELIMINARY UTILITY PLAN 6-12-19



ie
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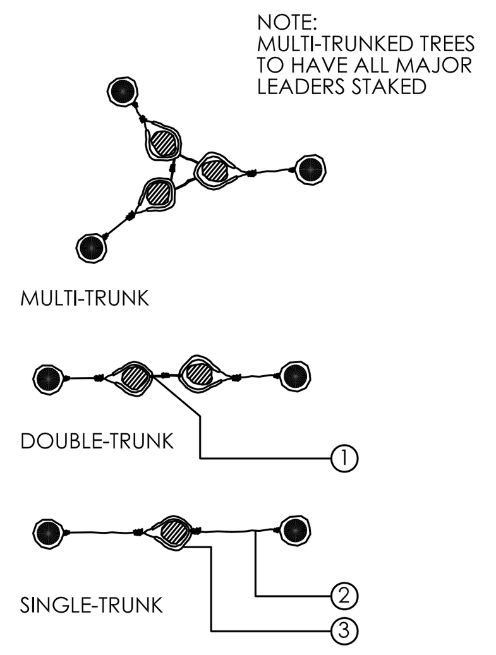
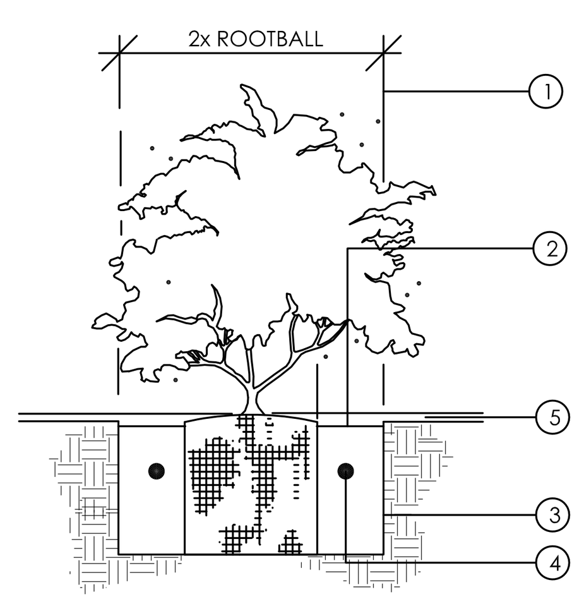


1. NOTCH TUBING LOOP WIRE THROUGH EXPOSED WIRE
2. #10 WIRE RUBBER COATED
3. 1/2" RUBBER HOSE

TREE GUYING DETAIL

NOT TO SCALE

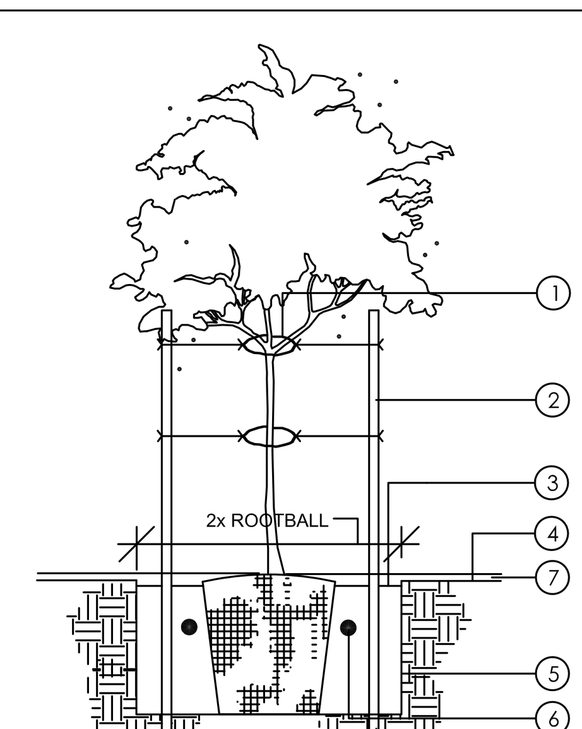


1. MINIMUM DIMENSION FOR 5 GAL. PLANTS
2. 1" BASIN
3. ROUGHEN SIDES OF PLANT PIT TO PREVENT GLAZING
4. AGRIFORM TABLETS SEE SPECS. FOR RATIO
5. 2" DEPTH OF DECOMPOSED GRANITE. (SEE LEGEND FOR TYPE)

BACKFILL PLANT PIT WITH SOIL MIX PER PHX MAG SUPLEMENT.

SHRUB PLANTING DETAIL

NOT TO SCALE



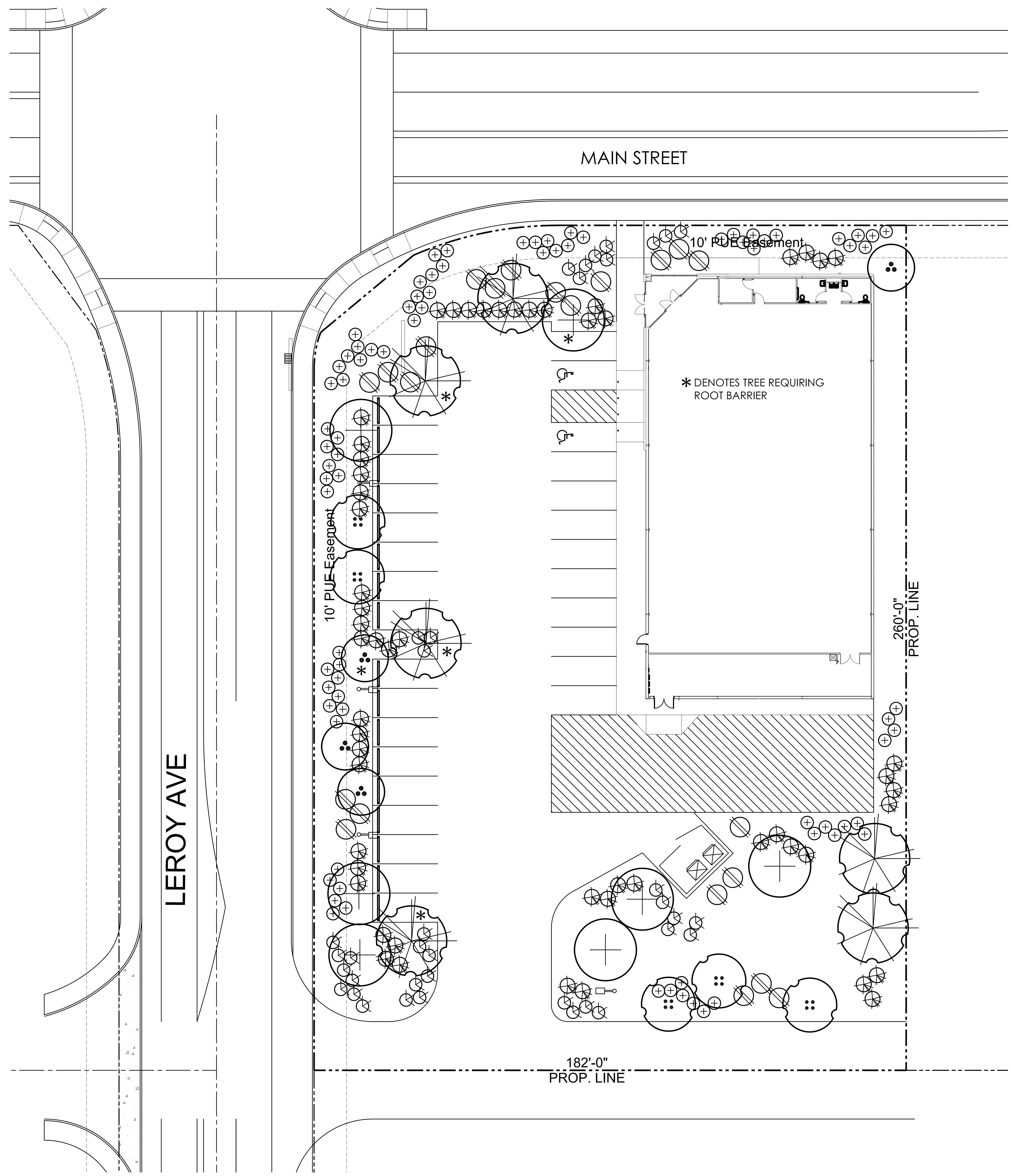
1. 1/2" RUBBER HOSE WITH #10 WIRE
2. TWO 2" ROUND BY 10' LONG GREEN TREE STAKES BURY 3' BELOW GRADE
3. 4" BASIN
4. GRADE (PRIOR TO GRANITE)
5. ROUGHEN SIDES OF PLANT PIT TO PREVENT GLAZING
6. AGRIFORM TABLETS
7. 2" DEPTH OF DECOMPOSED GRANITE. (SEE LEGEND FOR TYPE)

BACKFILL PLANT PIT WITH SOIL MIX PER PHX MAG SUPLEMENT.

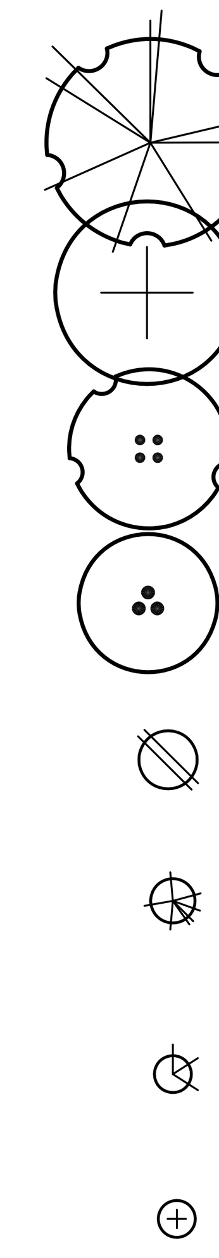
DOUBLE STAKING DETAIL

NOT TO SCALE

©



LANDSCAPE LEGEND



- GLEDITSIA TRICANTHOS 'INERMIS' THORNLESS HOLEY LOCUST 2" CALIP.
- CEDRUS ATLANTICA GLAUCA BLUE ATLAS CEDAR 2" CALIP.
- ACER RUBRUM 'AUTUMN BLAZE' AUTUMN BLAZE 2" CALIP.
- PRUNUS PERSICA 'ATROPURPUREA' PURPLE LEAF PLUM 1.5" CALIP.
- PINUS MUGO MUGO PINE 15 GALLON
- JUNIPERUS CHINENSIS SEA GREEN JUNIPER 5 GALLON
- JUNIPERUS 'LOW FAST' LOW FAST JUNIPER 5 GALLON
- JUNIPERUS 'BLUE RUG' BLUE RUG JUNIPER 5 GALLON

1/2" SCREENED (LOCAL SELECTION) CRUSHED ROCK MULCH 2" DEPTH IN ALL LANDSCAPE AREAS

LANDSCAPE PLAN

LANDSCAPE NOTES:

THIS ENTIRE SITE INCLUDING THE R.O.W. WILL BE MAINTAINED BY THIS PROPERTY OWNER TO MOLALLA CITY STANDARDS.

THIS SITE WILL BE SERVED BY A HIGH EFFICIENCY DRIP IRRIGATION SYSTEM GUARANTEE 100% COVERAGE TO ALL PLANT MATERIAL.

T.J. McQUEEN & ASSOCIATES, INC.
LANDSCAPE ARCHITECTURE
URBAN DESIGN
SITE PLANNING
10450 N. 74th Street , Suite 120
Scottsdale, Arizona 85258
P. (602) 265-0320
EMAIL: timmcqueen@tjmla.net

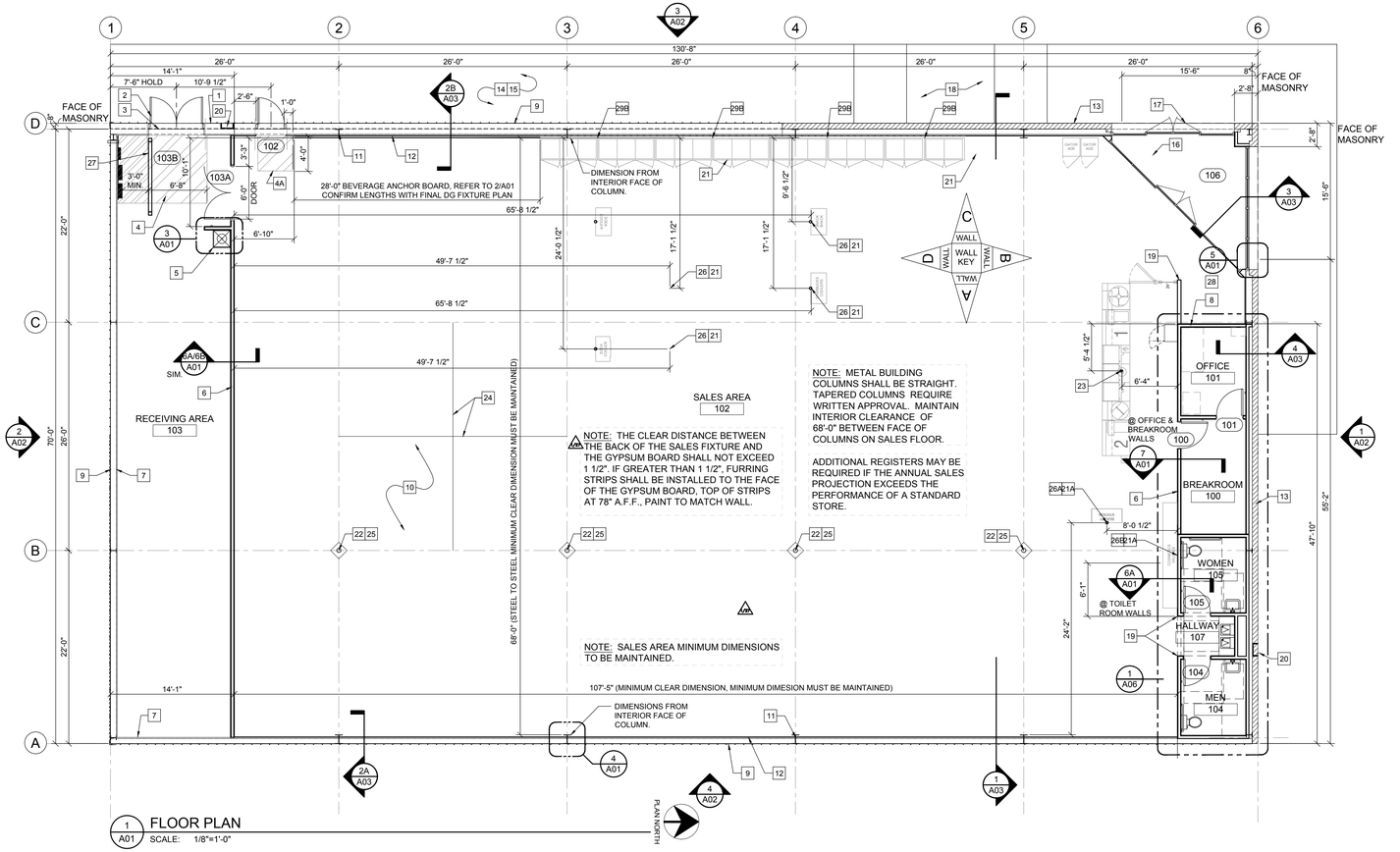
DOLLAR GENERAL
728 WEST MAIN STREET
MOLALLA, OREGON

NUMBER	REVISION	DATE

REGISTERED LANDSCAPE ARCHITECT 0917 Timothy J. McQueen OREGON EXP. 01/31/20

06.13.19

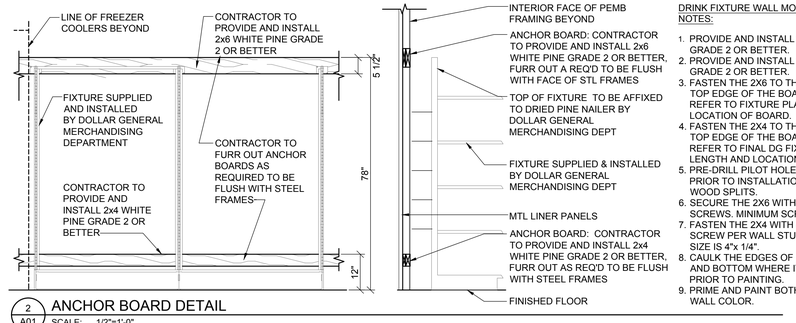
SHEET TITLE:	LANDSCAPE
ISSUE DATE:	06.13.19
DRAWN BY:	STAFF
CHECKED BY:	TJMCQ
PROJECT No.:	16014
SHEET:	La.01



1 FLOOR PLAN
1/A01 SCALE: 1/8"=1'-0"

FLOOR PLAN KEYED NOTES

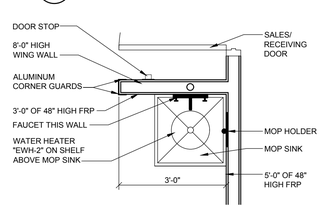
1. RECEIVING DOOR BUZZER - TORK MDL.#TA725 OR EQUAL
2. DOOR SCOPE. REFER TO DOOR SCHEDULE.
3. WEATHER STRIP & LOW PROFILE THRESHOLD. SEE DOOR SCHEDULE.
4. STRIPE FLOOR FOR DESIGNATED EGRESS PATH (PAINT YELLOW) AND 3'-0" DESIGNATED EMS PANEL CLEARANCE (PAINT RED).
4A. STRIPE FLOOR FOR DESIGNATED ADA EGRESS PATH (PAINT YELLOW).
5. PROVIDE AND INSTALL A TEN GALLON WATER HEATER (OR LARGER IF REQUIRED BY CODE) ABOVE THE MOP SINK.
6. 3 5/8" METAL STUD WITH 1/2" MINIMUM GYPSUM BOARD (BOTH SIDES). REFER TO NOTED WALL SECTION. REFER TO ROOM FINISH SCHEDULE FOR GYPSUM BOARD HEIGHT AT ANY PARTICULAR WALL.
7. METAL LINER PANELS TO 8'-0" A.F.F. (BY PRE-ENGINEERED BUILDING MANUFACTURER).
8. DIMENSIONS ARE TO COLUMN LINE UNLESS OTHERWISE NOTED.
9. METAL BUILDING PANELS (BY PEMB). PROVIDE TAMPER-RESISTANT FASTENERS FOR BOTTOM 8'-0".
10. CONCRETE SLAB WITH STRUCTURAL MIN. 6x6xW1.4 WELDED WIRE MESH OVER POLYETHYLENE VAPOR BARRIER (MIN. 10 MM THICK) OVER CRUSHED STONE BASE, TYPICAL, OR EQUIVALENT. SEE STRUCTURAL DWGS. PROVIDE CONTROL JOINTS AS SHOWN ON S03.
11. METAL BUILDING FRAME. REFER TO NOTED WALL SECTION FOR ADDITIONAL INFORMATION.
12. 1/2" GYPSUM BOARD (TO 10'-0" A.F.F.) OVER METAL LINER PANELS AND INSULATION WITH VAPOR BARRIER.
13. 8" SPLIT-FACED CMU PAINTED TO MATCH SIDE WALL PANELS. ALIGN FACE OF BLOCK WITH STEEL GIRT. PROVIDE PROPER ANCHORAGE TO STRUCTURE.
14. SLOPE CONCRETE 1/8" PER FOOT AWAY FROM BUILDING.
15. COORDINATE CONCRETE SIDEWALK WITH CIIVL AND BROOM FINISH, TYPICAL.
16. BRONZE STOREFRONT SYSTEM. REFER TO NOTED WALL SECTION FOR ADDITIONAL INFORMATION. CONTINUE GYPSUM BOARD ABOVE STOREFRONT TO DECK.
17. LINE OF SOFFIT OR CANOPY ABOVE.
18. A.D.A. COMPLIANT ACCESSIBLE RAMP WITH YELLOW PAINTED SIDES TO ACCESSIBLE PARKING STALLS.
19. MC CUE CART AND BUMPER GUARDS. TOP INSTALLED @ 3'-5" A.F.F. ORDER TRIM KIT FOR THIS PROTOTYPE.
20. WALL HYDRANT. REFER TO PLUMBING DRAWINGS FOR ADDITIONAL INFORMATION.
21. REFRIGERATION BY DOLLAR GENERAL.
21A. BEAUTY AND COSMETICS SHELVING AND EQUIPMENT.
22. ROUND PIPE STEEL COLUMN WITH RECESSED BASE PLATE. PAINT SW7005 PURE WHITE. WRAP COLUMN WITH TIGHT LOOP CARPET (BLACK) FROM BASE TO 48" A.F.F.
23. POWER POLE. COORDINATE FINAL LOCATION WITH FINAL DOLLAR GENERAL FIXTURE PLAN (F01).
24. CONTROL JOINTS ARE TO BE PLACED ALONG COLUMN LINES AND MID POINT BEWTEEN COLUMN LINES. COORDINATE WITH STRUCTURAL DRAWINGS.
25. FLOOR AREA AT BASE OF COLUMNS, WITHIN THE CONST JOINTS, TO BE PAINTED BLACK MAGIC TINT.
26. ENDCAP COOLER/FREEZER AND DISPLAY LIGHTING AS NEEDED TO BE HARDWIRED THROUGH WHITE SO CORD. GC TO LEAVE BOTTOM HANGING AT 80" A.F.F. (SEE ELECTRICAL). CORD ANCHORED TO PURLINS ABOVE. COORDINATE LOCATION WITH FINAL DOLLAR GENERAL FIXTURE PLAN.
26A. BEAUTY STATION TO BE HARDWIRED THROUGH WHITE SO CORD. GC TO LEAVE BOTTOM HANGING AT 48" A.F.F. (SEE ELECTRICAL). CORD ANCHORED TO PURLINS ABOVE. COORDINATE LOCATION WITH FINAL DOLLAR GENERAL FIXTURE PLAN.
26B. WALL OUTLETS FOR BANKS OF COOLERS AND FREEZERS AND COSMETICS VALANCE, SEE ELECTRICAL FOR DETAILS.
27. MC CUE RAILING IN FRONT OF ELECTRICAL PANELS. 8'-0" LONG WITH TOP TWO RAILINGS AND NO MIDDLE POST.
28. CART AREA. REFER TO 5 & 6/A06.



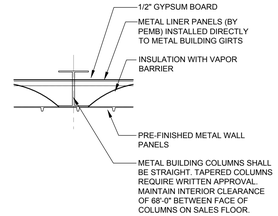
2 ANCHOR BOARD DETAIL
2/A01 SCALE: 1/2"=1'-0"

DRINK FIXTURE WALL MOUNTING SUPPORT NOTES:

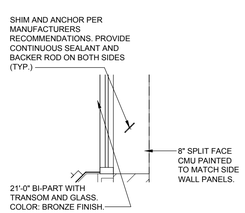
1. PROVIDE AND INSTALL 2X6 WHITE PINE - GRADE 2 OR BETTER.
2. PROVIDE AND INSTALL 2X4 WHITE PINE - GRADE 2 OR BETTER.
3. FASTEN THE 2X6 TO THE WALL WITH THE TOP EDGE OF THE BOARD AT 78" A.F.F., REFER TO FIXTURE PLAN FOR LENGTH AND LOCATION OF BOARD.
4. FASTEN THE 2X4 TO THE WALL WITH THE TOP EDGE OF THE BOARD AT 12" A.F.F., REFER TO FINAL DG FIXTURE PLAN FOR LENGTH AND LOCATION OF BOARD.
5. PRE-DRILL PILOT HOLES IN ALL BOARDS PRIOR TO INSTALLATION TO PREVENT WOOD SPLITS.
6. SECURE THE 2X6 WITH TWO SELF-TAPPING SCREWS. MINIMUM SCREW SIZE IS 4"x 1/4".
7. FASTEN THE 2X4 WITH WITH SELF-TAPPING SCREW PER WALL STUD. MINIMUM SCREW SIZE IS 4"x 1/4".
8. CAULK THE EDGES OF THE 2X6 AT THE TOP AND BOTTOM WHERE IT MEETS THE WALL PRIOR TO PAINTING.
9. PRIME AND PAINT BOTH BOARDS TO MATCH WALL COLOR.



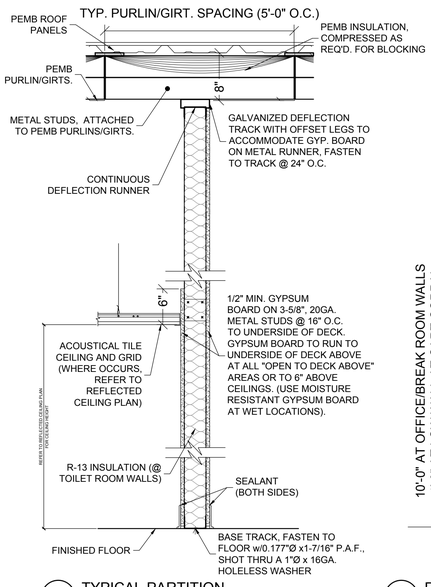
3 ENLARGED MOP SINK PLAN
3/A01 SCALE: 1/2"=1'-0"



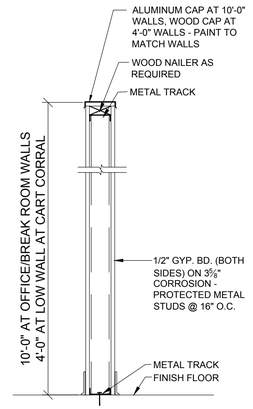
4 DETAIL AT COLUMN
4/A01 SCALE: 1/2"=1'-0"



5 EXTERIOR CORNER DETAIL
5/A01 SCALE: 1/2"=1'-0"



6A TYPICAL PARTITION
6A/A01 SCALE: 1"=1'-0"



7 PARTITION-OFFICE & BREAKROOM
7/A01 SCALE: 1"=1'-0"

ICON Architects incorporated
703 San Ysidro Trail
Mansfield, Texas 76063
Phn: 817.966.7503

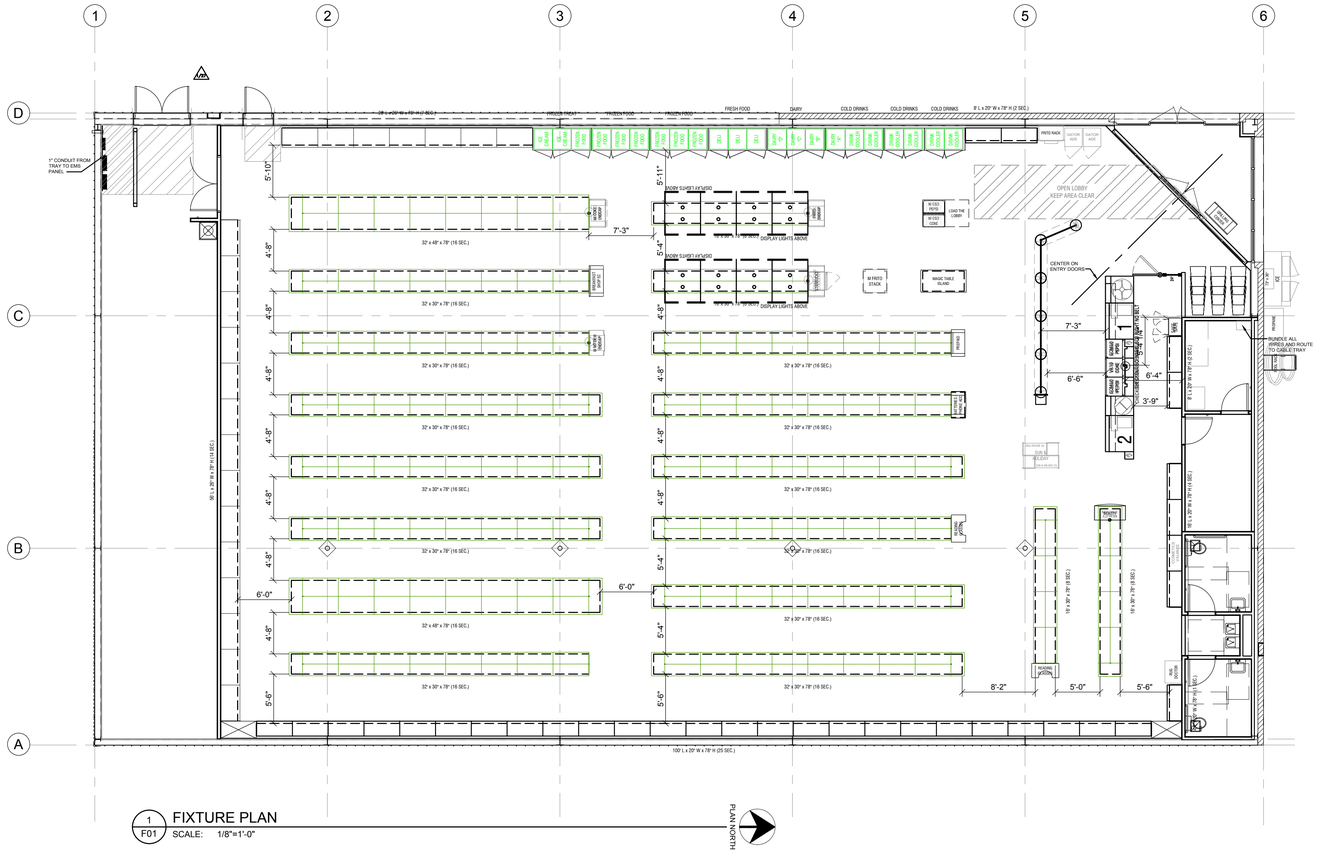
DOLLAR GENERAL®
728 W. MAIN STREET
MOLALLA, OREGON 97038

2/28/19 - ISSUE FOR REVIEW

REV.	REV.	REV.	REV.	REV.	REV.	REV.	REV.	REV.	REV.

FLOOR PLAN

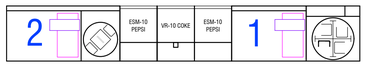
PROJECT # :	SHEET # : A01
DATE :	
DRAWN BY :	OF



1 F01 FIXTURE PLAN
SCALE: 1/8"=1'-0"

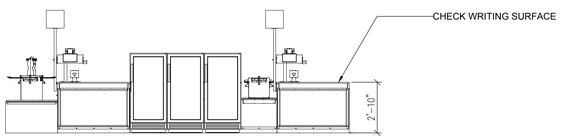
PLAN NORTH

B F01



NOTE: FRONT CHECKOUT COUNTER TO BE PROVIDED BY DOLLAR GENERAL AND INSTALLED AT DOLLAR GENERAL'S DIRECTION. COUNTERS SHALL INCLUDE A PORTION OF AT LEAST 36" IN LENGTH WHICH IS NO MORE THEN 34" ABOVE THE FINISH FLOOR. COUNTERS SHALL BE ON AN ACCESSIBLE ROUTE.

A - SERVICE COUNTER PLAN



B - ELEVATION

2 F01 SERVICE COUNTER DETAILS
SCALE: 1/4"=1'-0"

ICONArchitects
703 San Ysidro Trail
Mansfield, Texas 76063
Phn: 817.946.7503

DOLLAR GENERAL
728 W. MAIN STREET
MOLALLA, OREGON 97038

2-28-19 ISSUE FOR DESIGN REVIEW
REV.
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REV.

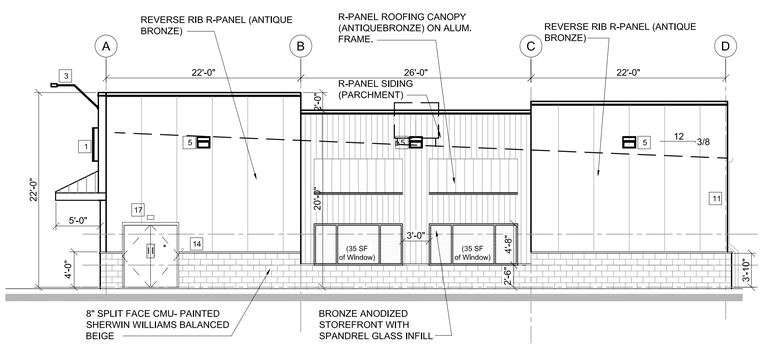
FIXTURE PLAN

PROJECT # :	SHEET # : F01
DATE :	
DRAWN BY :	OF

PRE-ENGINEERED METAL BUILDING VENDOR	VP BUILDINGS ATTN: DAVID ENGLISH (901) 568-4537					STAR BUILDING SYSTEMS ATTN: RODNEY BURT (800) 879-7827					NUCOR BUILDING SYSTEMS ATTN: BOB BARRY (315) 622-4440 (260) 837-7891					BIG BEE STEEL BUILDINGS, INC. ATTN: KEVIN BUSLER (800) 633-3378					CHIEF BUILDINGS ATTN: ERIN SULLIVAN (800) 845-1767					PREFERRED COLORS IF ALTERNATE EXTERIOR MATERIALS ARE USED INSTEAD OF METAL PANELS				
EXTERIOR FINISHES																													
EXTERIOR FINISHES ARE TO MATCH OR BE EQUAL TO VP METAL BUILDING SYSTEM'S FINISH SELECTION UNLESSS AUTHORITY HAVING JURISDICTION DOES NOT ALLOW.	COOL EGYPTIAN WHITE	COOL DARK BRONZE	BRONZE	COOL COTTON WHITE	GALVALUME	LIGHTSTONE	MEDIUM BRONZE KYNAR 500	BRONZE	POLAR WHITE	GALVALUME	LIGHTSTONE	MEDIUM BRONZE KYNAR 500	BRONZE	POLAR WHITE	GALVALUME	SANDSTONE	BURNISHED SLATE	BRONZE	POLAR WHITE	GALVALUME	PARCHMENT	ANTIQUE BRONZE	BRONZE	POLAR WHITE	GALVALUME	SHERWIN WILLIAMS BALANCED BEIGE*	SHERWIN WILLIAMS EXTRA VAN DYKE BROWN	BRONZE	WHITE BY PEMB MANUFACTURER	GALVALUME
GUTTERS	●					●					●					●					●					●				
DOWN SPOUTS	●					●					●					●					●					●				
SIDE AND REAR METAL WALL PANELS & TRIM, RECEIVING & EMERGENCY EXIT DOORS (EXTERIOR OF DOORS TO BE PAINTED, REFER TO DOOR SCHEDULE)	●					●					●					●					●					●				
ARCHITECTURAL BLOCK AT BUILDING FACADE TO BE PRE-FINISHED OR PAINTED (2 COATS-LOXON XP MASONRY COATING A24W400 SERIES) TO MATCH THE SIDE AND REAR METAL WALL PANELS	●					●					●					●					●					●				
FLAT METAL SOFFIT AT STOREFRONT VESTIBULE AREA				●					●					●					●					●			●	
BUILDING FASCIA WALL, PARAPET OVER ENTRANCE, AND CANOPY		●					●					●					●					●					●		
STOREFRONT SYSTEM			●					●					●					●					●					●		
STANDING SEAM METAL ROOF PANELS					●					●					●					●					●				●
LINER PANELS (INTERIOR SALES AND RECEIVING FLOOR)				●					●					●					●					●			●	

NOTE:
1. REFER TO SHEET T01 FOR ADDITIONAL INFORMATION ON RECOMMENDED NATIONAL ACCOUNT VENDORS.
2. NATIONAL ACCOUNT AND CONTACT INFORMATION SUBJECT TO CHANGE.

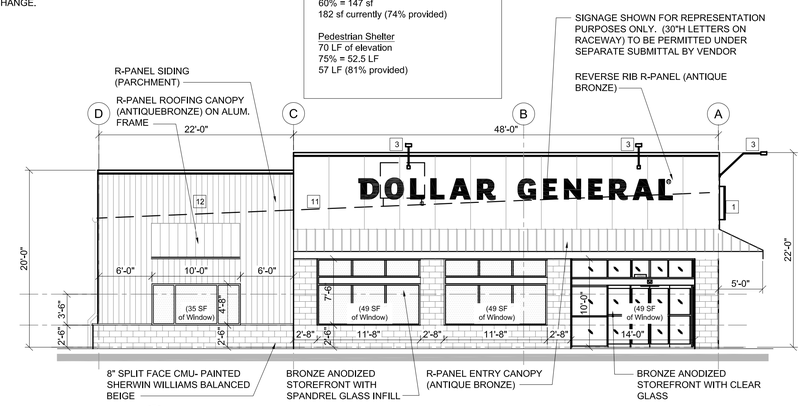
Window Area (from 30" AFF to 72" AFF)
245 sf of potential area
30% = 73.5 sf
70 sf currently (29% provided)



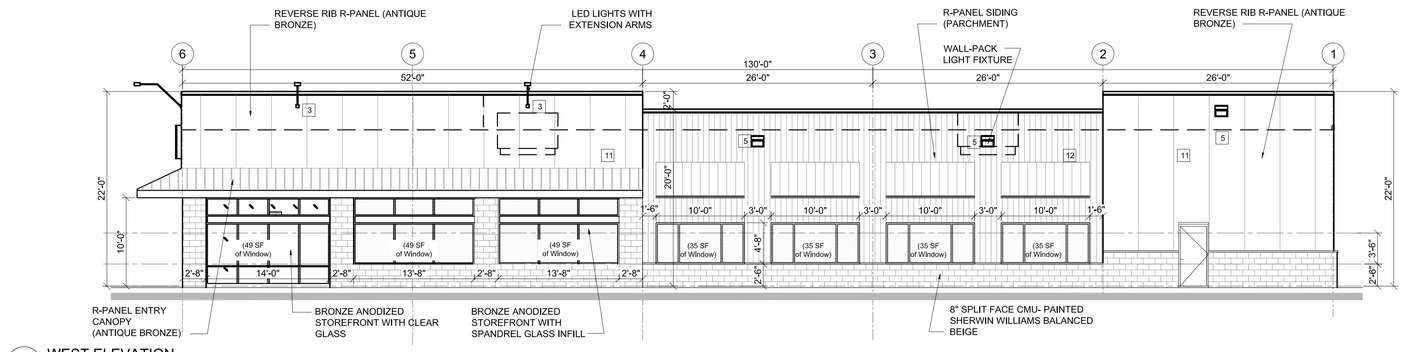
1 A02 SOUTH ELEVATION
SCALE: 1/8"=1'-0"

Window Area (from 30" AFF to 72" AFF)
245 sf of potential area
60% = 147 sf
182 sf currently (74% provided)

Pedestrian Shelter
70 LF of elevation
75% = 52.5 LF
57 LF (81% provided)



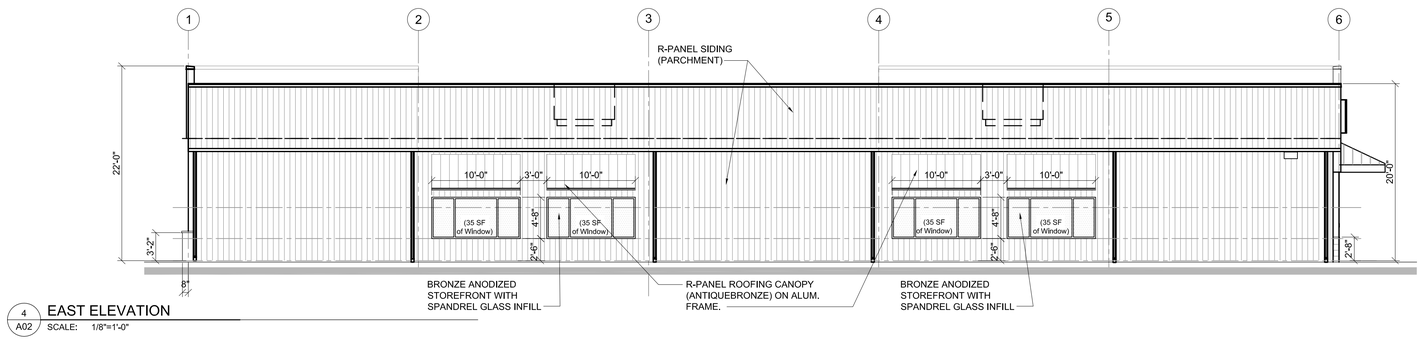
2 A02 NORTH ELEVATION
SCALE: 1/8"=1'-0"



3 A02 WEST ELEVATION
SCALE: 1/8"=1'-0"

Window Area (from 30" AFF to 72" AFF)
455 sf of potential area
60% = 273 sf
287 sf currently (63% provided)

Pedestrian Shelter
130 LF of elevation
75% = 97.5 LF
97 LF (75% provided)



4 A02 EAST ELEVATION
SCALE: 1/8"=1'-0"

Window Area (from 30" AFF to 72" AFF)
455 sf of potential area
30% = 136.5 sf
140 sf currently (31% provided)

ELEVATION KEYED NOTES

1. SIGN FURNISHED AND INSTALLED BY DOLLAR GENERAL CORP. WITH CIRCUIT AS NOTED ON ELECTRICAL PLAN. SIGN TO BE CENTERED ON FRONT OF BUILDING. CONTRACTOR IS TO PROVIDE ADEQUATE BLOCKING AS REQUIRED BY SIGN MANUFACTURER TO SUPPORT SIGN WEIGHT OF UP TO 1,400 LBS. EXTERIOR CANOPY SIGN SHALL BE SUPPORTED BY THE FACE OF THE CANOPY. COORDINATE THE PROPER SIGNAGE TO BE USED WITH DOLLAR GENERAL.
2. NOT USED.
3. FLOOD LIGHT. REFER TO ELEC. DRAWINGS FOR ADDITIONAL INFO.
4. NOT USED
5. WALL PACK. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
6. NOT USED
7. TRIM - SEE EXTERIOR FINISH SCHEDULE FOR COLOR.
8. GUTTER AND DOWNSPOUT - SEE EXTERIOR FINISH SCHEDULE FOR COLOR.
9. 8" SPLIT FACE CONCRETE MASONRY UNIT.
10. STANDING SEAM METAL ROOF.
11. PRE-FINISHED METAL WALL PANELS FOR THE FASCIA AND PARAPET OVER THE ENTRANCE. REVERSE RIB PROFILE .
12. PRE-FINISHED METAL WALL PANELS FOR THE SIDE AND REAR OF THE BUILDING. PROVIDE TAMPER-RESISTANT FASTENERS FOR BOTTOM 8'-0".
13. VENT FOR BATHROOM EXHAUST. REFER TO M01 FOR ADDITIONAL INFORMATION.
14. DOOR BUZZER. REFER TO E01 FOR ADDITIONAL INFORMATION.
15. NOT USED.
16. HVAC UNITS MOUNTED ON ROOF. REFER TO MECHANICAL SHEET M1 FOR MORE INFORMATION.
17. OUTSIDE AIR TEMP. SENSOR MOUNTED OVER RECEIVING DOORS @ 8'-0" A.F.F.
18. MINIMUM EAVE HEIGHT IS 14'-0" A.F.F.
19. FINISHED GRADE AT EXTERIOR WALLS SHALL BE A MINIMUM OF 6" BELOW FINISHED FLOOR AT ALL NON PAVED AREAS.
20. IN NORTHERN CLIMATES, PROVIDE SNOW GUARDS ON ROOF PER LOCAL CODE.
21. METAL CANOPY BY PRE-ENGINEERED METAL BUILDING MANUFACTURER. (ONLY APPLICABLE TO C & D PROTOTYPES)
22. 1/2" DIAMETER x 6" LONG STAINLESS STEEL EYE BOLTS (CLOSED) WITH 1" DIAMETER OPENINGS. DRILL AND EPOXY INTO BLOCK WALL. 4 BOLTS TO BE LOCATED AS SHOWN EACH SIDE OF ENTRY, TOTAL OF 8 BOLTS.

ICON Architects incorporated
703 San Ysidro Trail
Mansfield, Texas 76063
Phn: 817.946.7503

DOLLAR GENERAL®
728 W. MAIN STREET
MOLALLA, OREGON 97038

2/20/19 - ISSUE FOR REVIEW
5/28/19 - ISSUE FOR REVIEW
REV.
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EXTERIOR ELEVATIONS

PROJECT # :
DATE :
DRAWN BY :
SHEET # : A02
OF

Transportation Impact Analysis

EXHBIT H

Cascade Center

Molalla, Oregon

March 2019

KITTELSON & ASSOCIATES

Transportation Impact Analysis

Cascade Center

Molalla, Oregon

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Project No. 23301

March 2019

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Appendix G Turn Lane Criteria Analysis Worksheets

Appendix H Year 2020 Total Conditions with Mitigation Traffic Analysis Worksheets

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:

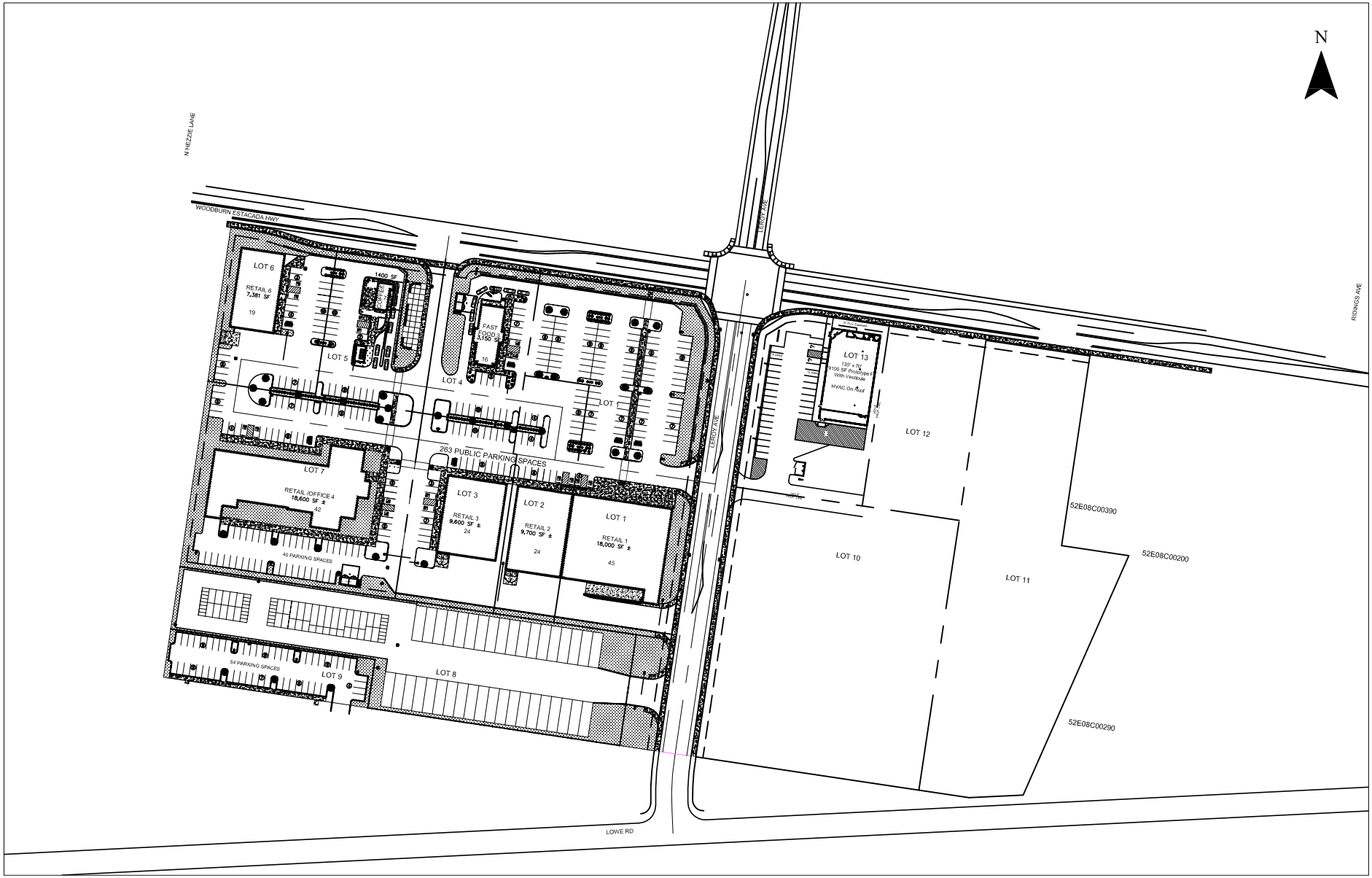
1. OR 211 (Woodburn-Estacada Highway/Main Street)/OR 213 (Cascade Highway)
2. OR 211 (Woodburn-Estacada Highway/Main Street)/Hezzie Lane
3. OR 211 (Woodburn-Estacada Highway/Main Street)/West Site Access
4. OR 211 (Woodburn-Estacada Highway/Main Street)/Leroy Avenue
5. OR 211 (Woodburn-Estacada Highway/Main 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 circulation.

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

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.

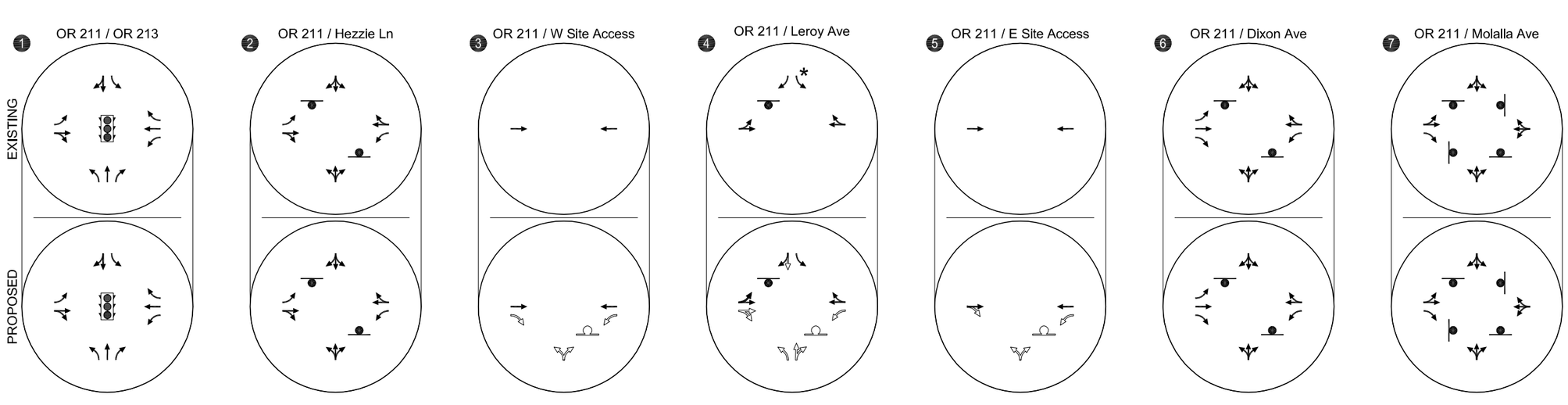
Table 1. Existing Transportation Facilities

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

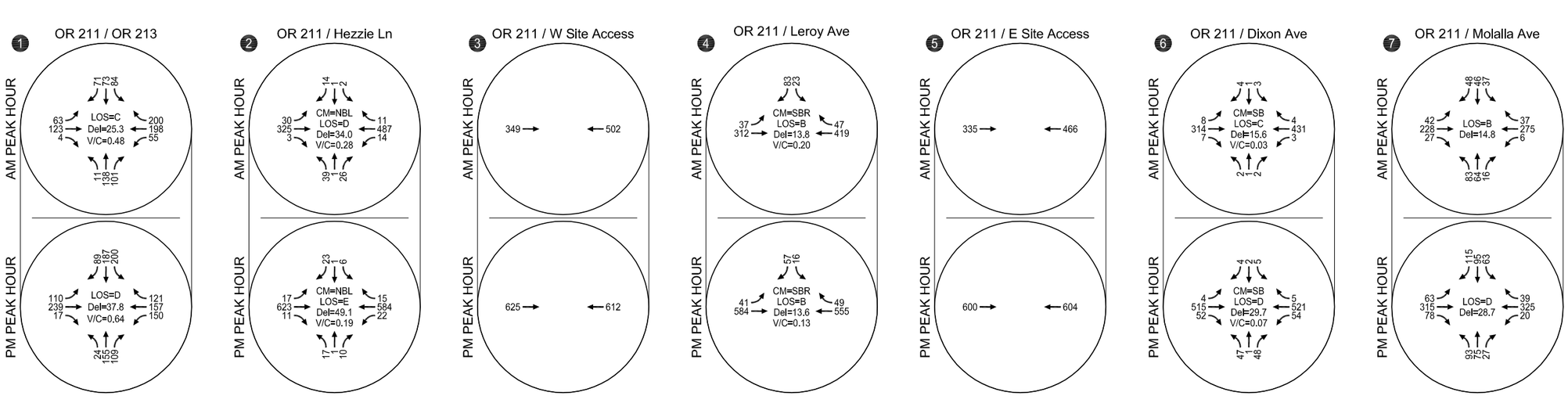
Year	2016	2015	2014	2013	2012
Peak Month	109	110	110	109	111
Count Month (October)	103	105	110	108	105

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

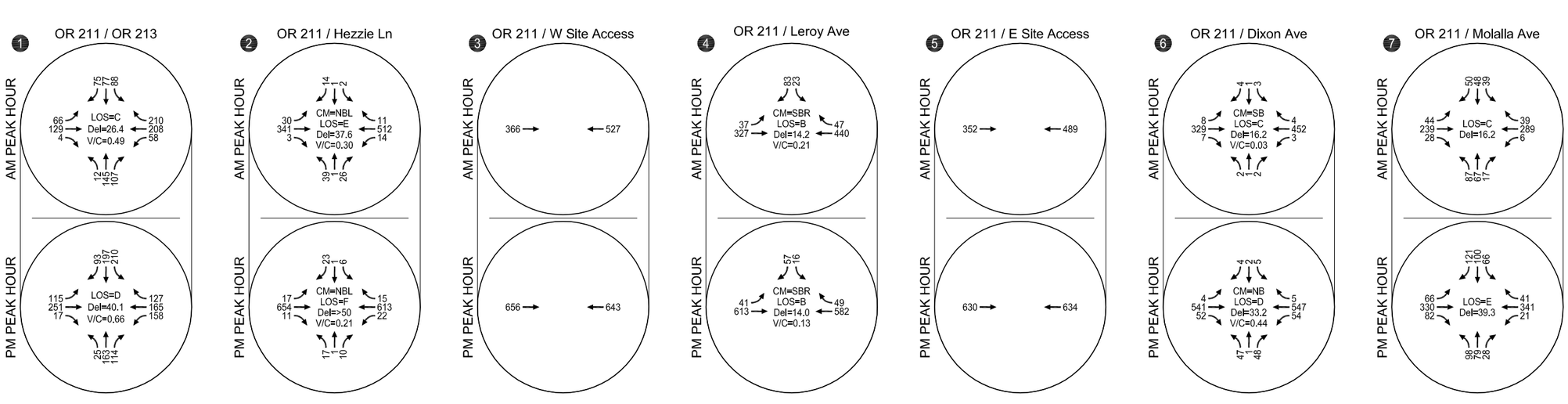
The year 2020 background traffic analysis identifies how the study area's transportation system will operate without the proposed Cascade Center. This analysis includes traffic attributed to planned developments within the study area and to general growth in the region but does not include traffic from 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



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 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.

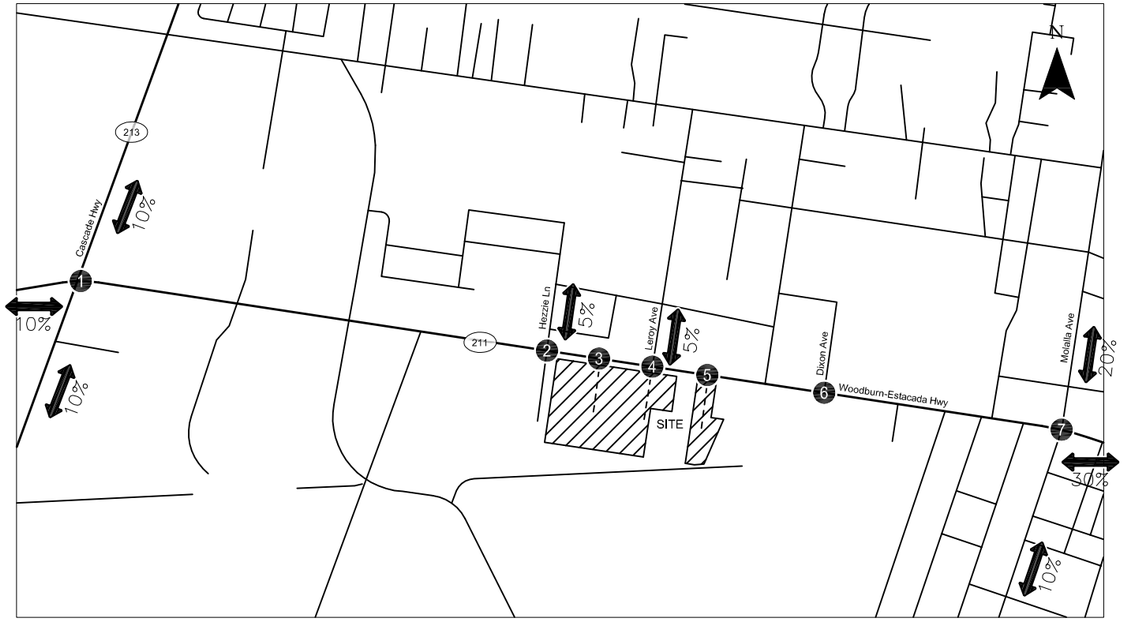
Table 4. Trip Generation

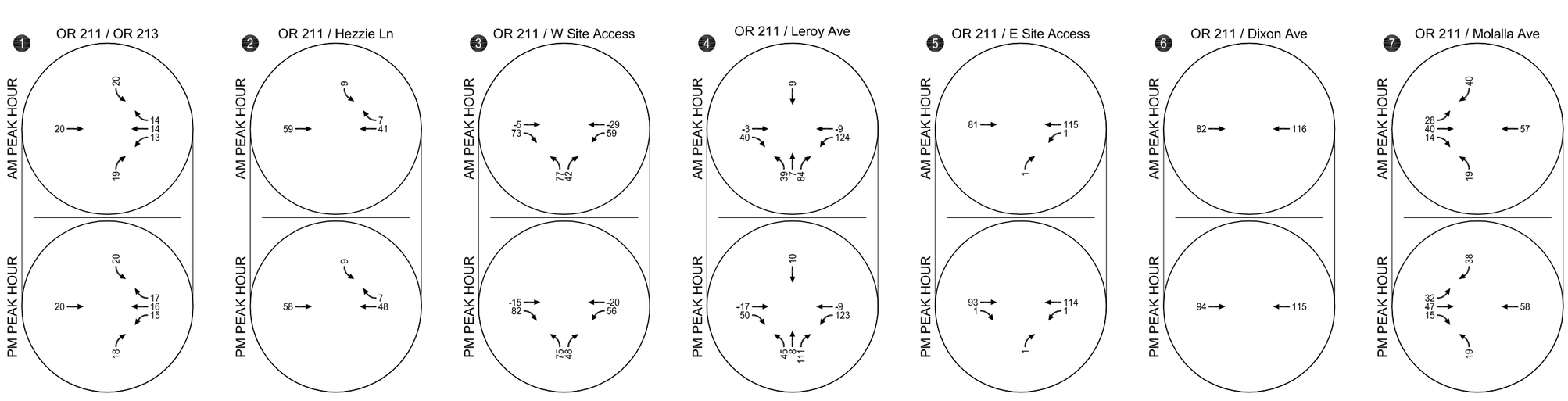
Land Use	ITE Code	Size	Weekday Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Fast Food Restaurant with Drive Through	934	6,300 ft²	2,966	253	129	124	206	107	99
Less Internal (16% Daily, 3% AM, 13% PM)			*504*	*8*	*4*	*4*	*29*	*15*	*14*
Less Pass-by (50% Daily, 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.

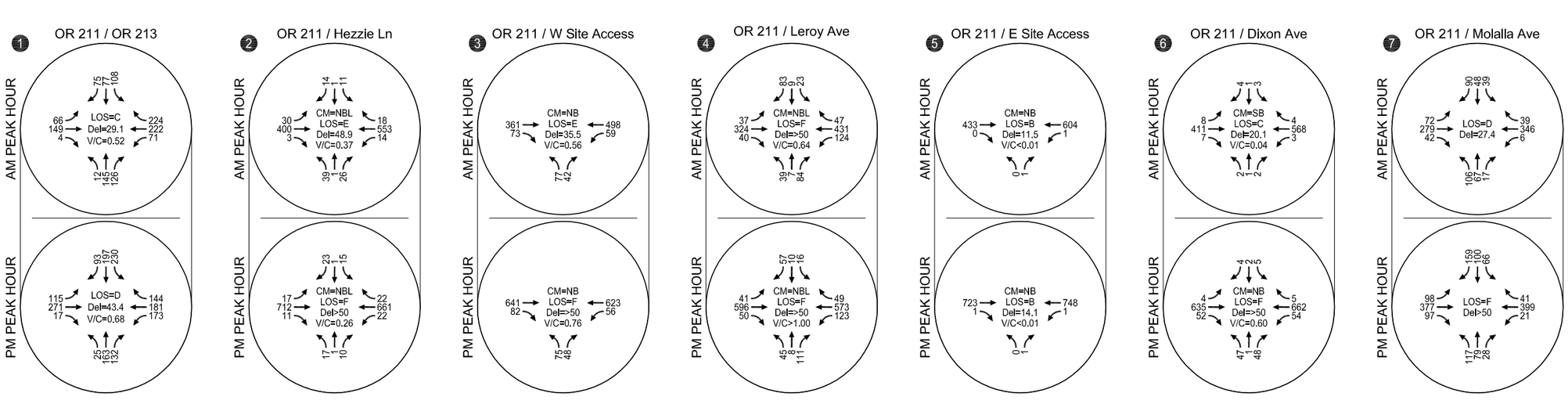
Appendix "E" contains the year 2020 total traffic level-of-service worksheets.

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



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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.

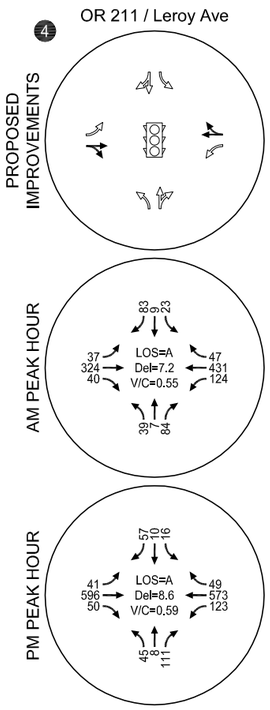
The ODOT right turn lane criteria are satisfied on eastbound OR 211 at Leroy Avenue if the intersection remains unsignalized; however, constructing a right-turn lane increases the north-south pedestrian crossing distance and would not be needed from a capacity perspective if the intersection is signalized. 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*.

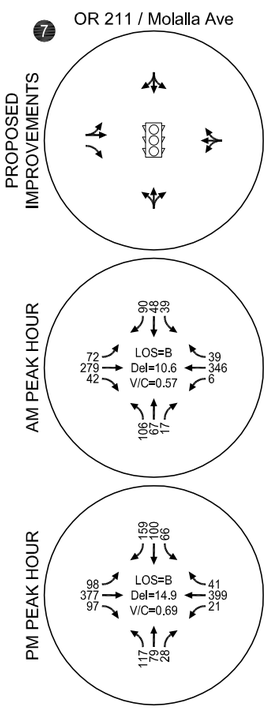
YEAR 2020 TOTAL TRAFFIC CONDITIONS WITH MITIGATION

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.





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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

KITTELSON & ASSOCIATES

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 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.

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>.
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6. Oregon Department of Transportation (ODOT). *Oregon Highway Plan*. 1999.
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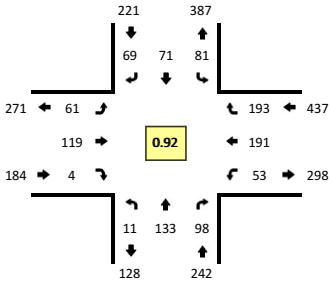
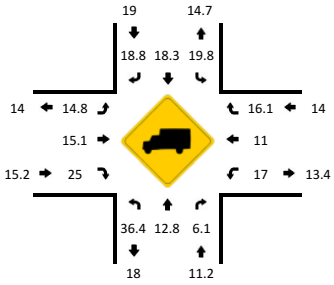
8. Institute of Transportation Engineers. *Trip Generation Handbook, 3rd Edition*. 2017.
9. *Manual on Uniform Traffic Control Devices.* 2009 Edition. 2009.

Appendix A
Turning Movement Counts

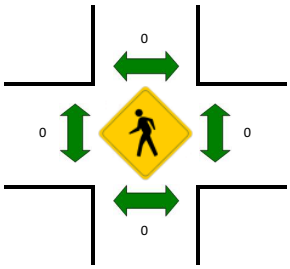
LOCATION: OR-213 -- OR-211
CITY/STATE: Molalla, OR
QC JOB #: 14815601
DATE: Tue, Oct 9 2018

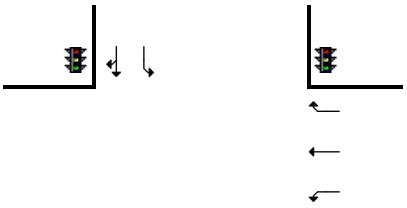
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:20 AM -- 7:35 AM

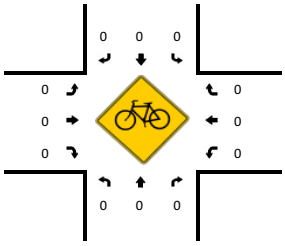


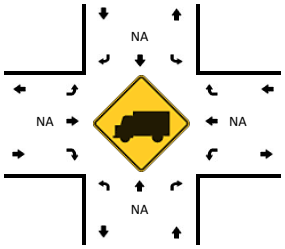


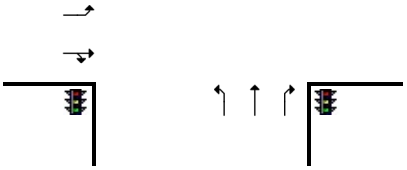
Quality Counts
DATA THAT DRIVES COMMUNITIES

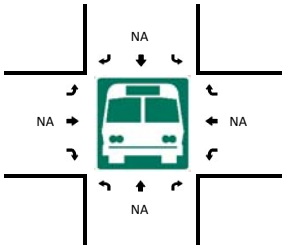












5-Min Count Period Beginning At	OR-213 (Northbound)				OR-213 (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	11	11	0	4	1	6	0	4	11	0	0	4	13	14	0	79	
7:05 AM	1	5	4	0	6	10	10	0	8	10	0	0	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																	

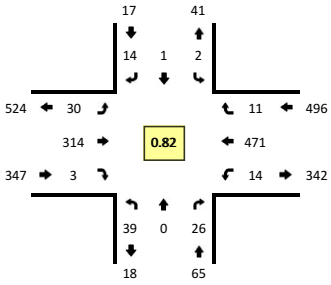
Comments:

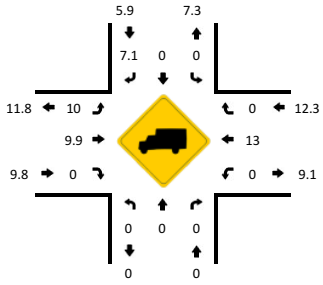
Report generated on 1/11/2019 9:14 AM
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

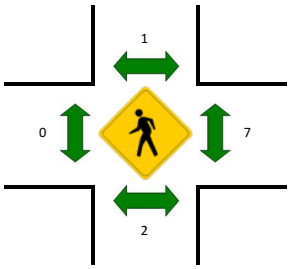
LOCATION: N Hezzie Ln -- OR-211
CITY/STATE: Molalla, OR

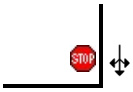
QC JOB #: 14815603
DATE: Tue, Oct 9 2018

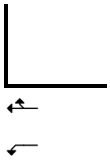
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:15 AM -- 7:30 AM

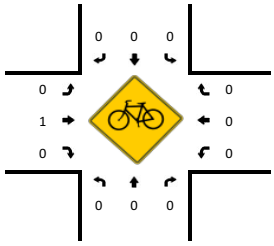


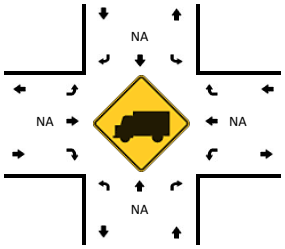


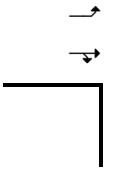


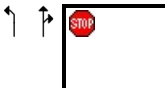


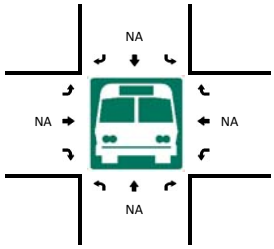












5-Min Count Period Beginning At	N Hezzie Ln (Northbound)				N Hezzie Ln (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	5	0	0	0	0	0	3	0	1	31	0	0	1	34	0	0	75	
7:05 AM	5	0	3	0	0	0	1	0	2	30	0	0	0	38	0	0	79	
7:10 AM	2	0	2	0	0	0	3	0	2	27	0	0	1	33	0	0	70	
7:15 AM	7	0	6	0	1	0	0	0	7	28	0	0	3	42	1	0	95	
7:20 AM	0	0	2	0	0	1	4	0	2	17	0	0	2	60	1	0	89	
7:25 AM	7	0	3	0	0	0	0	0	1	30	0	0	1	55	2	0	99	
7:30 AM	1	0	3	0	0	0	2	0	5	16	0	0	2	44	1	0	74	
7:35 AM	3	0	0	0	0	0	0	0	2	35	0	0	0	31	1	0	72	
7:40 AM	2	0	2	0	1	0	0	0	2	21	0	0	1	39	0	0	68	
7:45 AM	4	0	0	0	0	0	1	0	4	27	1	0	2	35	1	0	75	
7:50 AM	2	0	3	0	0	0	0	0	1	22	0	0	0	32	1	0	61	
7:55 AM	1	0	2	0	0	0	0	0	1	30	2	0	1	28	3	0	68	925
8:00 AM	1	0	0	0	0	0	0	0	4	22	0	0	1	38	0	0	66	916
8:05 AM	1	0	1	0	0	0	2	0	1	19	0	0	1	28	0	0	53	890
8:10 AM	1	0	3	0	1	0	0	0	1	20	0	0	0	31	0	0	57	877
8:15 AM	3	0	1	0	0	0	0	0	1	18	0	0	3	21	1	0	48	830
8:20 AM	1	0	1	0	0	0	0	0	3	20	0	1	1	33	0	0	60	801
8:25 AM	1	0	1	0	0	0	3	0	2	38	0	0	0	41	1	0	87	789
8:30 AM	2	0	0	0	0	0	3	0	3	18	0	0	0	27	0	1	54	769
8:35 AM	0	0	0	0	1	0	3	0	1	28	0	0	1	28	2	0	64	761
8:40 AM	2	0	1	0	1	1	2	0	1	23	0	0	0	40	1	0	72	765
8:45 AM	0	0	0	0	2	0	1	0	1	22	1	0	1	31	0	0	59	749
8:50 AM	4	0	0	0	1	0	1	0	2	27	0	0	2	25	4	0	66	754
8:55 AM	0	0	1	0	1	0	1	0	1	33	1	0	0	36	1	0	75	761

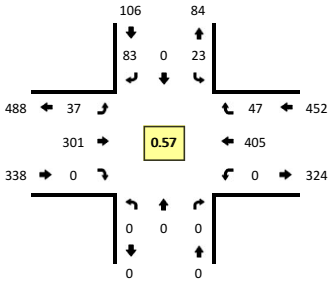
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	56	0	44	0	4	4	16	0	40	300	0	0	24	628	16	0	1132
Heavy Trucks	0	0	0		0	0	0		4	24	0		0	100	0		128
Pedestrians		4				0				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

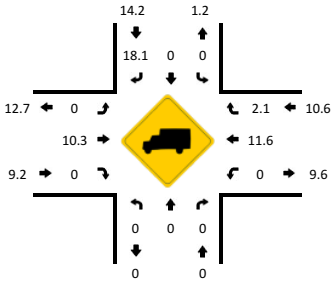
Comments:

LOCATION: Leroy Ave -- OR-211
CITY/STATE: Molalla, OR

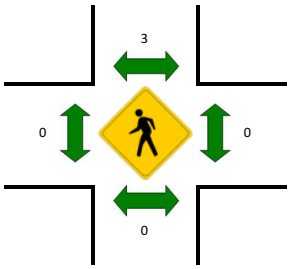
QC JOB #: 14815609
DATE: Tue, Oct 9 2018

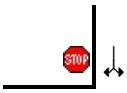
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:15 AM -- 7:30 AM

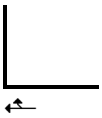


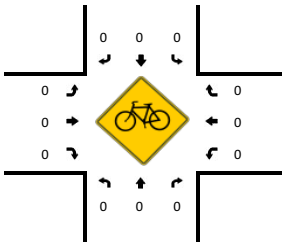


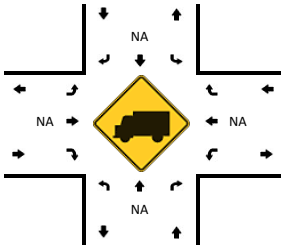
Quality Counts
DATA THAT DRIVES COMMUNITIES

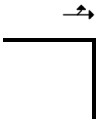


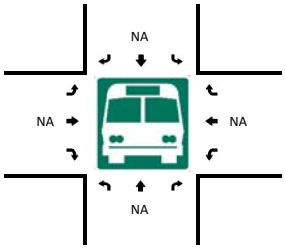












5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	0	0	0	0	0	2	0	1	12	0	0	0	41	2	0	58	
6:05 AM	0	0	0	0	0	0	1	0	1	14	0	0	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	2	27	0	0	0	23	0	0	63	717

5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
9:00 AM	0	0	0	0	1	0	4	0	2	29	0	0	0	31	4	0	71	736
9:05 AM	0	0	0	0	0	0	3	0	3	29	0	0	0	23	2	0	60	736
9:10 AM	0	0	0	0	0	0	1	0	0	31	0	0	0	38	1	0	71	749
9:15 AM	0	0	0	0	1	0	2	0	2	19	0	0	0	28	1	0	53	763
9:20 AM	0	0	0	0	0	0	3	0	1	22	0	0	0	31	5	0	62	758
9:25 AM	0	0	0	0	4	0	4	0	2	23	0	0	0	32	0	0	65	758
9:30 AM	0	0	0	0	0	0	3	0	2	18	0	0	0	31	1	0	55	758
9:35 AM	0	0	0	0	0	0	3	0	0	19	0	0	0	31	2	0	55	752
9:40 AM	0	0	0	0	1	0	4	0	2	21	0	0	0	27	0	0	55	740
9:45 AM	0	0	0	0	2	0	4	0	0	27	0	0	0	29	2	0	64	742
9:50 AM	0	0	0	0	0	0	1	0	0	25	0	0	0	32	3	0	61	735
9:55 AM	0	0	0	0	0	0	0	0	0	29	0	0	0	45	1	0	75	747
10:00 AM	0	0	0	0	0	0	3	0	1	29	0	0	0	37	1	0	71	747
10:05 AM	0	0	0	0	0	0	0	0	1	24	0	0	0	29	1	0	55	742
10:10 AM	0	0	0	0	1	0	1	0	0	33	0	0	0	32	2	0	69	740
10:15 AM	0	0	0	0	1	0	1	0	1	25	0	0	0	40	1	0	69	756
10:20 AM	0	0	0	0	1	0	3	0	1	27	0	0	0	28	3	0	63	757
10:25 AM	0	0	0	0	1	0	4	0	2	31	0	0	0	30	3	0	71	763
10:30 AM	0	0	0	0	0	0	2	0	0	31	0	0	0	35	0	0	68	776
10:35 AM	0	0	0	0	1	0	2	0	0	22	0	0	0	45	2	0	72	793
10:40 AM	0	0	0	0	0	0	2	0	1	23	0	0	0	27	2	0	55	793
10:45 AM	0	0	0	0	1	0	1	0	2	22	0	0	0	42	6	0	74	803
10:50 AM	0	0	0	0	0	0	2	0	0	34	0	0	0	52	2	0	90	832
10:55 AM	0	0	0	0	0	0	1	0	0	32	0	0	0	49	2	0	84	841
11:00 AM	0	0	0	0	1	0	0	0	2	25	0	0	0	45	1	0	74	844
11:05 AM	0	0	0	0	2	0	3	0	1	25	0	0	0	44	1	0	76	865
11:10 AM	0	0	0	0	1	0	2	0	3	43	0	0	0	37	5	0	91	887
11:15 AM	0	0	0	0	4	0	2	0	0	35	0	0	0	47	2	0	90	908
11:20 AM	0	0	0	0	1	0	4	0	1	35	0	0	0	36	1	0	78	923
11:25 AM	0	0	0	0	0	0	3	0	2	31	0	0	0	31	1	0	68	920
11:30 AM	0	0	0	0	1	0	3	0	0	35	0	0	0	34	1	0	74	926
11:35 AM	0	0	0	0	1	0	1	0	3	34	0	0	0	46	0	0	85	939
11:40 AM	0	0	0	0	2	0	1	0	4	31	0	0	0	38	4	0	80	964
11:45 AM	0	0	0	0	1	0	5	0	0	29	0	0	0	44	4	0	83	973
11:50 AM	0	0	0	0	4	0	0	0	1	31	0	0	0	44	1	0	81	964
11:55 AM	0	0	0	0	1	0	0	0	2	33	0	0	0	35	5	0	76	956
12:00 PM	0	0	0	0	1	0	4	0	1	40	0	0	0	47	3	0	96	978
12:05 PM	0	0	0	0	1	0	3	0	3	35	0	0	0	40	2	0	84	986
12:10 PM	0	0	0	0	1	0	7	0	0	38	0	0	0	33	2	0	81	976
12:15 PM	0	0	0	0	1	0	2	0	3	34	0	0	0	40	0	0	80	966
12:20 PM	0	0	0	0	2	0	2	0	2	38	0	0	0	23	0	0	67	955
12:25 PM	0	0	0	0	3	0	3	0	1	38	0	0	0	36	2	0	83	970
12:30 PM	0	0	0	0	3	0	2	0	3	33	0	0	0	35	0	0	76	972
12:35 PM	0	0	0	0	1	0	0	0	1	47	0	0	0	34	1	0	84	971
12:40 PM	0	0	0	0	1	0	1	0	1	24	0	0	0	36	0	0	63	954
12:45 PM	0	0	0	0	1	0	2	0	5	33	0	0	0	37	5	0	83	954
12:50 PM	0	0	0	0	0	0	3	0	1	38	0	0	0	35	1	0	78	951
12:55 PM	0	0	0	0	3	0	1	0	1	31	0	0	0	46	1	0	83	958
1:00 PM	0	0	0	0	0	0	0	0	1	35	0	0	0	28	0	0	64	926
1:05 PM	0	0	0	0	1	0	0	0	3	32	0	0	0	41	5	0	82	924
1:10 PM	0	0	0	0	2	0	4	0	2	28	0	0	0	37	4	0	77	920
1:15 PM	0	0	0	0	1	0	2	0	1	44	0	0	0	30	1	0	79	919
1:20 PM	0	0	0	0	1	0	3	0	1	42	0	0	0	38	4	0	89	941
1:25 PM	0	0	0	0	1	0	2	0	0	35	0	0	0	41	3	0	82	940
1:30 PM	0	0	0	0	1	0	2	0	3	55	0	0	0	30	1	0	92	956
1:35 PM	0	0	0	0	2	0	3	0	3	34	0	0	0	42	1	0	85	957
1:40 PM	0	0	0	0	1	0	2	0	3	38	0	0	0	44	3	0	91	985
1:45 PM	0	0	0	0	1	0	3	0	0	27	0	0	0	33	1	0	65	967
1:50 PM	0	0	0	0	4	0	2	0	3	34	0	0	0	39	2	0	84	973
1:55 PM	0	0	0	0	1	0	2	0	4	26	0	0	0	31	3	0	67	957
2:00 PM	0	0	0	0	3	0	2	0	1	32	0	0	0	43	3	0	84	977
2:05 PM	0	0	0	0	0	0	3	0	2	33	0	0	0	32	3	0	73	968
2:10 PM	0	0	0	0	0	0	3	0	4	40	0	0	0	37	3	0	87	978
2:15 PM	0	0	0	0	3	0	1	0	2	32	0	0	0	38	7	0	83	982
2:20 PM	0	0	0	0	2	0	9	0	2	37	0	0	0	30	3	0	83	976
2:25 PM	0	0	0	0	4	0	10	0	0	39	0	0	0	29	3	0	85	979
2:30 PM	0	0	0	0	3	0	4	0	1	40	0	0	0	31	2	0	81	968
2:35 PM	0	0	0	0	3	0	1	0	1	37	0	0	0	46	3	0	91	974
2:40 PM	0	0	0	0	1	0	1	0	1	43	0	0	0	34	1	0	81	964
2:45 PM	0	0	0	0	2	0	5	0	1	36	0	0	0	40	3	0	87	986
2:50 PM	0	0	0	0	1	0	5	0	3	37	0	0	0	39	2	0	87	989
2:55 PM	0	0	0	0	0	0	6	0	1	39	0	0	0	60	2	0	108	1030
3:00 PM	0	0	0	0	2	0	1	0	3	39	0	0	0	39	4	0	88	1034
3:05 PM	0	0	0	0	2	0	3	0	1	33	0	0	0	46	1	0	86	1047

5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:10 PM	0	0	0	0	3	0	10	0	3	44	0	0	0	49	0	0	109	1069
3:15 PM	0	0	0	0	1	0	6	0	3	43	0	0	0	48	3	0	104	1090
3:20 PM	0	0	0	0	1	0	3	0	0	41	0	0	0	56	1	0	102	1109
3:25 PM	0	0	0	0	0	0	2	0	2	49	0	0	0	30	2	0	85	1109
3:30 PM	0	0	0	0	2	0	9	0	7	46	0	0	0	43	1	0	108	1136
3:35 PM	0	0	0	0	1	0	6	0	3	41	0	0	0	43	1	0	95	1140
3:40 PM	0	0	0	0	2	0	7	0	2	58	0	0	0	37	2	0	108	1167
3:45 PM	0	0	0	0	0	0	2	0	0	38	0	0	0	41	1	0	82	1162
3:50 PM	0	0	0	0	1	0	4	0	2	48	0	0	0	37	1	0	93	1168
3:55 PM	0	0	0	0	0	0	5	0	3	51	0	0	0	38	6	0	103	1163
4:00 PM	0	0	0	0	1	0	7	0	3	50	0	0	0	31	1	0	93	1168
4:05 PM	0	0	0	0	0	0	1	0	4	49	0	0	0	41	1	0	96	1178
4:10 PM	0	0	0	0	1	0	6	0	2	46	0	0	0	39	3	0	97	1166
4:15 PM	0	0	0	0	1	0	5	0	2	49	0	0	0	39	2	0	98	1160
4:20 PM	0	0	0	0	2	0	4	0	2	45	0	0	0	41	3	0	97	1155
4:25 PM	0	0	0	0	0	0	2	0	3	45	0	0	0	38	4	0	92	1162
4:30 PM	0	0	0	0	4	0	3	0	1	49	0	0	0	46	2	0	105	1159
4:35 PM	0	0	0	0	1	0	4	0	4	44	0	0	0	46	2	0	101	1165
4:40 PM	0	0	0	0	0	0	2	0	5	53	0	0	0	45	3	0	108	1165
4:45 PM	0	0	0	0	2	0	5	0	6	37	0	0	0	46	5	0	101	1184
4:50 PM	0	0	0	0	1	0	9	0	4	53	0	0	0	44	6	0	117	1208
4:55 PM	0	0	0	0	0	0	5	0	4	42	0	0	0	42	8	0	101	1206
5:00 PM	0	0	0	0	2	0	5	0	1	59	0	0	0	46	6	0	119	1232
5:05 PM	0	0	0	0	1	0	5	0	3	49	0	0	0	42	5	0	105	1241
5:10 PM	0	0	0	0	2	0	8	0	6	39	0	0	0	61	3	0	119	1263
5:15 PM	0	0	0	0	1	0	4	0	2	49	0	0	0	33	3	0	92	1257
5:20 PM	0	0	0	0	1	0	3	0	4	45	0	0	0	39	4	0	96	1256
5:25 PM	0	0	0	0	1	0	2	0	4	49	0	0	0	44	6	0	106	1270
5:30 PM	0	0	0	0	0	0	8	0	6	43	0	0	0	39	4	0	100	1265
5:35 PM	0	0	0	0	2	0	8	0	4	49	0	0	0	37	3	0	103	1267
5:40 PM	0	0	0	0	0	0	7	0	5	45	0	0	0	31	6	0	94	1253
5:45 PM	0	0	0	0	1	0	10	0	3	48	0	0	0	43	1	0	106	1258
5:50 PM	0	0	0	0	4	0	5	0	3	45	0	0	0	40	7	0	104	1245
5:55 PM	0	0	0	0	2	0	2	0	2	41	0	0	0	29	5	0	81	1225
6:00 PM	0	0	0	0	0	0	4	0	8	45	0	0	0	47	2	0	106	1212
6:05 PM	0	0	0	0	2	0	3	0	4	47	0	0	0	31	1	0	88	1195
6:10 PM	0	0	0	0	2	0	6	0	5	43	0	0	0	36	0	0	92	1168
6:15 PM	0	0	0	0	3	0	4	0	3	46	0	0	0	40	3	0	99	1175
6:20 PM	0	0	0	0	4	0	3	0	1	35	0	0	0	32	1	0	76	1155
6:25 PM	0	0	0	0	1	0	1	0	3	34	0	0	0	31	0	0	70	1119
6:30 PM	0	0	0	0	2	0	6	0	7	31	0	0	0	37	4	0	87	1106
6:35 PM	0	0	0	0	7	0	15	0	4	38	0	0	0	24	0	0	88	1091
6:40 PM	0	0	0	0	2	0	4	0	7	42	0	0	0	26	3	0	84	1081
6:45 PM	0	0	0	0	0	0	3	0	1	41	0	0	0	31	5	0	81	1056
6:50 PM	0	0	0	0	4	0	7	0	5	39	0	0	0	32	4	0	91	1043
6:55 PM	0	0	0	0	0	0	7	0	3	37	0	0	0	28	4	0	79	1041
7:00 PM	0	0	0	0	2	0	1	0	4	27	0	0	0	23	3	0	60	995
7:05 PM	0	0	0	0	9	0	12	0	3	23	0	0	0	18	3	0	68	975
7:10 PM	0	0	0	0	2	0	4	0	3	32	0	0	0	26	2	0	69	952
7:15 PM	0	0	0	0	3	0	1	0	1	28	0	0	0	30	2	0	65	918
7:20 PM	0	0	0	0	0	0	0	0	1	33	0	0	0	22	1	0	57	899
7:25 PM	0	0	0	0	0	0	2	0	2	23	0	0	0	18	2	0	47	876
7:30 PM	0	0	0	0	1	0	2	0	0	22	0	0	0	31	1	0	57	846
7:35 PM	0	0	0	0	0	0	2	0	0	14	0	0	0	27	5	0	48	806
7:40 PM	0	0	0	0	0	0	0	0	3	26	0	0	0	18	2	0	49	771
7:45 PM	0	0	0	0	2	0	1	0	2	18	0	0	0	18	1	0	42	732
7:50 PM	0	0	0	0	1	0	1	0	3	20	0	0	0	17	0	0	42	683
7:55 PM	0	0	0	0	2	0	1	0	2	7	0	0	0	14	0	0	26	630
8:00 PM	0	0	0	0	0	0	1	0	2	18	0	0	0	10	0	0	31	601
8:05 PM	0	0	0	0	1	0	2	0	1	17	0	0	0	16	2	0	39	572
8:10 PM	0	0	0	0	0	0	2	0	2	22	0	0	0	26	1	0	53	556
8:15 PM	0	0	0	0	1	0	2	0	2	15	0	0	0	16	1	0	37	528
8:20 PM	0	0	0	0	0	0	1	0	1	14	0	0	0	18	2	0	36	507
8:25 PM	0	0	0	0	0	0	2	0	3	19	0	0	0	11	0	0	35	495
8:30 PM	0	0	0	0	0	0	3	0	2	9	0	0	0	22	0	0	36	474
8:35 PM	0	0	0	0	0	0	1	0	2	18	0	0	0	18	0	0	39	465
8:40 PM	0	0	0	0	1	0	1	0	4	15	0	0	0	11	1	0	33	449
8:45 PM	0	0	0	0	0	0	1	0	1	16	0	0	0	23	1	0	42	449
8:50 PM	0	0	0	0	1	0	2	0	2	15	0	0	0	14	2	0	36	443
8:55 PM	0	0	0	0	1	0	2	0	2	14	0	0	0	21	2	0	42	459
9:00 PM	0	0	0	0	1	0	1	0	1	8	0	0	0	17	1	0	29	457
9:05 PM	0	0	0	0	0	0	2	0	0	9	0	0	0	9	0	0	20	438
9:10 PM	0	0	0	0	0	0	1	0	1	15	0	0	0	8	0	0	25	410
9:15 PM	0	0	0	0	1	0	0	0	4	17	0	0	0	14	0	0	36	409

5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
9:20 PM	0	0	0	0	0	0	1	0	3	19	0	0	0	8	0	0	31	404
9:25 PM	0	0	0	0	0	0	1	0	0	18	0	0	0	6	0	0	25	394
9:30 PM	0	0	0	0	0	0	0	0	2	12	0	0	0	5	0	0	19	377
9:35 PM	0	0	0	0	0	0	0	0	1	8	0	0	0	9	1	0	19	357
9:40 PM	0	0	0	0	0	0	0	0	0	16	0	0	0	11	0	0	27	351
9:45 PM	0	0	0	0	1	0	1	0	0	7	0	0	0	8	0	0	17	326
9:50 PM	0	0	0	0	0	0	1	0	0	7	0	0	0	5	0	0	13	303
9:55 PM	0	0	0	0	0	0	2	0	1	9	0	0	0	4	1	0	17	278

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	40	0	152	0	48	280	0	0	0	480	96	0	1096
Heavy Trucks	0	0	0		0	0	36		0	24	0		0	64	0		124
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

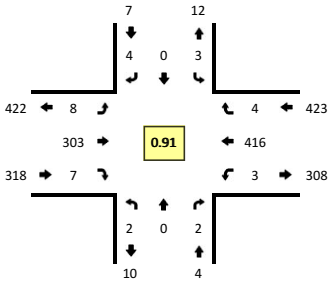
Report generated on 1/11/2019 9:16 AM

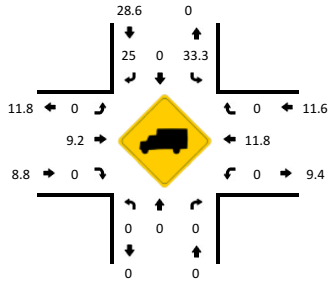
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

LOCATION: Dixon Ave -- OR-211
CITY/STATE: Molalla, OR

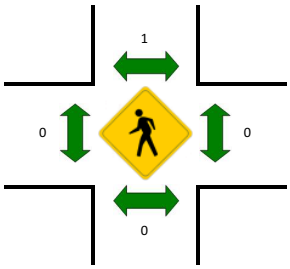
QC JOB #: 14815605
DATE: Tue, Oct 9 2018

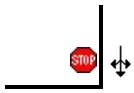
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:15 AM -- 7:30 AM

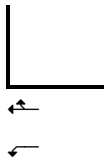


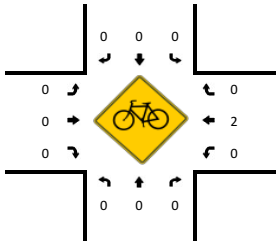


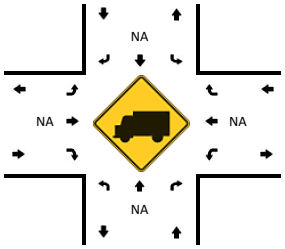
Quality Counts
DATA THAT DRIVES COMMUNITIES

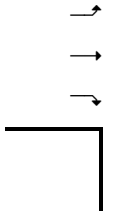


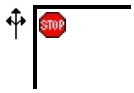


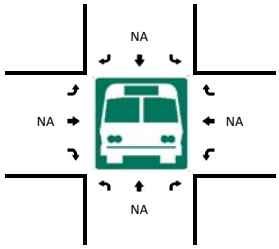












5-Min Count Period Beginning At	Dixon Ave (Northbound)				Dixon Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	0	0	0	25	0	0	0	32	1	0	58	
7:05 AM	0	0	0	0	0	0	0	0	1	30	0	0	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																	

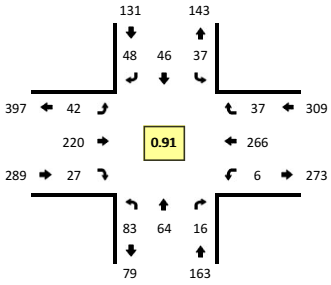
Comments:

Report generated on 1/11/2019 9:14 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

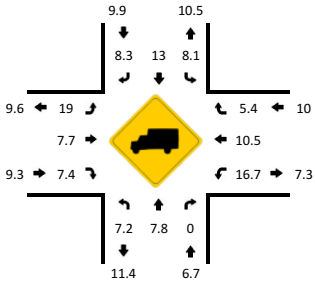
LOCATION: Molalla Ave -- OR-211
CITY/STATE: Molalla, OR

QC JOB #: 14815607
DATE: Tue, Oct 9 2018

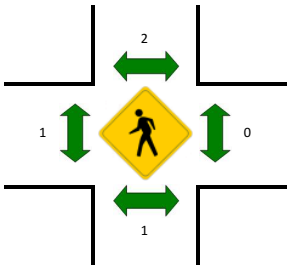


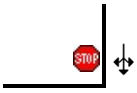
Peak-Hour: 7:00 AM -- 8:00 AM

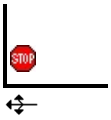
Peak 15-Min: 7:00 AM -- 7:15 AM

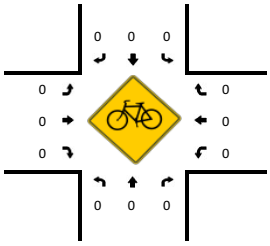


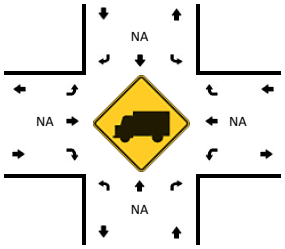
Quality Counts
DATA THAT DRIVES COMMUNITIES

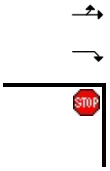


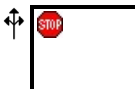


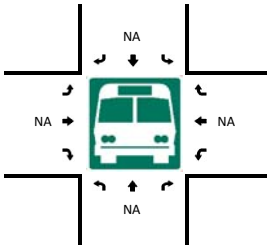












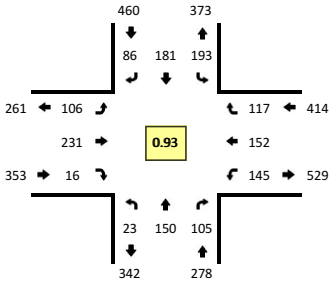
5-Min Count Period Beginning At	Molalla Ave (Northbound)				Molalla Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	11	8	2	0	2	2	5	0	5	19	0	0	1	21	0	0	76	
7:05 AM	6	9	3	0	3	2	5	0	4	21	1	0	0	28	9	0	91	
7:10 AM	6	9	4	0	2	3	3	0	9	18	1	0	0	18	4	0	77	
7:15 AM	9	9	1	0	0	6	4	0	5	14	2	0	0	21	5	0	76	
7:20 AM	12	6	0	0	1	4	4	0	1	17	2	0	2	29	2	0	80	
7:25 AM	6	4	0	0	2	4	8	0	1	15	2	0	2	24	0	0	68	
7:30 AM	4	3	2	0	0	5	4	0	2	17	3	0	0	17	2	0	59	
7:35 AM	7	2	0	0	0	5	2	0	2	22	5	0	0	22	4	0	71	
7:40 AM	8	3	2	0	7	2	5	0	3	20	3	0	0	19	3	0	75	
7:45 AM	5	2	1	0	11	6	4	0	4	18	3	0	0	26	2	0	82	
7:50 AM	5	3	1	0	5	2	3	0	2	21	1	0	1	18	3	0	65	
7:55 AM	4	6	0	0	4	5	1	0	4	18	4	0	0	23	3	0	72	892
8:00 AM	10	4	1	0	5	1	4	0	3	19	0	0	0	23	6	0	76	892
8:05 AM	3	3	2	0	0	9	5	0	2	12	1	0	2	19	4	0	62	863
8:10 AM	7	1	4	0	3	2	1	0	1	20	5	0	1	17	8	0	70	856
8:15 AM	3	6	1	0	4	4	9	0	3	9	2	0	1	23	3	0	68	848
8:20 AM	4	6	1	0	1	3	3	0	4	23	0	0	0	13	4	0	62	830
8:25 AM	7	8	2	0	3	2	2	0	2	13	6	0	1	16	2	0	64	826
8:30 AM	5	5	0	0	2	4	1	0	4	15	3	0	0	13	4	0	56	823
8:35 AM	7	2	0	0	4	3	5	0	1	16	1	0	2	26	6	0	73	825
8:40 AM	8	8	1	0	1	3	2	0	2	16	3	0	1	22	3	0	70	820
8:45 AM	3	5	3	0	3	7	9	0	5	8	4	0	0	16	6	0	69	807
8:50 AM	8	4	3	0	7	4	2	0	2	14	3	0	0	13	5	0	65	807
8:55 AM	6	3	2	0	5	1	5	0	3	20	5	0	3	16	5	0	74	809

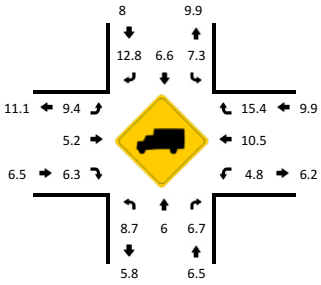
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	92	104	36	0	28	28	52	0	72	232	8	0	4	268	52	0	976
Heavy Trucks	4	4	0		0	0	12		16	36	0		4	28	4		108
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

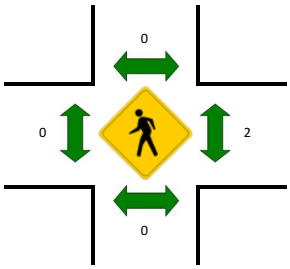
LOCATION: OR-213 -- OR-211
CITY/STATE: Molalla, OR
QC JOB #: 14815602
DATE: Tue, Oct 9 2018

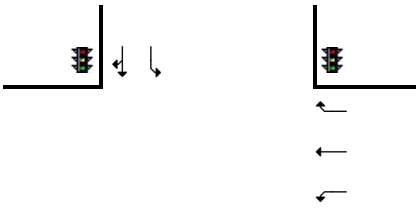
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 4:50 PM -- 5:05 PM

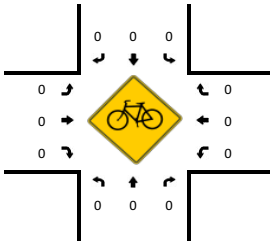


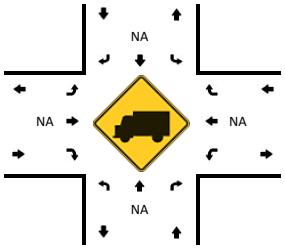


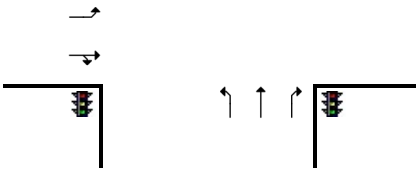
Quality Counts
DATA THAT DRIVES COMMUNITIES

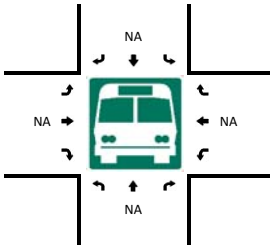












5-Min Count Period Beginning At	OR-213 (Northbound)				OR-213 (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	11	5	0	25	14	14	0	8	22	2	0	8	14	8	0	132	
4:05 PM	1	11	13	0	10	21	10	0	12	16	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

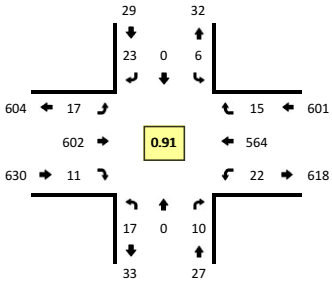
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	36	188	100	0	224	176	100	0	96	212	20	0	120	220	132	0	1624
Heavy Trucks	4	16	4		16	4	12		8	20	0		0	20	8		112
Pedestrians		0				0				0				4			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad Stopped Buses																	

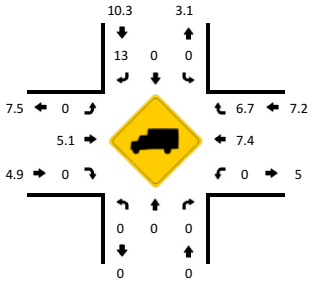
Comments:

Report generated on 1/11/2019 9:16 AM
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

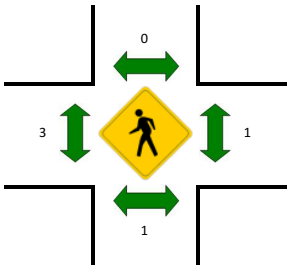
LOCATION: N Hezzie Ln -- OR-211
CITY/STATE: Molalla, OR
QC JOB #: 14815604
DATE: Tue, Oct 9 2018

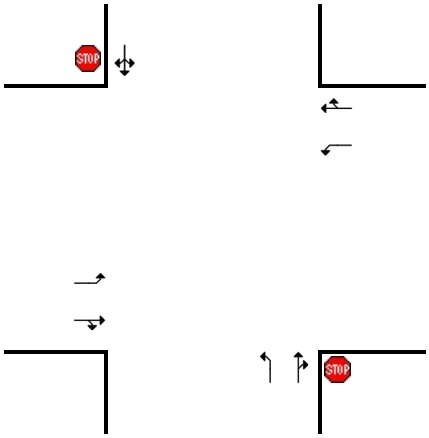
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

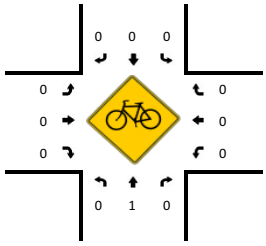


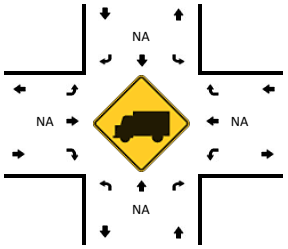


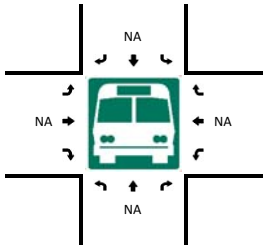
Quality Counts
DATA THAT DRIVES COMMUNITIES











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		
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																	

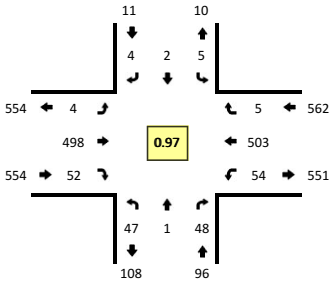
Comments:

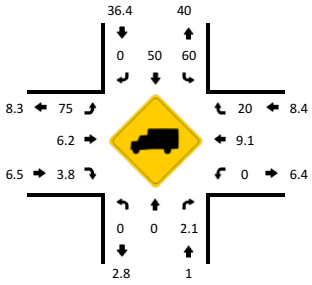
Report generated on 1/11/2019 9:16 AM
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

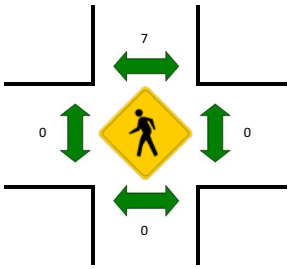
LOCATION: Dixon Ave -- OR-211
CITY/STATE: Molalla, OR

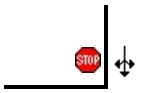
QC JOB #: 14815606
DATE: Tue, Oct 9 2018

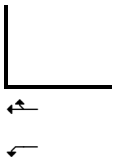
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 4:30 PM -- 4:45 PM

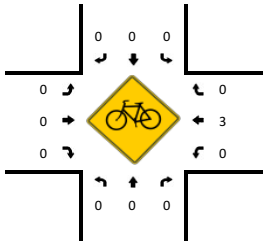


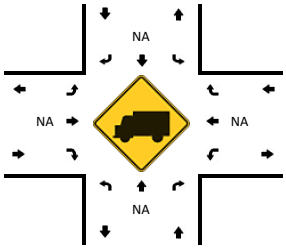


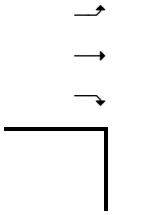


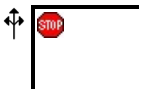


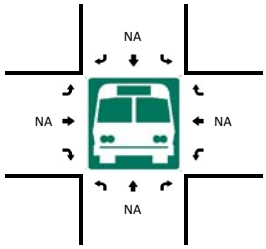












5-Min Count Period Beginning At	Dixon Ave (Northbound)				Dixon Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	4	0	3	0	0	0	0	0	0	38	7	0	2	32	0	0	86	
4:05 PM	3	0	4	0	1	0	1	0	0	50	7	0	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																	

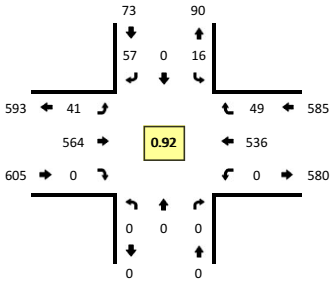
Comments:

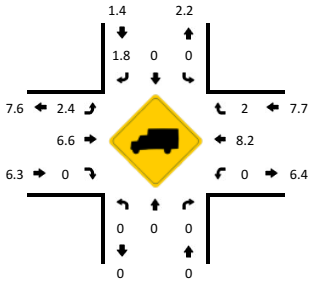
Report generated on 1/11/2019 9:16 AM

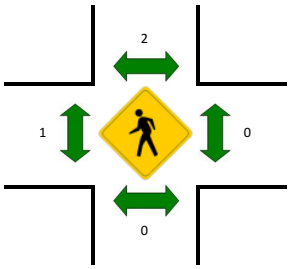
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

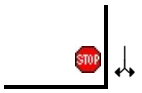
LOCATION: Leroy Ave -- OR-211
CITY/STATE: Molalla, OR
QC JOB #: 14815609
DATE: Tue, Oct 9 2018

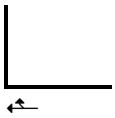
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

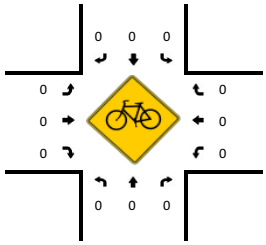


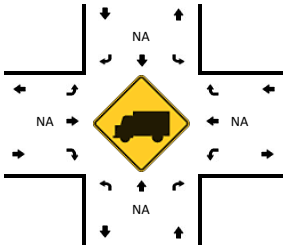


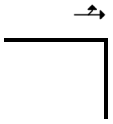


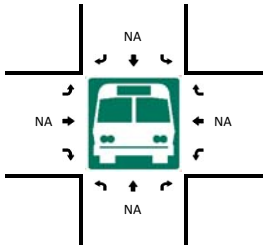












5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	0	0	0	0	0	2	0	1	12	0	0	0	41	2	0	58	
6:05 AM	0	0	0	0	0	0	1	0	1	14	0	0	0	26	2	0	44	
6:10 AM	0	0	0	0	0	0	2	0	2	14	0	0	0	27	0	0	45	
6:15 AM	0	0	0	0	0	0	2	0	0	24	0	0	0	29	0	0	55	
6:20 AM	0	0	0	0	1	0	1	0	0	8	0	0	0	28	3	0	41	
6:25 AM	0	0	0	0	1	0	2	0	2	16	0	0	0	32	0	0	53	
6:30 AM	0	0	0	0	0	0	2	0	0	17	0	0	0	40	0	0	59	
6:35 AM	0	0	0	0	0	0	3	0	0	17	0	0	0	36	1	0	57	
6:40 AM	0	0	0	0	0	0	2	0	3	22	0	0	0	33	0	0	60	
6:45 AM	0	0	0	0	1	0	2	0	1	31	0	0	0	32	2	0	69	
6:50 AM	0	0	0	0	0	0	3	0	2	27	0	0	0	41	4	0	77	
6:55 AM	0	0	0	0	2	0	5	0	1	25	0	0	0	28	3	0	64	682
7:00 AM	0	0	0	0	0	0	4	0	2	29	0	0	0	26	4	0	65	689
7:05 AM	0	0	0	0	2	0	4	0	4	25	0	0	0	36	11	0	82	727
7:10 AM	0	0	0	0	1	0	6	0	6	27	0	0	0	28	5	0	73	755
7:15 AM	0	0	0	0	2	0	11	0	2	25	0	0	0	31	8	0	79	779
7:20 AM	0	0	0	0	2	0	15	0	6	23	0	0	0	46	9	0	101	839
7:25 AM	0	0	0	0	6	0	12	0	4	22	0	0	0	43	7	0	94	880
7:30 AM	0	0	0	0	2	0	14	0	5	19	0	0	0	37	1	0	78	899
7:35 AM	0	0	0	0	2	0	3	0	2	25	0	0	0	30	0	0	62	904
7:40 AM	0	0	0	0	0	0	6	0	4	21	0	0	0	36	0	0	67	911
7:45 AM	0	0	0	0	1	0	4	0	1	28	0	0	0	32	2	0	68	910
7:50 AM	0	0	0	0	2	0	1	0	1	27	0	0	0	30	0	0	61	894
7:55 AM	0	0	0	0	3	0	3	0	0	30	0	0	0	30	0	0	66	896
8:00 AM	0	0	0	0	1	0	0	0	3	16	0	0	0	32	0	0	52	883
8:05 AM	0	0	0	0	0	0	3	0	0	27	0	0	0	29	1	0	60	861
8:10 AM	0	0	0	0	0	0	3	0	0	22	0	0	0	31	2	0	58	846
8:15 AM	0	0	0	0	1	0	1	0	0	12	0	0	0	25	0	0	39	806
8:20 AM	0	0	0	0	0	0	4	0	3	30	0	0	0	27	3	0	67	772
8:25 AM	0	0	0	0	1	0	2	0	1	26	0	0	0	34	1	0	65	743
8:30 AM	0	0	0	0	1	0	5	0	3	20	0	0	0	26	0	0	55	720
8:35 AM	0	0	0	0	0	0	2	0	0	33	0	0	0	26	0	0	61	719
8:40 AM	0	0	0	0	0	0	1	0	3	18	0	0	0	41	4	0	67	719
8:45 AM	0	0	0	0	3	0	2	0	1	22	0	0	0	30	4	0	62	713
8:50 AM	0	0	0	0	0	0	8	0	0	31	0	0	0	26	3	0	68	720
8:55 AM	0	0	0	0	1	0	10	0	2	27	0	0	0	23	0	0	63	717

5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
9:00 AM	0	0	0	0	1	0	4	0	2	29	0	0	0	31	4	0	71	736
9:05 AM	0	0	0	0	0	0	3	0	3	29	0	0	0	23	2	0	60	736
9:10 AM	0	0	0	0	0	0	1	0	0	31	0	0	0	38	1	0	71	749
9:15 AM	0	0	0	0	1	0	2	0	2	19	0	0	0	28	1	0	53	763
9:20 AM	0	0	0	0	0	0	3	0	1	22	0	0	0	31	5	0	62	758
9:25 AM	0	0	0	0	4	0	4	0	2	23	0	0	0	32	0	0	65	758
9:30 AM	0	0	0	0	0	0	3	0	2	18	0	0	0	31	1	0	55	758
9:35 AM	0	0	0	0	0	0	3	0	0	19	0	0	0	31	2	0	55	752
9:40 AM	0	0	0	0	1	0	4	0	2	21	0	0	0	27	0	0	55	740
9:45 AM	0	0	0	0	2	0	4	0	0	27	0	0	0	29	2	0	64	742
9:50 AM	0	0	0	0	0	0	1	0	0	25	0	0	0	32	3	0	61	735
9:55 AM	0	0	0	0	0	0	0	0	0	29	0	0	0	45	1	0	75	747
10:00 AM	0	0	0	0	0	0	3	0	1	29	0	0	0	37	1	0	71	747
10:05 AM	0	0	0	0	0	0	0	0	1	24	0	0	0	29	1	0	55	742
10:10 AM	0	0	0	0	1	0	1	0	0	33	0	0	0	32	2	0	69	740
10:15 AM	0	0	0	0	1	0	1	0	1	25	0	0	0	40	1	0	69	756
10:20 AM	0	0	0	0	1	0	3	0	1	27	0	0	0	28	3	0	63	757
10:25 AM	0	0	0	0	1	0	4	0	2	31	0	0	0	30	3	0	71	763
10:30 AM	0	0	0	0	0	0	2	0	0	31	0	0	0	35	0	0	68	776
10:35 AM	0	0	0	0	1	0	2	0	0	22	0	0	0	45	2	0	72	793
10:40 AM	0	0	0	0	0	0	2	0	1	23	0	0	0	27	2	0	55	793
10:45 AM	0	0	0	0	1	0	1	0	2	22	0	0	0	42	6	0	74	803
10:50 AM	0	0	0	0	0	0	2	0	0	34	0	0	0	52	2	0	90	832
10:55 AM	0	0	0	0	0	0	1	0	0	32	0	0	0	49	2	0	84	841
11:00 AM	0	0	0	0	1	0	0	0	2	25	0	0	0	45	1	0	74	844
11:05 AM	0	0	0	0	2	0	3	0	1	25	0	0	0	44	1	0	76	865
11:10 AM	0	0	0	0	1	0	2	0	3	43	0	0	0	37	5	0	91	887
11:15 AM	0	0	0	0	4	0	2	0	0	35	0	0	0	47	2	0	90	908
11:20 AM	0	0	0	0	1	0	4	0	1	35	0	0	0	36	1	0	78	923
11:25 AM	0	0	0	0	0	0	3	0	2	31	0	0	0	31	1	0	68	920
11:30 AM	0	0	0	0	1	0	3	0	0	35	0	0	0	34	1	0	74	926
11:35 AM	0	0	0	0	1	0	1	0	3	34	0	0	0	46	0	0	85	939
11:40 AM	0	0	0	0	2	0	1	0	4	31	0	0	0	38	4	0	80	964
11:45 AM	0	0	0	0	1	0	5	0	0	29	0	0	0	44	4	0	83	973
11:50 AM	0	0	0	0	4	0	0	0	1	31	0	0	0	44	1	0	81	964
11:55 AM	0	0	0	0	1	0	0	0	2	33	0	0	0	35	5	0	76	956
12:00 PM	0	0	0	0	1	0	4	0	1	40	0	0	0	47	3	0	96	978
12:05 PM	0	0	0	0	1	0	3	0	3	35	0	0	0	40	2	0	84	986
12:10 PM	0	0	0	0	1	0	7	0	0	38	0	0	0	33	2	0	81	976
12:15 PM	0	0	0	0	1	0	2	0	3	34	0	0	0	40	0	0	80	966
12:20 PM	0	0	0	0	2	0	2	0	2	38	0	0	0	23	0	0	67	955
12:25 PM	0	0	0	0	3	0	3	0	1	38	0	0	0	36	2	0	83	970
12:30 PM	0	0	0	0	3	0	2	0	3	33	0	0	0	35	0	0	76	972
12:35 PM	0	0	0	0	1	0	0	0	1	47	0	0	0	34	1	0	84	971
12:40 PM	0	0	0	0	1	0	1	0	1	24	0	0	0	36	0	0	63	954
12:45 PM	0	0	0	0	1	0	2	0	5	33	0	0	0	37	5	0	83	954
12:50 PM	0	0	0	0	0	0	3	0	1	38	0	0	0	35	1	0	78	951
12:55 PM	0	0	0	0	3	0	1	0	1	31	0	0	0	46	1	0	83	958
1:00 PM	0	0	0	0	0	0	0	0	1	35	0	0	0	28	0	0	64	926
1:05 PM	0	0	0	0	1	0	0	0	3	32	0	0	0	41	5	0	82	924
1:10 PM	0	0	0	0	2	0	4	0	2	28	0	0	0	37	4	0	77	920
1:15 PM	0	0	0	0	1	0	2	0	1	44	0	0	0	30	1	0	79	919
1:20 PM	0	0	0	0	1	0	3	0	1	42	0	0	0	38	4	0	89	941
1:25 PM	0	0	0	0	1	0	2	0	0	35	0	0	0	41	3	0	82	940
1:30 PM	0	0	0	0	1	0	2	0	3	55	0	0	0	30	1	0	92	956
1:35 PM	0	0	0	0	2	0	3	0	3	34	0	0	0	42	1	0	85	957
1:40 PM	0	0	0	0	1	0	2	0	3	38	0	0	0	44	3	0	91	985
1:45 PM	0	0	0	0	1	0	3	0	0	27	0	0	0	33	1	0	65	967
1:50 PM	0	0	0	0	4	0	2	0	3	34	0	0	0	39	2	0	84	973
1:55 PM	0	0	0	0	1	0	2	0	4	26	0	0	0	31	3	0	67	957
2:00 PM	0	0	0	0	3	0	2	0	1	32	0	0	0	43	3	0	84	977
2:05 PM	0	0	0	0	0	0	3	0	2	33	0	0	0	32	3	0	73	968
2:10 PM	0	0	0	0	0	0	3	0	4	40	0	0	0	37	3	0	87	978
2:15 PM	0	0	0	0	3	0	1	0	2	32	0	0	0	38	7	0	83	982
2:20 PM	0	0	0	0	2	0	9	0	2	37	0	0	0	30	3	0	83	976
2:25 PM	0	0	0	0	4	0	10	0	0	39	0	0	0	29	3	0	85	979
2:30 PM	0	0	0	0	3	0	4	0	1	40	0	0	0	31	2	0	81	968
2:35 PM	0	0	0	0	3	0	1	0	1	37	0	0	0	46	3	0	91	974
2:40 PM	0	0	0	0	1	0	1	0	1	43	0	0	0	34	1	0	81	964
2:45 PM	0	0	0	0	2	0	5	0	1	36	0	0	0	40	3	0	87	986
2:50 PM	0	0	0	0	1	0	5	0	3	37	0	0	0	39	2	0	87	989
2:55 PM	0	0	0	0	0	0	6	0	1	39	0	0	0	60	2	0	108	1030
3:00 PM	0	0	0	0	2	0	1	0	3	39	0	0	0	39	4	0	88	1034
3:05 PM	0	0	0	0	2	0	3	0	1	33	0	0	0	46	1	0	86	1047

5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:10 PM	0	0	0	0	3	0	10	0	3	44	0	0	0	49	0	0	109	1069
3:15 PM	0	0	0	0	1	0	6	0	3	43	0	0	0	48	3	0	104	1090
3:20 PM	0	0	0	0	1	0	3	0	0	41	0	0	0	56	1	0	102	1109
3:25 PM	0	0	0	0	0	0	2	0	2	49	0	0	0	30	2	0	85	1109
3:30 PM	0	0	0	0	2	0	9	0	7	46	0	0	0	43	1	0	108	1136
3:35 PM	0	0	0	0	1	0	6	0	3	41	0	0	0	43	1	0	95	1140
3:40 PM	0	0	0	0	2	0	7	0	2	58	0	0	0	37	2	0	108	1167
3:45 PM	0	0	0	0	0	0	2	0	0	38	0	0	0	41	1	0	82	1162
3:50 PM	0	0	0	0	1	0	4	0	2	48	0	0	0	37	1	0	93	1168
3:55 PM	0	0	0	0	0	0	5	0	3	51	0	0	0	38	6	0	103	1163
4:00 PM	0	0	0	0	1	0	7	0	3	50	0	0	0	31	1	0	93	1168
4:05 PM	0	0	0	0	0	0	1	0	4	49	0	0	0	41	1	0	96	1178
4:10 PM	0	0	0	0	1	0	6	0	2	46	0	0	0	39	3	0	97	1166
4:15 PM	0	0	0	0	1	0	5	0	2	49	0	0	0	39	2	0	98	1160
4:20 PM	0	0	0	0	2	0	4	0	2	45	0	0	0	41	3	0	97	1155
4:25 PM	0	0	0	0	0	0	2	0	3	45	0	0	0	38	4	0	92	1162
4:30 PM	0	0	0	0	4	0	3	0	1	49	0	0	0	46	2	0	105	1159
4:35 PM	0	0	0	0	1	0	4	0	4	44	0	0	0	46	2	0	101	1165
4:40 PM	0	0	0	0	0	0	2	0	5	53	0	0	0	45	3	0	108	1165
4:45 PM	0	0	0	0	2	0	5	0	6	37	0	0	0	46	5	0	101	1184
4:50 PM	0	0	0	0	1	0	9	0	4	53	0	0	0	44	6	0	117	1208
4:55 PM	0	0	0	0	0	0	5	0	4	42	0	0	0	42	8	0	101	1206
5:00 PM	0	0	0	0	2	0	5	0	1	59	0	0	0	46	6	0	119	1232
5:05 PM	0	0	0	0	1	0	5	0	3	49	0	0	0	42	5	0	105	1241
5:10 PM	0	0	0	0	2	0	8	0	6	39	0	0	0	61	3	0	119	1263
5:15 PM	0	0	0	0	1	0	4	0	2	49	0	0	0	33	3	0	92	1257
5:20 PM	0	0	0	0	1	0	3	0	4	45	0	0	0	39	4	0	96	1256
5:25 PM	0	0	0	0	1	0	2	0	4	49	0	0	0	44	6	0	106	1270
5:30 PM	0	0	0	0	0	0	8	0	6	43	0	0	0	39	4	0	100	1265
5:35 PM	0	0	0	0	2	0	8	0	4	49	0	0	0	37	3	0	103	1267
5:40 PM	0	0	0	0	0	0	7	0	5	45	0	0	0	31	6	0	94	1253
5:45 PM	0	0	0	0	1	0	10	0	3	48	0	0	0	43	1	0	106	1258
5:50 PM	0	0	0	0	4	0	5	0	3	45	0	0	0	40	7	0	104	1245
5:55 PM	0	0	0	0	2	0	2	0	2	41	0	0	0	29	5	0	81	1225
6:00 PM	0	0	0	0	0	0	4	0	8	45	0	0	0	47	2	0	106	1212
6:05 PM	0	0	0	0	2	0	3	0	4	47	0	0	0	31	1	0	88	1195
6:10 PM	0	0	0	0	2	0	6	0	5	43	0	0	0	36	0	0	92	1168
6:15 PM	0	0	0	0	3	0	4	0	3	46	0	0	0	40	3	0	99	1175
6:20 PM	0	0	0	0	4	0	3	0	1	35	0	0	0	32	1	0	76	1155
6:25 PM	0	0	0	0	1	0	1	0	3	34	0	0	0	31	0	0	70	1119
6:30 PM	0	0	0	0	2	0	6	0	7	31	0	0	0	37	4	0	87	1106
6:35 PM	0	0	0	0	7	0	15	0	4	38	0	0	0	24	0	0	88	1091
6:40 PM	0	0	0	0	2	0	4	0	7	42	0	0	0	26	3	0	84	1081
6:45 PM	0	0	0	0	0	0	3	0	1	41	0	0	0	31	5	0	81	1056
6:50 PM	0	0	0	0	4	0	7	0	5	39	0	0	0	32	4	0	91	1043
6:55 PM	0	0	0	0	0	0	7	0	3	37	0	0	0	28	4	0	79	1041
7:00 PM	0	0	0	0	2	0	1	0	4	27	0	0	0	23	3	0	60	995
7:05 PM	0	0	0	0	9	0	12	0	3	23	0	0	0	18	3	0	68	975
7:10 PM	0	0	0	0	2	0	4	0	3	32	0	0	0	26	2	0	69	952
7:15 PM	0	0	0	0	3	0	1	0	1	28	0	0	0	30	2	0	65	918
7:20 PM	0	0	0	0	0	0	0	0	1	33	0	0	0	22	1	0	57	899
7:25 PM	0	0	0	0	0	0	2	0	2	23	0	0	0	18	2	0	47	876
7:30 PM	0	0	0	0	1	0	2	0	0	22	0	0	0	31	1	0	57	846
7:35 PM	0	0	0	0	0	0	2	0	0	14	0	0	0	27	5	0	48	806
7:40 PM	0	0	0	0	0	0	0	0	3	26	0	0	0	18	2	0	49	771
7:45 PM	0	0	0	0	2	0	1	0	2	18	0	0	0	18	1	0	42	732
7:50 PM	0	0	0	0	1	0	1	0	3	20	0	0	0	17	0	0	42	683
7:55 PM	0	0	0	0	2	0	1	0	2	7	0	0	0	14	0	0	26	630
8:00 PM	0	0	0	0	0	0	1	0	2	18	0	0	0	10	0	0	31	601
8:05 PM	0	0	0	0	1	0	2	0	1	17	0	0	0	16	2	0	39	572
8:10 PM	0	0	0	0	0	0	2	0	2	22	0	0	0	26	1	0	53	556
8:15 PM	0	0	0	0	1	0	2	0	2	15	0	0	0	16	1	0	37	528
8:20 PM	0	0	0	0	0	0	1	0	1	14	0	0	0	18	2	0	36	507
8:25 PM	0	0	0	0	0	0	2	0	3	19	0	0	0	11	0	0	35	495
8:30 PM	0	0	0	0	0	0	3	0	2	9	0	0	0	22	0	0	36	474
8:35 PM	0	0	0	0	0	0	1	0	2	18	0	0	0	18	0	0	39	465
8:40 PM	0	0	0	0	1	0	1	0	4	15	0	0	0	11	1	0	33	449
8:45 PM	0	0	0	0	0	0	1	0	1	16	0	0	0	23	1	0	42	449
8:50 PM	0	0	0	0	1	0	2	0	2	15	0	0	0	14	2	0	36	443
8:55 PM	0	0	0	0	1	0	2	0	2	14	0	0	0	21	2	0	42	459
9:00 PM	0	0	0	0	1	0	1	0	1	8	0	0	0	17	1	0	29	457
9:05 PM	0	0	0	0	0	0	2	0	0	9	0	0	0	9	0	0	20	438
9:10 PM	0	0	0	0	0	0	1	0	1	15	0	0	0	8	0	0	25	410
9:15 PM	0	0	0	0	1	0	0	0	4	17	0	0	0	14	0	0	36	409

5-Min Count Period Beginning At	Leroy Ave (Northbound)				Leroy Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
9:20 PM	0	0	0	0	0	0	1	0	3	19	0	0	0	8	0	0	31	404
9:25 PM	0	0	0	0	0	0	1	0	0	18	0	0	0	6	0	0	25	394
9:30 PM	0	0	0	0	0	0	0	0	2	12	0	0	0	5	0	0	19	377
9:35 PM	0	0	0	0	0	0	0	0	1	8	0	0	0	9	1	0	19	357
9:40 PM	0	0	0	0	0	0	0	0	0	16	0	0	0	11	0	0	27	351
9:45 PM	0	0	0	0	1	0	1	0	0	7	0	0	0	8	0	0	17	326
9:50 PM	0	0	0	0	0	0	1	0	0	7	0	0	0	5	0	0	13	303
9:55 PM	0	0	0	0	0	0	2	0	1	9	0	0	0	4	1	0	17	278

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	20	0	72	0	40	588	0	0	0	596	56	0	1372
Heavy Trucks	0	0	0		0	0	0		0	44	0		0	20	0		64
Pedestrians		0				4				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

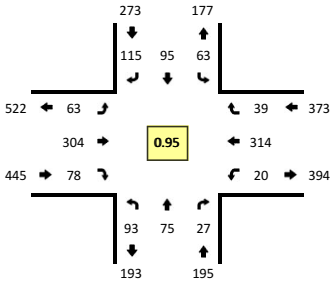
Report generated on 1/11/2019 9:18 AM

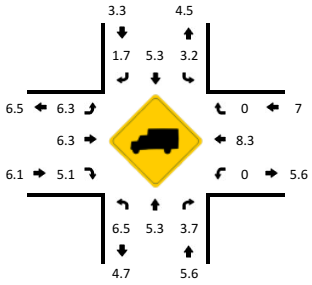
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

LOCATION: Molalla Ave -- OR-211
CITY/STATE: Molalla, OR

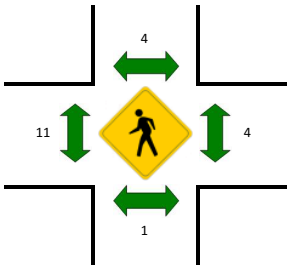
QC JOB #: 14815608
DATE: Tue, Oct 9 2018

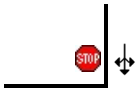
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 4:40 PM -- 4:55 PM

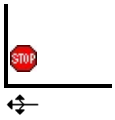


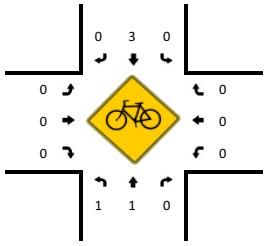


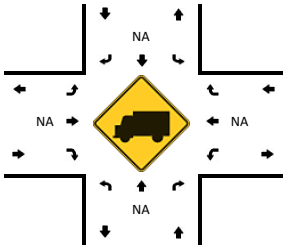
Quality Counts
DATA THAT DRIVES COMMUNITIES

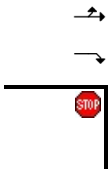


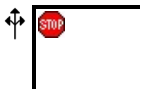


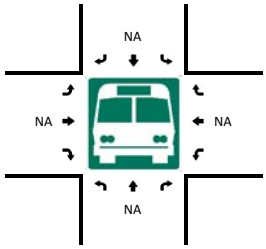












5-Min Count Period Beginning At	Molalla Ave (Northbound)				Molalla Ave (Southbound)				OR-211 (Eastbound)				OR-211 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	5	9	3	0	11	10	10	0	5	30	4	0	3	10	7	0	107	
4:05 PM	6	5	2	0	9	10	7	0	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:

Report generated on 1/11/2019 9:16 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Appendix B
Existing Conditions
Traffic Analysis Worksheets

Queues
1: OR 213 & OR 211

12/12/2018

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

HCM Signalized Intersection Capacity Analysis
1: OR 213 & OR 211

12/12/2018

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

Queues
1: OR 213 & OR 211

12/12/2018

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

HCM Signalized Intersection Capacity Analysis
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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 / PNT	CONN # FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
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										012		00
																		PRVTE	N S												
																		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										011		00
																		UNKN	N S												
																		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										011		00
																		PRVTE	E W												
																		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										011		00
																		PRVTE	W E												
																		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										011		00
																		N/A	W E												
																		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	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
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										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 D	A L C	U G S	C H L	S R K	W O	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# FC / CMPT/MLG / MILEPNT / LRS	CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
																	02	NONE 0 / PRVTE	STRGHT / W E								000	00
																		PSNGR CAR		01	DRVR	NONE	18	M	OR-Y / OR<25		000	000	00
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 / OR<25	000	000	00
No	*45*	*9*	*2.53*	*-122*	*36 22.92*				016000100S00																			
																	02	NONE 0 / PRVTE	TURN-L / E S								000	00
																		PSNGR CAR		01	DRVR	INJC	31	M	OR-Y / OR<25	028,004	000	02
																				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 / OR<25	000	000	00
No	*45*	*9*	*2.53*	*-122*	*36 22.92*				016000100S00																			
																	02	NONE 0 / PRVTE	TURN-L / E S								000	00
																		PSNGR CAR		01	DRVR	NONE	72	M	OR-Y / OR<25	028,004	000	02
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 / OR<25	020	000	04
No	*45*	*9*	*2.53*	*-122*	*36 22.92*				016000100S00																			
																				02	PSNG	INJC	36	F		000	000	00
																				03	PSNG	NONE	05	M		000	000	00
																	02	NONE 0 / PRVTE	STRGHT / W E								000	00
																		PSNGR CAR		01	DRVR	NONE	24	M	OR-Y / OR>25	000	000	00
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 / OR<25	020	000	04
No	*45*	*9*	*2.53*	*-122*	*36 22.92*				016000100S00																			
																	02	NONE 0 / PRVTE	STRGHT / N S								000	00
																		PSNGR CAR		01	DRVR	NONE	62	F	OR-Y / OR<25	000	000	00

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	SCHL ZN	WORK ZN	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
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				

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OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

161 WOODBURN-ESTACADA

Crashes at the Intersection of Main St (Hwy 161; MP 12.04) & Hezzie Ln, 2012-2016

SER# / INVEST / UNLOC?	SPEED	ALCHL	DRUGS	SCHOOL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / CONN # / FIRST STREET / SECOND STREET / INTERSECTION SEQ#	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
04863	N	N	N		Y	12/16/2013	CLACKAMAS	1	16																					
CITY						Mon 10A	MOLALLA	MN	0 S HEZZIE LN	INTER	3-LEG	N		N	CLD	ANGL-OTH	01	NONE	0	STRGHT									02
							MOLALLA UA	12.00	MAIN ST	CN		NONE		W	WET	TURN		PRVTE		W E								000	00
										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

SER# / INVEST / UNLOC?	SPEED	DALCS	RSLK	WCHR	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
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*		016100100		S00	1															OR<25					
																	02	NONE 0	STOP										012		00
																		PRVTE	W E												
																		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*		016100100		S00	1															OR<25					
																	02	NONE 0	STOP										012		00
																		PRVTE	W E												
																		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*		016100100		S00	1															OR<25					
																	02	NONE 0	STOP										012		00
																		PRVTE	W E												
																		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*		016100100		S00	1															OR<25					
																	02	NONE 0	STOP										011	013	00
																		PRVTE	W E												
																		PSNGR CAR		01	DRVR	INJC	40	F	OR-Y		000	000		00
																									OR>25					
																	03	NONE 0	STOP										022		00
																		PRVTE	W E												
																		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*		016100100		S00	1															OR<25					

161 WOODBURN-ESTACADA

Crashes at the Intersection of Main St (Hwy 161; MP 12.16) & Leroy Ave, 2012-2016

SER# / INVEST / UNLOC?	S 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	STOP										
													PRVTE	W E									012	00
													PSNGR CAR		01	DRVR	INJB	32	F	OR-Y		000	000	00
																				OR<25				
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		000	000	00
No		*45 8 55.77 -122 35 21.09*		016100100S00	1															OR<25				
															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		028,004	000	02
																				OR<25				
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		016,080	038	27,05
No		*45 8 55.77 -122 35 21.09*		016100100S00	1															OR<25				
												02	NONE 0	STRGHT										
													PRVTE	E W									000	00
													PSNGR CAR		01	DRVR	INJB	19	F	OR-Y		000	000	00
																				OR<25				
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		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	21	M	OR-Y		000	000	00
																				OR<25				
															02	PSNG	NO<5	02	M			000	000	00

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TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

161 WOODBURN-ESTACADA Crashes at the Intersection of Main St (Hwy 161; MP 12.41) & Dixon Ave, 2012-2016

SER# / INVEST / UNLOC?	SPEED	ALCOHL	DRUGS	SCHL	WORK	DATE / DAY/TIME / *LAT/LONG*	COUNTY / CITY / URBAN AREA	RD# / CMPT/MILEPNT / LRS	FC / MLG / STREET / 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
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					

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TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

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 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	08,02
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?	SPEC	DARK	ROAD	SURF	WTHR	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 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 NO RPT	N	N	N			10/22/2013 Tue 10A	CLACKAMAS MOLALLA MOLALLA UA	1 16 MN 0 12.76	MAIN ST MOLALLA AVE		INTER CN 03	CROSS 0	N TRF SIGNAL	N	CLR DRY DAY	S-1TURN TURN PDO		01	NONE 0 PRVTE TRUCK	TURN-R NW SW	01	DRVR	NONE	29	M	OR-Y OR<25		006,001	000	08 00 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 NONE	N	N	N			05/07/2013 Tue 11A	CLACKAMAS MOLALLA MOLALLA UA	1 16 MN 0 12.76	MAIN ST METZLER AVE		INTER CN 04	CROSS 0	N FLASHBCN-R	N	CLR DRY DAY	ANGL-OTH TURN PDO		01	NONE 0 PRVTE PSNGR CAR	STRGHT W E	01	DRVR	NONE	00	M	UNK OR<25		003	000	04 00 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 NO RPT	N	Y	N			10/23/2016 Sun 9P	CLACKAMAS MOLALLA MOLALLA UA	1 16 MN 0 12.76	MAIN ST MOLALLA AVE		INTER CN 04	CROSS 0	N STOP SIGN	N	CLR DRY DLIT	ANGL-OTH ANGL PDO		01	NONE 9 N/A PSNGR CAR	STRGHT S N	01	DRVR	NONE	00	U	UNK UNK		000	000	03 00 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

099	UNKNOWN	UNKNOWN OR NOT DEFINITE

VEHICLE TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
00	PDO	NOT COLLECTED FOR PDO CRASHES
01	PSNGR CAR	PASSENGER CAR, PICKUP, LIGHT DELIVERY, ETC.
02	BOBTAIL	TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL)
03	FARM TRCTR	FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT
04	SEMI TOW	TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW
05	TRUCK	TRUCK WITH NON-DETACHABLE BED, PANEL, ETC.
06	MOPED	MOPED, MINIBIKE, SEATED MOTOR SCOOTER, MOTOR BIKE
07	SCHL BUS	SCHOOL BUS (INCLUDES VAN)
08	OTH BUS	OTHER BUS
09	MTRCYCLE	MOTORCYCLE, DIRT BIKE
10	OTHER	OTHER: FORKLIFT, BACKHOE, ETC.
11	MOTRHOME	MOTORHOME
12	TROLLEY	MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES)
13	ATV	ATV
14	MTRSCTR	MOTORIZED SCOOTER (STANDING)
15	SNOWMOBILE	SNOWMOBILE
99	UNKNOWN	UNKNOWN VEHICLE TYPE

WEATHER CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	CLR	CLEAR
2	CLD	CLOUDY
3	RAIN	RAIN
4	SLT	SLEET
5	FOG	FOG
6	SNOW	SNOW
7	DUST	DUST
8	SMOK	SMOKE
9	ASH	ASH

Appendix D
Year 2020 Background Conditions
Traffic Analysis Worksheets

Queues
1: OR 213 & OR 211

12/12/2018

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

HCM Signalized Intersection Capacity Analysis
1: OR 213 & OR 211

12/12/2018

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

HCM 2010 TWSC
2: Stoneplace Apartments/Hezzie Ln & OR 211 12/12/2018

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

Queues
1: OR 213 & OR 211

12/12/2018

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.

HCM Signalized Intersection Capacity Analysis
1: OR 213 & OR 211

12/12/2018

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

Queues
1: OR 213 & OR 211

01/11/2019

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

HCM Signalized Intersection Capacity Analysis
1: OR 213 & OR 211

01/11/2019

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	↑	↱	↰	↑	Y	
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

Queues
1: OR 213 & OR 211

01/11/2019

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.

HCM Signalized Intersection Capacity Analysis
1: OR 213 & OR 211

01/11/2019

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	↑	↱	↰	↑	Y	
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	-

HCM 2010 TWSC
4: Leroy Ave & OR 211

01/11/2019

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	-

Analysis Traffic Volumes

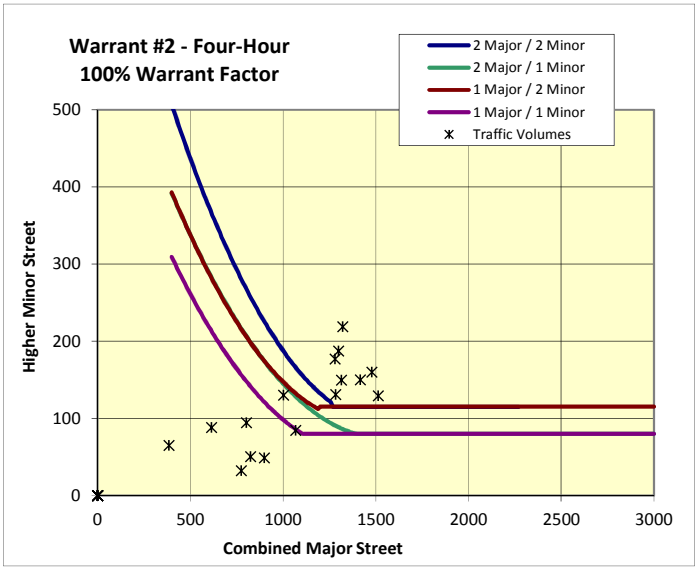
Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
12:00 AM	1:00 AM	0	0	0	0
1:00 AM		0	0	0	0
2:00 AM		0	0	0	0
3:00 AM		0	0	0	0
4:00 AM		0	0	0	0
5:00 AM		0	0	0	0
6:00 AM		287	489	3	32
7:00 AM		401	602	130	115
8:00 AM		370	455	25	50
9:00 AM		390	509	49	44
10:00 AM		452	617	85	33
11:00 AM		569	712	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

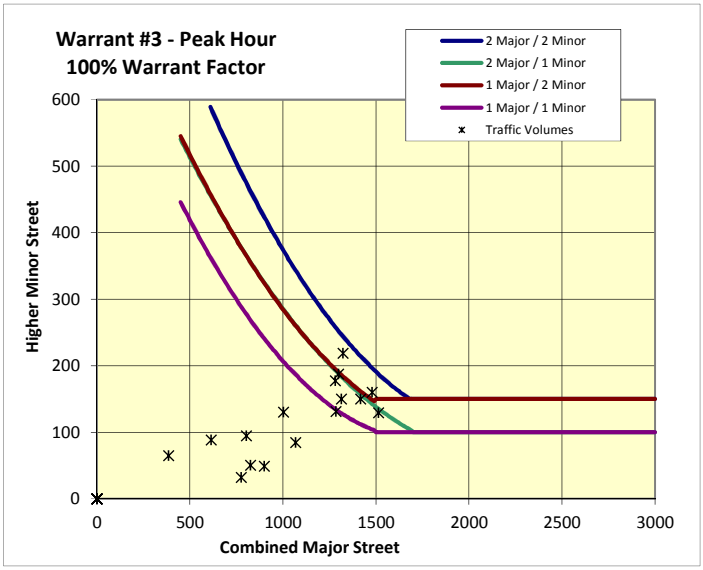
Input Parameters

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	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

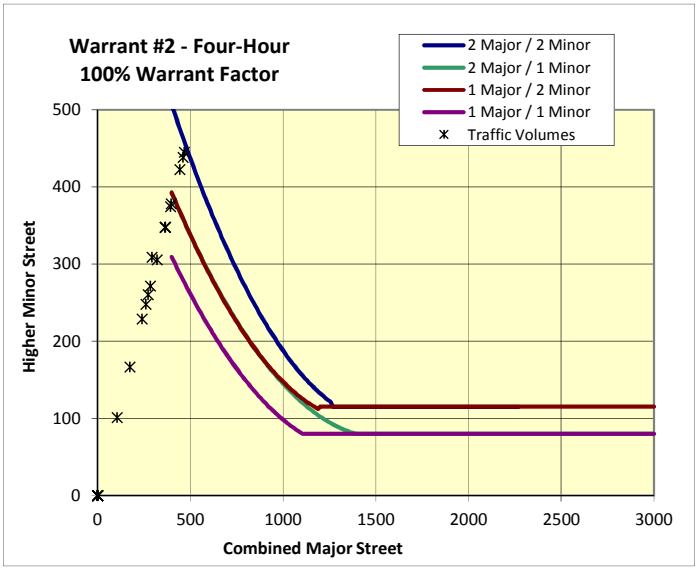
Hour		Major Street		Minor Street	
Begin	End	EB	WB	NB	SB
12:00 AM	1:00 AM	0	0	0	0
1:00 AM		0	0	0	0
2:00 AM		0	0	0	0
3:00 AM		0	0	0	0
4:00 AM		0	0	0	0
5:00 AM		0	0	0	0
6:00 AM		109	152	248	208
7:00 AM		163	131	289	309
8:00 AM		114	160	260	218
9:00 AM		119	166	271	227
10:00 AM		134	187	306	256
11:00 AM		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

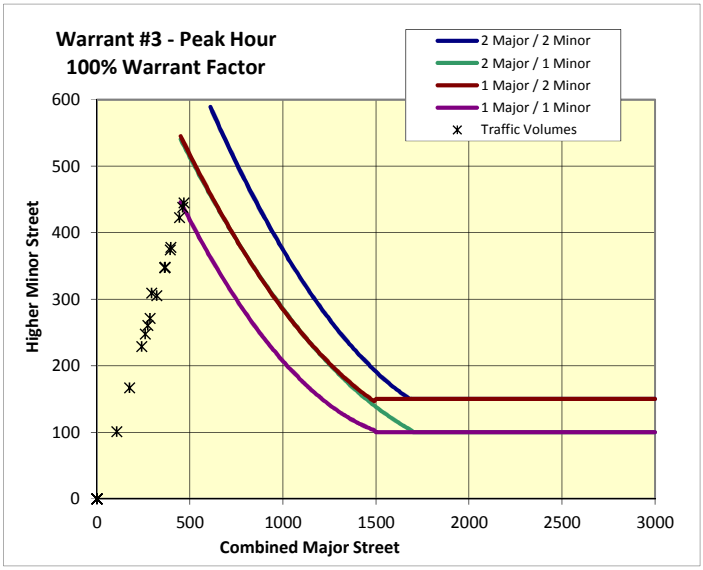
Input Parameters

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

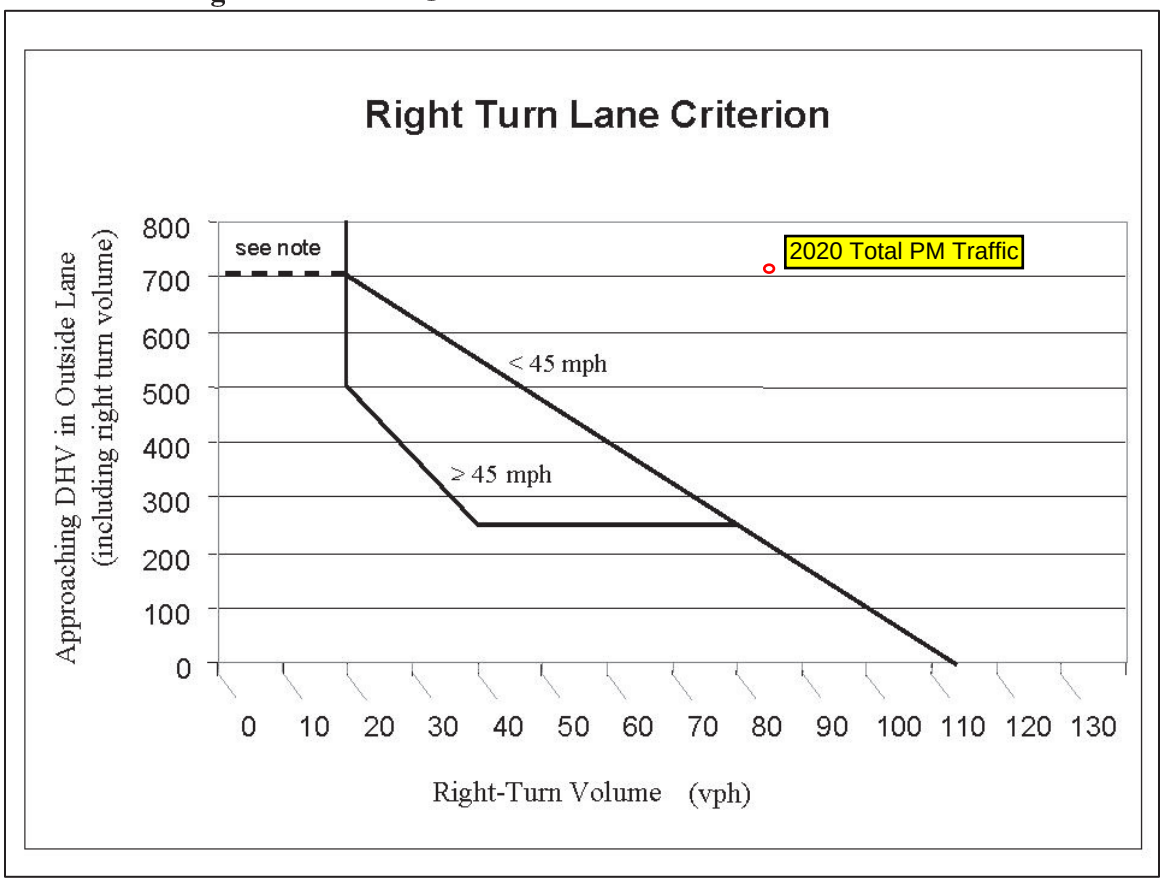
Warrant Factor	Condition	Major Street Requirement	Minor Street Requirement	Hours That Condition Is Met	Condition for Warrant Factor Met?	Signal Warrant Met?
100%	A	500	150	0	No	**No**
	B	750	75	0	No	
80%	A	400	120	3	No	**No**
	B	600	60	0	No	
70%	A	350	105	8	Yes	**Yes**
	B	525	53	0	No	
56%	A	280	84	11	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.

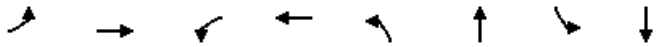
Criterion 3: Special Cases

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

Queues
4: Leroy Ave & OR 211

01/11/2019



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

HCM Signalized Intersection Capacity Analysis
4: Leroy Ave & OR 211

01/11/2019

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

Queues
7: Molalla Ave & OR 211

01/11/2019

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

HCM Signalized Intersection Capacity Analysis
7: Molalla Ave & OR 211

01/11/2019

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

Queues
4: Leroy Ave & OR 211

01/11/2019

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

HCM Signalized Intersection Capacity Analysis
4: Leroy Ave & OR 211

01/11/2019

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

Queues
7: Molalla Ave & OR 211

01/11/2019

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

HCM Signalized Intersection Capacity Analysis
7: Molalla Ave & OR 211

01/11/2019

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

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May 30, 2019 Project #: 23301

Gerald Fisher, PE
City of Molalla
117 N Molalla Avenue
PO Box 248
Molalla, OR 97038

RE: Supplemental OR 211/Leroy Avenue Traffic Signal Warrant Analysis

Dear Gerald,

This letter documents supplemental traffic signal warrant analyses prepared for the proposed Cascade Center development. Analysis of this location and six other intersections along OR 211 were originally reported in the Transportation Impact Analysis (TIA) prepared for the development in March 2019. Since submittal of the TIA, analysis of OR 211/Leroy Avenue intersection traffic signal warrants were re-evaluated in light of public testimony and Planning Commissioner comments made at the May 15, 2019 Planning Commission hearing as well as feedback provided by City and Oregon Department of Transportation (ODOT) staff.

Based on the analyses presented herein, we conclude that projected year 2020 traffic volumes at the intersection in combination with Cascade Center site buildout could be found to warrant signalization per ODOT requirements. Further details are provided herein.

TRAFFIC SIGNAL WARRANT ANALYSIS CONSIDERATIONS

As summarized in the March TIA, the northbound left-turn at the OR 211/Leroy Avenue intersection is projected to operate at a Level of Service "F" under year 2020 weekday AM and PM peak hour conditions, with or without development of Cascade Center. Further, the City's Transportation System Plan (TSP) identifies the need to signalize the intersection and the analysis conducted as part of the March TIA identified that traffic signal warrants would be met in year 2020. Since submittal of this analysis, the following additional considerations were identified through the recent public hearing and agency staff feedback:

- The population of Molalla is likely to exceed 10,000 persons by the anticipated year 2020 opening of the proposed Cascade Center, which results in higher minimum traffic volumes being required at the intersection to satisfy traffic signal warrants). The March 2019 applied a 70 percent reduction per traffic signal warrants in situations where the population is less than 10,000 (e.g., reflective of Molalla's population today).

- The March 2019 included Leroy Avenue right-turn volumes onto OR 211 in consideration of the volume warrants. Conversely, ODOT direction suggests none of the right-turns from Leroy Avenue onto OR 211 should be included in the signal warrant analysis.[1]
- City staff and other members of the public noted that drivers associated with Molalla River Middle School (including school buses) reportedly avoid completing southbound left-turns at the OR 211/Leroy Avenue intersection due to the challenge of identifying acceptable gaps on OR 211, and instead divert to other routes such as West Lane Road where the movements are easier to make[2].
- With the eventual signalization of the OR 211/Leroy Avenue intersection, drivers will likely reroute from unsignalized intersection to take advantage of the signal to turn left onto/off of OR 211.
- Pedestrian trips between the Molalla River Middle School and both the proposed Cascade Center as well as the residential homes west and south of the center can be expected to cross at the OR 211/Leroy Avenue intersection upon site development (reflecting both walking trips to the Cascade Center as well as completion of the only continuous sidewalk network linking existing sidewalks serving homes on the south side of OR 211 to the school site via the new sidewalks along the Cascade Center site frontage).
    - Pedestrian trips between the Molalla River Middle School and residential homes south of OR 211 led to the installation of a pedestrian crossing of OR 211 at Hezzie Lane in February 2019 after a child was struck by a vehicle crossing the roadway in 2018.
- Installation of a transit stop served by the South Clackamas Transportation District is required on the southeast corner of the OR 211/Leroy Avenue intersection in conjunction with site development.

Revised Traffic Signal Warrant Analysis Assumptions

In light of the feedback and considerations identified above, we performed a signal warrant analysis that accounts for the following:

- an assumed City of Molalla population greater than 10,000 persons by the year 2020,

[1] The ODOT *Analysis Procedures Manual* (APM) indicates that side street right-turns should be discounted by 85 percent of the shared through/right lane capacity for an approach with a shared through/right-turn lane. The APM furthers states that no right turns should be included in the warrant if the remainder is less than or equal to zero.

[2] Molalla River Middle Scholl classes start at 7:35 AM and conclude at 2:17 PM weekday except Friday when classes have a late start at 8:35 AM.

- elimination of all Leroy Avenue right-turn volumes approaching the intersection, and
- rerouting of some northbound left-turns from the proposed unsignalized western Cascade Center access to a signalized Leroy Avenue intersection recognizing the challenge in finding acceptable gaps in OR 211 traffic at unsignalized intersections. The site plan is designed to enable easy access between buildings, through the parking area and with convenient access to both Leroy Avenue and the western driveway.

Based on the changes above, the Leroy Avenue traffic volumes presented in the TIA were revised and were found to be sufficient to warrant signalization of the intersection. No additional considerations were accounted for in the analyses, such as the potential re-routing of school trips or existing trips on the north Leroy Avenue approach assuming signalization. Based on the feedback received, it is reasonable to assume that some increase in southbound left-turn movements would be realized upon intersection signalization, thereby further demonstrating that the volumes would warrant signalization. The revised analyses are discussed in more detail below.

Revised OR 211/Leroy Avenue Northbound Left-turn Volumes

The intersection operations summarized in the March TIA assumed that both the proposed west site access and Leroy Avenue operate as unsignalized stop controlled intersections. The site-generated trips were assigned assuming that drivers would seek the access with the lower delays and fewer conflicts with adjacent streets to try to turn left onto OR 211. As such, the analyses assigned a higher percentage of trips (e.g., approximately 60 – 70 percent) to the west site access to avoid existing opposing southbound turns at the stop controlled Leroy Avenue intersection. This is reflected in Figure 6 and Figure 7 of the TIA. As shown in Figure 7 of the TIA, with this assumption, the northbound left-turn on Leroy Avenue was shown to operate at Level of Service "F" during both the weekday AM and PM peak hours (long delays) and to operate over-capacity during the weekday PM peak hour, exceeding ODOT mobility standards. The west site access northbound approach was projected to operate at Level of Service "E" and 56 percent of its capacity during the weekday AM peak hour and at Level of Service "F" and 76 percent of its capacity during the weekday PM peak hour.

Given the proposed site configuration (Refer to TIA Figure 2) and the delays at the west access, we re-assessed the northbound Leroy Avenue left-turn volumes assuming 1/3 (33%) of the northbound left-turn site trips use the west access and 2/3 (67%) use the Leroy Avenue approach if the OR 211/Leroy Avenue intersection was signalized. The spreadsheet in Appendix 1 documents the traffic volume calculations.

Supplemental Traffic Signal Warrant Analysis

Based on the discussion above, a supplemental traffic signal warrant analysis was conducted for the OR 211/Leroy Avenue intersection consistent with ODOT requirements outlined in ODOT's *Traffic Signal Policy and Guidelines* (Reference 1), the *Manual on Uniform Traffic Control Devices* (MUTCD, Reference 2) , and the ODOT *Analysis Procedures Manual* (Reference 3). The MUTCD identifies nine

traffic signal warrants and notes "The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal."[3]

The traffic signal warrant analysis was prepared considering traffic volume patterns previously identified in the TIA as supplemented in Appendix 1 of this document and based on the 16-hour traffic volumes (6:00 AM to 10:00 PM) at the intersection recorded in October 2018 and documented in the TIA.

Findings for each of the nine traffic signal warrants are summarized below.

Warrant 1, Eight-Hour Vehicular Volume

This warrant contains two conditions that assess traffic volumes. Condition A is intended for application at locations where a large volume of intersecting traffic is the principal reason to consider installing a traffic control signal while Condition B is applied at locations where Condition A is not satisfied but the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street.

Assuming the population of Molalla exceeds 10,000 people, the OR 211 approaches to the intersection have volumes sufficient to warrant signalization under both Condition A (minimum total of 500 vehicles per hour required on OR 211 approaches) and Condition B (minimum total of 750 vehicles per hour required on OR 211 approaches) under existing and year 2020 conditions. Assuming the driveway trip re-assignment described above, the Leroy Avenue northbound through and left-turn volumes are projected to:

- not meet the minimum 150 vehicles per hour needed for Condition A
- exceed the minimum 75 vehicles per hour necessary to satisfy Condition B during nine hours of the day.

Based on this assessment, we find that Warrant 1 Condition B is satisfied.

[3] ODOT's *Analysis Procedures Manual* similarly states "Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway. However, approval of a signal depends on more than just a warrant analysis. Meeting a warrant is necessary to install a signal, but it does not mean a signal should be recommended or guarantee its installation. Considerations to be evaluated include safety concerns, alternatives to signalization, signal systems, delay, queuing, bike and pedestrian needs, railroads, access, consistency with local plans, local agency support and others."

Warrant 2, Four-Hour Vehicular Volume

Warrant 2 is intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal. Warrant 2 requires a minimum of 80 vehicles per hour on one side street approach for four or more hours per day. Based on the northbound left-turn routing from at the site accesses described above, there are six hours per day where the northbound Leroy Avenue approach has sufficient projected through and left-turn traffic to warrant signalization.

Based on this assessment, Warrant 2 is satisfied.

Warrant 3, Peak Hour

Warrant 3 is intended for use at a location where minor-street traffic suffers undue delay when entering or crossing the major street for a minimum of one hour of an average day. Per the MUTCD, Warrant 3 shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time (such as an employee shift change).

Warrant 3 is not applicable at the OR 211/Leroy Avenue intersection.

Warrant 4, Pedestrian Volumes

Warrant 4 addresses pedestrian crossing volumes and is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street. The October 2018 traffic count recorded 42 pedestrians using the intersection including 35 crossing east-west on the north side of the intersection, 3 crossing east-west along the south side of the intersection, and four crossing north-south on the west side of the intersection over the course of a day.

Upon buildout of Cascade Center, additional north-south pedestrian traffic can be expected across OR 211, particularly during the start and end of the school day at the Molalla River Middle School to the north.

The pedestrian volume warrant requires a minimum of 107 pedestrians to be crossing OR 211 at Leroy Avenue per hour for at least four hours per day or at least 133 pedestrians per hour during the pedestrian peak hour.

The required level of pedestrian activity to warrant signalization is not expected to be met.

Warrant 5, School Crossing

Warrant 5 is intended for application where the fact that schoolchildren cross the major street is the principal reason to consider installing a traffic control signal.

This warrant is not directly applicable at the OR 211/Leroy Avenue intersection.

Warrant 6, Coordinated Signal System

Warrant 6 is intended to facilitate progressed traffic flow within a coordinated traffic signal system and allows for installation of traffic control signals at intersections where they would otherwise not be needed in order to maintain proper platooning of vehicles.

Warrant 6 is not applicable given the lack of traffic signal coordination along OR 211 and the distances between existing/planned future traffic signals.

Warrant 7, Crash Experience

Warrant 7 is intended for application where the severity and frequency of crashes are the principal reasons to consider traffic signal installation. Amongst other considerations, the warrant requires five or more reported crashes of a type susceptible to correction by a traffic control signal within a 12-month period. Analysis of the recorded crashes at the intersection were shown in Table 3 of the TIA.

Based on the analysis of recorded crash data, Warrant 7 is not met at the OR 211/Leroy Avenue intersection.

Warrant 8, Roadway Network

Warrant 8 involves installing a traffic signal at an intersection to encourage concentration and organization of traffic flow on a roadway network. The warrant requires the intersection of two or more major routes that serve as the principal roadway network for through traffic flow. While OR 211 satisfies the MUTCD definition of a major through route, Leroy Avenue does not.

Warrant 8 is not applicable OR 211/Leroy Avenue intersection.

Warrant 9, Intersection Near a Grade Crossing

Warrant 9 is intended for use at a location where Warrants 1 – 8 are not shown to be met but where the proximity of the intersection to a railroad grade crossing would be the principal reason to consider installing a traffic signal.

Warrant 9 is not applicable given there is no railroad crossing proximate to or impacting the OR 211/Leroy Avenue intersection.

Overall Warrant Findings

Based on the consideration of all nine warrants, six of the warrant conditions are not applicable to the OR 211/Leroy Avenue, two are shown to be met and one is not met. As discussed, Warrants 1 and 2 are forecast to be met at the intersection by the year 2020 assuming buildout of Cascade Center. Satisfaction of these two warrants alone are often used by most local and state agencies for meriting signalization of an intersection.

SUMMARY & NEXT STEPS

This letter documents that projected traffic volumes at the OR 211/Leroy Avenue intersection warrant signalization in conjunction with the proposed Cascade Center development. Should signalization be completed, we expect additional drivers (beyond those considered in this analysis) would reroute to Leroy Avenue to make left-turns onto OR 211 given the feedback received from the community regarding school and residential traffic that avoids the stop-controlled intersection today.

While not recognized in the traffic volume-based signal Warrants 1 and 2, we further expect that signalization will accommodate new pedestrian trips crossing OR 211 at the intersection (particularly given the intersection will provide the only complete sidewalk system connecting development along the south side of OR 211 with the Molalla River Middle School site and neighborhood to the north as well as to the new transit stop that will be on the southeast quadrant of the intersection).

We hope the information provided in this letter assists City and ODOT staff in further evaluation of the potential need for signalization of the OR 211/Leroy Avenue intersection and would be pleased to discuss our analysis and findings as appropriate.

Sincerely,
KITTELSON & ASSOCIATES, INC.

Chris Brehmer, PE
Senior Principal Engineer

REFERENCES

1. Oregon Department of Transportation. *Traffic Signal Policy and Guidelines.* September 2017.
2. Federal Highway Administration. *Manual on Uniform Traffic Control Devices*. 2009 Edition.
3. Oregon Department of Transportation. *Analysis Procedures Manual, Version 2.* Last Update: November 2019.

ATTACHMENT

Appendix 1: Traffic Volume Derivation & Warrant Analysis

Appendix 1 Traffic Volume Derivation & Warrant Analysis

Table A. 2018 Raw Volumes

Time	NB	SB Left	EB	WB
6:00		5	240	410
7:00		23	338	452
8:00		8	300	368
9:00		9	306	400
10:00		6	342	471
11:00		19	406	507
12:00		18	451	459
13:00		16	454	462
14:00		22	464	494
15:00		15	560	530
16:00		13	602	538
17:00		17	604	537
18:00		27	529	422
19:00		22	297	284
20:00		5	216	218
21:00		3	158	107

Table B. 2018 Seasonally-adjusted Volumes

Time	NB	SB Left	EB	WB	Major Street Sum
6:00		5	248	423	671
7:00		23	349	467	816
8:00		8	310	380	690
9:00		9	316	413	729
10:00		6	353	486	840
11:00		19	419	524	943
12:00		18	466	474	940
13:00		16	469	477	946
14:00		22	479	510	990
15:00		15	578	547	1126
16:00		13	622	556	1178
17:00		17	624	555	1179
18:00		27	546	436	982
19:00		22	307	293	600
20:00		5	223	225	448
21:00		3	163	111	274

Where: NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound, Left = Left-turn movement, TH = Through movement

8 Highest Hours Shaded

Table C. 2020 Background Volumes

Time	NB	SB Left	EB	WB	Major Street Sum
6:00		5	285	487	772
7:00		23	402	537	939
8:00		8	356	437	794
9:00		9	364	475	839
10:00		6	406	560	966
11:00		19	482	602	1085
12:00		18	536	545	1081
13:00		16	539	549	1088
14:00		22	551	587	1138
15:00		15	665	630	1295
16:00		13	715	639	1355
17:00		17	718	638	1356
18:00		27	629	501	1130
19:00		22	353	337	690
20:00		5	257	259	516
21:00		3	188	127	315

8 Highest Hours Shaded

Table D. 2020 Total Traffic Volumes North-South

Time	NB LT & TH	SB Left & TH	EB	WB	Major Street Sum
6:00	1	5	285	487	772
7:00	46	32	402	537	939
8:00	12	10	356	437	794
9:00	21	13	364	475	839
10:00	32	12	406	560	966
11:00	48	28	482	602	1085
12:00	58	29	536	545	1081
13:00	53	26	539	549	1088
14:00	52	32	551	587	1138
15:00	51	25	665	630	1295
16:00	53	23	715	639	1355
17:00	53	27	718	638	1356
18:00	46	36	629	501	1130
19:00	35	29	353	337	690
20:00	26	10	257	259	516
21:00	17	6	188	127	315

No Growth Assumed - Background Volumes

8 Highest Hours Shaded

Table E. Sensitivity Analysis: Modified 2020 Total Traffic Volumes North-South
(Assumes 1/3 Site NBLT Use West Access and 2/3 Use Leroy Avenue Traffic Signal)

Time	NB LT & TH	SB Left & TH	EB	WB	Major Street Sum	Warrant 1A Met?	Warrant 1B Met?	Warrant 2 Met?
6:00	2	5	285	487	772	No	No	No
7:00	84	32	402	537	939	No	Yes	No
8:00	19	10	356	437	794	No	No	No
9:00	34	13	364	475	839	No	No	No
10:00	54	12	406	560	966	No	No	No
11:00	79	28	482	602	1085	No	Yes	No
12:00	96	29	536	545	1081	No	Yes	Yes
13:00	89	26	539	549	1088	No	Yes	Yes
14:00	86	32	551	587	1138	No	Yes	Yes
15:00	85	25	665	630	1295	No	Yes	Yes
16:00	88	23	715	639	1355	No	Yes	Yes
17:00	89	27	718	638	1356	No	Yes	Yes
18:00	77	36	629	501	1130	No	Yes	No
19:00	58	29	353	337	690	No	No	No
20:00	42	10	257	259	516	No	No	No
21:00	28	6	188	127	315	No	No	No

8 Highest Hours Shaded

No Growth Assumed - Background Volumes

Notes:

1) The "Counts" tab contains the raw turning movement volumes from the 16-hour turn movement count, southbound right-turns were zeroed out.
2) The Table A "Raw Volumes" cells reference the counts tab.
3) The Table B "Seasonally-adjusted Volumes" apply the ODOT seasonal adjustment factor described in the scoping memo/report (1.035). Note that no seasonal adjustment was applied to the volumes to/from Leroy Avenue, so the approach volumes are adjusted accordingly.
4) The Table C. "Background" volumes apply the background growth rate described in the scoping memo/report. The background growth rate was not applied to the volumes to/from Leroy Avenue, so the approach volumes were adjusted accordingly.
5) The Table D "Total Traffic Volumes North-South" references the "ITE Data" tab where a combination of the total AM and PM peak hour turning movement volumes from the TIA are used to develop 16-hour counts for the Leroy Avenue turn movements under total traffic conditions (including site trips). We used data from ITE Trip Generation Manual to estimate the 16-hour profile for the site trips.
6) East-west total traffic volumes on OR 211 are not projected in this spreadsheet for total traffic conditions given the existing and background volumes are sufficient to warrant signalization.

Table 4C-1. Warrant 1, Eight-Hour Vehicular Volume

Condition A—Minimum Vehicular Volume

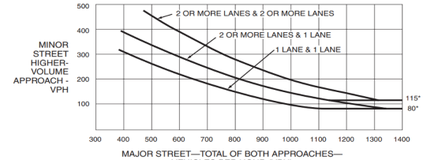
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112

Condition B—Interruption of Continuous Traffic

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

[a] Basic minimum hourly volume
[b] Used for combination of Conditions A and B after adequate trial of other remedial measures
[c] May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000
[d] May be used for combination of Conditions A and B after adequate trial of other remedial measures when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

QUALITY COUNTS REPORT

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File Path: ject\tmcs\148156 TMC Data\14815609 - Leroy Ave -- OR-211.csv

Intersectio Leroy Ave OR-211 Lane Configuration:

City/State: Molalla OR STOP SBLane1 SBLane2 SBLane3 SBLane4 SBLane5 SBLane6 SBLane7

QCJobNo: 14815609 YEAR MONTH DAY LR

ClientID: 2018 10 9 EBLane7 TR WBLane1

Date: 10/9/2018 EBLane6 WBLane2

Comments: EBLane5 WBLane3

EBLane4 WBLane4

PEAK HOUI 4:30 PM EBLane3 WBLane5

PEAK HOUI 5:30 PM EBLane2 WBLane6

PEAK 15-M 5:00 PM EBLane1 LT WBLane7

PEAK 15-M 5:15 PM

PHF 0.93 NBLane7 NBLane6 NBLane5 NBLane4 NBLane3 NBLane2 NBLane1 STOP

PEAK-HOUR VOLUMES

NBLeft	NBThru	NBRight	SBLeft	SBThru	SBRight	EBLeft	EBThru	EBRight	WBLeft	WBThru	WBRight	NBEntering	SBEntering	EBEntering	WBEntering	NBLeaving	SBLeaving	EBLeaving	WBLeaving
0	0	0	16	0	55	44	568	0	0	534	53	0	71	612	587	97	0	584	589

PERCENT HEAVY VEHICLES

NBLeft	NBThru	NBRight	SBLeft	SBThru	SBRight	EBLeft	EBThru	EBRight	WBLeft	WBThru	WBRight	NBEntering	SBEntering	EBEntering	WBEntering	NBLeaving	SBLeaving	EBLeaving	WBLeaving
0	0	0	0	0	1.8	2.3	6.5	0	0	7.1	0	0	1.4	6.2	6.5	1	0	6.3	6.6

PEAK-HOUR VOLUMES - PEDESTRIANS

Northern Crossi	thern Cros	stern Cross	stern Crossing
3	0	0	1

PEAK-HOUR VOLUMES - BICYCLES

NBLeft	NBThru	NBRight	SBLeft	SBThru	SBRight	EBLeft	EBThru	EBRight	WBLeft	WBThru	WBRight
0	0	0	0	0	0	0	0	0	0	0	0

PEAK 15-MIN FLOWRATES

VehicleTyp	NBLeft	NBThru	NBRight	NBUTurn	NBRTOR	SBLeft	SBThru	SBRight	SBUTurn	SBRTOR	EBLeft	EBThru	EBRight	EBUTurn	EBRTOR	WBLeft	WBThru	WBRight	WBUTurn	WBRTOR	Total
All Vehicles	0	0	0	0	0	20	0	72	0	0	40	588	0	0	0	0	596	56	0	0	1372
Heavy Truc	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

ALL-VEHICLE VOLUMES

Time Perio	NB Left	NB Thru	NB Right	NB U-Turn	NB RTOR	SB Left	SB Thru	SB Right	SB U-Turn	SB RTOR	EB Left	EB Thru	EB Right	EB U-Turn	EB RTOR	WB Left	WB Thru	WB Right	WB U-Turn	WB RTOR	Total	Hourly Tota
6:00 AM	0	0	0	0	0	0	0	2	0	0	1	12	0	0	0	0	41	2	0	0	58	
6:05 AM	0	0	0	0	0	0	0	1	0	0	1	14	0	0	0	0	26	2	0	0	44	
6:10 AM	0	0	0	0	0	0	0	2	0	0	2	14	0	0	0	0	27	0	0	0	45	
6:15 AM	0	0	0	0	0	0	0	2	0	0	0	24	0	0	0	0	29	0	0	0	55	
6:20 AM	0	0	0	0	0	1	0	1	0	0	0	8	0	0	0	0	28	3	0	0	41	
6:25 AM	0	0	0	0	0	1	0	2	0	0	2	16	0	0	0	0	32	0	0	0	53	
6:30 AM	0	0	0	0	0	0	0	2	0	0	0	17	0	0	0	0	40	0	0	0	59	
6:35 AM	0	0	0	0	0	0	0	3	0	0	0	17	0	0	0	0	36	1	0	0	57	
6:40 AM	0	0	0	0	0	0	0	2	0	0	3	22	0	0	0	0	33	0	0	0	60	
6:45 AM	0	0	0	0	0	1	0	2	0	0	1	31	0	0	0	0	32	2	0	0	69	
6:50 AM	0	0	0	0	0	0	0	3	0	0	2	27	0	0	0	0	41	4	0	0	77	
6:55 AM	0	0	0	0	0	2	0	5	0	0	1	25	0	0	0	0	28	3	0	0	64	682
7:00 AM	0	0	0	0	0	0	0	4	0	0	2	29	0	0	0	0	26	4	0	0	65	689
7:05 AM	0	0	0	0	0	2	0	4	0	0	4	25	0	0	0	0	36	11	0	0	82	727
7:10 AM	0	0	0	0	0	1	0	6	0	0	6	27	0	0	0	0	28	5	0	0	73	755
7:15 AM	0	0	0	0	0	2	0	11	0	0	2	25	0	0	0	0	31	8	0	0	79	779
7:20 AM	0	0	0	0	0	2	0	15	0	0	6	23	0	0	0	0	46	9	0	0	101	839
7:25 AM	0	0	0	0	0	6	0	12	0	0	4	22	0	0	0	0	43	7	0	0	94	880
7:30 AM	0	0	0	0	0	2	0	14	0	0	5	19	0	0	0	0	37	1	0	0	78	899
7:35 AM	0	0	0	0	0	2	0	3	0	0	2	25	0	0	0	0	30	0	0	0	62	904
7:40 AM	0	0	0	0	0	0	0	6	0	0	4	21	0	0	0	0	36	0	0	0	67	911
7:45 AM	0	0	0	0	0	1	0	4	0	0	1	28	0	0	0	0	32	2	0	0	68	910
7:50 AM	0	0	0	0	0	2	0	1	0	0	1	27	0	0	0	0	30	0	0	0	61	894
7:55 AM	0	0	0	0	0	3	0	3	0	0	0	30	0	0	0	0	30	0	0	0	66	896
8:00 AM	0	0	0	0	0	1	0	0	0	0	3	16	0	0	0	0	32	0	0	0	52	883
8:05 AM	0	0	0	0	0	0	0	3	0	0	0	27	0	0	0	0	29	1	0	0	60	861
8:10 AM	0	0	0	0	0	0	0	3	0	0	0	22	0	0	0	0	31	2	0	0	58	846
8:15 AM	0	0	0	0	0	1	0	1	0	0	0	12	0	0	0	0	25	0	0	0	39	806
8:20 AM	0	0	0	0	0	0	0	4	0	0	3	30	0	0	0	0	27	3	0	0	67	772
8:25 AM	0	0	0	0	0	1	0	2	0	0	1	26	0	0	0	0	34	1	0	0	65	743
8:30 AM	0	0	0	0	0	1	0	5	0	0	3	20	0	0	0	0	26	0	0	0	55	720
8:35 AM	0	0	0	0	0	0	0	2	0	0	0	33	0	0	0	0	26	0	0	0	61	719
8:40 AM	0	0	0	0	0	0	0	1	0	0	3	18	0	0	0	0	41	4	0	0	67	719
8:45 AM	0	0	0	0	0	3	0	2	0	0	1	22	0	0	0	0	30	4	0	0	62	713
8:50 AM	0	0	0	0	0	0	0	8	0	0	0	31	0	0	0	0	26	3	0	0	68	720
8:55 AM	0	0	0	0	0	1	0	10	0	0	2	27	0	0	0	0	23	0	0	0	63	717
9:00 AM	0	0	0	0	0	1	0	4	0	0	2	29	0	0	0	0	31	4	0	0	71	736
9:05 AM	0	0	0	0	0	0	0	3	0	0	3	29	0	0	0	0	23	2	0	0	60	736
9:10 AM	0	0	0	0	0	0	0	1	0	0	0	31	0	0	0	0	38	1	0	0	71	749
9:15 AM	0	0	0	0	0	1	0	2	0	0	2	19	0	0	0	0	28	1	0	0	53	763
9:20 AM	0	0	0	0	0	0	0	3	0	0	1	22	0	0	0	0	31	5	0	0	62	758
9:25 AM	0	0	0	0	0	4	0	4	0	0	2	23	0	0	0	0	32	0	0	0	65	758
9:30 AM	0	0	0	0	0	0	0	3	0	0	2	18	0	0	0	0	31	1	0	0	55	758
9:35 AM	0	0	0	0	0	0	0	3	0	0	0	19	0	0	0	0	31	2	0	0	55	752
9:40 AM	0	0	0	0	0	1	0	4	0	0	2	21	0	0	0	0	27	0	0	0	55	740
9:45 AM	0	0	0	0	0	2	0	4	0	0	0	27	0	0	0	0	29	2	0	0	64	742
9:50 AM	0	0	0	0	0	0	0	1	0	0	0	25	0	0	0	0	32	3	0	0	61	735
9:55 AM	0	0	0	0	0	0	0	0	0	0	0	29	0	0	0	0	45	1	0	0	75	747
10:00 AM	0	0	0	0	0	0	0	3	0	0	1	29	0	0	0	0	37	1	0	0	71	747
10:05 AM	0	0	0	0	0	0	0	0	0	0	1	24	0	0	0	0	29	1	0	0	55	742
10:10 AM	0	0	0	0	0	1	0	1	0	0	0	33	0	0	0	0	32	2	0	0	69	740
10:15 AM	0	0	0	0	0	1	0	1	0	0	1	25	0	0	0	0	40	1	0	0	69	756
10:20 AM	0	0	0	0	0	1	0	3	0	0	1	27	0	0	0	0	28	3	0	0	63	757
10:25 AM	0	0	0	0	0	1	0	4	0	0	2	31	0	0	0	0	30	3	0	0	71	763
10:30 AM	0	0	0	0	0	0	0	2	0	0	0	31	0	0	0	0	35	0	0	0	68	776
10:35 AM	0	0	0	0	0	1	0	2	0	0	0	22	0	0	0	0	45	2	0	0	72	793
10:40 AM	0	0	0	0	0	0	0	2	0	0	1	23	0	0	0	0	27	2	0	0	55	793
10:45 AM	0	0	0	0	0	1	0	1	0	0	2	22	0	0	0	0	42	6	0	0	74	803
10:50 AM	0	0	0	0	0	0	0	2	0	0	0	34	0	0	0	0	52	2	0	0	90	832
10:55 AM	0	0	0	0	0	0	0	1	0	0	0	32	0	0	0	0	49	2	0	0	84	841
11:00 AM	0	0	0	0	0	1	0	0	0	0	2	25	0	0	0	0	45	1	0	0	74	844
11:05 AM	0	0	0	0	0	2	0	3	0	0	1	25	0	0	0	0	44	1	0	0	76	865
11:10 AM	0	0	0	0	0	1	0	2	0	0	3	43	0	0	0	0	37	5	0	0	91	887
11:15 AM	0	0	0	0	0	4	0	2	0	0	0	35	0	0	0	0	47	2	0	0	90	908
11:20 AM	0	0	0	0	0	1	0	4	0	0	1	35	0	0	0	0	36	1	0	0	78	923
11:25 AM	0	0	0	0	0	0	0	3	0	0	2	31	0	0	0	0	31	1	0	0	68	920
11:30 AM	0	0	0	0	0	1	0	3	0	0	0	35	0	0	0	0	34	1	0	0	74	926
11:35 AM	0	0	0	0	0	1	0	1	0	0	3	34	0	0	0	0	46	0	0	0	85	939
11:40 AM	0	0	0	0	0	2	0	1	0	0	4	31	0	0	0	0	38	4	0	0	80	964
11:45 AM	0	0	0	0	0	1	0	5	0	0	0	29	0	0	0	0	44	4	0	0	83	973
11:50 AM	0	0	0	0	0	4	0	0	0	0	1	31	0	0	0	0	44	1	0	0	81	964
11:55 AM	0	0	0	0	0	1	0	0	0	0	2	33	0	0	0	0	35	5	0	0	76	956
12:00 PM	0	0	0	0	0	1	0	4	0	0	1	40	0	0	0	0	47	3	0	0	96	978
12:05 PM	0	0	0	0	0	1	0	3	0	0	3	35	0	0	0	0	40	2	0	0	84	986
12:10 PM	0	0	0	0	0	1	0	7	0	0	0	38	0	0	0	0	33	2	0	0	81	976
12:15 PM	0	0	0	0	0	1	0	2	0	0	3	34	0	0	0	0	40	0	0	0	80	966
12:20 PM	0	0	0	0	0	2	0	2	0	0	2	38	0	0	0	0	23	0	0	0	67	955
12:25 PM	0	0	0	0	0	3	0	3	0	0	1	38	0	0	0	0	36	2	0	0	83	970
12:30 PM	0	0	0	0	0	3	0	2	0	0	3	33	0	0	0	0	35	0	0	0	76	972
12:35 PM	0	0	0	0	0	1	0	0	0	0	1	47	0	0	0	0	34	1	0	0	84	971
12:40 PM	0	0	0	0	0	1	0	1	0	0	1	24	0	0	0	0	36	0	0	0	63	954
12:45 PM	0	0	0	0	0	1	0	2	0	0	5	33	0	0	0	0	37	5	0	0	83	954
12:50 PM	0	0	0	0	0	0	0	3	0	0	1	38	0	0	0	0	35	1	0	0	78	951
12:55 PM	0	0	0	0	0	3	0	1	0	0	1	31	0	0	0	0	46	1	0	0	83	958
1:00 PM	0	0	0	0	0	0	0	0	0	0	1	35	0	0	0	0	28	0	0	0	64	926
1:05 PM	0	0	0	0	0	1	0	0	0	0	3	32	0	0	0	0	41	5	0	0	82	924
1:10 PM	0	0	0	0	0	2	0	4	0	0	2	28	0	0	0	0	37	4	0	0	77	920
1:15 PM	0	0	0	0	0	1	0	2	0	0	1	44	0	0	0	0	30	1	0	0	79	919
1:20 PM	0	0	0	0	0	1	0	3	0	0	1	42	0	0	0	0	38	4	0	0	89	941
1:25 PM	0	0	0	0	0	1	0	2	0	0	0	35	0	0	0	0	41	3	0	0	82	940
1:30 PM	0	0	0	0	0	1	0	2	0	0	3	55	0	0	0	0	30	1	0	0	92	956
1:35 PM	0	0	0	0	0	2	0	3	0	0	3	34	0	0	0	0	42	1	0	0	85	957
1:40 PM	0	0	0	0	0	1	0	2	0	0	3	38	0	0	0	0	44	3	0	0	91	985
1:45 PM	0	0	0	0	0	1	0	3	0	0	0	27	0	0	0	0	33	1	0	0	65	967
1:50 PM	0	0	0	0	0	4	0	2	0	0	3	34	0	0	0	0	39	2	0	0	84	973
1:55 PM	0	0	0	0	0	1	0	2	0	0	4	26	0	0	0	0	31	3	0	0	67	957

2:00 PM	0	0	0	0	0	3	0	2	0	0	1	32	0	0	0	0	43	3	0	0	84	977
2:05 PM	0	0	0	0	0	0	0	3	0	0	2	33	0	0	0	0	32	3	0	0	73	968
2:10 PM	0	0	0	0	0	0	0	3	0	0	4	40	0	0	0	0	37	3	0	0	87	978
2:15 PM	0	0	0	0	0	3	0	1	0	0	2	32	0	0	0	0	38	7	0	0	83	982
2:20 PM	0	0	0	0	0	2	0	9	0	0	2	37	0	0	0	0	30	3	0	0	83	976
2:25 PM	0	0	0	0	0	4	0	10	0	0	0	39	0	0	0	0	29	3	0	0	85	979
2:30 PM	0	0	0	0	0	3	0	4	0	0	1	40	0	0	0	0	31	2	0	0	81	968
2:35 PM	0	0	0	0	0	3	0	1	0	0	1	37	0	0	0	0	46	3	0	0	91	974
2:40 PM	0	0	0	0	0	1	0	1	0	0	1	43	0	0	0	0	34	1	0	0	81	964
2:45 PM	0	0	0	0	0	2	0	5	0	0	1	36	0	0	0	0	40	3	0	0	87	986
2:50 PM	0	0	0	0	0	1	0	5	0	0	3	37	0	0	0	0	39	2	0	0	87	989
2:55 PM	0	0	0	0	0	0	0	6	0	0	1	39	0	0	0	0	60	2	0	0	108	1030
3:00 PM	0	0	0	0	0	2	0	1	0	0	3	39	0	0	0	0	39	4	0	0	88	1034
3:05 PM	0	0	0	0	0	2	0	3	0	0	1	33	0	0	0	0	46	1	0	0	86	1047
3:10 PM	0	0	0	0	0	3	0	10	0	0	3	44	0	0	0	0	49	0	0	0	109	1069
3:15 PM	0	0	0	0	0	1	0	6	0	0	3	43	0	0	0	0	48	3	0	0	104	1090
3:20 PM	0	0	0	0	0	1	0	3	0	0	0	41	0	0	0	0	56	1	0	0	102	1109
3:25 PM	0	0	0	0	0	0	0	2	0	0	2	49	0	0	0	0	30	2	0	0	85	1109
3:30 PM	0	0	0	0	0	2	0	9	0	0	7	46	0	0	0	0	43	1	0	0	108	1136
3:35 PM	0	0	0	0	0	1	0	6	0	0	3	41	0	0	0	0	43	1	0	0	95	1140
3:40 PM	0	0	0	0	0	2	0	7	0	0	2	58	0	0	0	0	37	2	0	0	108	1167
3:45 PM	0	0	0	0	0	0	0	2	0	0	0	38	0	0	0	0	41	1	0	0	82	1162
3:50 PM	0	0	0	0	0	1	0	4	0	0	2	48	0	0	0	0	37	1	0	0	93	1168
3:55 PM	0	0	0	0	0	0	0	5	0	0	3	51	0	0	0	0	38	6	0	0	103	1163
4:00 PM	0	0	0	0	0	1	0	7	0	0	3	50	0	0	0	0	31	1	0	0	93	1168
4:05 PM	0	0	0	0	0	0	0	1	0	0	4	49	0	0	0	0	41	1	0	0	96	1178
4:10 PM	0	0	0	0	0	1	0	6	0	0	2	46	0	0	0	0	39	3	0	0	97	1166
4:15 PM	0	0	0	0	0	1	0	5	0	0	2	49	0	0	0	0	39	2	0	0	98	1160
4:20 PM	0	0	0	0	0	2	0	4	0	0	2	45	0	0	0	0	41	3	0	0	97	1155
4:25 PM	0	0	0	0	0	0	0	2	0	0	3	45	0	0	0	0	38	4	0	0	92	1162
4:30 PM	0	0	0	0	0	4	0	3	0	0	1	49	0	0	0	0	46	2	0	0	105	1159
4:35 PM	0	0	0	0	0	1	0	4	0	0	4	44	0	0	0	0	46	2	0	0	101	1165
4:40 PM	0	0	0	0	0	0	0	2	0	0	5	53	0	0	0	0	45	3	0	0	108	1165
4:45 PM	0	0	0	0	0	2	0	5	0	0	6	37	0	0	0	0	46	5	0	0	101	1184
4:50 PM	0	0	0	0	0	1	0	9	0	0	4	53	0	0	0	0	44	6	0	0	117	1208
4:55 PM	0	0	0	0	0	0	0	5	0	0	4	42	0	0	0	0	42	8	0	0	101	1206
5:00 PM	0	0	0	0	0	2	0	5	0	0	1	59	0	0	0	0	46	6	0	0	119	1232
5:05 PM	0	0	0	0	0	1	0	5	0	0	3	49	0	0	0	0	42	5	0	0	105	1241
5:10 PM	0	0	0	0	0	2	0	8	0	0	6	39	0	0	0	0	61	3	0	0	119	1263
5:15 PM	0	0	0	0	0	1	0	4	0	0	2	49	0	0	0	0	33	3	0	0	92	1257
5:20 PM	0	0	0	0	0	1	0	3	0	0	4	45	0	0	0	0	39	4	0	0	96	1256
5:25 PM	0	0	0	0	0	1	0	2	0	0	4	49	0	0	0	0	44	6	0	0	106	1270
5:30 PM	0	0	0	0	0	0	0	8	0	0	6	43	0	0	0	0	39	4	0	0	100	1265
5:35 PM	0	0	0	0	0	2	0	4	0	0	4	49	0	0	0	0	37	3	0	0	103	1267
5:40 PM	0	0	0	0	0	0	0	7	0	0	5	45	0	0	0	0	31	6	0	0	94	1253
5:45 PM	0	0	0	0	0	1	0	10	0	0	3	48	0	0	0	0	43	1	0	0	106	1258
5:50 PM	0	0	0	0	0	4	0	5	0	0	3	45	0	0	0	0	40	7	0	0	104	1245
5:55 PM	0	0	0	0	0	2	0	2	0	0	2	41	0	0	0	0	29	5	0	0	81	1225
6:00 PM	0	0	0	0	0	0	0	4	0	0	8	45	0	0	0	0	47	2	0	0	106	1212
6:05 PM	0	0	0	0	0	2	0	3	0	0	4	47	0	0	0	0	31	1	0	0	88	1195
6:10 PM	0	0	0	0	0	2	0	6	0	0	5	43	0	0	0	0	36	0	0	0	92	1168
6:15 PM	0	0	0	0	0	3	0	4	0	0	3	46	0	0	0	0	40	3	0	0	99	1175
6:20 PM	0	0	0	0	0	4	0	3	0	0	1	35	0	0	0	0	32	1	0	0	76	1155
6:25 PM	0	0	0	0	0	1	0	1	0	0	3	34	0	0	0	0	31	0	0	0	70	1119
6:30 PM	0	0	0	0	0	2	0	6	0	0	7	31	0	0	0	0	37	4	0	0	87	1106
6:35 PM	0	0	0	0	0	7	0	15	0	0	4	38	0	0	0	0	24	0	0	0	88	1091
6:40 PM	0	0	0	0	0	2	0	4	0	0	7	42	0	0	0	0	26	3	0	0	84	1081
6:45 PM	0	0	0	0	0	0	0	3	0	0	1	41	0	0	0	0	31	5	0	0	81	1056
6:50 PM	0	0	0	0	0	4	0	7	0	0	5	39	0	0	0	0	32	4	0	0	91	1043
6:55 PM	0	0	0	0	0	0	0	7	0	0	3	37	0	0	0	0	28	4	0	0	79	1041
7:00 PM	0	0	0	0	0	2	0	1	0	0	4	27	0	0	0	0	23	3	0	0	60	995
7:05 PM	0	0	0	0	0	9	0	12	0	0	3	23	0	0	0	0	18	3	0	0	68	975
7:10 PM	0	0	0	0	0	2	0	4	0	0	3	32	0	0	0	0	26	2	0	0	69	952
7:15 PM	0	0	0	0	0	3	0	1	0	0	1	28	0	0	0	0	30	2	0	0	65	918
7:20 PM	0	0	0	0	0	0	0	0	0	0	1	33	0	0	0	0	22	1	0	0	57	899
7:25 PM	0	0	0	0	0	0	0	2	0	0	2	23	0	0	0	0	18	2	0	0	47	876
7:30 PM	0	0	0	0	0	1	0	2	0	0	0	22	0	0	0	0	31	1	0	0	57	846
7:35 PM	0	0	0	0	0	0	0	2	0	0	0	14	0	0	0	0	27	5	0	0	48	806
7:40 PM	0	0	0	0	0	0	0	0	0	0	3	26	0	0	0	0	18	2	0	0	49	771
7:45 PM	0	0	0	0	0	2	0	1	0	0	2	18	0	0	0	0	18	1	0	0	42	732
7:50 PM	0	0	0	0	0	1	0	1	0	0	3	20	0	0	0	0	17	0	0	0	42	683
7:55 PM	0	0	0	0	0	2	0	1	0	0	2	7	0	0	0	0	14	0	0	0	26	630
8:00 PM	0	0	0	0	0	0	0	1	0	0	2	18	0	0	0	0	10	0	0	0	31	601
8:05 PM	0	0	0	0	0	1	0	2	0	0	1	17	0	0	0	0	16	2	0	0	39	572
8:10 PM	0	0	0	0	0	0	0	2	0	0	2	22	0	0	0	0	26	1	0	0	53	556
8:15 PM	0	0	0	0	0	1	0	2	0	0	2	15	0	0	0	0	16	1	0	0	37	528
8:20 PM	0	0	0	0	0	0	0	1	0	0	1	14	0	0	0	0	18	2	0	0	36	507
8:25 PM	0	0	0	0	0	0	0	2	0	0	3	19	0	0	0	0	11	0	0	0	35	495
8:30 PM	0	0	0	0	0	0	0	3	0	0	2	9	0	0	0	0	22	0	0	0	36	474
8:35 PM	0	0	0	0	0	0	0	1	0	0	2	18	0	0	0	0	18	0	0	0	39	465
8:40 PM	0	0	0	0	0	1	0	1	0	0	4	15	0	0	0	0	11	1	0	0	33	449
8:45 PM	0	0	0	0	0	0	0	1	0	0	1	16	0	0	0	0	23	1	0	0	42	449
8:50 PM	0	0	0	0	0	1	0	2	0	0	2	15	0	0	0	0	14	2	0	0	36	443
8:55 PM	0	0	0	0	0	1	0	2	0	0	2	14	0	0	0	0	21	2	0	0	42	459
9:00 PM	0	0	0	0	0	1	0	1	0	0	1	8	0	0	0	0	17	1	0	0	29	457
9:05 PM	0	0	0	0	0	0	0	2	0	0	0	9	0	0	0	0	9	0	0	0	20	438
9:10 PM	0	0	0	0	0	0	0	1	0	0	1	15	0	0	0	0	8	0	0	0	25	410
9:15 PM	0	0	0	0	0	1	0	0	0	0	4	17	0	0	0	0	14	0	0	0	36	409
9:20 PM	0	0	0	0	0	0	0	1	0	0	3	19	0	0	0	0	8	0	0	0	31	404
9:25 PM	0	0	0	0	0	0	0	1	0	0	0	18	0	0	0	0	6	0	0	0	25	394
9:30 PM	0	0	0	0	0	0	0	0	0	0	2	12	0	0	0	0	5	0	0	0	19	377
9:35 PM	0	0	0	0	0	0	0	0	0	0	1	8	0	0	0	0	9	1	0	0	19	357
9:40 PM	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0	0	11	0	0	0	27	351
9:45 PM	0	0	0	0	0	1	0	1	0	0	0	7	0	0	0	0	8	0	0	0	17	326
9:50 PM	0	0	0	0	0	0	0	1	0	0	0	7	0	0	0	0	5	0	0	0	13	303
9:55 PM	0	0	0	0	0	0	0	2	0	0	1	9	0	0	0	0	4	1	0	0	17	278

Site-generated Trip Assignment (From TIA Figure 6)

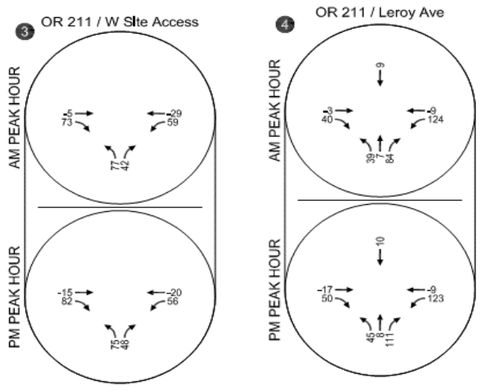

Table 1. TIA Trip Assignment (From TIA Figure 6)

	TIA OR 211/Leroy Intersection		
	NBLT	NBTH	SBTH
AM Peak Hour	39	7	9
PM Peak Hour	45	8	10

Table 2. TIA Trip Assignment Extrapolated Across Day

Hour	ITE Shopping Center Percent of Daily Trips	NBLT	NBTH	SBTH	
6:00	0.2	1	0	0	
7:00	1.1	39	7	9	Peak Hour Volume per TIA
8:00	2	10	2	2	
9:00	3.6	18	3	4	
10:00	5.6	27	5	6	
11:00	8.3	41	7	9	
12:00	10	49	9	11	
13:00	9.3	45	8	10	
14:00	9	44	8	10	
15:00	8.8	43	8	10	
16:00	9.2	45	8	10	Peak Hour Volume per TIA
17:00	9.3	45	8	10	
18:00	8	39	7	9	
19:00	6.1	30	5	7	
20:00	4.4	22	4	5	
21:00	2.9	14	3	3	

Table 3. TIA Trip Assignment (From TIA Figure 6)

	TIA West Access	TIA OR 211/Leroy Intersection		
	NBLT	NBLT	NBTH	SBTH
AM Peak Hour	77	39	7	9
PM Peak Hour	75	45	8	10

Table 4. Sensitivity Analysis Assuming 1/3 Site NBLT Use West Access and 2/3 Site NBLT Use Leroy Avenue Traffic Signal

Hour	ITE Shopping Center Percent of Daily Trips	NBLT	NBTH	SBTH
6:00	0.2	2	0	0
7:00	1.1	77	7	9
8:00	2	17	2	2
9:00	3.6	31	3	4
10:00	5.6	49	5	6
11:00	8.3	72	7	9
12:00	10	87	9	11
13:00	9.3	81	8	10
14:00	9	78	8	10
15:00	8.8	77	8	10
16:00	9.2	80	8	10
17:00	9.3	81	8	10
18:00	8	70	7	9
19:00	6.1	53	5	7
20:00	4.4	38	4	5
21:00	2.9	25	3	3

Public Works Department
117 N Molalla Avenue
PO Box 248
Molalla, Oregon 97038
Phone: (503) 829-6855
Fax: (503) 829-3676

July 16, 2019

TO: Alice Cannon, Senior Planner

FROM: Gerald Fisher, Public Works Director

RE: 728 W Main Street – Dollar General (DRW03-2019)

Based on a review of the materials submitted, Staff has prepared the following comments. These comments are applicable to the subject application; any subsequent modifications may require amendments and/or additions. These conditions do not include requirements already set forth in the municipal code.

CONDITIONS

1. Specific Requirements To This Site:
   A. Street:
      1. Since this project was part of the traffic analysis for Cascade Center, this development proposal will not require a traffic impact analysis update.
      2. Leroy Avenue: Leroy Avenue is a new major collector street under City of Molalla jurisdiction. Right-of-way width will be 60 feet and pavement width will be 34-46 feet. Cascade Center will be constructing Leroy Avenue with curb and gutter on the east side of the roadway. Applicant will be required to construct 6-foot wide sidewalks, a commercial driveway, and street lighting to complete the frontage improvements on the east side of the roadway to the south edge of the driveway wing for the private driveway to the east. Driveway centerline shall align with centerline of driveway on the west side of Leroy Avenue as proposed by Cascade Center. In the event that Cascade Center does not develop, applicant shall be required to construction road improvements commensurate with Cascade Center conditions along project frontage.
      3. W Main Street (OR 211) – W Main Street (OR 211) is an arterial street under Oregon Department of Transportation jurisdiction. Cascade Center will be constructing the south half of W Main Street with curb and gutter. Applicant shall be required to construct six-foot wide sidewalks and street lighting to complete the frontage improvements on the south side of the roadway to the east edge of the parcel. In the event that Cascade Center does not develop, applicant shall be required to construction road improvements commensurate with Cascade Center conditions along project frontage.
      4. Transit – Per the Transportation System Plan, the southeast corner of W Main Street and Leroy Avenue is designated as a bus stop. Applicant shall install a concrete pad, size and location to be determined by South Clackamas Transit District, for future installation of a bus shelter. Location shall be identified on plans for approval by City and South Clackamas Transit District and be constructed as part of the public improvements.

5. 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.
6. Access to public streets shall be limited to the private road access shown in Exhibit "B" of the application. Private roadway shall be paved and include pedestrian connections into the site on the north side of the drive. Access spacing shall conform to the Transportation Systems Plan. The proposed width of accesses shall meet the Molalla Standard Specifications for Public Works Construction.
7. A pedestrian crosswalk on the south side of the Leroy Avenue and private driveway shall be constructed with ADA ramps and applicant shall coordinate construction of the improvements with Cascade Center. Applicant shall be responsible to install all associated signing for this crosswalk.
8. Applicant shall dedicate a 10-foot wide Public Utility Easement along all public rights of way if not already provided in the Cascade Center subdivision plat.
9. Applicant may be required to reimburse the City for costs associated with the construction of Leroy Avenue with costs based on frontage foot calculations or as determined by the City.
10. Transportation SDC's – In accordance with MMC 13.14 this design review does increase the impacts to the public improvement facility and is therefore not exempt from transportation SDC charges. SDC's shall be calculated in accordance with the SDC methodology.

B. Storm:
   1. Leroy Avenue – There are no storm improvements available for connection of onsite storm improvements. See ODOT Streets below.
   2. ODOT Streets: Storm improvements shall meet ODOT requirements. Applicants storm system shall connect to the storm improvements on W Main Street (OR 211).
   3. Stormwater SDC's – In accordance with MMC 13.14 this design review does increase the impacts to the public improvement facility and is therefore not exempt from stormwater SDC charges. SDC's shall be calculated in accordance with the SDC methodology.

C. Sanitary:
   1. A sewer connection to this parcel exists but will be removed as part of the public improvements for Leroy Avenue. Applicant shall connect to sewer in W Main Street via new sewer lateral or coordinate with Cascade Center to provide a viable sewer connection to reconstructed sewer main on Leroy Avenue.
   2. Sanitary SDC's – In accordance with MMC 13.14 this design review does increase the impacts to the public improvement facility and is therefore not exempt from sanitary SDC charges. SDC's shall be calculated in accordance with the SDC methodology.

D. Water:
   1. A water connection to this parcel exists but will be removed as part of the public improvements for W Main Street (OR 211). Applicant shall connect to water in W Main Street via new water lateral or coordinate with Cascade Center to provide a viable water

connection to water main on Leroy Avenue.

2. Applicant shall be required to construct a new 8-inch waterline along the private drive for fire flow and extend to east limits of project. Applicant shall coordinate with Cascade Center for installation of a waterline cross to facilitate the extension of an 8-inch waterline. Applicant shall dedicate a 15-foot wide waterline easement per City requirements.
3. Water SDC's – In accordance with MMC 13.14 this design review does increase the impacts to the public improvement facility and is therefore not exempt from water SDC charges…this development is not exempt from water SDC charges. SDC's shall be calculated in accordance with the SDC methodology.

E. Parks:
   1. Parks SDC's – In accordance with SMC 13.70.110 this commercial development is exempt from parks SDC charges.

F. Franchise Utility Services:
   1. All utilities to the project shall be served underground services. No overhead crossings of public right of way shall be approved by the city.

DESIGN REQUIREMENTS & POLICIES

a. General Requirements:

A. For residential development projects, all public improvements shall be completed and accepted by the Public Works Department prior to issuance of building permits. No connections to City service shall be allowed until public improvements are completed. For commercial and industrial development projects, all public improvements shall be completed and accepted by the Public Works Department prior to issuance of any occupancy.

B. From the materials submitted, it appears that the storm drain, domestic water and sanitary sewer facilities will be obtained from main line connections and/or extensions. Separate engineering drawings reflecting the installation of these public utilities will be required.

C. No construction of, or connection to, any existing or proposed public utility/improvements will be permitted until all plans are approved by Staff, all fees have been paid, all necessary permits, bonding, right-of-way and easements have been obtained and approved by staff, and Staff is notified a minimum of 24 hours in advance.

D. Staff reserves the right to require revisions/modifications to the public improvement construction plans and completed street improvements, if additional modifications or expansion of the sight distance onto adjacent streets is required.

E. All public utility/improvement plans submitted for review shall be based upon a 22"x 34" format and shall be prepared in accordance with the City of Molalla Public Work's Standards.

F. All survey monuments on the subject site or that may be subject to disturbance within the construction area, or the construction of any off-site improvements shall be adequately referenced and protected prior to commencement of any construction activity. If the survey monuments are disturbed, moved, relocated or destroyed as a result of any construction, the project shall, at its cost, retain the services of a registered professional land surveyor in the State of Oregon to restore the monument to its original condition and file the necessary surveys as required by Oregon State law. A copy of any recorded survey shall be submitted to Staff.

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

H. The applicant shall contact the Oregon Water Resources Department and inform them of any existing wells located on the subject site. Any existing well shall be limited to irrigation purposes only. Proper separation, in conformance with applicable State standards, shall be maintained between irrigation systems, public water systems, and public sanitary systems. Should the project abandon any existing wells, they shall be properly abandoned in conformance with State standards and supply the City with a copy of the final document.

I. 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.

J. 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.

K. All public improvement designs shall meet the requirements of the Molalla Standard Specifications for Public Works Construction as amended by the Public Works Director.

L. General Easements – A 10-foot wide public utility easement shall be dedicated to the City adjacent to all public right-of-way and no structures are allowed to encroach into the easement. Applicant shall be required to submit a legal description and exhibit map for review and sign City easements. Once completed, applicant will be required to record easements with the County Recorder's Office and return the original document to the City prior to final occupancy.

M. General Wetland Requirements – The applicant will be required to provide Public Works with a letter of concurrence from the Department of State Lands regarding any wetlands on the subject property.

N. General Erosion Control – The applicant shall install, operate and maintain adequate erosion control measures in conformance with the standards adopted by the City of Molalla and DEQ during the construction of any public/private utility and building improvements until such time as approved permanent vegetative materials have been installed. Applicant or Applicant's Contractor shall be responsible for all erosion control requirements under the 1200-C permit and shall coordinate directly with DEQ for questions related to 1200-C permit compliance.

Oregon
Kate Brown, Governor

Department of Transportation
Region 1 Headquarters
123 NW Flanders Street
Portland, Oregon 97209
(503) 731.8200
FAX (503) 731.8259

July 2nd, 2019 ODOT #8763

ODOT Response

Project Name: Dollar General -Molalla	**Applicant:** Joshua Simon, Peter Krahenbuhl
Jurisdiction: City of Molalla	**Jurisdiction Case #:** DRW03-2019
Site Address: 728 W. Main St. (Hwy 211), Molalla, OR 97038	**Legal Description:** 05S 02E 08C **Tax Lot(s):** 00600
State Highway: OR 211	

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 requires the applicant to update the Traffic Impact Analysis (TIA) to reflect the following changes:

I. Revised traffic signal warrant analysis to be consistent with comments submitted for the Cascade Center development. The warrant should include no adjustment for populations under 10,000 for OR211 and Molalla Avenue intersection. The signal warrant analysis for Leroy Avenue did not meet ODOT requirements and the updated TIA should reflect the findings.

II. The TIA analysis for all intersections along OR 211 should include a center lane operating with a two stage left turn movement ("Two Way Left Turn Lane") which will reflect improve operation for all intersection.

III. The TIA should be updated where Leroy Ave operates with two-way stop control and two-stage left turn for both the south and north legs of the intersection with Main Street.

IV. The proposed right turn lanes at the development accesses and at Leroy Avenue requires State Traffic Engineer approval.

V. A continues left-turn lane shall be installed along the frontage of the development starting at the western access to the site through Leroy Avenue, ending at the eastern access to the site.

VI. Figure 5 and 7 of the TIA do not include the reported v/c for OR211/Molalla Avenue intersection (Intersection 7).

VII. Page 23 of the TIA, Intersection Operation – The report states that the northbound left turn at OR 211/Leroy Avenue is projected to exceed ODOT mobility target. Once the analysis is modified to include the two stage left-turn movement as indicated above, the operation of the intersection will improve to meet ODOT mobility target.

The revised TIA will be evaluated with updated signal warrant analysis for OR 211/Molalla Ave intersection.

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

Traffic Impacts

☒ The applicant shall submit an updated Traffic Impact Analysis (TIA) to assess the impacts of the proposed use on the State highway system. The analysis must reflect the changes detailed above. **Contact the ODOT Traffic representative identified below for any questions relating to the TIA.**

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. To provide space for a future planned signal pole/pedestrian pushbuttons/cabinets at the corner the applicant shall donate an additional 10ft farther back in both directions at the northwest corner of the property. 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 (Leroy Ave) to the state highway for the proposed use is required. Truck turning templates shall be provided as needed to ensure vehicles can enter and exit the approach safely. Site access to the state highway is regulated by OAR 734.51. For application information go to http://www.oregon.gov/ODOT/HWY/ACCESSMGT/Pages/Application-Forms.aspx.

Note: It may take **2 to 3 months** to process a State Highway Approach Road Permit.

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.

☒ Illumination within the ODOT right of way must be in accordance with AASHTO illumination standards and the ODOT Lighting Policy and Guidelines, which states that local jurisdictions must enter into an Intergovernmental Agreement (IGA) with ODOT wherein the local jurisdiction is responsible for installation, maintenance, operation, and energy costs.

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

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

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

Please send a copy of the Notice of Decision including conditions of approval to:

ODOT Region 1 Planning
Development Review
123 NW Flanders St
Portland, OR 97209

ODOT_R1_DevRev@odot.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 Abraham.tayar@odot.state.or.us
District Contact: Loretta Kieffer	503.667.7441 Loretta.L.kieffer@odot.state.or.us

Planning & Community Dev.
117 N Molalla Avenue
PO Box 248
Molalla, Oregon 97038
Phone: (503) 759-0205
communityplanner@cityofmolalla.com

Exhibit D - FINDINGS OF FACT

Chapter 17-3.2.040 NON-RESIDENTIAL BUILDINGS

This code section addresses building orientation; primary building entrances/windows; articulation and detailing; pedestrian amenities; and screening for mechanical equipment.

FINDINGS:

Elevations should incorporate changes in materials 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 or public parking area, pedestrian accessway or plaza may utilize changes in texture and/or color materials, provided that the design is consistent with the overall composition of the building. Staff find that the eastern facing elevation from the Applicant's submitted elevation profiles will be visible from adjacent streets and pedestrian walkways. The Applicant will be required to maintain a consistency of materials on the eastern facing elevation. As a condition of approval, the Applicant shall wrap the brick façade from the north and south elevations to the eastern elevation and extend that façade across the entirety of the eastern elevation. *17-3.2.040 (E) (2)*

As a condition of final approval, the applicant shall screen all wall-mounted, rooftop, and ground-mounted mechanical equipment. Equipment shall not be placed on the street facing elevation where other practical alternatives exist. Section *17-3.2.040 (G) (1)*

The Applicant's submitted application describes rooftop screening of the building's HVAC system by parapets located on 3-sides of the building (North, West, and South) and states that these parapets are of enough height to screen roof top mounted equipment. Staff finds that the north, west, and southern elevations do not identify the dimensions of the parapet screening or location of the HVAC system. As a condition of approval, the Applicant shall show the dimensions of the parapet screening or location of the HVAC system on the east, west, and southern elevation plans. Section *17-3.2.040 (G) (2)*

Chapter 17-3.3 ACCESS AND CIRCULATION

This code section contains standards for vehicular and pedestrian access, circulation and connectivity. The standards promote safe, direct and convenient options for walking and bicycling while accommodating vehicle access.

FINDINGS:

Since this project was part of the traffic analysis for Cascade Center, this development proposal will not require a traffic impact analysis. Section 17-3.3.030 (A)

As a condition of final approval, the Applicant shall ensure no visual obstructions greater than 2.5 ft in height shall be placed in vision clearance areas. Section 17-3.3.030 (G)

As a condition of approval, the Applicant will obtain an approach permit approved by the City of Molalla Public Works Director prior to construction. Section 17-3.3.030 (D)

As a condition of final approval, the Applicant shall design and construct all walkways in conformance to ADA requirements as required. 17-3.3.040 (B) (6)

For pedestrian amenities interior to the site, the Applicant's submitted application states:

1. That the Applicant will provide concrete sidewalks along the entire front of our store and a connection to the ROW sidewalk along Main Street.
2. That where a walkway crosses a parking area or driveway, the Applicant shall clearly mark these areas with a contrasting paving material.

Staff finds that pedestrian circulation amenities, as submitted, do not meet the requirements of Molalla Municipal Code. The provided pedestrian amenities are insufficient to facilitate continuous pedestrian circulation throughout the site and with future, adjacent sites.

As a condition of approval, the Applicant shall identify all pedestrian features on all submitted site plans and provide an additional east-west walkway and north-south walkway on the southern edge and eastern edge of the site, respectively. Section 17-4.2.040 (B) (2) (h)

As a condition of approval, the Applicant shall revise and resubmit pedestrian walkways and crossings interior to the site to meet continuous walkway requirements within the site and to create connectivity between the site and future developments.
17-3.3.040 (B) (1-5)

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

This section contains standards for landscaping, 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.

FINDINGS:

The Applicant did not provide a landscape island for the row of 12 parking spaces along the eastern side of the parking area (against the building). Please revise all submitted site plans to show a landscaping island on the southern end of this row, between the parking area and cross-hatched truck loading area. Section 17-3.4.030

As a condition of final approval, the Applicant will place wheel stops, curbs, bollards, or other physical barriers along the edges of all vehicle-maneuvering areas to protect landscaping from being damaged by vehicles. Section 17-3.4.030 (E) (4)

As a condition of final approval, the property owner shall maintain all landscaping in good condition, or otherwise replace it. Section 17-3.4.030 (G)

Staff finds that the Applicant has not provided enough detail on the locations and types of on-site exterior lighting to make a determination of compliance. As a condition of final approval, the Applicant shall be required to submit a plan showing illumination type, intensity, and precise locations of lighting to determine compliance with Molalla Municipal Code. Section 17-3.4.050, 17-4.2.040 (B) (2) (k).

Chapter 17-3.5 PARKING AND LOADING

FINDINGS:
The Applicant states that they will provide a minimum of two (2) bike spaces in the sidewalk along the North elevation. Staff finds that Molalla Municipal Code stipulates that the greater number between two (2) and the number of automobile parking spaces divided by five (5) shall determine minimum bicycle parking requirements. Given the Applicants proposed number of automobile parking spaces of thirty (30);

As a condition of approval, six (6) bicycle parking spaces shall be required.
Section 17-3.5.040 (A)

As a condition of final approval, the Applicant shall construct bicycle parking in conformance with the standards set out in Section 17-3.5.040 (B)-(D)

As a condition of final approval, the Applicant shall identify bicycle parking area(s) on the Sheet La.01, the Preliminary Grading and Drainage Plan, and Preliminary Utility Plan Section 17-4.2.040 (B) (2)(g)-(h)

Chapter 17-3.6 PUBLIC FACILITIES

The standards of Chapter 7-3.6 implement the public facility policies of the City of Molalla Comprehensive Plan and adopted City plans.

Transportation Standards Findings (17-3.6.020):

Since this project was part of the traffic analysis for Cascade Center, this development proposal will not require a traffic impact analysis update.

Leroy Avenue: Leroy Avenue is a new major collector street under City of Molalla jurisdiction. Right-of-way width will be 60 feet and pavement width will be 34-46 feet. Cascade Center will be constructing Leroy Avenue with curb and gutter on the east side of the roadway. Applicant will be required to construct 6-foot wide sidewalks, a commercial driveway, and street lighting to complete the frontage improvements on the east side of the roadway to the south edge of the driveway wing for the private driveway to the east. Driveway centerline shall align with centerline of driveway on the west side of Leroy Avenue as proposed by Cascade Center. If Cascade Center does not develop, applicant shall be required to construction road improvements commensurate with Cascade Center conditions along project frontage.

W Main Street (OR 211): W Main Street (OR 211) is an arterial street under Oregon Department of Transportation jurisdiction. Cascade Center will be constructing the south half of W Main Street with curb and gutter. Applicant shall be required to construct six-foot wide sidewalks and street lighting to complete the frontage improvements on the south side of the roadway to the east edge of the parcel. If Cascade Center does not develop, applicant shall be required to

construction road improvements commensurate with Cascade Center conditions along project frontage.

Per the Transportation System Plan, the southeast corner of W Main Street and Leroy Avenue is designated as a bus stop. Applicant shall install a concrete pad, size and location to be determined by South Clackamas Transit District, for future installation of a bus shelter. Location shall be identified on plans for approval by City and South Clackamas Transit District and be constructed as part of the public improvements.

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 enough 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 for Public Works to process plat documents.

Access to public streets shall be limited to the private road access shown in Exhibit "B" of the application. Private roadway shall be paved and include pedestrian connections into the site on the north side of the drive. Access spacing shall conform to the Transportation Systems Plan. The proposed width of accesses shall meet the Molalla Standard Specifications for Public Works Construction.

A pedestrian crosswalk on the south side of the Leroy Avenue and private driveway shall be constructed with ADA ramps and applicant shall coordinate construction of the improvements with Cascade Center. Applicant shall be responsible to install all associated signing for this crosswalk.

Applicant shall dedicate a 10-foot wide Public Utility Easement along all public rights of way if not already provided in the Cascade Center subdivision plat.

Applicant may be required to reimburse the City for costs associated with the construction of Leroy Avenue with costs based on frontage foot calculations or as determined by the City.

Transportation SDC's – In accordance with MMC 13.14 this design review does increase the impacts to the public improvement facility and is therefore not exempt from transportation SDC charges. SDC's shall be calculated in accordance with the SDC methodology.

Public Use Areas Findings 17-3.6.030:
Parks SDC's – In accordance with SMC 13.70.110 this commercial development is exempt from parks SDC charges.

Sanitary Sewer and Water Service Improvements Findings (17-3.6.040):

Sanitary: A sewer connection to this parcel exists but will be removed as part of the public improvements for Leroy Avenue. Applicant shall connect to sewer in W Main Street via new sewer lateral or coordinate with Cascade Center to provide a viable sewer connection to reconstructed sewer main on Leroy Avenue.

Sanitary SDC's – In accordance with MMC 13.14 this design review does increase the impacts to the public improvement facility and is therefore not exempt from sanitary SDC charges. SDC's shall be calculated in accordance with the SDC methodology.

Water: A water connection to this parcel exists but will be removed as part of the public improvements for W Main Street (OR 211). Applicant shall connect to water in W Main Street via new water lateral or coordinate with Cascade Center to provide a viable water connection to water main on Leroy Avenue.

Applicant shall be required to construct a new 8-inch waterline along the private drive for fire flow and extend to east limits of project. Applicant shall coordinate with Cascade Center for installation of a waterline cross to facilitate the extension of an 8-inch waterline. Applicant shall dedicate a 15-foot wide waterline easement per City requirements.

Water SDC's – In accordance with MMC 13.14 this design review does increase the impacts to the public improvement facility and is therefore not exempt from water SDC charges. SDC's shall be calculated in accordance with the SDC methodology.

Storm Drainage and Surface Water Management Facilities Findings (17-3.6.050):

Storm: Leroy Avenue – There are no storm improvements available for connection of onsite storm improvements. See ODOT Streets below.

ODOT Streets: Storm improvements shall meet ODOT requirements. Applicants storm system shall connect to the storm improvements on W Main Street (OR 211).

Stormwater SDC's – In accordance with MMC 13.14 this design review does increase the impacts to the public improvement facility and is therefore not exempt from stormwater SDC charges. SDC's shall be calculated in accordance with the SDC methodology.

Utilities Findings (17-3.6.060):

All utilities to the project shall be served underground services. No overhead crossings of public right of way shall be approved by the city.

Design Requirements and Policies:

For commercial and industrial development projects, all public improvements shall be completed and accepted by the Public Works Department prior to issuance of any occupancy.

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.

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.

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.

All public utility/improvement plans submitted for review shall be based upon a 22"x 34" format and shall be prepared in accordance with the City of Molalla Public Work's Standards.

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.

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

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.

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.

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.

All public improvement designs shall meet the requirements of the Molalla Standard Specifications for Public Works Construction as amended by the Public Works Director.

General Easements – A 10-foot wide public utility easement shall be dedicated to the City adjacent to all public right-of-way and no structures can encroach into the easement. Applicant shall be required to submit a legal description and exhibit map for review and sign City easements. Once completed, applicant will be required to record easements with the County Recorder's Office and return the original document to the City prior to final occupancy.

General Wetland Requirements – The applicant will be required to provide Public Works with a letter of concurrence from the Department of State Lands regarding any wetlands on the subject property.

General Erosion Control – The applicant shall install, operate and maintain adequate erosion control measures in conformance with the standards adopted by the City of Molalla and DEQ during the construction of any public/private utility and building improvements until such time as approved permanent vegetative materials have been installed. Applicant or Applicant's Contractor shall be responsible for all erosion control requirements under the 1200-C permit and shall coordinate directly with DEQ for questions related to 1200-C permit compliance.

Chapter 17-4.2.050 APPROVAL CRITERIA FOR SITE DESIGN REVIEW(E)(F)

Findings:
Staff finds that impacts to adjacent properties due to noise, odor, vibration, smoke, dust, or visual impact are either not applicable to the project or have been addressed in previous sections. Impacts due to light and glare may be mitigated in site design. As a condition of approval, the Applicant shall design exterior lighting to minimize impacts of glare upon adjacent properties. These design elements shall be identified on the site plans. Section 17-4.2.050 (E)

As a condition of approval, the Applicant shall meet all existing conditions of approval for the site or use as prescribed by this document. Section 17-4.2.050 (E)

Chapter 18.02. SIGNS

FINDINGS:

As a condition of approval, the Applicant shall apply for and receive permits for any and all signs associated with this development.