March 22, 2024

Colin Cortes
City of Woodburn
Community Development Department
270 Montgomery Street
Woodburn, OR 97071

RE: US Market Gas Station at 2115 Molalla Road (CU 24-01, DR 24-01, and ZA 24-01) Completeness Response

Mr. Cortes:

Please accept this letter and the accompanying materials as our response to the City's February 22, 2024, determination that application 23-124010-PLN was incomplete as originally submitted. We believe the materials provided here fully respond to the items outlined in the City's letter and provide the necessary basis to deem the application complete. We look forward to continuing to work with City staff on any issues, as necessary, during the review and approval process.

Our responses to the incompleteness items are as follows:

Responses to Part 1: Completeness Items

A. ***Narrative.*** *Revise the conditional use narrative under Table 2.03A to specify that the CU request for a "gasoline station" is for that subset of the whole group of "automotive maintenance and gasoline stations, including repair services" as listed in Table 2.03, Use B2, and so excludes any automotive maintenance and repair services (as appears to be the case).*

Response: The response in the conditional use (CU) narrative under Table 2.03A has been revised to specify that the request for a "gasoline station" (and car wash) pertains to the subset of the use category "automotive maintenance and gasoline stations, including repair services" and does not include any other automotive maintenance or repair services. Refer to the revised response in Attachment 1. This item is complete.

B. ***Frontage/street improvements:*** *Revise the Sheet L100 landscape plan to:*

1. *Indicate in the legend for each tree species either the size category at maturity as Table 3.06B describes or height in feet at maturity.*
2. *Demonstrate that the landscape strip conforms with the 3.01.04B last paragraph (grass and irrigation).*

Response: The landscape plan has been revised as requested above. Refer to Sheet L100 in the revised Preliminary Land Use Plans in Attachment 2. This item is complete.

C. ***Vision clearance area (VCA) / sight triangles:*** *Revise the site plan sight triangles to shift them north to align with the post-dedication right-of-way (ROW) boundary instead of the existing one, in order to conform with Figure 3.03A.*

Response: The sight triangles on the Preliminary Site Plan have been shifted north to align with the post-dedication right-of-way boundary. Refer Sheet C100 in the revised Preliminary Land Use Plans in Attachment 2. This item is complete.

D. ***Driveway:*** *Regarding the proposed driveway at 26 feet width:*

1. *Submit Woodburn Fire District documentation allowing the developer to make use of Table 3.04A footnote 7 and revise the narrative under 3.04.04 to refer to the documentation.*

Response: Applicant's original submittal incorrectly attributed the need for a 26-foot wide driveway to safe fire and emergency service access/egress. The planned 26-foot wide driveway at Molalla Road is necessary to accommodate safe and efficient turning movements for fuel trucks and other delivery vehicles that will routinely access the site. A 26-foot wide driveway accommodates right turns onto Molalla Road, by fuel trucks and large delivery vehicles, without the need to enter into the eastbound lane of travel. Subsequently, this additional driveway width will help to improve the safety of motorists traveling on Molalla Road and will avoid disruption to the normal traffic operation of the roadway (see the truck turning model on the Preliminary Site Plan in Attachment 2).

2. *Revise Sheet C100 and its keyed Note 1 to (a) symbolize a driveway apron that conforms with standard drawings 4150-1 & 4150-4 and (b) end the note with, "conforming with City of Woodburn Public Works unless the Oregon Dept. of Transportation in writing directs otherwise".*

Response: Keyed note 1 on the revised Preliminary Site Plan has been revised as requested above. Refer to Sheet C100 in the revised Preliminary Land Use Plans in Attachment 2. This item is complete.

E. ***Directional signage:*** *Based on 3.05.02J, indicate directional signs (max 3½ ft high if ground-mounted) identifying the way out to the highway, such as showing the state highway symbol and an arrow.*

Response: Directional signs identifying the way out to the highway are provided on the revised Preliminary Site Plan in Attachment 2. Refer to keyed note 22 on Sheet C100. This item is complete.

F. ***TIA:*** *Revise the transportation impact analysis to address:*

1. *City transportation consultant comments 2 & 3 from the enclosed memo of February 20 (Enclosure 2); and*
    - *Comment 2:* *On Page 13, the TIA states that half of the pass-by trip reduction was applied to OR 211 and half to OR 99E and OR 214. However, based on the definition of a pass-by trip, pass-by trips should only be applied only to OR 211 (i.e., the roadway directly adjacent to the proposed development). DKS would suggest removing the pass-by trip reductions from the OR 214/OR 99E intersection and re-evaluating the vehicle operations at the OR 214/OR 99E intersection and the OR 211/Gas Station Driveway intersection. It is unlikely that this adjustment will change the overall vehicle*

operations findings at either intersection, but it may alter the proportionate share calculations.

Response: The diverted trips were eliminated from OR 215/OR 99E and the trip distribution for pass-by-trips was reevaluated for OR 211 from the directional split based on existing patterns. The vehicle operations at the OR 214/OR 99E intersection and the OR 211/gas station driveway intersection were re-evaluated accordingly. Refer to the revised Transportation Impact Analysis (TIA) in Attachment 4. This item is complete.

- *Comment 3: Please include an evaluation of left-turn lane warrants for the gas station site driveway in addition to the Safeway Access and June Way/Woodburn Place West Access intersections.*

Response: An evaluation of left-turn warrants for the gas station driveway in addition to the Safeway access and June Way/Woodburn Place West access intersections is included in the revised TIA in Attachment 4. This item is complete.

2. *Oregon Department of Transportation (ODOT) comment 1 from the enclosed memo of February 21 (Enclosure 3).*

- *Comment 1: The Oregon Highway Plan (OHP) v/c mobility target for OR 211 (district highway, within UGB, non-MPO, 45 MPH) at the Cooley Road intersection is 0.90 rather than 0.95 as cited. As the intersection is operating well below the mobility target, this will not have an effect on the operational analysis results nor the conclusions of the study.*

Response: This item has been addressed in the revised TIA (Attachment 4). This item is complete.

G. ***Bicycle parking:*** *The site plan indicates through Keyed Note 19 for covered bicycle parking that it is, "covered by building overhang". Elevation Sheet A3.1 does not allow determination of conformance – that the roof overhang of the convenience store is at least 4 ft deep, enough to span the two 2-ft wide bicycle parking stalls. Use any of drawings and text to demonstrate conformance.*

Response: The roof overhang at the convenience store's main entrance has a minimum depth of 4 feet which is wide enough to cover two 2-foot-wide bicycle parking stalls. Detailed measurements and labels have been added for clarification to the North Elevation on Sheet A3.1 and the West Elevation on Sheet A3.2 of the revised Preliminary Architectural Drawings provided in Attachment 3. This item is complete.

H. ***Parking:***

1. ***Minimum parking:*** *The proposed use requires minimum 25 parking stalls, which the narrative under Table 3.05A correctly describes, but the site plans illustrate only 23 stalls.*

Response: The revised Preliminary Site Plan (Sheet C100) in Attachment 2 correctly describes and illustrates the required minimum 25 parking stalls. The parking spaces allocated to each of the 6 fuel pumps are included in the overall parking count. During the Pre-Application Meeting, Staff discussed this matter, suggesting that the Applicant could interpret the requirement for 1 parking stall per fuel pump island as applying to the area next to each fuel pump. This interpretation is substantiated by the practical considerations inherent in gas station operations. When customers arrive to refuel their vehicles, they require direct access to the fuel pump island, and it is common for customers refueling their vehicles to exit their cars to enter the convenience store while their vehicles are being refueled rather than choosing a different parking space after refueling. Furthermore, the retail area requires separate minimum parking stalls which are provided. This item is complete.

2. ***Apartments parking:*** *There is also the problem that necessary additional parking that would make up for the parking stalls displaced by the cross accesses at Woodburn Place and Woodburn Place West Apartments are missing, 2 displaced from the east and as many as 3 displaced from the west. (See also Part II, Item AA). The required parking is as many as 30 stalls.*

   If wanting to investigate deviation, see Zoning Adjustment (ZA) of Table 3.05A row 6 as 5.02.06C.9 allows (max 5% reduction) or variance (VAR) through 5.03.12. (Without deviation, means of conformance could necessitate removing the proposed car wash or shrinking the convenience store.)

Response: As discussed in the CU narrative in the response to WDO 3.05.03A.2., three off-street parking spaces will be removed from the Woodburn Place West Apartments and two spaces will be removed from the Woodburn Eastside Apartments for increased site circulation through a shared access easement. Woodburn Place West Apartments is a 258-unit multiple-family development approved in September 2021 (CU 22-01 & DR 22-08). Per WDO Table 3.05B, multiple-family dwellings require two parking spaces per unit. The site provides 516 parking spaces, meeting this standard. Woodburn Eastside Apartments is a 220-unit multiple-family development approved in May 2021 (CU 2019-04, DR 2019-06, & VAR 2020-05 Related to ANX 2919-01). The site provides 450 parking spaces, 10 spaces in excess of the required 440 spaces. Circulation patterns between the two multiple-family developments allow residents to park within either development. After the demolition of five off-street parking spaces, the multiple family developments collectively provide an excess of five parking spaces; therefore, they continue to meet the parking standards of the WDO and no additional parking spaces are necessary.

3. ***Carports:*** *The west cross access that eliminates 3 parking stalls from Woodburn Place West Apartments at 2045 Molalla Road eliminates specifically 3 from under a carport. To maintain conformance, provide a carport over a minimum stalls on the subject property equal to the number of displaced stalls. (3.05.03F.2 requires that minimum half of apartment parking be in garages or under carports. See also Part II, Item AA).*

Response: Carports will be installed at Woodburn Place West Apartments to replace the number of carports displaced by the project. The exact positioning of these carports will be decided at a later stage, once a more strategic plan has been developed. Applicant requests this item be addressed at the time of conditioning. This item will be completed.

4. ***Shared parking agreement:*** *The parking displacement situation necessitates a shared parking agreement through 3.05.05. Revise the narrative to address, and submit a draft agreement among the two apartment complexes and the subject property that addresses at least 3.05.05D.2. If the convenience store operator has opinions about time, place and manner restrictions, outline them (in the revised narrative) for City consideration.*

Response: Applicant supports the establishment of an easement on the adjacent apartment sites that would accommodate unlimited parking for patrons of the convenience store. Such easement can be established by Applicant prior to the issuance of building permits. Subsequently, Applicant requests that this item be a condition of approval of the subject application.

5. ***Operations:*** *Besides a condition for a shared parking agreement, expect also a condition that requires signage indicating that apartment tenants may park on the subject property (at least in certain stalls north past the convenience store). If the convenience store operator has opinions about how to administer, outline these.*

Response: As outlined above, both apartment sites continue to meet the minimum required vehicle parking even after the removal of 5 vehicle parking spaces that are necessary to accommodate site-to-site vehicle circulation. Subsequently, there is no need to accommodate parking for apartment residents on the subject site.

6. ***Carpool/vanpool (C/V):*** *The narrative under Table 3.05C says that the site plan has a C/V stall at the north rear of the convenience store, but there is none – unless the stall marked with a bold gray "C" means to indicate C/V instead of a compact stall. Revise the site plan to designate the C/V stall as "C/V" on the site plan.*

Response: As discussed in the CU narrative in the response to WDO 3.05.03H, a carpool/vanpool (C/V) stall is provided on the northern side of the planned convenience store, within 50 feet of the perimeter walkway. The stall is identified with keyed note 17 on the Preliminary Site Plan (Sheet C100) in Attachment 2. Striping and signage for the C/V stall will meet the applicable WDO standards. This item is complete.

I. ***Walkway islands/peninsulas:*** *To conform with 3.06.03C.4, revise the site and landscape plans to provide a landscaped island or peninsula along the west side of the wide walkway where it passes through the parking aisle at the convenience store. (Revision could change the walkway alignment.)*

Response: As required in the accessible parking space requirements in Oregon Revised Statutes (ORS) 447.233(2)(d), the access aisle for an accessible parking space shall be located on the passenger side of the parking space except that two adjacent accessible parking spaces may share a common access aisle. Only one accessible parking space is provided; therefore, the realignment of the walkway on the driver's side of the accessible stall so that it is immediately adjacent to the landscape island is not feasible without losing a parking space. The wide walkway is still positioned near the landscape island, allowing it to benefit from the shade provided by the landscaping. Similarly, the close proximity of the crossing point to the convenience store roof overhang and the fueling area canopy guarantees ample shade for pedestrians, fulfilling the intended purpose of this standard. No change is necessary. This item is complete.

J. ***Recycling and trash enclosure:*** *Revise the narrative under 3.06.06 and if necessary to site plans to clarify if any outdoor storage of recycling and trash is proposed or not, and if proposed, how it conforms to Table 3.06D, row 15, and 3.06.06B.5, 6, & 7.*

If an enclosure is required, staff recommends that the darker color or hue be along the wall bottom faces and the lighter along the wall upper faces. Staff recommends also that, assuming concrete masonry unit (CMU), that the max 20% of wall that may be ground-face CMU (i.e. CMU that is neither scored nor textured), if any, be either at elbow level (beginning at 6th course of CMU from ground) or along the wall upper faces. Include wall elevation detail drawings.

Response: No recycling and trash enclosure is planned. As stated in the original narrative under 3.06.03(C)(4), The apartment development's trash enclosure, located on the abutting property to the north, is planned to be jointly used. A revised response to 3.06.05 clarifying the planned joint use is provided in Attachment 1. This item is complete.

K. ***Lighting:***

1. *Revise the Sheet C105 photometrics plan, specifically the luminaire and pole schedule, to indicate how the vendor models conform to the hue / color temperature specification of 3.11.02C.*
2. *Submit cut/spec sheets for the vendor models.*

Response: The Preliminary Photometric Plan will be revised to show conformance to all applicable WDO standards at the time of building permit submittal. Applicant requests this item be addressed at the time of conditioning. This item will be completed.

L. ***Building code:*** *The Building Official identified that the car wash east wall is proposed at the property line, and that one of the following needs to happen:*

1. *The east elevation is revised to indicate no doors, windows, or other penetrations because the wall would require a certain level of fire-rated construction;*
2. *The east wall is set back from the property line; or*
3. *The developer grants on the adjacent property a "no-build" easement.*

The Building Official can elaborate on any of these. Contact Melissa Gitt, (503) 980-2430, melissa.gitt@ci.woodburn.or.us. Revise the narrative under Table 2.03C to address the issue, and if necessary, the site plans too.

Response: The windows along the east wall of the car wash abutting the property line are planned to remain. A 25-foot no-build easement will be granted adjacent to the property as shown on the revised Preliminary Architectural Drawings in Attachment 3. This item is complete.

*M. **Storm report:***

1. *The storm report was missing both in Adobe PDF and from the binders – only the divider cover tabs for Exhibit H were present – but first see 2. below.*
2. *If the report does not already do so, revise to address ODOT direction per the enclosed e- mail of February 22 (Enclosure 4): the means of stormwater run-off detention and treatment, including the size of the proposed underground detention facility.*

Response: The Preliminary Stormwater Report has been included as Attachment 5 which addresses the direction from ODOT. This item is complete.

*N. **Pumps:** Revise site plan Keyed Note 7 to specify if the number of gas pumps is a half dozen (3 islands times 2 equals 6).*

Response: Keyed note 7 on the Preliminary Site Plan was revised to specify the number of gas pumps. Refer to the revised Preliminary Land Use Plans in Attachment 2. This item is complete.

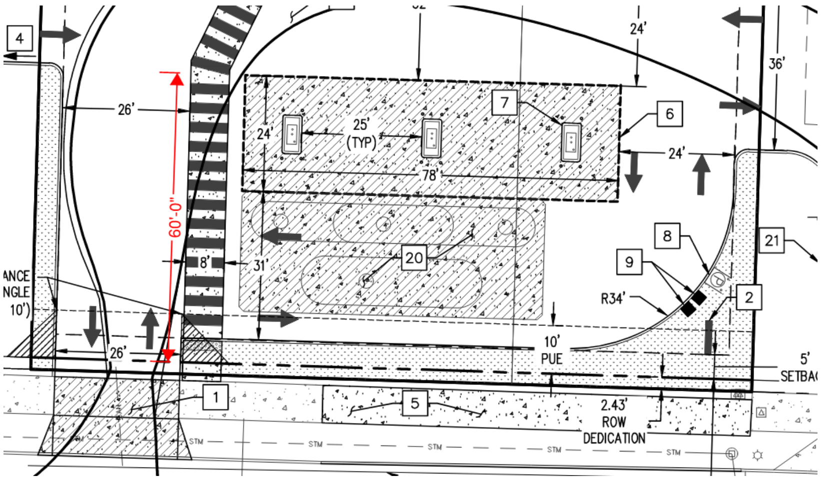
*O. **Queueing:** There appears too little room for vehicle queues at the pumps, and the application materials lack information about how queueing and circulation would operate. Guiding questions include:*

1. *Is queueing one way?*
2. *Are some pumps allocated for self-serve and others for attendant service or "mini serve"?*
3. *What signage and striping should the site plans illustrate and note to describe intended queueing?*
4. *How is queueing handled in the field during operations?*
5. *What would prevent queued vehicles from backing up onto the highway?*
6. *Because the site plan indicates no attendant booth, where and how would the attendant(s) be stationed?*

Response: This project involves the construction of a small-scale gasoline station. Typically, such establishments do not require excessive dedicated queuing space due to the specific characteristics of their operations and customer behavior. In contrast to larger discount or membership-based gas stations like Fred Meyer and Costco, where lengthy queues are common due to high customer volumes and competitive pricing, smaller gas stations generally cater to a more localized customers with lower traffic volumes resulting from pass-by trips. Customers at small gas stations are inclined to stop only if they perceive that their wait will be brief, thereby minimizing the need for extensive queuing areas.

Upon entering the site via the driveway, customers typically proceed directly toward the convenience store. The proposed design includes six fueling spaces and approximately 60 feet of available queuing area (refer to Figure 1), which would accommodate approximately three additional vehicles. No queuing concerns are anticipated. This item is complete.

Figure 1: Queuing Area



P. ***Water station:*** *Explain what a "water station" is, which the site plan illustrates near the site southeast corner, revising Keyed Note 9 to describe.*

Response: An air and water station, commonly found at gas stations, is a self-service tool that lets you inflate your tires with air and use the water to top off your car's radiator fluid or clean your windshield or headlights. Keyed note 9 on the revised Preliminary Site Plan in Attachment 2 has been revised to say, "Air and Water Pump Machine Station" to clarify that the air and water station is one machine. This item is complete.

Q. ***Public Works:*** *See the enclosed Public Works Department comments (Enclosure 1). The contact is Dago Garcia, P.E., City Engineer, (503) 982-5248, dago.garcia@ci.woodburn.or.us.*

1. *Applicant needs to provide additional information on how the proposed private storm system and private sewer system comply with the City's Storm Drainage and Sanitary Sewer ordinances, see Ordinances 1790 and 2620. The gas pumps area shall comply with Federal, State, and City's regulations for containment of spills and storm discharges.*

   Pending ODOT's and Marion County Plumbing permit review and approval the minimum requirement is to have an oil/water and sand separator on the private storm system.

   Pending Marion County Plumbing permits approval, the minimum requirement is to have an oil/water separator and grease interceptor in the private sewer system. Please submit the attached "nonresidential wastewater discharge Survey" form to Carol Limbach for additional information/requirements (carol.leimbach@ci.woodbur.or.us).

Response: The Preliminary Stormwater Report included in Attachment 5 provides all applicable information regarding the private storm system. The site has been designed to contain spills. The required nonresidential wastewater discharge survey will be submitted at the time of building permit submittal. This item is complete/will be completed.

Responses to Part 2: Staff Recommended Revisions

Part II anticipates developer actions and revisions, whether before or after public hearing and ideally before staff finalizes conditions of approval. Read in whole first, taking notes, before asking staff to clarify or revising app materials. I'd be happy to set up a virtual meeting between staff and the applicant or applicant's team to help understand the items and continue discussion from there. A phone call to me would also suffice, (503) 980-2485.

*AA. **Cross access drive aisles:** Revise the west cross access drive aisles from two-way at 24 ft wide with two striped arrows to one-way eastbound at minimum 10 ft and maximum 12 ft wide with one striped arrow and an MUTCD-compliant "do not enter" sign. (See also Part I, Item H).*

Response: A shared parking agreement is set to be established between the adjacent apartment properties and the subject site, as outlined in this letter. With the implementation of a cross-access easement and shared parking agreement, restricting vehicular circulation through the properties is counter-productive. The access aisle to the west will be maintained at a width of 24 feet. This item is complete.

*BB. **Architectural Wall:** Staff is considering a compromise position: A low Architectural Wall minimum height 4 ft (which is equal to 6 courses if CMU), with a cap of smoother concrete, extending along a fraction of the property perimeter:*

- *The east property line segment north of the car wash and the north property line westerly to 5 ft short of the walkway near the cross access drive aisle.*
- *The east property line segment south of the car wash to 2 ft short of the cross access drive aisle.*
- *The east property line segment starting 2 ft south of the cross access drive aisle and ending at the edge of the streetside public utility easement (PUE) as well as stair-stepping at the south if and as necessary to conform with Figures 2.06A & B.*

Have each wall segment end shall have a pier or pilaster minimum 16 inches wide relative to wall face and projecting minimum 4 inches. Each segment is to have a minimum number of piers or pilasters equal to a ratio of 1 per 40 ft of wall. Each pier or pilaster is to be capped with ornamental concrete in the form of any of a shallow-sloped pyramid or sphere or other finial atop such pyramid. The site northeast corner wall may be partly made of opaque cedar wood fencing if the wall remains mostly masonry.

Response: As outlined in the CU narrative, placing a wall around the property would compromise site safety, impede pedestrian connectivity, and detract from the overall aesthetic appeal of the area. While a 4-foot-tall wall, as suggested in this recommendation, would be less obtrusive than the mandated 6-foot wall, the Applicant maintains that the proposed landscaping serves as a more fitting screen, aligning better with the area's aesthetic character and garnering greater appeal from neighboring properties, all while fulfilling the same purpose. This item can be completed, if necessary.

CC. __Architecture:__

1. ***__Awnings/canopies:__** Based on WDO 3.07.06B.1b(4) & B.5a, provide of any of a canopy, fixed awning, or roof overhang at the convenience store main entrance, minimum depth 4 ft, minimum width 9 ft, and minimum height clearance 9 ft:*

__Response:__ A roof overhang at the convenience store's main entrance with a minimum depth of 4 feet, width of ±70 feet, and height of ±10 feet is provided. Detailed measurements and labels have been added for clarification to the North Elevation on Sheet A3.1 and the West Elevation on Sheet A3.2 in the revised Preliminary Architectural Drawings provided as Attachment 3. This item is complete.

2. ***__Windows:__** Add 2:*
   a. *1, which could be translucent, on the convenience store west elevation, at least 2 ft narrowest dimension and at least approximately 8 square ft (sq ft).*
   b. *1, which could be translucent or spandrel glass, on the convenience store north elevation, at least 2 ft narrowest dimension and at least approximately 8 square ft (sq ft), ideally aligned with the west gable end.*

__Response:__ A 3-foot by 3-foot window (9 square feet) has been added to the convenience store's north and west elevations as shown on the revised Preliminary Architectural Drawings in Attachment 3. This item is complete.

3. ***__Lighting:__** Revise the convenience store west wall-packs from 3 to 2.*

__Response:__ The convenience store west wall-packs have been reduced from 3 to 2 as shown on the revised Preliminary Architectural Drawings in Attachment 3. The Photometric Plan will be revised at the time of building permits. This item is complete.

4. ***__Gas pump canopy:__** Revise the elevations to indicate maximum height 16 ft.*

__Response:__ The gas pump canopy has been lowered to indicate a maximum clearance height of 16 feet as shown on the revised Preliminary Architectural Drawings in Attachment 3. This item is complete.

*DD. **__SDCs:__** Regarding system development charges (SDCs), the traffic one can be very expensive per Resolution No. 2188 (April 25, 2022), Exhibit "A" that provides for charges based on Institute of Transportation Engineers (ITE) codes including ITE code 960, super convenience market/gas station, based on vehicle fueling positions. Regarding a car wash, footnote 3 explains, "For ITE codes not listed in the schedule above, the SDC charges shall be calculated in accordance with the*

April 2022 Transportation System Development Charges Study." Please investigate, ask the Public Works Department Engineering Division any questions about SDC administration, and determine if the developer's budget can accommodate all SDCs.

Response: Applicant will coordinate the Public Works Department Engineering Division regarding traffic SDCs. This item will be completed.

Thank you for reviewing our application. We believe these additional clarifications and plan revisions completely respond to the items included in your February 22, 2024, incompleteness letter. Please contact me if you require any additional information.

Sincerely,

AKS ENGINEERING & FORESTRY, LLC

Zach Pelz, AICP

3700 River Road N, Suite 1

Keizer, OR 97303

(503) 400-6028 | pelzz@aks-eng.com

Attachments:

1. Revised Sections of the CU Narrative
2. Revised Preliminary Land Use Plans
3. Revised Preliminary Architectural Drawings
4. Revised Transportation Impact Analysis
5. Preliminary Stormwater Report
6. Letter of Incompleteness for CU 24-01, DR 24-01, & ZA 24-01

Attachment 1: Revised Sections of the CU Narrative

WOODBURN DEVELOPMENT ORDINANCE (WDO)

2.03 Commercial Zones

[…]

Table 2.03A – Uses Allowed in Commercial Zones	
Use	CG Zoning District
Commercial Retail and Services	
Automotive maintenance and gasoline stations, including repair services	CU [3]
[…] 3. Allowed outright if not within 200 feet of residentially zoned properties […]	

Response: The planned project includes a **convenience store with a** gasoline station ~~with a convenience store~~ and car wash. **Gasoline stations and car washes are uses that are subsets of the larger use group of "automotive maintenance and gasoline stations, including repair services." The planned project includes only a gasoline station and a car wash. No other automotive maintenance or repair services are planned.** The planned convenience store is permitted outright in the CG zone. The car wash is also permitted outright, as it is greater than 200-feet away (±201-feet) from the residentially zoned properties located south of Molalla Road. The planned gasoline station is considered a conditional use because it is located within 200-feet (±132-feet) of the residentially zoned properties as shown on the Preliminary Site Plan provided in Exhibit B. Accordingly, a Conditional Use Permit is included in this consolidated application.

Per WDO 5.03.01, "A conditional use is an activity which is permitted in a zone but which, because of some characteristics, is not entirely compatible with other uses allowed in the zone and cannot be permitted outright." Because the conditional use review is triggered due to the proximity of the gasoline station to the residential properties located south of Molalla Road, the City is authorized to add conditions to its approval only as necessary to mitigate potential impacts to those residential properties that accrue from the gasoline station. Furthermore, because a convenience store, and a host of similar and more intensive commercial and residential uses are permitted outright in the CG zone, the City has already acknowledged, through the application of the CG zoning designation to the subject site, that such uses can be made compatible with abutting properties through application of the standard Site Design Review standards and procedures. For this reason, the City's analysis of impacts from a gasoline station must only consider the incremental impact beyond what could be generated by other uses permitted outright in the CG zone.

Per WDO 5.03.01.B. the City shall approve a conditional use if: 1) the planned use is permitted as a conditional use in the zone; 2) the planned use complies with the development standards of the zoning district; and 3) the planned use is compatible with surrounding properties. Per WDO 5.03.01, the City is authorized to apply conditions of approval to a conditional use as necessary to mitigate potential impacts from noise, light, air quality, aesthetics, and vehicular traffic – in this instance, as necessary to mitigate potential impacts of the gasoline station to the residentially zoned properties to the south. As detailed is this narrative, the gasoline station is not anticipated to generate impacts to the residentially zoned properties south of Molalla Road beyond other uses permitted outright in the CG zone and can meet the applicable standards and criteria of the WDO.

[…]

3.04 Vehicular & Bicycle/Pedestrian Access

[…]

3.04.03 Access Management: Driveway Guidelines and Standards

[…]

Table 3.04A – Access Requirements		
		Commercial or Industrial Use
Paved Width of Driveway (feet) [3, 4, 7, 8]	1-way	10 minimum 20 maximum
	2-way	Commercial/Mixed-Use: 20 minimum 24 maximum* *(Add 12 ft maximum if a turn pocket is added)
		Industrial: 22 minimum 36 maximum* *(Add 8' if a turn pocket is added)
[…] 7. It is permissible that the Oregon Fire Code (OFC) as administered by the independent Woodburn Fire District may cause driveway widths to exceed minimums and maximums. It is a developer's responsibility to comply with the OFC. […]		

Response: A two-way driveway provides access to Molalla Road. The driveway is 26 feet in width and exceeds the maximum width of 24 feet for a two-way driveway with no turn pocket. The additional two feet is required **to safely accommodate service vehicles to the site. The necessary driveway width is determined through standard engineering practices and truck turning modeling for an Interstate Semi-Trailer that would be utilized to deliver fuel and other typical goods to the site. The truck turn modeling is shown on the Preliminary Site Plan in Attachment 2 and indicates the 26-foot driveway is the minimum width necessary to safely accommodate service vehicles to the site. A reduced driveway width jeopardize safe and efficient vehicular circulation through the site and on Molalla Road as it would require delivery vehicles making a right turn onto Molalla Road to partially utilize the opposing (eastbound) lane of travelA 26-foot wide driveway approach eliminates this problem.** ~~for fire safety, which, per note 7 of Table 3.04A, is permissible.~~ This standard is **equally** met.

The remaining three access points are for shared access between the adjacent properties per WDO 3.04.03(D)(2) above, and range in width from 24-feet to 36-feet wide. The shared access point on the northern side of the property is 26-feet wide, as required for fire safety (see the Preliminary Fire Service Plan in Exhibit B). The shared access point connecting the subject site to the Woodburn Eastside Apartments is 36 feet and is necessary for fuel truck access and other delivery truck access to the site as shown on the Preliminary Site Plan in Exhibit B. The shared access point to the west is 24 feet. Driveway separation is maximized between the driveways providing access to Molalla Road from the adjacent parcels. The shared access point to the Woodburn Eastside Apartments is provided to minimize driveways connecting to Molalla Road. This standard is met.

[…]

3.05 Off-Street Parking and Loading

[…]

3.05.05 Shared Parking

A. **Shared parking shall be allowed through a Zoning Adjustment, Design Review, Conditional Use, or Planned Unit Development.**

1. **Up to 20 percent of the required vehicle parking may be satisfied by joint use of the parking area for another use with the same peak hours; or**

2. **Up to 40 percent of the required vehicle parking may be satisfied by joint use of the parking area for another use with alternate peak hours; and**

3. **An additional amount of joint use parking, of up to 10 percent of the required vehicle parking, may be satisfied when the development is located along a transit service route with stops, pullouts, or shelters.**

Note: **This provision does not reduce the number of required off-street parking spaces, but allows a portion of the requirement to be satisfied by shared parking. The actual number of required off-street parking spaces may be reduced through a Zoning Adjustment or Variance.**

B. **The following uses are considered as daytime uses for purposes of shared parking identified in this Section: banks, business offices, retail stores, personal service shops, household equipment or furniture shops, clothing, shoe repair or service shops, manufacturing or wholesale buildings, and other similar primarily daytime uses, as determined through the Zoning Adjustment or Design Review.**

C. **The following uses are considered as nighttime or weekend uses for purposes of shared parking identified in this Section: auditoriums incidental to a public or private school, houses of worship, bowling alleys, dance halls, theaters, drinking and eating establishments, and other similar primarily nighttime or weekend uses, as determined through the Zoning Adjustment or Design Review.**

D. **Shared parking may be allowed if the following standards are met:**

1. **Future changes of use, such as expansion of a building or establishment of hours of operation which conflict with, or affect, a shared parking agreement, shall require review and authorization of a subsequent Design Review or Modification of Conditions.**

2. **Legal documentation, to the satisfaction of the Director, shall be submitted verifying shared parking between the separate developments. Shared parking agreements may include provisions covering maintenance, liability, hours of use, and cross-access easements.**

3. The approved legal documentation shall be recorded by the applicant at the Marion County Recorder's Office and a copy of the recorded document shall be submitted to the Director, prior to issuance of a building or other land use permit.

E. Use of off-street parking by the City or other transit agency for park and ride does not require applying the shared parking provisions.

F. Multiple-family dwellings: If the developer or property management company were to designate and mark a number of parking spaces as leasing office visitor parking, then the spaces shall be available for resident parking before and after office hours. A sign 1½ by 1 ft min shall note the range of hours when a space is limited to visitor parking, for example 10 a.m. to 6 p.m., and specify that it is available for resident parking outside the specified hours. (This provision applies regardless of whether Section 3.05.05A is relevant or not.)

Response: **Although there are sufficient vehicle parking spaces on the adjacent apartment site to accommodate all required vehicle parking for the subject use during all times of day without the need for any overlap, Applicant intends to establish a shared parking easement on the adjacent apartment site to formalize this agreement. The applicable criteria can be met.**

3.06 Landscaping

[…]

3.06.05 Screening

A. Screening between zones and uses shall comply with Table 3.06D.

Response: The subject property is within the CG zone, adjacent to multiple family dwellings in the CG zone to the north, east, and west. Per Table 3.06D above, a six-to-seven-foot architectural wall is required to buffer the property from these adjacent residential uses. This application seeks approval for a Zoning Adjustment from the architectural wall design standards to allow a buffer that will better complement the character of the area. Specifically, the Adjustment seeks to replace the required fortress-like wall with a vegetated landscape screen surrounding the property.

In the context of the subject site and adjacent development, an architectural wall is contrary to the City's goals of promoting compatibility between these uses. An architectural wall around the perimeter of the subject site would decrease site safety by severely limiting opportunities for informal surveillance, would discourage pedestrian connectivity, and would negatively impact the character of the area.

A vegetated buffer/screen is superior to an architectural wall because of its ability to provide a screen that reduces noise and glare between adjacent uses while promoting visual access and by establishing an attractive transition between uses that promotes neighborhood character and livability for area residents.

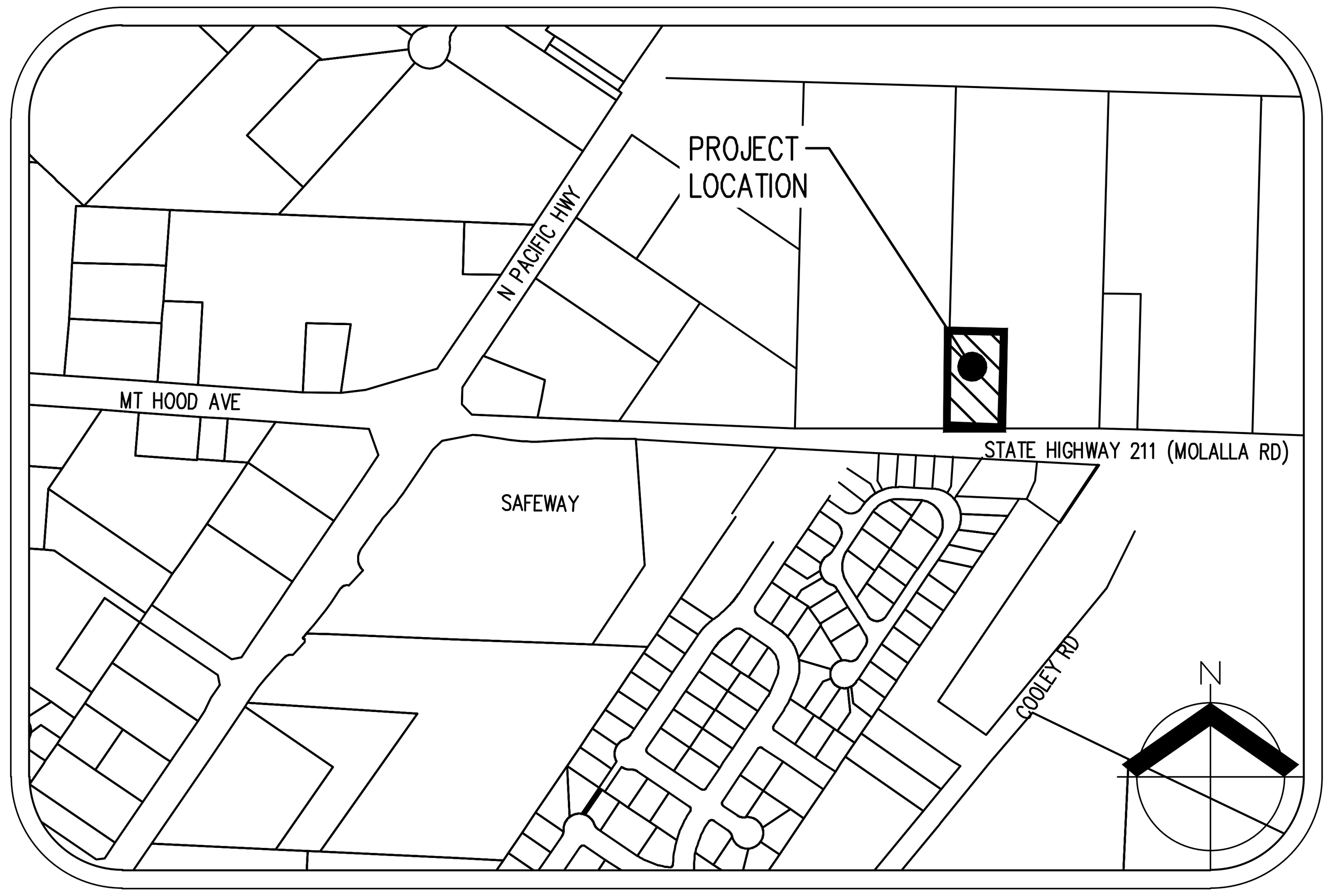
Finally, providing a hedge along the site's Molalla Road frontage exceeds the screening requirements in WDO Table 3.06D above, because the residential properties to the south utilize similar screening, including fencing and hedges.

<u>Because the Application plans to share a solid waste facility with the Woodburn West Apartments site, no new solid waste facilities are included in this application. Subsequently, no additional screening for such a facility is necessary.</u>

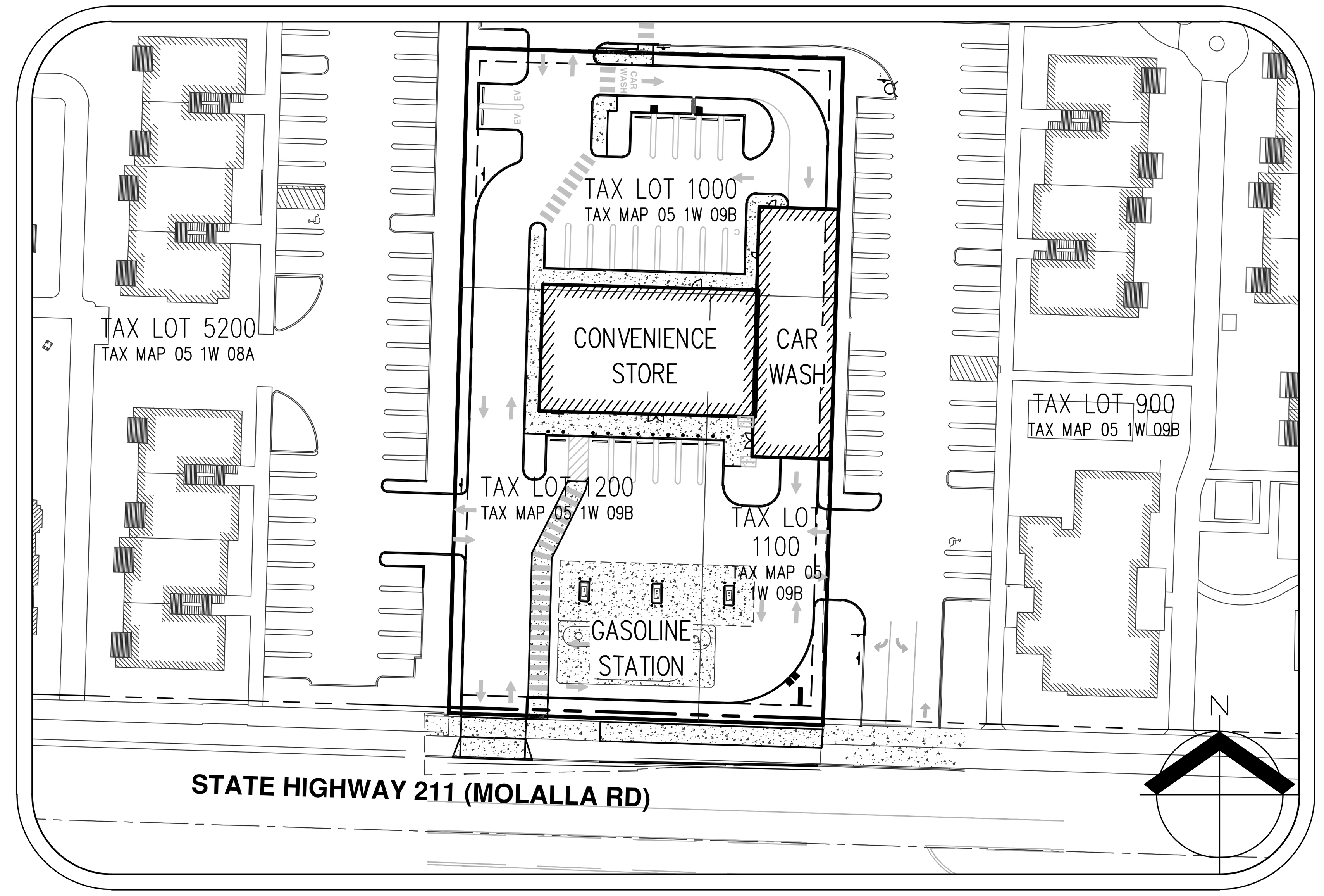
Attachment 2: Revised Preliminary Land Use Plans

2115 MOLALLA RD NE - WOODBURN

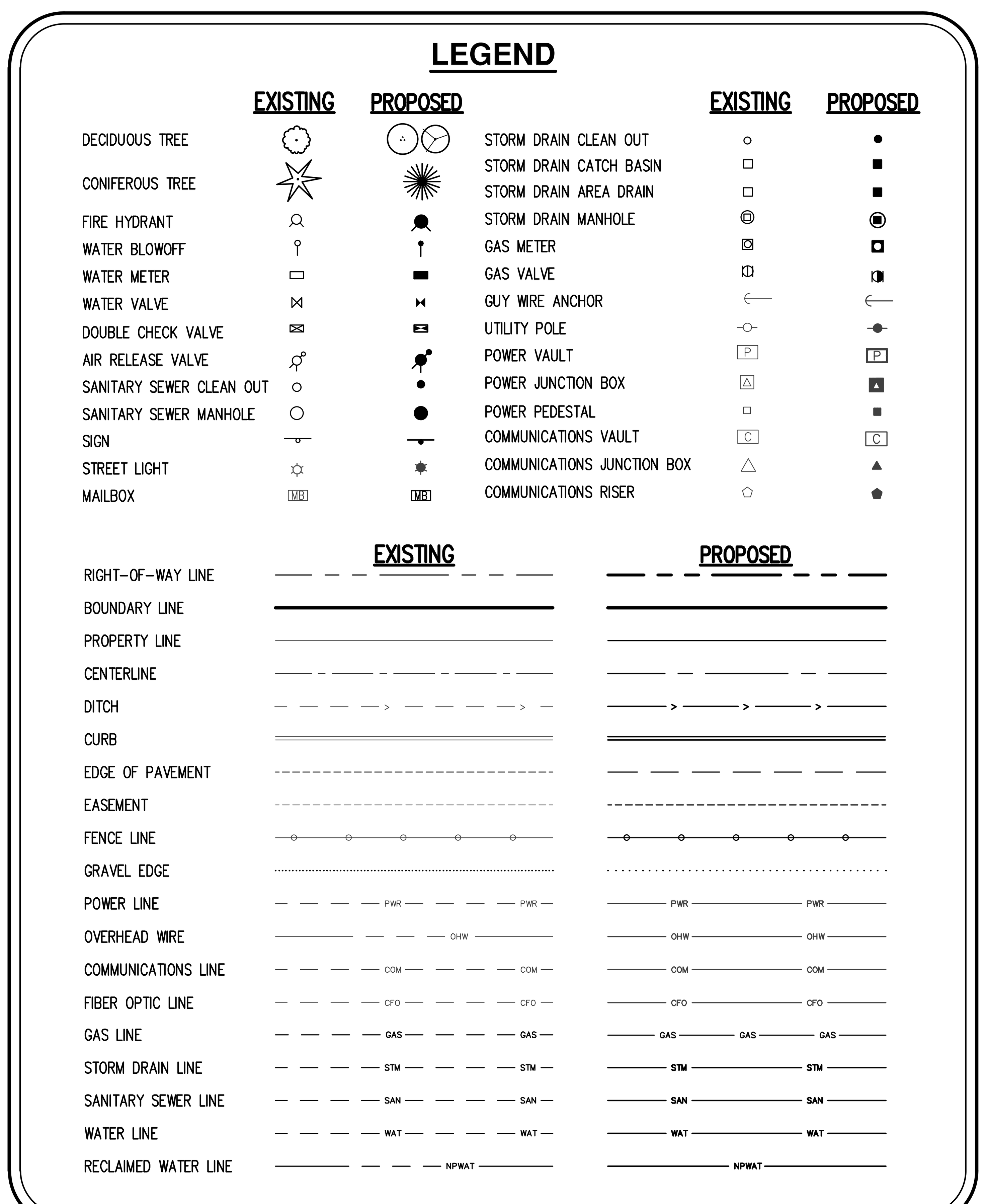
PRELIMINARY LAND USE PLANS



VICINITY MAP
NOT TO SCALE



SITE MAP
NOT TO SCALE



CIVIL ENGINEERING/ SURVEYING/LAND USE PLANNING/LANDSCAPE ARCHITECTURE
AKS ENGINEERING & FORESTRY, LLC
CONTACT: TYLER ROTH
3700 RIVER RD N, STE 1
KEIZER, OR 97303
503.400.6028
WWW.AKS-ENG.COM

ARCHITECT
RONALD PED ARCHITECT, P.C.
CONTACT: RON PED
537 HIGH ST SE
SALEM, OR 97301
PH: 503.363.1456

OWNER
MATVEEV DEVELOPMENT, LLC
31696 S ONA WAY
MOLALLA, OR 97038

APPLICANT
I&E CONSTRUCTION, INC.
27375 SW PARKWAY AVENUE
WILSONVILLE, OR 97070

TRANSPORTATION
LANCASTER MOBLEY
CONTACT: JENNIFER DANZIGER
321 SW 4TH AVE, STE 400
PORTLAND, OR 97204
PH: 503.248.0313

PROPERTY DESCRIPTION:
MARION COUNTY TAX MAP 05 1W 09B
TAX LOTS 1000, 1100 AND 1200
CITY OF WOODBURN, OREGON

PROPERTY LOCATION:
2115 MOLALLA RD NE
WOODBURN, OR 97071

VERTICAL DATUM
ELEVATIONS ARE BASED ON NGS BENCHMARK RD0246. LOCATED IN WOODBURN APPROXIMATELY 100 FEET SOUTHWEST OF THE CENTERLINE OF WEST LINCOLN STREET IN THE CONCRETE ENTRANCE STEPS OF THE FORMER CITY HALL. ELEVATION = 187.52 FEET (NAVD 88). THEN ADJUSTED TO NGVD 29 WITH A VERTCON SHIFT OF -3.37 FEET SETTING THE NGVD 29 ELEVATION AT 184.15 FEET.

SHEET INDEX

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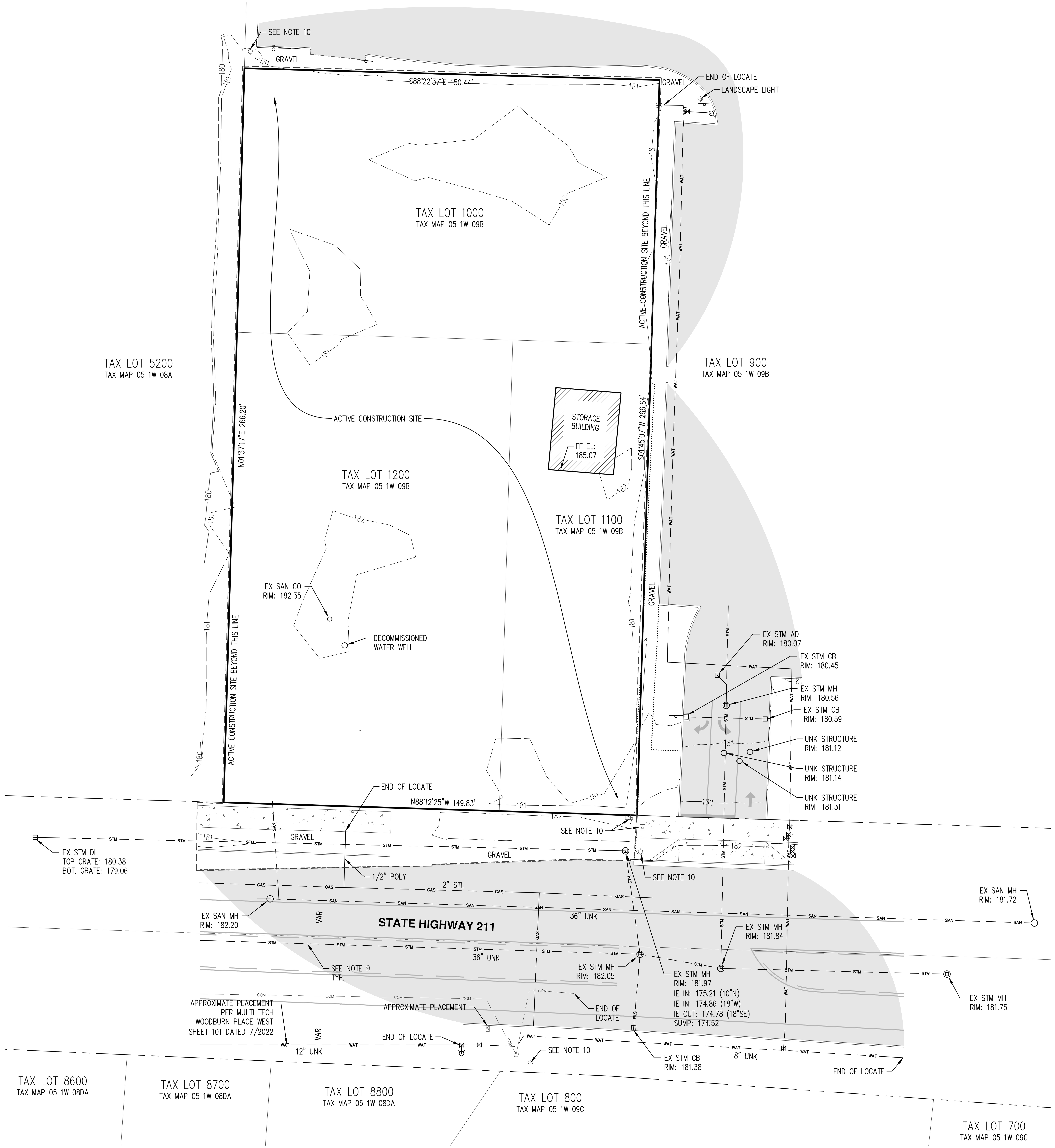
COVER SHEET
2115 MOLALLA RD NE
MOLALLA PETROLEUM, LLC
WOODBURN, OR

PRELIMINARY NOT FOR CONSTRUCTION
RENEWS: DECEMBER 31, 2024

JOB NUMBER:	9438
DATE:	03/20/2024
DESIGNED BY:	TDR
DRAWN BY:	ED
CHECKED BY:	TDR

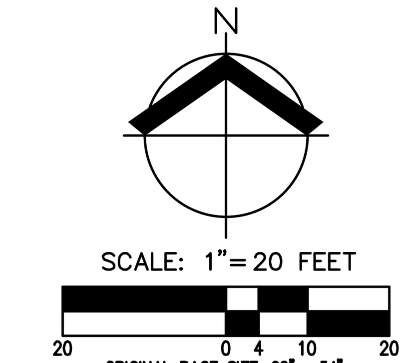
C000

AKS DRAWING FILE: 9438 COVER.DWG | LAYOUT: C000 COVER SHEET



NOTES:

1. UTILITIES SHOWN ARE BASED ON UNDERGROUND UTILITY LOCATE MARKINGS AS PROVIDED BY OTHERS, PROVIDED PER UTILITY LOCATE TICKET NUMBER 22321723, 24008471, AND 24008472. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND LOCATES REPRESENT THE ONLY UTILITIES IN THE AREA. CONTRACTORS ARE RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS PRIOR TO BEGINNING CONSTRUCTION.
2. FIELD WORK WAS CONDUCTED SEPTEMBER, 2022 WITH ADDITIONAL FIELD WORK CONDUCTED JANUARY, 2024.
3. VERTICAL DATUM: ELEVATIONS ARE BASED ON NGS BENCHMARK RD0246. LOCATED IN WOODBURN APPROXIMATELY 100 FEET SOUTHWEST OF THE CENTERLINE OF WEST LINCOLN STREET IN THE CONCRETE ENTRANCE STEPS OF THE FORMER CITY HALL. ELEVATION = 187.52 FEET (NAVD 88). THEN ADJUSTED TO NGVD 29 WITH A VERTCON SHIFT OF −3.37 FEET SETTING THE NGVD 29 ELEVATION AT 184.15 FEET
4. HORIZONTAL DATUM: A LOCAL DATUM PLANE DERIVED FROM STATE PLANE OREGON NORTH 3601 NAD83(2011) EPOCH 2010.00 BY MULTIPLYING BY A PROJECT MEAN GROUND COMBINED SCALE FACTOR OF 1.00011058061676 AT A CENTRAL PROJECT POINT WITH INTERNATIONAL FEET STATE PLANE GRID COORDINATES N:550177.640 E:7602454.693 AND A MERIDIAN CONVERGENCE ANGLE OF −1°38'55". STATE PLANE COORDINATES WERE DERIVED FROM GPS OBSERVATIONS USING THE TRIMBLE VRS NOW NETWORK. DISTANCES SHOWN ARE INTERNATIONAL FEET GROUND VALUES.
5. THIS IS NOT A PROPERTY BOUNDARY SURVEY TO BE RECORDED WITH THE COUNTY SURVEYOR. BOUNDARIES MAY BE PRELIMINARY AND SHOULD BE CONFIRMED WITH THE STAMPING SURVEYOR PRIOR TO RELYING ON FOR DETAILED DESIGN OR CONSTRUCTION.
6. BUILDING FOOTPRINTS ARE MEASURED TO SIDING UNLESS NOTED OTHERWISE. CONTACT SURVEYOR WITH QUESTIONS REGARDING BUILDING TIES.
7. CONTOUR INTERVAL IS 1 FOOT.
8. TREES WITH DIAMETER OF 6" AND GREATER ARE SHOWN. TREE DIAMETERS WERE MEASURED UTILIZING A DIAMETER TAPE AT BREAST HEIGHT. TREE INFORMATION IS SUBJECT TO CHANGE UPON ARBORIST INSPECTION.
9. ALL STORM PIPES APPROXIMATE PLACEMENT PER MULTI TECH EXISTING CONDITIONS PLAN, SHEET C1.2, EFFECTIVE DATE NOVEMBER 2022.
10. STRUCTURES FOUND WITHOUT PUBLIC UTILITIES MARKED. ADDITIONAL UNDERGROUND UTILITIES MAY BE IN AREA.



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2115 MOLALLA RD NE

WOODBURN OREGON

TAX LOTS 1000, 1100, AND 1200 MARION COUNTY TAX MAP 05 1W 09B

EXISTING CONDITIONS PLAN

DESIGNED BY:
DRAWN BY: AC
MANAGED BY: JS
CHECKED BY: ZP
DATE: 03/01/2024

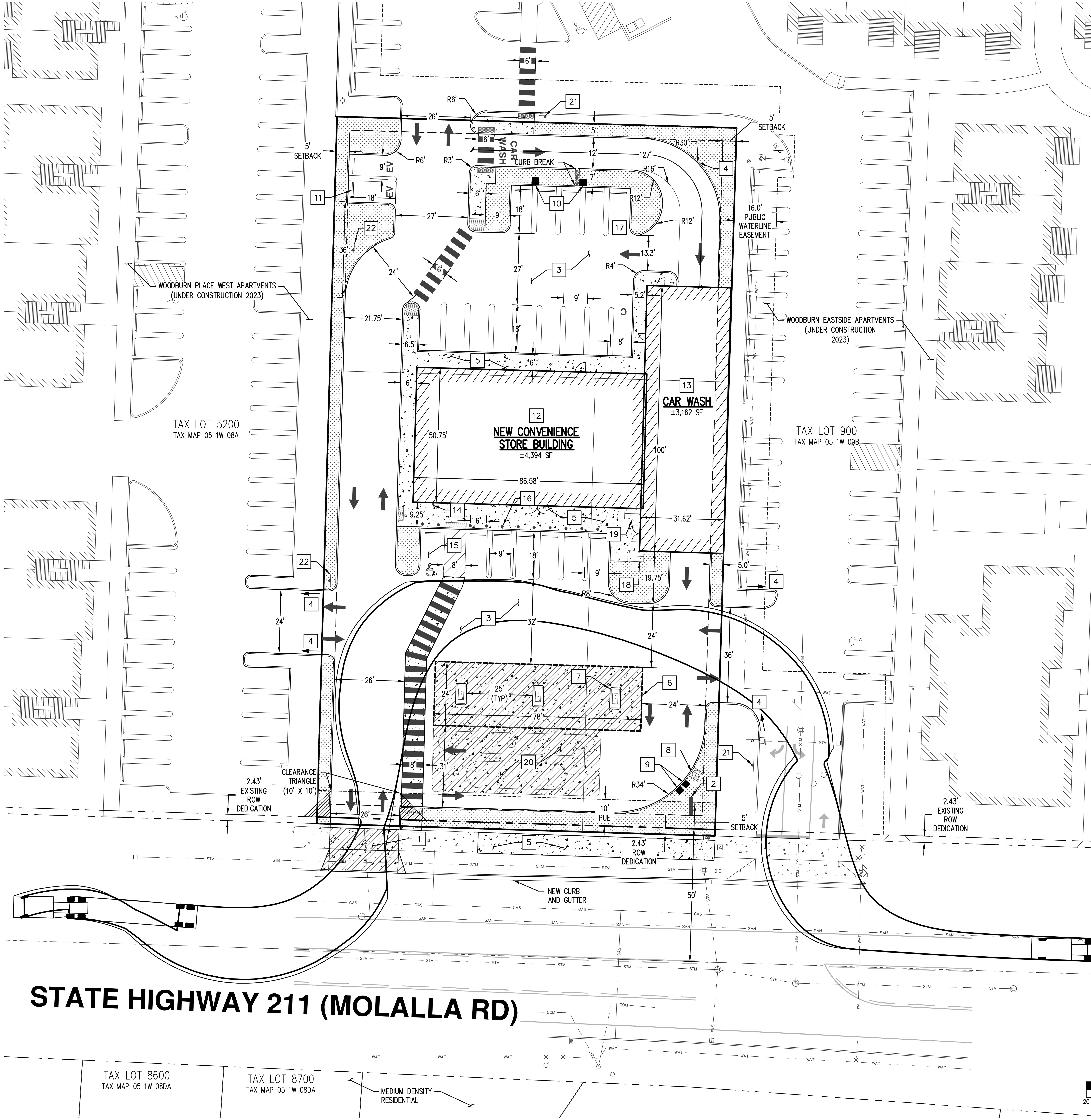
REGISTERED PROFESSIONAL LAND SURVEYOR

OREGON
NOVEMBER 9, 2021
JOSEPH F. SULLIVAN
86458LS
RENEWS: 6/30/2024

REVISIONS

JOB NUMBER
9438

SHEET
C002



SITE PLAN KEYED NOTES:

1. PROPERTY LINE SIDEWALK AT DRIVEWAY APPROACH PER DETAIL NO. 4150-4 CONFORMING WITH CITY OF WOODBURN PUBLIC WORKS UNLESS THE OREGON DEPARTMENT OF TRANSPORTATION IN WRITING DIRECTS OTHERWISE.
2. FREESTANDING SIGN.
3. AC PAVEMENT.
4. TYPE "C" CONCRETE CURB (TYP).
5. CONCRETE SIDEWALK.
6. FUEL STATION OVERHEAD (CANOPY TO BE CONSTRUCTED DESIGN-BUILD).
7. FUEL PUMP ISLAND (3 ISLANDS; 6 GAS PUMPS).
8. PROPANE TANK FILLING STATION.
9. AIR AND WATER PUMP MACHINE STATION.
10. VACUUM STATION (2 STALLS EACH).
11. WHEEL STOP (TYP).
12. CONVENIENCE STORE BUILDING.
13. DRIVE THROUGH CARWASH.
14. ACCESSIBLE PARKING SIGNAGE MOUNTED ON BUILDING. COORDINATE WITH BUILDING PLANS.
15. ACCESSIBLE PARKING STALL AND ACCESS AISLE.
16. BOLLARD (TYP).
17. CARPOOL/VANPOOL PARKING STALL.
18. UNCOVERED BICYCLE PARKING.
19. COVERED BICYCLE PARKING (COVERED BY 4-FOOT BUILDING OVERHANG).
20. UNDERGROUND FUEL TANKS.
21. RELOCATED "NO PARKING FIRE LANE" SIGN.
22. DIRECTIONAL SIGN WITH ARROW AND HIGHWAY SYMBOL.

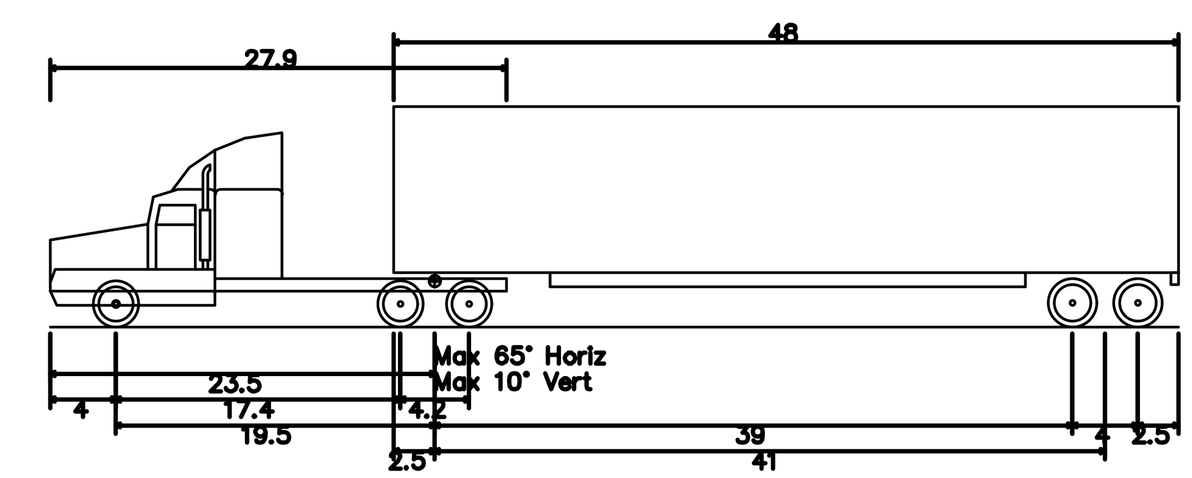
SITE AREA SUMMARY

AREA DESCRIPTION	AREA (SF)	% OF TOTAL AREA
TOTAL SITE AREA:	±40,000	--
STRUCTURES:	±7,556	±19%

PARKING COUNT:

TOTAL SPACES REQUIRED:	25 (1 STALL/200 SF OF RETAIL AREA + 1 STALL/PUMP STATION)
STANDARD SPACES PROVIDED:	14
COMPACT SPACES PROVIDED:	1
ADA SPACES PROVIDED:	1
ELECTRIC VEHICLE SPACES PROVIDED:	2
CARPOOL/VANPOOL SPACES PROVIDED:	1
FUEL SPACES PROVIDED:	6
TOTAL SPACES PROVIDED:	25
BICYCLE PARKING REQUIRED:	4 (15% OF REQUIRED PARKING SPACES)
BICYCLE PARKING PROVIDED:	4

BASIS OF TRUCK TURNING MODELING



WB-62 - Interstate Semi-Trailer

Overall Length	69.000ft
Overall Width	8.500ft
Overall Body Height	13.500ft
Min Body Ground Clearance	1.334ft
Max Track Width	8.500ft
Lock-to-lock time	6.00s
Max Steering Angle (Virtual)	28.40°

LEGEND

CONCRETE SIDEWALK (4" MIN THICKNESS)	
CONCRETE PAVEMENT SECTION (8" MIN THICKNESS)	
LANDSCAPE	

N

SCALE: 1"=20 FEET

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ORIGINAL PAGE SIZE: 22" x 34"

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PRELIMINARY SITE PLAN
2115 MOLALLA RD NE
MOLALLA PETROLEUM, LLC
WOODBURN, OR

PRELIMINARY NOT FOR CONSTRUCTION

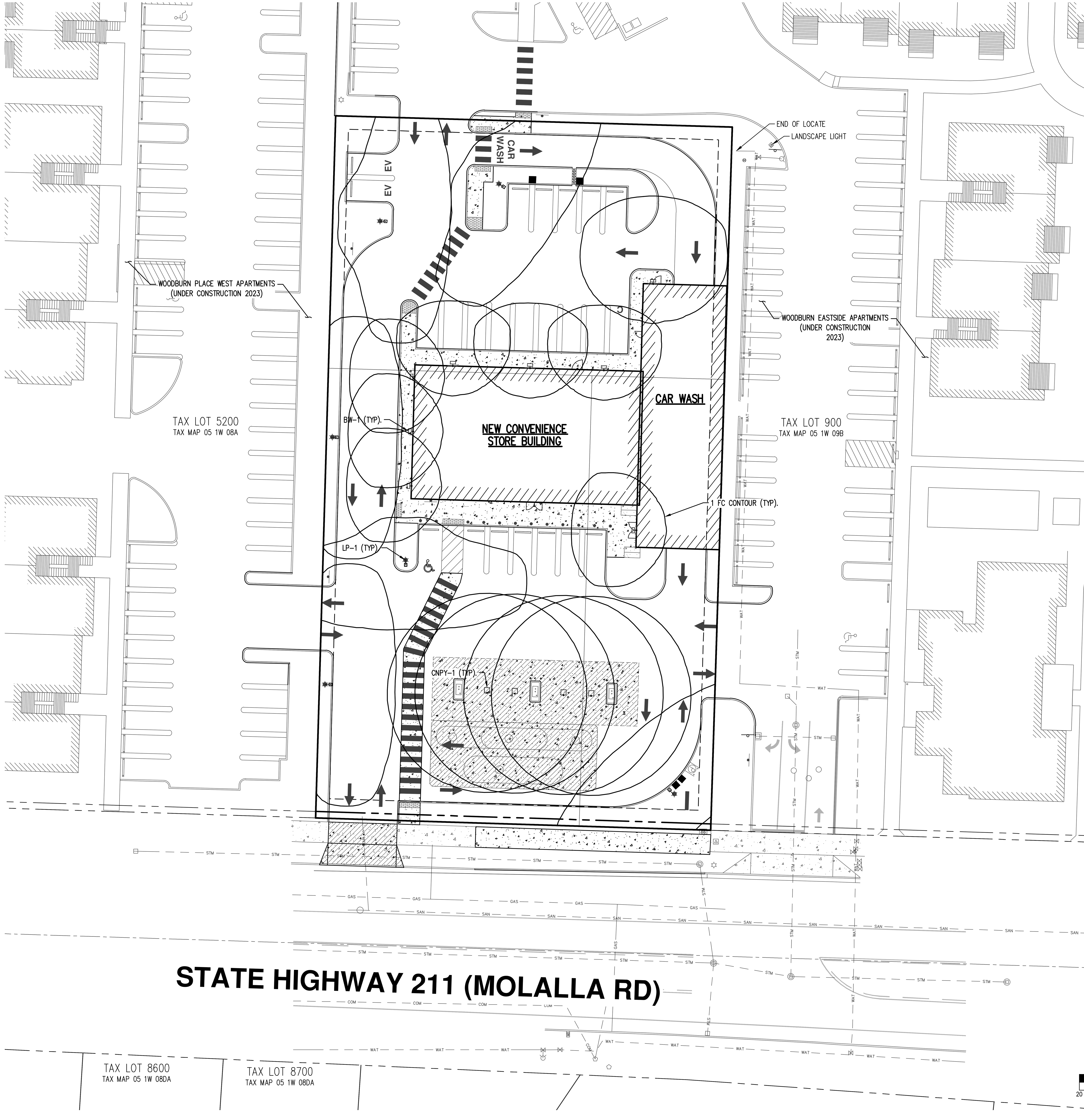
REGISTERED PROFESSIONAL ENGINEER OREGON TYLER D. ROTH

RENEWS: DECEMBER 31, 2024

JOB NUMBER:	9438
DATE:	03/20/2024
DESIGNED BY:	TDR
DRAWN BY:	ED
CHECKED BY:	TDR

C100

AKS DRAWING FILE: 9438 SITE PLAN.DWG | LAYOUT: C100 PRELIMINARY SITE PLAN



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SCALE: 1"=20 FEET

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ORIGINAL PAGE SIZE: 22" x 34"

NOTES

1. BACK LIGHT SHIELDING SHALL BE INSTALLED TO LIGHT POLES ADJACENT TO PROPERTY LINES TO LIMIT LIGHT ENCROACHMENT ON TAX LOTS 900 AND 5200.

LUMINAIRE AND POLE SCHEDULE								
LABEL	TAG	DESCRIPTION	MOUNTING HEIGHT (FT)	ARM LENGTH (FT)	QTY	TOTAL LUMENS	LUM. WATTS	LIGHT LOSS FACTOR (LLF)
LP-1	NEW	LEOTEK ARIETA 13 ARCHTECTURAL LED AREA LUMINARIE (AR13 MV WW 2 DB 030)	12	3.3	6	2,970	22	0.85
CNPY-1	NEW	GE EVOLVE CANOPY LED SOFFIC ECLS (ECLS01 T5SM730)	20	N/A	4	3,600	29	0.85
BW-1	NEW	LUMARK XTOR CROSSTOUR LED (XTOR4B-Y)	8	N/A	8	3,995	38	0.85

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PRELIMINARY PHOTOMETRICS PLAN

2115 MOLALLA RD NE
MOLALLA PETROLEUM, LLC
WOODBURN, OR

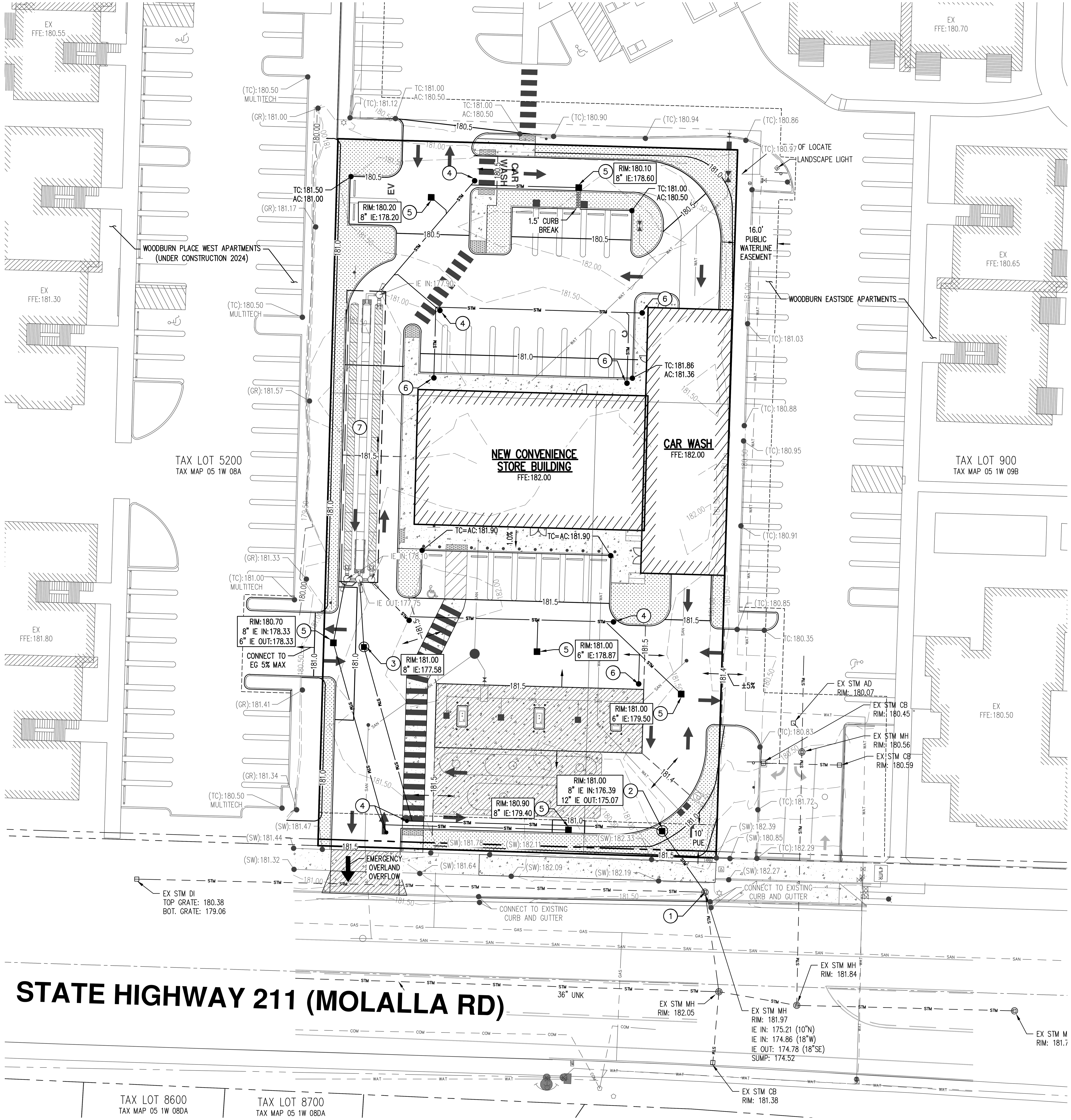
PRELIMINARY NOT FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER OREGON TYLER D. ROTH

RENEWS: DECEMBER 31, 2024

JOB NUMBER:	9438
DATE:	03/20/2024
DESIGNED BY:	TDR
DRAWN BY:	ED
CHECKED BY:	TDR

C105



STORM DRAIN (SD) KEYED NOTES:

1. CONNECT TO EXISTING SD MANHOLE. 12" IE IN (N): 174.90
2. CONTECH 48" STORMFILTER WATER QUALITY MANHOLE. RIM AND INVERTS PER PLAN. 3 LOW DROP CARTRIDGES.
3. FLOW CONTROL MANHOLE. ORIFICE SIZE: 2.21" OVERFLOW: 179.09
4. SD CLEANOUT.
5. SD CATCH BASIN. RIM AND INVERT ELEVATIONS SHOWN ON PLAN.
6. 4" DOWNSPOUT CONNECTION WITH CLEANOUT.
7. ADS UNDERGROUND STORMTECH SC-310 CHAMBER DETENTION SYSTEM. NUMBER OF CHAMBER: 42 SYSTEM VOLUME: 1,865 CFS

ABBREVIATIONS:

EXISTING:

(SW): EXISTING SIDEWALK ELEVATION
(TC): EXISTING TOP OF CURB ELEVATION
(GR): EXISTING GRAVEL ELEVATION
(EG): EXISTING GROUND ELEVATION

PROPOSED:

FFE: FINISHED FLOOR ELEVATION
RIM: RIM ELEVATION
TC: TOP OF CURB ELEVATION
AC: ASPHALT CONCRETE ELEVATION

LEGEND

EXISTING GROUND CONTOUR (1 FT)	181
EXISTING GROUND CONTOUR (5 FT)	180
FINISHED GRADE CONTOUR (1 FT)	181
FINISHED GRADE CONTOUR (5 FT)	180
PROPOSED MANHOLE (MH)	
PROPOSED CLEANOUT (CO)\DOWNSPOUT (DS)	
PROPOSED CATCH BASIN (CB)	
GRADING RIDGE	

N

SCALE: 1"= 20 FEET

20 0 4 10 20

ORIGINAL PAGE SIZE: 22" x 34"

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PRELIMINARY GRADING AND DRAINAGE PLAN

2115 MOLALLA RD NE

MOLALLA PETROLEUM, LLC

WOODBURN, OR

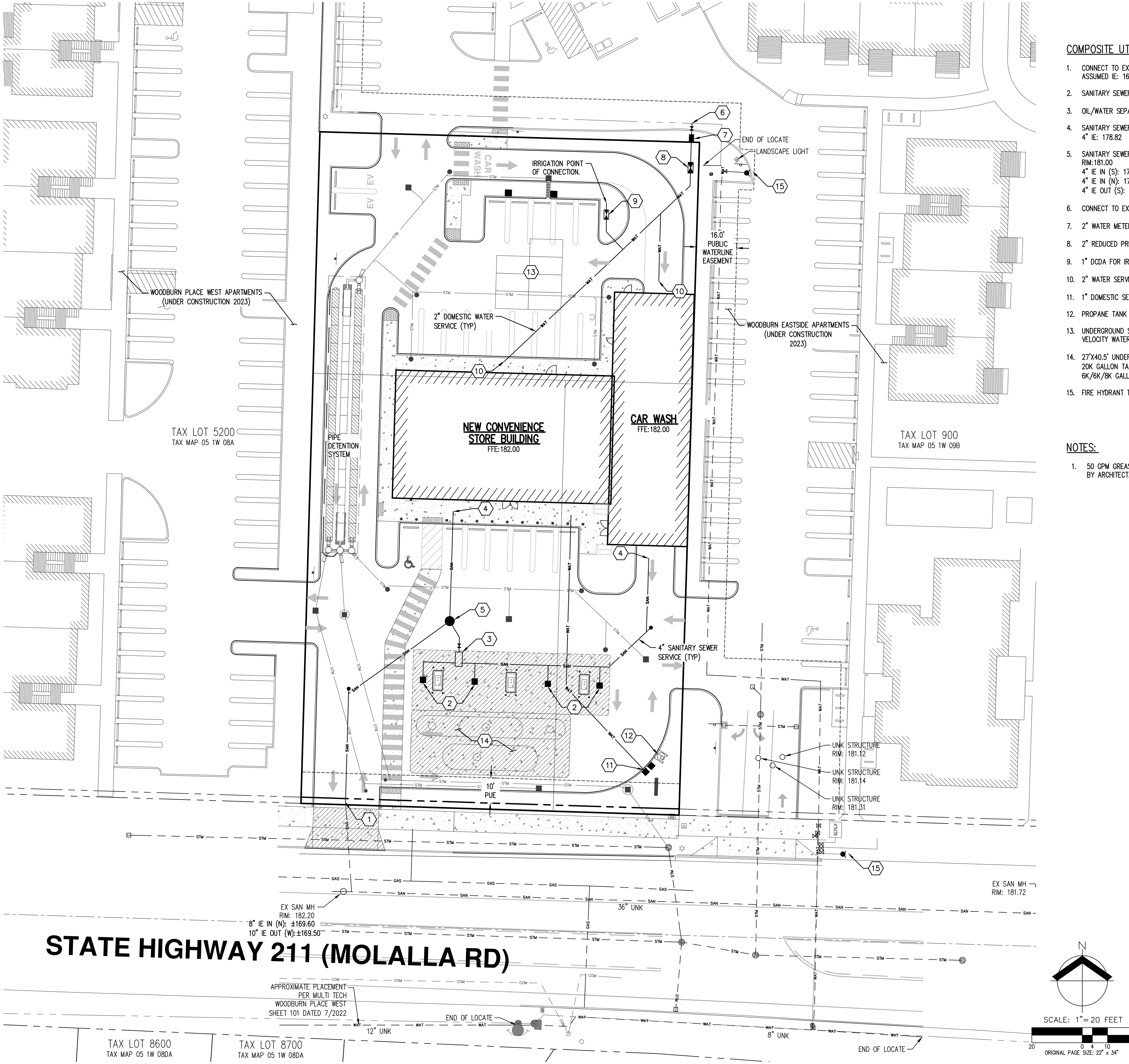
PRELIMINARY NOT FOR CONSTRUCTION

RENEWS: DECEMBER 31, 2024

JOB NUMBER:	9438
DATE:	03/20/2024
DESIGNED BY:	TDR
DRAWN BY:	ED
CHECKED BY:	TDR

C200

AKS DRAWING FILE: 9438 GRADING.DWG | LAYOUT: C200 PRELIMINARY GRADING AND DRAINAGE PLAN



AKS DRAWING FILE: 9438 UTILITIES.DWG | LAYOUT: C300 PRELIMINARY COMPOSITE UTILITY PLAN

COMPOSITE UTILITY PLAN KEYED NOTES:

1. CONNECT TO EXISTING SANITARY SEWER LATERAL.
   ASSUMED IE: 169.74
2. SANITARY SEWER CATCH BASIN.
3. OIL/WATER SEPARATOR.
4. SANITARY SEWER CONNECTION AT BUILDING.
   4" IE: 178.82
5. SANITARY SEWER MANHOLE.
   RIM:181.00
   4" IE IN (S): 177.00
   4" IE IN (N): 177.53
   4" IE OUT (S): 176.00
6. CONNECT TO EXISTING 8" PUBLIC WATER MAIN WITH 2" TAP.
7. 2" WATER METER.
8. 2" REDUCED PRESSURE (RP) BACKFLOW.
9. 1" DCDA FOR IRRIGATION SYSTEM.
10. 2" WATER SERVICE CONNECTION AT BUILDING.
11. 1" DOMESTIC SERVICE TO WATER STATION.
12. PROPANE TANK FILLING STATION.
13. UNDERGROUND STORAGE TANKS FOR RECYCLING SYSTEM. DESIGNED BY VELOCITY WATER WORKS.
14. 27'X40.5' UNDERGROUND FUEL TANKS. DESIGNED BY JF PETROLEUM GROUP.
    20K GALLON TANK, 10' DIAMETER.
    6K/6K/8K GALLON TANK, 8' DIAMETER.
15. FIRE HYDRANT TO BE CONSTRUCTED WITH WOODBURN PLACE APARTMENTS.

NOTES:

1. 50 GPM GREASE INTERCEPTOR TO BE INSIDE OF BUILDING AND SPECIFIED BY ARCHITECT.

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PRELIMINARY COMPOSITE UTILITY PLAN
2115 MOLALLA RD NE
MOLALLA PETROLEUM, LLC
WOODBURN, OR

REGISTERED PROFESSIONAL ENGINEER
OREGON
TYLER D. ROTH
PRELIMINARY NOT FOR CONSTRUCTION
RENEWS: DECEMBER 31, 2024

JOB NUMBER:	9438
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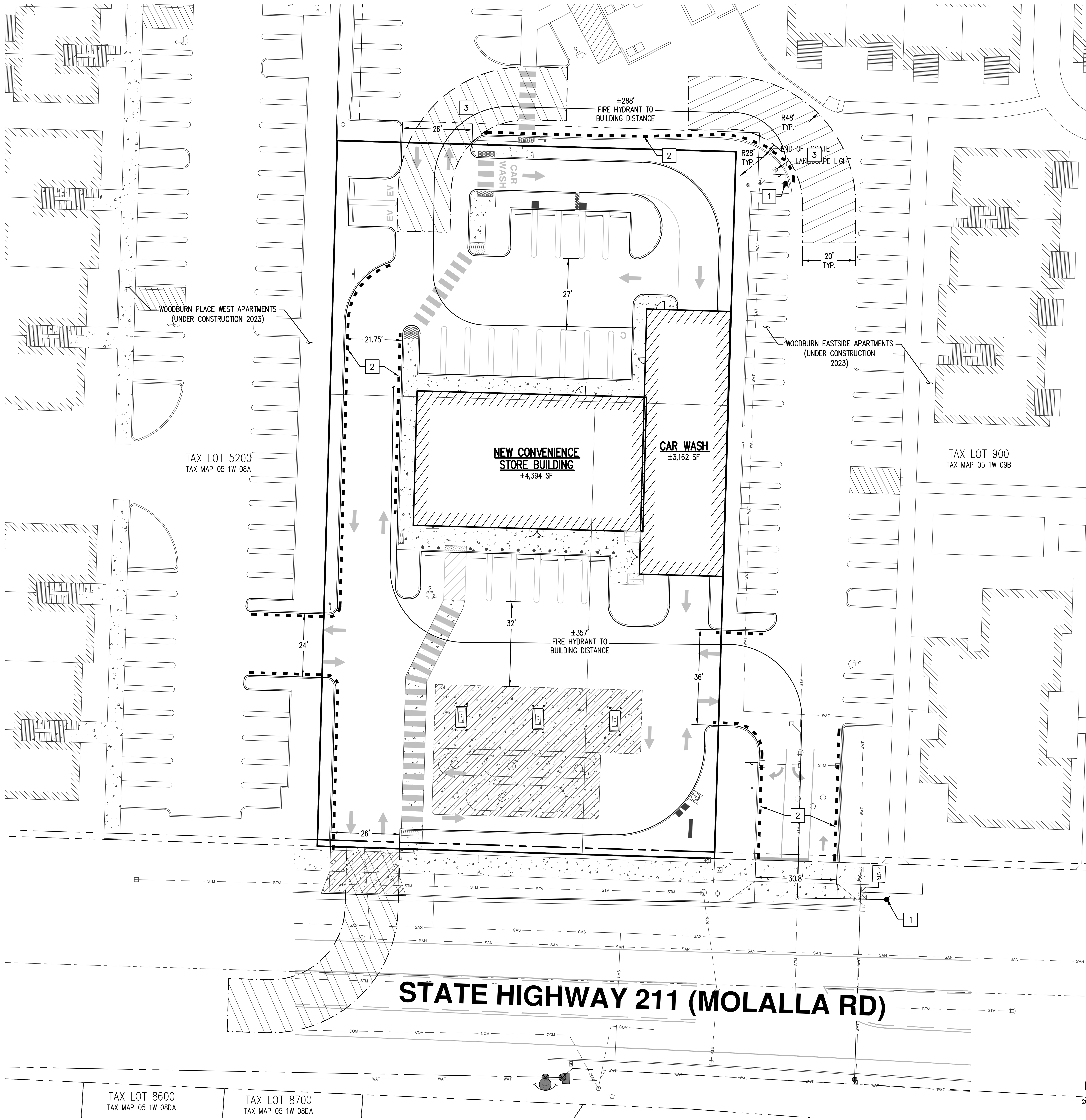

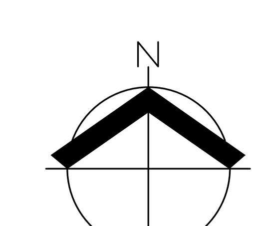

SCALE: 1"=20 FEET

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ORIGINAL PAGE SIZE: 22" x 34"

FIRE SERVICE PLAN KEYED NOTES: #

1. FIRE HYDRANT TO BE CONSTRUCTED WITH WOODBURN PLACE APARTMENTS.
2. RED PAINTED CURB – NO PARKING FIRE LANE.
3. FIRE APPARATUS MOBILITY.

FIRE SPRINKLER NOTE:

A FIRE SPRINKLER SYSTEM IS NOT PROPOSED FOR THE DEVELOPMENT.

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PRELIMINARY FIRE SERVICE PLAN
2115 MOLALLA RD NE
MOLALLA PETROLEUM, LLC
WOODBURN, OR

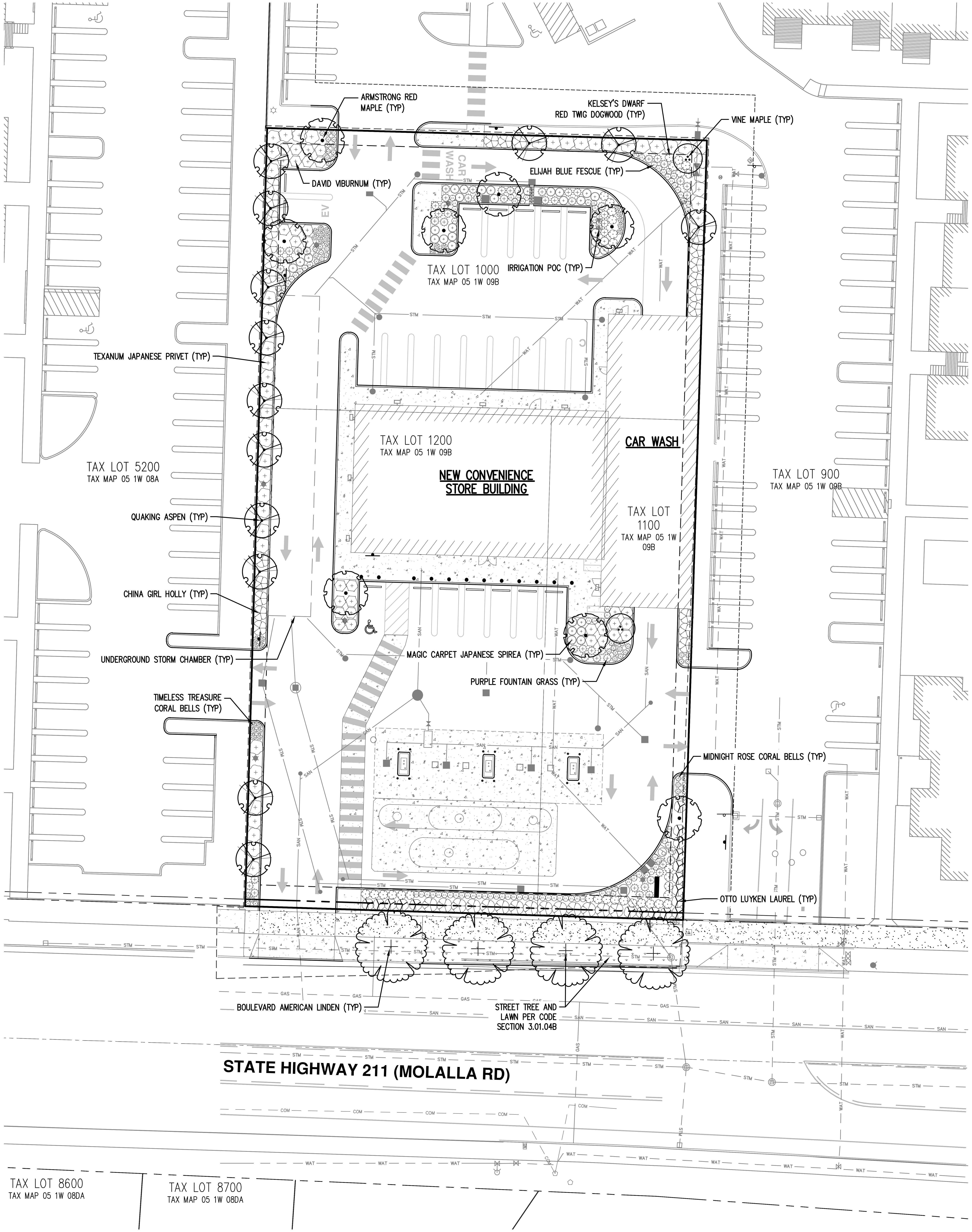
REGISTERED PROFESSIONAL ENGINEER
OREGON
MARCH 9, 2021
TYLER D. ROTH
RENEWS: DECEMBER 31, 2024

PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	9438
DATE:	03/20/2024
DESIGNED BY:	TDR
DRAWN BY:	ED
CHECKED BY:	TDR

C301

AKS DRAWING FILE: 9438 FIRE.DWG | LAYOUT: C301 PRELIMINARY FIRE SERVICE PLAN



PRELIMINARY PLANT SCHEDULE

TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING	MATURE HEIGHT
	2	ACER CIRCINATUM	VINE MAPLE	5'-6' HT/B&B MULTI-TRUNK	AS SHOWN	10' - 15'
	8	ACER RUBRUM 'ARMSTRONG'	ARMSTRONG RED MAPLE	2" CAL. B&B	AS SHOWN	40' - 45'
	13	POPULUS TREMULOIDES 'ERECTA'	COLUMNAR QUAKING ASPEN	2" CAL. B&B	AS SHOWN	35' - 40'
STREET TREES	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**SIZE/CONTAINER**	**SPACING**	**MATURE HEIGHT**
	4	TILIA AMERICANA 'BOULEVARD'	BOULEVARD AMERICAN LINDEN	2" CAL. B&B	AS SHOWN	45' - 50'
SHRUBS	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**SIZE/CONTAINER**	**SPACING**	
	32	CORNUS SERICEA 'KELSEYI'	KELSEY'S DWARF RED TWIG DOGWOOD	2 GAL. CONT.	36" o.c.	
	95	FESTUCA GLAUCA 'ELIJAH BLUE'	ELIJAH BLUE FESCUE	1 GAL. CONT.	24" o.c.	
	47	HEUCHERA X 'MIDNIGHT ROSE'	MIDNIGHT ROSE CORAL BELLS	1 GAL. CONT.	24" o.c.	
	28	HEUCHERA X 'TIMELESS TREASURE'	TIMELESS TREASURE CORAL BELLS	1 GAL. CONT.	24" o.c.	
	38	ILEX X MESERVEAE 'CHINA GIRL'	CHINA GIRL HOLLY	5 GAL. CONT.	60" o.c.	
	47	LIGUSTRUM JAPONICUM 'TEXANUM'	TEXANUM JAPANESE PRIVET	5 GAL. CONT.	60" o.c.	
	56	PENNISETUM SETACEUM 'RUBRUM'	PURPLE FOUNTAIN GRASS	1 GAL. CONT.	36" o.c.	
	18	PRUNUS LAUROCERASUS 'OTTO LUYKEN'	OTTO LUYKEN ENGLISH LAUREL	5 GAL. CONT.	48" o.c.	
	35	SPIRAEA JAPONICA 'WALBUMA'	MAGIC CARPET JAPANESE SPIREA	2 GAL. CONT.	36" o.c.	
	31	VIBURNUM DAVIDII	DAVID VIBURNUM	2 GAL. CONT.	48" o.c.	
GROUND COVERS	**QTY**	**DESCRIPTION**				
	±916 SF	LAWN: NORTHWEST SUPREME LAWN SEED MIX – SUNMARK SEEDS (OR APPROVED EQUAL) DASHER 3 PERENNIAL RYEGRASS (LOLIUM PERENNE VAR. DASHER 3) 35%; CUTTER II PERENNIAL RYEGRASS (LOLIUM PERENNE VAR. CUTTER II) 35%; GARNET CREEPING RED FESCUE (FESTUCA RUBRA VAR. GARNET) 15%; WINDWARD CHEWINGS FESCUE (FESTUCA RUBRA SPP FALLAX VAR. WINDWARD) 15% APPLY AT A RATE OF 8 LBS. PER 1,000 SF OR AS RECOMMENDED BY SUPPLIER				

PRELIMINARY LANDSCAPE NOTES

1. PRELIMINARY LANDSCAPE PLAN IS INTENDED TO PORTRAY DESIGN INTENT ONLY. PLAN CHANGES, INCLUDING CHANGES TO PLANT VARIETY, LOCATIONS, AND OTHER PLAN ELEMENTS MAY OCCUR PRIOR TO FINAL PLAN APPROVAL, WHERE ALLOWED BY CITY OF WOODBURN STANDARDS.
2. ALL LANDSCAPING SHALL CONFORM TO APPLICABLE CITY OF WOODBURN STANDARDS (WOODBURN DEVELOPMENT ORDINANCE (WDO) CHAPTER 3.06) AND TO AMERICAN STANDARDS FOR NURSERY STOCK, ANSI Z60.1, CURRENT EDITION. ALL LANDSCAPING MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH RECOGNIZED, BEST-PRACTICE INDUSTRY STANDARDS, SUCH AS THOSE ADOPTED BY THE OREGON LANDSCAPE CONTRACTORS BOARD (OLCB).
3. CONTRACTOR SHALL BE RESPONSIBLE FOR PLANTING AND PROVIDING IRRIGATION, AS NECESSARY, FOR ALL LANDSCAPE AREAS, PER WDO 3.06.02. AND 3.01.04B. IRRIGATION SYSTEM SHALL BE DESIGN-BUILD BY THE LANDSCAPE CONTRACTOR.
4. ALL PLANT MATERIAL SHALL BE OF HIGH GRADE, HEALTHY, EVENLY BRANCHED, TYPICAL FOR THEIR SPECIES, AND MEET THE SIZE AND GRADING OF THE AMERICAN STANDARDS FOR NURSERY STOCK (ANSI Z60.1). CONTAINERIZED PLANT STOCK SHALL BE FULLY ROOTED, BUT NOT ROOT-BOUND, IN THE CONTAINERS IN WHICH THEY ARE DELIVERED.
5. MULCH: APPLY 3" DEEP WELL-AGED MEDIUM GRIND OR SHREDDED DARK HEMLOCK BARK MULCH IN PLANTING BEDS, TAKING CARE TO NOT COVER FOLIAGE OR BURY ROOT CROWNS.
6. CHINA GIRL HOLLY AND OTTO LUYKEN LAUREL HEDGE IS TO BE MAINTAINED AT A HEIGHT OF NO MORE THAN 42" WITHIN VISION CLEARANCE AREAS. THE CHINA GIRL HOLLY AND TEXANUM JAPANESE PRIVET HEDGE ALONG THE REST OF THE PERIMETER IS TO BE MAINTAINED AT A HEIGHT OF 6-7 FEET FOR SCREENING IN LIEU OF ARCHITECTURAL WALL.

LANDSCAPE DATA

TOTAL PAVEMENT AREA: ±24,387 SF
TOTAL LANDSCAPE AREA: ±4,901 SF (20.1%)

N

SCALE: 1"=20 FEET

20 0 4 10 20

ORIGINAL PAGE SIZE: 22" x 34"

AKS ENGINEERING & FORESTRY, LLC
3700 RIVER RD N, STE 1
KEIZER, OR 97303
503.400.6028
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ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

PRELIMINARY LANDSCAPE PLAN
2115 MOLALLA RD NE
MOLALLA PETROLEUM, LLC
WOODBURN, OR

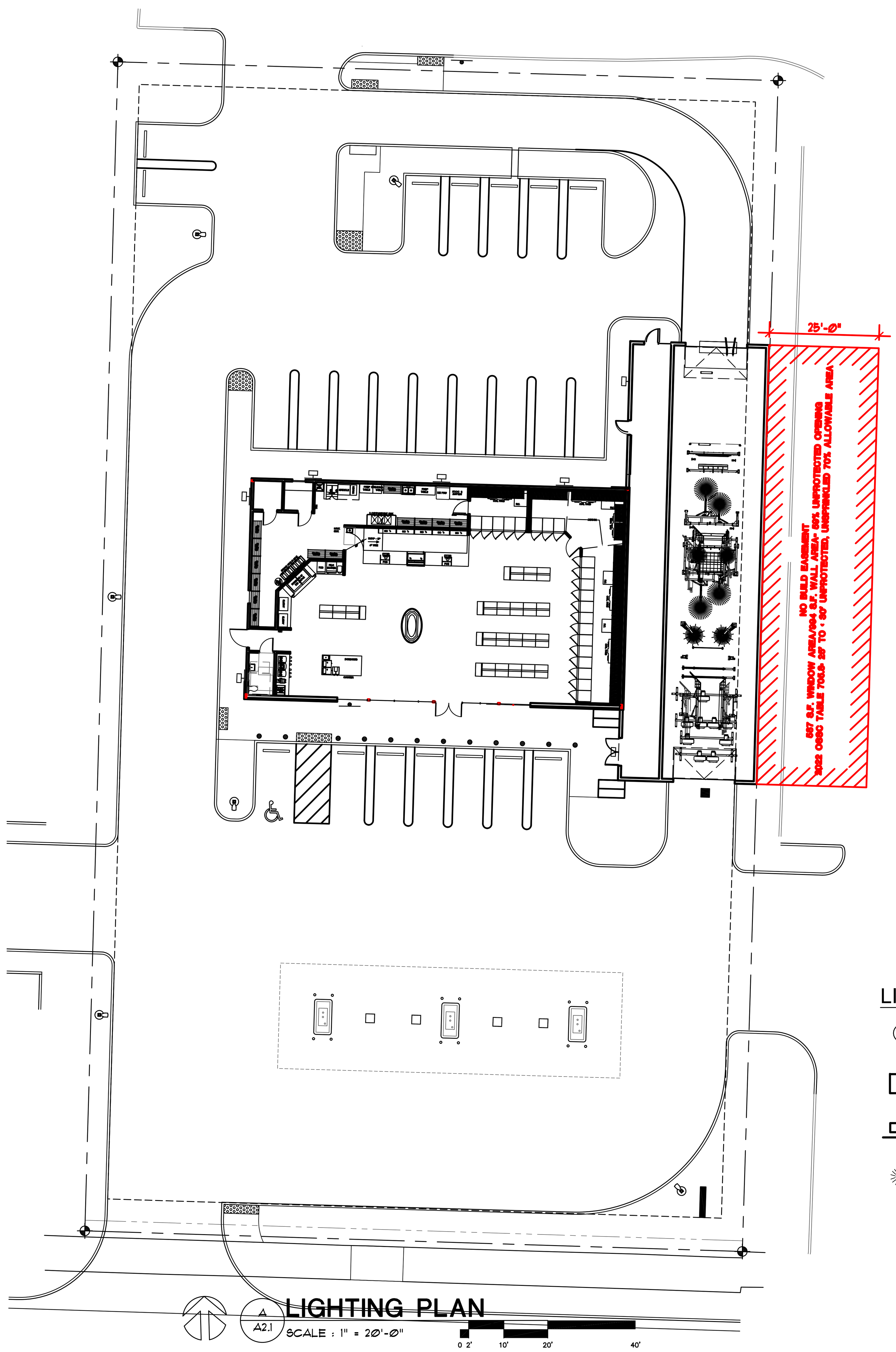
PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	9438
DATE:	1/18/2024
DESIGNED BY:	JRH
DRAWN BY:	JRH
CHECKED BY:	TEB

L100

AKS DRAWING FILE: 9438 LANDSCAPE.DWG | LAYOUT: L100

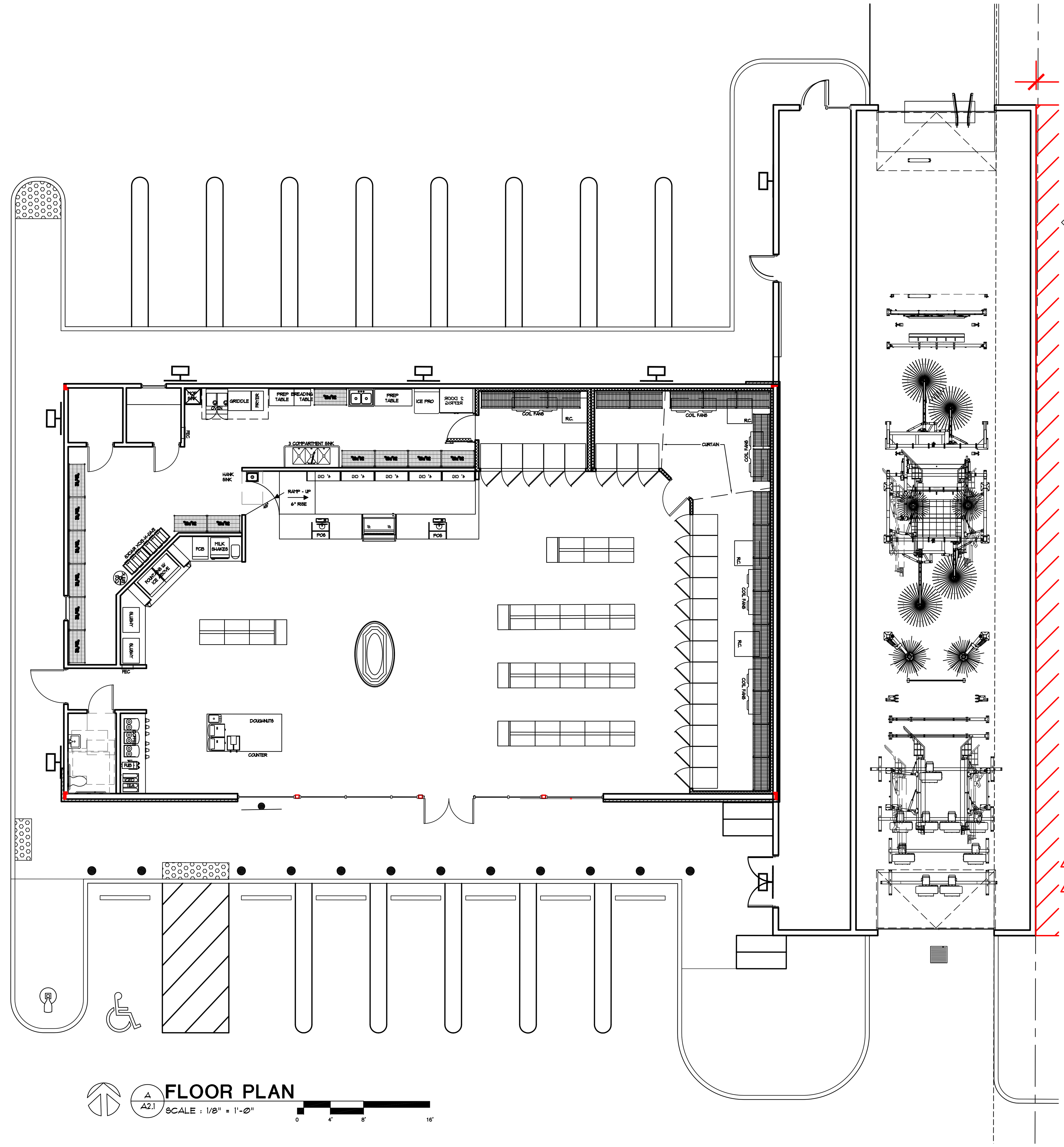
Attachment 3:: Revised Preliminary Architectural Drawings



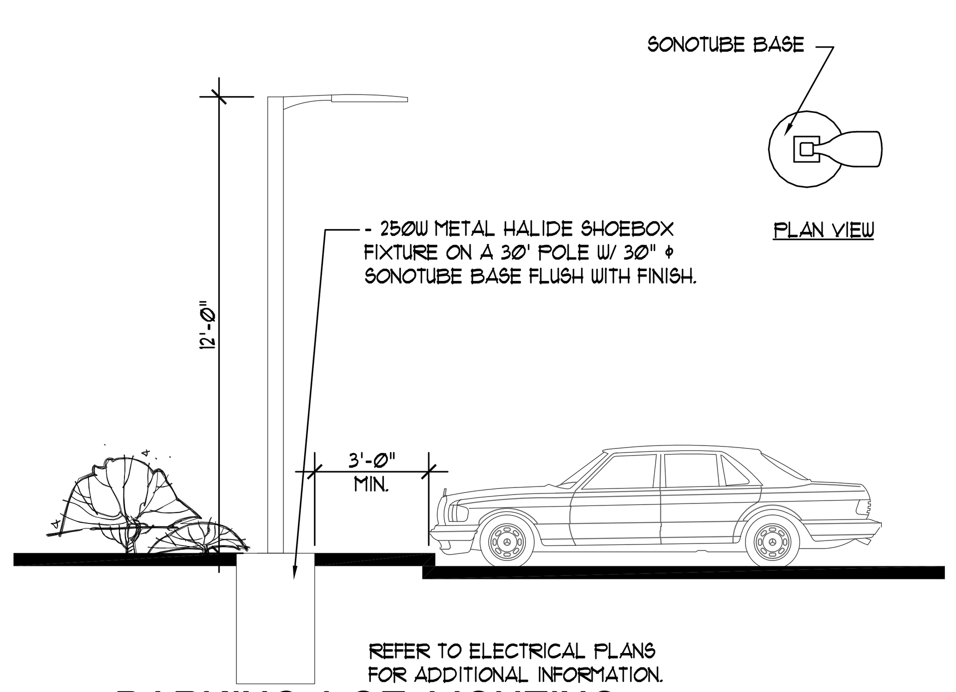
A/A2.1 LIGHTING PLAN
SCALE : 1" = 20'-Ø"

LIGHTING SCHEDULE

- PARKING POLE LIGHT LEOTEK ARIETA 13 ARCHITECTURAL LED AREA LUMINARIE
- CANOPY LIGHT GE EVOLVE CANOPY LED SOFFIC ECLS
- LUMARK XTOR CROSSTOUR LED
- EXISTING PARKING POLE LIGHT



A/A2.1 FLOOR PLAN
SCALE : 1/8" = 1'-Ø"



1 PARKING LOT LIGHTING
SHOEBOX FIXTURE ON 14' POLE
SCALE: NTS

RONALD JAMES PED ARCHITECT P.C.

REGISTERED ARCHITECT
RONALD JAMES PED
SALEM, OREGON
STATE OF OREGON

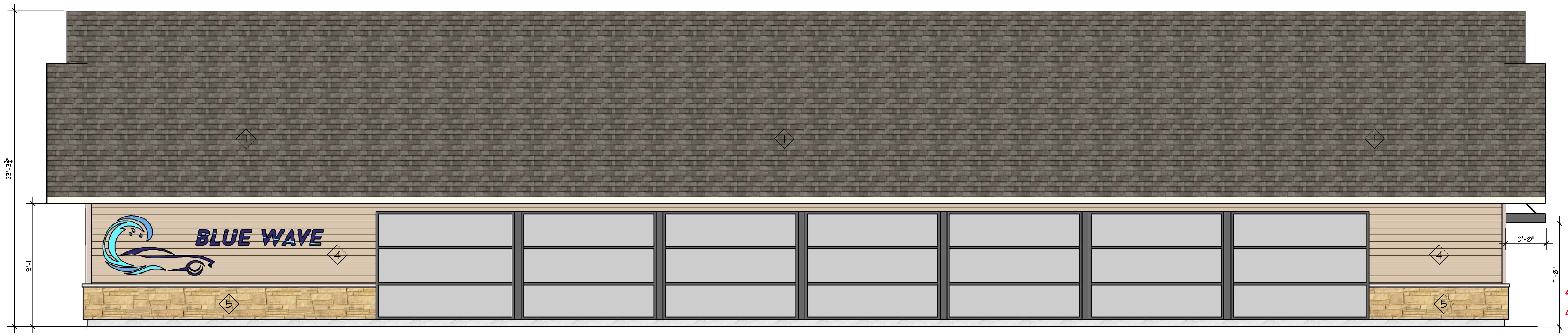
1 12/29/23 REVISION 1 REVISED FLOOR PLAN
2 02.19.2024 REVISION 2 PLAN REVIEW LETTER 2

CONVENIENCE STORE
US MARKET #675
4601 SILVERTON RD, SALEM OREGON

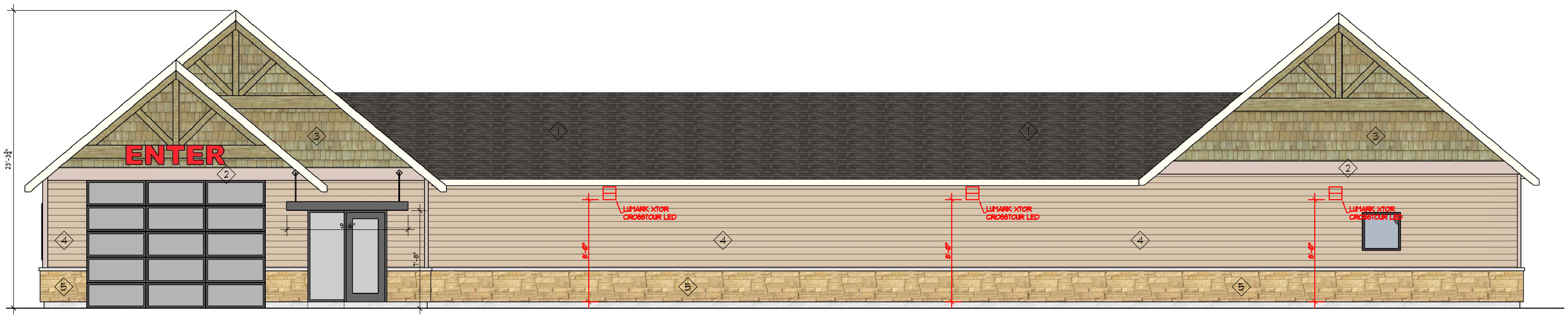
DATE: MAY 25, 2023
DRAWN:
JOB NO.: 2330

A2.1

SOUTH ELEVATION (A / A3.1)
SCALE : 1/4" = 1'-0"



EAST ELEVATION (B / A3.1)
SCALE : 1/4" = 1'-0"



NORTH ELEVATION (C / A3.1)
SCALE : 1/4" = 1'-0"

EXTERIOR FINSHES

1. ARCHITECTURAL COMP
2. HARDI TRIM BOARD
3. HARDI SHAKE
4. HARDI SIDING 6" WEATHER
5. CULTURED STONE VENEER

RONALD JAMES PED ARCHITECT P.C.
(503) 363-1456
1220 TWENTIETH ST SE #125
SALEM, OREGON 97302

REGISTERED ARCHITECT
RONALD JAMES PED
SALEM, OREGON
STATE OF OREGON

1 — 12/29/23 REVISION 1 REVISED FLOOR PLAN
2 — 02.19.2024 REVISION 2 PLAN REVIEW LETTER 2

CONVENIENCE STORE
US MARKET #675
4601 SILVERTON RD, SALEM OREGON

DATE: MAY 25, 2023
DRAWN:
JOB NO.: 2330

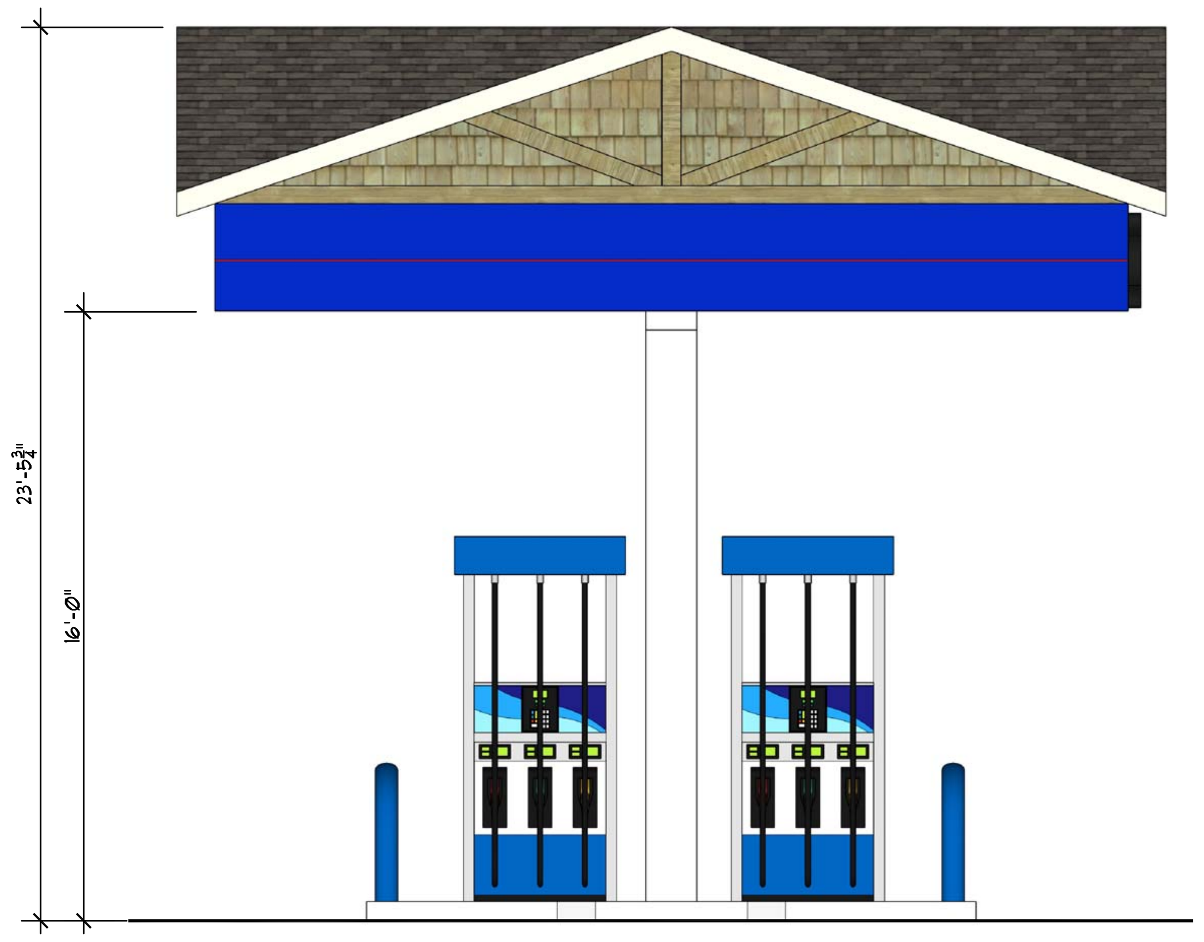
A3.1

LAST SAVED: Mon, 18 Mar 2024 - 12:38 pm LOCATION: P:\2231 US Market IE Construction 2115 Molalla RD Woodburn\2014 A1.1 03.06.24.dwg A3.1
PRINTED: Mon, 18 Mar 2024 - 01:39 pm PRINTED BY: Jordan

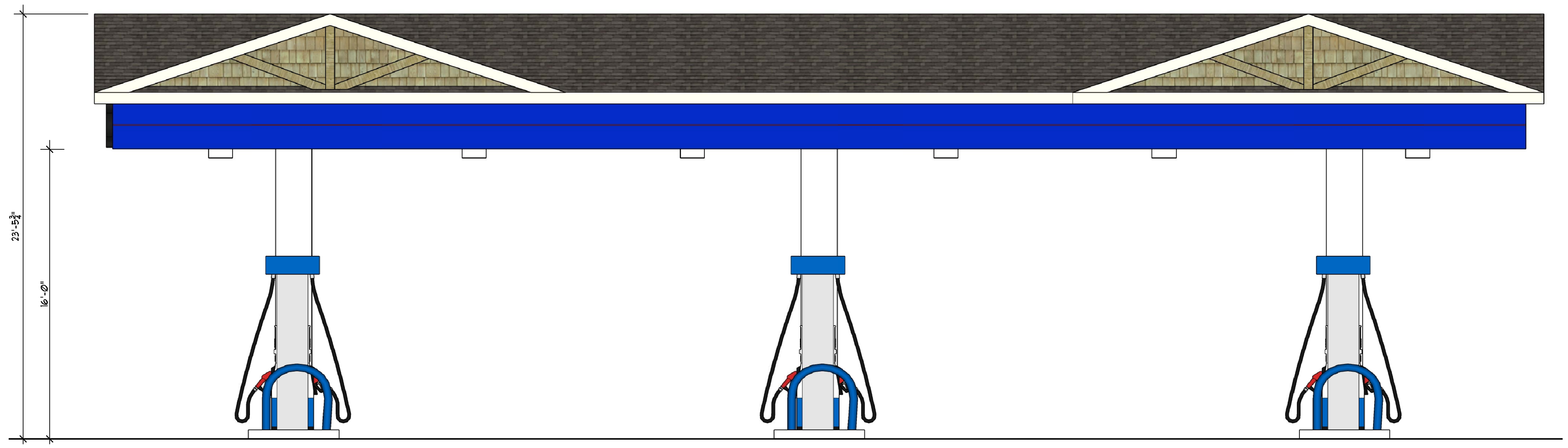
EXTERIOR FINSHES

1	ARCHITECTURAL COMP
2	HARDI TRIM BOARD
3	HARDI SHAKE
4	HARDI SIDING 6" WEATHER
5	CULTURED STONE VENEER

A/A3.2 WEST ELEVATION
SCALE : 1/4" = 1'-0"

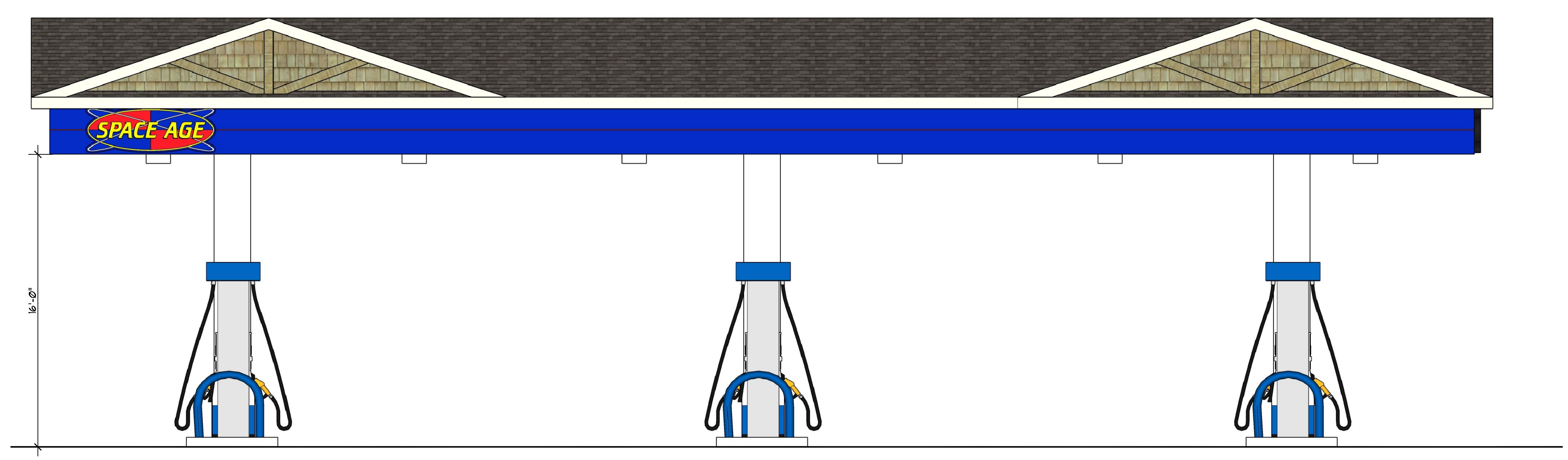


B/A3.2 CANOPY WEST ELEVATION
SCALE : 1/4" = 1'-0"



C/A3.2 CANOPY NORTH ELEVATION
SCALE : 1/4" = 1'-0"

D/A3.2 CANOPY EAST ELEVATION
SCALE : 1/4" = 1'-0"



E/A3.2 CANOPY SOUTH ELEVATION
SCALE : 1/4" = 1'-0"

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REGISTERED ARCHITECT
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SALEM, OREGON
STATE OF OREGON

1 — 12/29/23 REVISION 1 REVISED FLOOR PLAN
2 — 02.19.2024 REVISION 2 PLAN REVIEW LETTER 2

CONVENIENCE STORE
US MARKET #675
4601 SILVERTON RD, SALEM OREGON

DATE: MAY 25, 2023
DRAWN:
JOB NO.: 2330

A3.2

LAST SAVED: Mon, 18 Mar 2024 - 12:38 pm LOCATION: P:\2231 US Market IE Construction 2115 Molalla RD Woodburn\2014 A1.1 03.06.24.dwg A3.2
PRINTED: Mon, 18 Mar 2024 - 01:40 pm PRINTED BY: Jordan

Attachment 4:: Revised Transportation Impact Analysis

lancaster
mobley

2115 Molalla Road

Transportation Impact Analysis

Woodburn, Oregon

Date:
Revised March 25, 2024

Prepared for:
I&E Construction

Prepared by:
Jennifer Danziger, PE
Ken Kim, PE

REGISTERED PROFESSIONAL
ENGINEER
16168
Digitally signed by Jennifer Danziger
Date: 2024.03.25 13:09:17-07'00'
OREGON
SEPT. 15, 1992
JENNIFER ELISE DANZIGER

RENEWS: 12/31/2025

Table of Contents

List of Appendices

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List of Tables

Executive Summary

1. A gas station with convenience store and car wash is planned at 2115 Molalla Road (OR 211) in Woodburn, Oregon. Construction of the development is expected to be completed by the year 2025.
2. Four driveways are proposed for the site as shown in the attached site plan, but only one would connect to Molalla Road (OR 211). A driveway on the east side of the site would connect to the highway access for the Woodburn Place Apartments East. The other driveways connect to the apartments north and west of the site.
3. The primary trip generation is estimated at 76 morning peak hour, 52 evening peak hour, and 654 daily trips that will be added to the network.
4. A review of the most recent five years of available crash data yielded the following conclusions:
    - The signalized highway intersection (OR 214/OR 211 & OR 99E) has a calculated crash rate that exceeds the 90th percentile rates identified by ODOT for similar types of intersections and is listed in the worst 5 percent of the ODOT SPIS list. Although capacity improvements at the signalized intersection are listed in the TSP and in the TIAs prepared for nearby developments, these projects are unlikely to change the crash rate and would not be effective as safety mitigation. Since no consistent crash patterns were identified at the intersection, no safety mitigation is recommended.
    - The Safeway shopping center driveway access on Molalla Road (OR 211) has a crash rate that exceeds the 90th percentile rates identified by ODOT for similar types of intersections. Access control to address crashes at the driveway to the Safeway shopping center would need to be initiated by ODOT and should not be the responsibility of other development in the area.
    - At the other study intersections, no significant trends or crash patterns were identified, and no safety mitigation is recommended per the crash data analysis.
5. Based on the sight distance analysis, adequate sight distance is available for the planned site access intersections along Molalla Road (OR 211). No sight distance mitigation is necessary or recommended.
6. Left-turn lanes are already present on Molalla Road (OR 211) at most of the study intersections; the only locations currently without a left-turn lane are westbound Molalla Road (OR 211) at the Safeway shopping center driveway and eastbound Molalla Road (OR 211) at the future access to Woodburn Place West apartments. Left-turn lane warrants are projected to be met at each location under both background and buildout scenarios. Because the warrants are met regardless of whether or not the proposed development is constructed, no mitigation at this intersection is recommended as part of the proposed development.
7. At all other unsignalized intersections, where left-turn warrants are projected to be met, a left-turn lane is already provided on Molalla Road (OR 211). This includes the site access, where warrants are projected to be under buildout conditions during both the morning and evening peak hours.
8. Preliminary traffic signal warrants were examined for all unsignalized study intersections. None of the intersections are projected to meet signal warrants under any analysis scenario.
9. All study area intersections are expected to meet mobility standards for all analysis scenarios except for the signalized intersection of Molalla Road (OR 211)/Mt. Hood Avenue (OR 214) & N Pacific Highway (OR 99E).

This intersection is expected to operate with a v/c ratio over 0.90 during the evening peak hour under both year 2025 background and year 2025 buildout scenarios, which exceeds the ODOT mobility target. The proposed development will not change the overall intersection v/c ratio but will result in a small increase in delay. Recommended mitigation is detailed below.

10. In general, changes in 95th percentile queuing between the year 2025 background and year 2025 buildout scenarios are anticipated to be small. Queues for the westbound left-turn movement on Molalla Road (OR 211) at the traffic signal with N Pacific Highway (OR 99E) are anticipated to spill out of the turn lane into the adjacent through lane and past the entrance to the Safeway shopping center during the evening in both the year 2025 background and year 2025 buildout scenarios. As a result, queues on the northbound Safeway access are expected to extend into the parking lot during the evening in both future scenarios. Improvements at the signalized intersection are recommended below. No mitigation for the shopping center access is recommended because drivers have alternate options for exiting the shopping center.

11. Two potential mitigation options were evaluated to address the expected deficiencies at the intersection of Molalla Road (OR 211)/Mt. Hood Avenue (OR 214) & N Pacific Highway (OR 99E) with the following findings and recommendations:

    - The options considered include: 1) the Woodburn TSP Project R14, which would add a second southbound left-turn lane on OR 99E and a corresponding eastbound receiving lane on OR 211, and 2) a separate westbound right-turn lane as conditioned for the Woodburn Place West apartments.

    - Both mitigation options result in a small improvement in operations during evening peak because neither the southbound left turn nor the westbound right turn is a critical movement under either future scenario. However, the addition of a westbound right-turn lane would improve intersection operations to a greater extent in the morning peak hour compared with the dual southbound left-turn lanes. The options result in similar changes in queues compared with the current configuration.

    - Given these findings, the westbound right-turn lane appears to be equally or more effective than the dual southbound left-turn lanes and it is likely to have a lower cost and fewer impacts than the TSP improvement. Therefore, the westbound right-turn lane is recommended as the preferred intersection improvement. The proposed development is estimated to contribute 1.2 percent of the total evening peak hour traffic traveling through the intersection and 2.3 percent of the traffic in the existing westbound through-right lane under year 2025 buildout conditions. This traffic estimate should be considered in the proportionate share contribution for the project.

Project Description

Introduction

A gas station with convenience store and car wash is planned at 2115 Molalla Road (OR 211) in Woodburn, Oregon. Construction of the development is expected to be completed by the year 2025.

This Transportation Impact Analysis (TIA) report examines the impacts of the proposed development on the transportation system in the vicinity of the project site. Its purpose is to determine whether the transportation system within the vicinity of the site is capable of safely and efficiently supporting the proposed development and to determine any mitigation that may be necessary to do so.

Parameters of the TIA were scoped with the City of Woodburn and ODOT. The resulting study area includes intersections that are under both jurisdictions, including:

1. Molalla Road (OR 211)/Mt. Hood Avenue (OR 214) & N Pacific Highway (OR 99E)
2. Molalla Road (OR 211) & Safeway Access
3. Molalla Road (OR 211) & June Road/Woodburn Place West
4. Molalla Road (OR 211) & Primary Site Access
5. Molalla Road (OR 211) & Woodburn Place East
6. Molalla Road (OR 211) & Cooley Road

All supporting data and calculations are included in the appendices to this report.

Location Description

The property located at 2115 Molalla Road was recently annexed into the Woodburn city limits with General Commercial (CG) zoning. The 0.93-acre property shown in red in Figure 1 comprises three tax lots (051W09B 1000, 1100, 1200). A site plan is included in Appendix A.

Four driveways are proposed for the site as shown in the attached site plan, but only one would connect directly to Molalla Road (OR 211).

1. A recently constructed access to the site from the highway is located on the west edge of the site approximately 330 feet east of the site access for Woodburn Place Apartments West and 160 feet west of the site access for Woodburn Place Apartments East.
2. A driveway on the east side of the site would connect to the highway access for the Woodburn Place Apartments East.
3. A driveway on the west side of the site would connect to Woodburn Place Apartments West.
4. A driveway on the north side of the site would connect to Woodburn Place Apartments East.

Figure 1: Project Location and Access (Marion County GIS)

Vicinity Streets

The study area includes roadways under state, county, and city jurisdiction that are expected to be impacted by the proposed development. Table 1 describes each of the vicinity roadways.

Table 1: Vicinity Roadway Descriptions

Street Name	Functional Classification	Travel Lanes	Speed (mph)	Curbs & Sidewalks	On-Street Parking	Bicycle Facilities
Jurisdiction: ODOT						
Pacific Highway OR 99E	Regional Hwy Major Arterial (City)	2-3	35-55	Partial	Prohibited	Partial
Molalla Road OR 211	District Hwy Major Arterial (City)	2-5	30-35	Partial Both Sides	Prohibited	Yes
Mt. Hood Avenue OR 214	District Hwy Major Arterial (City)	2-5	30-35	Both Sides	Prohibited	Yes
Jurisdiction: Marion County						
Cooley Road	Local Street	2	40	Partial	Prohibited	None
Jurisdiction: City of Woodburn						
June Way	Local Street	2	25	Both Sides	Permitted	None

Study Intersections

Based on coordination with agency staff, five existing intersections and one future intersection were identified for analysis. A summarized description of the study intersections is provided in Table 2.

Table 2: Study Intersection Descriptions

	Intersection	Geometry	Traffic Control	Phasing/Stopped Approaches
1	Molalla Road (OR 211)/Mt. Hood Avenue (OR 214) & N Pacific Highway (OR 99E)	Four Legs	Signalized	Protected Lefts
2	Molalla Road (OR 211) & Safeway Access	Three Legs	Stop-Controlled	NB Stop
3	Molalla Road (OR 211) & June Road/Woodburn Place West	Four Legs [1]	Stop-Controlled	NB/SB Stop
4	Molalla Road (OR 211) & Primary Site Access	Three Legs	Stop-Controlled	SB Stop
5	Molalla Road (OR 211) & Woodburn Place East	Three Legs	Stop-Controlled	SB Stop
6	Molalla Road (OR 211) & Cooley Road	Four Legs [2]	Stop-Controlled	NB/SB Stop

Notes:

1. *The north leg will be constructed by the Woodburn Place West Project.*
2. *The north leg is a private driveway.*

A vicinity map showing the project site, vicinity streets, and study intersection configurations is shown in Figure 2.

Bicycle and Pedestrian Access

Mollala Road (OR 211) currently has gaps in the sidewalk and bicycle network. Sidewalk gaps include a segment on the north side between June Way and OR 99E and a segment on the south side between June Way and the shopping center to the west. Bicycle system gaps include a segment on the north side of the highway between June Way and OR 99E and a segment on the south side between June Way and the shopping center to the west.

According to the final decision for the Woodburn Place West apartments,[1] the development will be constructing frontage improvements along the north side of Molalla Road (OR 211) that will include a minimum 6-foot bike lane, 8-foot planter strip, and 8-foot sidewalk. Additionally, the Condition T-BP1.a indicates the developer shall "fill the highway south sidewalk gap within the block face between June Way and OR 99E."

[1] Woodburn Planning Commission Final Decision, CU 22-01 & DR 22-08, September 8, 2022.

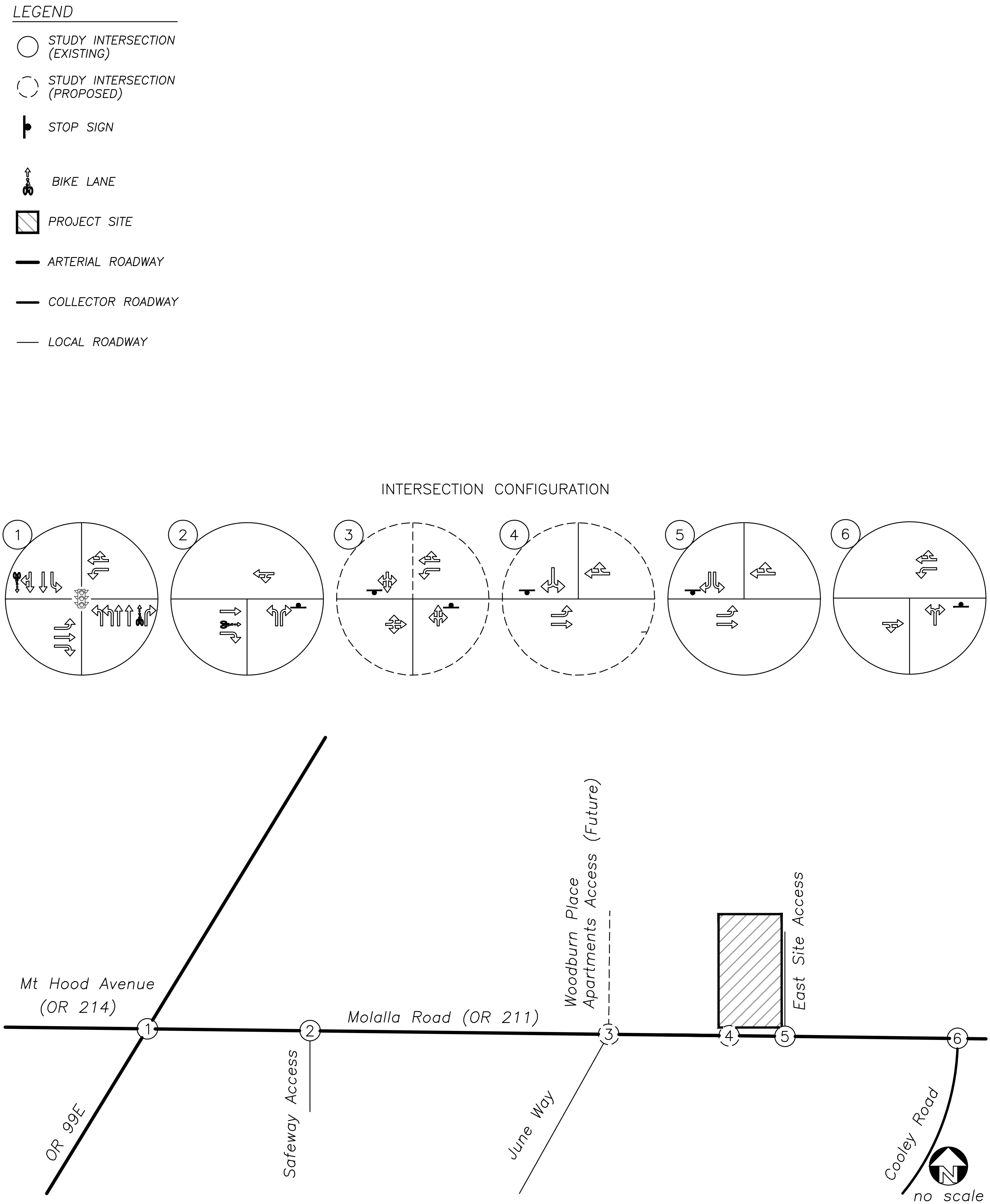
With these improvements, the sidewalk on the north side of Molalla Road (OR 211) would be completed from the apartments to the intersection with OR 99E. The gap in the bicycle system would remain.

Transit

Woodburn Transit System (WTS) typically provides fixed route and express service along OR 214, OR 99E, downtown and through some of the nearby neighborhoods. The closest stops to the proposed development are located at Mt Hood Avenue (OR 214) & OR 99E, approximately 1,800 feet west of the site. The summarized description of the transit line is shown in Table 3.

Table 3: Transit Line Description

Transit Line (TriMet)	Service Area	Day of Week	Service Times	Typical Headways (Minutes)	Nearest Stops
Express Loop	Downtown, Commercial Area Nearby OR 214 & 99E, and OR 214 & Evergreen Road	M - F	8:00 AM - 06:00 PM	60	Mt Hood Avenue (OR 214)/ OR 99E
		Saturday	9:00 AM - 06:00 PM	60	
		Sunday	9:00 AM - 03:00 PM	60	
Woodburn City Loop		M - F	8:00 AM - 06:00 PM	60	
		Saturday	9:00 AM - 06:00 PM	60	
		Sunday	9:00 AM - 03:00 PM	60	



VICINITY MAP

Lane Configurations & Traffic Control

Figure 2

2115 Molalla Road

3/15/2024

lancaster mobley

Site Trips

Trip Generation

To estimate the number of trips that could be generated by the proposed development, trip rates from the *Trip Generation Manual* [2] were used.

The site had previously been developed with one single-family home. That home has since been demolished with the development of the Woodburn Place Apartments to the east and west of the site. While the trips associated with this prior use will not be present in any traffic counts collected for the TIA, it is important to account for the trips when considering the SDC calculation. Therefore, data from the land use code 210, Single Family Detached Housing is used to estimate the site's prior use trip generation based on the number of dwelling units (DU).

The proposed development consists of a gas station with convenience store and car wash. The 11th edition of the *Trip Generation Manual* does not contain a code that includes all three uses together as a single land use; the last manual to contain a land use code (946) for this use is the 9th Edition.

The approach to estimating trip generation initially considered using land use code 945, Convenience Store/Gas Station, based on the number of vehicle fueling positions (VFPs) for stores with 4,000 to 5,500 SF of gross floor area (GFA)[3] and land use code 948, Automated Car Wash, based on the number of car wash tunnels. However, this approach has several shortcomings. First, data for the car wash is only available for the evening peak hour; therefore, the car wash trips would not be addressed during either the morning peak hour or for the day. Second, many car wash users at a facility like the one proposed also purchase gas and/or use the convenience store but the internal trip capture rates are not available and typical retail capture rates are likely to underestimate the internal rates.

Therefore, an alternative approach is proposed for developing trip generation. Data from the 9th Edition of the `*Trip Generation Manual* for land use code 946, Gasoline/Service Station with Convenience Market and Car Wash, was compared with 945, Gasoline/Service Station w/Convenience Market, to understand how the addition of the car wash to the site facilities affected trip generation rates. The rates for both land uses are based on the number of VFPs. The results are summarized in Table 4.

---

[2] Institute of Transportation Engineers (ITE), Trip Generation Manual, 11th Edition, 2021.

[3] Vehicle fueling positions is recommended as the variable as the fuel pumps are prominently positioned closest to the roadway while the convenience store is located behind the pumps.

Table 4: Trip Rate Comparison

ITE Code	Morning Peak Hour	Evening Peak Hour	Daily Trips
945 - Gasoline Station with Convenience	10.16	13.38	162.78
946 - Gasoline Station with Convenience & Car Wash	11.84	13.86	152.84
Estimated % Trip Increase	17%	4%	-6%
Proposed % Trip Increase	17%	4%	11%

Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, 9th Edition, 2012.

As shown in Table 4, comparing the trip rates with and without a car wash shows that trip generation rates with the car wash were 17 percent higher in the morning and 4 percent higher in the evening; however, the daily rate was 6 percent lower.

To estimate the trip generation for the site, we propose applying the calculated percentage trip increases from Table 4 to the 11th Edition trip generation estimates for a gas station + convenience store for the morning and evening peak hours. An average of the peak hour percentage trip increase is proposed for application to the daily trip estimates. This approach allows us to estimate the effects of the car wash throughout the day instead of just during the evening peak hour while using the more detailed trip rates from the newest edition of the *Trip Generation Manual*.

Total Site Trips

The total site trips using this approach are summarized in Table 5. The results are 190 morning peak hour, 143 evening peak hour, and 1,712 daily trips.

Internal Trips

The proposed facility will be surrounded on three sides and have multiple shared accesses with the Woodburn Place Apartments, which include 489 housing units. Some trips between the apartments and the retail/service facilities are anticipated to occur. These internal trips will not utilize the public roadways and need to be deducted from the total site trips. To estimate the internal trip capture rate, the methodology outlined in the NCHRP Report 684[4] was applied. The results are an internal trip deduction of 2 trips (1 percent) during the morning peak hour and 25 trips (17 percent) during the evening peak hour. To estimate the daily internal trips, an average of the morning and evening capture rates was applied for a deduction of 154 daily trips (9 percent).

As shown in Table 5, the external site trips are estimated at 188 morning peak hour, 118 evening peak hour and 1,558 daily trips.

Pass-By Trips

The proposed development is expected to attract pass-by trips to the site. Pass-by trips are trips that leave the adjacent roadway to patronize an establishment and then continue in their original direction of travel.

---

[4] Transportation Research Board. NCHRP Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments, 2011.

The newest ITE *Trip Generation Manual* includes updates to the pass-by rates. The average rates for sites with between 2 and 8 VFPs are 60 percent for the morning peak period and 56 percent for the evening peak period. The daily pass-by rate was assumed to be the average (58 percent) of the peak period rates. The resulting pass-by trips are estimated at 112 morning peak hour, 66 evening peak hour, and 904 weekday trips.

Primary Trips

As shown in Table 5, the primary trip generation is estimated at 76 morning peak hour, 52 evening peak hour, and 654 daily trips that will be added to the network.

Table 5: Trip Generation

ITE Code	Intensity	Morning Peak Hour			Evening Peak Hour			Daily Trips
		In	Out	Total	In	Out	Total	
Prior Land Use								
210 - Single-Family Detached Housing	1 DU	0	1	1	1	0	1	10
Proposed Land Use								
945 - Convenience Store/Gas Station	6 VFPs	81	81	162	69	68	137	1,542
Additional Traffic for Car Wash		*17%*			*4%*			*11%*
		14	14	28	3	3	6	170
Total Site Trips		95	95	190	72	71	143	1,712
Internal Trips between Site & Adjacent Apartments		*1%*			*17%*			*9%*
		-1	*-1*	*-2*	*-7*	*-18*	*-25*	*-154*
External Site Trips		94	94	188	65	53	118	1,558
Pass-By		*60%*			*56%*			*58%*
		-56	*-56*	*-112*	*-33*	*-33*	*-66*	*-904*
Primary Trips		38	38	76	32	20	52	654

Trip Distribution

A preliminary directional distribution of the site trips to and from the proposed development was estimated based on other approved developments, locations of likely destinations, and locations of major transportation facilities in the site vicinity.

Primary Trips

Because the proposed development is a "convenience" service, primary trips are anticipated to be short in length and to come primarily from nearby neighborhoods; thus, dissipating quickly from the arterial network. The following trip distribution was applied to primary trips:

- 25 percent to/from the east on Molalla Road (OR 211)
    - 10 percent to/from south on Cooley Road
    - 15 percent to/from east on Woodburn-Estacada Highway (OR 211)

- 30 percent to/from the west on Mt Hood Avenue (OR 214)
    - 15 percent to/from local streets between OR 99E and 5th Street
    - 10 percent to/from 5th Street
    - 5 percent to/from west of 5th Street
- 15 percent to/from the north on N Pacific Highway (OR 99E)
- 30 percent to/from the south on N Pacific Highway (OR 99E)
    - 5 percent to/from the local streets between OR 214/211 and Hardcastle Avenue
    - 5 percent to/from east/west on Hardcastle Avenue
    - 15 percent to/from the east/west on Young Street
    - 5 percent to/from south on N Pacific Highway (OR 99E)

This trip distribution pattern differs from those applied to the adjacent apartments because it is a commercial development rather than residential. It is the first gas station/convenience store that anyone traveling to/from the east on OR 211 will encounter, which is why the allocation to/from the east was higher, 25 percent versus 15 percent for the apartments. As a convenience service, the remainder of the traffic was assumed to serve primarily the eastern half of the Woodburn community. More of the community lies to the south of the highway than to the north, which is why more traffic is assumed to be traveling to/from the south than the to/from the north compared with the apartments, which split the north/south traffic.

Pass-By Trips

The following trip distribution for the pass-by trips was estimated from the directional split based on existing patterns:

- During the morning peak hour, approximately 45 percent will be traveling eastbound on Molalla Road (OR 211) and 55 percent will be traveling westbound
- During the morning peak hour, approximately 55 percent will be traveling eastbound on Molalla Road (OR 211) and 45 percent will be traveling westbound

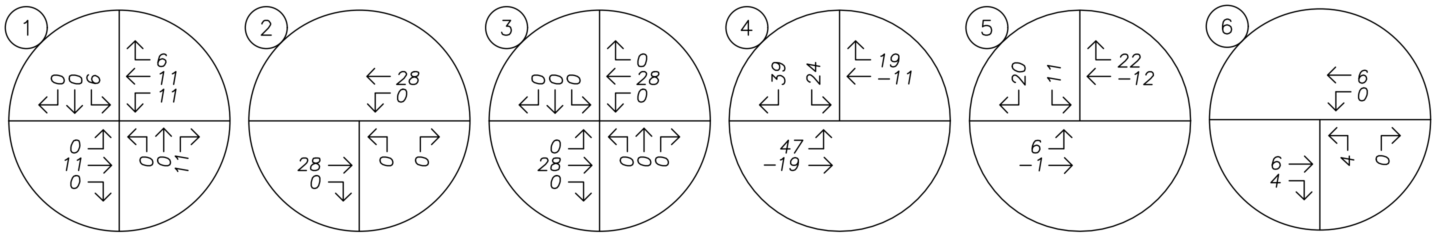
Trip Assignment

The trip distribution and assignment for the total site trips generated during the morning and evening peak hours are shown in Figure 3. A breakdown of site trips by type of trip is included in Appendix B.

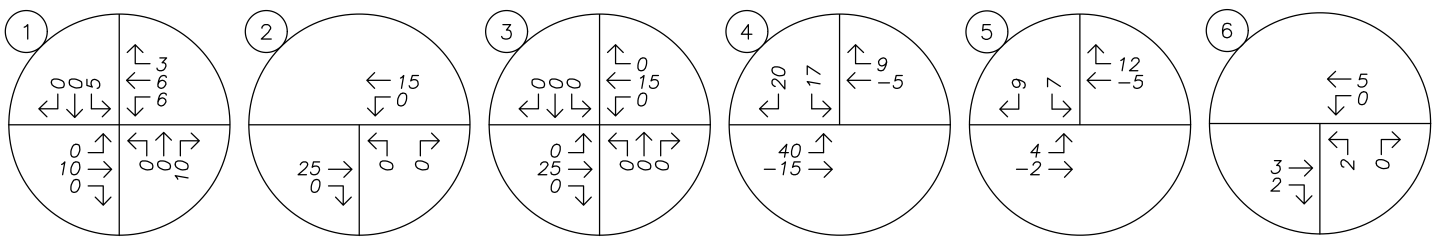
XX% PERCENT OF PROJECT TRIPS

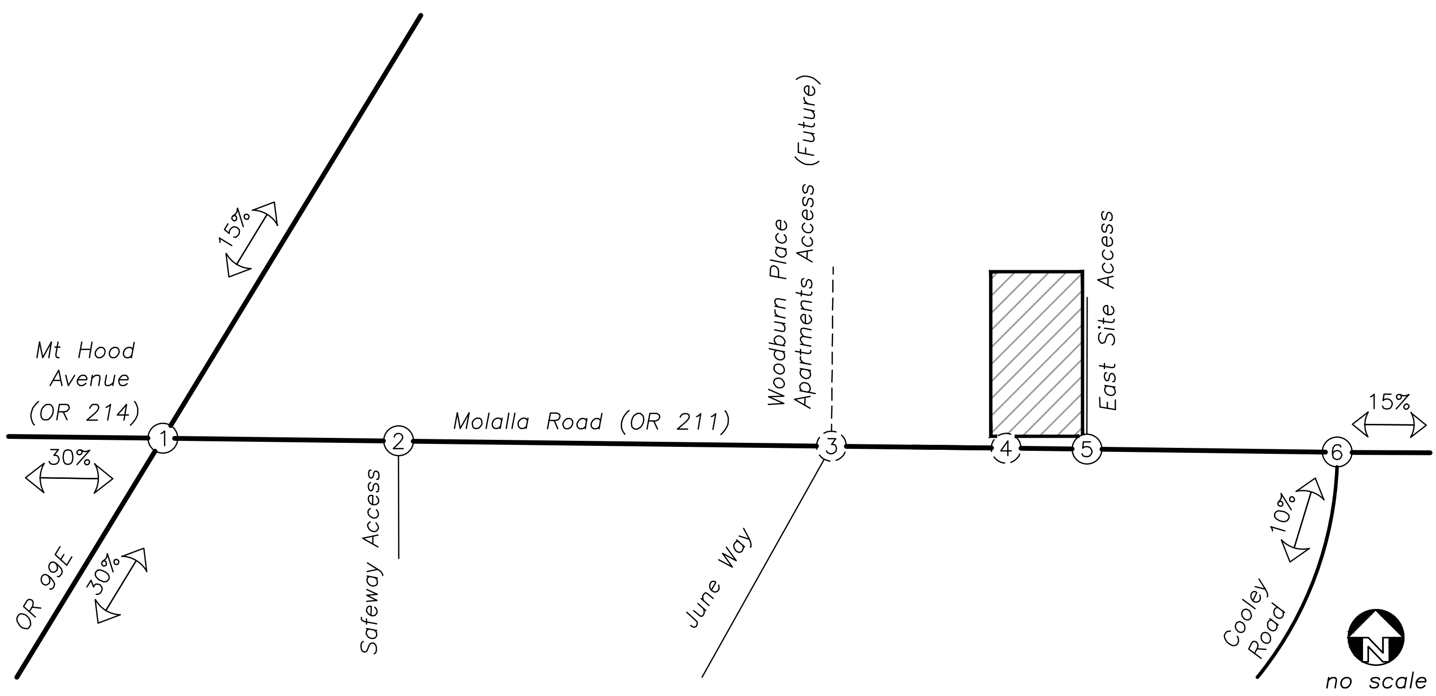
PRIMARY TRIP GENERATION			
	IN	OUT	TOTAL
AM	38	38	76
PM	32	20	52

AM PEAK HOUR



PM PEAK HOUR





TRAFFIC VOLUME
Proposed Development Plan - Site Trips
AM & PM Peak Hours

Figure 3
2115 Molalla Road
3/15/2024

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Traffic Volumes

Existing Conditions

All traffic counts were collected on September 7, 2023, while school was in session at the study intersections. All traffic counts are included in Appendix B.

Seasonal Adjustments

Volumes on the state highways, OR 211, OR 214, and OR 99E were seasonally adjusted following the procedures in ODOT's *Analysis Procedures Manual* (APM). As agreed with ODOT staff, the adjustment factor was developed using the automatic traffic recorder (ATR) method. Data from ATR #24-001 for the years 2016 through 2021 was used, excluding the year 2020, which shows a different seasonal pattern than other years due to the influence of the pandemic. The resulting factor of 1.034 was applied to the morning and evening peak hour volumes for all movements at the intersection of Molalla Road (OR 211) at N Pacific Highway (OR 99E) and the east-west through movements along Molalla Road (OR 211) at all the other study intersections.

Traffic Volumes

The year 2023 existing traffic volumes for the morning and evening peak hours are shown in Figure 4.

A comparison of the 2023 existing traffic volumes with those presented in the TIA prepared for the Woodburn Place West Apartments shows that the more recent traffic volumes are lower. The counts for the apartment project were collected in the year 2019, prior to the pandemic. During the pandemic, traffic volumes on most roadways dropped significantly. After the pandemic, traffic volumes increased again with some roadways returning to pre-pandemic volumes but some roadways continue to show lower volume trends.

Table 6 compares ODOT's average annual daily traffic volume estimates (AADT) on the study area highways for the year 2019, prior to the pandemic, and 2022, the most recent year of data available since the pandemic.

Table 6: Comparison of 2019 and 2022 Highway Volumes

Highway Location	Average Annual Daily Traffic (AADT)*		3-Year Growth
	2019	2022	
OR 214 West of OR 99E	14,098	14,998	6.4%
OR 211 East of OR 99E	8,006	6,570	-17.9%
OR 99E North of OR 214 & OR 211	17,456	17,760	1.7%
OR 99E & OR 214 South of OR 211	20,145	19,490	-3.3%
Total	59,705	58,818	-1.5%

** The AADT volumes are based on counts collected in May 2022 and April 2019.*
Source: Oregon Traffic Monitoring System, https://ordot.public.ms2soft.com/tcds/tsearch.asp?loc=Ordot&mod=TCDS

The table shows that the AADT was still lower in 2022 than 2019 on OR 211 (Molalla Road) and OR 99E (N Pacific Highway) south of the intersection with OR 211, The AADT on OR 214 (Mt. Hood Avenue) and OR 99E (N Pacific Highway) have returned to a net positive growth. Overall, volumes through the intersection of these highways were still lower in 2022 than in 2019.

Background Conditions

The background condition reflects a future volume forecast without the proposed development. Two components were included in the background traffic estimates: 1) general growth and 2) growth associated with planned developments. The background year is assumed to be 2025, which corresponds with the buildout of the proposed development.

As agreed upon during the scoping process, separate growth rates were applied to the highway and local streets in the study area. For the highways, a background growth rate of 1.17 percent per year was developed based on future growth trends from the state highways summarized in Table 7.

Table 7: Highway Growth Trends

Hwy	MP	Description	2019	2041	Annual Growth
081 (OR 99E)	31.65	North of Woodburn-Estacada Highway (OR211) and Hillsboro-Silverton Highway (OR214) [0.05 mile]	17,500	21,500	1.04%
081 (OR 99E)	31.80	South of Woodburn-Estacada Highway (OR211) [0.10 mile]	20,100	27,800	1.74%
140 (OR 214)	39.24	West of Pacific Highway East (OR99E) [0.05 mile]	14,100	14,000	0.00%
161 (OR 211)	0.15	East of Pacific Highway East (OR99E) and Hillsboro-Silverton Highway (OR214) [0.15 mile]	8,000	11,400	1.93%
Average Growth					1.17%

Source: 2041 Future Volume Table

For the local streets and driveways, a background growth rate for 0.5 percent per year was applied per the Woodburn Development Ordinance (WDO) Section 3.04.05F.

In addition to the general growth, traffic from the following developments was added to the network volumes:

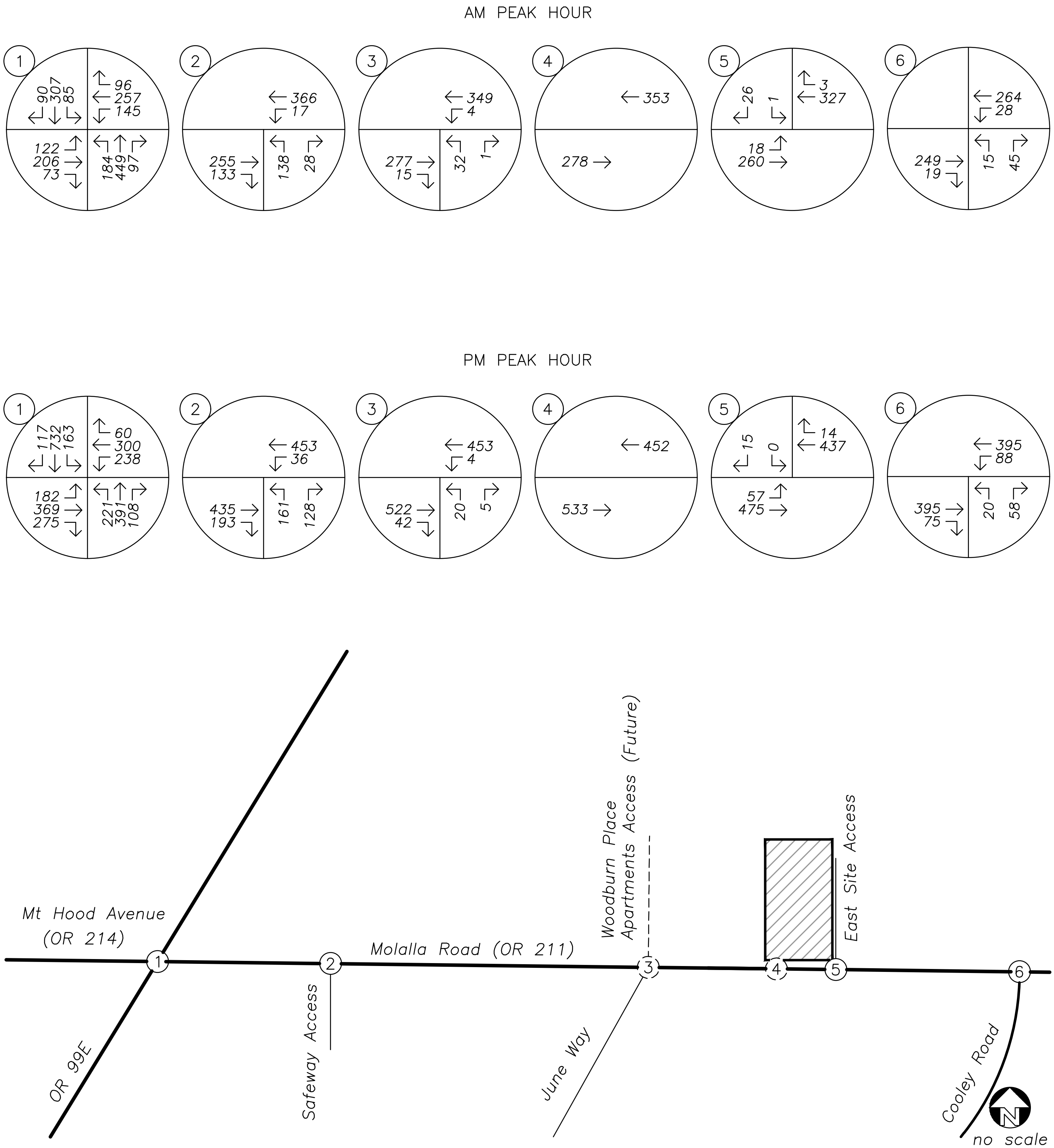
- Woodburn Place West
- Pacific Valley Apartments
- Cleveland Crossing Apartments

Figure 5 presents the year 2025 background volumes for the morning and evening peak hours.

Buildout Conditions

Peak hour trips calculated to be generated by the proposed development, as described earlier within the *Site Trips* section, were added to the background volumes to estimate the buildout volumes.

Figure 6 presents the year 2025 buildout volumes for the morning and evening peak hours.



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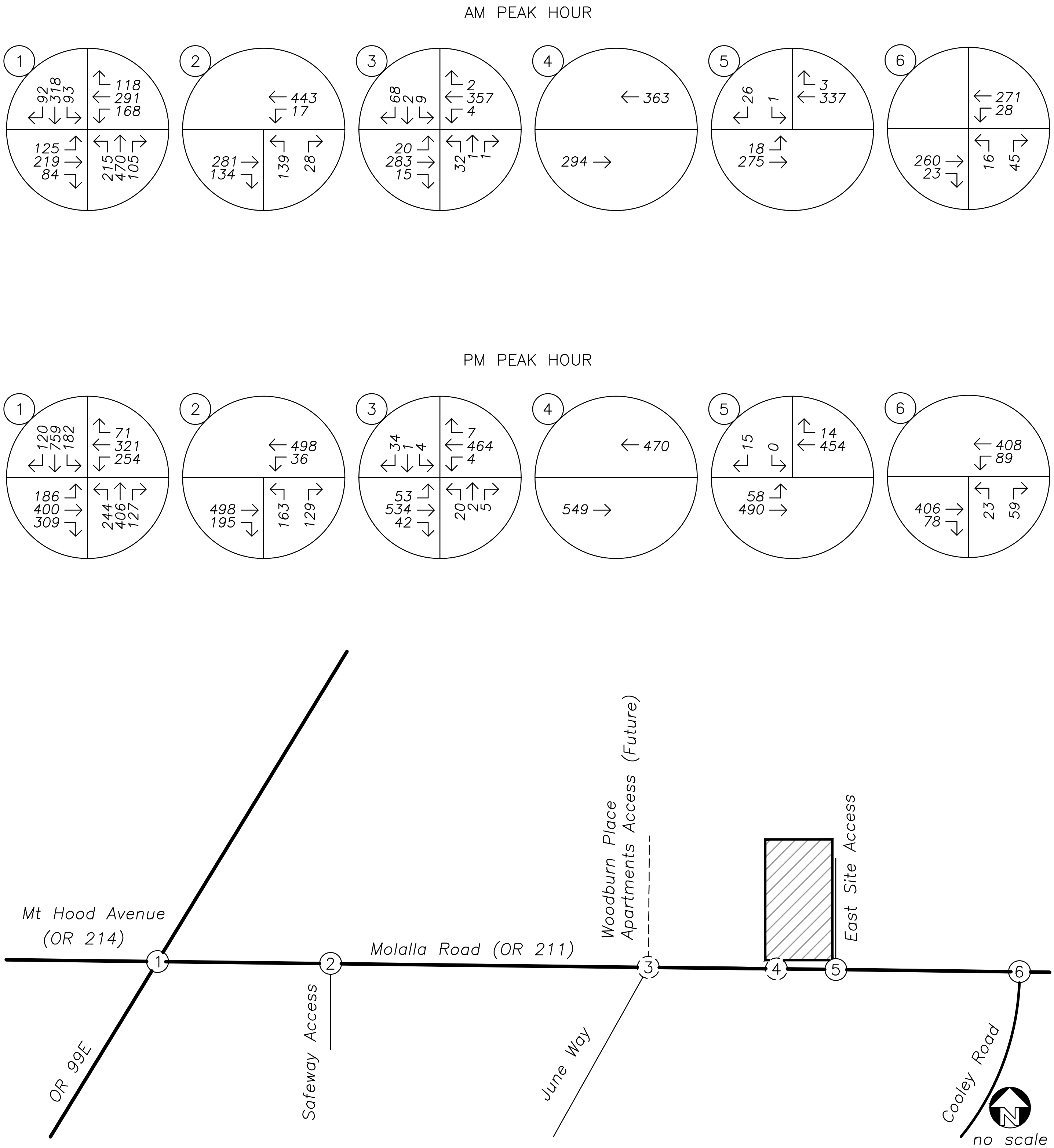
TRAFFIC VOLUMES
Year 2023 Existing Conditions
AM & PM Peak Hours

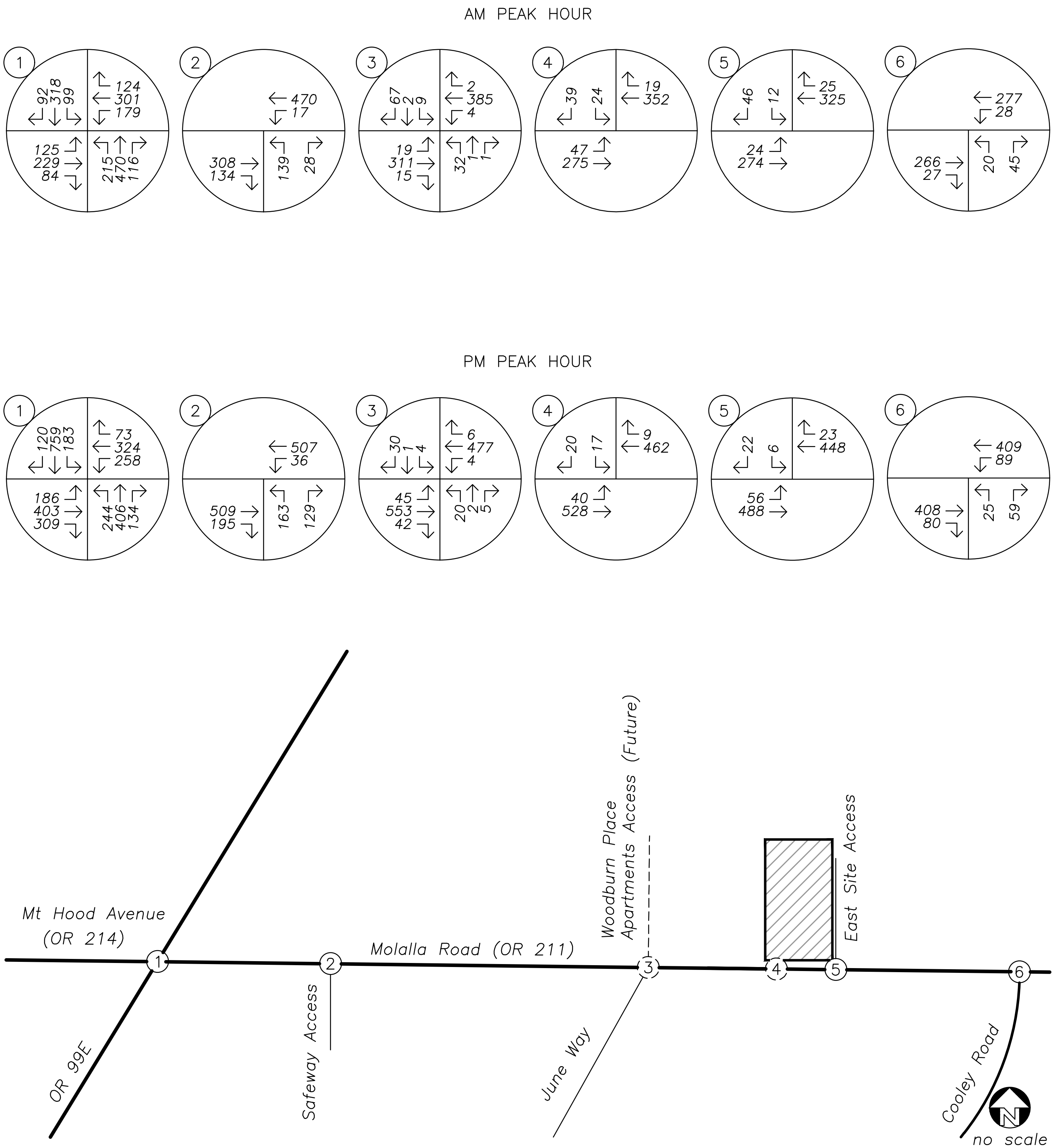
Figure 4
2115 Molalla Road
3/15/2024



TRAFFIC VOLUMES
Year 2025 Background Conditions
AM & PM Peak Hours

lancaster mobley

Figure 5
2115 Molalla Road
3/15/2024



TRAFFIC VOLUMES
Year 2025 Buildout Conditions
AM & PM Peak Hours

Figure 6
2115 Molalla Road
3/15/2024

Safety Analysis

Crash History Review

Using data obtained from ODOT's Crash Data System, a review of approximately five years of the most recent available crash history (January 2017 through December 2021) was performed at the study intersections. The crash data was evaluated based on the number of crashes, the type of collisions, and the severity of the collisions. Crash severity is based on injuries sustained by people involved in the collision, and includes five categories:

- *PDO* – Property Damage Only
- *Injury C* – Possible Injury
- *Injury B* – Suspected Minor Injury
- *Injury A* – Suspected Serious Injury
- *Fatality*

Crash rates provide the ability to compare safety risks at different intersections by accounting for both the number of crashes that have occurred during the study period and the number of vehicles that typically travel through the intersection. Crash rates were calculated using the common assumption that traffic counted during the evening peak hour represents approximately 10 percent of the AADT at the intersection.

Table 8 provides a summary of crash types while Table 9 summarizes crash severities and rates for the three study area intersections with a history of reported crashes. Detailed crash data is provided in Appendix C.

Table 8: Collision Type Summary

Intersection		Crash Type							Total Crashes
		Rear End	Turn	Angle	Side-swipe	Other	Ped	Bike	
1	Molalla Road (OR 211)/Mt. Hood Avenue (OR 214) & N Pacific Highway (OR 99E)	46	10	1	6	1	1	0	65
2	Molalla Road (OR 211) & Safeway Access	0	12	0	0	0	0	0	12
3	Molalla Road (OR 211) & June Road/Woodburn Place West	1	1	0	0	0	0	0	2

Table 9: Crash Severity and Rate Summary

Intersection		Severity					Total Crashes	ADT	Crash Rate	90th % Rate
		PDO	C	B	A	Fatal				
1	Molalla Road (OR 211)/Mt. Hood Avenue (OR 214) & N Pacific Highway (OR 99E)	21	35	7	2	0	65	31,560	1.129	0.860
2	Molalla Road (OR 211) & Safeway Access	5	6	1	0	0	12	14,060	0.468	0.293
3	Molalla Road (OR 211) & June Road/Woodburn Place West	0	2	0	0	0	2	10,460	0.105	0.293

Crash Severity

Two of the crashes related to the study area intersections resulted in a suspected serious injury (Injury A). All were reported at the intersection of Molalla Road (OR 211)/Mt. Hood Avenue (OR 214) & N Pacific Highway (OR 99E):

- A northbound vehicle stopping at the intersection was struck by another northbound vehicle. The passenger of the stopping vehicle sustained injuries classified as Injury A and no injuries were sustained by the drivers of either vehicle. The striking driver was reported as following too closely. The collision occurred under rain, wet, daytime conditions.
- A southbound vehicle making a left turn was struck by a vehicle traveling southbound. The drivers of both vehicles sustained injuries classified as Injury A while a passenger of the turning vehicle sustained injuries classified as Injury B and two passengers of the turning vehicle sustained injury classified as Injury C. The striking driver was reported as disregarding traffic signal and driving left of center. The collision occurred under clear, dry, nighttime (11:00 pm) conditions.

Pedestrian and Bicycle Collisions

One of the reported crashes involved a pedestrian. At the intersection of Molalla Road (OR 211)/Mt. Hood Avenue (OR 214) & N Pacific Highway (OR 99E), a eastbound passenger vehicle on Mt. Hood Avenue struck a pedestrian walking in the north crosswalk. The pedestrian sustained injuries classified as Injury B; no injuries were sustained by the driver of the vehicle. The driver of the vehicle was reported as failing to yield the right of way although an obstructed view was also noted. The collision occurred under clear, dry, daytime conditions.

ODOT 90th Percentile Crash Rates

Intersection crash rates were compared to the published statewide 90th percentile crash rates within ODOT's APM. According to Exhibit 4-1: Intersection Crash Rates per MEV by Land Type and Traffic Control in the APM, intersections which experience crash rates in excess of 90th percentile crash rates should be "flagged for further analysis".

Two of the study area intersections were calculated to have a crash rate that exceeds the 90th percentile crash rates for similar unsignalized intersections.

Molalla Road (OR 211)/Mt. Hood Avenue (OR 214) & N Pacific Highway (OR 99E)

The OR 211/OR 214 & OR 99E had 65 reported crashes over the five-year analysis period. However, the crash analysis shows that most (nearly 71 percent) crashes were rear-end collisions and the severity was generally low.

Forty-six (46) of the intersection-related crashes were reported as rear-end collisions. The cause or error was generally failure to avoid a stopped vehicle ahead or following too closely. Fifteen (15) of the crashes were reported in the eastbound direction movements, 13 crashes were reported in the southbound direction, 11 were reported in the northbound direction, and 7 were reported in the westbound direction. No specific pattern was identified for the rear-end collisions.

Ten (10) of the intersection-related crashes were reported as turning collisions. The cause or error was failure to yield right of way. Two (2) involved a vehicle making a westbound right-turn movement, 3 involved a vehicle making a southbound left-turn movement, 3 involved a vehicle making a northbound left-turn movement, and 2 involved a vehicle making an eastbound left-turn movement. Again, no specific pattern was identified for the turning collisions.

The other reported crashes involved all other legs of the intersection with no discernable patterns.

The Woodburn TSP identifies Project R14, which would "install a second left-turn lane on the southbound approach, install a second receiving lane on the east leg, and update signal timing in coordination with ODOT" as a medium priority project for capacity but does not identify specific safety improvements at the intersection. The TSP improvements are unlikely to change crash patterns at the intersection; therefore, Project R14 is not recommended as safety mitigation for the high crash rate.

The TIAs prepared for the Woodburn Place East and West apartments identified the need for a separate westbound right-turn lane. This improvement is unlikely to change crash patterns at the intersection; therefore, it is not recommended as safety mitigation for the high crash rate.

Molalla Road (OR 211) & Safeway Access

The Molalla Road (OR 211) & Safeway Access had 12 reported crashes over the five-year analysis period related to the driveway. All were reported as turning collisions while rear-end collisions in the vicinity of the driveway were assumed to be related to congestion at the traffic signal. Of the turning collisions, 7 involved a northbound left turn from the Safeway driveway, 3 involved a westbound left turn from the Molalla Road, and 1 involved a northbound right turn from the Safeway Access. In general, the drivers at fault failed to yield the right of way to the through movements.

The Woodburn TSP does not include any safety or capacity projects at this intersection. The only potential solution for the crash at this intersection would be access control restrictions to eliminate certain turning movements. This action would need to be initiated by ODOT and should not be the responsibility of development beyond the shopping center.

ODOT SPIS Review

The ODOT 2020 Safety Priority Index System (SPIS) list is based on reported crash data for the years 2017 through 2019. Two of the study area intersections were listed in the worst 15 percent[5] of SPIS list:

- Molalla Road (OR 211)/Mt. Hood Avenue (OR 214) & N Pacific Highway (OR 99E) – 95th percentile
- Molalla Road (OR 211) & Safeway Access – 85th percentile

These findings coincide with other factors in the crash review, including high crash rates and locations with crashes that resulted in an injury classified as Injury A.

Conclusions

The signalized highway intersection (OR 214/OR 211 & OR 99E) has a calculated crash rate that exceeds the 90th percentile rates identified by ODOT for similar types of intersections and is listed in the worst 5 percent of the ODOT SPIS list. No consistent crash patterns were identified. Although capacity improvements at the signalized intersection are listed in the TSP and in the TIAs prepared for nearby developments, these projects are unlikely to change the crash rate; therefore, no safety mitigation is recommended.

The Safeway shopping center driveway access on Molalla Road (OR 211) has a crash rate that exceeds the 90th percentile rates identified by ODOT for similar types of intersections. Access control to address crashes at the driveway to the Safeway shopping center but action would need to be initiated by ODOT and should not be the responsibility of development beyond the shopping center.

At the other study intersections, no significant trends or crash patterns were identified, and no safety mitigation is recommended per the crash data analysis.

Sight Distance Evaluation

A sight distance analysis was conducted at the two site accesses proposed on existing roadways. To evaluate the sight distance available at these intersections, intersection sight distance was measured and recommended in accordance with the current AASHTO manual[6]. According to AASHTO, the driver's eye is assumed to be 14.5 feet from the near edge of the nearest travel lane of the intersecting street and at a height of 3.5 feet above the minor-street approach pavement. The vehicle driver's eye-height along the major-street approach is assumed to be 3.5 feet above the cross-street pavement.

Based on the posted speed of 35 mph along Molalla Road (OR 211), the minimum recommended intersection sight distances for maintaining relatively uninterrupted traffic flow along the roadway is 390 feet for the left-turn and 335 feet for the right-turn. At both the primary site access and the access shared with Woodburn Place East, intersection sight distance was measured to exceed 1,000 feet to the east and west of the access.

Based on the detailed analysis, adequate sight distance is available for the proposed site access intersections along Ridge Road. No sight distance mitigation is necessary or recommended.

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[5] Oregon Department of Transportation, Safety Priority Index System, 2020 - On-State, Top 15% Groups - By Score

[6] American Association of State Highway and Transportation Officials (AASHTO), A Policy on Geometric Design of Highways and Streets, 7th Edition, 2018.

Warrant Analysis

Left-Turn Lane Warrants

A left-turn refuge is primarily a safety consideration for the major-street approach because it removes left-turning vehicles from the through traffic stream. Left-turn lanes are already present on Molalla Road (OR 211) at most of the study intersections; the only locations currently without a left-turn lane are westbound Molalla Road (OR 211) at the Safeway shopping center driveway and eastbound Molalla Road (OR 211) at the future access to Woodburn Place West apartments. The left-turn lane warrants were assessed for all unsignalized intersections and all scenarios using ODOT's warrant analysis methodology.

Left-turn lane warrants on Molalla Road (OR 211) are projected to be met both westbound at the Safeway shopping center driveway and eastbound at the Woodburn Place West apartments under both background and buildout scenarios. Because the warrants are met regardless of whether or not the proposed development is constructed, no mitigation at this intersection is recommended as part of the proposed development.

At all other unsignalized intersections, where left-turn lane warrants are projected to be met, a left-turn lane is already provided on Molalla Road (OR 211). This includes the site access, where warrants are projected to be under buildout conditions during both the morning and evening peak hours.

Preliminary Traffic Signal Warrants

Preliminary traffic signal warrants were examined for all unsignalized study intersections. Methodologies were based on the Manual on Uniform Traffic Control Devices (MUTCD), published by the Federal Highway Administration in 2009. Warrant 1, Eight-Hour Vehicular Volumes, was evaluated based on the common assumption that traffic counted during the evening peak hour represents 10 percent of the average daily traffic (ADT) and that the 8th highest hour is 5.65 percent of the daily volume.

None of the intersections are projected to meet signal warrants under any analysis scenario.

Operational Analysis

Intersection Capacity Analysis

A capacity and delay analysis were conducted for each of the study intersections per the signalized and unsignalized intersection analysis methodologies in the *Highway Capacity Manual* (HCM)[7]. Intersections are generally evaluated based on the average control delay experienced by vehicles and are assigned a grade according to their operation. The level of service (LOS) of an intersection can range from LOS A, which indicates very little, or no delay experienced by vehicles, to LOS F, which indicates a high degree of congestion and delay. The volume-to-capacity (v/c) ratio is a measure that compares the traffic volumes (demand) against the available capacity of an intersection.

The analysis was performed using Synchro (version 12) software. The overall signalized v/c ratios were calculated following the methodologies in Chapter 16 of the ODOT APM for the critical intersection v/c ratio. This methodology was performed for all signalized intersections.

Mobility Standards

The following agency mobility standards are applicable in the study area:

- The City of Woodburn has the following mobility standards per the Woodburn Development Ordinance:[8]
    - For a signalized and all-way stop-control intersections, the minimum LOS shall be either "E" or if pre-development already operating at lower LOS, then at no lower LOS.
    - For a signalized intersection, the minimum V/C ratio shall be either less than 1.00 regardless of LOS or if pre-development already operating at 1.00 or higher V/C, then at no higher V/C.
    - For an unsignalized intersection, the minimum V/C shall be 0.95 or lower for the major movement through the intersection, or, if pre-development already operating at higher V/C, then at no higher V/C.
- ODOT has the following mobility targets in the study area per the Oregon Highway Plan:[9]
    - OR 99E is a regional highway inside an urban growth boundary but not a Metropolitan Planning Organization (MPO). Within the city limits, the posted speed is 35 mph, and the target v/c ratio is 0.90 or less.
    - OR 214 and OR 211 are district highways inside an urban growth boundary but not within an MPO. Within the city limits, where the posted speed is 35 mph, the target v/c ratio is 0.95 or less and where the posted speed is 45 mph, the target v/c ratio is 0.90 or less.

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[7] Transportation Research Board, *Highway Capacity Manual 6th Edition*, 2016.

[8] City of Woodburn, *Woodburn Development Ordinance*, Amended by Ordinance 2603 effective June 30, 2022 (LA 21-02).

[9] Oregon Department of Transportation, *Oregon Highway Plan*, Table 6: Volume to Capacity Ratio Targets for Peak Hour Operating Conditions, 1999 Including amendments November 1999 through May 2015.

Delay & Capacity Analysis

The LOS, delay, and v/c results of the capacity analysis are shown in Table 10 for the morning and evening peak hours. The detailed calculations are attached in Appendix D.

Table 10: Capacity Analysis Summary

Intersection & Condition	Mobility Standard	Morning Peak Hour			Evening Peak Hour		
		V/C	LOS	Delay (s)	V/C	LOS	Delay (s)
1. Molalla Road (OR 211)/Mt. Hood Avenue (OR 214) & N Pacific Highway (OR 99E)							
2020 Existing Condition	0.90	0.67	C	27	0.87	D	52
2025 Background Condition		0.73	C	30	0.92	E	61
2025 Buildout Condition		0.75	C	31	0.92	E	62
2. Molalla Road (OR 211) & Safeway Access							
2020 Existing Condition	0.95	0.38	C	20	0.70	E	48
2025 Background Condition		0.45	C	24	0.84	F	74
2025 Buildout Condition		0.49	D	27	0.86	F	80
3. Molalla Road (OR 211) & June Road/Woodburn Place West							
2020 Existing Condition	0.95	0.10	C	16	0.12	C	23
2025 Background Condition		0.13	C	19	0.18	D	32
2025 Buildout Condition		0.14	C	21	0.18	D	33
4. Molalla Road (OR 211) & Primary Site Access							
2025 Buildout Condition	0.95	0.12	B	12	0.09	B	14
5. Molalla Road (OR 211) & Woodburn Place East							
2020 Existing Condition	0.95	0.04	B	11	0.06	B	11
2025 Background Condition		0.05	B	11	0.06	B	12
2025 Buildout Condition		0.10	B	11	0.06	B	13
6. Molalla Road (OR 211) & Cooley Road							
2020 Existing Condition	0.90	0.10	B	11	0.18	B	16
2025 Background Condition		0.11	B	11	0.20	C	16
2025 Buildout Condition		0.12	B	12	0.20	C	17

The signalized intersection of Molalla Road (OR 211)/Mt. Hood Avenue (OR 214) & N Pacific Highway (OR 99E) is expected to operate with a v/c ratio over 0.90 during the evening peak hour under the 2025 background and buildout scenarios, which exceeds the ODOT mobility target. The proposed development will not change the overall intersection v/c ratio but will result in a small increase in delay.

The Woodburn TSP identifies Project R14, which would "install a second left-turn lane on the southbound approach, install a second receiving lane on the east leg, and update signal timing in coordination with ODOT" as a medium priority project for capacity but does not identify specific safety improvements at the intersection. As an alternative improvement, the TIAs prepared for the Woodburn Place East and West apartments identified the need for a separate westbound right-turn lane. The improvements are assessed in the *Potential Mitigation* section of this report.

All other study area intersections are expected to meet mobility standards for all analysis scenarios.

Queuing Analysis

An analysis of projected queuing was conducted for the study intersections. The 95th percentile queue lengths were estimated based on the same Synchro/SimTraffic simulations used for the delay calculations. The 95th percentile queue is a statistical measurement which indicates there is a 5 percent chance that the queue may exceed this length during the analysis period; however, given this is a probability, the 95th percentile queue length may theoretically never be met or observed in the field.

The 95th percentile queue lengths reported in the simulation are presented in Table 11 for the morning and evening peak hours. All queues more than 5 feet longer than a multiple of 25 were rounded up to the nearest 25 feet, equivalent to an average vehicle length. Those that were 5 feet or less than a multiple of 25 were rounded down since 5 feet is equivalent to the space between queued vehicles. Detailed queuing analysis reports are included in Appendix D.

Table 11: 95th Percentile Queueing Analysis Summary

Intersection/Movement	Available Storage (ft)	2025 Background Queue (ft)		2025 Buildout Queue (ft)	
		Morning	Evening	Morning	Evening
1. Molalla Road (OR 211)/Mt. Hood Avenue (OR 214) & N Pacific Highway (OR 99E)					
EB Left	560	150	425	175	425
WB Left	315	175	350	225	325
NB Left	350	200	225	200	250
NB Right	200	50	75	75	100
SB Left	380	125	200	150	225
2. Molalla Road (OR 211) & Safeway Access					
EB Right	130	25	25	25	25
WB Left-Through	740	75	275	150	225
NB Left	150	100	275	175	300
NB Right	150	50	200	75	175

Table 11: 95th Percentile Queueing Analysis Summary

Intersection/Movement	Available Storage (ft)	2025 Background Queue (ft)		2025 Buildout Queue (ft)	
		Morning	Evening	Morning	Evening
3. Molalla Road (OR 211) & June Road/Woodburn Place West					
EB Left-Through-Right	740	25	75	50	100
WB Left	100	25	25	25	25
NB Left-Through-Right	125	50	50	50	50
SB Left-Through-Right	100	75	50	50	50
4. Molalla Road (OR 211) & Primary Site Access					
EB Left	100	-	-	50	50
SB Left-Right	100	-	-	50	50
5. Molalla Road (OR 211) & Woodburn Place East					
EB Left	100	25	50	50	50
SB Left-Right	100	50	50	50	50
6. Molalla Road (OR 211) & Cooley Road					
EB Left	325	25	25	25	25
WB Left	100	25	50	25	50
NB Left-Right	>200	75	75	75	75
SB Left-Right	770	75	50	75	50

In general, changes in 95th percentile queuing between the year 2025 background and buildout conditions are anticipated to be small. Queues for the westbound left-turn movement on Molalla Road (OR 211) at the traffic signal are anticipated to spill out of the turn lane into the adjacent through lane and past the entrance to the Safeway shopping center during the evening in both the background and buildout scenarios. As a result, queues on the northbound Safeway access are expected to extend into the parking lot during the evening in both future scenarios.

Improvements at the signalized intersection are assessed in the *Potential Mitigation* section of this report. No mitigation for the Safeway shopping center access is recommended because drivers have alternate options for exiting the shopping center.

Potential Mitigation

The signalized intersection of Molalla Road (OR 211)/Mt. Hood Avenue (OR 214) & N Pacific Highway (OR 99E) is expected to operate with a v/c ratio over 0.90 during the evening peak hour under the 2025 background and buildout scenarios, which exceeds the ODOT mobility target. The proposed development will change the overall intersection v/c ratio and delay.

The Woodburn TSP identifies Project R14, which would "install a second left-turn lane on the southbound approach, install a second receiving lane on the east leg, and update signal timing in coordination with ODOT" as a medium priority project for capacity but does not identify specific safety improvements at the intersection. As an alternative improvement, the TIAs prepared for the Woodburn Place East and West apartments identified the need for a separate westbound right-turn lane. The operational and queuing results of these two potential improvements are summarized in Table 12 and Table 13.

Table 12: OR 211/OR 214 & OR 99E - Operations with Potential Mitigation

Intersection & Condition	Mobility Standard	Morning Peak Hour			Evening Peak Hour		
		V/C	LOS	Delay (s)	V/C	LOS	Delay (s)
Current Configuration							
2025 Background Condition	0.90	0.73	C	30	0.92	E	61
2025 Buildout Condition		0.75	C	31	0.92	E	62
TSP Improvement – Dual Southbound Left-Turn Lanes							
2025 Background Condition	0.90	0.71	C	29	0.92	E	59
2025 Buildout Condition		0.72	C	30	0.92	E	59
Woodburn Place West TIA Improvement – Westbound Right-Turn Lane							
2025 Background Condition	0.90	0.65	C	26	0.92	E	59
2025 Buildout Condition		0.66	C	26	0.92	E	62

As shown in Table 12, both mitigation options result in no improvement in v/c ratio during evening peak because neither the southbound left turn nor the westbound right turn is a critical movement under either future scenario. However, the addition of a westbound right-turn lane would improve intersection operations to a greater extent in the morning peak hour compared with the dual southbound left-turn lanes.

Table 13: OR 211/OR 214 & OR 99E - Queuing with Potential Mitigation

Intersection/Movement	Available Storage (ft)	2025 Background Queue (ft)		2025 Buildout Queue (ft)	
		Morning	Evening	Morning	Evening
Current Configuration					
EB Left	560	150	425	175	425
WB Left	315	175	350	225	325
NB Left	350	200	225	200	250
NB Right	200	50	75	75	100
SB Left	380	125	200	150	225
TSP Improvement – Dual Southbound Left-Turn Lanes					
EB Left	560	150	400	150	450
WB Left	315	175	300	200	325
NB Left	350	200	225	200	225
NB Right	200	50	50	50	50
SB Left	380	100	150	125	175
Woodburn Place West TIA Improvement – Westbound Right-Turn Lane					
EB Left	560	150	300	150	475
WB Left	315	200	325	200	325
WB Right	TBD	75	50	75	75
NB Left	350	200	225	200	250
NB Right	200	75	100	75	100
SB Left	380	150	250	175	225

As shown in Table 13, both mitigation options result in similar small changes in queues compared with the current configuration. The westbound left-turn queue at the signal will still extend past the entrance to the Safeway shopping center during the evening with either mitigation option.

Conclusion

Given the analysis findings, the westbound right-turn lane appears to be equally or more effective than the dual southbound left-turn lanes and it is likely to have a lower cost and fewer impacts than the TSP improvement. Therefore, the westbound right-turn lane is recommended as the preferred intersection improvement.

The proposed development is estimated to contribute 1.2 percent of the total evening peak hour traffic traveling through the intersection and 2.3 percent of the traffic in the existing westbound through-right lane under year 2025 buildout conditions. This traffic estimate should be considered in the proportionate share contribution for the project.

Conclusions

Key findings of this study include:

- A review of the most recent five years of available crash data yielded the following conclusions:
  - The signalized highway intersection (OR 214/OR 211 & OR 99E) has a calculated crash rate that exceeds the 90th percentile rates identified by ODOT for similar types of intersections and is listed in the worst 5 percent of the ODOT SPIS list. Although capacity improvements at the signalized intersection are listed in the TSP and in the TIAs prepared for nearby developments, these projects are unlikely to change the crash rate and would not be effective as safety mitigation. Since no consistent crash patterns were identified at the intersection, no safety mitigation is recommended.
  - The Safeway shopping center driveway access on Molalla Road (OR 211) has a crash rate that exceeds the 90th percentile rates identified by ODOT for similar types of intersections. Access control to address crashes at the driveway to the Safeway shopping center would need to be initiated by ODOT and should not be the responsibility of development beyond the shopping center.
  - At the other study intersections, no significant trends or crash patterns were identified, and no safety mitigation is recommended per the crash data analysis.
- Based on the sight distance analysis, adequate sight distance is available for the planned site access intersections along Molalla Road (OR 211). No sight distance mitigation is necessary or recommended.
- Left-turn lanes are already present on Molalla Road (OR 211) at most of the study intersections; the only locations currently without a left-turn lane are westbound Molalla Road (OR 211) at the Safeway shopping center driveway and eastbound Molalla Road (OR 211) at the future access to Woodburn Place West apartments. Left-turn lane warrants are projected to be met at each location under both background and buildout scenarios. Because the warrants are met regardless of whether or not the proposed development is constructed, no mitigation at this intersection is recommended as part of the proposed development.
- At all other unsignalized intersections, where left-turn warrants are projected to be met, a left-turn lane is already provided on Molalla Road (OR 211). This includes the site access, where warrants are projected to be under buildout conditions during both the morning and evening peak hours.
- Preliminary traffic signal warrants were examined for all unsignalized study intersections. None of the intersections are projected to meet signal warrants under any analysis scenario.
- All study area intersections are expected to meet mobility standards for all analysis scenarios except for the signalized intersection of Molalla Road (OR 211)/Mt. Hood Avenue (OR 214) & N Pacific Highway (OR 99E). This intersection is expected to operate with a v/c ratio over 0.90 during the evening peak hour under both year 2025 background and year 2025 buildout scenarios, which exceeds the ODOT mobility target. The proposed development will not change the overall intersection v/c ratio but will result in a small increase in delay. Recommended mitigation is detailed below.
- In general, changes in 95th percentile queuing between the year 2025 background and year 2025 buildout scenarios are anticipated to be small. Queues for the westbound left-turn movement on Molalla Road

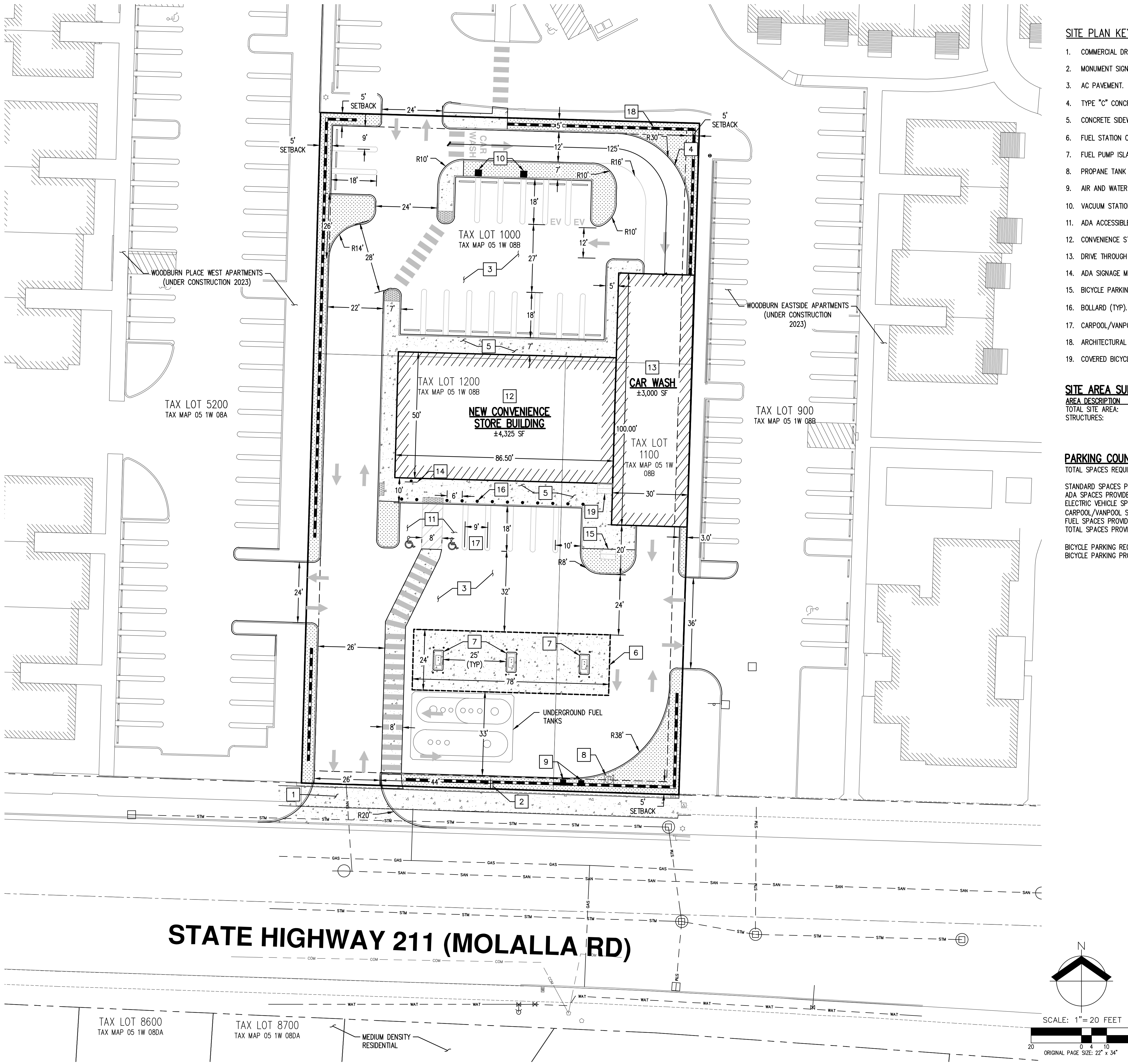
(OR 211) at the traffic signal with N Pacific Highway (OR 99E) are anticipated to spill out of the turn lane into the adjacent through lane and past the entrance to the Safeway shopping center during the evening in both the year 2025 background and year 2025 buildout scenarios. As a result, queues on the northbound Safeway access are expected to extend into the parking lot during the evening in both future scenarios. Improvements at the signalized intersection are recommended below. No mitigation for the shopping center access is recommended because drivers have alternate options for exiting the shopping center.

- Two potential mitigation options were evaluated to address the expected deficiencies at the intersection of Molalla Road (OR 211)/Mt. Hood Avenue (OR 214) & N Pacific Highway (OR 99E) with the following findings and recommendations:
    - The options considered include: 1) the Woodburn TSP Project R14, which would add a second southbound left-turn lane on OR 99E and a corresponding eastbound receiving lane on OR 211, and 2) a separate westbound right-turn lane as conditioned for the Woodburn Place West apartments.
    - Both mitigation options result in a small improvement in operations during evening peak because neither the southbound left turn nor the westbound right turn is a critical movement under either future scenario. However, the addition of a westbound right-turn lane would improve intersection operations to a greater extent in the morning peak hour compared with the dual southbound left-turn lanes. The options result in similar changes in queues compared with the current configuration.
    - Given these findings, the westbound right-turn lane appears to be equally or more effective than the dual southbound left-turn lanes and it is likely to have a lower cost and fewer impacts than the TSP improvement. Therefore, the westbound right-turn lane is recommended as the preferred intersection improvement. The proposed development is estimated to contribute 1.2 percent of the total evening peak hour traffic traveling through the intersection and 2.3 percent of the traffic in the existing westbound through-right lane under year 2025 buildout conditions. This traffic estimate should be considered in the proportionate share contribution for the project.

Appendix A – Site Information

Site Plan

Trip Generation Calculations



SITE PLAN KEYED NOTES:

1. COMMERCIAL DRIVEWAY DROP AND APPROACH.
2. MONUMENT SIGN.
3. AC PAVEMENT.
4. TYPE "C" CONCRETE CURB (TYP).
5. CONCRETE SIDEWALK.
6. FUEL STATION OVERHEAD (CANOPY TO BE CONSTRUCTED DESIGN-BUILD).
7. FUEL PUMP ISLAND.
8. PROPANE TANK FILLING STATION.
9. AIR AND WATER STATION.
10. VACUUM STATION (2 STALLS EACH).
11. ADA ACCESSIBLE PARKING STALL WITH LOADING AREA.
12. CONVENIENCE STORE BUILDING.
13. DRIVE THROUGH CARWASH.
14. ADA SIGNAGE MOUNTED ON BUILDING.
15. BICYCLE PARKING.
16. BOLLARD (TYP).
17. CARPOOL/VANPOOL PARKING STALL.
18. ARCHITECTURAL WALL.
19. COVERED BICYCLE PARKING.

SITE AREA SUMMARY

AREA DESCRIPTION	AREA (SF)	% OF TOTAL AREA
TOTAL SITE AREA:	±40,000	--
STRUCTURES:	±7,465	±19%

PARKING COUNT:

TOTAL SPACES REQUIRED:	25 (1 STALL/200 SF OF RETAIL AREA + 1 STALL/PUMP STATION)
STANDARD SPACES PROVIDED:	16
ADA SPACES PROVIDED:	2
ELECTRIC VEHICLE SPACE PROVIDED:	2
CARPOOL/VANPOOL SPACE PROVIDED:	1
FUEL SPACES PROVIDED:	6
TOTAL SPACES PROVIDED:	27
BICYCLE PARKING REQUIRED:	4 (15% OF REQUIRED PARKING SPACES)
BICYCLE PARKING PROVIDED:	4

AKS

AKS ENGINEERING & FORESTRY, LLC
3700 RIVER RD N, STE 1
KEIZER, OR 97303
503.400.6028
WWW.AKS-ENG.COM

ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

PRELIMINARY SITE PLAN
2115 MOLALLA RD NE
WOODBURN, OR

REGISTERED PROFESSIONAL ENGINEER
OREGON
TYLER D. ROTH
RENEWS: DECEMBER 31, 2024

PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	9438
DATE:	08/03/2023
DESIGNED BY:	TDR
DRAWN BY:	ED
CHECKED BY:	TDR

C100

AKS DRAWING FILE: 9438 SITE PLAN.DWG | LAYOUT: LAYOUT1

TRIP GENERATION CALCULATIONS
Source: Trip Generation Manual, 11th Edition

Land Use:	Single-Family Detached Housing
Land Use Code:	210
Land Use Subcategory:	All Sites
Setting/Location	General Urban/Suburban
Variable:	Dwelling Units
Trip Type:	Vehicle
Formula Type:	Rate
Variable Quantity:	1

WARNING: Variable Quantity is less than Minimum Survey Size for Peak Hours

AM PEAK HOUR

Trip Rate: 0.7

	Enter	Exit	Total
Directional Split	25%	75%	
Trip Ends	0	1	1

PM PEAK HOUR

Trip Rate: 0.94

	Enter	Exit	Total
Directional Split	63%	37%	
Trip Ends	1	0	1

WEEKDAY

Trip Rate: 9.43

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	5	5	10

SATURDAY

Trip Rate: 9.48

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	5	5	10

TRIP GENERATION CALCULATIONS
Source: Trip Generation Manual, 11th Edition

Land Use:	Convenience Store/Gas Station
Land Use Code:	945
Land Use Subcategory:	GFA (4-5.5k)
Setting/Location	General Urban/Suburban
Variable:	Vehicle Fueling Positions
Trip Type:	Vehicle
Formula Type:	Rate
Variable Quantity:	6

AM PEAK HOUR

Trip Rate: 27.04

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	81	81	162

PM PEAK HOUR

Trip Rate: 22.76

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	69	68	137

WEEKDAY

Trip Rate: 257.13

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	771	771	1,542

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	2115 Molalla Road	**Organization:**	Lancaster Mobley
Project Location:	Woodburn, Oregon	**Performed By:**	JED
Scenario Description:		**Date:**	
Analysis Year:		**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail				190	95	95
Restaurant				0		
Cinema/Entertainment				0		
Residential				188	51	137
Hotel				0		
All Other Land Uses[2]				0		
Total				378	146	232

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail	1.00	0%	0%	1.00	0%	0%
Restaurant						
Cinema/Entertainment						
Residential	1.00	0%	0%	1.00	0%	0%
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	378	146	232
Internal Capture Percentage	1%	1%	1%
External Vehicle-Trips[3]	374	144	230
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	1%	1%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	1%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.
[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator
[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A
[4]Person-Trips
*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	2115 Molalla Road
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips				Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*		Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0		1.00	0	0
Retail	1.00	95	95		1.00	95	95
Restaurant	1.00	0	0		1.00	0	0
Cinema/Entertainment	1.00	0	0		1.00	0	0
Residential	1.00	51	51		1.00	137	137
Hotel	1.00	0	0		1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	28		12	0	13	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	3	1	27	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		30	0	0	0	0
Retail	0		0	0	1	0
Restaurant	0	8		0	3	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	16	0	0		0
Hotel	0	4	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates				External Trips by Mode*		
	Internal	External	Total		Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0		0	0	0
Retail	1	94	95		94	0	0
Restaurant	0	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0	0
Residential	1	50	51		50	0	0
Hotel	0	0	0		0	0	0
All Other Land Uses[3]	0	0	0		0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates				External Trips by Mode*		
	Internal	External	Total		Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0		0	0	0
Retail	1	94	95		94	0	0
Restaurant	0	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0	0
Residential	1	136	137		136	0	0
Hotel	0	0	0		0	0	0
All Other Land Uses[3]	0	0	0		0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A
[2]Person-Trips
[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator
*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	2115 Molalla Road	**Organization:**	Lancaster Mobley
Project Location:	Woodburn, Oregon	**Performed By:**	JED
Scenario Description:		**Date:**	
Analysis Year:	BK+Site	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0	0	0
Retail				143	72	71
Restaurant				0	0	0
Cinema/Entertainment				0	0	0
Residential				207	130	77
Hotel				0	0	0
All Other Land Uses[2]				0	0	0
Total				350	202	148

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail	1.00	0%	0%	1.00	0%	0%
Restaurant						
Cinema/Entertainment						
Residential	1.00	0%	0%	1.00	0%	0%
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail					300	
Restaurant						
Cinema/Entertainment						
Residential		300				
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	18	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	7	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	350	202	148
Internal Capture Percentage	14%	12%	17%
External Vehicle-Trips[3]	300	177	123
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	10%	25%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	14%	9%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.
[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator
[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P
[4]Person-Trips
*Indicates computation that has been rounded to the nearest whole number.
Estimation Tool Developed by the Texas Transportation Institute

Project Name:	2115 Molalla Road
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips				Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*		Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0		1.00	0	0
Retail	1.00	72	72		1.00	71	71
Restaurant	1.00	0	0		1.00	0	0
Cinema/Entertainment	1.00	0	0		1.00	0	0
Residential	1.00	130	130		1.00	77	77
Hotel	1.00	0	0		1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	1		21	3	18	4
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	3	31	16	0		2
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		6	0	0	5	0
Retail	0		0	0	60	0
Restaurant	0	36		0	21	0
Cinema/Entertainment	0	3	0		5	0
Residential	0	7	0	0		0
Hotel	0	1	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates				External Trips by Mode*		
	Internal	External	Total		Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0		0	0	0
Retail	7	65	72		65	0	0
Restaurant	0	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0	0
Residential	18	112	130		112	0	0
Hotel	0	0	0		0	0	0
All Other Land Uses[3]	0	0	0		0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates				External Trips by Mode*		
	Internal	External	Total		Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0		0	0	0
Retail	18	53	71		53	0	0
Restaurant	0	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0	0
Residential	7	70	77		70	0	0
Hotel	0	0	0		0	0	0
All Other Land Uses[3]	0	0	0		0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Appendix B – Volumes

Traffic Counts

In-Process Trips

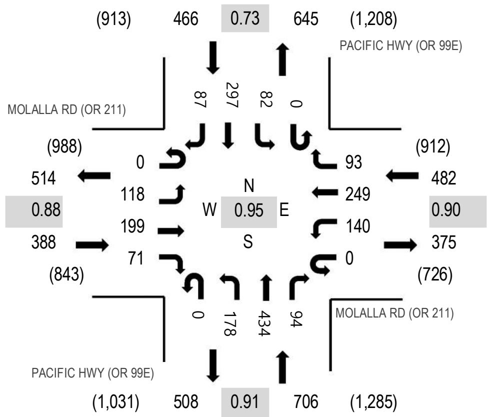
Volume Diagrams

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

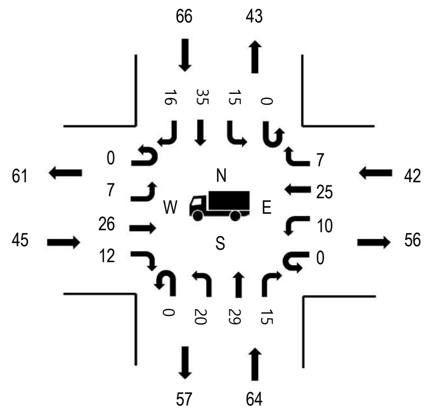
Location: 1 PACIFIC HWY (OR 99E) & MOLALLA RD (OR 211) AM
Date: Thursday, September 7, 2023
Peak Hour: 07:10 AM - 08:10 AM
Peak 15-Minutes: 07:55 AM - 08:10 AM

Peak Hour

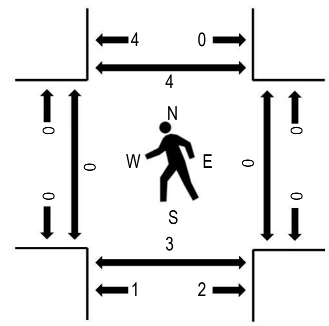
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	11.6%	0.88
WB	8.7%	0.90
NB	9.1%	0.91
SB	14.2%	0.73
All	10.6%	0.95

Traffic Counts - Motorized Vehicles

Interval Start Time	MOLALLA RD (OR 211) Eastbound				MOLALLA RD (OR 211) Westbound				PACIFIC HWY (OR 99E) Northbound				PACIFIC HWY (OR 99E) Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	10	23	8	0	7	21	11	0	3	42	9	0	3	21	13	171	2,006
7:05 AM	0	13	31	6	0	10	10	5	0	6	36	3	0	4	14	6	144	2,010
7:10 AM	0	8	14	3	0	5	18	6	0	20	41	10	0	7	20	4	156	2,042
7:15 AM	0	9	13	3	0	13	33	3	0	7	41	13	0	8	21	4	168	2,040
7:20 AM	0	6	17	7	0	9	24	11	0	18	36	9	0	9	33	9	188	2,040
7:25 AM	0	16	16	2	0	10	20	8	0	9	30	8	0	4	21	17	161	2,020
7:30 AM	0	11	24	4	0	13	26	7	0	13	28	6	0	6	15	3	156	2,022
7:35 AM	0	15	22	4	0	10	12	14	0	10	44	6	0	8	34	7	186	2,030
7:40 AM	0	8	10	7	0	18	28	9	0	9	34	5	0	3	22	5	158	1,996
7:45 AM	0	7	18	12	0	6	19	8	0	21	32	6	0	6	17	8	160	1,983
7:50 AM	0	6	14	5	0	10	16	9	0	18	35	10	0	7	32	9	171	1,993
7:55 AM	0	11	21	10	0	9	19	9	0	17	41	4	0	9	31	6	187	1,982
8:00 AM	0	9	14	7	0	19	20	3	0	13	39	11	0	9	27	4	175	1,947
8:05 AM	0	12	16	7	0	18	14	6	0	23	33	6	0	6	24	11	176	
8:10 AM	0	11	23	9	0	13	19	6	0	11	31	8	0	3	16	4	154	
8:15 AM	0	9	16	9	0	14	24	9	0	11	39	6	0	3	20	8	168	
8:20 AM	0	17	10	8	0	9	25	3	0	12	35	8	0	4	31	6	168	
8:25 AM	0	7	26	9	0	12	14	8	0	12	29	2	0	14	27	3	163	
8:30 AM	0	7	25	15	0	10	27	6	0	17	25	5	0	3	20	4	164	
8:35 AM	0	11	16	11	0	10	13	7	0	11	29	5	0	3	27	9	152	
8:40 AM	0	9	15	10	0	9	24	6	0	16	27	7	0	5	11	6	145	
8:45 AM	0	8	13	15	0	9	19	4	0	12	30	3	0	7	36	14	170	
8:50 AM	0	8	14	7	0	12	20	3	0	15	32	5	0	9	25	10	160	
8:55 AM	0	9	9	8	0	11	17	3	0	16	18	3	0	8	34	16	152	
Count Total	0	237	420	186	0	266	482	164	0	320	807	158	0	148	579	186	3,953	
Peak Hour	0	118	199	71	0	140	249	93	0	178	434	94	0	82	297	87	2,042	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	1	2	3	6	12	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	4	2	1	3	10	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	4	5	2	7	18	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	2	6	4	4	16	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	5	6	4	6	21	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	2	2	3	2	9	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	8	7	3	3	21	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	1	4	2	12	19	7:35 AM	0	0	0	1	1	7:35 AM	0	1	0	0	1
7:40 AM	6	3	5	1	15	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	1	1
7:45 AM	5	8	2	6	21	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	3	7	3	9	22	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	4	4	8	4	20	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	1	1
8:00 AM	2	4	5	5	16	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	2	2
8:05 AM	3	8	1	7	19	8:05 AM	0	0	0	0	0	8:05 AM	0	2	0	0	2
8:10 AM	6	8	6	3	23	8:10 AM	0	0	0	0	0	8:10 AM	0	2	0	0	2
8:15 AM	6	12	6	6	30	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	6	9	3	9	27	8:20 AM	0	0	0	0	0	8:20 AM	0	2	0	0	2
8:25 AM	6	5	7	6	24	8:25 AM	0	0	0	0	0	8:25 AM	0	1	0	0	1
8:30 AM	5	6	7	6	24	8:30 AM	1	0	0	0	1	8:30 AM	0	1	0	0	1
8:35 AM	5	5	1	4	15	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	4	8	5	1	18	8:40 AM	0	0	0	0	0	8:40 AM	1	0	0	0	1
8:45 AM	3	5	3	5	16	8:45 AM	0	0	0	0	0	8:45 AM	0	1	0	0	1
8:50 AM	5	11	6	4	26	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	1	4	3	4	12	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	97	141	93	123	454	Count Total	1	0	0	1	2	Count Total	1	10	0	4	15
Peak Hour	45	64	42	66	217	Peak Hour	0	0	0	1	1	Peak Hour	0	3	0	4	7

Location: 2 SAFEWAY SHOPPING CENTER ACCESS & MOLALLA RD (OR 211) AM
Date: Thursday, September 7, 2023
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:15 AM - 07:30 AM

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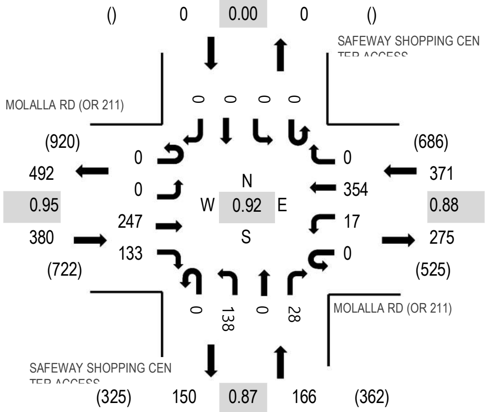
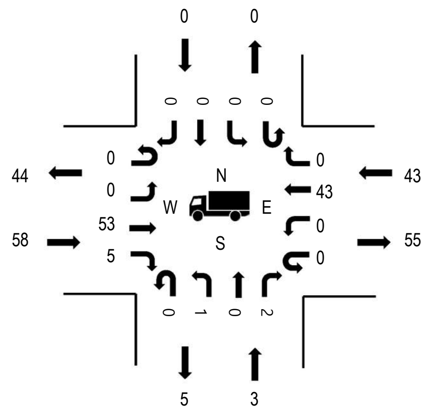
Peak Hour

Motorized Vehicles

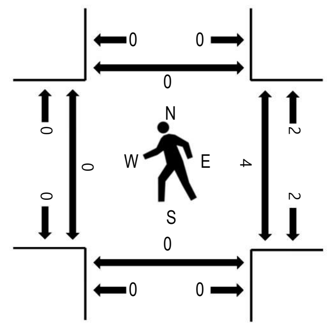


Note: Total study counts contained in parentheses.

Heavy Vehicles



Pedestrians



	HV%	PHF
EB	15.3%	0.95
WB	11.6%	0.88
NB	1.8%	0.87
SB	0.0%	0.00
All	11.3%	0.92

Traffic Counts - Motorized Vehicles

Interval Start Time	MOLALLA RD (OR 211) Eastbound				MOLALLA RD (OR 211) Westbound				SAFEWAY SHOPPING CENTER ACCESS Northbound				SAFEWAY SHOPPING CENTER ACCESS Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	0	23	12	0	2	28	0	1	10	0	2	0	0	0	0	78	906
7:05 AM	0	0	25	11	0	3	15	0	0	10	0	1	0	0	0	0	65	912
7:10 AM	0	0	19	11	0	2	26	0	0	5	0	4	0	0	0	0	67	908
7:15 AM	0	0	27	8	0	1	38	0	0	12	0	5	0	0	0	0	91	917
7:20 AM	0	0	16	18	0	1	27	0	0	15	0	3	0	0	0	0	80	908
7:25 AM	0	0	18	11	0	2	30	0	0	12	0	5	0	0	0	0	78	894
7:30 AM	0	0	23	11	0	1	32	0	0	14	0	1	0	0	0	0	82	898
7:35 AM	0	0	24	11	0	0	23	0	0	8	0	1	0	0	0	0	67	907
7:40 AM	0	0	13	6	0	4	46	0	0	9	0	2	0	0	0	0	80	905
7:45 AM	0	0	22	9	0	2	30	0	0	7	0	1	0	0	0	0	71	890
7:50 AM	0	0	25	7	0	1	25	0	0	10	0	0	0	0	0	0	68	879
7:55 AM	0	0	16	17	0	1	33	0	0	7	0	5	0	0	0	0	79	886
8:00 AM	0	0	27	9	0	0	28	0	0	18	0	2	0	0	0	0	84	864
8:05 AM	0	0	16	11	0	3	22	0	0	8	0	1	0	0	0	0	61	
8:10 AM	0	0	20	15	0	1	20	0	0	18	0	2	0	0	0	0	76	
8:15 AM	0	0	17	8	0	4	28	0	0	20	0	5	0	0	0	0	82	
8:20 AM	0	0	11	12	0	3	24	0	0	14	0	2	0	0	0	0	66	
8:25 AM	0	0	21	21	0	4	24	0	0	9	0	3	0	0	0	0	82	
8:30 AM	0	0	24	9	0	5	31	0	0	17	0	5	0	0	0	0	91	
8:35 AM	0	0	13	10	0	6	21	0	0	12	0	3	0	0	0	0	65	
8:40 AM	0	0	18	7	0	2	17	0	0	15	0	6	0	0	0	0	65	
8:45 AM	0	0	13	9	0	5	19	0	0	13	0	1	0	0	0	0	60	
8:50 AM	0	0	15	15	0	2	24	0	0	15	0	4	0	0	0	0	75	
8:55 AM	0	0	10	8	0	3	17	0	0	14	0	5	0	0	0	0	57	
Count Total	0	0	456	266	0	58	628	0	1	292	0	69	0	0	0	0	1,770	
Peak Hour	0	0	247	133	0	17	354	0	0	138	0	28	0	0	0	0	917	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	1	0	3	0	4	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	4	0	1	0	5	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	4	0	4	0	8	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	3	0	2	0	5	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	4	0	5	0	9	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	1	1	3	0	5	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	9	0	3	0	12	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	6	0	1	0	7	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	4	0	5	0	9	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	8	0	2	0	10	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	4	0	6	0	10	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	3	1	5	0	9	7:55 AM	0	0	0	0	0	7:55 AM	0	0	2	0	2
8:00 AM	5	1	4	0	10	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	2	2
8:05 AM	5	0	1	0	6	8:05 AM	0	0	0	0	0	8:05 AM	0	0	2	0	2
8:10 AM	6	0	6	0	12	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	4	1	5	0	10	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	2	0	3	0	5	8:20 AM	0	0	0	0	0	8:20 AM	0	0	1	0	1
8:25 AM	3	0	8	0	11	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	5	0	6	0	11	8:30 AM	0	0	0	0	0	8:30 AM	0	0	2	0	2
8:35 AM	2	1	3	0	6	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	4	0	3	0	7	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	5	1	6	0	12	8:45 AM	0	0	0	0	0	8:45 AM	0	0	1	0	1
8:50 AM	3	0	3	0	6	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	2	0	3	0	5	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	97	6	91	0	194	Count Total	0	0	0	0	0	Count Total	0	0	8	2	10
Peak Hour	58	3	43	0	104	Peak Hour	0	0	0	0	0	Peak Hour	0	0	4	2	6

ALL TRAFFIC DATA SERVICES

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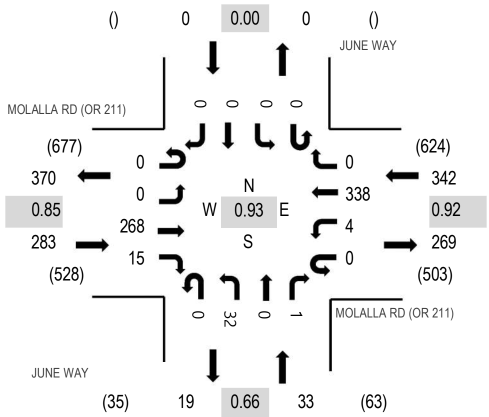
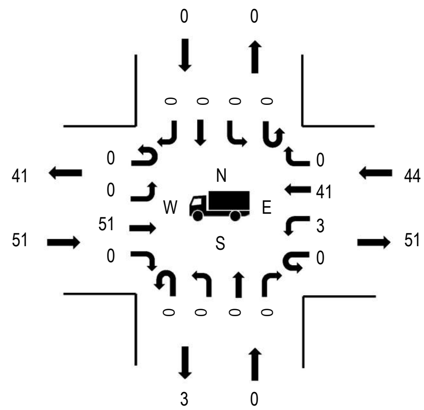
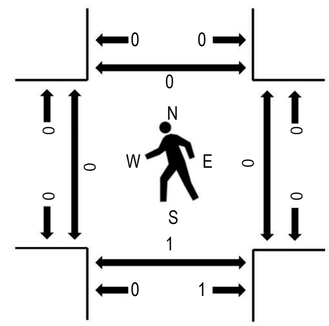
Location: 3 JUNE WAY & MOLALLA RD (OR 211) AM
Date: Thursday, September 7, 2023
Peak Hour: 07:05 AM - 08:05 AM
Peak 15-Minutes: 07:10 AM - 07:25 AM

Peak Hour







Note: Total study counts contained in parentheses.

	HV%	PHF
EB	18.0%	0.85
WB	12.9%	0.92
NB	0.0%	0.66
SB	0.0%	0.00
All	14.4%	0.93

Traffic Counts - Motorized Vehicles

Interval Start Time	MOLALLA RD (OR 211) Eastbound U-Turn	Left	Thru	Right	MOLALLA RD (OR 211) Westbound U-Turn	Left	Thru	Right	JUNE WAY Northbound U-Turn	Left	Thru	Right	JUNE WAY Southbound U-Turn	Left	Thru	Right	Total	Rolling Hour
7:00 AM	0	0	26	1	0	0	23	0	0	3	0	1	0	0	0	0	54	656
7:05 AM	0	0	22	1	0	1	19	0	0	1	0	0	0	0	0	0	44	658
7:10 AM	0	0	28	0	0	1	39	0	0	2	0	0	0	0	0	0	70	658
7:15 AM	0	0	30	3	0	0	21	0	0	3	0	1	0	0	0	0	58	627
7:20 AM	0	0	18	0	0	0	28	0	0	2	0	0	0	0	0	0	48	625
7:25 AM	0	0	21	1	0	1	30	0	0	3	0	0	0	0	0	0	56	623
7:30 AM	0	0	23	1	0	0	28	0	0	2	0	0	0	0	0	0	54	618
7:35 AM	0	0	25	1	0	1	26	0	0	3	0	0	0	0	0	0	56	629
7:40 AM	0	0	16	0	0	0	37	0	0	7	0	0	0	0	0	0	60	615
7:45 AM	0	0	18	3	0	0	29	0	0	4	0	0	0	0	0	0	54	595
7:50 AM	0	0	24	3	0	0	23	0	0	3	0	0	0	0	0	0	53	579
7:55 AM	0	0	19	0	0	0	30	0	0	0	0	0	0	0	0	0	49	571
8:00 AM	0	0	24	2	0	0	28	0	0	2	0	0	0	0	0	0	56	559
8:05 AM	0	0	20	1	0	0	19	0	0	4	0	0	0	0	0	0	44	
8:10 AM	0	0	16	2	0	0	20	0	0	0	0	1	0	0	0	0	39	
8:15 AM	0	0	24	1	0	0	27	0	0	4	0	0	0	0	0	0	56	
8:20 AM	0	0	13	0	0	0	29	0	0	3	0	1	0	0	0	0	46	
8:25 AM	0	0	23	1	0	0	24	0	0	2	0	1	0	0	0	0	51	
8:30 AM	0	0	27	3	0	0	34	0	0	1	0	0	0	0	0	0	65	
8:35 AM	0	0	16	0	0	0	24	0	0	2	0	0	0	0	0	0	42	
8:40 AM	0	0	21	1	0	1	17	0	0	0	0	0	0	0	0	0	40	
8:45 AM	0	0	14	1	0	0	23	0	0	0	0	0	0	0	0	0	38	
8:50 AM	0	0	15	3	0	0	24	0	0	3	0	0	0	0	0	0	45	
8:55 AM	0	0	15	1	0	0	17	0	0	4	0	0	0	0	0	0	37	
Count Total	0	0	498	30	0	5	619	0	0	58	0	5	0	0	0	0	1,215	
Peak Hour	0	0	268	15	0	4	338	0	0	32	0	1	0	0	0	0	658	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

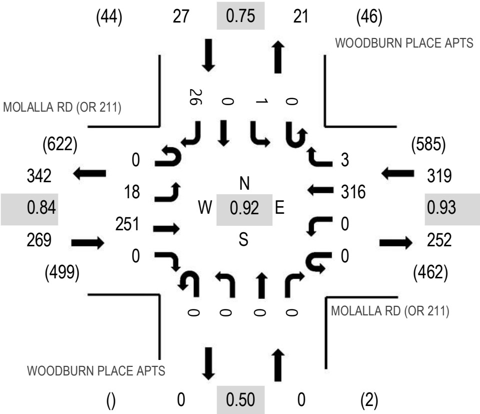
Interval	Heavy Vehicles					Interval	Bicycles on Roadway					Interval	Pedestrians/Bicycles on Crosswalk				
Start Time	EB	NB	WB	SB	Total	Start Time	EB	NB	WB	SB	Total	Start Time	EB	NB	WB	SB	Total
7:00 AM	3	1	3	0	7	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	4	0	2	0	6	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	5	0	7	0	12	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	3	0	0	0	3	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	4	0	6	0	10	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	2	0	2	0	4	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	6	0	3	0	9	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	4	0	6	0	10	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	4	0	1	0	5	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	6	0	4	0	10	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	4	0	4	0	8	7:50 AM	0	0	0	0	0	7:50 AM	0	1	0	0	1
7:55 AM	4	0	5	0	9	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	2	2
8:00 AM	5	0	4	0	9	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	5	0	1	0	6	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	5	1	5	0	11	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	4	0	5	0	9	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	1	1
8:20 AM	2	1	3	0	6	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	3	0	8	0	11	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	3	0	5	0	8	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	3	0	3	0	6	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	2	0	4	0	6	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	6	0	5	0	11	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	3	0	3	0	6	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	2	0	3	0	5	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	92	3	92	0	187	Count Total	0	0	0	0	0	Count Total	0	1	0	3	4
Peak Hour	51	0	44	0	95	Peak Hour	0	0	0	0	0	Peak Hour	0	1	0	2	3

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

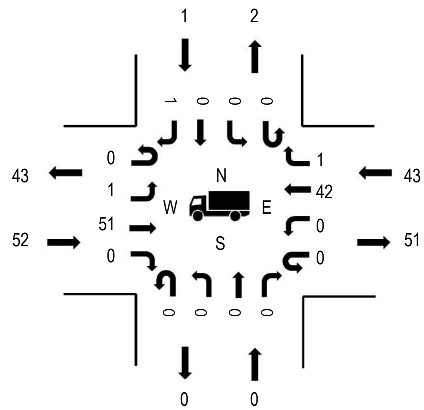
Location: 4 WOODBURN PLACE APTS & MOLALLA RD (OR 211) AM
Date: Thursday, September 7, 2023
Peak Hour: 07:05 AM - 08:05 AM
Peak 15-Minutes: 07:10 AM - 07:25 AM

Peak Hour

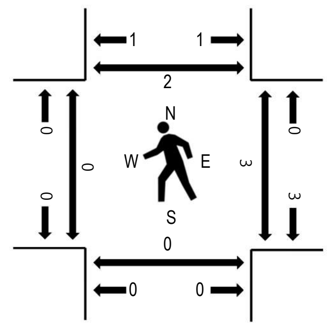
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	19.3%	0.84
WB	13.5%	0.93
NB	0.0%	0.50
SB	3.7%	0.75
All	15.6%	0.92

Traffic Counts - Motorized Vehicles

Interval	MOLALLA RD (OR 211) Eastbound				MOLALLA RD (OR 211) Westbound				WOODBURN PLACE APTS Northbound				WOODBURN PLACE APTS Southbound					Rolling
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	Hour
7:00 AM	0	2	26	0	0	0	21	0	0	0	0	0	0	0	0	3	52	614
7:05 AM	0	2	19	0	0	0	18	1	0	0	0	0	0	0	0	2	42	615
7:10 AM	0	3	26	0	0	0	39	0	0	0	0	0	0	0	0	2	70	608
7:15 AM	0	1	31	0	0	0	18	0	0	0	0	0	0	0	0	1	51	576
7:20 AM	0	0	16	0	0	0	25	1	0	0	0	0	0	0	0	4	46	574
7:25 AM	0	2	20	0	0	0	28	0	0	0	0	0	0	0	0	2	52	572
7:30 AM	0	0	21	0	0	0	25	1	0	0	0	0	0	0	0	2	49	571
7:35 AM	0	2	22	0	0	0	26	0	0	0	0	0	0	1	0	4	55	584
7:40 AM	0	1	18	0	0	0	34	0	0	0	0	0	0	0	0	2	55	565
7:45 AM	0	2	17	0	0	0	23	0	0	0	0	0	0	0	0	3	45	553
7:50 AM	0	3	19	0	0	0	23	0	0	0	0	0	0	0	0	2	47	543
7:55 AM	0	0	21	0	0	0	27	0	0	0	0	0	0	0	0	2	50	535
8:00 AM	0	2	21	0	0	0	30	0	0	0	0	0	0	0	0	0	53	516
8:05 AM	0	1	16	0	0	0	15	1	0	0	0	1	0	0	0	1	35	
8:10 AM	0	2	13	0	0	0	21	2	0	0	0	0	0	0	0	0	38	
8:15 AM	0	2	22	0	0	0	25	0	0	0	0	0	0	0	0	0	49	
8:20 AM	0	2	12	0	0	0	29	0	0	0	0	0	0	0	0	1	44	
8:25 AM	0	0	25	0	0	0	26	0	0	0	0	0	0	0	0	0	51	
8:30 AM	0	3	25	0	0	0	34	0	0	0	0	0	0	0	0	0	62	
8:35 AM	0	1	14	0	0	0	20	0	0	0	0	0	0	0	0	1	36	
8:40 AM	0	3	19	0	0	0	18	1	0	1	0	0	0	0	0	1	43	
8:45 AM	0	1	12	0	0	0	19	0	0	0	0	0	0	0	0	3	35	
8:50 AM	0	3	12	0	0	0	19	0	0	0	0	0	0	0	0	5	39	
8:55 AM	0	1	13	0	0	0	15	0	0	0	0	0	0	0	0	2	31	
Count Total	0	39	460	0	0	0	578	7	0	1	0	1	0	1	0	43	1,130	
Peak Hour	0	18	251	0	0	0	316	3	0	0	0	0	0	1	0	26	615	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

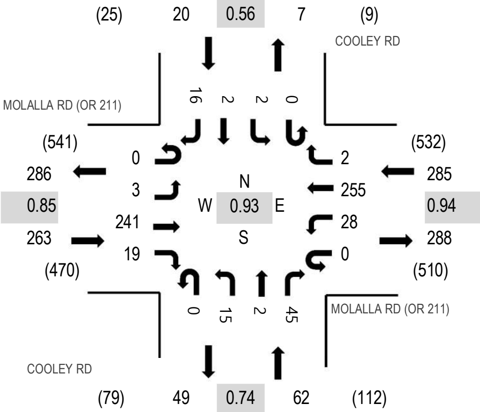
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	3	0	3	0	6	7:00 AM	0	0	0	0	0	7:00 AM	0	0	6	0	6
7:05 AM	4	0	3	0	7	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	5	0	7	0	12	7:10 AM	0	0	0	0	0	7:10 AM	0	0	3	0	3
7:15 AM	3	0	0	0	3	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	4	0	6	0	10	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	2	0	2	0	4	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	6	0	3	0	9	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	4	0	6	0	10	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	5	0	1	0	6	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	6	0	3	0	9	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	3	0	5	0	8	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	2	2
7:55 AM	5	0	4	1	10	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	2	2
8:00 AM	5	0	3	0	8	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	4	0	1	0	5	8:05 AM	0	0	0	0	0	8:05 AM	0	2	0	0	2
8:10 AM	4	0	6	0	10	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	5	0	4	0	9	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	3	0	4	0	7	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	5	0	8	0	13	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	3	0	4	0	7	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	3	0	3	0	6	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	2	0	4	0	6	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	5	0	4	1	10	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	3	0	3	0	6	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	2	0	3	0	5	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	94	0	90	2	186	Count Total	0	0	0	0	0	Count Total	0	2	9	4	15
Peak Hour	52	0	43	1	96	Peak Hour	0	0	0	0	0	Peak Hour	0	0	3	4	7

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

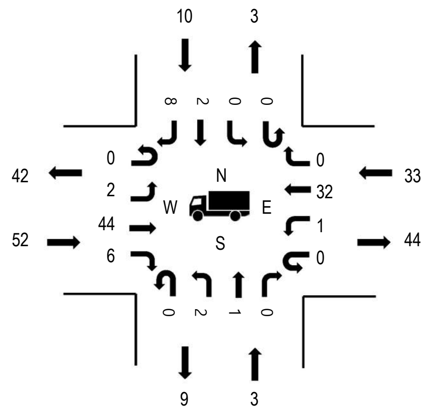
Location: 5 COOLEY RD & MOLALLA RD (OR 211) AM
Date: Thursday, September 7, 2023
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:00 AM - 07:15 AM

Peak Hour

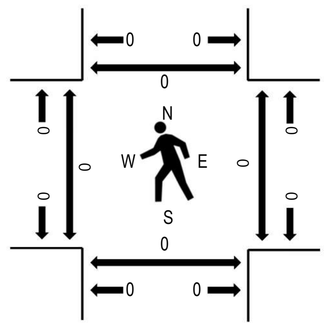
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	19.8%	0.85
WB	11.6%	0.94
NB	4.8%	0.74
SB	50.0%	0.56
All	15.6%	0.93

Traffic Counts - Motorized Vehicles

Interval Start Time	MOLALLA RD (OR 211) Eastbound				MOLALLA RD (OR 211) Westbound				COOLEY RD Northbound				COOLEY RD Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	1	22	5	0	3	17	0	0	1	1	9	0	1	0	2	62	630
7:05 AM	0	1	17	1	0	3	15	0	0	1	0	4	0	0	1	0	43	622
7:10 AM	0	1	22	0	0	2	33	0	0	1	0	4	0	0	0	1	64	613
7:15 AM	0	0	33	2	0	1	14	2	0	0	0	3	0	0	0	0	55	589
7:20 AM	0	0	16	0	0	2	16	0	0	2	0	5	0	0	0	6	47	581
7:25 AM	0	0	19	1	0	3	25	0	0	1	0	6	0	0	0	1	56	579
7:30 AM	0	0	20	1	0	1	22	0	0	0	0	3	0	1	0	1	49	578
7:35 AM	0	0	23	1	0	1	20	0	0	3	0	1	0	0	0	1	50	588
7:40 AM	0	0	18	2	0	2	30	0	0	2	0	0	0	0	1	0	55	579
7:45 AM	0	0	16	0	0	2	21	0	0	0	0	6	0	0	0	1	46	565
7:50 AM	0	0	18	1	0	4	19	0	0	2	1	3	0	0	0	2	50	553
7:55 AM	0	0	17	5	0	4	23	0	0	2	0	1	0	0	0	1	53	533
8:00 AM	0	0	22	0	0	3	25	0	0	1	0	2	0	0	0	1	54	509
8:05 AM	0	0	16	1	0	0	13	0	0	1	0	2	0	0	0	1	34	
8:10 AM	0	0	12	2	0	0	17	0	0	5	0	4	0	0	0	0	40	
8:15 AM	0	1	21	0	0	0	18	0	0	1	0	5	0	0	0	1	47	
8:20 AM	0	0	12	2	0	1	26	0	0	1	0	3	0	0	0	0	45	
8:25 AM	0	0	19	2	0	4	26	0	0	1	0	3	0	0	0	0	55	
8:30 AM	0	0	24	3	0	1	28	0	0	1	0	2	0	0	0	0	59	
8:35 AM	0	0	13	1	0	1	19	1	0	0	0	5	0	0	0	1	41	
8:40 AM	0	0	16	3	0	0	17	0	0	2	0	2	0	0	0	1	41	
8:45 AM	0	0	10	2	0	2	17	0	0	2	0	1	0	0	0	0	34	
8:50 AM	0	0	12	0	0	0	15	0	0	1	0	2	0	0	0	0	30	
8:55 AM	0	0	11	2	0	0	13	0	0	0	0	3	0	0	0	0	29	
Count Total	0	4	429	37	0	40	489	3	0	31	2	79	0	2	2	21	1,139	
Peak Hour	0	3	241	19	0	28	255	2	0	15	2	45	0	2	2	16	630	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval	Heavy Vehicles					Interval	Bicycles on Roadway					Interval	Pedestrians/Bicycles on Crosswalk				
Start Time	EB	NB	WB	SB	Total	Start Time	EB	NB	WB	SB	Total	Start Time	EB	NB	WB	SB	Total
7:00 AM	4	1	1	1	7	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	4	0	2	1	7	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	4	0	7	0	11	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	4	0	0	0	4	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	4	0	3	3	10	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	1	0	3	0	4	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	5	0	2	1	8	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	5	1	5	0	11	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	6	0	1	1	8	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	6	0	3	0	9	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	4	1	3	2	10	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	5	0	3	1	9	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0
8:00 AM	5	1	3	0	9	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	4	0	1	0	5	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	4	1	6	0	11	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	5	1	3	0	9	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	4	1	3	0	8	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	4	0	9	0	13	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	3	0	3	0	6	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	3	0	4	0	7	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	2	1	3	1	7	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	3	0	4	0	7	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	3	0	3	0	6	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	2	0	3	0	5	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	94	8	78	11	191	Count Total	0	0	0	0	0	Count Total	0	0	0	0	0
Peak Hour	52	3	33	10	98	Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	0	0

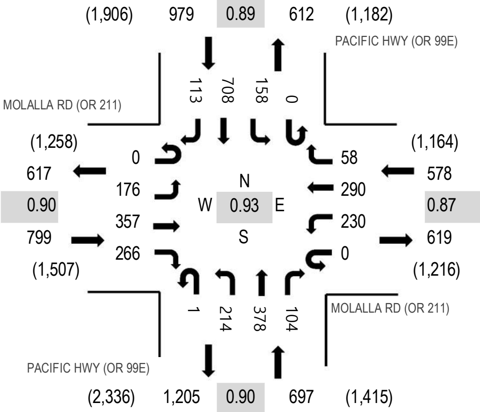
ALL TRAFFIC DATA SERVICES

(303) 216-2439
www.alltrafficdata.net

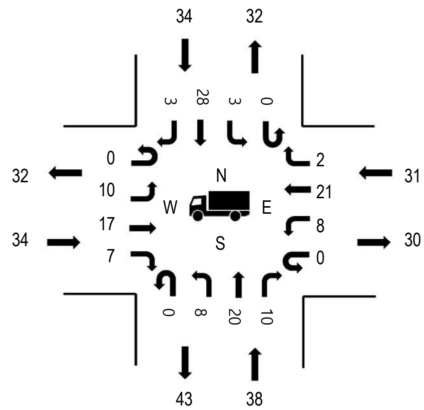
Location: 1 PACIFIC HWY (OR 99E) & MOLALLA RD (OR 211) PM
Date: Thursday, September 7, 2023
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour

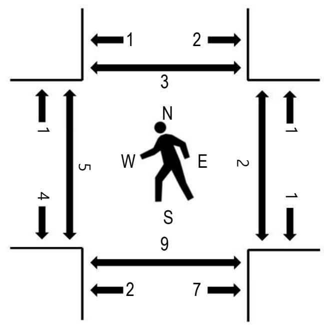
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	4.3%	0.90
WB	5.4%	0.87
NB	5.5%	0.90
SB	3.5%	0.89
All	4.5%	0.93

Traffic Counts - Motorized Vehicles

Interval Start Time	MOLALLA RD (OR 211) Eastbound U-Turn	Left	Thru	Right	MOLALLA RD (OR 211) Westbound U-Turn	Left	Thru	Right	PACIFIC HWY (OR 99E) Northbound U-Turn	Left	Thru	Right	PACIFIC HWY (OR 99E) Southbound U-Turn	Left	Thru	Right	Total	Rolling Hour
4:00 PM	0	16	39	18	0	26	21	6	0	16	31	12	0	12	56	11	264	3,048
4:05 PM	0	11	29	21	0	20	12	9	0	24	34	5	0	14	49	11	239	3,013
4:10 PM	0	15	31	17	0	17	17	1	1	28	38	11	0	15	59	18	268	3,045
4:15 PM	0	11	36	15	0	17	30	3	0	23	32	7	0	12	55	17	258	3,019
4:20 PM	0	12	28	17	0	26	17	5	0	16	28	14	0	5	60	15	243	3,009
4:25 PM	0	12	20	24	0	27	28	7	0	18	36	9	0	10	40	8	239	3,035
4:30 PM	0	13	27	21	0	14	28	5	0	12	42	8	0	9	77	4	260	3,053
4:35 PM	0	15	37	24	0	14	30	6	1	28	25	8	0	18	48	10	264	3,036
4:40 PM	0	19	22	26	0	26	19	4	0	30	35	5	0	28	71	10	295	3,020
4:45 PM	0	14	29	17	0	21	28	5	0	13	26	8	0	16	61	9	247	2,962
4:50 PM	0	12	36	19	0	8	26	3	0	20	27	9	0	12	56	7	235	2,968
4:55 PM	0	13	27	17	0	23	26	3	0	16	25	10	0	9	57	10	236	2,961
5:00 PM	0	13	32	19	0	17	20	9	0	12	31	9	0	10	47	10	229	2,944
5:05 PM	0	15	37	35	0	28	29	3	0	16	33	9	0	11	45	10	271	
5:10 PM	0	12	33	25	0	21	18	5	0	6	32	9	0	11	59	11	242	
5:15 PM	0	22	23	20	0	22	20	5	0	23	22	6	0	16	60	9	248	
5:20 PM	0	16	23	21	0	17	26	5	0	16	48	16	0	7	64	10	269	
5:25 PM	0	12	31	22	0	19	20	5	0	22	32	7	0	11	63	13	257	
5:30 PM	0	16	18	13	0	28	29	4	0	13	37	9	0	7	56	13	243	
5:35 PM	0	20	31	22	0	23	30	1	0	18	21	7	0	13	54	8	248	
5:40 PM	0	11	26	17	0	23	29	6	0	9	19	11	0	12	68	6	237	
5:45 PM	0	11	33	29	0	17	23	2	0	18	22	14	0	16	55	13	253	
5:50 PM	0	8	20	16	0	14	21	6	2	30	40	15	0	9	40	7	228	
5:55 PM	0	7	27	11	0	17	22	2	0	11	30	9	0	11	61	11	219	
Count Total	0	326	695	486	0	485	569	110	4	438	746	227	0	294	1,361	251	5,992	
Peak Hour	0	176	357	266	0	230	290	58	1	214	378	104	0	158	708	113	3,053	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles EB	Heavy Vehicles NB	Heavy Vehicles WB	Heavy Vehicles SB	Heavy Vehicles Total	Interval Start Time	Bicycles on Roadway EB	Bicycles on Roadway NB	Bicycles on Roadway WB	Bicycles on Roadway SB	Bicycles on Roadway Total	Interval Start Time	Pedestrians/Bicycles on Crosswalk EB	Pedestrians/Bicycles on Crosswalk NB	Pedestrians/Bicycles on Crosswalk WB	Pedestrians/Bicycles on Crosswalk SB	Pedestrians/Bicycles on Crosswalk Total
4:00 PM	8	6	3	2	19	4:00 PM	0	0	0	0	0	4:00 PM	0	2	1	0	3
4:05 PM	3	6	2	4	15	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	0	8	3	1	12	4:10 PM	0	0	0	0	0	4:10 PM	0	0	1	0	1
4:15 PM	0	6	1	0	7	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	3	5	4	5	17	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	2	2
4:25 PM	1	3	2	3	9	4:25 PM	0	0	0	0	0	4:25 PM	0	1	0	0	1
4:30 PM	5	5	3	2	15	4:30 PM	0	0	0	0	0	4:30 PM	0	1	0	0	1
4:35 PM	2	0	4	3	9	4:35 PM	0	0	0	0	0	4:35 PM	0	1	0	0	1
4:40 PM	4	2	2	3	11	4:40 PM	0	0	0	0	0	4:40 PM	1	0	0	1	2
4:45 PM	3	2	1	4	10	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	2	7	4	1	14	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	1	1
4:55 PM	3	3	3	1	10	4:55 PM	0	0	0	0	0	4:55 PM	0	2	1	0	3
5:00 PM	4	1	1	3	9	5:00 PM	0	0	0	0	0	5:00 PM	1	0	1	1	3
5:05 PM	3	4	3	7	17	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	1	5	6	3	15	5:10 PM	0	0	0	0	0	5:10 PM	1	1	0	0	2
5:15 PM	1	2	1	1	5	5:15 PM	0	0	0	0	0	5:15 PM	2	2	0	1	5
5:20 PM	4	4	3	3	14	5:20 PM	0	1	0	0	1	5:20 PM	1	1	0	0	2
5:25 PM	2	3	0	3	8	5:25 PM	0	0	0	0	0	5:25 PM	1	2	1	1	5
5:30 PM	1	0	1	6	8	5:30 PM	0	0	0	0	0	5:30 PM	2	0	0	1	3
5:35 PM	4	2	6	2	14	5:35 PM	0	0	0	1	1	5:35 PM	0	0	0	0	0
5:40 PM	3	1	2	5	11	5:40 PM	0	0	0	0	0	5:40 PM	0	1	0	0	1
5:45 PM	3	0	2	3	8	5:45 PM	0	0	0	0	0	5:45 PM	2	1	0	0	3
5:50 PM	1	3	1	2	7	5:50 PM	0	0	0	1	1	5:50 PM	0	1	0	0	1
5:55 PM	2	2	0	3	7	5:55 PM	0	0	0	0	0	5:55 PM	0	0	1	0	1
Count Total	63	80	58	70	271	Count Total	0	1	0	2	3	Count Total	11	16	6	8	41
Peak Hour	34	38	31	34	137	Peak Hour	0	1	0	0	1	Peak Hour	7	10	3	5	25

(303) 216-2439
www.alltrafficdata.net

Location: 2 SAFEWAY SHOPPING CENTER ACCESS & MOLALLA RD (OR 211) PM

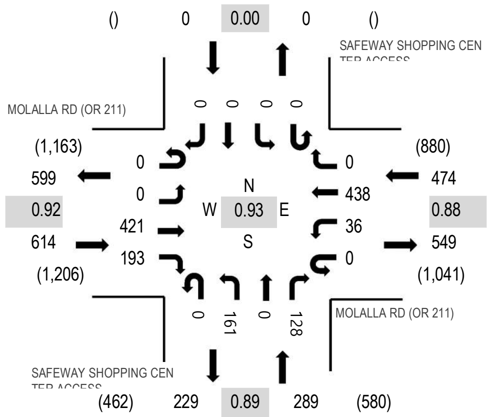
Date: Thursday, September 7, 2023

Peak Hour: 04:10 PM - 05:10 PM

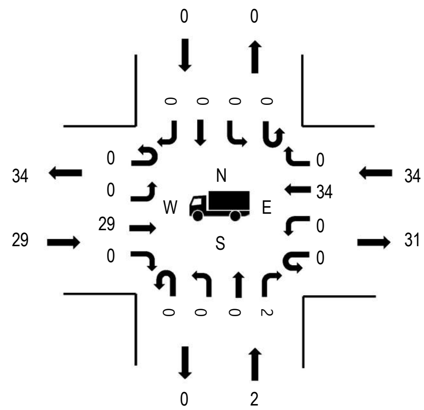
Peak 15-Minutes: 04:35 PM - 04:50 PM

Peak Hour

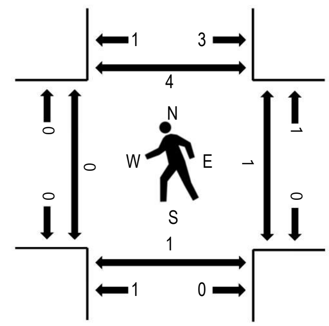
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	4.7%	0.92
WB	7.2%	0.88
NB	0.7%	0.89
SB	0.0%	0.00
All	4.7%	0.93

Traffic Counts - Motorized Vehicles

Interval Start Time	MOLALLA RD (OR 211) Eastbound				MOLALLA RD (OR 211) Westbound				SAFEWAY SHOPPING CENTER ACCESS Northbound				SAFEWAY SHOPPING CENTER ACCESS Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	40	20	0	2	34	0	0	14	0	17	0	0	0	0	127	1,373
4:05 PM	0	0	30	21	0	5	21	0	0	13	0	5	0	0	0	0	95	1,354
4:10 PM	0	0	37	18	0	6	33	0	0	13	0	11	0	0	0	0	118	1,377
4:15 PM	0	0	37	17	0	1	27	0	0	19	0	9	0	0	0	0	110	1,361
4:20 PM	0	0	35	13	0	2	34	0	0	17	0	10	0	0	0	0	111	1,354
4:25 PM	0	0	24	13	0	2	44	0	0	17	0	6	0	0	0	0	106	1,356
4:30 PM	0	0	31	11	0	6	36	0	0	7	0	12	0	0	0	0	103	1,366
4:35 PM	0	0	46	17	0	5	42	0	0	7	0	11	0	0	0	0	128	1,362
4:40 PM	0	0	38	19	0	2	42	0	0	17	0	10	0	0	0	0	128	1,350
4:45 PM	0	0	32	17	0	4	37	0	0	16	0	9	0	0	0	0	115	1,328
4:50 PM	0	0	36	24	0	1	24	0	0	13	0	9	0	0	0	0	107	1,322
4:55 PM	0	0	34	12	0	4	38	0	0	14	0	23	0	0	0	0	125	1,313
5:00 PM	0	0	39	12	0	0	35	0	0	11	0	11	0	0	0	0	108	1,293
5:05 PM	0	0	32	20	0	3	46	0	0	10	0	7	0	0	0	0	118	
5:10 PM	0	0	38	16	0	0	25	0	0	17	0	6	0	0	0	0	102	
5:15 PM	0	0	32	13	0	3	33	0	0	14	0	8	0	0	0	0	103	
5:20 PM	0	0	33	15	0	5	38	0	0	16	0	6	0	0	0	0	113	
5:25 PM	0	0	26	23	0	8	34	0	0	16	0	9	0	0	0	0	116	
5:30 PM	0	0	26	8	0	0	34	0	0	22	0	9	0	0	0	0	99	
5:35 PM	0	0	29	21	0	4	43	0	0	9	0	10	0	0	0	0	116	
5:40 PM	0	0	36	11	0	2	32	0	0	20	0	5	0	0	0	0	106	
5:45 PM	0	0	40	22	0	1	21	0	0	18	0	7	0	0	0	0	109	
5:50 PM	0	0	31	13	0	3	29	0	0	14	0	8	0	0	0	0	98	
5:55 PM	0	0	32	16	0	1	28	0	0	19	0	9	0	0	0	0	105	
Count Total	0	0	814	392	0	70	810	0	0	353	0	227	0	0	0	0	2,666	
Peak Hour	0	0	421	193	0	36	438	0	0	161	0	128	0	0	0	0	1,377	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

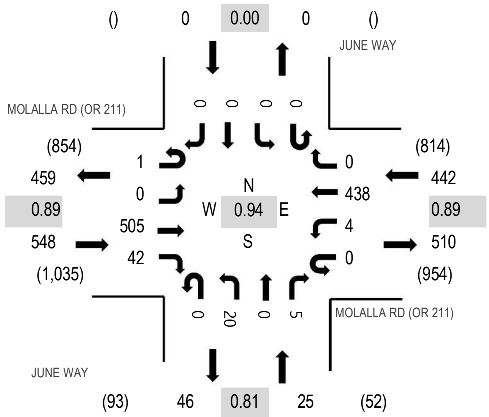
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	5	0	2	0	7	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	2	0	3	0	5	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	1	0	3	0	4	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	1	0	2	0	3	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	5	0	2	0	7	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	2	2
4:25 PM	1	0	4	0	5	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	2	0	4	0	6	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	2	1	4	0	7	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	3	0	3	0	6	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	1	1
4:45 PM	2	0	2	0	4	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	4	0	3	0	7	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	3	1	3	0	7	4:55 PM	0	0	0	0	0	4:55 PM	0	0	1	1	2
5:00 PM	3	0	2	0	5	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	2	0	2	0	4	5:05 PM	0	0	0	0	0	5:05 PM	0	1	0	1	2
5:10 PM	4	1	5	0	10	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	2	0	1	0	3	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	1	1
5:20 PM	2	1	2	0	5	5:20 PM	0	0	0	0	0	5:20 PM	0	0	1	1	2
5:25 PM	1	0	0	0	1	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	0	0	4	0	4	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	3	0	4	0	7	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	5	0	1	0	6	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	0	2	0	2	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	1	0	1	0	2	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	2	0	1	0	3	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	56	4	60	0	120	Count Total	0	0	0	0	0	Count Total	0	1	2	7	10
Peak Hour	29	2	34	0	65	Peak Hour	0	0	0	0	0	Peak Hour	0	1	1	5	7

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

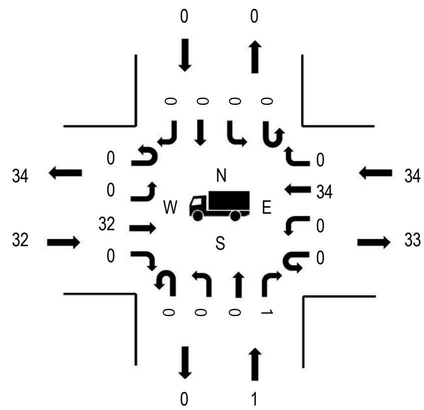
Location: 3 JUNE WAY & MOLALLA RD (OR 211) PM
Date: Thursday, September 7, 2023
Peak Hour: 04:10 PM - 05:10 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour

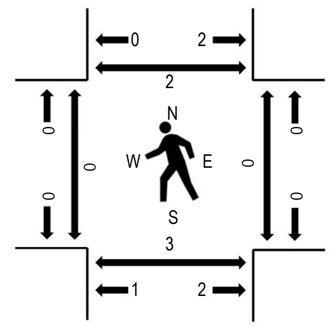
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	5.8%	0.89
WB	7.7%	0.89
NB	4.0%	0.81
SB	0.0%	0.00
All	6.6%	0.94

Traffic Counts - Motorized Vehicles

Interval Start Time	MOLALLA RD (OR 211) Eastbound				MOLALLA RD (OR 211) Westbound				JUNE WAY Northbound				JUNE WAY Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	46	5	0	1	29	0	0	5	0	0	0	0	0	0	86	995
4:05 PM	0	0	35	4	0	0	21	0	0	2	0	0	0	0	0	0	62	1,002
4:10 PM	0	0	47	2	0	2	37	0	0	2	0	0	0	0	0	0	90	1,015
4:15 PM	0	0	40	5	0	0	26	0	0	3	0	0	0	0	0	0	74	992
4:20 PM	0	0	44	0	0	1	37	0	0	1	0	3	0	0	0	0	86	995
4:25 PM	0	0	29	1	0	0	43	0	0	0	0	0	0	0	0	0	73	988
4:30 PM	0	0	38	4	0	0	43	0	0	2	0	0	0	0	0	0	87	996
4:35 PM	0	0	48	5	0	0	34	0	0	3	0	0	0	0	0	0	90	977
4:40 PM	0	0	42	7	0	1	42	0	0	1	0	1	0	0	0	0	94	974
4:45 PM	0	0	38	5	0	0	36	0	0	2	0	0	0	0	0	0	81	949
4:50 PM	0	0	41	5	0	0	25	0	0	0	0	0	0	0	0	0	71	937
4:55 PM	0	0	55	2	0	0	40	0	0	4	0	0	0	0	0	0	101	939
5:00 PM	0	0	45	6	0	0	39	0	0	2	0	1	0	0	0	0	93	906
5:05 PM	1	0	38	0	0	0	36	0	0	0	0	0	0	0	0	0	75	
5:10 PM	0	0	36	5	0	0	25	0	0	1	0	0	0	0	0	0	67	
5:15 PM	0	0	40	2	0	0	34	0	0	1	0	0	0	0	0	0	77	
5:20 PM	0	0	36	2	0	0	38	0	0	3	0	0	0	0	0	0	79	
5:25 PM	0	0	33	4	0	1	42	0	0	1	0	0	0	0	0	0	81	
5:30 PM	0	0	32	3	0	0	30	0	0	2	0	1	0	0	0	0	68	
5:35 PM	1	0	34	4	0	0	45	0	0	2	0	1	0	0	0	0	87	
5:40 PM	0	0	36	3	0	0	27	0	0	3	0	0	0	0	0	0	69	
5:45 PM	0	0	44	4	0	0	20	0	0	1	0	0	0	0	0	0	69	
5:50 PM	0	0	35	3	0	0	33	0	0	2	0	0	0	0	0	0	73	
5:55 PM	0	0	35	5	0	1	25	0	0	2	0	0	0	0	0	0	68	
Count Total	2	0	947	86	0	7	807	0	0	45	0	7	0	0	0	0	1,901	
Peak Hour	1	0	505	42	0	4	438	0	0	20	0	5	0	0	0	0	1,015	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

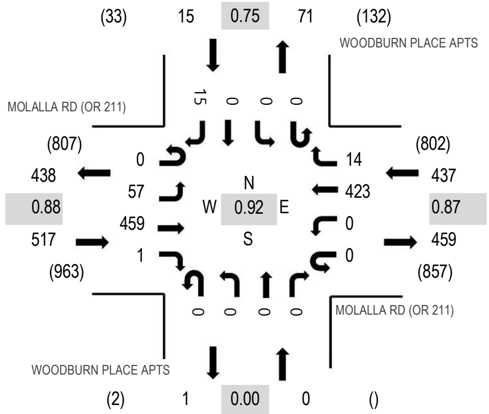
Interval	Heavy Vehicles					Interval	Bicycles on Roadway					Interval	Pedestrians/Bicycles on Crosswalk				
Start Time	EB	NB	WB	SB	Total	Start Time	EB	NB	WB	SB	Total	Start Time	EB	NB	WB	SB	Total
4:00 PM	6	1	3	0	10	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	2	0	2	0	4	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	1	0	3	0	4	4:10 PM	0	0	0	0	0	4:10 PM	0	2	0	0	2
4:15 PM	1	0	4	0	5	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	5	1	0	0	6	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	1	0	4	0	5	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	1	1
4:30 PM	2	0	3	0	5	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	3	0	4	0	7	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	3	0	3	0	6	4:40 PM	0	0	1	0	1	4:40 PM	0	0	0	0	0
4:45 PM	2	0	3	0	5	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	3	0	2	0	5	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	5	0	3	0	8	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	3	0	5	0	8	5:00 PM	0	0	0	0	0	5:00 PM	0	1	0	0	1
5:05 PM	3	0	0	0	3	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	1	1
5:10 PM	3	0	5	0	8	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	2	0	1	0	3	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	1	0	2	0	3	5:20 PM	0	0	1	0	1	5:20 PM	0	0	0	0	0
5:25 PM	1	0	0	0	1	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	0	0	4	0	4	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	2	0	3	0	5	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	5	0	1	0	6	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	0	2	0	2	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	1	0	1	0	2	5:50 PM	0	0	0	0	0	5:50 PM	0	1	0	0	1
5:55 PM	2	0	1	0	3	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	57	2	59	0	118	Count Total	0	0	2	0	2	Count Total	0	4	0	2	6
Peak Hour	32	1	34	0	67	Peak Hour	0	0	1	0	1	Peak Hour	0	3	0	2	5

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 4 WOODBURN PLACE APTS & MOLALLA RD (OR 211) PM
Date: Thursday, September 7, 2023
Peak Hour: 04:10 PM - 05:10 PM
Peak 15-Minutes: 04:55 PM - 05:10 PM

Peak Hour

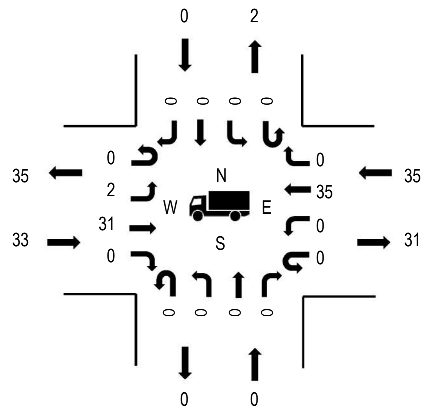
Motorized Vehicles



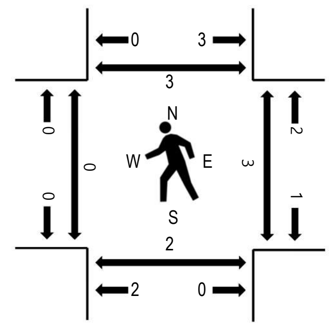
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	6.4%	0.88
WB	8.0%	0.87
NB	0.0%	0.00
SB	0.0%	0.75
All	7.0%	0.92

Heavy Vehicles



Pedestrians



Traffic Counts - Motorized Vehicles

Interval Start Time	MOLALLA RD (OR 211) Eastbound U-Turn	Left	Thru	Right	MOLALLA RD (OR 211) Westbound U-Turn	Left	Thru	Right	WOODBURN PLACE APTS Northbound U-Turn	Left	Thru	Right	WOODBURN PLACE APTS Southbound U-Turn	Left	Thru	Right	Total	Rolling Hour
4:00 PM	0	1	44	0	0	0	30	2	0	0	0	0	0	1	0	0	78	938
4:05 PM	0	1	34	0	0	0	21	0	0	0	0	0	0	0	0	1	57	953
4:10 PM	0	2	42	0	0	0	38	0	0	0	0	0	0	0	0	0	82	969
4:15 PM	0	11	31	0	0	0	24	0	0	0	0	0	0	0	0	1	67	947
4:20 PM	0	2	47	0	0	0	38	2	0	0	0	0	0	0	0	1	90	961
4:25 PM	0	2	27	0	0	0	44	1	0	0	0	0	0	0	0	2	76	943
4:30 PM	0	3	35	0	0	0	38	3	0	0	0	0	0	0	0	1	80	946
4:35 PM	0	6	40	0	0	0	36	0	0	0	0	0	0	0	0	0	82	928
4:40 PM	0	7	38	0	0	0	40	2	0	0	0	0	0	0	0	0	87	925
4:45 PM	0	7	32	0	0	0	35	1	0	0	0	0	0	0	0	1	76	903
4:50 PM	0	4	34	0	0	0	23	0	0	0	0	0	0	0	0	4	65	890
4:55 PM	0	7	51	0	0	0	36	2	0	0	0	0	0	0	0	2	98	895
5:00 PM	0	4	45	0	0	0	40	3	0	0	0	0	0	0	0	1	93	860
5:05 PM	0	2	37	1	0	0	31	0	0	0	0	0	0	0	0	2	73	
5:10 PM	0	1	33	0	0	0	23	1	0	0	0	0	0	1	0	1	60	
5:15 PM	0	7	36	0	0	0	37	1	0	0	0	0	0	0	0	0	81	
5:20 PM	0	6	31	0	0	0	31	2	0	0	0	0	0	0	0	2	72	
5:25 PM	0	2	33	0	0	0	43	1	0	0	0	0	0	0	0	0	79	
5:30 PM	0	1	31	1	0	0	27	0	0	0	0	0	0	0	0	2	62	
5:35 PM	0	3	30	0	0	0	41	1	0	0	0	0	0	0	0	4	79	
5:40 PM	0	7	31	0	0	0	26	0	0	0	0	0	0	0	0	1	65	
5:45 PM	0	8	32	0	0	0	22	0	0	0	0	0	0	0	0	1	63	
5:50 PM	0	1	36	0	0	0	27	3	0	0	0	0	0	0	0	3	70	
5:55 PM	0	11	25	0	0	0	25	1	0	0	0	0	0	0	0	1	63	
Count Total	0	106	855	2	0	0	776	26	0	0	0	0	0	2	0	31	1,798	
Peak Hour	0	57	459	1	0	0	423	14	0	0	0	0	0	0	0	15	969	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

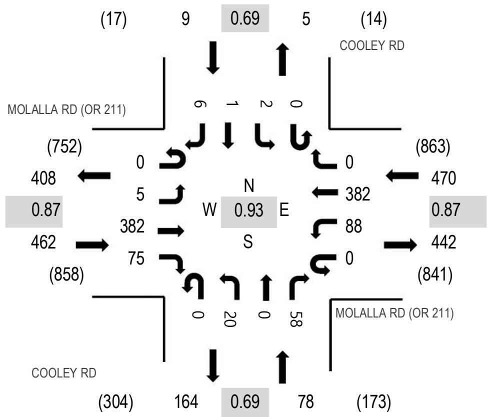
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	5	0	3	0	8	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	3	0	2	0	5	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	1	0	3	0	4	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	1	0	4	0	5	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	6	0	1	0	7	4:20 PM	0	0	0	0	0	4:20 PM	0	1	2	0	3
4:25 PM	1	0	4	0	5	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	2	2
4:30 PM	2	0	2	0	4	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	1	1
4:35 PM	2	0	5	0	7	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	4	0	2	0	6	4:40 PM	0	0	1	0	1	4:40 PM	0	0	0	0	0
4:45 PM	2	0	3	0	5	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	2	0	4	0	6	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	5	0	1	0	6	4:55 PM	0	0	0	0	0	4:55 PM	0	1	1	0	2
5:00 PM	4	0	5	0	9	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	3	0	1	0	4	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	4	0	4	0	8	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	1	1
5:15 PM	2	0	2	0	4	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	1	1
5:20 PM	1	0	1	0	2	5:20 PM	0	0	1	0	1	5:20 PM	0	0	0	1	1
5:25 PM	1	0	0	0	1	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	1	1
5:30 PM	0	0	4	0	4	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	2	0	3	0	5	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	5	0	1	0	6	5:40 PM	0	0	0	0	0	5:40 PM	1	0	0	0	1
5:45 PM	0	0	3	0	3	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	2	0	1	0	3	5:55 PM	0	0	0	0	0	5:55 PM	1	1	1	0	3
Count Total	58	0	59	0	117	Count Total	0	0	2	0	2	Count Total	2	3	4	7	16
Peak Hour	33	0	35	0	68	Peak Hour	0	0	1	0	1	Peak Hour	0	2	3	3	8

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

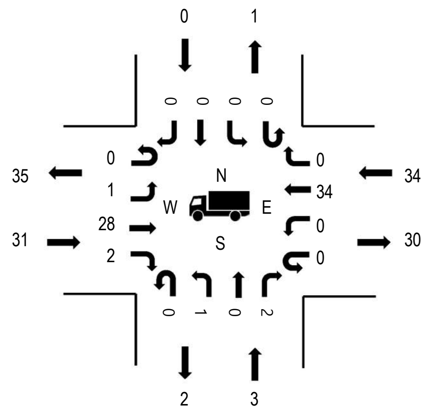
Location: 5 COOLEY RD & MOLALLA RD (OR 211) PM
Date: Thursday, September 7, 2023
Peak Hour: 04:10 PM - 05:10 PM
Peak 15-Minutes: 04:55 PM - 05:10 PM

Peak Hour

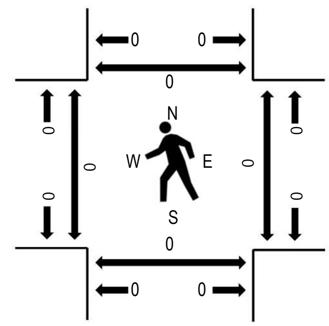
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	6.7%	0.87
WB	7.2%	0.87
NB	3.8%	0.69
SB	0.0%	0.69
All	6.7%	0.93

Traffic Counts - Motorized Vehicles

Interval Start Time	MOLALLA RD (OR 211) Eastbound				MOLALLA RD (OR 211) Westbound				COOLEY RD Northbound				COOLEY RD Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	35	10	0	3	31	0	0	1	0	4	0	0	0	0	84	1,004
4:05 PM	0	0	30	4	0	16	19	0	0	0	0	3	0	1	0	1	74	1,015
4:10 PM	0	1	36	7	0	7	32	0	0	2	0	4	0	0	0	1	90	1,019
4:15 PM	0	0	27	2	0	6	21	0	0	4	0	9	0	0	0	0	69	998
4:20 PM	0	0	38	8	0	11	41	0	0	0	0	4	0	1	0	0	103	1,016
4:25 PM	0	0	21	8	0	6	39	0	0	2	0	3	0	0	0	0	79	980
4:30 PM	0	0	29	7	0	6	34	0	0	2	0	2	0	0	0	1	81	980
4:35 PM	0	1	37	2	0	10	32	0	0	1	0	4	0	0	0	0	87	977
4:40 PM	0	1	28	8	0	5	35	0	0	2	0	9	0	0	0	2	90	980
4:45 PM	0	0	28	2	0	6	32	0	0	2	0	4	0	0	0	1	75	957
4:50 PM	0	2	30	6	0	8	19	0	0	1	0	5	0	1	0	0	72	941
4:55 PM	0	0	40	9	0	12	29	0	0	3	0	6	0	0	0	1	100	943
5:00 PM	0	0	37	8	0	6	39	0	0	1	0	4	0	0	0	0	95	907
5:05 PM	0	0	31	8	0	5	29	0	0	0	0	4	0	0	1	0	78	
5:10 PM	0	1	23	7	0	10	24	0	0	0	0	3	0	0	1	0	69	
5:15 PM	0	0	29	6	0	5	32	0	0	1	0	12	0	0	2	0	87	
5:20 PM	0	1	27	3	0	2	26	0	0	3	0	5	0	0	0	0	67	
5:25 PM	0	0	24	3	0	4	37	0	0	2	0	9	0	0	0	0	79	
5:30 PM	0	1	27	8	0	8	24	1	0	3	0	5	0	0	0	1	78	
5:35 PM	0	1	25	4	0	7	34	0	0	6	0	12	0	0	0	1	90	
5:40 PM	0	4	22	6	0	4	24	0	0	1	0	6	0	0	0	0	67	
5:45 PM	0	0	26	6	0	2	21	0	0	0	0	4	0	0	0	0	59	
5:50 PM	0	0	29	5	0	7	24	0	0	4	0	5	0	0	0	0	74	
5:55 PM	0	0	26	3	0	4	24	0	0	0	0	6	0	1	0	0	64	
Count Total	0	13	705	140	0	160	702	1	0	41	0	132	0	4	4	9	1,911	
Peak Hour	0	5	382	75	0	88	382	0	0	20	0	58	0	2	1	6	1,019	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	5	1	2	0	8	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	2	0	3	0	5	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	2	0	3	0	5	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	0	2	3	0	5	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	7	0	2	0	9	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	1	0	3	0	4	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	2	0	2	0	4	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	2	0	5	0	7	4:35 PM	0	0	0	1	1	4:35 PM	0	0	0	0	0
4:40 PM	2	0	2	0	4	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	2	0	3	0	5	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	2	0	4	0	6	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	4	1	1	0	6	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	4	0	5	0	9	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	3	0	1	0	4	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	4	0	4	0	8	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	2	0	2	0	4	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	1	0	1	0	2	5:20 PM	0	1	0	0	1	5:20 PM	0	0	0	0	0
5:25 PM	1	0	0	0	1	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	0	0	5	0	5	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	1	1	2	0	4	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	4	0	2	0	6	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	0	3	0	3	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	1	0	0	0	1	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	4	0	1	0	5	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	56	5	59	0	120	Count Total	0	1	0	1	2	Count Total	0	0	0	0	0
Peak Hour	31	3	34	0	68	Peak Hour	0	0	0	1	1	Peak Hour	0	0	0	0	0

24-001 OR99E; MP 34.03; PACIFIC HIGHWAY EAST NO. 81; 0.11 miles south of NE Belle Passi Rd

	2019	2018	2017	2016	2015	(3-Yr Average)	
June	117	109	109	111	113	111.0	1.000
July	114	109	113	108	113	110.0	1.009
August	112	109	117	109	109	110.0	1.009
September	109	106	109	106	105	107.0	1.037

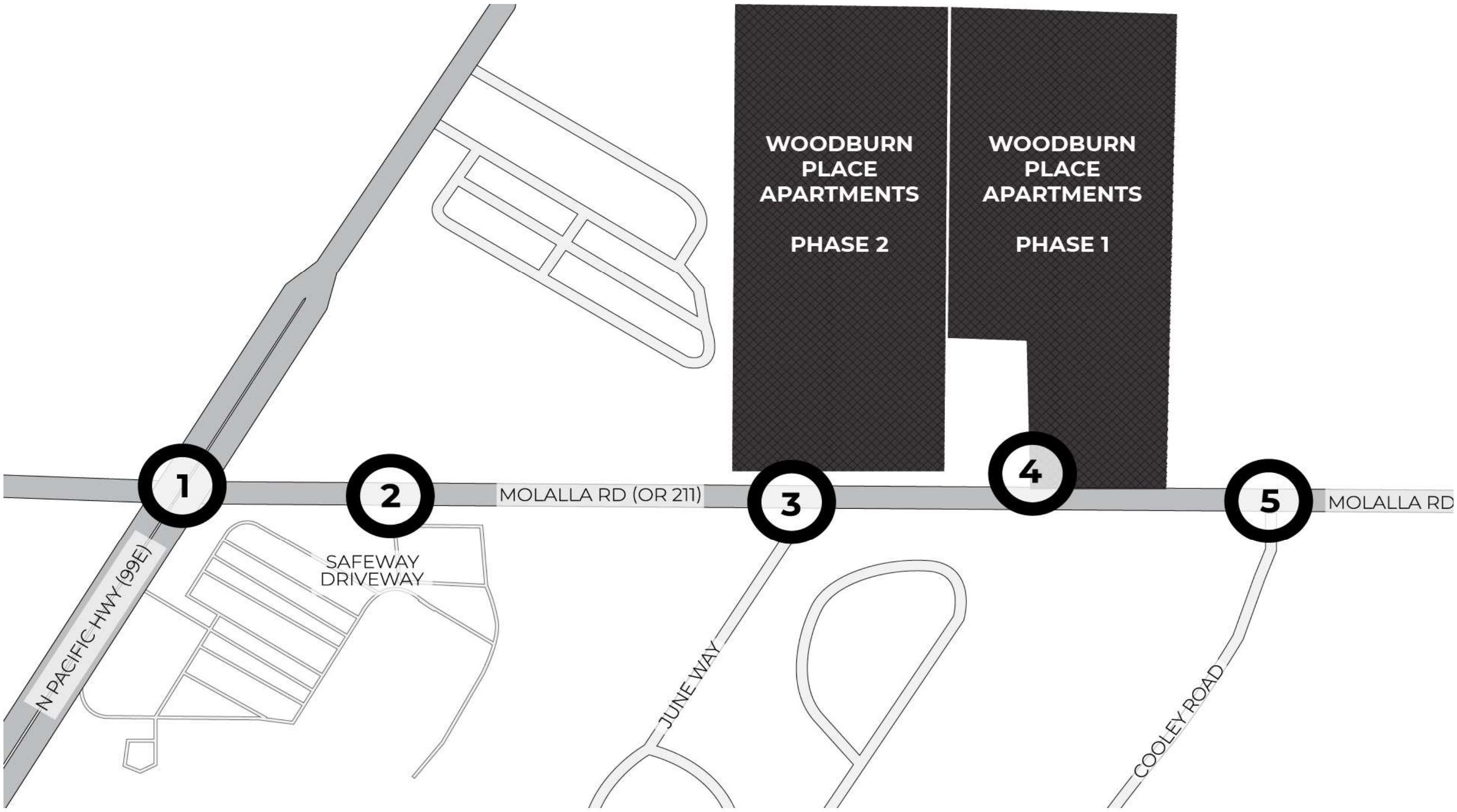
	2021	2019	2018	2017	2016	(3-Yr Average)		
June	112	117	109	109	111	110.7	1.006	USE
July	112	114	109	113	108	111.3	1.000	
August	112	112	109	117	109	111.0	1.003	
September	108	109	106	109	106	107.7	1.034	

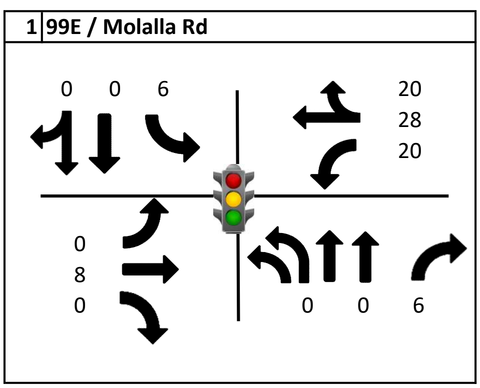
Notes: Year 2020 data is excluded from all calculations

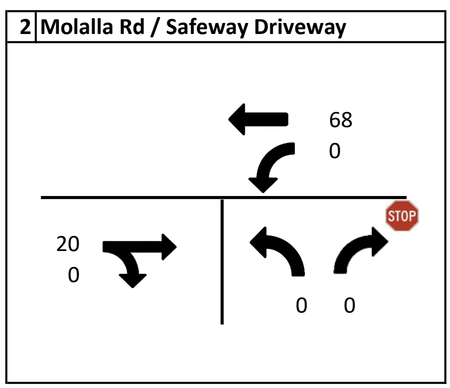
* 2041 Future Volume values may not match 2041 TransGIS/TVT Web volumes due to FHWA requirements that there be no negative growth values. This requirement is not valid in some areas of Oregon.

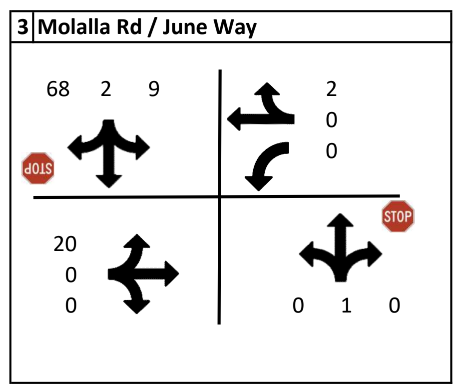
Site id	HWY	MP	DIR	HS	Description	2017	2019	2021	2041*	RSQ		
199	081	31.65	1		North of Woodburn-Estacada Highway (OR211) and Hillsboro-Silverton Highway (OR214) [0.05 mile]		17500		21500	MODEL	1.0%	1.17%
200	081	31.80	1		South of Woodburn-Estacada Highway (OR211) [0.10 mile]		20100		27800	MODEL	1.7%	
3235	140	39.24	1		West of Pacific Highway East (OR99E) [0.05 mile]		14100		14000	MODEL	0.0%	
3446	161	0.15	1		East of Pacific Highway East (OR99E) and Hillsboro-Silverton Highway (OR214) [0.15 mile]		8000		11400	MODEL	1.9%	

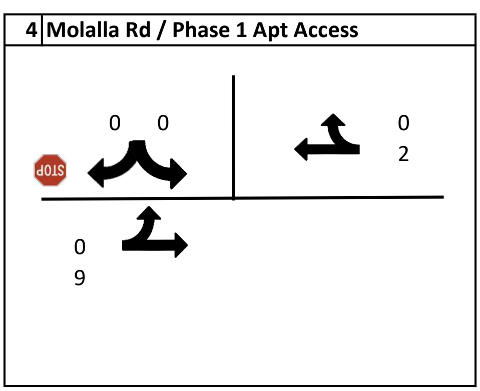
Figure 6: Site Generated Volumes AM Peak Hour











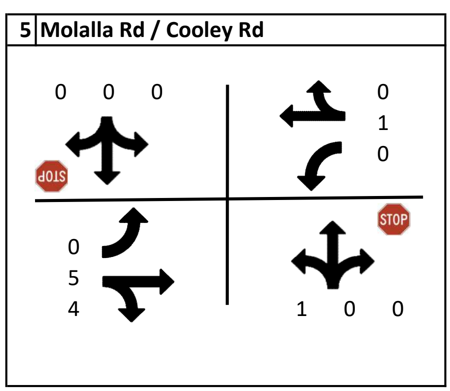
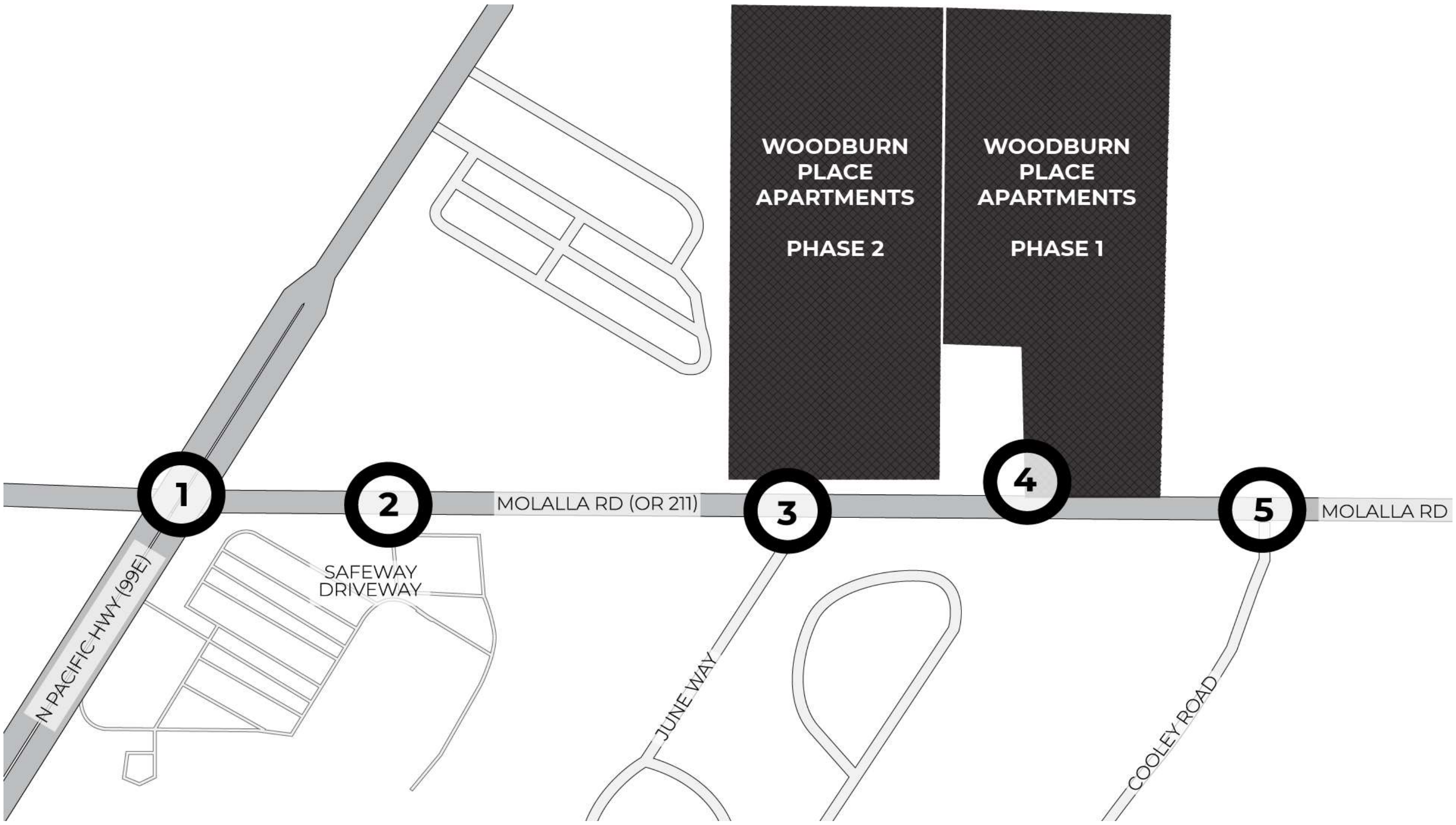
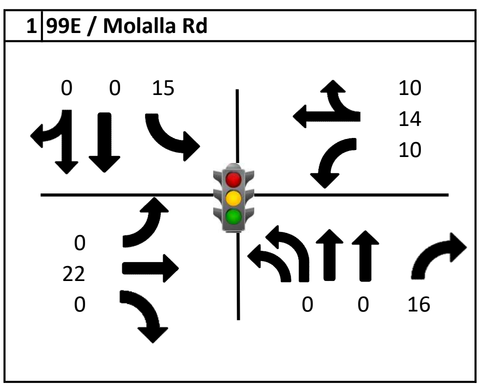
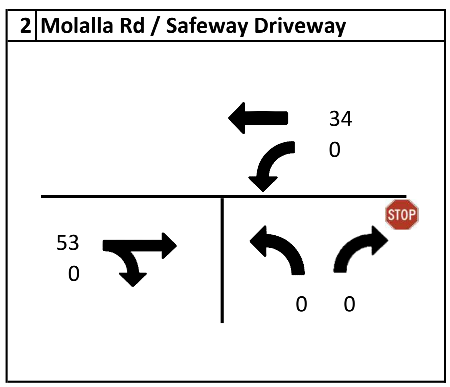
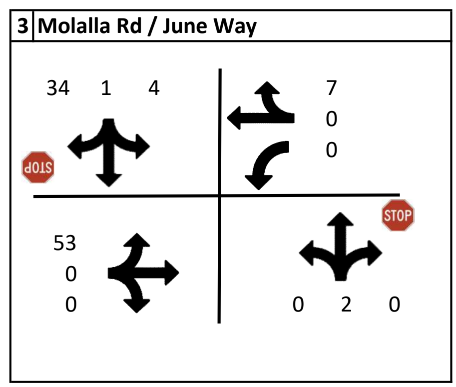


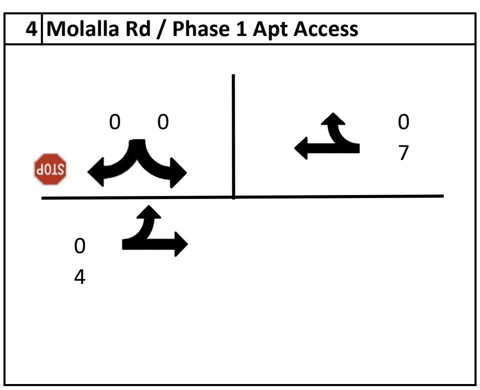
Figure 7: Site Generated Volumes PM Peak Hour

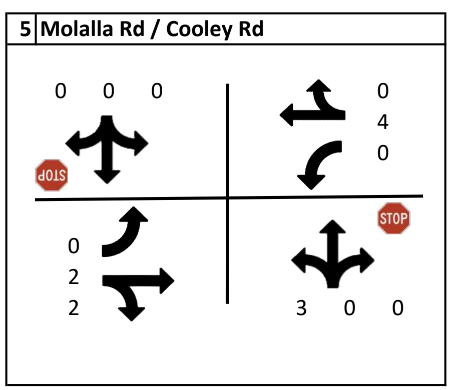












LEGEND

XX% *PERCENT OF PROJECT TRIPS*

TRIP GENERATION			
	IN	OUT	TOTAL
AM	19	54	73
PM	55	35	90

AM PEAK HOUR

PM PEAK HOUR

SITE TRIP DISTRIBUTION & ASSIGNMENT
Proposed Development Plan – Site Trips
AM & PM Peak Hours

N

no scale

FIGURE 3

PAGE 6

January 10, 2020

Randy Saunders
RSS Architecture, PC
2225 Country Club Rd
Woodburn, OR 97071

ASSOCIATED TRANSPORTATION ENGINEERING & PLANNING INC.

Re: Woodburn Housing Development TIA Letter

Mr Saunders,

At the December 18, 2019 Pre-application meeting with Woodburn officials, they asked the applicant to submit a traffic memo to determine whether or not a traffic impact analysis (TIA) will be required. The Woodburn Development Ordinance is as follows:

> ***3.04.05 Traffic Impact Analysis***
> *A. A Traffic Impact Analysis (TIA) may be required by the Director prior to the approval of a City access permit when the Director estimates a development proposal may generate either 100 or more additional, peak hour trips, or 1,000 or more additional daily trips, within ten years of a development application.*
> *B. A TIA shall evaluate the traffic impacts projected of a development proposal and the estimated effectiveness of potential traffic impact mitigation measures.*
> *C. The methodology for a TIA shall be consistent with City standards.*

The proposed project is to build three story units with a total 42 apartment units. In the 10th Edition of the ITE Trip Generation Manual, this type of project falls within the Multifamily (Mid-rise) classification, ITE Code 221. Per the ITE the trip rates per unit are: daily - 5.44; AM peak - 0.36; and PM peak - 0.44. Based on these rates the following table compares the estimated site developed trips versus the Woodburn Development Code criteria that triggers a TIA.

Period	Woodburn Threshold	Site Generation
Daily	1,000	228
AM Peak	100	15
PM Peak	100	18

AM PEAK HOUR

2023 Existing Volumes

1	OR 211/214 & OR 99E	90	307	85	122	206	73	96	257	145	184	449	97
2	OR 211 & Safeway	0	0	0	0	255	133	0	366	17	138	0	28
3	OR 211 & June Way	0	0	0	0	277	15	0	349	4	32	0	1
4	OR 211 & Site Access	0	0	0	0	278	0	0	353	0	0	0	0
5	OR 211 & Woodburn East	26	0	1	18	260	0	3	327	0	0	0	0
6	OR 211 & Cooley Road	16	2	2	3	249	19	2	264	28	15	2	45

In Process Traffic

1	OR 211/214 & OR 99E	0	4	6	0	8	9	20	28	20	27	10	6
2	OR 211 & Safeway	0	0	0	0	20	0	0	68	0	0	0	0
3	OR 211 & June Way	68	2	9	20	0	0	2	0	0	0	1	0
4	OR 211 & Site Access	0	0	0	0	9	0	0	2	0	0	0	0
5	OR 211 & Woodburn East	0	0	0	0	9	0	0	2	0	0	0	0
6	OR 211 & Cooley Road	0	0	0	0	5	4	0	1	0	1	0	0

Background Growth

1	OR 211/214 & OR 99E	2	7	2	3	5	2	2	6	3	4	11	2
2	OR 211 & Safeway	0	0	0	0	6	1	0	9	0	1	0	0
3	OR 211 & June Way	0	0	0	0	6	0	0	8	0	0	0	0
4	OR 211 & Site Access	0	0	0	0	7	0	0	8	0	0	0	0
5	OR 211 & Woodburn East	0	0	0	0	6	0	0	8	0	0	0	0
6	OR 211 & Cooley Road	0	0	0	0	6	0	0	6	0	0	0	0

2025 Background Volumes

1	OR 211/214 & OR 99E	92	318	93	125	219	84	118	291	168	215	470	105
2	OR 211 & Safeway	0	0	0	0	281	134	0	443	17	139	0	28
3	OR 211 & June Way	68	2	9	20	283	15	2	357	4	32	1	1
4	OR 211 & Site Access	0	0	0	0	294	0	0	363	0	0	0	0
5	OR 211 & Woodburn East	26	0	1	18	275	0	3	337	0	0	0	0
6	OR 211 & Cooley Road	16	2	2	3	260	23	2	271	28	16	2	45

Primary Trips

1	OR 211/214 & OR 99E	0	0	6	0	11	0	6	11	11	0	0	11
2	OR 211 & Safeway	0	0	0	0	28	0	0	28	0	0	0	0
3	OR 211 & June Way	0	0	0	0	28	0	0	28	0	0	0	0
4	OR 211 & Site Access	22	0	5	25	3	0	5	6	0	0	0	0
5	OR 211 & Woodburn East	6	0	5	3	5	0	5	5	0	0	0	0
6	OR 211 & Cooley Road	0	0	0	0	6	4	0	6	0	4	0	0

Pass-By Trips

1	OR 211/214 & OR 99E	0	0	0	0	0	0	0	0	0	0	0	0
2	OR 211 & Safeway	0	0	0	0	0	0	0	0	0	0	0	0
3	OR 211 & June Way	0	0	0	0	0	0	0	0	0	0	0	0
4	OR 211 & Site Access	17	0	19	22	-22	0	14	-17	0	0	0	0
5	OR 211 & Woodburn East	14	0	6	3	-6	0	17	-17	0	0	0	0
6	OR 211 & Cooley Road	0	0	0	0	0	0	0	0	0	0	0	0

Total Site Trips

1	OR 211/214 & OR 99E	0	0	6	0	11	0	6	11	11	0	0	11
2	OR 211 & Safeway	0	0	0	0	28	0	0	28	0	0	0	0
3	OR 211 & June Way	0	0	0	0	28	0	0	28	0	0	0	0
4	OR 211 & Site Access	39	0	24	47	-19	0	19	-11	0	0	0	0
5	OR 211 & Woodburn East	20	0	11	6	-1	0	22	-12	0	0	0	0
6	OR 211 & Cooley Road	0	0	0	0	6	4	0	6	0	4	0	0

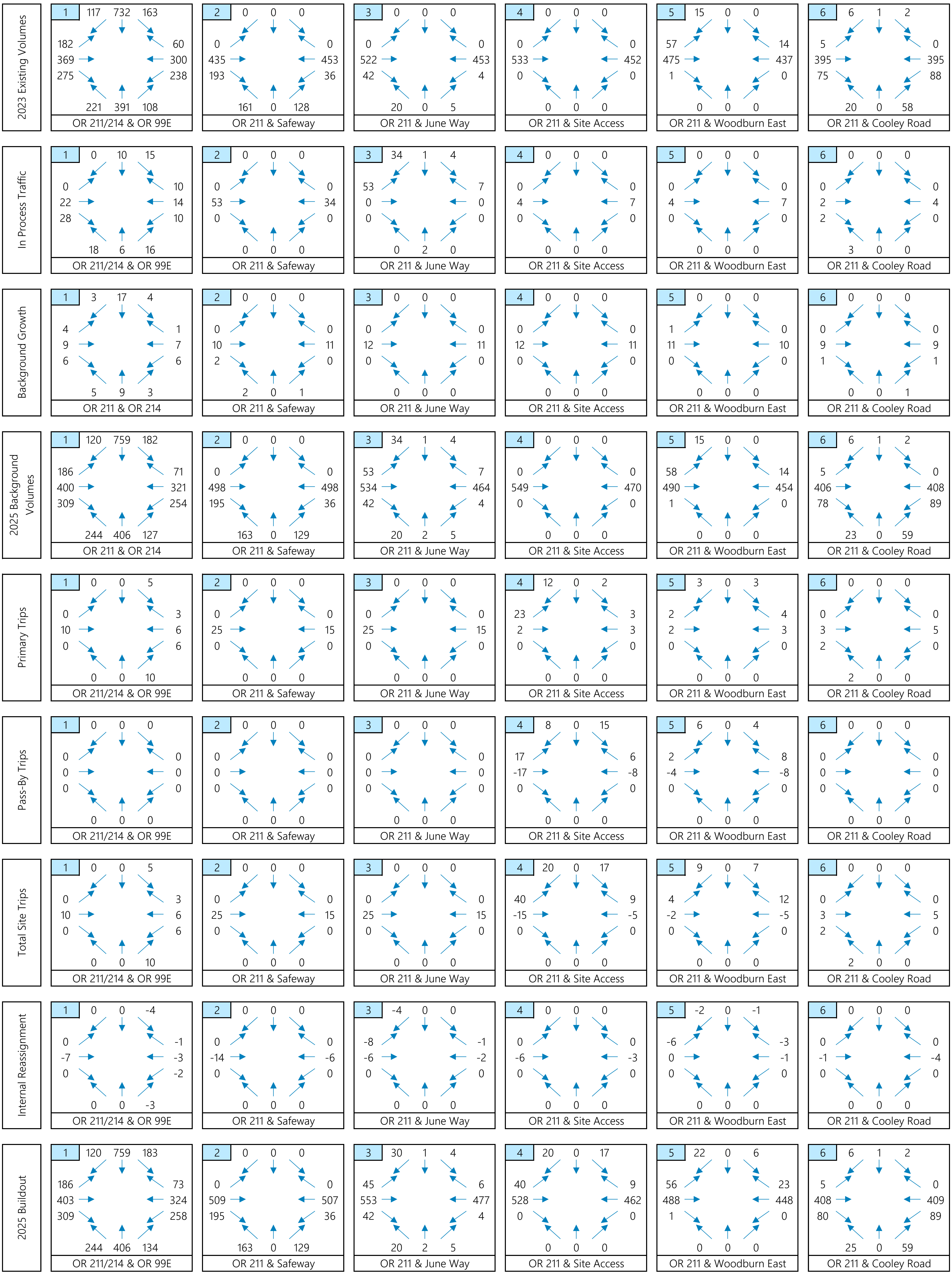
Internal Reassignment

1	OR 211/214 & OR 99E	0	0	0	0	-1	0	0	-1	0	0	0	0
2	OR 211 & Safeway	0	0	0	0	-1	0	0	-1	0	0	0	0
3	OR 211 & June Way	-1	0	0	-1	0	0	0	0	0	0	0	0
4	OR 211 & Site Access	0	0	0	0	0	0	0	0	0	0	0	0
5	OR 211 & Woodburn East	0	0	0	0	0	0	0	0	0	0	0	0
6	OR 211 & Cooley Road	0	0	0	0	0	0	0	0	0	0	0	0

2025 Buildout

1	OR 211/214 & OR 99E	92	318	99	125	229	84	124	301	179	215	470	116
2	OR 211 & Safeway	0	0	0	0	308	134	0	470	17	139	0	28
3	OR 211 & June Way	67	2	9	19	311	15	2	385	4	32	1	1
4	OR 211 & Site Access	39	0	24	47	275	0	19	352	0	0	0	0
5	OR 211 & Woodburn East	46	0	12	24	274	0	25	325	0	0	0	0
6	OR 211 & Cooley Road	16	2	2	3	266	27	2	277	28	20	2	45

PM PEAK HOUR


2023 Existing Volumes
1 117 732 163
182 60
369 300
275 238
221 391 108
OR 211/214 & OR 99E
2 0 0 0
0 0
435 453
193 36
161 0 128
OR 211 & Safeway
3 0 0 0
0 0
522 453
42 4
20 0 5
OR 211 & June Way
4 0 0 0
0 0
533 452
0 0
0 0 0
OR 211 & Site Access
5 15 0 0
57 14
475 437
1 0
0 0 0
OR 211 & Woodburn East
6 6 1 2
5 0
395 395
75 88
20 0 58
OR 211 & Cooley Road
In Process Traffic
1 0 10 15
0 10
22 14
28 10
18 6 16
OR 211/214 & OR 99E
2 0 0 0
0 0
53 34
0 0
0 0 0
OR 211 & Safeway
3 34 1 4
53 7
0 0
0 0
0 2 0
OR 211 & June Way
4 0 0 0
0 0
4 7
0 0
0 0 0
OR 211 & Site Access
5 0 0 0
0 0
4 7
0 0
0 0 0
OR 211 & Woodburn East
6 0 0 0
0 0
2 4
2 0
3 0 0
OR 211 & Cooley Road
Background Growth
1 3 17 4
4 1
9 7
6 6
5 9 3
OR 211 & OR 214
2 0 0 0
0 0
10 11
2 0
2 0 1
OR 211 & Safeway
3 0 0 0
0 0
12 11
0 0
0 0 0
OR 211 & June Way
4 0 0 0
0 0
12 11
0 0
0 0 0
OR 211 & Site Access
5 0 0 0
1 0
11 10
0 0
0 0 0
OR 211 & Woodburn East
6 0 0 0
0 0
9 9
1 1
0 0 1
OR 211 & Cooley Road
2025 Background Volumes
1 120 759 182
186 71
400 321
309 254
244 406 127
OR 211 & OR 214
2 0 0 0
0 0
498 498
195 36
163 0 129
OR 211 & Safeway
3 34 1 4
53 7
534 464
42 4
20 2 5
OR 211 & June Way
4 0 0 0
0 0
549 470
0 0
0 0 0
OR 211 & Site Access
5 15 0 0
58 14
490 454
1 0
0 0 0
OR 211 & Woodburn East
6 6 1 2
5 0
406 408
78 89
23 0 59
OR 211 & Cooley Road
Primary Trips
1 0 0 5
0 3
10 6
0 6
0 0 10
OR 211/214 & OR 99E
2 0 0 0
0 0
25 15
0 0
0 0 0
OR 211 & Safeway
3 0 0 0
0 0
25 15
0 0
0 0 0
OR 211 & June Way
4 12 0 2
23 3
2 3
0 0
0 0 0
OR 211 & Site Access
5 3 0 3
2 4
2 3
0 0
0 0 0
OR 211 & Woodburn East
6 0 0 0
0 0
3 5
2 0
2 0 0
OR 211 & Cooley Road
Pass-By Trips
1 0 0 0
0 0
0 0
0 0
0 0 0
OR 211/214 & OR 99E
2 0 0 0
0 0
0 0
0 0
0 0 0
OR 211 & Safeway
3 0 0 0
0 0
0 0
0 0
0 0 0
OR 211 & June Way
4 8 0 15
17 6
-17 -8
0 0
0 0 0
OR 211 & Site Access
5 6 0 4
2 8
-4 -8
0 0
0 0 0
OR 211 & Woodburn East
6 0 0 0
0 0
0 0
0 0
0 0 0
OR 211 & Cooley Road
Total Site Trips
1 0 0 5
0 3
10 6
0 6
0 0 10
OR 211/214 & OR 99E
2 0 0 0
0 0
25 15
0 0
0 0 0
OR 211 & Safeway
3 0 0 0
0 0
25 15
0 0
0 0 0
OR 211 & June Way
4 20 0 17
40 9
-15 -5
0 0
0 0 0
OR 211 & Site Access
5 9 0 7
4 12
-2 -5
0 0
0 0 0
OR 211 & Woodburn East
6 0 0 0
0 0
3 5
2 0
2 0 0
OR 211 & Cooley Road
Internal Reassignment
1 0 0 -4
0 -1
-7 -3
0 -2
0 0 -3
OR 211/214 & OR 99E
2 0 0 0
0 0
-14 -6
0 0
0 0 0
OR 211 & Safeway
3 -4 0 0
-8 -1
-6 -2
0 0
0 0 0
OR 211 & June Way
4 0 0 0
0 0
-6 -3
0 0
0 0 0
OR 211 & Site Access
5 -2 0 -1
-6 -3
0 -1
0 0
0 0 0
OR 211 & Woodburn East
6 0 0 0
0 0
-1 -4
0 0
0 0 0
OR 211 & Cooley Road
2025 Buildout
1 120 759 183
186 73
403 324
309 258
244 406 134
OR 211/214 & OR 99E
2 0 0 0
0 0
509 507
195 36
163 0 129
OR 211 & Safeway
3 30 1 4
45 6
553 477
42 4
20 2 5
OR 211 & June Way
4 20 0 17
40 9
528 462
0 0
0 0 0
OR 211 & Site Access
5 22 0 6
56 23
488 448
1 0
0 0 0
OR 211 & Woodburn East
6 6 1 2
5 0
408 409
80 89
25 0 59
OR 211 & Cooley Road

Appendix C - Safety

Crash History Data

Left-Turn Lane Warrant Analysis

Preliminary Signal Warrant Analysis

URBAN NON-SYSTEM CRASH LISTING

CITY OF WOODBURN, MARION COUNTY

PACIFIC HY 99E and HILLSBORO-SILV HY, City of Woodburn, Marion County, 01/01/2017 to 12/31/2021

1 - 106 of 106 Crash records shown.

Gray fill indicates crashes that are duplicates or not intersection-related.

SER# INVEST RD DPT UNLOC?	S D M P R J S W E A U I C O E L G N H R D C S V L K	DATE DAY TIME LAT	CLASS DIST FROM LONG	CITY STREET FIRST STREET SECOND STREET LRS	RD CHAR DIRECT LOCTN	INT-TYPE (MEDIAN) LEGS (#LANES)	INT-REL TRAF- CONTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH COLL SVRTY	SPCL USE TRLR QTY OWNER V# TYPE	MOVE FROM TO	PRTC P# TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT EVENT	CAUSE
05247	N N N N	12/05/2017	16	HILLSBORO-SILV HY	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 0	STRGHT									29
NONE		TU		PACIFIC HY 99E	NE		TRF SIGNAL	N	DRY	REAR	PRVTE	NE-SW								000	00
N		2P			06	0		N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	26	M	OR-Y		026	000	29
N		45 9 4.66	-122 49 52.38	008100100S00													OR<25				
											02 NONE 0	STOP									
											PRVTE	NE-SW								011	00
											PSNGR CAR		01 DRVR	INJC	26	F	OR-Y		000	000	00
																	OR<25				
00248	N N N N	01/23/2018	16	HILLSBORO-SILV HY	INTER	CROSS	N	N	RAIN	ANGL-STP	01 NONE 0	TURN-L									08
NONE		TU		PACIFIC HY 99E	NE		TRF SIGNAL	N	WET	TURN	PRVTE	W -NE								000	00
N		7A			06	0		N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	48	F	OR-Y		002,026	000	08
N		45 9 4.67	-122 49 52.39	008100100S00													OR<25				
											01 NONE 0	TURN-L									
											PRVTE	W -NE								000	00
											PSNGR CAR		02 PSNG	INJB	13	F			000	000	00
											02 NONE 0	STOP									
											PRVTE	NE-SW								012	00
											PSNGR CAR		01 DRVR	NONE	38	M	OR-Y		000	000	00
																	OR<25				
02698	N N N N	07/24/2018	16	HILLSBORO-SILV HY	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 0	STRGHT									29
NO RPT		TU		PACIFIC HY 99E	NE		TRF SIGNAL	N	DRY	REAR	PRVTE	NE-SW								000	00
N		4P			06	0		N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	51	M	OR-Y		026	000	29
N		45 9 4.66	-122 49 52.38	008100100S00													OR<25				
											02 NONE 0	STOP									
											PRVTE	NE-SW								011	00
											PSNGR CAR		01 DRVR	INJC	60	F	OR-Y		000	000	00
																	OR<25				
04933	N N N N	12/23/2018	16	HILLSBORO-SILV HY	INTER	CROSS	N	N	RAIN	S-1STOP	01 NONE 0	STRGHT									29
NONE		SU		PACIFIC HY 99E	NE		TRF SIGNAL	N	WET	REAR	PRVTE	NE-SW								000	00
N		6P			06	1		N	DARK	INJ	PSNGR CAR		01 DRVR	NONE	23	F	OR-Y		026	000	29
N		45 9 4.66	-122 49 52.38	008100100S00													OR<25				
											02 NONE 0	STOP									
											PRVTE	NE-SW								011	00
											PSNGR CAR		01 DRVR	INJC	39	M	OR-Y		000	000	00
																	OR<25				
											02 NONE 0	STOP									
											PRVTE	NE-SW								011	00
											PSNGR CAR		02 PSNG	INJC	00	F			000	000	00
03590	N N N N	10/12/2021	16	HILLSBORO-SILV HY	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 0	STRGHT									29
NONE		TU		PACIFIC HY 99E	NE		TRF SIGNAL	N	DRY	REAR	PRVTE	NE-SW								000	00
N		1P			06	1		N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	17	F	OR-Y		026	000	29
N		45 9 4.67	-122 49 52.36	008100100S00													OR<25				
											02 NONE 0	STOP									
											PRVTE	NE-SW								011	00
											PSNGR CAR		01 DRVR	INJC	33	F	OR-Y		000	000	00

PACIFIC HY 99E and HILLSBORO-SILV HY, City of Woodburn, Marion County, 01/01/2017 to 12/31/2021

Gray fill indicates crashes that are duplicates or not intersection-related.

OR<25

03029	N N N N	07/26/2017	14	HILLSBORO-SILV HY	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 0	STRGHT								29
NONE		WE		PACIFIC HY 99E	W		TRF SIGNAL	N	DRY	REAR	PRVTE	W -E							000	00
N		3P			06	1		N	DAY	INJ	SEMI TOW		01 DRVR	NONE	48	M	OR-Y	026	000	29
N		45 9 4.66	-122 49 52.38	014000100S00													OR>25			
											02 NONE 0	STOP								
											PRVTE	W -E							011	00
											PSNGR CAR		01 DRVR	INJC	36	M	OR-Y	000	000	00
																	OR>25			
03108	N N N N N N	08/01/2017	14	HILLSBORO-SILV HY	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 1	STRGHT								07
CITY		TU		PACIFIC HY 99E	W		L-GRN-SIG	N	DRY	REAR	PRVTE	W -E							000	00
N		1P			06	1		N	DAY	INJ	SEMI TOW		01 DRVR	INJC	55	M	OTH-Y	043,026	000	07
N		45 9 4.66	-122 49 52.38	014000100S00													N-RES			
											02 NONE 0	STOP								
											PRVTE	W -E							011	00
											PSNGR CAR		01 DRVR	INJC	20	F	OR-Y	000	000	00
																	OR<25			
02059	N N N N N N	06/10/2018	14	HILLSBORO-SILV HY	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 0	STRGHT								27,29
NO RPT		SU		PACIFIC HY 99E	W		TRF SIGNAL	N	DRY	REAR	PRVTE	W -E							000	00
N		4P			06	0		N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	37	F	OTH-Y	016,026	038	27,29
N		45 9 4.66	-122 49 52.38	014000100S00													N-RES			
											01 NONE 0	STRGHT								
											PRVTE	W -E							000	00
											PSNGR CAR		02 PSNG	INJC	10	M		000	000	00
											02 NONE 0	STOP								
											PRVTE	W -E							012	00
											PSNGR CAR		01 DRVR	INJC	33	M	OR-Y	000	000	00
																	OR<25			
											02 NONE 0	STOP								
											PRVTE	W -E							012	00
											PSNGR CAR		02 PSNG	INJC	33	F		000	000	00
02894	N N N N	08/05/2018	14	HILLSBORO-SILV HY	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 0	STRGHT								29
CITY		SU		PACIFIC HY 99E	W		TRF SIGNAL	N	DRY	REAR	PRVTE	W -E							000	00
N		7P			06	0		N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	20	M	OR-Y	026	000	29
N		45 9 4.66	-122 49 52.38	014000100S00													OR<25			
											02 NONE 0	STOP								
											PRVTE	W -E							011	00
											PSNGR CAR		01 DRVR	INJC	23	M	OR-Y	000	000	00
																	OR<25			
											02 NONE 0	STOP								
											PRVTE	W -E							011	00
											PSNGR CAR		02 PSNG	INJC	50	F		000	000	00
											02 NONE 0	STOP								
											PRVTE	W -E							011	00
											PSNGR CAR		03 PSNG	NONE	01	M		000	000	00
00985	N N N N	03/23/2018	14	HILLSBORO-SILV HY	INTER	CROSS	N	N	RAIN	S-1STOP	01 NONE 9	STRGHT								07
NO RPT		FR		PACIFIC HY 99E	W		TRF SIGNAL	N	WET	REAR	N/A	W -E							000	00
N		11A			06	0		N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00

Gray fill indicates crashes that are duplicates or not intersection-related.

N		45 9 4.66	-122 49 52.37	014000100S00												UNK			
											02 NONE 9	STOP							
											N/A	W -E						011	00
											SEMI TOW		01 DRVR	NONE	00 Unk	UNK	000	000	00
																UNK			
00522	N N N N	02/10/2019	14	HILLSBORO-SILV HY	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 0	STRGHT							29
CITY		SU		PACIFIC HY 99E	W		TRF SIGNAL	N	DRY	REAR	PRVTE	W -E						000	00
N		2P			06	1		N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	29 M	OR-Y	026	000	29
N		45 9 4.66	-122 49 52.38	014000100S00												OR<25			
											02 NONE 0	STOP							
											PRVTE	W -E						011	00
											PSNGR CAR		01 DRVR	NONE	53 M	NONE	000	000	00
																OR<25			
											02 NONE 0	STOP							
											PRVTE	W -E						011	00
											PSNGR CAR		02 PSNG	INJC	62 F		000	000	00
03385	N N N N N N	11/08/2020	14	HILLSBORO-SILV HY	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 0	STRGHT							07
CITY		SU		PACIFIC HY 99E	W		STOP SIGN	N	DRY	REAR	PRVTE	W -E						000	00
N		2P			09	1		N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	24 M	SUSP	043,026	000	07
N		45 9 4.67	-122 49 52.39	014000100S00												OR<25			
											02 NONE 0	STOP							
											PRVTE	W -E						011	00
											PSNGR CAR		01 DRVR	INJC	64 M	OR-Y	000	000	00
																OR<25			
											02 NONE 0	STOP							
											PRVTE	W -E						011	00
											PSNGR CAR		02 PSNG	INJC	64 F		000	000	00
03438	N N N N N N	11/18/2020	14	HILLSBORO-SILV HY	INTER	CROSS	N	N	RAIN	S-1STOP	01 NONE 9	STRGHT							27
CITY		WE		PACIFIC HY 99E	W		STOP SIGN	N	WET	REAR	N/A	W -E						000	00
N		7P			09	1		N	DLIT	PDO	PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
N		45 9 4.67	-122 49 52.38	014000100S00												UNK			
											02 NONE 9	STOP							
											N/A	W -E						011	00
											PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
																UNK			
00746	N N N N N N	03/10/2021	14	HILLSBORO-SILV HY	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 0	STRGHT							07
CITY		WE		PACIFIC HY 99E	W		TRF SIGNAL	N	DRY	REAR	PRVTE	W -E						000	00
N		1P			06	1		N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	32 M	OR-Y	043,026	000	07
N		45 9 4.67	-122 49 52.41	014000100S00												OR>25			
											02 NONE 0	STOP							
											PRVTE	W -E						011	00
											PSNGR CAR		01 DRVR	NONE	26 F	OR-Y	000	000	00
																OR<25			
											02 NONE 0	STOP							
											PRVTE	W -E						011	00
											PSNGR CAR		02 PSNG	INJC	61 F		000	000	00
04764	N N N N	12/24/2021	14	HILLSBORO-SILV HY	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 9	STRGHT						004	29
CITY		FR		PACIFIC HY 99E	W		STOP SIGN	N	DRY	REAR	N/A	W -E						000	00
N		6P			09	1		N	DLIT	PDO	PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00

Gray fill indicates crashes that are duplicates or not intersection-related.

N		45 9 4.68	-122 49 52.4	014000100S00													UNK			
											02 NONE 9	STOP								
											N/A	W -E							011	00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
																	UNK			
00009	N N N N N N	01/02/2018	14	HILLSBORO-SILV HY	INTER	CROSS	N	N	CLR	O-1 L-TURN	01 NONE 0	STRGHT								27,02
CITY		TU		PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN	PRVTE	NE-SW							000	00
N		7A			01	0		N	DAWN	INJ	PSNGR CAR		01 DRVR	NONE	41	F	OR-Y	000	000	00
N		45 9 4.66	-122 49 52.38	008100100S00													OR<25			
											01 NONE 0	STRGHT								
											PRVTE	NE-SW							000	00
											PSNGR CAR		02 PSNG	NONE	04	M		000	000	00
											02 NONE 0	TURN-L								
											PRVTE	SW-W							000	00
											PSNGR CAR		01 DRVR	INJC	26	F	OR-Y	016,028,004	038	27,02
																	OR<25			
03454	N Y N N N N	09/14/2018	14	HILLSBORO-SILV HY	INTER	CROSS	N	N	CLR	S-1TURN	01 NONE 0	STRGHT								33,04,05
CITY		FR		PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN	PRVTE	NE-SW							031	00
N		11P			04	1		N	DLIT	INJ	PSNGR CAR		01 DRVR	INJA	18	M	NONE	051,020,034	000	33,04,05
N		45 9 4.66	-122 49 52.38	008100100S00													OR<25			
											02 NONE 0	TURN-L								
											PRVTE	NE-E							000	00
											PSNGR CAR		01 DRVR	INJA	24	F	OR-Y	000	000	00
																	OR<25			
											02 NONE 0	TURN-L								
											PRVTE	NE-E							000	00
											PSNGR CAR		02 PSNG	INJB	24	M		000	000	00
											02 NONE 0	TURN-L								
											PRVTE	NE-E							000	00
											PSNGR CAR		03 PSNG	INJC	22	F		000	000	00
											02 NONE 0	TURN-L								
											PRVTE	NE-E							000	00
											PSNGR CAR		04 PSNG	INJC	19	M		000	000	00
00976	N N N N	03/16/2019	14	HILLSBORO-SILV HY	INTER	CROSS	N	N	CLR	O-1 L-TURN	01 NONE 0	TURN-L								02
CITY		SA		PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN	PRVTE	NE-E							000	00
N		11A			04	0		N	DAY	INJ	PSNGR CAR		01 DRVR	INJB	57	F	OR-Y	028,004	000	02
N		45 8 13.29	-122 50 38.06	008100100S00													OR>25			
											02 NONE 0	STRGHT								
											PRVTE	SW-NE							000	00
											PSNGR CAR		01 DRVR	INJC	27	M	OR-Y	000	000	00
																	OR<25			
04717	N N N N N N	11/25/2019	14	HILLSBORO-SILV HY	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 9	STRGHT								32,04,27
CITY		MO		PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	ANGL	N/A	N -S							000	00
N		9P			01	0		N	DLIT	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
N		45 9 4.67	-122 49 52.4	008100100S00													UNK			
											02 NONE 9	STRGHT								
											N/A	E -W							000	00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
																	UNK			

CITY OF WOODBURN, MARION COUNTY

PACIFIC HY 99E and HILLSBORO-SILV HY, City of Woodburn, Marion County, 01/01/2017 to 12/31/2021

1 - 106 of 106 Crash records shown.

Gray fill indicates crashes that are duplicates or not intersection-related.

01521	N N N N N N	05/11/2021	14	HILLSBORO-SILV HY	INTER	CROSS	N	N	CLR	PED	01 NONE 0	TURN-L										40,02
CITY		TU		PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	PED	PRVTE	W -NE								000		00
N		7A			02	0		N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	21	M	OR-Y		029	026		40,02
N		45 8 13.3	-122 50 38.06	008100100S00													OR<25					
												-										
												STRGHT	01 PED	INJB	15	M		I XWLK	000	000		00
												UN UN										
03374	N Y N N N N	09/28/2021	14	HILLSBORO-SILV HY	INTER	CROSS	N	N	CLR	S-STRGHT	01 NONE 0	STRGHT										29
CITY		TU		PACIFIC HY 99E	CN		UNKNOWN	N	DRY	REAR	PRVTE	W -E								000		00
N		7P			04	0		N	DUSK	INJ	PSNGR CAR		01 DRVR	INJB	18	M	NONE		042	000		29
N		45 9 4.68	-122 49 52.38	008100100S00													OR<25					
											02 NONE 0	STRGHT										
											PRVTE	W -E								000		00
											PSNGR CAR		01 DRVR	NONE	27	F	NONE		000	000		00
																	OR<25					
04409	N N N N	12/03/2021	14	HILLSBORO-SILV HY	INTER	CROSS	N	N	CLR	O-1 L-TURN	01 NONE 9	STRGHT										02
NO RPT		FR		PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN	N/A	E -W								000		00
N		9P			02	0		N	DLIT	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK		000	000		00
N		45 8 13.28	-122 50 38.09	008100100S00													UNK					
											02 NONE 9	TURN-L										
											N/A	W -NE								000		00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK		000	000		00
																	UNK					
04610	N N N N N N	12/15/2021	14	HILLSBORO-SILV HY	INTER	CROSS	N	N	RAIN	O-1 L-TURN	01 NONE 9	TURN-L										04
CITY		WE		PACIFIC HY 99E	CN		TRF SIGNAL	N	WET	TURN	N/A	SW-W								000		00
N		7P			01	0		N	DLIT	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK		000	000		00
N		45 9 4.64	-122 49 52.37	008100100S00													UNK					
											02 NONE 9	STRGHT										
											N/A	NE-SW								000		00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK		000	000		00
																	UNK					
01946	N N N N	05/18/2017	16	PACIFIC HY 99E	ALLEY		N	N	CLR	O-1 L-TURN	01 NONE 0	STRGHT									087	02
CITY		TH		HILLSBORO-SILV HY	NE	(NONE)	UNKNOWN	N	DRY	TURN	PRVTE	NE-SW								000	087	00
N		5P			03			N	DAY	INJ	PSNGR CAR		01 DRVR	INJB	75	F	OR-Y		000	000		00
N		45 9 9.61	-122 49 48.06	008100100S00		(04)											OR<25					
											02 NONE 0	TURN-L										
											PRVTE	SW-W								018	087	00
											PSNGR CAR		01 DRVR	NONE	18	M	OR-Y		028,004	000		02
																	OR<25					
04413	N N N N N N	10/18/2017	16	PACIFIC HY 99E	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT										02
CITY		WE		HILLSBORO-SILV HY	NE	(NONE)	UNKNOWN	N	DRY	TURN	PRVTE	NE-SW								000		00
N		4P			03			N	DAY	INJ	PSNGR CAR		01 DRVR	INJB	34	F	OR-Y		000	000		00
N		45 9 10.06	-122 49 47.67	008100100S00		(04)											OR<25					
											01 NONE 0	STRGHT										
											PRVTE	NE-SW								000		00
											PSNGR CAR		02 PSNG	NO<5	02	M			000	000		00
											02 NONE 0	TURN-L										
											PRVTE	W -NE								018		00
											PSNGR CAR		01 DRVR	NONE	74	M	OR-Y		028	000		02

Gray fill indicates crashes that are duplicates or not intersection-related.

																	OR<25				
01367	N N N N N N	04/08/2017	16	PACIFIC HY 99E	ALLEY		N	N	RAIN	ANGL-OTH	01 NONE 9	STRGHT								082	02
CITY		SA		HILLSBORO-SILV HY	NE	(NONE)	UNKNOWN	N	WET	TURN	N/A	NE-SW							000		00
N		12P			04			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 11.86	-122 49 46.09	008100100S00		(04)											UNK				
											02 NONE 9	TURN-L									
											N/A	W -NE							018		00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																	UNK				
00751	Y N N N N N	03/04/2018	16	HILLSBORO-SILV HY	ALLEY		N	Y	CLR	ANGL-OTH	01 NONE 0	TURN-R									01,08
CITY		SU		PACIFIC HY 99E	NE	(NONE)	UNKNOWN	N	DRY	TURN	PRVTE	NE-W							018		00
N		8P			01			N	DLIT	INJ	PSNGR CAR		01 DRVR	INJB	18	M	NONE	047,001	000		01,08
N		45 9 9.62	-122 49 48.05	008100100S00		(04)											OR<25				
											02 NONE 0	STRGHT									
											PRVTE	W -E							000		00
											PSNGR CAR		01 DRVR	NONE	31	M	SUSP	000	000		00
																	OR<25				
											02 NONE 0	STRGHT									
											PRVTE	W -E							000		00
											PSNGR CAR		02 PSNG	INJA	43	F		000	000		00
											02 NONE 0	STRGHT									
											PRVTE	W -E							000		00
											PSNGR CAR		03 PSNG	NONE	02	F		000	000		00
											02 NONE 0	STRGHT									
											PRVTE	W -E							000		00
											PSNGR CAR		04 PSNG	INJB	13	F		000	000		00
											02 NONE 0	STRGHT									
											PRVTE	W -E							000		00
											PSNGR CAR		05 PSNG	INJA	15	F		000	000		00
01139	N N N N N N	04/06/2018	16	HILLSBORO-SILV HY	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT								082	27,02
CITY		FR		PACIFIC HY 99E	NE	(NONE)	UNKNOWN	N	DRY	TURN	PRVTE	NE-SW							000		00
N		2P			04			N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	39	F	OR-Y	000	000		00
N		45 9 9.63	-122 49 48.04	008100100S00		(04)											OR<25				
											02 NONE 0	TURN-L									
											PRVTE	W -NE							018		00
											PSNGR CAR		01 DRVR	INJC	17	F	OR-Y	028	000	082	02
																	OR<25				
02951	N N N N N N	08/10/2018	16	PACIFIC HY 99E	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 0	TURN-L									02
CITY		FR		HILLSBORO-SILV HY	NE	(NONE)	UNKNOWN	N	DRY	TURN	PRVTE	W -NE							018		00
N		5P			00			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	61	F	OR-Y	028	000		02
N		45 9 9.61	-122 49 48.06	008100100S00		(04)											OR>25				
											02 NONE 0	STRGHT									
											PRVTE	NE-SW							000		00
											PSNGR CAR		01 DRVR	NONE	29	M	OR-Y	000	000		00
																	OR<25				
											02 NONE 0	STRGHT									
											PRVTE	NE-SW							000		00
											PSNGR CAR		02 PSNG	INJC	24	F		000	000		00

Gray fill indicates crashes that are duplicates or not intersection-related.

											02 NONE 0	STRGHT									
											PRVTE	NE-SW							000		00
											PSNGR CAR		03 PSNG	NONE	01	M		000	000		00
04918	N N N N N N	12/21/2018	16	PACIFIC HY 99E	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 0	TURN-L								082	02
CITY		FR		HILLSBORO-SILV HY	NE	(NONE)	UNKNOWN	N	DRY	TURN	PRVTE	W -NE							018		00
N		5P			04			N	DLIT	INJ	PSNGR CAR		01 DRVR	INJA	31	F	OR-Y	028	000	082	02
N		45 9 9.64	-122 49 48.04	008100100S00		(04)											OR<25				
											02 NONE 0	STRGHT									
											PRVTE	NE-SW							000		00
											PSNGR CAR		01 DRVR	INJC	28	F	OR-Y	000	000		00
																	OR<25				
											02 NONE 0	STRGHT									
											PRVTE	NE-SW							000		00
											PSNGR CAR		02 PSNG	INJC	18	F		000	000		00
											02 NONE 0	STRGHT									
											PRVTE	NE-SW							000		00
											PSNGR CAR		03 PSNG	INJC	06	F		000	000		00
03137	N N N N N N	08/23/2018	16	PACIFIC HY 99E	ALLEY		N	N	CLD	ANGL-OTH	01 NONE 9	TURN-L									02
CITY		TH		HILLSBORO-SILV HY	NE	(NONE)	UNKNOWN	N	DRY	TURN	N/A	W -NE							018		00
N		1P			04			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 9.6	-122 49 48.06	008100100S00		(04)											UNK				
											02 NONE 9	STRGHT									
											N/A	NE-SW							000		00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																	UNK				
03633	N N N N	09/26/2018	16	PACIFIC HY 99E	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 9	STRGHT									02
NONE		WE		HILLSBORO-SILV HY	NE	(NONE)	UNKNOWN	N	DRY	TURN	N/A	NE-SW							000		00
N		6P			04			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 9.62	-122 49 48.05	008100100S00		(04)											UNK				
											02 NONE 9	TURN-L									
											N/A	W -NE							018		00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																	UNK				
00351	N N N N N N	01/29/2019	16	PACIFIC HY 99E	ALLEY		N	N	CLR	O-1 L-TURN	01 NONE 0	STRGHT									02
CITY		TU		HILLSBORO-SILV HY	NE	(NONE)	STOP SIGN	N	DRY	TURN	PRVTE	NE-SW							000		00
N		3P			04			N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	22	F	OR-Y	000	000		00
N		45 9 9.62	-122 49 48.09	008100100S00		(04)											OR<25				
											01 NONE 0	STRGHT									
											PRVTE	NE-SW							000		00
											PSNGR CAR		02 PSNG	INJC	46	F		000	000		00
											01 NONE 0	STRGHT									
											PRVTE	NE-SW							000		00
											PSNGR CAR		03 PSNG	INJC	26	F		000	000		00
											02 NONE 0	TURN-L									
											PRVTE	SW-W							019		00
											PSNGR CAR		01 DRVR	NONE	55	M	OR-Y	028	000		02
																	OR<25				

CITY OF WOODBURN, MARION COUNTY

PACIFIC HY 99E and HILLSBORO-SILV HY, City of Woodburn, Marion County, 01/01/2017 to 12/31/2021

1 - 106 of 106 Crash records shown.

Gray fill indicates crashes that are duplicates or not intersection-related.

00913	N N N N N N	03/11/2019	16	PACIFIC HY 99E	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT									50
CITY		MO		HILLSBORO-SILV HY	NE	(NONE)	L-TURN REF	N	DRY	TURN	PRVTE	NE-SW							031		00
N		5P			05			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	35	M	OR-Y	032	000		50
N		45 9 10.06	-122 49 47.7	008100100S00		(05)											OR<25				
											02 NONE 0	TURN-L									
											PRVTE	W -NE							018		00
											PSNGR CAR		01 DRVR	INJC	32	M	OR-Y	028	000		00
																	OR<25				
03418	N N N N N N	09/06/2019	16	PACIFIC HY 99E	ALLEY		N	N	CLD	ANGL-OTH	01 NONE 0	TURN-L									02
CITY		FR		HILLSBORO-SILV HY	NE	(NONE)	UNKNOWN	N	DRY	TURN	PRVTE	W -NE							018		00
N		6A			03			N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	58	M	OR-Y	028	000		02
N		45 9 9.63	-122 49 48.07	008100100S00		(04)											OR<25				
											02 NONE 0	TURN-L									
											PRVTE	SW-W							019		00
											PSNGR CAR		01 DRVR	INJC	55	F	OR-Y	000	000		00
																	OR<25				
03537	N N N N N N	09/13/2019	16	PACIFIC HY 99E	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 9	STRGHT									02
CITY		FR		HILLSBORO-SILV HY	NE	(NONE)	L-TURN REF	N	DRY	TURN	N/A	NE-SW							000		00
N		4P			05			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 10.09	-122 49 47.65	008100100S00		(04)											UNK				
											02 NONE 9	TURN-L									
											N/A	W -NE							018		00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																	UNK				
04864	N N N N	12/05/2019	16	PACIFIC HY 99E	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 9	TURN-L									02
NONE		TH		HILLSBORO-SILV HY	NE	(NONE)	L-TURN REF	N	DRY	TURN	N/A	E -SW							018		00
N		5P			05			N	DUSK	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 9.6	-122 49 48.05	008100100S00		(05)											UNK				
											02 NONE 9	STRGHT									
											N/A	SW-NE							000		00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																	UNK				
01910	N N N N N N	06/30/2020	16	PACIFIC HY 99E	ALLEY		N	N	CLD	ANGL-OTH	01 NONE 0	TURN-L									02
CITY		TU		HILLSBORO-SILV HY	NE	(NONE)	L-TURN REF	N	DRY	TURN	PRVTE	W -NE							018		00
N		10A			05			N	DAY	INJ	PSNGR CAR		01 DRVR	INJB	50	M	OR-Y	028	000		02
N		45 9 9.61	-122 49 48.07	008100100S00		(05)											OR<25				
											02 NONE 0	STRGHT									
											PRVTE	NE-SW							000		00
											PSNGR CAR		01 DRVR	INJB	28	F	OR-Y	000	000		00
																	OR<25				
03972	Y N N N N N	12/30/2020	16	PACIFIC HY 99E	ALLEY		N	N	RAIN	ANGL-OTH	01 NONE 9	STRGHT								082	30
CITY		WE		HILLSBORO-SILV HY	NE	(NONE)	UNKNOWN	N	WET	TURN	N/A	NE-SW							000		00
N		3P			04			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 9.62	-122 49 48.08	008100100S00		(04)											UNK				
											02 NONE 9	TURN-L									
											N/A	W -NE							018		00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																	UNK				
01810	N N N N	06/03/2021	16	PACIFIC HY 99E	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT								082	27,02,40
CITY		TH		HILLSBORO-SILV HY	NE	(NONE)	UNKNOWN	N	DRY	TURN	PRVTE	NE-SW							000		00
N		4P			04			N	DAY	INJ	PSNGR CAR		01 DRVR	INJA	36	M	OR-Y	000	000		00

Gray fill indicates crashes that are duplicates or not intersection-related.

N		45 9 9.61	-122 49 48.1	008100100S00		(04)										OR<25			
											01 NONE 0	STRGHT							
											PRVTE	NE-SW						000	00
											PSNGR CAR		02 PSNG	INJA	64 M		000	000	00
											02 NONE 0	TURN-L							
											PRVTE	W -NE						018	00
											PSNGR CAR		01 DRVR	NONE	73 M	OR-Y	028,016	038 082	27,02,40
																OR<25			
02817	N N N N	08/18/2021	16	PACIFIC HY 99E	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 9	TURN-L							02
NO RPT		WE		HILLSBORO-SILV HY	NE	(NONE)	UNKNOWN	N	DRY	TURN	N/A	W -NE						018	00
N		4P			05			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
N		45 9 9.63	-122 49 48.05	008100100S00		(05)										UNK			
											02 NONE 9	STRGHT							
											N/A	NE-SW						000	00
											PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
																UNK			
03941	N N N N	11/04/2021	16	PACIFIC HY 99E	ALLEY		N	N	RAIN	ANGL-OTH	01 NONE 9	TURN-R							02
NONE		TH		HILLSBORO-SILV HY	NE	(NONE)	UNKNOWN	N	WET	TURN	N/A	W -SW						018	00
N		12P			03			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
N		45 9 6.91	-122 49 50.45	008100100S00		(04)										UNK			
											02 NONE 9	STRGHT							
											N/A	NE-SW						000	00
											PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
																UNK			
04345	N N N N N N	12/01/2021	16	PACIFIC HY 99E	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 9	STRGHT							02
CITY		WE		HILLSBORO-SILV HY	NE	(NONE)	UNKNOWN	N	DRY	TURN	N/A	NE-SW						000	00
N		10A			03			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
N		45 9 9.62	-122 49 48.09	008100100S00		(04)										UNK			
											02 NONE 9	TURN-L							
											N/A	W -NE						018	00
											PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
																UNK			
03587	N N N N	08/31/2017	14	PACIFIC HY 99E	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 0	TURN-L							02
CITY		TH		HILLSBORO-SILV HY	SW	(NONE)	UNKNOWN	N	DRY	TURN	PRVTE	W -NE						018	00
N		3P			03			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	56 M	OR-Y	028	000	02
N		45 9 2.01	-122 49 54.77	008100100S00		(04)										OR<25			
											02 NONE 0	STRGHT							
											PRVTE	NE-SW						000	00
											PSNGR CAR		01 DRVR	NONE	63 M	OR-Y	000	000	00
																OR<25			
											02 NONE 0	STRGHT							
											PRVTE	NE-SW						000	00
											PSNGR CAR		02 PSNG	INJC	85 M		000	000	00
01647	N N N N N N	04/29/2017	14	HILLSBORO-SILV HY	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 0	TURN-L							02
CITY		SA		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	DRY	TURN	PRVTE	SW-W						018	00
N		3P			03			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	70 M	OR-Y	028	000	02
N		45 9 4.85	-122 49 59.98	014000100S00		(04)										OR<25			
											02 NONE 0	STRGHT							
											PRVTE	W -E						000	00
											PSNGR CAR		01 DRVR	INJB	70 M	OR-Y	000	000	00

CITY OF WOODBURN, MARION COUNTY **PACIFIC HY 99E and HILLSBORO-SILV HY, City of Woodburn, Marion County, 01/01/2017 to 12/31/2021**

1 - 106 of 106 Crash records shown.

Gray fill indicates crashes that are duplicates or not intersection-related.

																	OR<25				
02374	N N N N N N	06/16/2017	14	HILLSBORO-SILV HY	ALLEY		N	N	CLD	ANGL-OTH	01 NONE 0	STRGHT									32,02
CITY		FR		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	DRY	TURN	PRVTE	W -E							000		00
N		2P			03			N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	21	F	OR-Y	000	000		00
N		45 9 4.89	-122 50 1.5	014000100S00		(04)											OR<25				
											02 NONE 0	TURN-L									
											PRVTE	S -W							018		00
											PSNGR CAR		01 DRVR	INJA	60	M	OR-Y	052,028	000		32,02
																	OR<25				
03017	N N N N	07/25/2017	14	HILLSBORO-SILV HY	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 0	TURN-L									02
CITY		TU		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	DRY	TURN	PRVTE	NE-E							000		00
N		9A			00			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	18	F	OR-Y	028	000		02
N		45 9 4.89	-122 50 1.5	014000100S00		(04)											OR<25				
											02 NONE 0	STRGHT									
											PRVTE	E -W							000		00
											PSNGR CAR		01 DRVR	INJC	21	F	OR-Y	000	000		00
																	OR<25				
04265	N N N N N N	10/10/2017	14	HILLSBORO-SILV HY	ALLEY		N	N	RAIN	ANGL-OTH	01 NONE 0	TURN-L								082	02
CITY		TU		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	WET	TURN	PRVTE	NE-E							018		00
N		5P			05			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	19	M	OR-Y	028	000	082	02
N		45 9 4.89	-122 50 1.5	014000100S00		(04)											OR<25				
											02 NONE 0	STRGHT									
											PRVTE	E -W							000		00
											PSNGR CAR		01 DRVR	INJB	25	M	OR-Y	000	000		00
																	OR<25				
05058	N N N N N N	11/22/2017	14	HILLSBORO-SILV HY	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 0	TURN-R									02
CITY		WE		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	DRY	TURN	PRVTE	NE-W							018		00
N		11A			06			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	00	M	UNK	028	000		02
N		45 9 4.89	-122 50 1.5	014000100S00		(04)											UNK				
											02 NONE 0	STRGHT									
											PRVTE	E -W							000		00
											PSNGR CAR		01 DRVR	NONE	76	M	OR-Y	000	000		00
																	OR<25				
											02 NONE 0	STRGHT									
											PRVTE	E -W							000		00
											PSNGR CAR		02 PSNG	INJC	75	F		000	000		00
05125	N N N N N N	11/28/2017	14	HILLSBORO-SILV HY	ALLEY		N	N	CLD	O-1 L-TURN	01 NONE 0	STRGHT									10
CITY		TU		PACIFIC HY 99E	W	(NONE)	STOP SIGN	N	WET	TURN	PRVTE	W -E							000		00
N		5P			03			N	DUSK	INJ	PSNGR CAR		01 DRVR	NONE	17	F	OR-Y	015	000		10
N		45 9 4.89	-122 50 1.5	014000100S00		(04)											OR<25				
											01 NONE 0	STRGHT									
											PRVTE	W -E							000		00
											PSNGR CAR		02 PSNG	INJC	38	F		000	000		00
											02 NONE 0	TURN-L									
											PRVTE	E -S							019		00
											PSNGR CAR		01 DRVR	INJC	69	M	OR-Y	028	000		00
																	OR>25				
05402	N N N N	12/13/2017	14	HILLSBORO-SILV HY	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 0	TURN-L									02
CITY		WE		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	DRY	TURN	PRVTE	NE-E							018		00
N		6P			03			N	DLIT	INJ	PSNGR CAR		01 DRVR	NONE	18	F	NONE	028	000		02
N		45 9 4.89	-122 50 1.5	014000100S00		(04)											OR<25				

Gray fill indicates crashes that are duplicates or not intersection-related.

											02 NONE 0	STRGHT								
											PRVTE	W -E							000	00
											PSNGR CAR		01 DRVR	INJB	51	F	OR-Y	000	000	00
																	OR>25			
											02 NONE 0	STRGHT								
											PRVTE	W -E							000	00
											PSNGR CAR		02 PSNG	INJB	74	F		000	000	00
											02 NONE 0	STRGHT								
											PRVTE	W -E							000	00
											PSNGR CAR		03 PSNG	INJC	21	F		000	000	00
00551	N N N N N N	02/12/2017	14	HILLSBORO-SILV HY	ALLEY		N	N	UNK	ANGL-OTH	01 NONE 9	STRGHT								02
CITY		SU		PACIFIC HY 99E	W	(NONE)	STOP SIGN	N	DRY	ANGL	N/A	N -S							018	00
N		2P			00			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
N		45 9 4.89	-122 50 1.5	014000100S00		(04)											UNK			
											02 NONE 9	STRGHT								
											N/A	E -W							000	00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
																	UNK			
01271	N N N N	04/03/2017	14	HILLSBORO-SILV HY	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 9	STRGHT								02
CITY		MO		PACIFIC HY 99E	W	(NONE)	STOP SIGN	N	DRY	ANGL	N/A	N -S							019	00
N		3P			03			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
N		45 9 4.89	-122 50 1.5	014000100S00		(04)											UNK			
											02 NONE 9	STRGHT								
											N/A	W -E							000	00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
																	UNK			
02890	N N N N N N	07/17/2017	14	HILLSBORO-SILV HY	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 9	STRGHT								02
CITY		MO		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	DRY	ANGL	N/A	NE-SW							018	00
N		9A			06			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
N		45 9 4.89	-122 50 1.5	014000100S00		(04)											UNK			
											02 NONE 9	STRGHT								
											N/A	E -W							000	00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
																	UNK			
03705	N N N N N N	09/08/2017	14	HILLSBORO-SILV HY	ALLEY		N	N	CLR	O-1 L-TURN	01 NONE 9	STRGHT								02
CITY		FR		PACIFIC HY 99E	W	(NONE)	STOP SIGN	N	DRY	TURN	N/A	W -E							000	00
N		11A			03			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
N		45 9 4.91	-122 50 2.26	014000100S00		(04)											UNK			
											02 NONE 9	TURN-L								
											N/A	E -S							019	00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
																	UNK			
05079	N N N N	11/24/2017	14	HILLSBORO-SILV HY	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 9	TURN-L								02
NONE		FR		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	DRY	TURN	N/A	NE-E							018	00
N		12P			06			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
N		45 9 4.89	-122 50 1.5	014000100S00		(04)											UNK			
											02 NONE 9	STRGHT								
											N/A	E -W							000	00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
																	UNK			
00888	N N N N N N	03/15/2018	14	HILLSBORO-SILV HY	ALLEY		N	N	RAIN	O-1 L-TURN	01 NONE 0	STRGHT							082	02

Gray fill indicates crashes that are duplicates or not intersection-related.

CITY		TH		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	WET	TURN	PRVTE	W -E							000		00
N		6P			04			N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	48	M	OR-Y	000	000		00
N		45 9 4.78	-122 49 56.94	014000100S00		(04)											OR<25				
											01 NONE 0	STRGHT									
											PRVTE	W -E							000		00
											PSNGR CAR		02 PSNG	INJC	16	F		000	000		00
											01 NONE 0	STRGHT									
											PRVTE	W -E							000		00
											PSNGR CAR		03 PSNG	INJC	15	M		000	000		00
											01 NONE 0	STRGHT									
											PRVTE	W -E							000		00
											PSNGR CAR		04 PSNG	INJC	13	F		000	000		00
											02 NONE 0	TURN-L									
											PRVTE	E -SW							019		00
											PSNGR CAR		01 DRVR	NONE	45	M	SUSP	028,004	000	082	02
																	OR<25				
01284	N N N N	04/16/2018	14	HILLSBORO-SILV HY	ALLEY		N	N	RAIN	ANGL-OTH	01 NONE 0	STRGHT									02
CITY		MO		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	WET	TURN	PRVTE	E -W							000		00
N		1P			06			N	DAY	INJ	PSNGR CAR		01 DRVR	INJB	80	M	OR-Y	028	000		02
N		45 9 4.89	-122 50 1.5	014000100S00		(04)											OR>25				
											01 NONE 0	STRGHT									
											PRVTE	E -W							000		00
											PSNGR CAR		02 PSNG	INJB	71	F		000	000		00
											02 NONE 0	TURN-L									
											PRVTE	NE-E							018		00
											PSNGR CAR		01 DRVR	NONE	21	M	OR-Y	000	000		00
																	OR>25				
01347	N N N N	04/21/2018	14	HILLSBORO-SILV HY	ALLEY		N	N	CLD	O-1 L-TURN	01 NONE 0	TURN-L									02
CITY		SA		PACIFIC HY 99E	W	(NONE)	STOP SIGN	N	DRY	TURN	PRVTE	E -SW							019		00
N		10A			00			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	22	M	OTH-Y	028,004	000		02
N		45 9 4.89	-122 50 1.5	014000100S00		(04)											OR<25				
											02 NONE 0	STRGHT									
											PRVTE	W -E							000		00
											PSNGR CAR		01 DRVR	INJC	34	F	OR-Y	000	000		00
																	OR<25				
											02 NONE 0	STRGHT									
											PRVTE	W -E							000		00
											PSNGR CAR		02 PSNG	INJC	33	M		000	000		00
03777	N N N N N N	10/06/2018	14	HILLSBORO-SILV HY	ALLEY		N	N	CLD	ANGL-OTH	01 NONE 0	STRGHT									02
CITY		SA		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	DRY	ANGL	PRVTE	NE-SW							018		00
N		12P			06			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	64	F	OR-Y	028	000		02
N		45 9 4.89	-122 50 1.5	014000100S00		(04)											OR<25				
											02 NONE 0	STRGHT									
											PRVTE	E -W							000		00
											PSNGR CAR		01 DRVR	NONE	55	M	OR-Y	000	000		00
																	OR<25				
											02 NONE 0	STRGHT									
											PRVTE	E -W							000		00
											PSNGR CAR		02 PSNG	INJC	26	F		000	000		00

PACIFIC HY 99E and HILLSBORO-SILV HY, City of Woodburn, Marion County, 01/01/2017 to 12/31/2021

1 - 106 of 106 Crash records shown.

Gray fill indicates crashes that are duplicates or not intersection-related.

02006	N N N N N N	06/07/2018	14	HILLSBORO-SILV HY	ALLEY		N	N	CLR	O-1 L-TURN	01 NONE 9	TURN-L									02
NONE		TH		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	DRY	TURN	N/A	E -SW							019		00
N		5P			03			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 4.78	-122 49 56.93	014000100S00		(04)											UNK				
											02 NONE 9	STRGHT									
											N/A	W -E							000		00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																	UNK				
03930	N N N N	10/16/2018	14	HILLSBORO-SILV HY	ALLEY		N	N	UNK	ANGL-OTH	01 NONE 9	UNK									02
NONE		TU		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	UNK	TURN	N/A	UN-UN							018		00
N		8P			00			N	DLIT	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 4.89	-122 50 1.51	014000100S00		(04)											UNK				
											02 NONE 9	STRGHT									
											N/A	UN-UN							000		00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																	UNK				
04978	N N N N	12/26/2018	14	HILLSBORO-SILV HY	ALLEY		N	N	CLD	O-1 L-TURN	01 NONE 9	STRGHT									02
NONE		WE		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	WET	TURN	N/A	W -E							000		00
N		12P			03			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 4.89	-122 50 1.5	014000100S00		(04)											UNK				
											02 NONE 9	TURN-L									
											N/A	E -SW							019		00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																	UNK				
00819	N N N N N N	03/04/2019	14	HILLSBORO-SILV HY	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 0	TURN-L									02
CITY		MO		PACIFIC HY 99E	W	(NONE)	STOP SIGN	N	DRY	TURN	PRVTE	SW-W							018		00
N		1P			04			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	21	M	SUSP	028	000		02
N		45 9 4.9	-122 50 1.51	014000100S00		(04)											OR<25				
											02 NONE 0	STRGHT									
											PRVTE	W -E							000		00
											PSNGR CAR		01 DRVR	NONE	74	M	OR-Y	000	000		00
																	OR<25				
											02 NONE 0	STRGHT									
											PRVTE	W -E							000		00
											PSNGR CAR		02 PSNG	INJC	72	F		000	000		00
											02 NONE 0	STRGHT									
											PRVTE	W -E							000		00
											PSNGR CAR		03 PSNG	INJC	10	F		000	000		00
00887	N N N N	03/09/2019	14	HILLSBORO-SILV HY	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 0	UNK									02
NONE		SA		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	DRY	TURN	PRVTE	UN-UN							018		00
N		9A			00			N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	21	F	OR-Y	028	000		02
N		45 9 4.89	-122 50 1.47	014000100S00		(04)											OR<25				
											01 NONE 0	UNK									
											PRVTE	UN-UN							018		00
											PSNGR CAR		02 PSNG	INJC	43	F		000	000		00
											02 NONE 0	STRGHT									
											PRVTE	UN-UN							000		00
											PSNGR CAR		01 DRVR	NONE	32	F	OR-Y	000	000		00
																	OR<25				
03748	N N N N N N	09/27/2019	14	HILLSBORO-SILV HY	ALLEY		N	N	RAIN	ANGL-OTH	01 NONE 0	STRGHT								082	02
CITY		FR		PACIFIC HY 99E	W	(NONE)	L-GRN-SIG	N	WET	TURN	PRVTE	W -E							000		00

Gray fill indicates crashes that are duplicates or not intersection-related.

N		4P			05			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	17	F	OR-Y	000	000	00
N		45 9 4.79	-122 49 56.92	014000100S00		(05)											OR<25			
											01 NONE 0	STRGHT								
											PRVTE	W -E							000	00
											PSNGR CAR		02 PSNG	INJC	52	M		000	000	00
											02 NONE 0	TURN-L								
											PRVTE	SW-W							018	00
											PSNGR CAR		01 DRVR	INJC	30	F	OR-Y	028	000 082	02
																	OR<25			
											02 NONE 0	TURN-L								
											PRVTE	SW-W							018	00
											PSNGR CAR		02 PSNG	INJC	48	F		000	000	00
											02 NONE 0	TURN-L								
											PRVTE	SW-W							018	00
											PSNGR CAR		03 PSNG	INJC	08	F		000	000	00
											02 NONE 0	TURN-L								
											PRVTE	SW-W							018	00
											PSNGR CAR		04 PSNG	INJC	02	F		000	000	00
											02 NONE 0	TURN-L								
											PRVTE	SW-W							018	00
											PSNGR CAR		05 PSNG	INJC	01	F		000	000	00
03856	N N N N N N	10/04/2019	14	HILLSBORO-SILV HY	ALLEY		N	N	CLR	O-1 L-TURN	01 NONE 0	TURN-L								02
CITY		FR		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	DRY	TURN	PRVTE	E -SW							019	00
N		5P			03			N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	37	M	OR-Y	028,004	000	02
N		45 9 4.79	-122 49 56.92	014000100S00		(04)											OR<25			
											02 NONE 0	STRGHT								
											PRVTE	W -E							000	00
											PSNGR CAR		01 DRVR	INJB	25	F	OR-Y	000	000	00
																	OR<25			
00856	N N N N	03/08/2019	14	HILLSBORO-SILV HY	ALLEY		N	N	RAIN	O-1 L-TURN	01 NONE 9	TURN-L								02
CITY		FR		PACIFIC HY 99E	W	(NONE)	STOP SIGN	N	WET	TURN	N/A	W -NE							000	00
N		5P			06			N	DUSK	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
N		45 9 4.91	-122 50 1.5	014000100S00		(04)											UNK			
											02 NONE 9	STRGHT								
											N/A	E -W							000	00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
																	UNK			
01057	N N N N	03/22/2019	14	HILLSBORO-SILV HY	ALLEY		N	N	CLR	O-OTHER	01 NONE 9	TURN-L								02
NONE		FR		PACIFIC HY 99E	W	(NONE)	R-GRN-SIG	N	DRY	TURN	N/A	E -SW							019	00
N		4P			03			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
N		45 9 4.77	-122 49 56.94	014000100S00		(04)											UNK			
											02 NONE 9	TURN-R								
											N/A	W -SW							019	00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
																	UNK			
01857	N N N N	05/02/2019	14	HILLSBORO-SILV HY	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 9	STRGHT								02
NONE		TH		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	DRY	TURN	N/A	E -W							000	00
N		11A			05			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
N		45 9 4.88	-122 50 1.51	014000100S00		(04)											UNK			

Gray fill indicates crashes that are duplicates or not intersection-related.

											02 NONE 9	TURN-L								
											N/A	N -E							018	00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
																	UNK			
01710	N N N N N N	06/12/2020	14	HILLSBORO-SILV HY	ALLEY		N	N	RAIN	ANGL-OTH	01 NONE 0	STRGHT								02
CITY		FR		PACIFIC HY 99E	W	(NONE)	STOP SIGN	N	WET	TURN	PRVTE	E -W							000	00
N		9A			00			N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	23	F	OR-Y	000	000	00
N		45 9 4.89	-122 50 1.49	014000100S00		(04)											OR>25			
											01 NONE 0	STRGHT								
											PRVTE	E -W							000	00
											PSNGR CAR		02 PSNG	INJC	34	F		000	000	00
											02 NONE 0	TURN-L								
											PRVTE	NE-E							018	00
											PSNGR CAR		01 DRVR	INJC	16	M	OR-Y	028	000	02
																	OR<25			
											02 NONE 0	TURN-L								
											PRVTE	NE-E							018	00
											PSNGR CAR		02 PSNG	INJC	45	F		000	000	00
03728	N N N N	12/11/2020	14	HILLSBORO-SILV HY	ALLEY		N	N	RAIN	ANGL-OTH	01 NONE 0	STRGHT								02
CITY		FR		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	WET	TURN	PRVTE	E -W							000	00
N		12P			05			N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	70	M	OR-Y	028	000	02
N		45 9 4.89	-122 50 1.5	014000100S00		(04)											OR<25			
											02 NONE 0	TURN-L								
											PRVTE	NE-E							018	00
											PSNGR CAR		01 DRVR	INJC	28	F	OR-Y	000	000	00
																	OR<25			
01824	N N N N N N	06/23/2020	14	HILLSBORO-SILV HY	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 9	TURN-L							082	02
CITY		TU		PACIFIC HY 99E	W	(NONE)	STOP SIGN	N	DRY	TURN	N/A	S -W							018	00
N		9A			00			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
N		45 9 4.89	-122 50 1.51	014000100S00		(04)											UNK			
											02 NONE 9	STRGHT								
											N/A	W -E							000	00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
																	UNK			
00764	N N N N N N	03/12/2021	14	HILLSBORO-SILV HY	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT								02
CITY		FR		PACIFIC HY 99E	W	(NONE)	STOP SIGN	N	DRY	ANGL	PRVTE	W -E							000	00
N		3P			03			N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	53	F	SUSP	000	000	00
N		45 9 4.89	-122 50 1.49	014000100S00		(04)											OR<25			
											02 NONE 0	STRGHT								
											PRVTE	N -S							019	00
											PSNGR CAR		01 DRVR	NONE	24	M	OR-Y	028	000	02
																	OR<25			
01305	N N N N N N	04/23/2021	14	HILLSBORO-SILV HY	ALLEY		N	N	CLR	O-1 L-TURN	01 NONE 0	STRGHT								02
CITY		FR		PACIFIC HY 99E	W	(NONE)	STOP SIGN	N	DRY	TURN	PRVTE	W -E							000	00
N		11A			00			N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	43	M	OR-Y	000	000	00
N		45 9 4.9	-122 50 1.52	014000100S00		(04)											OR<25			
											02 NONE 0	TURN-L								
											PRVTE	E -S							019	00
											PSNGR CAR		01 DRVR	INJB	26	M	SUSP	028,004	000	02
																	OR<25			
00148	N N N N N N	01/15/2021	14	HILLSBORO-SILV HY	ALLEY		N	N	RAIN	ANGL-OTH	01 NONE 9	TURN-L								02,27

Gray fill indicates crashes that are duplicates or not intersection-related.

CITY		FR		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	WET	TURN	N/A	NE-E						018	00
N		12P			00			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
N		45 9 4.88	-122 50 1.52	014000100S00		(04)										UNK			
											02 NONE 9	STRGHT							
											N/A	E -W						000	00
											PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
																UNK			
01781	N N N N	06/01/2021	14	HILLSBORO-SILV HY	ALLEY		N	N	CLR	O-1 L-TURN	01 NONE 9	STRGHT						082	40,02
CITY		TU		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	DRY	TURN	N/A	W -E						000	00
N		2P			03			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
N		45 9 4.88	-122 50 1.51	014000100S00		(04)										UNK			
											02 NONE 9	TURN-L							
											N/A	E -SW						019	00
											PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
																UNK			
03393	N N N N N N	09/01/2021	14	HILLSBORO-SILV HY	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 0	TURN-R							02
CITY		WE		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	DRY	TURN	PRVTE	N -W						018	00
N		10A			00			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	20 F	OR-Y	028	000	02
N		45 9 4.9	-122 50 1.51	014000100S00		(04)										OR<25			
											02 NONE 0	STRGHT							
											PRVTE	E -W						000	00
											PSNGR CAR		01 DRVR	NONE	30 F	OR-Y	000	000	00
																OR<25			
											02 NONE 0	STRGHT							
											PRVTE	E -W						000	00
											PSNGR CAR		02 PSNG	INJC	01 M		000	000	00
											02 NONE 0	STRGHT							
											PRVTE	E -W						000	00
											PSNGR CAR		03 PSNG	INJC	05 F		000	000	00
04117	N N N N	11/15/2021	14	HILLSBORO-SILV HY	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 9	TURN-L							02
CITY		MO		PACIFIC HY 99E	W	(NONE)	R-GRN-SIG	N	DRY	TURN	N/A	S -W						000	00
N		3P			03			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
N		45 9 4.89	-122 50 1.51	014000100S00		(04)										UNK			
											02 NONE 9	STRGHT							
											N/A	W -E						000	00
											PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
																UNK			
04181	N N N N N N	11/20/2021	14	HILLSBORO-SILV HY	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 9	STRGHT							02
CITY		SA		PACIFIC HY 99E	W	(NONE)	STOP SIGN	N	DRY	TURN	N/A	E -W						000	00
N		10A			05			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
N		45 9 4.89	-122 50 1.52	014000100S00		(04)										UNK			
											02 NONE 9	TURN-L							
											N/A	N -E						018	00
											PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
																UNK			
00941	N N N N	03/10/2017	16	PACIFIC HY 99E	STRGHT		N	N	CLR	S-STRGHT	01 NONE 0	STRGHT							29
NONE		FR		HILLSBORO-SILV HY	NE	(NONE)	L-TURN REF	N	DRY	REAR	PRVTE	SW-NE						000	00
N		8A			05			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	33 F	OR-Y	042	000	29
N		45 9 7.36	-122 49 50.02	008100100S00		(05)										OR>25			
											02 NONE 0	STRGHT							
											PRVTE	SW-NE						000	00
											PSNGR CAR		01 DRVR	INJC	37 F	OR-Y	000	000	00

PACIFIC HY 99E and HILLSBORO-SILV HY, City of Woodburn, Marion County, 01/01/2017 to 12/31/2021

1 - 106 of 106 Crash records shown.

Gray fill indicates crashes that are duplicates or not intersection-related.

																OR<25			
04036	N N N N	09/26/2017	16	PACIFIC HY 99E	STRGHT		Y	N	CLR	O-1STOP	01 NONE 9	BACK							10
CITY		TU		HILLSBORO-SILV HY	NE	(NONE)	UNKNOWN	N	DRY	BACK	N/A	UN-UN						000	00
N		3P			00			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
N		45 9 6.01	-122 49 51.2	008100100S00		(04)										UNK			
											02 NONE 9	STOP							
											N/A	UN-UN						011	00
											PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
																UNK			
01795	N N N N	05/25/2018	16	PACIFIC HY 99E	STRGHT		Y	N	CLR	S-1STOP	01 NONE 0	STRGHT							29
NONE		FR		HILLSBORO-SILV HY	NE	(NONE)	UNKNOWN	N	DRY	REAR	PRVTE	NE-SW						000	00
N		4P			00			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	39 M	OR-Y	026	000	29
N		45 9 6.01	-122 49 51.2	008100100S00		(04)										OR<25			
											02 NONE 0	STOP							
											PRVTE	NE-SW						011	00
											PSNGR CAR		01 DRVR	INJC	64 F	OR-Y	000	000	00
																OR<25			
03079	N N N N	08/20/2018	16	PACIFIC HY 99E	STRGHT		Y	N	CLR	S-1STOP	01 NONE 0	STRGHT							29
NONE		MO		HILLSBORO-SILV HY	NE	(NONE)	UNKNOWN	N	DRY	REAR	PRVTE	NE-SW						000	00
N		12P			00			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	47 M	OR-Y	026	000	29
N		45 9 6.46	-122 49 50.81	008100100S00		(04)										OR<25			
											02 NONE 0	STOP							
											PRVTE	NE-SW						011	00
											PSNGR CAR		01 DRVR	INJC	48 M	OR-Y	000	000	00
																OR>25			
01459	N N N N	04/30/2018	16	PACIFIC HY 99E	STRGHT		Y	N	CLR	S-1STOP	01 NONE 9	STRGHT							29
NONE		MO		HILLSBORO-SILV HY	NE	(NONE)	UNKNOWN	N	DRY	REAR	N/A	NE-SW						000	00
N		3P			00			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
N		45 9 7.39	-122 49 50.02	008100100S00		(04)										UNK			
											02 NONE 9	STOP							
											N/A	NE-SW						011	00
											PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
																UNK			
02935	N N N N	08/09/2018	16	PACIFIC HY 99E	STRGHT		N	N	CLR	S-1STOP	01 NONE 9	STRGHT							29
NONE		TH		HILLSBORO-SILV HY	NE	(NONE)	UNKNOWN	N	DRY	REAR	N/A	NE-SW						000	00
N		3P			00			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
N		45 9 5.56	-122 49 51.59	008100100S00		(04)										UNK			
											02 NONE 9	STOP							
											N/A	NE-SW						011	00
											PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
																UNK			
02981	N N N N	08/12/2018	16	PACIFIC HY 99E	STRGHT		Y	N	CLR	S-STRGHT	01 NONE 9	STRGHT							22
NONE		SU		HILLSBORO-SILV HY	NE	(NONE)	UNKNOWN	N	DRY	REAR	N/A	NE-SW						000	00
N		UNK			04			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
N		45 9 6.00	-122 49 51.21	008100100S00		(04)										UNK			
											02 NONE 9	STRGHT							
											N/A	NE-SW						006	00
											PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
																UNK			
04261	N N N N N N	10/28/2019	16	PACIFIC HY 99E	STRGHT		Y	N	CLR	S-1STOP	01 NONE 0	STRGHT							13

PACIFIC HY 99E and HILLSBORO-SILV HY, City of Woodburn, Marion County, 01/01/2017 to 12/31/2021

Gray fill indicates crashes that are duplicates or not intersection-related.

CITY		MO		HILLSBORO-SILV HY	NE	(NONE)	UNKNOWN	N	DRY	REAR	PRVTE	NE-SW							000	00
N		1P			04			N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	20	F	OR-Y	045	000	13
N		45 9 6.46	-122 49 50.81	008100100S00		(04)											OR<25			
											01 NONE 0	STRGHT								
											PRVTE	NE-SW							000	00
											PSNGR CAR		02 PSNG	INJC	46	F		000	000	00
											02 NONE 0	STRGHT								
											PRVTE	NE-SW							000	00
											PSNGR CAR		01 DRVR	NONE	37	M	OR-Y	000	000	00
																	OR<25			
02138	N N N N	06/06/2019	16	PACIFIC HY 99E	STRGHT		Y	N	CLD	S-1STOP	01 NONE 9	STRGHT								07
CITY		TH		HILLSBORO-SILV HY	NE	(NONE)	UNKNOWN	N	DRY	REAR	N/A	NE-SW							000	00
N		12P			03			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
N		45 9 5.56	-122 49 51.59	008100100S00		(04)											UNK			
											02 NONE 9	STOP								
											N/A	NE-SW							011	00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
																	UNK			
01845	N Y N N N N	06/21/2020	16	PACIFIC HY 99E	STRGHT		Y	N	CLR	S-1STOP	01 NONE 0	STRGHT								29
CITY		SU		HILLSBORO-SILV HY	NE	(NONE)	UNKNOWN	N	DRY	REAR	PRVTE	NE-SW							000	00
N		3P			04			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	64	M	OR-Y	026	000	29
N		45 9 5.58	-122 49 51.62	008100100S00		(04)											OR<25			
											02 NONE 0	STOP								
											PRVTE	NE-SW							011	00
											PSNGR CAR		01 DRVR	INJC	26	M	OR-Y	000	000	00
																	OR<25			
01279	N N N N N N	04/21/2021	16	PACIFIC HY 99E	STRGHT		Y	N	CLR	S-1STOP	01 NONE 0	STRGHT								16
CITY		WE		HILLSBORO-SILV HY	NE	(NONE)	UNKNOWN	N	DRY	REAR	PRVTE	NE-SW							000	00
N		5P			00			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	52	F	OR-Y	026	025	16
N		45 9 6.46	-122 49 50.83	008100100S00		(04)											OR<25			
											02 NONE 0	STOP								
											PRVTE	NE-SW							011	00
											PSNGR CAR		01 DRVR	INJB	54	F	OR-Y	000	000	00
																	OR<25			
02776	N N N N N N	07/12/2017	14	PACIFIC HY 99E	STRGHT		N	Y	CLR	FIX OBJ	01 NONE 0	STRGHT							050,001	10
CITY		WE		HILLSBORO-SILV HY	SW	(NONE)	UNKNOWN	N	DRY	FIX	PRVTE	NE-SW							000 050	00
Y		9P			04			N	DUSK	INJ	MTRCYCLE		01 DRVR	INJA	45	M	OR-Y	081	000 001	10
N		45 9 .23	-122 49 56.35	008100100S00		(04)											OR<25			
04642	N N N N	12/05/2018	14	PACIFIC HY 99E	STRGHT		Y	N	FOG	S-1STOP	01 NONE 0	STRGHT								29
NONE		WE		HILLSBORO-SILV HY	SW	(NONE)	UNKNOWN	N	ICE	REAR	PRVTE	SW-NE							000	00
N		5A			05			N	DLIT	INJ	PSNGR CAR		01 DRVR	NONE	28	F	OR-Y	026	000	29
N		45 9 3.79	-122 49 53.16	008100100S00		(04)											OR<25			
											01 NONE 0	STRGHT								
											PRVTE	SW-NE							000	00
											PSNGR CAR		02 PSNG	NONE	01	M		000	000	00
											02 NONE 0	STOP								
											PRVTE	SW-NE							011	00
											PSNGR CAR		01 DRVR	INJC	61	M	OR-Y	000	000	00
																	OR<25			

CITY OF WOODBURN, MARION COUNTY

PACIFIC HY 99E and HILLSBORO-SILV HY, City of Woodburn, Marion County, 01/01/2017 to 12/31/2021

1 - 106 of 106 Crash records shown.

Gray fill indicates crashes that are duplicates or not intersection-related.

00432	Y Y N N N N	02/04/2019	14	PACIFIC HY 99E	STRGHT		N	Y	RAIN	FIX OBJ	01 NONE 0	STRGHT								040,001	33,30
CITY		MO		HILLSBORO-SILV HY	SW	(NONE)	UNKNOWN	N	WET	FIX	PRVTE	UN-UN							000	040	00
Y		1A			00			N	DLIT	INJ	MTRCYCLE		01 DRVR	INJB	22	M	OR-Y	051,050,081	000	001	33,30
N		45 9 2.02	-122 49 54.76	008100100S00		(04)											OR<25				
01559	N N N N	04/27/2019	14	PACIFIC HY 99E	STRGHT		N	N	CLR	S-STRGHT	01 NONE 9	STRGHT									13
NONE		SA		HILLSBORO-SILV HY	SW	(NONE)	UNKNOWN	N	DRY	SS-O	N/A	NE-SW							000		00
N		11A			04			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 2.43	-122 49 54.37	008100100S00		(04)											UNK				
											02 NONE 9	STRGHT									
											N/A	NE-SW							000		00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																	UNK				
01231	N N N N N N	04/11/2020	14	PACIFIC HY 99E	STRGHT		N	N	CLR	S-1STOP	01 NONE 0	STRGHT									27,29
CITY		SA		HILLSBORO-SILV HY	SW	(NONE)	UNKNOWN	N	DRY	REAR	PRVTE	NE-SW							000		00
N		11A			03			Y	DAY	INJ	PSNGR CAR		01 DRVR	INJC	22	F	OR-Y	016,026	038		27,29
N		45 9 2.46	-122 49 54.4	008100100S00		(04)											OR<25				
											02 NONE 0	STOP									
											PRVTE	NE-SW							011		00
											PSNGR CAR		01 DRVR	INJC	31	M	OR-Y	000	000		00
																	OR<25				
02285	N Y N N	08/02/2020	14	PACIFIC HY 99E	STRGHT		N	Y	CLR	FIX OBJ	01 NONE 9	STRGHT								050	10
CITY		SU		HILLSBORO-SILV HY	SW	(RSDMD)	UNKNOWN	N	DRY	FIX	N/A	NE-SW							000		00
Y		8P			04			N	DUSK	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 2.88	-122 49 53.98	008100100S00		(04)											UNK				
00994	N N N N	03/14/2017	14	HILLSBORO-SILV HY	STRGHT		N	N	RAIN	S-STRGHT	01 NONE 0	STRGHT								087	13
CITY		TU		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	WET	SS-O	PRVTE	W -E							000	087	00
N		5P			03			N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	75	M	OR-Y	045	000		13
N		45 9 4.85	-122 49 59.98	014000100S00		(04)											OR<25				
											01 NONE 0	STRGHT									
											PRVTE	W -E							000	087	00
											PSNGR CAR		02 PSNG	INJC	74	F		000	000		00
											02 NONE 0	STRGHT									
											PRVTE	W -E							000		00
											PSNGR CAR		01 DRVR	INJC	41	M	OTH-Y	000	000		00
																	N-RES				
00265	N N N N	01/20/2017	14	HILLSBORO-SILV HY	STRGHT		Y	N	CLD	S-1STOP	01 NONE 9	STRGHT									07
CITY		FR		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	WET	REAR	N/A	W -E							000		00
N		7A			04			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 4.74	-122 49 55.42	014000100S00		(04)											UNK				
											02 NONE 9	STOP									
											N/A	W -E							011		00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																	UNK				
04450	N N N N N N	11/19/2018	14	HILLSBORO-SILV HY	STRGHT		Y	N	CLR	S-1STOP	01 NONE 0	STRGHT									27,29
CITY		MO		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	DRY	REAR	PRVTE	W -E							000		00
N		5P			04			N	DLIT	INJ	PSNGR CAR		01 DRVR	INJC	36	F	OR-Y	016,026	038		27,29
N		45 9 4.87	-122 50 .75	014000100S00		(04)											OR<25				
											02 NONE 0	STOP									
											PRVTE	W -E							011		00

URBAN NON-SYSTEM CRASH LISTING
CITY OF WOODBURN, MARION COUNTY

PACIFIC HY 99E and HILLSBORO-SILV HY, City of Woodburn, Marion County, 01/01/2017 to 12/31/2021

1 - 106 of 106 Crash records shown.

Gray fill indicates crashes that are duplicates or not intersection-related.

											PSNGR CAR		01 DRVR	INJC	52	M	OR-Y	000	000		00
																	OR<25				
01209	N N N N N N 04/04/2019		14	HILLSBORO-SILV HY	STRGHT		Y	N	CLD	S-1STOP	01 NONE 0	STRGHT									16
CITY		TH		PACIFIC HY 99E	W	(NONE)	L-GRN-SIG	N	WET	REAR	PRVTE	W -E							000		00
N		12P			04			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	31	M	OR-Y	026	025		16
N		45 9 4.71	-122 49 54.66	014000100S00		(04)											OR<25				
											02 NONE 0	STOP									
											PRVTE	W -E							012		00
											PSNGR CAR		01 DRVR	INJC	53	M	OR-Y	000	000		00
																	OR<25				
03192	N N N N N N 10/23/2020		14	HILLSBORO-SILV HY	STRGHT		N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT									02,27
CITY		FR		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	DRY	TURN	PRVTE	E -W							000		00
N		10A			04			N	DAY	INJ	PSNGR CAR		01 DRVR	INJB	84	M	OR-Y	000	000		00
N		45 9 4.89	-122 50 1.51	014000100S00		(04)											OR<25				
											01 NONE 0	STRGHT									
											PRVTE	E -W							000		00
											PSNGR CAR		02 PSNG	INJB	83	F		000	000		00
											02 NONE 0	TURN-L									
											PRVTE	N -E							018		00
											PSNGR CAR		01 DRVR	NONE	25	M	SUSP	016,028	038		02,27
																	OR<25				
03535	N N N N N N 11/20/2020		14	HILLSBORO-SILV HY	STRGHT		Y	N	FOG	S-1STOP	01 NONE 0	STRGHT									29
CITY		FR		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	DRY	REAR	PRVTE	W -E							000		00
N		8P			03			N	DLIT	INJ	PSNGR CAR		01 DRVR	NONE	69	F	OTH-Y	026	000		29
N		45 9 4.71	-122 49 53.9	014000100S00		(04)											N-RES				
											02 NONE 0	STOP									
											PRVTE	W -E							011		00
											PSNGR CAR		01 DRVR	INJC	20	F	OR-Y	000	000		00
																	OR<25				
00183	N N N N N N 01/20/2021		14	HILLSBORO-SILV HY	STRGHT		N	Y	CLD	FIX OBJ	01 NONE 0	STRGHT								040,062	17
CITY		WE		PACIFIC HY 99E	W	(NONE)	UNKNOWN	N	WET	FIX	PRVTE	W -E							000	040,062	00
Y		10P			00			N	DLIT	INJ	PSNGR CAR		01 DRVR	INJA	25	M	NONE	083,081	028		17
N		45 9 5.04	-122 50 7.59	014000100S00		(04)											OR>25				
											01 NONE 0	STRGHT									
											PRVTE	W -E							000	040,062	00
											PSNGR CAR		02 PSNG	INJC	00	F		000	000		00
02140	N N N N N N 06/28/2021		14	HILLSBORO-SILV HY	STRGHT		Y	N	CLR	ANGL-STP	01 NONE 0	TURN-L								082	40,02
CITY		MO		PACIFIC HY 99E	W	(NONE)	L-TURN REF	N	DRY	TURN	PRVTE	SW-W							018		00
N		11A			05			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	66	M	OR-Y	028	000	082	40,02
N		45 9 4.91	-122 50 1.53	014000100S00		(05)											OR<25				
											01 NONE 0	TURN-L									
											PRVTE	SW-W							018		00
											PSNGR CAR		02 PSNG	INJB	63	F		000	000		00
											02 NONE 0	STOP									
											PRVTE	W -E							012		00
											PSNGR CAR		01 DRVR	NONE	26	M	OR-Y	000	000		00
																	OR<25				
											02 NONE 0	STOP									
											PRVTE	W -E							012		00
											PSNGR CAR		02 PSNG	INJC	24	F		000	000		00

PACIFIC HY 99E and HILLSBORO-SILV HY, City of Woodburn, Marion County, 01/01/2017 to 12/31/2021

1 - 106 of 106 Crash records shown.

Gray fill indicates crashes that are duplicates or not intersection-related.

00889	N N N N	03/24/2021	14	HILLSBORO-SILV HY	STRGHT		Y	N	CLD	S-STRGHT	01 NONE	9	STRGHT										13
CITY		WE		PACIFIC HY 99E	W	(NONE)	L-GRN-SIG	N	WET	SS-O	N/A		W -E									000	00
N		11A			04			N	DAY	PDO	PSNGR CAR			01 DRVR	NONE	00	Unk	UNK			000	000	00
N		45 9 4.7	-122 49 53.89	014000100S00		(04)												UNK					
											02 NONE	9	STRGHT										
											N/A		W -E									000	00
											PSNGR CAR			01 DRVR	NONE	00	Unk	UNK			000	000	00
																		UNK					

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANAYLYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF WOODBURN, MARION COUNTY

PACIFIC HY 99E and WOODBURN-ESTACADA H, City of Woodburn, Marion County, 01/01/2017 to 12/31/2021

1 - 44 of 44 Crash records shown.

Gray fill indicates crashes that are duplicates or not intersection-related.

SER# / INVEST / RD DPT / UNLOC?	S D M / P R J S W / E A U I C O / E L G N H R / D C S V L K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A / G / E	S / E / X	LICNS / RES	PED / LOC	ERROR	ACT EVENT	CAUSE
03473	N N N N	08/06/2017	16	WOODBURN-ESTACADA H	INTER	CROSS	N	N	UNK	S-1STOP	01	NONE 9	STRGHT										29
NONE		SU		PACIFIC HY 99E	E		TRF SIGNAL	N	UNK	REAR		N/A	E -W									000	00
N		12P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N		45 9 4.66	-122 49 52.38	016100100S00															UNK				
											02	NONE 9	STOP										
												N/A	E -W									011	00
												PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																			UNK				
00100	N N N N	01/11/2018	16	WOODBURN-ESTACADA H	INTER	CROSS	N	N	RAIN	O-1STOP	01	NONE 0	BACK										10
NO RPT		TH		PACIFIC HY 99E	E		TRF SIGNAL	N	WET	BACK		PRVTE	W -E									000	00
N		6A			06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	32	M	OR-Y		011	000	10
N		45 9 4.66	-122 49 52.38	016100100S00															OR<25				
											02	NONE 0	STOP										
												PRVTE	E -W									011	00
												PSNGR CAR		01	DRVR	INJC	48	F	OR-Y		000	000	00
																			OR<25				
00346	N N N N N N	01/27/2017	14	WOODBURN-ESTACADA H	INTER	CROSS	N	N	FOG	S-1STOP	01	NONE 0	STRGHT										07
CITY		FR		PACIFIC HY 99E	S		TRF SIGNAL	N	WET	REAR		PRVTE	S -N									000	00
N		10A			06	1		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	56	F	OR-Y		043,026	000	07
N		45 9 4.66	-122 49 52.38	008100100S00															OR<25				
											02	NONE 0	STOP										
												PRVTE	S -N									011	00
												PSNGR CAR		01	DRVR	INJC	29	F	OR-Y		000	000	00
																			OR<25				
03610	N N N N	09/25/2018	14	WOODBURN-ESTACADA H	INTER	CROSS	N	N	CLR	S-1STOP	01	UNKN 0	STRGHT										29
NO RPT		TU		PACIFIC HY 99E	S		TRF SIGNAL	N	DRY	REAR		UNKN	S -N									000	00
N		8P			06	0		N	DLIT	INJ		UNKNOWN		01	DRVR	NONE	00	Unk	UNK		026	000	29
N		45 9 4.66	-122 49 52.38	008100100S00															UNK				
											02	NONE 0	STOP										
												PRVTE	S -N									011	00
												PSNGR CAR		01	DRVR	INJC	40	M	OR-Y		000	000	00
																			OR<25				
01056	N N N N	03/30/2018	14	PACIFIC HY 99E	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT										29
NONE		FR		WOODBURN-ESTACADA H	S		TRF SIGNAL	N	DRY	REAR		N/A	S -N									000	00
N		1P			06	1		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N		45 9 4.66	-122 49 52.38	008100100S00															UNK				
											02	NONE 9	STOP										
												N/A	S -N									012	00
												PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																			UNK				
00184	N N N N N N	01/13/2020	14	WOODBURN-ESTACADA H	INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 1	STRGHT										10
CITY		MO		PACIFIC HY 99E	S		TRF SIGNAL	N	WET	REAR		PRVTE	S -N									000	00
N		3P			06	1		N	DAY	INJ		SEMI TOW		01	DRVR	NONE	56	M	OR-Y		026	000	00
N		45 9 4.67	-122 49 52.39	008100100S00															OR<25				
											02	NONE 0	STOP										

Gray fill indicates crashes that are duplicates or not intersection-related.

											PRVTE	S -N							011	00
											PSNGR CAR		01 DRVR	INJC	29	M	NONE	009	000	10
																	OR<25			
00540	N N N N	02/07/2020	14	WOODBURN-ESTACADA H	INTER	CROSS	N	N	CLR	S-1STOP	01 UNKN 0	STRGHT								29
NO RPT		FR		PACIFIC HY 99E	S		TRF SIGNAL	N	DRY	REAR	UNKN	S -N							000	00
N		5A			06	1		N	DLIT	INJ	UNKNOWN		01 DRVR	NONE	00	M	UNK	026	000	29
N		45 9 4.65	-122 49 52.39	008100100S00													UNK			
											02 NONE 0	STOP								
											PRVTE	S -N							011	00
											PSNGR CAR		01 DRVR	INJC	41	M	OTH-Y	000	000	00
																	N-RES			
04760	N N N N N N	12/24/2021	16	WOODBURN-ESTACADA H	INTER	CROSS	N	N	RAIN	S-1STOP	01 NONE 1	STRGHT								07
CITY		FR		PACIFIC HY 99E	S		TRF SIGNAL	N	WET	REAR	PRVTE	S -N							000	00
N		12P			06	1		N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	31	M	SUSP	043,026	000	07
N		45 9 4.66	-122 49 52.41	008100100S00													OR<25			
											02 NONE 0	STOP								
											PRVTE	S -N							011	00
											PSNGR CAR		01 DRVR	NONE	52	M	OR-Y	000	000	00
																	OR<25			
											02 NONE 0	STOP								
											PRVTE	S -N							011	00
											PSNGR CAR		02 PSNG	INJA	58	F		000	000	00
01457	N N N N N N	05/07/2021	14	WOODBURN-ESTACADA H	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 9	STRGHT								33,27,29
CITY		FR		PACIFIC HY 99E	S		TRF SIGNAL	N	DRY	REAR	N/A	S -N							000	00
N		8P			06	1		N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
N		45 9 4.68	-122 49 52.37	008100100S00													UNK			
											02 NONE 9	STOP								
											N/A	S -N							011	00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
																	UNK			
04476	N N N N	10/21/2017	14	WOODBURN-ESTACADA H	INTER	CROSS	N	N	RAIN	ANGL-OTH	01 NONE 0	TURN-R								02
NO RPT		SA		PACIFIC HY 99E	CN		TRF SIGNAL	N	WET	TURN	PRVTE	E -N							000	00
N		7P			02	0		N	DLIT	INJ	PSNGR CAR		01 DRVR	NONE	29	M	OR-Y	028	000	02
N		45 9 4.66	-122 49 52.38	008100100S00													OR<25			
											02 NONE 1	STRGHT								
											PRVTE	S -N							000	00
											PSNGR CAR		01 DRVR	INJB	59	F	OR-Y	000	000	00
																	OR<25			
05532	N N N N N N	12/21/2017	14	WOODBURN-ESTACADA H	INTER	CROSS	N	N	CLD	O-1 L-TURN	01 NONE 0	TURN-L								04
CITY		TH		PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN	PRVTE	N -E							022	00
N		5P			04	0		N	DLIT	INJ	PSNGR CAR		01 DRVR	NONE	42	F	OR-Y	020	022	04
N		45 9 4.66	-122 49 52.38	008100100S00													OR<25			
											02 NONE 0	STRGHT								
											PRVTE	S -N							000	00
											PSNGR CAR		01 DRVR	INJC	70	F	OR-Y	000	000	00
																	OR<25			
											03 NONE 0	STRGHT								
											PRVTE	S -N							022	00
											PSNGR CAR		01 DRVR	NONE	26	M	OR-Y	000	022	00
																	OR<25			

CITY OF WOODBURN, MARION COUNTY

PACIFIC HY 99E and WOODBURN-ESTACADA H, City of Woodburn, Marion County, 01/01/2017 to 12/31/2021

1 - 44 of 44 Crash records shown.

Gray fill indicates crashes that are duplicates or not intersection-related.

04442	N N N N	10/20/2017	14	WOODBURN-ESTACADA H	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 9	TURN-R									02
NONE		FR		PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN	N/A	E -N							000		00
N		2P			02	0		N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 4.66	-122 49 52.38	008100100S00													UNK				
											02 NONE 9	STRGHT									
											N/A	S -N							000		00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																	UNK				
01605	N N N N	05/31/2020	14	WOODBURN-ESTACADA H	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT									04
CITY		SU		PACIFIC HY 99E	CN		TRF SIGNAL	N	DRY	TURN	PRVTE	W -E							000		00
N		7P			04	1		N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	24	M	OTH-Y	020	000		04
N		45 9 4.65	-122 49 52.38	014000100S00													OR<25				
											02 NONE 0	TURN-L									
											PRVTE	S -W							000		00
											PSNGR CAR		01 DRVR	INJC	38	F	OR-Y	000	000		00
																	OR<25				
01913	Y N N N N N	06/17/2021	16	PACIFIC HY 99E	ALLEY		N	N	CLR	O-1 L-TURN	01 NONE 0	STRGHT								001,010	01,06,50
CITY		TH		WOODBURN-ESTACADA H	N	(NONE)	L-TURN REF	N	DRY	TURN	PRVTE	S -N							031	010	00
N		6A			07			N	DAWN	FAT	MTRCYCLE		01 DRVR	KILL	36	M	OR-Y	047,031,042	000	001	01,06,50
N		45 9 9.6	-122 49 48.06	008100100S00		(04)											OR<25				
											02 NONE 0	TURN-L									
											PRVTE	N -E							019		00
											PSNGR CAR		01 DRVR	INJA	21	M	OR-Y	000	000		00
																	OR<25				
04591	N N N N N N	10/28/2017	16	WOODBURN-ESTACADA H	ALLEY		N	N	CLR	S-1TURN	01 NONE 0	STRGHT								001	06
CITY		SA		PACIFIC HY 99E	E	(NONE)	UNKNOWN	N	DRY	TURN	PRVTE	W -E							031		00
N		6P			04			N	DUSK	INJ	MTRCYCLE		01 DRVR	INJB	60	M	OR-Y	032	000	001	06
N		45 9 4.48	-122 49 48.84	016100100S00		(02)											OR<25				
											02 NONE 0	TURN-L									
											PRVTE	W -N							000		00
											PSNGR CAR		01 DRVR	NONE	21	F	OR-Y	000	000		00
																	OR<25				
01221	N N N N N N	03/30/2017	16	WOODBURN-ESTACADA H	ALLEY		N	Y	CLR	O-OTHER	01 NONE 9	TURN-L									02
STATE		TH		PACIFIC HY 99E	E	(NONE)	STOP SIGN	N	DRY	TURN	N/A	E -S							019		00
N		2P			02			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 4.46	-122 49 47.42	016100100S00		(02)											UNK				
											02 NONE 9	STRGHT									
											N/A	W -E							000		00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																	UNK				
04085	N N N N	08/30/2018	16	WOODBURN-ESTACADA H	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 0	TURN-L									02
NONE		TH		PACIFIC HY 99E	E	(NONE)	STOP SIGN	N	DRY	TURN	PRVTE	S -W							018		00
N		3P			04			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	71	F	OTH-Y	028	000		02
N		45 9 4.45	-122 49 46.7	016100100S00		(02)											N-RES				
											02 NONE 0	TURN-L									
											PRVTE	E -S							019		00
											PSNGR CAR		01 DRVR	INJC	43	F	OR-Y	000	000		00
																	OR<25				
04853	N N N N	12/17/2018	16	WOODBURN-ESTACADA H	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 0	TURN-L									02
NONE		MO		PACIFIC HY 99E	E	(NONE)	UNKNOWN	N	DRY	TURN	PRVTE	S -W							018		00
N		7A			04			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	48	F	OR-Y	028	000		02

Gray fill indicates crashes that are duplicates or not intersection-related.

N		45 9 4.45	-122 49 46.71	016100100S00		(02)											OR<25				
											02 NONE 0	STRGHT									
											PRVTE	E -W							000		00
											PSNGR CAR		01 DRVR	INJC	18	M	OR-Y	000	000		00
																	OR<25				
02091	N N N N	06/11/2018	16	WOODBURN-ESTACADA H	ALLEY		N	N	CLR	O-1 L-TURN	01 NONE 9	STRGHT									02
CITY		MO		PACIFIC HY 99E	E	(NONE)	STOP SIGN	N	DRY	TURN	N/A	W -E							000		00
N		7P			03			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 4.46	-122 49 46.7	016100100S00		(02)											UNK				
											02 NONE 9	TURN-L									
											N/A	E -S							019		00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																	UNK				
00435	N N N N N N	02/04/2019	16	WOODBURN-ESTACADA H	ALLEY		N	N	RAIN	ANGL-OTH	01 NONE 0	TURN-L								013	02
CITY		MO		PACIFIC HY 99E	E	(NONE)	STOP SIGN	N	WET	TURN	PRVTE	S -W							018	013	00
N		12P			03			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	18	F	OR-Y	028	022		02
N		45 9 4.45	-122 49 46.71	016100100S00		(02)											OR<25				
											02 NONE 0	STRGHT									
											PRVTE	W -E							000		00
											PSNGR CAR		01 DRVR	INJC	46	F	OR-Y	000	000		00
																	OR<25				
											02 NONE 0	STRGHT									
											PRVTE	W -E							000		00
											PSNGR CAR		02 PSNG	INJC	83	F		000	000		00
											03 NONE 0	STRGHT									
											PRVTE	E -W							022		00
											PSNGR CAR		01 DRVR	NONE	49	M	OR-Y	000	022		00
																	OR<25				
02135	N N N N	06/03/2019	16	WOODBURN-ESTACADA H	ALLEY		N	N	CLR	O-1 L-TURN	01 NONE 9	TURN-L									02
NONE		MO		PACIFIC HY 99E	E	(NONE)	UNKNOWN	N	DRY	TURN	N/A	W -N							019		00
N		3P			04			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 4.46	-122 49 44.5	016100100S00		(02)											UNK				
											02 NONE 9	STRGHT									
											N/A	E -W							000		00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																	UNK				
02682	N N N N	07/17/2019	16	WOODBURN-ESTACADA H	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 9	STRGHT									02
NO RPT		WE		PACIFIC HY 99E	E	(NONE)	STOP SIGN	N	DRY	TURN	N/A	W -E							000		00
N		6A			03			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 4.45	-122 49 46.68	016100100S00		(02)											UNK				
											02 NONE 9	TURN-R									
											N/A	S -E							018		00
											SEMI TOW		01 DRVR	NONE	00	Unk	UNK	000	000		00
																	UNK				
04802	N N N N	12/01/2019	16	WOODBURN-ESTACADA H	ALLEY		N	N	CLD	ANGL-OTH	01 NONE 9	UNK									02
NONE		SU		PACIFIC HY 99E	E	(NONE)	UNKNOWN	N	WET	TURN	N/A	N -UN							018		00
N		1P			04			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 4.47	-122 49 44.53	016100100S00		(02)											UNK				
											02 NONE 9	STRGHT									
											N/A	E -W							000		00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00

PACIFIC HY 99E and WOODBURN-ESTACADA H, City of Woodburn, Marion County, 01/01/2017 to 12/31/2021

1 - 44 of 44 Crash records shown.

Gray fill indicates crashes that are duplicates or not intersection-related.

																	UNK				
00273	N N N N N N	01/18/2020	16	WOODBURN-ESTACADA H	ALLEY		N	N	CLD	ANGL-OTH	01 NONE 0	STRGHT									02
CITY		SA		PACIFIC HY 99E	E	(NONE)	STOP SIGN	N	WET	TURN	PRVTE	W -E							000		00
N		11A			03			N	DAY	INJ	PSNGR CAR		01 DRVR	INJB	67	F	OR-Y	000	000		00
N		45 9 4.44	-122 49 46.71	016100100S00		(02)											OR<25				
											02 NONE 0	TURN-L									
											PRVTE	S -W							018		00
											PSNGR CAR		01 DRVR	NONE	38	F	OR-Y	028	000		02
																	OR<25				
00566	N N N N N N	02/08/2020	16	WOODBURN-ESTACADA H	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 0	TURN-L									27,02
CITY		SA		PACIFIC HY 99E	E	(NONE)	STOP SIGN	N	DRY	TURN	PRVTE	S -W							018		00
N		6P			03			N	DUSK	INJ	PSNGR CAR		01 DRVR	NONE	62	F	OR-Y	016,028	038		27,02
N		45 9 4.47	-122 49 46.72	016100100S00		(02)											OR<25				
											02 NONE 0	STRGHT									
											PRVTE	W -E							000		00
											PSNGR CAR		01 DRVR	INJC	24	M	OR-Y	000	000		00
																	OR<25				
02022	N N N N N N	07/11/2020	16	WOODBURN-ESTACADA H	ALLEY		N	N	CLR	ANGL-OTH	01 NONE 0	TURN-L									02
CITY		SA		PACIFIC HY 99E	E	(NONE)	STOP SIGN	N	DRY	TURN	PRVTE	S -W							018		00
N		12P			03			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	94	F	OR-Y	028	000		02
N		45 9 4.46	-122 49 46.71	016100100S00		(02)											OR<25				
											02 NONE 0	STRGHT									
											PRVTE	W -E							000	013	00
											PSNGR CAR		01 DRVR	INJC	22	F	OR-Y	000	022		00
																	OR<25				
											02 NONE 0	STRGHT									
											PRVTE	W -E							000	013	00
											PSNGR CAR		02 PSNG	INJC	56	F		000	000		00
											03 NONE 0	STOP									
											PRVTE	E -W							012		00
											PSNGR CAR		01 DRVR	NONE	54	M	OTH-Y	000	000		00
																	N-RES				
03733	N N N N	12/11/2020	16	WOODBURN-ESTACADA H	ALLEY		N	N	RAIN	ANGL-OTH	01 NONE 9	TURN-L									02
CITY		FR		PACIFIC HY 99E	E	(NONE)	STOP SIGN	N	WET	TURN	N/A	S -W							018		00
N		7P			03			N	DLIT	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 4.42	-122 49 46.73	016100100S00		(02)											UNK				
											02 NONE 9	STRGHT									
											N/A	W -E							000		00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																	UNK				
00226	N N N N N N	01/23/2021	16	WOODBURN-ESTACADA H	ALLEY		N	N	CLR	O-1 L-TURN	01 NONE 9	TURN-L									02
CITY		SA		PACIFIC HY 99E	E	(NONE)	UNKNOWN	N	DRY	TURN	N/A	W -N							000		00
N		5P			04			N	DLIT	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 4.48	-122 49 48.85	016100100S00		(02)											UNK				
											02 NONE 9	STRGHT									
											N/A	E -W							000		00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																	UNK				
00930	N N N N N N	03/27/2021	16	WOODBURN-ESTACADA H	ALLEY		N	N	CLR	O-1 L-TURN	01 NONE 9	STRGHT									02
CITY		SA		PACIFIC HY 99E	E	(NONE)	STOP SIGN	N	DRY	TURN	N/A	W -E							000		00

PACIFIC HY 99E and WOODBURN-ESTACADA H, City of Woodburn, Marion County, 01/01/2017 to 12/31/2021

1 - 44 of 44 Crash records shown.

Gray fill indicates crashes that are duplicates or not intersection-related.

N		7P			03			N	DLIT	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 4.46	-122 49 46.71	016100100S00		(02)											UNK				
											02 NONE 9	TURN-L									
											N/A	E -S							019		00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																	UNK				
01436	N N N N N N	04/17/2019	16	PACIFIC HY 99E	STRGHT		N	N	CLD	S-STRGHT	01 NONE 0	STRGHT								013	13
CITY		WE		WOODBURN-ESTACADA H	N	(NONE)	UNKNOWN	N	DRY	SS-O	PRVTE	S -N							000		00
N		6P			05			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	28	F	OR-Y	045	000		13
N		45 9 5.56	-122 49 51.6	008100100S00		(04)											OR<25				
											02 NONE 0	STRGHT									
											PRVTE	S -N							000	013	00
											PSNGR CAR		01 DRVR	NONE	48	F	OR-Y	000	022		00
																	OR<25				
											03 NONE 0	STOP									
											PRVTE	N -S							012		00
											PSNGR CAR		01 DRVR	INJC	21	F	OR-Y	000	000		00
																	OR<25				
01902	N N N N	05/16/2017	16	WOODBURN-ESTACADA H	STRGHT		Y	N	RAIN	S-1STOP	01 NONE 0	STRGHT									07
CITY		TU		PACIFIC HY 99E	E	(NONE)	UNKNOWN	N	WET	REAR	PRVTE	E -W							000		00
N		7A			04			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	19	F	OR-Y	043,026	000		07
N		45 9 4.49	-122 49 49.55	016100100S00		(02)											OR<25				
											02 NONE 0	STOP									
											PRVTE	E -W							011		00
											PSNGR CAR		01 DRVR	INJC	24	F	OR-Y	000	000		00
																	OR<25				
04942	N N N N	11/16/2017	16	WOODBURN-ESTACADA H	STRGHT		Y	N	CLD	S-1STOP	01 NONE 0	STRGHT									29
NO RPT		TH		PACIFIC HY 99E	E	(NONE)	UNKNOWN	N	WET	REAR	PRVTE	E -W							000		00
N		3P			04			N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	66	M	OR-Y	026	000		29
N		45 9 4.49	-122 49 49.55	016100100S00		(02)											OR<25				
											02 NONE 0	STOP									
											PRVTE	E -W							011		00
											PSNGR CAR		01 DRVR	NONE	46	M	OR-Y	000	000		00
																	OR<25				
03355	N N N N N N	08/18/2017	16	WOODBURN-ESTACADA H	STRGHT		Y	N	CLR	S-1STOP	01 NONE 9	STRGHT									29
CITY		FR		PACIFIC HY 99E	E	(NONE)	UNKNOWN	N	DRY	REAR	N/A	E -W							000		00
N		4P			04			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 4.48	-122 49 48.84	016100100S00		(02)											UNK				
											02 NONE 9	STOP									
											N/A	E -W							011		00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																	UNK				
03650	N N N N N N	09/28/2018	16	WOODBURN-ESTACADA H	STRGHT		Y	N	CLR	S-1STOP	01 NONE 0	STRGHT								058,079,093	27,29
CITY		FR		PACIFIC HY 99E	E	(NONE)	UNKNOWN	N	DRY	REAR	PRVTE	E -W							000	058,079	00
N		4P			04			N	DAY	INJ	PSNGR CAR		01 DRVR	INJA	57	F	OR-Y	016,026	038	093	27,29
N		45 9 4.47	-122 49 43.04	016100100S00		(02)											OR<25				
											02 NONE 0	STOP									
											PRVTE	E -W							011		00
											PSNGR CAR		01 DRVR	NONE	41	F	OR-Y	000	000		00
																	OR>25				
											02 NONE 0	STOP									
											PRVTE	E -W							011		00

PACIFIC HY 99E and WOODBURN-ESTACADA H, City of Woodburn, Marion County, 01/01/2017 to 12/31/2021

1 - 44 of 44 Crash records shown.

Gray fill indicates crashes that are duplicates or not intersection-related.

											PSNGR CAR		02 PSNG	NONE	03	M		000	000	00
01055	N N N N	03/30/2018	16	WOODBURN-ESTACADA H	STRGHT		Y	N	CLR	S-1STOP	01 NONE 9	STRGHT								29
NONE		FR		PACIFIC HY 99E	E	(NONE)	UNKNOWN	N	DRY	REAR	N/A	E -W							000	00
N		1P			04			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
N		45 9 4.46	-122 49 45.24	016100100S00		(02)											UNK			
											02 NONE 9	STOP								
											N/A	E -W							011	00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
																	UNK			
02545	N N N N	07/14/2018	16	WOODBURN-ESTACADA H	STRGHT		Y	N	UNK	S-STRGHT	01 NONE 9	STRGHT								13
NONE		SA		PACIFIC HY 99E	E	(NONE)	L-GRN-SIG	N	UNK	SS-O	N/A	E -W							000	00
N		2P			04			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
N		45 9 4.55	-122 49 50.97	016100100S00		(03)											UNK			
											02 NONE 9	STRGHT								
											N/A	E -W							000	00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
																	UNK			
83599	N N N N	10/18/2019	16	WOODBURN-ESTACADA H	STRGHT		N	N	RAIN	S-1STOP	01 NONE 0	STRGHT								29
NONE		FR		PACIFIC HY 99E	E	(NONE)	UNKNOWN	N	WET	REAR	PRVTE	E -W							000	00
N		7P			04			N	DLIT	INJ	PSNGR CAR		01 DRVR	NONE	79	M	OR-Y	026	000	29
N		45 9 4.52	-122 49 50.27	016100100S00		(02)											OR<25			
											02 NONE 0	STOP								
											PRVTE	E -W							011	00
											PSNGR CAR		01 DRVR	INJC	26	M	OR-Y	000	000	00
																	OR<25			
											02 NONE 0	STOP								
											PRVTE	E -W							011	00
											PSNGR CAR		02 PSNG	INJC	25	F		000	000	00
02578	N N N N	07/09/2019	16	WOODBURN-ESTACADA H	STRGHT		Y	N	CLR	S-1STOP	01 NONE 9	STRGHT								29
NO RPT		TU		PACIFIC HY 99E	E	(NONE)	UNKNOWN	N	DRY	REAR	N/A	E -W							000	00
N		2P			04			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
N		45 9 4.49	-122 49 48.16	016100100S00		(02)											UNK			
											02 NONE 9	STOP								
											N/A	E -W							011	00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000	00
																	UNK			
04403	N N N N	12/03/2021	16	WOODBURN-ESTACADA H	STRGHT		N	N	CLR	S-STRGHT	01 NONE 0	STRGHT								29
CITY		FR		PACIFIC HY 99E	E	(NONE)	UNKNOWN	N	DRY	REAR	PRVTE	W -E							000	00
N		5P			03			N	DARK	INJ	PSNGR CAR		01 DRVR	INJC	46	F	OR-Y	042	000	29
N		45 9 4.47	-122 49 45.24	016100100S00		(02)											N-RES			
											02 NONE 0	STRGHT								
											PRVTE	W -E							000	00
											PSNGR CAR		01 DRVR	NONE	67	F	OR-Y	000	000	00
																	OR<25			
05491	N N N N N N	12/20/2017	14	PACIFIC HY 99E	STRGHT		Y	N	CLR	S-1STOP	01 NONE 0	STRGHT							013	07
CITY		WE		WOODBURN-ESTACADA H	S	(NONE)	L-GRN-SIG	N	DRY	REAR	PRVTE	S -N							000	00
N		10A			05			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	19	M	OR-Y	043,026	000	07
N		45 9 3.78	-122 49 53.17	008100100S00		(05)											OR<25			

Gray fill indicates crashes that are duplicates or not intersection-related.

											02 NONE 0	STOP									
											PRVTE	S -N							012	013	00
											PSNGR CAR		01 DRVR	INJC	39	F	OR-Y	000	022		00
																	OR<25				
											02 NONE 0	STOP									
											PRVTE	S -N							012	013	00
											PSNGR CAR		02 PSNG	INJC	14	F		000	000		00
											02 NONE 0	STOP									
											PRVTE	S -N							012	013	00
											PSNGR CAR		03 PSNG	INJC	13	F		000	000		00
											03 NONE 0	STOP									
											PRVTE	S -N							012		00
											PSNGR CAR		01 DRVR	INJC	24	F	OR-Y	000	000		00
																	OR<25				
01126	N N N N N N	04/05/2018	14	PACIFIC HY 99E	STRGHT		Y	N	RAIN	S-1STOP	01 NONE 0	STRGHT								013	27,29
CITY		TH		WOODBURN-ESTACADA H	S	(NONE)	L-GRN-SIG	N	WET	REAR	PRVTE	S -N							000		00
N		5P			05			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	30	M	OR-Y	016,026	038		27,29
N		45 9 3.77	-122 49 53.18	008100100S00		(05)											OR<25				
											02 NONE 0	STOP									
											PRVTE	S -N							012	013	00
											PSNGR CAR		01 DRVR	NONE	19	F	OR-Y	000	022		00
																	OR<25				
											03 NONE 0	STOP									
											PRVTE	S -N							012		00
											PSNGR CAR		01 DRVR	INJC	28	F	OR-Y	000	000		00
																	OR<25				
03694	N N N N N N	10/01/2018	14	PACIFIC HY 99E	STRGHT		N	Y	CLD	FIX OBJ	01 NONE 0	STRGHT								044	17
CITY		MO		WOODBURN-ESTACADA H	S	(RSDMD)	UNKNOWN	N	DRY	FIX	PRVTE	S -N							000	044	00
Y		7A			05			N	DAY	INJ	PSNGR CAR		01 DRVR	INJA	52	F	OR-Y	081	028		17
N		45 9 3.78	-122 49 53.18	008100100S00		(04)											OR<25				
03872	N N N N	10/12/2018	14	PACIFIC HY 99E	STRGHT		Y	N	CLR	S-1STOP	01 NONE 0	STRGHT									29
NO RPT		FR		WOODBURN-ESTACADA H	S	(NONE)	UNKNOWN	N	DRY	REAR	PRVTE	S -N							000		00
N		5P			00			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	78	F	OR-Y	026	000		29
N		45 9 3.78	-122 49 53.17	008100100S00		(04)											OR<25				
											02 NONE 0	STOP									
											PRVTE	S -N							011		00
											PSNGR CAR		01 DRVR	INJC	25	F	OR-Y	000	000		00
																	OR<25				
03258	N N N N	08/31/2018	14	PACIFIC HY 99E	STRGHT		Y	N	CLR	S-STRGHT	01 NONE 9	STRGHT									13
NONE		FR		WOODBURN-ESTACADA H	S	(NONE)	UNKNOWN	N	DRY	SS-O	N/A	S -N							000		00
N		5P			06			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 2.89	-122 49 53.97	008100100S00		(04)											UNK				
											02 NONE 9	STRGHT									
											N/A	S -N							000		00
											PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																	UNK				

161: WOODBURN-ESTACADA

Highway 161 ALL ROAD TYPES, MP 0.03 to 0.13 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

Gray fill indicates crashes that are duplicates or not intersection-related.

1 - 23 of 23 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E E D / D R A L C / M J U G S / S I N V / W C H L / O R K	DATE / DAY / TIME / LAT	COUNTY / CITY / URBAN AREA / LONG	RD# FC / COMPNT / MLG TYP / MILEPNT	CONN# / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
83599	N N N N	10/18/2019	MARION	1 16		STRGHT		N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											29
NONE		FR	WOODBURN	MN 0	WOODBURN-ESTACADA H	E	(NONE)	UNKNOWN	N	WET	REAR		PRVTE	E -W									000		00
N		7P	WOODBURN UA	0.03	PACIFIC HY 99E	04			N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	79	M	OR-Y		026	000		29
N		45 9 4.52	-122 49 50.27		016100100S00		(02)													OR<25					
												02	NONE 0	STOP											
													PRVTE	E -W									011		00
													PSNGR CAR		01	DRVR	INJC	26	M	OR-Y		000	000		00
																				OR<25					
												02	NONE 0	STOP											
													PRVTE	E -W									011		00
													PSNGR CAR		02	PSNG	INJC	25	F			000	000		00
01902	N N N N	05/16/2017	MARION	1 16		STRGHT		Y	N	RAIN	S-1STOP	01	NONE 0	STRGHT											07
CITY		TU	WOODBURN	MN 0	WOODBURN-ESTACADA H	E	(NONE)	UNKNOWN	N	WET	REAR		PRVTE	E -W									000		00
N		7A	WOODBURN UA	0.04	PACIFIC HY 99E	04			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	19	F	OR-Y		043,026	000		07
N		45 9 4.49	-122 49 49.55		016100100S00		(02)													OR<25					
												02	NONE 0	STOP											
													PRVTE	E -W									011		00
													PSNGR CAR		01	DRVR	INJC	24	F	OR-Y		000	000		00
																				OR<25					
04942	N N N N	11/16/2017	MARION	1 16		STRGHT		Y	N	CLD	S-1STOP	01	NONE 0	STRGHT											29
NO RPT		TH	WOODBURN	MN 0	WOODBURN-ESTACADA H	E	(NONE)	UNKNOWN	N	WET	REAR		PRVTE	E -W									000		00
N		3P	WOODBURN UA	0.04	PACIFIC HY 99E	04			N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	66	M	OR-Y		026	000		29
N		45 9 4.49	-122 49 49.55		016100100S00		(02)													OR<25					
												02	NONE 0	STOP											
													PRVTE	E -W									011		00
													PSNGR CAR		01	DRVR	NONE	46	M	OR-Y		000	000		00
																				OR<25					
04591	N N N N N N	10/28/2017	MARION	1 16		ALLEY		N	N	CLR	S-1TURN	01	NONE 0	STRGHT										001	06
CITY		SA	WOODBURN	MN 0	WOODBURN-ESTACADA H	E	(NONE)	UNKNOWN	N	DRY	TURN		PRVTE	W -E									031		00
N		6P	WOODBURN UA	0.05	PACIFIC HY 99E	04			N	DUSK	INJ		MTRCYCLE		01	DRVR	INJB	60	M	OR-Y		032	000	001	06
N		45 9 4.48	-122 49 48.84		016100100S00		(02)													OR<25					
												02	NONE 0	TURN-L											
													PRVTE	W -N									000		00
													PSNGR CAR		01	DRVR	NONE	21	F	OR-Y		000	000		00
																				OR<25					
03355	N N N N N N	08/18/2017	MARION	1 16		STRGHT		Y	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
CITY		FR	WOODBURN	MN 0	WOODBURN-ESTACADA H	E	(NONE)	UNKNOWN	N	DRY	REAR		N/A	E -W									000		00
N		4P	WOODBURN UA	0.05	PACIFIC HY 99E	04			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N		45 9 4.48	-122 49 48.84		016100100S00		(02)													UNK					
												02	NONE 9	STOP											
													N/A	E -W									011		00
													PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																				UNK					
00226	N N N N N N	01/23/2021	MARION	1 16		ALLEY		N	N	CLR	O-1 L-TURN	01	NONE 9	TURN-L											02
CITY		SA	WOODBURN	MN 0	WOODBURN-ESTACADA H	E	(NONE)	UNKNOWN	N	DRY	TURN		N/A	W -N									000		00

Gray fill indicates crashes that are duplicates or not intersection-related.

1 - 23 of 23 Crash records shown.

N		5P	WOODBURN UA	0.05	PACIFIC HY 99E	04			N	DLIT	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 4.48	-122 49 48.85		016100100S00		(02)											UNK				
												02 NONE 9	STRGHT									
												N/A	E -W							000		00
												PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																		UNK				
02578	N N N N	07/09/2019	MARION	1 16		STRGHT		Y	N	CLR	S-1STOP	01 NONE 9	STRGHT									29
NO RPT		TU	WOODBURN	MN 0	WOODBURN-ESTACADA H	E	(NONE)	UNKNOWN	N	DRY	REAR	N/A	E -W							000		00
N		2P	WOODBURN UA	0.06	PACIFIC HY 99E	04			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 4.49	-122 49 48.16		016100100S00		(02)											UNK				
												02 NONE 9	STOP									
												N/A	E -W							011		00
												PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																		UNK				
01221	N N N N N N	03/30/2017	MARION	1 16		ALLEY		N	Y	CLR	O-OTHER	01 NONE 9	TURN-L									02
STATE		TH	WOODBURN	MN 0	WOODBURN-ESTACADA H	E	(NONE)	STOP SIGN	N	DRY	TURN	N/A	E -S							019		00
N		2P	WOODBURN UA	0.07	PACIFIC HY 99E	02			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 4.46	-122 49 47.42		016100100S00		(02)											UNK				
												02 NONE 9	STRGHT									
												N/A	W -E							000		00
												PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																		UNK				
02091	N N N N	06/11/2018	MARION	1 16		ALLEY		N	N	CLR	O-1 L-TURN	01 NONE 9	STRGHT									02
CITY		MO	WOODBURN	MN 0	WOODBURN-ESTACADA H	E	(NONE)	STOP SIGN	N	DRY	TURN	N/A	W -E							000		00
N		7P	WOODBURN UA	0.08	PACIFIC HY 99E	03			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 4.46	-122 49 46.7		016100100S00		(02)											UNK				
												02 NONE 9	TURN-L									
												N/A	E -S							019		00
												PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																		UNK				
00435	N N N N N N	02/04/2019	MARION	1 16		ALLEY		N	N	RAIN	ANGL-OTH	01 NONE 0	TURN-L								013	02
CITY		MO	WOODBURN	MN 0	WOODBURN-ESTACADA H	E	(NONE)	STOP SIGN	N	WET	TURN	PRVTE	S -W							018	013	00
N		12P	WOODBURN UA	0.08	PACIFIC HY 99E	03			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	18	F	OR-Y	028	022		02
N		45 9 4.45	-122 49 46.71		016100100S00		(02)											OR<25				
												02 NONE 0	STRGHT									
												PRVTE	W -E							000		00
												PSNGR CAR		01 DRVR	INJC	46	F	OR-Y	000	000		00
																		OR<25				
												02 NONE 0	STRGHT									
												PRVTE	W -E							000		00
												PSNGR CAR		02 PSNG	INJC	83	F		000	000		00
												03 NONE 0	STRGHT									
												PRVTE	E -W							022		00
												PSNGR CAR		01 DRVR	NONE	49	M	OR-Y	000	022		00
																		OR<25				
02682	N N N N	07/17/2019	MARION	1 16		ALLEY		N	N	CLR	ANGL-OTH	01 NONE 9	STRGHT									02
NO RPT		WE	WOODBURN	MN 0	WOODBURN-ESTACADA H	E	(NONE)	STOP SIGN	N	DRY	TURN	N/A	W -E							000		00
N		6A	WOODBURN UA	0.08	PACIFIC HY 99E	03			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 4.45	-122 49 46.68		016100100S00		(02)											UNK				
												02 NONE 9	TURN-R									
												N/A	S -E							018		00

Gray fill indicates crashes that are duplicates or not intersection-related.

1 - 23 of 23 Crash records shown.

												SEMI TOW		01 DRVR	NONE	00 Unk	UNK	000	000	00
																	UNK			
00273	N N N N N N	01/18/2020	MARION	1 16		ALLEY		N	N	CLD	ANGL-OTH	01 NONE 0	STRGHT							02
CITY		SA	WOODBURN	MN 0	WOODBURN-ESTACADA H	E	(NONE)	STOP SIGN	N	WET	TURN	PRVTE	W -E						000	00
N		11A	WOODBURN UA	0.08	PACIFIC HY 99E	03			N	DAY	INJ	PSNGR CAR		01 DRVR	INJB	67 F	OR-Y	000	000	00
N		45 9 4.44	-122 49 46.71		016100100S00		(02)										OR<25			
												02 NONE 0	TURN-L							
												PRVTE	S -W						018	00
												PSNGR CAR		01 DRVR	NONE	38 F	OR-Y	028	000	02
																	OR<25			
00566	N N N N N N	02/08/2020	MARION	1 16		ALLEY		N	N	CLR	ANGL-OTH	01 NONE 0	TURN-L							27,02
CITY		SA	WOODBURN	MN 0	WOODBURN-ESTACADA H	E	(NONE)	STOP SIGN	N	DRY	TURN	PRVTE	S -W						018	00
N		6P	WOODBURN UA	0.08	PACIFIC HY 99E	03			N	DUSK	INJ	PSNGR CAR		01 DRVR	NONE	62 F	OR-Y	016,028	038	27,02
N		45 9 4.47	-122 49 46.72		016100100S00		(02)										OR<25			
												02 NONE 0	STRGHT							
												PRVTE	W -E						000	00
												PSNGR CAR		01 DRVR	INJC	24 M	OR-Y	000	000	00
																	OR<25			
02022	N N N N N N	07/11/2020	MARION	1 16		ALLEY		N	N	CLR	ANGL-OTH	01 NONE 0	TURN-L							02
CITY		SA	WOODBURN	MN 0	WOODBURN-ESTACADA H	E	(NONE)	STOP SIGN	N	DRY	TURN	PRVTE	S -W						018	00
N		12P	WOODBURN UA	0.08	PACIFIC HY 99E	03			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	94 F	OR-Y	028	000	02
N		45 9 4.46	-122 49 46.71		016100100S00		(02)										OR<25			
												02 NONE 0	STRGHT							
												PRVTE	W -E						000 013	00
												PSNGR CAR		01 DRVR	INJC	22 F	OR-Y	000	022	00
																	OR<25			
												02 NONE 0	STRGHT							
												PRVTE	W -E						000 013	00
												PSNGR CAR		02 PSNG	INJC	56 F		000	000	00
												03 NONE 0	STOP							
												PRVTE	E -W						012	00
												PSNGR CAR		01 DRVR	NONE	54 M	OTH-Y	000	000	00
																	N-RES			
03733	N N N N	12/11/2020	MARION	1 16		ALLEY		N	N	RAIN	ANGL-OTH	01 NONE 9	TURN-L							02
CITY		FR	WOODBURN	MN 0	WOODBURN-ESTACADA H	E	(NONE)	STOP SIGN	N	WET	TURN	N/A	S -W						018	00
N		7P	WOODBURN UA	0.08	PACIFIC HY 99E	03			N	DLIT	PDO	PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
N		45 9 4.42	-122 49 46.73		016100100S00		(02)										UNK			
												02 NONE 9	STRGHT							
												N/A	W -E						000	00
												PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
																	UNK			
00930	N N N N N N	03/27/2021	MARION	1 16		ALLEY		N	N	CLR	O-1 L-TURN	01 NONE 9	STRGHT							02
CITY		SA	WOODBURN	MN 0	WOODBURN-ESTACADA H	E	(NONE)	STOP SIGN	N	DRY	TURN	N/A	W -E						000	00
N		7P	WOODBURN UA	0.08	PACIFIC HY 99E	03			N	DLIT	PDO	PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
N		45 9 4.46	-122 49 46.71		016100100S00		(02)										UNK			
												02 NONE 9	TURN-L							
												N/A	E -S						019	00
												PSNGR CAR		01 DRVR	NONE	00 Unk	UNK	000	000	00
																	UNK			
04085	N N N N	08/30/2018	MARION	1 16		ALLEY		N	N	CLR	ANGL-OTH	01 NONE 0	TURN-L							02

Gray fill indicates crashes that are duplicates or not intersection-related.

1 - 23 of 23 Crash records shown.

NONE		TH	WOODBURN	MN 0	WOODBURN-ESTACADA H	E	(NONE)	STOP SIGN	N	DRY	TURN	PRVTE	S -W							018		00
N		3P	WOODBURN UA	0.08	PACIFIC HY 99E	04			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	71	F	OTH-Y	028	000		02
N		45 9 4.45	-122 49 46.7		016100100S00		(02)											N-RES				
												02 NONE 0	TURN-L									
												PRVTE	E -S							019		00
												PSNGR CAR		01 DRVR	INJC	43	F	OR-Y	000	000		00
																		OR<25				
04853	N N N N	12/17/2018	MARION	1 16		ALLEY		N	N	CLR	ANGL-OTH	01 NONE 0	TURN-L									02
NONE		MO	WOODBURN	MN 0	WOODBURN-ESTACADA H	E	(NONE)	UNKNOWN	N	DRY	TURN	PRVTE	S -W							018		00
N		7A	WOODBURN UA	0.08	PACIFIC HY 99E	04			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	48	F	OR-Y	028	000		02
N		45 9 4.45	-122 49 46.71		016100100S00		(02)											OR<25				
												02 NONE 0	STRGHT									
												PRVTE	E -W							000		00
												PSNGR CAR		01 DRVR	INJC	18	M	OR-Y	000	000		00
																		OR<25				
04403	N N N N	12/03/2021	MARION	1 16		STRGHT		N	N	CLR	S-STRGHT	01 NONE 0	STRGHT									29
CITY		FR	WOODBURN	MN 0	WOODBURN-ESTACADA H	E	(NONE)	UNKNOWN	N	DRY	REAR	PRVTE	W -E							000		00
N		5P	WOODBURN UA	0.10	PACIFIC HY 99E	03			N	DARK	INJ	PSNGR CAR		01 DRVR	INJC	46	F	OR-Y	042	000		29
N		45 9 4.47	-122 49 45.24		016100100S00		(02)											N-RES				
												02 NONE 0	STRGHT									
												PRVTE	W -E							000		00
												PSNGR CAR		01 DRVR	NONE	67	F	OR-Y	000	000		00
																		OR<25				
01055	N N N N	03/30/2018	MARION	1 16		STRGHT		Y	N	CLR	S-1STOP	01 NONE 9	STRGHT									29
NONE		FR	WOODBURN	MN 0	WOODBURN-ESTACADA H	E	(NONE)	UNKNOWN	N	DRY	REAR	N/A	E -W							000		00
N		1P	WOODBURN UA	0.10	PACIFIC HY 99E	04			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 4.46	-122 49 45.24		016100100S00		(02)											UNK				
												02 NONE 9	STOP									
												N/A	E -W							011		00
												PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																		UNK				
02135	N N N N	06/03/2019	MARION	1 16		ALLEY		N	N	CLR	O-1 L-TURN	01 NONE 9	TURN-L									02
NONE		MO	WOODBURN	MN 0	WOODBURN-ESTACADA H	E	(NONE)	UNKNOWN	N	DRY	TURN	N/A	W -N							019		00
N		3P	WOODBURN UA	0.11	PACIFIC HY 99E	04			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 4.46	-122 49 44.5		016100100S00		(02)											UNK				
												02 NONE 9	STRGHT									
												N/A	E -W							000		00
												PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																		UNK				
04802	N N N N	12/01/2019	MARION	1 16		ALLEY		N	N	CLD	ANGL-OTH	01 NONE 9	UNK									02
NONE		SU	WOODBURN	MN 0	WOODBURN-ESTACADA H	E	(NONE)	UNKNOWN	N	WET	TURN	N/A	N -UN							018		00
N		1P	WOODBURN UA	0.11	PACIFIC HY 99E	04			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
N		45 9 4.47	-122 49 44.53		016100100S00		(02)											UNK				
												02 NONE 9	STRGHT									
												N/A	E -W							000		00
												PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	000	000		00
																		UNK				
03650	N N N N N N	09/28/2018	MARION	1 16		STRGHT		Y	N	CLR	S-1STOP	01 NONE 0	STRGHT								058,079, 093	27,29
CITY		FR	WOODBURN	MN 0	WOODBURN-ESTACADA H	E	(NONE)	UNKNOWN	N	DRY	REAR	PRVTE	E -W							000	058,079	00
N		4P	WOODBURN UA	0.13	PACIFIC HY 99E	04			N	DAY	INJ	PSNGR CAR		01 DRVR	INJA	57	F	OR-Y	016,026	038	093	27,29
N		45 9 4.47	-122 49 43.04		016100100S00		(02)											OR<25				

Gray fill indicates crashes that are duplicates or not intersection-related.

1 - 23 of 23 Crash records shown.

02 NONE 0	STOP									
PRVTE	E -W								011	00
PSNGR CAR		01 DRVR	NONE	41	F	OR-Y		000	000	00
						OR>25				
02 NONE 0	STOP									
PRVTE	E -W								011	00
PSNGR CAR		02 PSNG	NONE	03	M			000	000	00

CITY OF WOODBURN, MARION COUNTY

WOODBURN-ESTACADA H and JUNE WAY, City of Woodburn, Marion County, 01/01/2017 to 12/31/2021

1 - 2 of 2 Crash records shown.

Gray fill indicates crashes that are duplicates or not intersection-related.

SER# / INVEST / RD DPT / UNLOC?	S P E D / A L C / D R U G S / M J I N V / S C H L / W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A / G / E	S / E / X	LICNS / RES	PED / LOC	ERROR	ACT	EVENT	CAUSE
02582	N N N N	07/10/2019	16	WOODBURN-ESTACADA H	INTER	3-LEG	N	N	CLR	S-STRGHT	01	NONE 0	STRGHT											29
NONE		WE		JUNE WAY	W		STOP SIGN	N	DRY	REAR		PRVTE	W -E									000		00
N		4P			06	0		N	DAY	INJ		SEMI TOW		01	DRVR	NONE	47	M	OR-Y		042	000		29
N		45 9 4.51	-122 49 35.68	016100100S00															OR>25					
											02	NONE 0	STRGHT											
												PRVTE	W -E									006		00
												PSNGR CAR		01	DRVR	INJC	42	F	OR-Y		000	000		00
																			OR>25					
05057	N N N N N N	12/16/2019	16	WOODBURN-ESTACADA H	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	TURN-L										010	02
CITY		MO		JUNE WAY	CN		STOP SIGN	N	DRY	TURN		PRVTE	SW-W									000		00
N		9A			04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	21	F	OR-Y		028	000		02
N		45 9 4.49	-122 49 35.68	016100100S00															OR<25					
											02	NONE 0	STRGHT											
												PRVTE	W -E									000	010	00
												PSNGR CAR		01	DRVR	INJC	50	F	OR-Y		000	000		00
																			OR<25					
											02	NONE 0	STRGHT											
												PRVTE	W -E									000	010	00
												PSNGR CAR		02	PSNG	INJC	58	M			000	000		00

161: WOODBURN-ESTACADA

Highway 161 ALL ROAD TYPES, MP 0.3 to 0.6 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

1 - 2 of 2 Crash records shown.

Gray fill indicates crashes that are duplicates or not intersection-related.

SER# / INVEST / RD DPT / UNLOC?	S P E E D	A L C	D R U G S	M J I N V	S C H L	W O R K	DATE / DAY / TIME / LAT	COUNTY / CITY / URBAN AREA / LONG	RD# FC / COMPNT / MLG TYP / MILEPNT	CONN# / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
02625	N	N	N	N			08/29/2020	MARION	1 06		STRGHT		N	Y	CLR	FIX OBJ	01	NONE 9	STRGHT										079,062,	16
STATE							SA		MN 0		UN	(NONE)	UNKNOWN	N	DRY	FIX		N/A	W -E									000	121	00
Y							9P		0.48		01			N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N							45 9 4.39	-122 49 17.49		016100100S00		(02)													UNK					
03154	N	N	N	N	N	N	07/20/2017	MARION	1 06		STRGHT		N	N	CLR	ANGL-OTH	01	NONE 1	STRGHT										001	02
STATE							TH		MN 0		UN	(NONE)	UNKNOWN	N	DRY	TURN		PRVTE	W -E									000		00
N							11P		0.48		03			N	DARK	FAT		SEMI TOW		01	DRVR	NONE	23	M	OR-Y		000	000		00
N							45 9 4.38	-122 49 17.49		016100100S00		(02)													OR<25					
																	02	NONE 0	TURN-R											
																		PRVTE	S -E									051		00
																		FARM TRCTR		01	DRVR	INJA	30	M	OR-Y		028	000	001	02
																									OR<25					
																	02	NONE 0	TURN-R											
																		PRVTE	S -E									051		00
																		FARM TRCTR		02	PSNG	KILL	47	M			000	000	001	00
																	02	NONE 0	TURN-R											
																		PRVTE	S -E									051		00
																		FARM TRCTR		03	PSNG	INJA	60	M			000	000	001	00

Turn Lane Evaluation (E-W Hwy Orientation)

Evaluation:	Safeway Shopping Center
Highway:	OR 211 (Molalla Road)
MP:	0.08
Posted Speed:	35
Analyst:	J
Condition:	2023 Existing

Turn Movement Volumes

AM

	SBR	SBT	SBL		
	-	-	-		
EBL	-			-	WBR
EBT	255	AM		366	WBT
EBR	133			17	WBL
	138	-	28		
	NBL	NBT	NBR		

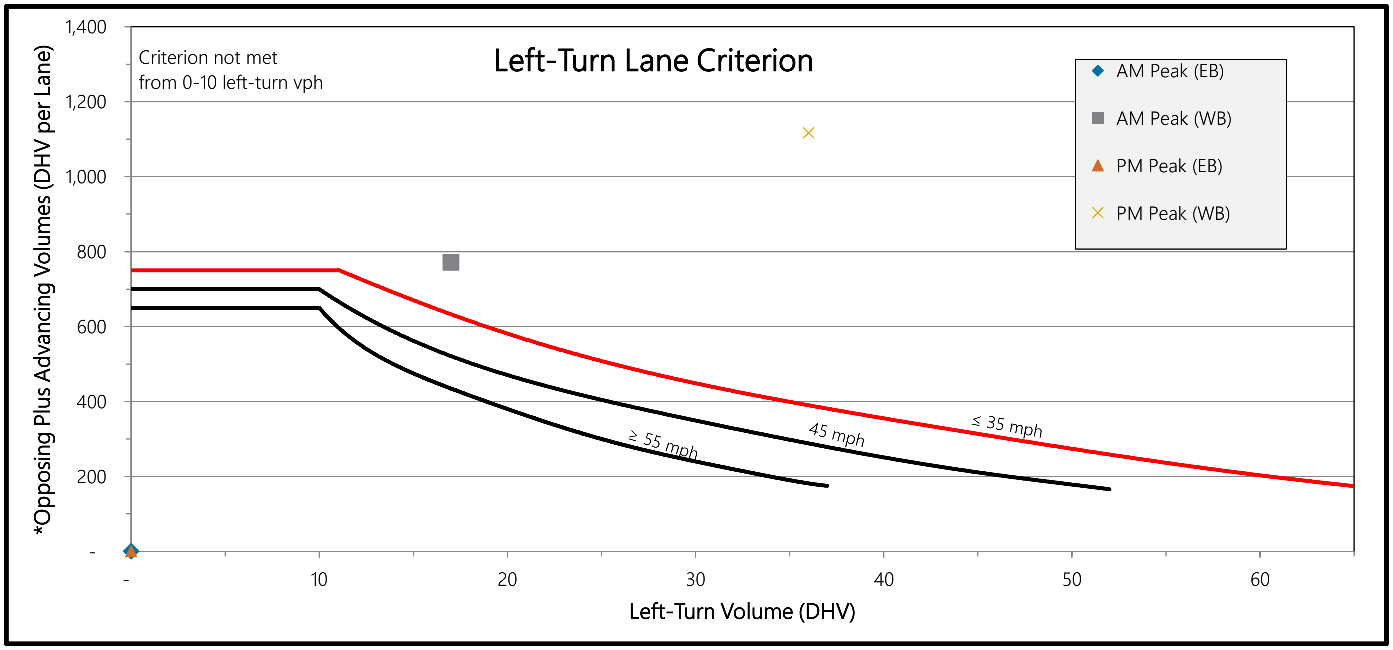
PM

	SBR	SBT	SBL		
	-	-	-		
EBL	-			-	WBR
EBT	435	PM		453	WBT
EBR	193			36	WBL
	161	-	128		
	NBL	NBT	NBR		

	EB	WB
Through Lanes (Including Shared):	1	1

Left-Turn Evaluation

	AM	PM
EB DHV Lefts =	-	-
WB DHV Lefts =	17	36
EB DHV (Opposing + Advancing) =	-	-
WB DHV (Opposing + Advancing) =	771	1,117



* (Advancing Volume/Advancing Thru Lanes) + (Opposing Volume/Opposing Thru Lanes). Opposing left-turns are not counted as opposing volumes.

Turn Lane Evaluation (E-W Hwy Orientation)

Evaluation:	Safeway Shopping Center
Highway:	OR 211 (Molalla Road)
MP:	0.08
Posted Speed:	35
Analyst:	J
Condition:	2025 Background

Turn Movement Volumes

AM

	SBR	SBT	SBL	
	-	-	-	
EBL -				- WBR
EBT 281		AM		443 WBT
EBR 134				17 WBL
	139	-	28	
	NBL	NBT	NBR	

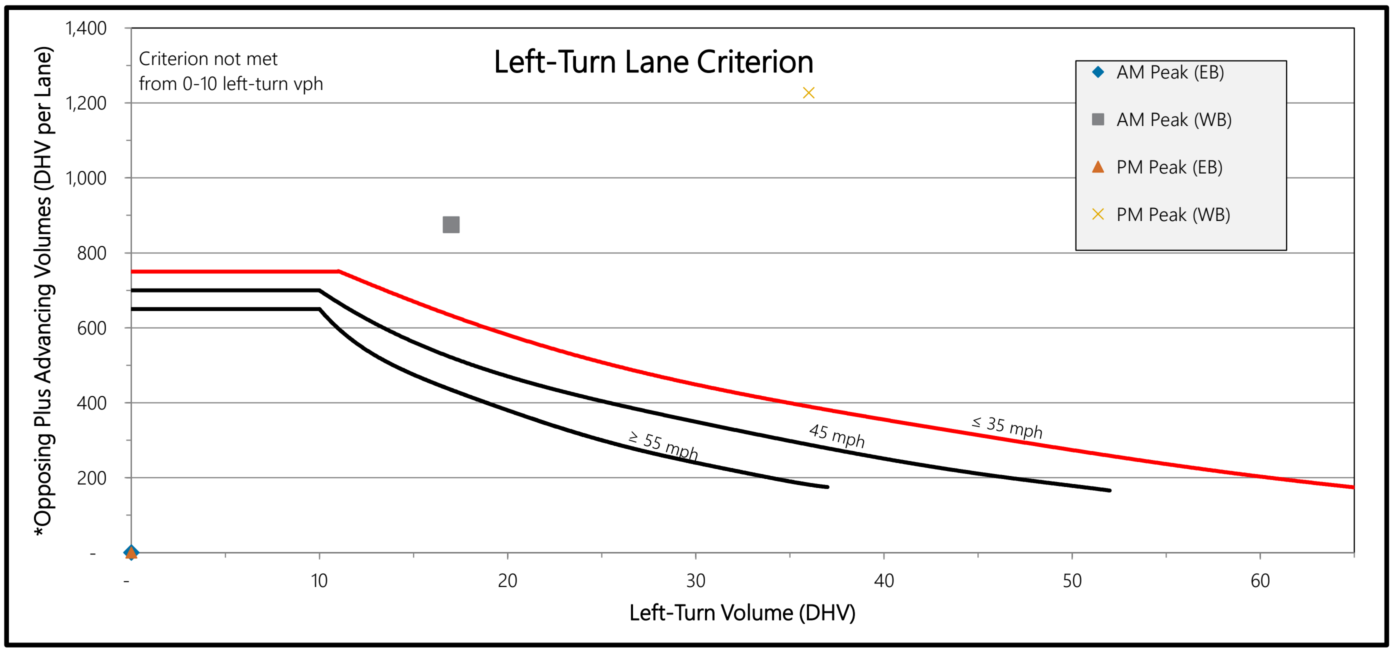
PM

	SBR	SBT	SBL	
	-	-	-	
EBL -				- WBR
EBT 498		PM		498 WBT
EBR 195				36 WBL
	163	-	129	
	NBL	NBT	NBR	

	EB	WB
Through Lanes (Including Shared):	1	1

Left-Turn Evaluation

	AM	PM
EB DHV Lefts =	-	-
WB DHV Lefts =	17	36
EB DHV (Opposing + Advancing) =	-	-
WB DHV (Opposing + Advancing) =	875	1,227



* (Advancing Volume/Advancing Thru Lanes) + (Opposing Volume/Opposing Thru Lanes). Opposing left-turns are not counted as opposing volumes.

Turn Lane Evaluation (E-W Hwy Orientation)

Evaluation:	Safeway Shopping Center
Highway:	OR 211 (Molalla Road)
MP:	0.08
Posted Speed:	35
Analyst:	J
Condition:	2025 Buildout

Turn Movement Volumes

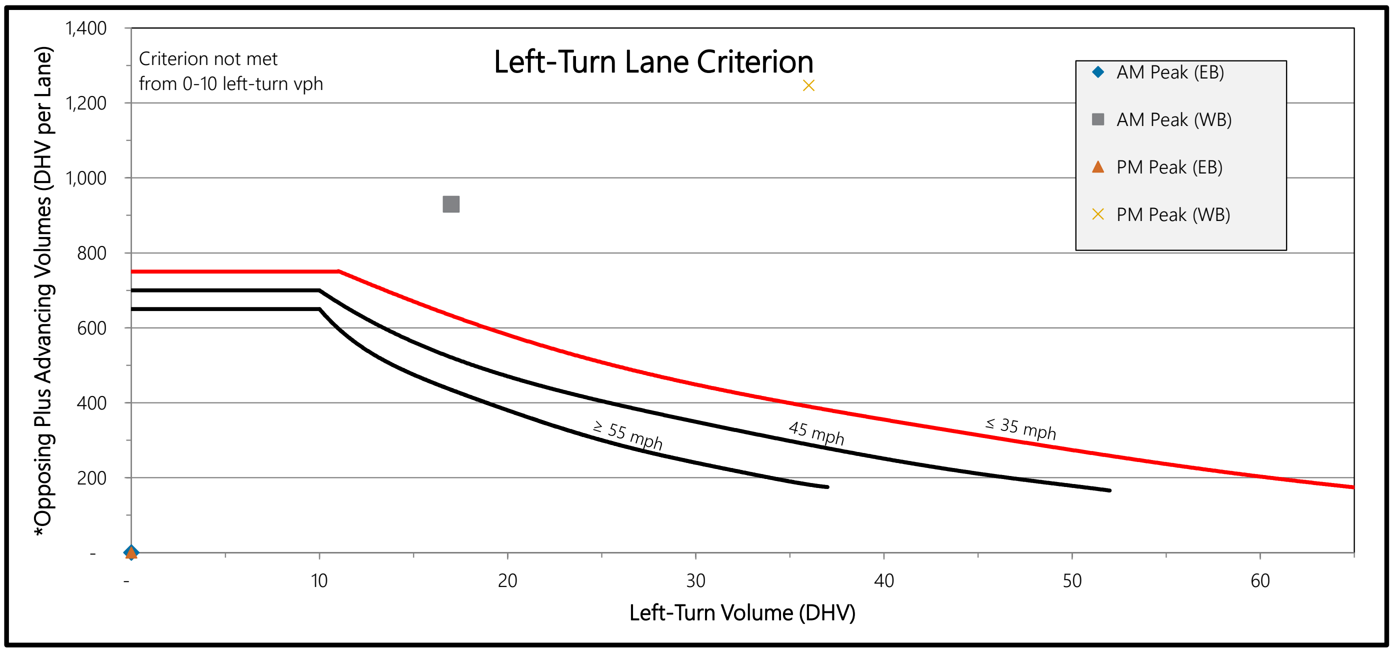
		SBR	SBT	SBL		
		-	-	-		
EBL	-				-	WBR
EBT	308		AM		470	WBT
EBR	134				17	WBL
		138	-	28		
		NBL	NBT	NBR		

		SBR	SBT	SBL		
		-	-	-		
EBL	-				-	WBR
EBT	509		PM		507	WBT
EBR	195				36	WBL
		163	-	129		
		NBL	NBT	NBR		

	EB	WB
Through Lanes (Including Shared):	1	1

Left-Turn Evaluation

	AM	PM
EB DHV Lefts =	-	-
WB DHV Lefts =	17	36
EB DHV (Opposing + Advancing) =	-	-
WB DHV (Opposing + Advancing) =	929	1,247



* (Advancing Volume/Advancing Thru Lanes) + (Opposing Volume/Opposing Thru Lanes). Opposing left-turns are not counted as opposing volumes.

Turn Lane Evaluation (E-W Hwy Orientation)

Evaluation:	June Way/Woodburn Place
Highway:	OR 211 (Molalla Road)
MP:	0.23
Posted Speed:	35
Analyst:	J
Condition:	2025 Background

Turn Movement Volumes

AM

		SBR	SBT	SBL		
		68	2	9		
EBL	20				2	WBR
EBT	283		AM		357	WBT
EBR	15				4	WBL
		32	1	1		
		NBL	NBT	NBR		

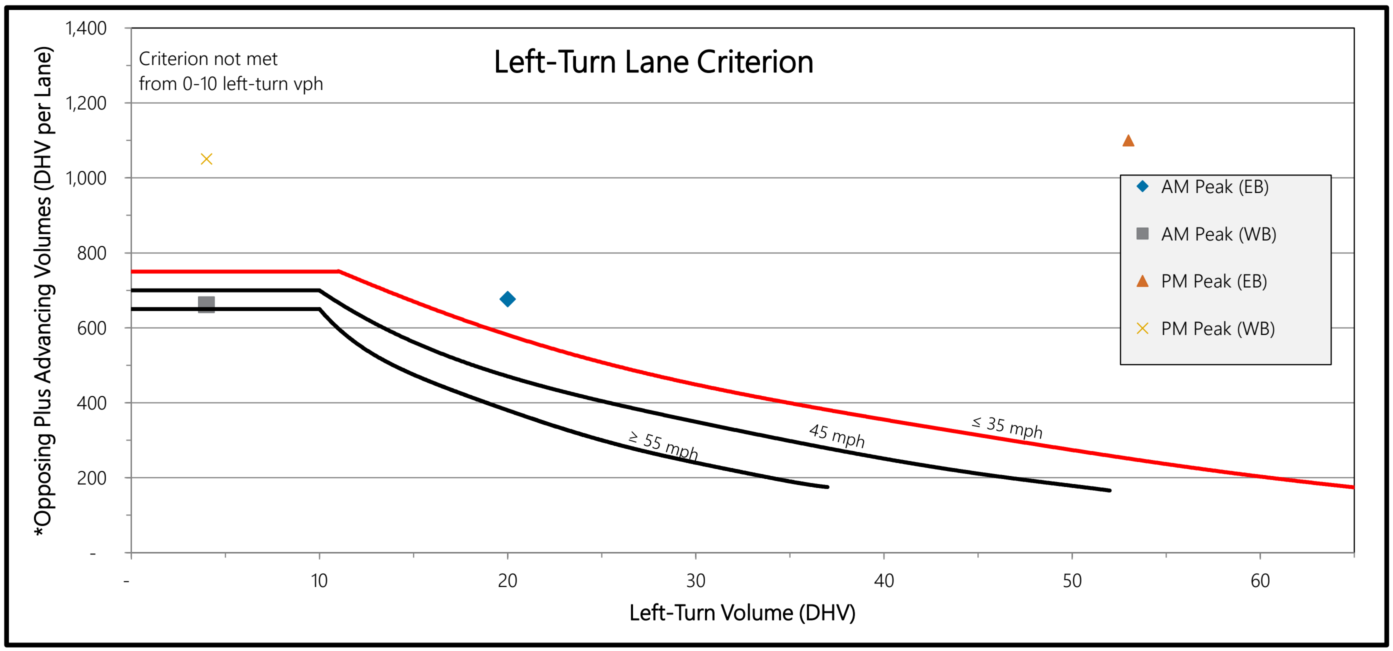
PM

		SBR	SBT	SBL		
		34	1	4		
EBL	53				7	WBR
EBT	534		PM		464	WBT
EBR	42				4	WBL
		20	2	5		
		NBL	NBT	NBR		

	EB	WB
Through Lanes (Including Shared):	1	1

Left-Turn Evaluation

	AM	PM
EB DHV Lefts =	20	53
WB DHV Lefts =	4	4
EB DHV (Opposing + Advancing) =	677	1,100
WB DHV (Opposing + Advancing) =	661	1,051



* (Advancing Volume/Advancing Thru Lanes) + (Opposing Volume/Opposing Thru Lanes). Opposing left-turns are not counted as opposing volumes.

Turn Lane Evaluation (E-W Hwy Orientation)

Evaluation:	June Way/Woodburn Place
Highway:	OR 211 (Molalla Road)
MP:	0.23
Posted Speed:	35
Analyst:	J
Condition:	2025 Buildout

Turn Movement Volumes

AM

	SBR	SBT	SBL	
	67	2	9	
EBL 19				2 WBR
EBT 311		AM		385 WBT
EBR 15				4 WBL
	32	1	1	
	NBL	NBT	NBR	

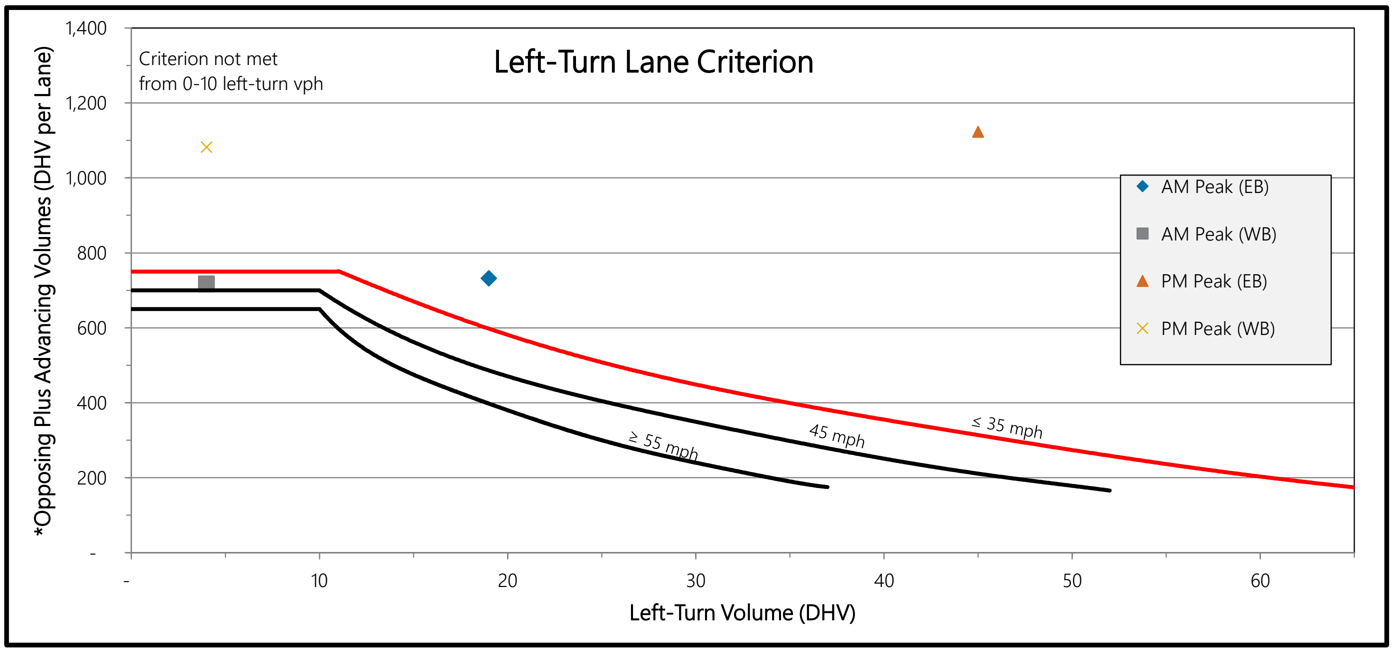
PM

	SBR	SBT	SBL	
	30	1	4	
EBL 45				6 WBR
EBT 553		PM		477 WBT
EBR 42				4 WBL
	20	2	5	
	NBL	NBT	NBR	

	EB	WB
Through Lanes (Including Shared):	1	1

Left-Turn Evaluation

	AM	PM
EB DHV Lefts =	19	45
WB DHV Lefts =	4	4
EB DHV (Opposing + Advancing) =	732	1,123
WB DHV (Opposing + Advancing) =	717	1,082



* (Advancing Volume/Advancing Thru Lanes) + (Opposing Volume/Opposing Thru Lanes). Opposing left-turns are not counted as opposing volumes.

Turn Lane Evaluation (E-W Hwy Orientation)

Evaluation:	Site Access
Highway:	OR 211 (Molalla Road)
MP:	0.30
Posted Speed:	35
Analyst:	J
Condition:	2025 Buildout

Turn Movement Volumes

AM

SBR	39
SBT	-
SBL	24
EBL	47
EBT	275
EBR	-
WBR	19
WBT	352
WBL	-
NBL	-
NBT	-
NBR	-

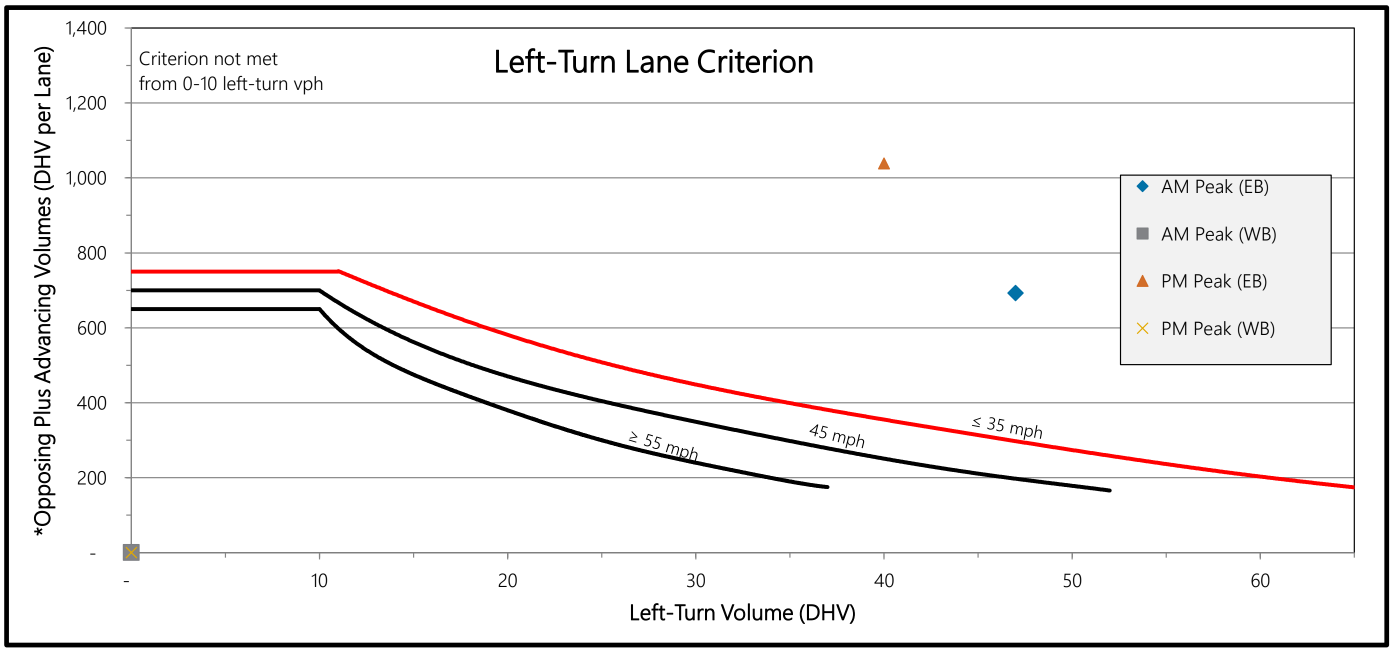
PM

SBR	20
SBT	-
SBL	17
EBL	40
EBT	528
EBR	-
WBR	9
WBT	462
WBL	-
NBL	-
NBT	-
NBR	-

	EB	WB
Through Lanes (Including Shared):	1	1

Left-Turn Evaluation

	AM	PM
EB DHV Lefts =	47	40
WB DHV Lefts =	-	-
EB DHV (Opposing + Advancing) =	693	1,039
WB DHV (Opposing + Advancing) =	-	-



* (Advancing Volume/Advancing Thru Lanes) + (Opposing Volume/Opposing Thru Lanes). Opposing left-turns are not counted as opposing volumes.

Turn Lane Evaluation (E-W Hwy Orientation)

Evaluation:	Woodburn Place East
Highway:	OR 211 (Molalla Road)
MP:	0.32
Posted Speed:	35
Analyst:	J
Condition:	2025 Background

Turn Movement Volumes

AM

	SBR	SBT	SBL	
	26	-	1	
EBL 18				3 WBR
EBT 275		AM		337 WBT
EBR -				- WBL
	-	-	-	
	NBL	NBT	NBR	

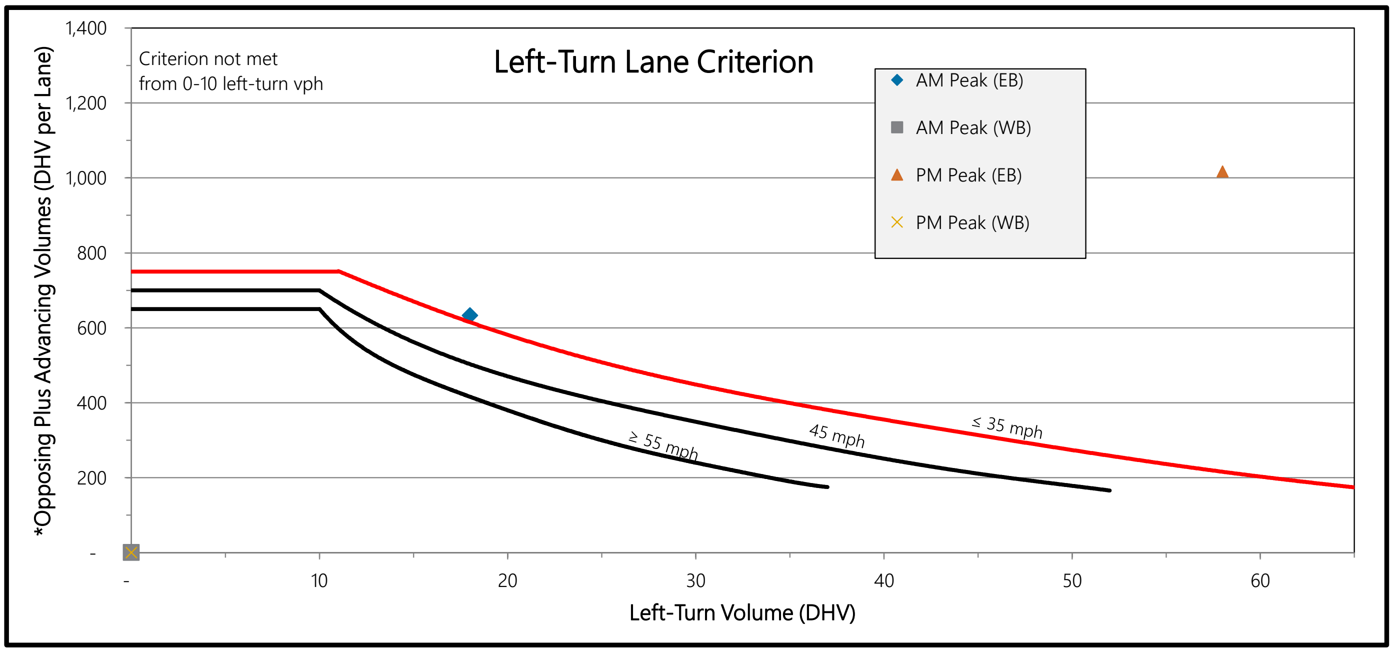
PM

	SBR	SBT	SBL	
	15	-	-	
EBL 58				14 WBR
EBT 490		PM		454 WBT
EBR 1				- WBL
	-	-	-	
	NBL	NBT	NBR	

	EB	WB
Through Lanes (Including Shared):	1	1

Left-Turn Evaluation

	AM	PM
EB DHV Lefts =	18	58
WB DHV Lefts =	-	-
EB DHV (Opposing + Advancing) =	633	1,017
WB DHV (Opposing + Advancing) =	-	-



* (Advancing Volume/Advancing Thru Lanes) + (Opposing Volume/Opposing Thru Lanes). Opposing left-turns are not counted as opposing volumes.

Turn Lane Evaluation (E-W Hwy Orientation)

Evaluation:	Woodburn Place East
Highway:	OR 211 (Molalla Road)
MP:	0.32
Posted Speed:	35
Analyst:	J
Condition:	2025 Buildout

Turn Movement Volumes

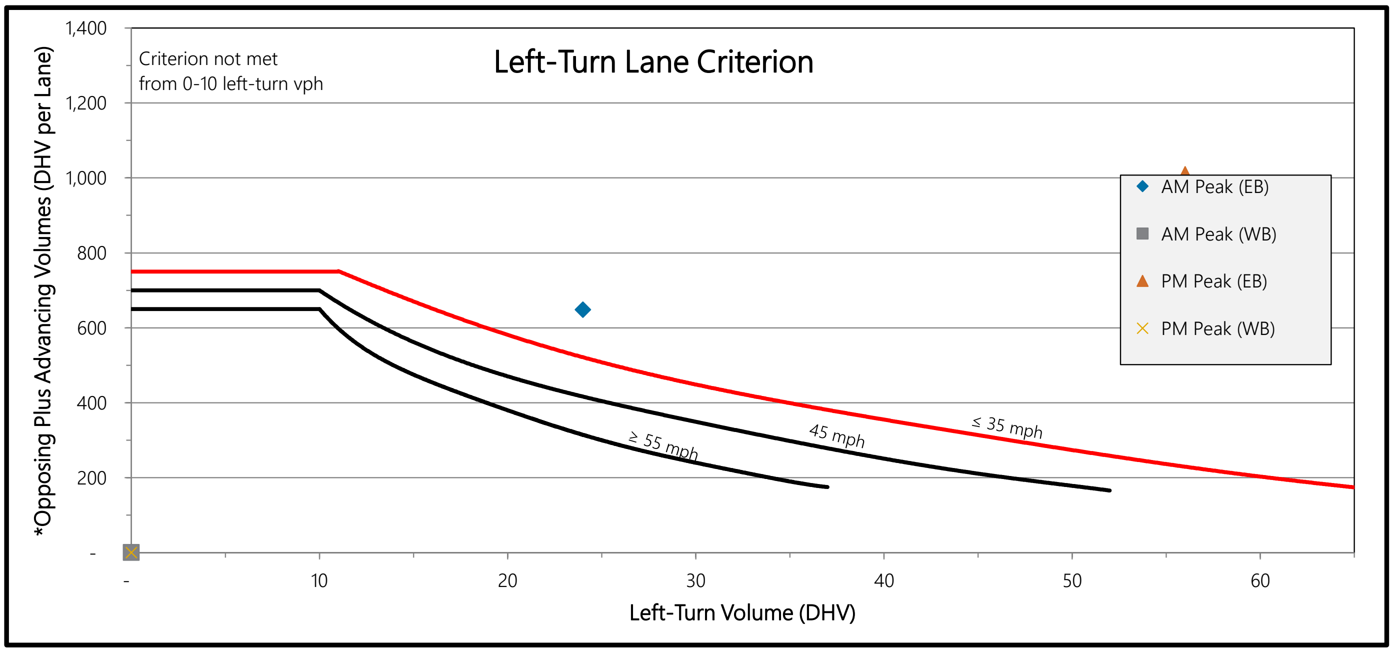
		SBR	SBT	SBL		
		46	-	12		
EBL	24				25	WBR
EBT	274		AM		325	WBT
EBR	-				-	WBL
		-	-	-		
		NBL	NBT	NBR		

		SBR	SBT	SBL		
		22	-	6		
EBL	56				23	WBR
EBT	488		PM		448	WBT
EBR	1				-	WBL
		-	-	-		
		NBL	NBT	NBR		

	EB	WB
Through Lanes (Including Shared):	1	1

Left-Turn Evaluation

	AM	PM
EB DHV Lefts =	24	56
WB DHV Lefts =	-	-
EB DHV (Opposing + Advancing) =	648	1,016
WB DHV (Opposing + Advancing) =	-	-



* (Advancing Volume/Advancing Thru Lanes) + (Opposing Volume/Opposing Thru Lanes). Opposing left-turns are not counted as opposing volumes.

Turn Lane Evaluation (E-W Hwy Orientation)

Evaluation:	Cooley Road
Highway:	OR 211 (Molalla Road)
MP:	0.41
Posted Speed:	45
Analyst:	J
Condition:	2025 Background

Turn Movement Volumes

AM

		SBR	SBT	SBL		
		16	2	2		
EBL	3				2	WBR
EBT	260		AM		271	WBT
EBR	23				28	WBL
		16	2	45		
		NBL	NBT	NBR		

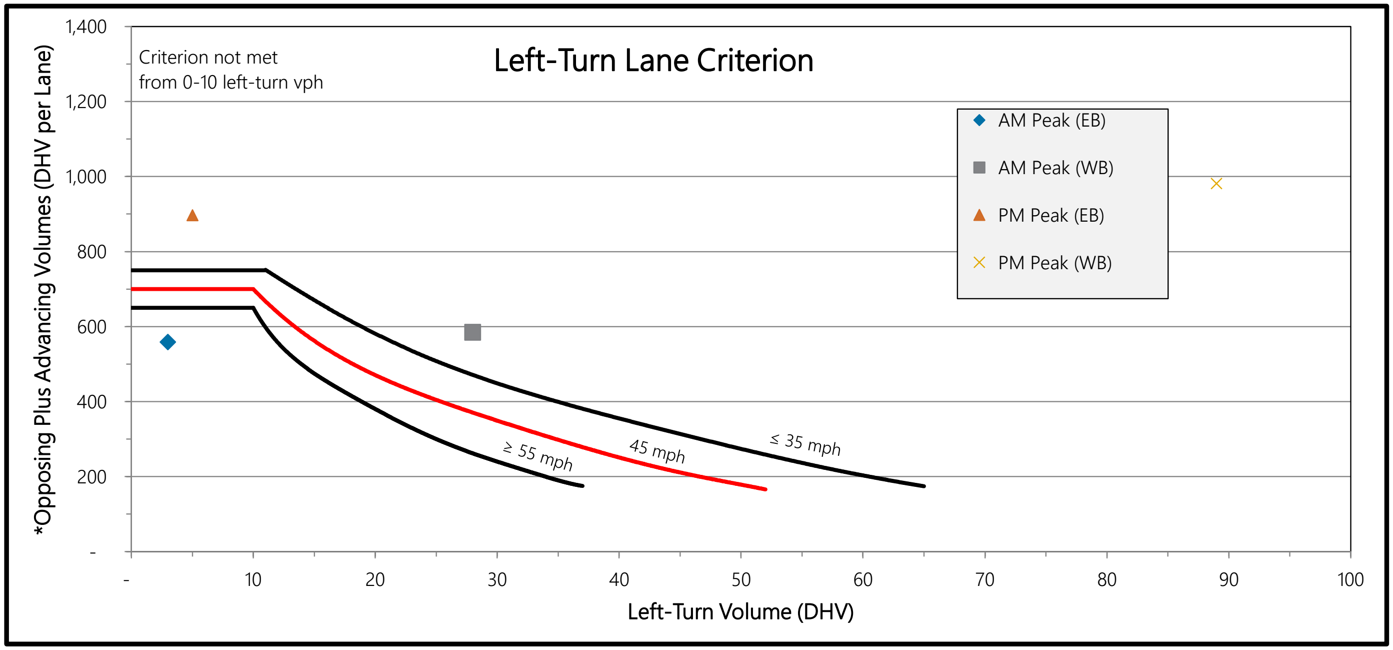
PM

		SBR	SBT	SBL		
		6	1	2		
EBL	5				-	WBR
EBT	406		PM		408	WBT
EBR	78				89	WBL
		23	-	59		
		NBL	NBT	NBR		

	EB	WB
Through Lanes (Including Shared):	1	1

Left-Turn Evaluation

	AM	PM
EB DHV Lefts =	3	5
WB DHV Lefts =	28	89
EB DHV (Opposing + Advancing) =	559	897
WB DHV (Opposing + Advancing) =	584	981



* (Advancing Volume/Advancing Thru Lanes) + (Opposing Volume/Opposing Thru Lanes). Opposing left-turns are not counted as opposing volumes.

Turn Lane Evaluation (E-W Hwy Orientation)

Evaluation:	Cooley Road
Highway:	OR 211 (Molalla Road)
MP:	0.41
Posted Speed:	45
Analyst:	J
Condition:	2025 Buildout

Turn Movement Volumes

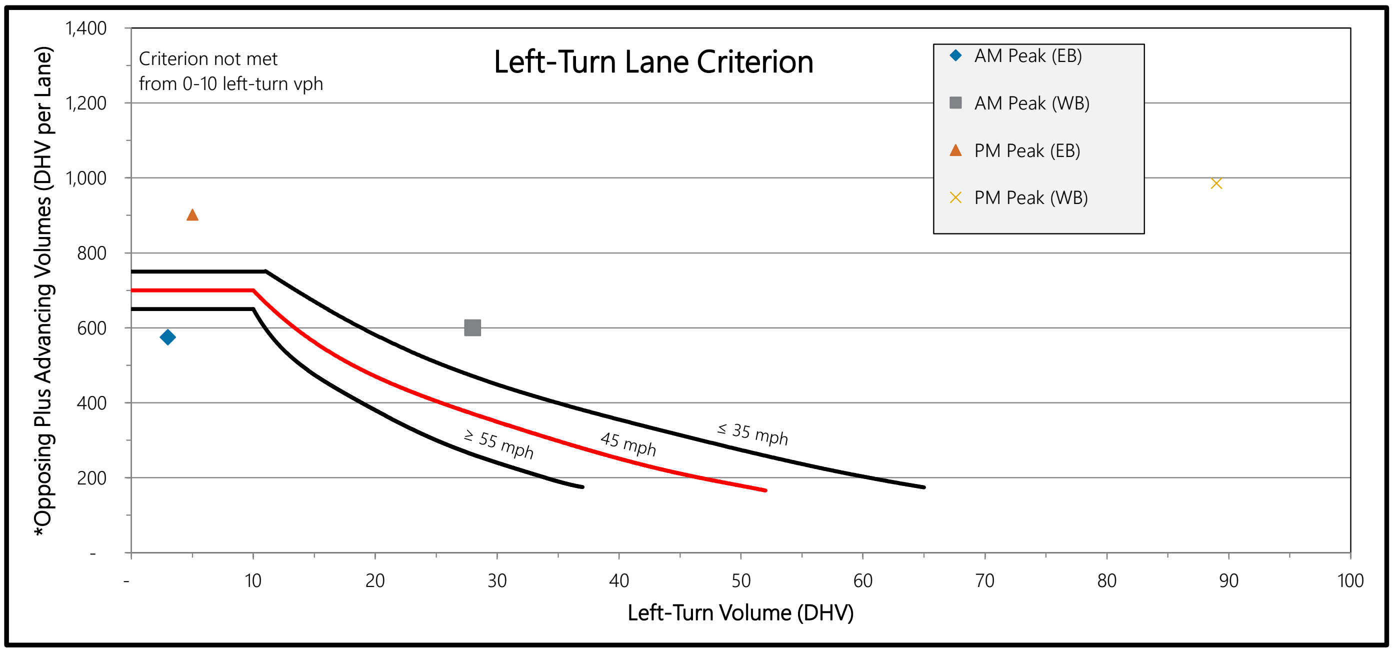
		SBR	SBT	SBL		
		16	2	2		
EBL	3				2	WBR
EBT	266		AM		277	WBT
EBR	27				28	WBL
		20	2	45		
		NBL	NBT	NBR		

		SBR	SBT	SBL		
		6	1	2		
EBL	5				-	WBR
EBT	408		PM		409	WBT
EBR	80				89	WBL
		25	-	59		
		NBL	NBT	NBR		

	EB	WB
Through Lanes (Including Shared):	1	1

Left-Turn Evaluation

	AM	PM
EB DHV Lefts =	3	5
WB DHV Lefts =	28	89
EB DHV (Opposing + Advancing) =	575	902
WB DHV (Opposing + Advancing) =	600	986



* (Advancing Volume/Advancing Thru Lanes) + (Opposing Volume/Opposing Thru Lanes). Opposing left-turns are not counted as opposing volumes.

Preliminary Traffic Signal Warrant Analysis

Project:	2115 Molalla Road
Date:	3/19/2024
Scenario:	Year 2025 Background Conditions - PM

Major Street:	Molalla Road (OR 211)	Minor Street:	Safeway Access	
Number of Lanes:	1	Number of Lanes:	1	
PM Peak Hour Volumes:	1227	PM Peak Hour Volumes:	292	Total
			129	Rights
			100%	RT Discount

Warrant Used:

X 100 percent of standard warrants used

___ 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100% Warrants	70% Warrants	100% Warrants	70% Warrants
Major St.	Minor St.				
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	12,270	8,850	
Minor Street*	1,630	2,650	No
Condition B: Interruption of Continuous Traffic			
Major Street	12,270	13,300	
Minor Street*	1,630	1,350	No
Combination Warrant			
Major Street	12,270	10,640	
Minor Street*	1,630	2,120	No

* Minor street right-turning traffic volumes reduced by 100%.

Preliminary Traffic Signal Warrant Analysis

Project:	2115 Molalla Road
Date:	3/19/2024
Scenario:	Year 2025 Buildout Conditions - PM

Major Street:	Molalla Road (OR 211)	Minor Street:	Safeway Access	
Number of Lanes:	1	Number of Lanes:	1	
PM Peak Hour Volumes:	1247	PM Peak Hour Volumes:	292	Total
			129	Rights
			100%	RT Discount

Warrant Used:

X	100 percent of standard warrants used
	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	12,470	8,850	
Minor Street*	1,630	2,650	No
Condition B: Interruption of Continuous Traffic			
Major Street	12,470	13,300	
Minor Street*	1,630	1,350	No
Combination Warrant			
Major Street	12,470	10,640	
Minor Street*	1,630	2,120	No

* Minor street right-turning traffic volumes reduced by 100%.

Preliminary Traffic Signal Warrant Analysis

Project:	2115 Molalla Road
Date:	3/19/2024
Scenario:	Year 2025 Background Conditions - PM

Major Street:	Molalla Road (OR 211)	Minor Street:	June Way/Woodburn Place West	
Number of Lanes:	1	Number of Lanes:	1	
PM Peak Hour Volumes:	1104	PM Peak Hour Volumes:	39	Total
			34	Rights
			50%	RT Discount

Warrant Used:

X 100 percent of standard warrants used

___ 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>WARRANT 1, CONDITION A</u>		100%	70%	100%	70%
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<u>WARRANT 1, CONDITION B</u>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	11,040	8,850	
Minor Street*	220	2,650	No
Condition B: Interruption of Continuous Traffic			
Major Street	11,040	13,300	
Minor Street*	220	1,350	No
Combination Warrant			
Major Street	11,040	10,640	
Minor Street*	220	2,120	No

* Minor street right-turning traffic volumes reduced by 50%.

Preliminary Traffic Signal Warrant Analysis

Project: 2115 Molalla Road
Date: 3/19/2024
Scenario: Year 2025 Buildout Conditions - PM

Major Street:	Molalla Road (OR 211)	Minor Street:	June Way/Woodburn Place West	
Number of Lanes:	1	Number of Lanes:	1	
PM Peak Hour Volumes:	1127	PM Peak Hour Volumes:	35	Total
			30	Rights
			50%	RT Discount

Warrant Used:

X — 100 percent of standard warrants used

___ — 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	11,270	8,850	
Minor Street*	200	2,650	No
Condition B: Interruption of Continuous Traffic			
Major Street	11,270	13,300	
Minor Street*	200	1,350	No
Combination Warrant			
Major Street	11,270	10,640	
Minor Street*	200	2,120	No

* Minor street right-turning traffic volumes reduced by 50%.

Preliminary Traffic Signal Warrant Analysis

Project:	2115 Molalla Road
Date:	3/19/2024
Scenario:	Year 2025 Buildout Conditions - PM

Major Street:	Molalla Road (OR 211)	Minor Street:	Primary Site Access	
Number of Lanes:	1	Number of Lanes:	1	
PM Peak Hour Volumes:	1039	PM Peak Hour Volumes:	37	Total
			20	Rights
			100%	RT Discount

Warrant Used:

X	100 percent of standard warrants used
	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	10,390	8,850	
Minor Street*	170	2,650	No
Condition B: Interruption of Continuous Traffic			
Major Street	10,390	13,300	
Minor Street*	170	1,350	No
Combination Warrant			
Major Street	10,390	10,640	
Minor Street*	170	2,120	No

* Minor street right-turning traffic volumes reduced by 100%.

Preliminary Traffic Signal Warrant Analysis

Project:	2115 Molalla Road
Date:	3/19/2024
Scenario:	Year 2025 Background Conditions - PM

Major Street:	Molalla Road (OR 211)	Minor Street:	Woodburn Place East	
Number of Lanes:	1	Number of Lanes:	1	
PM Peak Hour Volumes:	1017	PM Peak Hour Volumes:	15	Total
			15	Rights
			50%	RT Discount

Warrant Used:

X	100 percent of standard warrants used
	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	10,170	8,850	
Minor Street*	80	2,650	No
Condition B: Interruption of Continuous Traffic			
Major Street	10,170	13,300	
Minor Street*	80	1,350	No
Combination Warrant			
Major Street	10,170	10,640	
Minor Street*	80	2,120	No

* Minor street right-turning traffic volumes reduced by 50%.

Preliminary Traffic Signal Warrant Analysis

Project:	2115 Molalla Road
Date:	3/19/2024
Scenario:	Year 2025 Buildout Conditions - PM

Major Street:	Molalla Road (OR 211)	Minor Street:	Woodburn Place East	
Number of Lanes:	1	Number of Lanes:	1	
PM Peak Hour Volumes:	1016	PM Peak Hour Volumes:	28	Total
			22	Rights
			50%	RT Discount

Warrant Used:

X — 100 percent of standard warrants used

___ — 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	10,160	8,850	
Minor Street*	170	2,650	No
Condition B: Interruption of Continuous Traffic			
Major Street	10,160	13,300	
Minor Street*	170	1,350	No
Combination Warrant			
Major Street	10,160	10,640	
Minor Street*	170	2,120	No

* Minor street right-turning traffic volumes reduced by 50%.

Preliminary Traffic Signal Warrant Analysis

Project: 2115 Molalla Road
Date: 3/19/2024
Scenario: Year 2025 Background Conditions - PM

Major Street:	Molalla Road (OR 211)	Minor Street:	Cooley Road	
Number of Lanes:	1	Number of Lanes:	1	
PM Peak Hour Volumes:	986	PM Peak Hour Volumes:	82	Total
			59	Rights
			50%	RT Discount

Warrant Used:

- [ ] 100 percent of standard warrants used
- X 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>WARRANT 1, CONDITION A</u>		100%	70%	100%	70%
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<u>WARRANT 1, CONDITION B</u>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	9,860	6,200	
Minor Street*	530	1,850	No
Condition B: Interruption of Continuous Traffic			
Major Street	9,860	9,300	
Minor Street*	530	950	No
Combination Warrant			
Major Street	9,860	7,440	
Minor Street*	530	1,480	No

* Minor street right-turning traffic volumes reduced by 50%.

Preliminary Traffic Signal Warrant Analysis

Project: 2115 Molalla Road
Date: 3/19/2024
Scenario: Year 2025 Buildout Conditions - PM

Major Street:	Molalla Road (OR 211)	Minor Street:	Cooley Road	
Number of Lanes:	1	Number of Lanes:	1	
PM Peak Hour Volumes:	993	PM Peak Hour Volumes:	84	Total
			59	Rights
			50%	RT Discount

Warrant Used:

	100 percent of standard warrants used
X	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
WARRANT 1, CONDITION A		100%	70%	100%	70%
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
Condition A: Minimum Vehicular Volume			
Major Street	9,930	6,200	
Minor Street*	550	1,850	No
Condition B: Interruption of Continuous Traffic			
Major Street	9,930	9,300	
Minor Street*	550	950	No
Combination Warrant			
Major Street	9,930	7,440	
Minor Street*	550	1,480	No

* Minor street right-turning traffic volumes reduced by 50%.

Appendix D - Operations

Definitions

Synchro Reports

Queuing Reports

Level of Service Definitions

Level of service is used to describe the quality of traffic flow. Levels of service A to C are considered good, and rural roads are usually designed for level of service C. Urban streets and signalized intersections are typically designed for level of service D. Level of service E is considered to be the limit of acceptable delay. For unsignalized intersections, level of service E is generally considered acceptable. Here is a more complete description of levels of service:

- *Level of service A:* Very low delay at intersections, with all traffic signal cycles clearing and no vehicles waiting through more than one signal cycle. On highways, low volume and high speeds, with speeds not restricted by other vehicles.
- *Level of service B:* Operating speeds beginning to be affected by other traffic; short traffic delays at intersections. Higher average intersection delay than for level of service A resulting from more vehicles stopping.
- *Level of service C:* Operating speeds and maneuverability closely controlled by other traffic; higher delays at intersections than for level of service B due to a significant number of vehicles stopping. Not all signal cycles clear the waiting vehicles. This is the recommended design standard for rural highways.
- *Level of service D:* Tolerable operating speeds; long traffic delays occur at intersections. The influence of congestion is noticeable. At traffic signals many vehicles stop, and the proportion of vehicles not stopping declines. The number of signal cycle failures, for which vehicles must wait through more than one signal cycle, are noticeable. This is typically the design level for urban signalized intersections.
- *Level of service E:* Restricted speeds, very long traffic delays at traffic signals, and traffic volumes near capacity. Flow is unstable so that any interruption, no matter how minor, will cause queues to form and service to deteriorate to level of service F. Traffic signal cycle failures are frequent occurrences. For unsignalized intersections, level of service E or better is generally considered acceptable.
- *Level of service F:* Extreme delays, resulting in long queues which may interfere with other traffic movements. There may be stoppages of long duration, and speeds may drop to zero. There may be frequent signal cycle failures. Level of service F will typically result when vehicle arrival rates are greater than capacity. It is considered unacceptable by most drivers.

Level of Service Criteria
For Signalized Intersections

Level of Service (LOS)	Control Delay per Vehicle (Seconds)
A	<10
B	10-20
C	20-35
D	35-55
E	55-80
F	>80

Level of Service Criteria
For Unsignalized Intersections

Level of Service (LOS)	Control Delay per Vehicle (Seconds)
A	<10
B	10-15
C	15-25
D	25-35
E	35-50
F	>50

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	206	73	145	257	96	184	449	97	85	307	90
Future Volume (vph)	122	206	73	145	257	96	184	449	97	85	307	90
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	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	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1568	1549	1252	1554	1527		2906	3107	1282	1409	2825	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1568	1549	1252	1554	1527		2906	3107	1282	1409	2825	
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)	128	217	77	153	271	101	194	473	102	89	323	95
RTOR Reduction (vph)	0	0	57	0	11	0	0	0	71	0	24	0
Lane Group Flow (vph)	128	217	20	153	361	0	194	473	31	89	394	0
Confl. Peds. (#/hr)	4		3	3		4						
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	6%	13%	17%	7%	10%	8%	11%	7%	16%	18%	12%	18%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8						6			
Actuated Green, G (s)	11.4	23.4	23.4	13.6	25.6		11.0	26.9	26.9	9.0	24.9	
Effective Green, g (s)	11.9	23.9	23.9	14.1	26.1		11.5	27.4	27.4	9.5	25.4	
Actuated g/C Ratio	0.13	0.26	0.26	0.16	0.29		0.13	0.30	0.30	0.10	0.28	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	205	407	329	241	438		367	936	386	147	789	
v/s Ratio Prot	0.08	0.14		c0.10	c0.24		c0.07	c0.15		0.06	0.14	
v/s Ratio Perm			0.02						0.02			
v/c Ratio	0.62	0.53	0.06	0.63	0.82		0.53	0.51	0.08	0.61	0.50	
Uniform Delay, d1	37.4	28.7	25.1	36.0	30.2		37.2	26.2	22.7	38.9	27.4	
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	5.0	1.0	0.1	4.7	11.6		1.1	0.3	0.1	5.8	0.4	
Delay (s)	42.4	29.8	25.2	40.7	41.9		38.2	26.5	22.8	44.7	27.8	
Level of Service	D	C	C	D	D		D	C	C	D	C	
Approach Delay (s/veh)		32.8			41.5			29.0			30.8	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	33.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	90.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	122	206	73	145	257	96	184	449	97	85	307	90
Future Volume (veh/h)	122	206	73	145	257	96	184	449	97	85	307	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1668	1573	1518	1654	1614	1641	1600	1654	1532	1504	1586	1504
Adj Flow Rate, veh/h	128	217	0	153	271	90	194	473	55	89	323	69
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	13	17	7	10	8	11	7	16	18	12	18
Cap, veh/h	171	416		200	329	109	335	923	381	140	687	145
Arrive On Green	0.11	0.26	0.00	0.13	0.28	0.28	0.11	0.29	0.29	0.10	0.28	0.27
Sat Flow, veh/h	1589	1573	1286	1576	1158	385	2956	3143	1298	1433	2471	520
Grp Volume(v), veh/h	128	217	0	153	0	361	194	473	55	89	195	197
Grp Sat Flow(s),veh/h/ln	1589	1573	1286	1576	0	1542	1478	1572	1298	1433	1507	1485
Q Serve(g_s), s	5.8	8.7	0.0	6.9	0.0	16.1	4.6	9.2	2.3	4.4	7.9	8.2
Cycle Q Clear(g_c), s	5.8	8.7	0.0	6.9	0.0	16.1	4.6	9.2	2.3	4.4	7.9	8.2
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	171	416		200	0	439	335	923	381	140	419	413
V/C Ratio(X)	0.75	0.52		0.76	0.00	0.82	0.58	0.51	0.14	0.64	0.47	0.48
Avail Cap(c_a), veh/h	280	672		427	0	805	561	1556	642	311	787	775
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.0	23.1	0.0	31.1	0.0	24.7	31.0	21.7	19.2	32.0	22.1	22.2
Incr Delay (d2), s/veh	4.9	0.8	0.0	4.5	0.0	3.0	1.2	0.3	0.1	3.5	0.6	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	3.1	0.0	2.8	0.0	5.8	1.6	3.2	0.7	1.6	2.7	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	36.8	23.9	0.0	35.6	0.0	27.7	32.2	22.0	19.3	35.5	22.7	22.9
LnGrp LOS	D	C		D		C	C	C	B	D	C	C
Approach Vol, veh/h		345			514			722			481	
Approach Delay, s/veh		28.7			30.0			24.5			25.1	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.3	24.5	11.9	25.0	11.2	25.6	13.4	23.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	13.5	38.0	12.5	38.0	15.5	36.0	19.5	31.0
Max Q Clear Time (g_c+I1), s	6.6	10.2	7.8	18.1	6.4	11.2	8.9	10.7
Green Ext Time (p_c), s	0.4	4.2	0.2	1.4	0.2	5.6	0.4	0.7

Intersection Summary	
HCM 7th Control Delay, s/veh	26.7
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	255	133	17	366	138	28
Future Vol, veh/h	255	133	17	366	138	28
Conflicting Peds, #/hr	0	0	0	0	0	4
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	100	-	-	0	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	21	4	0	12	1	7
Mvmt Flow	277	145	18	398	150	30

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	277	0	712	281
Stage 1	-	-	-	-	277	-
Stage 2	-	-	-	-	435	-
Critical Hdwy	-	-	4.1	-	6.41	6.27
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.2	-	3.509	3.363
Pot Cap-1 Maneuver	-	-	1297	-	400	746
Stage 1	-	-	-	-	772	-
Stage 2	-	-	-	-	655	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1297	-	393	743
Mov Cap-2 Maneuver	-	-	-	-	393	-
Stage 1	-	-	-	-	772	-
Stage 2	-	-	-	-	643	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.35	18.07
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	393	743	-	-	80	-
HCM Lane V/C Ratio	0.382	0.041	-	-	0.014	-
HCM Control Delay (s/veh)	19.7	10.1	-	-	7.8	0
HCM Lane LOS	C	B	-	-	A	A
HCM 95th %tile Q(veh)	1.7	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	277	15	4	349	0	32	0	1	0	0	0
Future Vol, veh/h	0	277	15	4	349	0	32	0	1	0	0	0
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	19	0	75	12	0	0	0	0	0	0	0
Mvmt Flow	0	298	16	4	375	0	34	0	1	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	375	0	0	315	0	0	691	691	307	682	699	375
Stage 1	-	-	-	-	-	-	307	307	-	384	384	-
Stage 2	-	-	-	-	-	-	384	384	-	298	315	-
Critical Hdwy	4.1	-	-	4.85	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.875	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1194	-	-	927	-	-	362	370	738	367	366	676
Stage 1	-	-	-	-	-	-	707	665	-	643	615	-
Stage 2	-	-	-	-	-	-	643	615	-	715	659	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1194	-	-	926	-	-	360	368	737	364	364	676
Mov Cap-2 Maneuver	-	-	-	-	-	-	360	368	-	473	455	-
Stage 1	-	-	-	-	-	-	707	664	-	640	612	-
Stage 2	-	-	-	-	-	-	640	612	-	714	659	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.1	15.91	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	365	1194	-	-	926	-	-	-
HCM Lane V/C Ratio	0.097	-	-	-	0.005	-	-	-
HCM Control Delay (s/veh)	15.9	0	-	-	8.9	-	-	0
HCM Lane LOS	C	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	-

Intersection						
Int Delay, s/veh	0					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	278	353	0	0	0
Future Vol, veh/h	0	278	353	0	0	0
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	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	19	12	2	2	2
Mvmt Flow	0	299	380	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	380	0	-	0	678	380
Stage 1	-	-	-	-	380	-
Stage 2	-	-	-	-	299	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1179	-	-	-	417	667
Stage 1	-	-	-	-	692	-
Stage 2	-	-	-	-	752	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1179	-	-	-	417	667
Mov Cap-2 Maneuver	-	-	-	-	519	-
Stage 1	-	-	-	-	692	-
Stage 2	-	-	-	-	752	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1179	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	18	260	327	3	1	26
Future Vol, veh/h	18	260	327	3	1	26
Conflicting Peds, #/hr	2	0	0	2	3	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	20	13	33	0	4
Mvmt Flow	20	283	355	3	1	28

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	361	0	-	0	684	362
Stage 1	-	-	-	-	359	-
Stage 2	-	-	-	-	325	-
Critical Hdwy	4.16	-	-	-	6.4	6.24
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.254	-	-	-	3.5	3.336
Pot Cap-1 Maneuver	1176	-	-	-	418	678
Stage 1	-	-	-	-	711	-
Stage 2	-	-	-	-	737	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1174	-	-	-	409	675
Mov Cap-2 Maneuver	-	-	-	-	513	-
Stage 1	-	-	-	-	698	-
Stage 2	-	-	-	-	736	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.53	0	10.64
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1174	-	-	-	667
HCM Lane V/C Ratio	0.017	-	-	-	0.044
HCM Control Delay (s/veh)	8.1	-	-	-	10.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	249	19	28	264	2	15	2	45	2	2	16
Future Vol, veh/h	3	249	19	28	264	2	15	2	45	2	2	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	400	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	67	18	32	4	13	0	13	50	0	0	100	50
Mvmt Flow	3	268	20	30	284	2	16	2	48	2	2	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	286	0	0	288	0	0	630	631	278	620	640	285
Stage 1	-	-	-	-	-	-	284	284	-	345	345	-
Stage 2	-	-	-	-	-	-	345	346	-	275	295	-
Critical Hdwy	4.77	-	-	4.14	-	-	7.23	7	6.2	7.1	7.5	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.23	6	-	6.1	6.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.23	6	-	6.1	6.5	-
Follow-up Hdwy	2.803	-	-	2.236	-	-	3.617	4.45	3.3	3.5	4.9	3.75
Pot Cap-1 Maneuver	981	-	-	1262	-	-	379	342	766	403	290	653
Stage 1	-	-	-	-	-	-	699	597	-	675	494	-
Stage 2	-	-	-	-	-	-	648	558	-	735	524	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	981	-	-	1262	-	-	357	333	766	365	282	653
Mov Cap-2 Maneuver	-	-	-	-	-	-	458	410	-	365	282	-
Stage 1	-	-	-	-	-	-	697	595	-	659	482	-
Stage 2	-	-	-	-	-	-	613	545	-	684	522	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.1	0.75	11.24	11.95
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	643	981	-	-	1262	-	-	540
HCM Lane V/C Ratio	0.104	0.003	-	-	0.024	-	-	0.04
HCM Control Delay (s/veh)	11.2	8.7	-	-	7.9	-	-	11.9
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	182	369	275	238	300	60	221	391	108	163	732	117
Future Volume (vph)	182	369	275	238	300	60	221	391	108	163	732	117
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	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	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1568	1667	1411	1614	1600		3101	3167	1319	1630	3129	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1568	1667	1411	1614	1600		3101	3167	1319	1630	3129	
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)	196	397	296	256	323	65	238	420	116	175	787	126
RTOR Reduction (vph)	0	0	181	0	6	0	0	0	84	0	11	0
Lane Group Flow (vph)	196	397	115	256	382	0	238	420	32	175	902	0
Confl. Peds. (#/hr)	3		9	9		3	5		2	2		2
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	6%	5%	3%	3%	7%	3%	4%	5%	10%	2%	4%	3%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8						6			
Actuated Green, G (s)	15.4	29.0	29.0	19.1	32.7		10.4	30.1	30.1	16.1	35.8	
Effective Green, g (s)	15.9	29.5	29.5	19.6	33.2		10.9	30.6	30.6	16.6	36.3	
Actuated g/C Ratio	0.14	0.26	0.26	0.17	0.30		0.10	0.27	0.27	0.15	0.32	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	222	437	370	281	473		300	862	359	240	1011	
v/s Ratio Prot	0.12	c0.24		c0.16	c0.24		0.08	0.13		c0.11	c0.29	
v/s Ratio Perm			0.08						0.02			
v/c Ratio	0.88	0.91	0.31	0.91	0.81		0.79	0.49	0.09	0.73	0.89	
Uniform Delay, d1	47.3	40.1	33.2	45.5	36.6		49.6	34.3	30.4	45.7	36.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	31.0	22.3	0.3	31.4	9.5		13.0	0.3	0.1	9.9	10.0	
Delay (s)	78.2	62.4	33.6	76.9	46.1		62.6	34.6	30.5	55.6	46.2	
Level of Service	E	E	C	E	D		E	C	C	E	D	
Approach Delay (s/veh)		56.3			58.4			42.6			47.7	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	50.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	112.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	82.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	182	369	275	238	300	60	221	391	108	163	732	117
Future Volume (veh/h)	182	369	275	238	300	60	221	391	108	163	732	117
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1668	1682	1709	1709	1654	1709	1695	1682	1614	1723	1695	1709
Adj Flow Rate, veh/h	196	397	0	256	323	60	238	420	62	175	787	115
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	6	5	3	3	7	3	4	5	10	2	4	3
Cap, veh/h	224	430		280	388	72	302	968	402	211	944	138
Arrive On Green	0.14	0.26	0.00	0.17	0.29	0.28	0.10	0.30	0.30	0.13	0.33	0.33
Sat Flow, veh/h	1589	1682	1448	1628	1355	252	3132	3195	1327	1641	2819	412
Grp Volume(v), veh/h	196	397	0	256	0	383	238	420	62	175	450	452
Grp Sat Flow(s),veh/h/ln	1589	1682	1448	1628	0	1606	1566	1598	1327	1641	1611	1620
Q Serve(g_s), s	13.7	26.1	0.0	17.5	0.0	25.3	8.4	12.0	3.9	11.8	29.2	29.2
Cycle Q Clear(g_c), s	13.7	26.1	0.0	17.5	0.0	25.3	8.4	12.0	3.9	11.8	29.2	29.2
Prop In Lane	1.00		1.00	1.00		0.16	1.00		1.00	1.00		0.25
Lane Grp Cap(c), veh/h	224	430		280	0	460	302	968	402	211	539	542
V/C Ratio(X)	0.87	0.92		0.91	0.00	0.83	0.79	0.43	0.15	0.83	0.83	0.83
Avail Cap(c_a), veh/h	224	460		280	0	489	304	968	402	304	604	607
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.7	41.1	0.0	46.1	0.0	37.9	50.1	31.7	28.9	48.2	34.8	34.9
Incr Delay (d2), s/veh	29.1	23.2	0.0	32.1	0.0	10.8	12.5	0.2	0.1	10.6	8.6	8.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.2	13.3	0.0	9.5	0.0	11.1	3.8	4.6	1.2	5.4	12.4	12.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	76.8	64.3	0.0	78.2	0.0	48.7	62.6	32.0	29.0	58.8	43.4	43.4
LnGrp LOS	E	E		E		D	E	C	C	E	D	D
Approach Vol, veh/h		593			639			720			1077	
Approach Delay, s/veh		68.4			60.5			41.8			45.9	
Approach LOS		E			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.9	42.0	20.0	36.5	18.6	38.3	23.5	33.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	10.5	42.0	15.5	34.0	20.5	32.0	19.0	30.5
Max Q Clear Time (g_c+I1), s	10.4	31.2	15.7	27.3	13.8	14.0	19.5	28.1
Green Ext Time (p_c), s	0.0	6.2	0.0	0.9	0.3	4.3	0.0	0.4

Intersection Summary	
HCM 7th Control Delay, s/veh	52.4
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	6.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	435	193	36	453	161	128
Future Vol, veh/h	435	193	36	453	161	128
Conflicting Peds, #/hr	0	1	1	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	100	-	-	0	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	7	0	0	8	0	2
Mvmt Flow	468	208	39	487	173	138

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	469	0	1033	470
Stage 1	-	-	-	-	469	-
Stage 2	-	-	-	-	565	-
Critical Hdwy	-	-	4.1	-	6.4	6.22
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.318
Pot Cap-1 Maneuver	-	-	1103	-	260	594
Stage 1	-	-	-	-	634	-
Stage 2	-	-	-	-	573	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1102	-	247	593
Mov Cap-2 Maneuver	-	-	-	-	247	-
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	546	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.62	32.35
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	247	593	-	-	133	-
HCM Lane V/C Ratio	0.701	0.232	-	-	0.035	-
HCM Control Delay (s/veh)	47.8	12.9	-	-	8.4	0
HCM Lane LOS	E	B	-	-	A	A
HCM 95th %tile Q(veh)	4.7	0.9	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	522	42	4	453	0	20	0	5	0	0	0
Future Vol, veh/h	0	522	42	4	453	0	20	0	5	0	0	0
Conflicting Peds, #/hr	2	0	3	3	0	2	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	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	6	0	0	8	0	0	0	20	0	0	0
Mvmt Flow	0	555	45	4	482	0	21	0	5	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	484	0	0	603	0	0	1071	1073	581	1048	1095	484
Stage 1	-	-	-	-	-	-	581	581	-	492	492	-
Stage 2	-	-	-	-	-	-	490	492	-	555	603	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.4	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.48	3.5	4	3.3
Pot Cap-1 Maneuver	1089	-	-	984	-	-	200	222	482	208	215	587
Stage 1	-	-	-	-	-	-	503	503	-	562	551	-
Stage 2	-	-	-	-	-	-	563	551	-	519	492	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1087	-	-	982	-	-	199	220	480	204	213	586
Mov Cap-2 Maneuver	-	-	-	-	-	-	199	220	-	336	332	-
Stage 1	-	-	-	-	-	-	502	502	-	558	547	-
Stage 2	-	-	-	-	-	-	561	547	-	514	490	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.08	23.12	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	225	1087	-	-	982	-	-	-
HCM Lane V/C Ratio	0.118	-	-	-	0.004	-	-	-
HCM Control Delay (s/veh)	23.1	0	-	-	8.7	-	-	0
HCM Lane LOS	C	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	-

Intersection						
Int Delay, s/veh	0					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	533	452	0	0	0
Future Vol, veh/h	0	533	452	0	0	0
Conflicting Peds, #/hr	2	0	0	2	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	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	6	8	2	2	2
Mvmt Flow	0	573	486	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	488	0	-	0	1061	488
Stage 1	-	-	-	-	488	-
Stage 2	-	-	-	-	573	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1075	-	-	-	248	580
Stage 1	-	-	-	-	617	-
Stage 2	-	-	-	-	564	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1073	-	-	-	247	579
Mov Cap-2 Maneuver	-	-	-	-	381	-
Stage 1	-	-	-	-	616	-
Stage 2	-	-	-	-	563	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1073	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑	↱		Y	
Traffic Vol, veh/h	57	475	437	14	0	15
Future Vol, veh/h	57	475	437	14	0	15
Conflicting Peds, #/hr	3	0	0	3	3	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	7	8	0	0	0
Mvmt Flow	62	516	475	15	0	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	493	0	-	0	1129	489
Stage 1	-	-	-	-	486	-
Stage 2	-	-	-	-	643	-
Critical Hdwy	4.14	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.236	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1060	-	-	-	228	583
Stage 1	-	-	-	-	623	-
Stage 2	-	-	-	-	527	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1057	-	-	-	213	580
Mov Cap-2 Maneuver	-	-	-	-	349	-
Stage 1	-	-	-	-	585	-
Stage 2	-	-	-	-	526	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.92	0	11.39
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1057	-	-	-	580
HCM Lane V/C Ratio	0.059	-	-	-	0.028
HCM Control Delay (s/veh)	8.6	-	-	-	11.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.1

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	395	75	88	395	0	20	0	58	2	1	6
Future Vol, veh/h	5	395	75	88	395	0	20	0	58	2	1	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	400	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	20	7	3	0	9	0	5	0	3	0	0	0
Mvmt Flow	5	425	81	95	425	0	22	0	62	2	1	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	425	0	0	505	0	0	1090	1090	465	1049	1130	425
Stage 1	-	-	-	-	-	-	476	476	-	614	614	-
Stage 2	-	-	-	-	-	-	615	614	-	435	516	-
Critical Hdwy	4.3	-	-	4.1	-	-	7.15	6.5	6.23	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.38	-	-	2.2	-	-	3.545	4	3.327	3.5	4	3.3
Pot Cap-1 Maneuver	1045	-	-	1070	-	-	190	217	595	207	205	634
Stage 1	-	-	-	-	-	-	564	560	-	483	486	-
Stage 2	-	-	-	-	-	-	474	486	-	603	538	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1045	-	-	1070	-	-	170	197	595	168	186	634
Mov Cap-2 Maneuver	-	-	-	-	-	-	295	311	-	168	186	-
Stage 1	-	-	-	-	-	-	561	557	-	440	443	-
Stage 2	-	-	-	-	-	-	426	443	-	537	535	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.09	1.58	14.27	16.01
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	472	1045	-	-	1070	-	-	337
HCM Lane V/C Ratio	0.178	0.005	-	-	0.088	-	-	0.029
HCM Control Delay (s/veh)	14.3	8.5	-	-	8.7	-	-	16
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.6	0	-	-	0.3	-	-	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	219	84	168	291	118	215	470	105	93	318	92
Future Volume (vph)	125	219	84	168	291	118	215	470	105	93	318	92
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	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	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1568	1549	1252	1554	1523		2906	3107	1282	1409	2826	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1568	1549	1252	1554	1523		2906	3107	1282	1409	2826	
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)	132	231	88	177	306	124	226	495	111	98	335	97
RTOR Reduction (vph)	0	0	63	0	12	0	0	0	79	0	24	0
Lane Group Flow (vph)	132	231	25	177	418	0	226	495	32	98	408	0
Confl. Peds. (#/hr)	4		3	3		4						
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	6%	13%	17%	7%	10%	8%	11%	7%	16%	18%	12%	18%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8						6			
Actuated Green, G (s)	11.6	27.1	27.1	15.4	30.9		11.7	27.4	27.4	9.6	25.3	
Effective Green, g (s)	12.1	27.6	27.6	15.9	31.4		12.2	27.9	27.9	10.1	25.8	
Actuated g/C Ratio	0.12	0.28	0.28	0.16	0.32		0.13	0.29	0.29	0.10	0.26	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	194	438	354	253	490		363	889	366	145	747	
v/s Ratio Prot	0.08	0.15		c0.11	c0.27		c0.08	c0.16		0.07	0.14	
v/s Ratio Perm			0.02						0.02			
v/c Ratio	0.68	0.53	0.07	0.70	0.85		0.62	0.56	0.09	0.68	0.55	
Uniform Delay, d1	40.9	29.5	25.6	38.5	30.9		40.5	29.6	25.5	42.1	30.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	8.6	0.9	0.1	7.6	13.3		2.9	0.6	0.1	10.8	0.6	
Delay (s)	49.5	30.3	25.6	46.1	44.2		43.3	30.2	25.5	52.9	31.5	
Level of Service	D	C	C	D	D		D	C	C	D	C	
Approach Delay (s/veh)		35.0			44.7			33.1			35.4	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	36.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	97.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱		↰↰	↑↑	↱	↰	↑↑↱	
Traffic Volume (veh/h)	125	219	84	168	291	118	215	470	105	93	318	92
Future Volume (veh/h)	125	219	84	168	291	118	215	470	105	93	318	92
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1668	1573	1518	1654	1614	1641	1600	1654	1532	1504	1586	1504
Adj Flow Rate, veh/h	132	231	0	177	306	113	226	495	64	98	335	71
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	13	17	7	10	8	11	7	16	18	12	18
Cap, veh/h	172	444		224	355	131	326	865	357	138	646	135
Arrive On Green	0.11	0.28	0.00	0.14	0.32	0.31	0.11	0.28	0.28	0.10	0.26	0.25
Sat Flow, veh/h	1589	1573	1286	1576	1122	415	2956	3143	1298	1433	2474	518
Grp Volume(v), veh/h	132	231	0	177	0	419	226	495	64	98	202	204
Grp Sat Flow(s),veh/h/ln	1589	1573	1286	1576	0	1537	1478	1572	1298	1433	1507	1485
Q Serve(g_s), s	6.3	9.7	0.0	8.5	0.0	20.1	5.8	10.6	3.0	5.2	9.0	9.2
Cycle Q Clear(g_c), s	6.3	9.7	0.0	8.5	0.0	20.1	5.8	10.6	3.0	5.2	9.0	9.2
Prop In Lane	1.00		1.00	1.00		0.27	1.00		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	172	444		224	0	486	326	865	357	138	393	388
V/C Ratio(X)	0.77	0.52		0.79	0.00	0.86	0.69	0.57	0.18	0.71	0.51	0.53
Avail Cap(c_a), veh/h	263	631		401	0	754	527	1461	603	292	739	728
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.0	23.7	0.0	32.5	0.0	25.3	33.6	24.5	21.7	34.4	24.8	24.9
Incr Delay (d2), s/veh	5.3	0.7	0.0	4.6	0.0	5.4	2.0	0.4	0.2	5.0	0.8	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	3.5	0.0	3.4	0.0	7.5	2.1	3.8	0.9	1.9	3.1	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.4	24.4	0.0	37.1	0.0	30.7	35.6	24.9	21.9	39.4	25.5	25.8
LnGrp LOS	D	C		D		C	D	C	C	D	C	C
Approach Vol, veh/h		363			596			785			504	
Approach Delay, s/veh		29.9			32.6			27.7			28.3	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.7	24.5	12.5	28.8	11.6	25.6	15.2	26.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	13.5	38.0	12.5	38.0	15.5	36.0	19.5	31.0
Max Q Clear Time (g_c+I1), s	7.8	11.2	8.3	22.1	7.2	12.6	10.5	11.7
Green Ext Time (p_c), s	0.4	4.3	0.1	1.6	0.2	5.8	0.4	0.8

Intersection Summary			
HCM 7th Control Delay, s/veh			29.5
HCM 7th LOS			C

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	281	134	17	443	139	28
Future Vol, veh/h	281	134	17	443	139	28
Conflicting Peds, #/hr	0	0	0	0	0	4
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	100	-	-	0	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	21	4	0	12	1	7
Mvmt Flow	305	146	18	482	151	30

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	305	0	824	309
Stage 1	-	-	-	-	305	-
Stage 2	-	-	-	-	518	-
Critical Hdwy	-	-	4.1	-	6.41	6.27
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.2	-	3.509	3.363
Pot Cap-1 Maneuver	-	-	1267	-	344	719
Stage 1	-	-	-	-	750	-
Stage 2	-	-	-	-	600	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1267	-	337	716
Mov Cap-2 Maneuver	-	-	-	-	337	-
Stage 1	-	-	-	-	750	-
Stage 2	-	-	-	-	588	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.29	21.73
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	337	716	-	-	67	-
HCM Lane V/C Ratio	0.448	0.042	-	-	0.015	-
HCM Control Delay (s/veh)	24	10.2	-	-	7.9	0
HCM Lane LOS	C	B	-	-	A	A
HCM 95th %tile Q(veh)	2.2	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	283	15	4	357	2	32	1	1	9	2	68
Future Vol, veh/h	20	283	15	4	357	2	32	1	1	9	2	68
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	19	0	75	12	0	0	0	0	0	0	0
Mvmt Flow	22	304	16	4	384	2	34	1	1	10	2	73

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	386	0	0	321	0	0	750	751	313	741	758	385
Stage 1	-	-	-	-	-	-	356	356	-	394	394	-
Stage 2	-	-	-	-	-	-	394	395	-	348	364	-
Critical Hdwy	4.1	-	-	4.85	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.875	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1183	-	-	921	-	-	330	342	732	334	339	667
Stage 1	-	-	-	-	-	-	665	632	-	635	609	-
Stage 2	-	-	-	-	-	-	635	608	-	672	627	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1183	-	-	920	-	-	284	333	731	324	329	667
Mov Cap-2 Maneuver	-	-	-	-	-	-	284	333	-	441	428	-
Stage 1	-	-	-	-	-	-	650	618	-	632	606	-
Stage 2	-	-	-	-	-	-	561	605	-	655	613	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.51	0.1	19.15	11.7
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	291	112	-	-	920	-	-	622
HCM Lane V/C Ratio	0.126	0.018	-	-	0.005	-	-	0.137
HCM Control Delay (s/veh)	19.1	8.1	0	-	8.9	-	-	11.7
HCM Lane LOS	C	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0	-	-	0.5

Intersection						
Int Delay, s/veh	0					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	294	363	0	0	0
Future Vol, veh/h	0	294	363	0	0	0
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	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	19	12	2	2	2
Mvmt Flow	0	316	390	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	390	0	-	0	706	390
Stage 1	-	-	-	-	390	-
Stage 2	-	-	-	-	316	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1168	-	-	-	402	658
Stage 1	-	-	-	-	684	-
Stage 2	-	-	-	-	739	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1168	-	-	-	402	658
Mov Cap-2 Maneuver	-	-	-	-	507	-
Stage 1	-	-	-	-	684	-
Stage 2	-	-	-	-	739	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1168	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	18	275	337	3	1	26
Future Vol, veh/h	18	275	337	3	1	26
Conflicting Peds, #/hr	2	0	0	2	3	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	20	13	33	0	4
Mvmt Flow	20	299	366	3	1	28

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	372	0	-	0	711	373
Stage 1	-	-	-	-	370	-
Stage 2	-	-	-	-	341	-
Critical Hdwy	4.16	-	-	-	6.4	6.24
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.254	-	-	-	3.5	3.336
Pot Cap-1 Maneuver	1165	-	-	-	403	669
Stage 1	-	-	-	-	703	-
Stage 2	-	-	-	-	725	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1163	-	-	-	394	666
Mov Cap-2 Maneuver	-	-	-	-	502	-
Stage 1	-	-	-	-	690	-
Stage 2	-	-	-	-	723	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.5	0	10.73
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1163	-	-	-	658
HCM Lane V/C Ratio	0.017	-	-	-	0.045
HCM Control Delay (s/veh)	8.1	-	-	-	10.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	260	23	28	271	2	16	2	45	2	2	16
Future Vol, veh/h	3	260	23	28	271	2	16	2	45	2	2	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	400	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	67	18	32	4	13	0	13	50	0	0	100	50
Mvmt Flow	3	280	25	30	291	2	17	2	48	2	2	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	294	0	0	304	0	0	651	652	292	640	663	292
Stage 1	-	-	-	-	-	-	298	298	-	353	353	-
Stage 2	-	-	-	-	-	-	353	354	-	287	311	-
Critical Hdwy	4.77	-	-	4.14	-	-	7.23	7	6.2	7.1	7.5	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.23	6	-	6.1	6.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.23	6	-	6.1	6.5	-
Follow-up Hdwy	2.803	-	-	2.236	-	-	3.617	4.45	3.3	3.5	4.9	3.75
Pot Cap-1 Maneuver	974	-	-	1245	-	-	367	332	752	391	280	646
Stage 1	-	-	-	-	-	-	687	588	-	668	489	-
Stage 2	-	-	-	-	-	-	642	554	-	725	514	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	974	-	-	1245	-	-	345	322	752	354	272	646
Mov Cap-2 Maneuver	-	-	-	-	-	-	449	402	-	354	272	-
Stage 1	-	-	-	-	-	-	685	586	-	652	478	-
Stage 2	-	-	-	-	-	-	607	540	-	673	512	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.09	0.74	11.43	12.08
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	627	974	-	-	1245	-	-	530
HCM Lane V/C Ratio	0.108	0.003	-	-	0.024	-	-	0.041
HCM Control Delay (s/veh)	11.4	8.7	-	-	8	-	-	12.1
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0.1	-	-	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑↱		↰↰	↑↑	↱	↰	↑↑↱	
Traffic Volume (vph)	186	400	309	254	321	71	244	406	127	182	759	120
Future Volume (vph)	186	400	309	254	321	71	244	406	127	182	759	120
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	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	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1568	1667	1410	1614	1598		3101	3167	1319	1630	3130	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1568	1667	1410	1614	1598		3101	3167	1319	1630	3130	
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)	200	430	332	273	345	76	262	437	137	196	816	129
RTOR Reduction (vph)	0	0	174	0	6	0	0	0	100	0	11	0
Lane Group Flow (vph)	200	430	158	273	415	0	262	437	37	196	934	0
Confl. Peds. (#/hr)	3		9	9		3	5		2	2		2
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	6%	5%	3%	3%	7%	3%	4%	5%	10%	2%	4%	3%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8						6			
Actuated Green, G (s)	15.5	30.6	30.6	19.0	34.1		10.5	30.6	30.6	17.3	37.4	
Effective Green, g (s)	16.0	31.1	31.1	19.5	34.6		11.0	31.1	31.1	17.8	37.9	
Actuated g/C Ratio	0.14	0.27	0.27	0.17	0.30		0.10	0.27	0.27	0.15	0.33	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	217	448	379	272	478		295	852	355	251	1027	
v/s Ratio Prot	0.13	c0.26		c0.17	c0.26		c0.08	0.14		c0.12	c0.30	
v/s Ratio Perm			0.11						0.03			
v/c Ratio	0.92	0.96	0.42	1.00	0.87		0.89	0.51	0.10	0.78	0.91	
Uniform Delay, d1	49.1	41.6	34.7	48.0	38.3		51.6	35.8	31.7	47.0	37.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	39.9	31.9	0.5	55.5	15.1		25.8	0.4	0.1	14.0	11.5	
Delay (s)	89.0	73.5	35.3	103.5	53.4		77.4	36.2	31.8	61.0	48.7	
Level of Service	F	E	D	F	D		E	D	C	E	D	
Approach Delay (s/veh)		63.5			73.1			48.4			50.8	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	57.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	115.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM 7th Signalized Intersection Summary
1: N Pacific Hwy(99E) & Mt Hood Ave (OR 214)/Molalla Road (OR 211) 10/06/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	186	400	309	254	321	71	244	406	127	182	759	120
Future Volume (veh/h)	186	400	309	254	321	71	244	406	127	182	759	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1668	1682	1709	1709	1654	1709	1695	1682	1614	1723	1695	1709
Adj Flow Rate, veh/h	200	430	0	273	345	71	262	437	83	196	816	118
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	6	5	3	3	7	3	4	5	10	2	4	3
Cap, veh/h	218	446		272	393	81	295	928	385	230	950	137
Arrive On Green	0.14	0.27	0.00	0.17	0.30	0.29	0.09	0.29	0.29	0.14	0.34	0.33
Sat Flow, veh/h	1589	1682	1448	1628	1329	273	3132	3195	1327	1641	2823	408
Grp Volume(v), veh/h	200	430	0	273	0	416	262	437	83	196	465	469
Grp Sat Flow(s),veh/h/ln	1589	1682	1448	1628	0	1602	1566	1598	1327	1641	1611	1621
Q Serve(g_s), s	14.5	29.5	0.0	19.5	0.0	28.9	9.7	13.1	5.5	13.6	31.5	31.5
Cycle Q Clear(g_c), s	14.5	29.5	0.0	19.5	0.0	28.9	9.7	13.1	5.5	13.6	31.5	31.5
Prop In Lane	1.00		1.00	1.00		0.17	1.00		1.00	1.00		0.25
Lane Grp Cap(c), veh/h	218	446		272	0	473	295	928	385	230	542	545
V/C Ratio(X)	0.92	0.96		1.00	0.00	0.88	0.89	0.47	0.22	0.85	0.86	0.86
Avail Cap(c_a), veh/h	218	446		272	0	473	295	928	385	295	586	590
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.8	42.3	0.0	48.6	0.0	39.2	52.3	34.1	31.4	49.0	36.2	36.2
Incr Delay (d2), s/veh	39.1	33.1	0.0	55.7	0.0	16.8	25.9	0.3	0.2	15.8	11.3	11.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.1	16.1	0.0	12.0	0.0	13.3	4.8	5.1	1.8	6.5	13.7	13.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	88.8	75.4	0.0	104.4	0.0	56.0	78.2	34.3	31.6	64.9	47.4	47.4
LnGrp LOS	F	E		F		E	E	C	C	E	D	D
Approach Vol, veh/h		630			689			782			1130	
Approach Delay, s/veh		79.7			75.2			48.7			50.5	
Approach LOS		E			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	43.3	20.0	38.5	20.4	37.9	23.5	35.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	10.5	42.0	15.5	34.0	20.5	32.0	19.0	30.5
Max Q Clear Time (g_c+I1), s	11.7	33.5	16.5	30.9	15.6	15.1	21.5	31.5
Green Ext Time (p_c), s	0.0	5.3	0.0	0.6	0.3	4.5	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	61.0
HCM 7th LOS	E

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	9.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	498	195	36	498	163	129
Future Vol, veh/h	498	195	36	498	163	129
Conflicting Peds, #/hr	0	1	1	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	100	-	-	0	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	7	0	0	8	0	2
Mvmt Flow	535	210	39	535	175	139

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	536	0	1149	537
Stage 1	-	-	-	-	536	-
Stage 2	-	-	-	-	613	-
Critical Hdwy	-	-	4.1	-	6.4	6.22
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.318
Pot Cap-1 Maneuver	-	-	1042	-	221	544
Stage 1	-	-	-	-	590	-
Stage 2	-	-	-	-	544	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1041	-	209	543
Mov Cap-2 Maneuver	-	-	-	-	209	-
Stage 1	-	-	-	-	590	-
Stage 2	-	-	-	-	516	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.58	47.4
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	209	543	-	-	121	-
HCM Lane V/C Ratio	0.837	0.256	-	-	0.037	-
HCM Control Delay (s/veh)	73.9	13.9	-	-	8.6	0
HCM Lane LOS	F	B	-	-	A	A
HCM 95th %tile Q(veh)	6.2	1	-	-	0.1	-

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	53	534	42	4	464	7	20	2	5	4	1	34
Future Vol, veh/h	53	534	42	4	464	7	20	2	5	4	1	34
Conflicting Peds, #/hr	2	0	3	3	0	2	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	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	6	0	0	8	0	0	0	20	0	0	0
Mvmt Flow	56	568	45	4	494	7	21	2	5	4	1	36

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	503	0	0	616	0	0	1209	1218	593	1190	1236	499
Stage 1	-	-	-	-	-	-	706	706	-	508	508	-
Stage 2	-	-	-	-	-	-	503	512	-	682	729	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.4	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.48	3.5	4	3.3
Pot Cap-1 Maneuver	1072	-	-	974	-	-	161	182	473	166	178	575
Stage 1	-	-	-	-	-	-	430	442	-	551	542	-
Stage 2	-	-	-	-	-	-	555	540	-	443	431	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1070	-	-	971	-	-	137	166	472	148	162	574
Mov Cap-2 Maneuver	-	-	-	-	-	-	137	166	-	275	278	-
Stage 1	-	-	-	-	-	-	394	405	-	548	539	-
Stage 2	-	-	-	-	-	-	517	537	-	401	395	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.72	0.07	32.26	12.78
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	161	149	-	-	971	-	-	504
HCM Lane V/C Ratio	0.179	0.053	-	-	0.004	-	-	0.082
HCM Control Delay (s/veh)	32.3	8.6	0	-	8.7	-	-	12.8
HCM Lane LOS	D	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.6	0.2	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	549	470	0	0	0
Future Vol, veh/h	0	549	470	0	0	0
Conflicting Peds, #/hr	2	0	0	2	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	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	6	8	2	2	2
Mvmt Flow	0	590	505	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	507	0	-	0	1098	507
Stage 1	-	-	-	-	507	-
Stage 2	-	-	-	-	590	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1057	-	-	-	236	565
Stage 1	-	-	-	-	605	-
Stage 2	-	-	-	-	554	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1055	-	-	-	235	564
Mov Cap-2 Maneuver	-	-	-	-	370	-
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	553	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1055	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	58	490	454	14	0	15
Future Vol, veh/h	58	490	454	14	0	15
Conflicting Peds, #/hr	3	0	0	3	3	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	7	8	0	0	0
Mvmt Flow	63	533	493	15	0	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	512	0	-	0	1166	507
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	662	-
Critical Hdwy	4.14	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.236	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1043	-	-	-	216	570
Stage 1	-	-	-	-	611	-
Stage 2	-	-	-	-	517	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1040	-	-	-	202	566
Mov Cap-2 Maneuver	-	-	-	-	339	-
Stage 1	-	-	-	-	572	-
Stage 2	-	-	-	-	515	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.92	0	11.55
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1040	-	-	-	566
HCM Lane V/C Ratio	0.061	-	-	-	0.029
HCM Control Delay (s/veh)	8.7	-	-	-	11.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.1

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	406	78	89	408	0	23	0	59	2	1	6
Future Vol, veh/h	5	406	78	89	408	0	23	0	59	2	1	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	400	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	20	7	3	0	9	0	5	0	3	0	0	0
Mvmt Flow	5	437	84	96	439	0	25	0	63	2	1	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	439	0	0	520	0	0	1120	1119	478	1077	1161	439
Stage 1	-	-	-	-	-	-	489	489	-	630	630	-
Stage 2	-	-	-	-	-	-	631	630	-	447	531	-
Critical Hdwy	4.3	-	-	4.1	-	-	7.15	6.5	6.23	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.38	-	-	2.2	-	-	3.545	4	3.327	3.5	4	3.3
Pot Cap-1 Maneuver	1032	-	-	1056	-	-	181	208	585	198	197	622
Stage 1	-	-	-	-	-	-	555	553	-	473	478	-
Stage 2	-	-	-	-	-	-	464	478	-	594	529	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1032	-	-	1056	-	-	161	189	585	160	178	622
Mov Cap-2 Maneuver	-	-	-	-	-	-	286	304	-	160	178	-
Stage 1	-	-	-	-	-	-	552	550	-	430	435	-
Stage 2	-	-	-	-	-	-	417	435	-	527	527	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.09	1.57	14.87	16.45
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	453	1032	-	-	1056	-	-	324
HCM Lane V/C Ratio	0.195	0.005	-	-	0.091	-	-	0.03
HCM Control Delay (s/veh)	14.9	8.5	-	-	8.7	-	-	16.4
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.7	0	-	-	0.3	-	-	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	229	84	179	301	124	215	470	116	99	318	92
Future Volume (vph)	125	229	84	179	301	124	215	470	116	99	318	92
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1568	1549	1252	1554	1522		2906	3107	1282	1409	2826	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1568	1549	1252	1554	1522		2906	3107	1282	1409	2826	
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)	132	241	88	188	317	131	226	495	122	104	335	97
RTOR Reduction (vph)	0	0	62	0	12	0	0	0	92	0	25	0
Lane Group Flow (vph)	132	241	26	188	436	0	226	495	30	104	407	0
Confl. Peds. (#/hr)	4		3	3		4						
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	6%	13%	17%	7%	10%	8%	11%	7%	16%	18%	12%	18%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8						6			
Actuated Green, G (s)	11.7	28.3	28.3	16.0	32.6		11.7	24.0	24.0	11.9	24.2	
Effective Green, g (s)	12.2	28.8	28.8	16.5	33.1		12.2	24.5	24.5	12.4	24.7	
Actuated g/C Ratio	0.12	0.29	0.29	0.17	0.34		0.12	0.25	0.25	0.13	0.25	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	194	454	367	261	513		361	775	319	177	710	
v/s Ratio Prot	0.08	0.16		c0.12	c0.29		c0.08	c0.16		0.07	0.14	
v/s Ratio Perm			0.02						0.02			
v/c Ratio	0.68	0.53	0.07	0.72	0.85		0.62	0.63	0.09	0.58	0.57	
Uniform Delay, d1	41.1	29.0	25.0	38.6	30.2		40.8	32.8	28.3	40.4	32.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	8.6	0.9	0.0	8.8	12.5		2.9	1.5	0.0	4.0	0.9	
Delay (s)	49.7	29.9	25.0	47.4	42.8		43.7	34.4	28.4	44.5	33.0	
Level of Service	D	C	C	D	D		D	C	C	D	C	
Approach Delay (s/veh)		34.7			44.2			36.0			35.2	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	37.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	98.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	69.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	229	84	179	301	124	215	470	116	99	318	92
Future Volume (veh/h)	125	229	84	179	301	124	215	470	116	99	318	92
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1668	1573	1518	1654	1614	1641	1600	1654	1532	1504	1586	1504
Adj Flow Rate, veh/h	132	241	0	188	317	120	226	495	75	104	335	71
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	13	17	7	10	8	11	7	16	18	12	18
Cap, veh/h	172	448		235	363	138	324	847	350	138	634	133
Arrive On Green	0.11	0.28	0.00	0.15	0.33	0.32	0.11	0.27	0.27	0.10	0.26	0.25
Sat Flow, veh/h	1589	1573	1286	1576	1114	422	2956	3143	1298	1433	2474	518
Grp Volume(v), veh/h	132	241	0	188	0	437	226	495	75	104	202	204
Grp Sat Flow(s),veh/h/ln	1589	1573	1286	1576	0	1536	1478	1572	1298	1433	1507	1485
Q Serve(g_s), s	6.5	10.4	0.0	9.2	0.0	21.5	5.9	10.9	3.6	5.7	9.2	9.5
Cycle Q Clear(g_c), s	6.5	10.4	0.0	9.2	0.0	21.5	5.9	10.9	3.6	5.7	9.2	9.5
Prop In Lane	1.00		1.00	1.00		0.27	1.00		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	172	448		235	0	501	324	847	350	138	386	380
V/C Ratio(X)	0.77	0.54		0.80	0.00	0.87	0.70	0.58	0.21	0.75	0.52	0.54
Avail Cap(c_a), veh/h	258	619		394	0	739	517	1433	592	286	725	714
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.7	24.2	0.0	32.9	0.0	25.5	34.3	25.3	22.7	35.2	25.6	25.7
Incr Delay (d2), s/veh	5.9	0.7	0.0	4.6	0.0	6.9	2.0	0.5	0.2	6.1	0.8	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	3.7	0.0	3.7	0.0	8.2	2.1	3.9	1.1	2.1	3.2	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.7	24.9	0.0	37.5	0.0	32.4	36.4	25.8	22.9	41.3	26.4	26.6
LnGrp LOS	D	C		D		C	D	C	C	D	C	C
Approach Vol, veh/h		373			625			796			510	
Approach Delay, s/veh		30.5			33.9			28.5			29.5	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.8	24.5	12.7	30.1	11.7	25.6	16.0	26.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	13.5	38.0	12.5	38.0	15.5	36.0	19.5	31.0				
Max Q Clear Time (g_c+I1), s	7.9	11.5	8.5	23.5	7.7	12.9	11.2	12.4				
Green Ext Time (p_c), s	0.4	4.3	0.1	1.6	0.2	5.8	0.4	0.8				
Intersection Summary												
HCM 7th Control Delay, s/veh			30.5									
HCM 7th LOS			C									

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection						
Int Delay, s/veh	3.8					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	308	134	17	470	139	28
Future Vol, veh/h	308	134	17	470	139	28
Conflicting Peds, #/hr	0	0	0	0	0	4
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	100	-	-	0	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	21	4	0	12	1	7
Mvmt Flow	335	146	18	511	151	30

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	335	0	883	339
Stage 1	-	-	-	-	335	-
Stage 2	-	-	-	-	548	-
Critical Hdwy	-	-	4.1	-	6.41	6.27
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.2	-	3.509	3.363
Pot Cap-1 Maneuver	-	-	1236	-	318	692
Stage 1	-	-	-	-	727	-
Stage 2	-	-	-	-	581	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1236	-	311	690
Mov Cap-2 Maneuver	-	-	-	-	311	-
Stage 1	-	-	-	-	727	-
Stage 2	-	-	-	-	569	-

Approach	EB		WB		NB	
HCM Control Delay, s/v	0		0.28		24.24	
HCM LOS					C	

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	311	690	-	-	63	-
HCM Lane V/C Ratio	0.486	0.044	-	-	0.015	-
HCM Control Delay (s/veh)	27	10.5	-	-	8	0
HCM Lane LOS	D	B	-	-	A	A
HCM 95th %tile Q(veh)	2.5	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	311	15	4	385	2	32	1	1	9	2	67
Future Vol, veh/h	19	311	15	4	385	2	32	1	1	9	2	67
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	19	0	75	12	0	0	0	0	0	0	0
Mvmt Flow	20	334	16	4	414	2	34	1	1	10	2	72

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	416	0	0	352	0	0	808	809	343	799	816	415
Stage 1	-	-	-	-	-	-	384	384	-	424	424	-
Stage 2	-	-	-	-	-	-	424	425	-	376	392	-
Critical Hdwy	4.1	-	-	4.85	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.875	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1154	-	-	894	-	-	302	317	704	306	314	642
Stage 1	-	-	-	-	-	-	643	615	-	612	591	-
Stage 2	-	-	-	-	-	-	612	590	-	650	610	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1154	-	-	894	-	-	259	308	703	296	305	642
Mov Cap-2 Maneuver	-	-	-	-	-	-	259	308	-	418	408	-
Stage 1	-	-	-	-	-	-	628	601	-	609	588	-
Stage 2	-	-	-	-	-	-	539	587	-	633	596	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.45	0.09	20.73	12.03
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	265	98	-	-	894	-	-	596
HCM Lane V/C Ratio	0.138	0.018	-	-	0.005	-	-	0.141
HCM Control Delay (s/veh)	20.7	8.2	0	-	9	-	-	12
HCM Lane LOS	C	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0	-	-	0.5

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	47	275	352	19	24	39
Future Vol, veh/h	47	275	352	19	24	39
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	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	19	12	2	2	2
Mvmt Flow	51	296	378	20	26	42

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	399	0	-	0	785	389
Stage 1	-	-	-	-	389	-
Stage 2	-	-	-	-	397	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1160	-	-	-	361	660
Stage 1	-	-	-	-	685	-
Stage 2	-	-	-	-	679	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1160	-	-	-	345	660
Mov Cap-2 Maneuver	-	-	-	-	462	-
Stage 1	-	-	-	-	655	-
Stage 2	-	-	-	-	679	-

Approach	EB	WB	SB
HCM Control Delay, s/v	1.2	0	12.21
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1160	-	-	-	567
HCM Lane V/C Ratio	0.044	-	-	-	0.119
HCM Control Delay (s/veh)	8.2	-	-	-	12.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection						
Int Delay, s/veh	1.2					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	24	274	325	25	12	46
Future Vol, veh/h	24	274	325	25	12	46
Conflicting Peds, #/hr	2	0	0	2	3	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	20	13	33	0	4
Mvmt Flow	26	298	353	27	13	50

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	382	0	-	0	722	372
Stage 1	-	-	-	-	369	-
Stage 2	-	-	-	-	353	-
Critical Hdwy	4.16	-	-	-	6.4	6.24
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.254	-	-	-	3.5	3.336
Pot Cap-1 Maneuver	1154	-	-	-	397	670
Stage 1	-	-	-	-	704	-
Stage 2	-	-	-	-	716	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1152	-	-	-	386	666
Mov Cap-2 Maneuver	-	-	-	-	496	-
Stage 1	-	-	-	-	687	-
Stage 2	-	-	-	-	714	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.66	0	11.44
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1152	-	-	-	622
HCM Lane V/C Ratio	0.023	-	-	-	0.101
HCM Control Delay (s/veh)	8.2	-	-	-	11.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	266	27	28	277	2	20	2	45	2	2	16
Future Vol, veh/h	3	266	27	28	277	2	20	2	45	2	2	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	400	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	67	18	32	4	13	0	13	50	0	0	100	50
Mvmt Flow	3	286	29	30	298	2	22	2	48	2	2	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	300	0	0	315	0	0	666	667	301	653	681	299
Stage 1	-	-	-	-	-	-	307	307	-	359	359	-
Stage 2	-	-	-	-	-	-	359	360	-	294	322	-
Critical Hdwy	4.77	-	-	4.14	-	-	7.23	7	6.2	7.1	7.5	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.23	6	-	6.1	6.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.23	6	-	6.1	6.5	-
Follow-up Hdwy	2.803	-	-	2.236	-	-	3.617	4.45	3.3	3.5	4.9	3.75
Pot Cap-1 Maneuver	968	-	-	1234	-	-	358	325	744	383	273	641
Stage 1	-	-	-	-	-	-	680	583	-	663	486	-
Stage 2	-	-	-	-	-	-	637	550	-	719	508	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	968	-	-	1234	-	-	336	316	744	347	265	641
Mov Cap-2 Maneuver	-	-	-	-	-	-	442	397	-	347	265	-
Stage 1	-	-	-	-	-	-	678	581	-	647	474	-
Stage 2	-	-	-	-	-	-	602	537	-	667	506	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.09	0.73	11.75	12.19
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	605	968	-	-	1234	-	-	522
HCM Lane V/C Ratio	0.119	0.003	-	-	0.024	-	-	0.041
HCM Control Delay (s/veh)	11.8	8.7	-	-	8	-	-	12.2
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0.1	-	-	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	403	309	258	324	73	244	406	134	183	759	120
Future Volume (vph)	186	403	309	258	324	73	244	406	134	183	759	120
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.97	1.00	0.99	
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	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1568	1667	1410	1614	1597		3101	3167	1318	1630	3130	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1568	1667	1410	1614	1597		3101	3167	1318	1630	3130	
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)	200	433	332	277	348	78	262	437	144	197	816	129
RTOR Reduction (vph)	0	0	183	0	7	0	0	0	106	0	10	0
Lane Group Flow (vph)	200	433	149	277	419	0	262	437	38	197	935	0
Confl. Peds. (#/hr)	3		9	9		3	5		2	2		2
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	6%	5%	3%	3%	7%	3%	4%	5%	10%	2%	4%	3%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8						6			
Actuated Green, G (s)	16.2	31.5	31.5	21.2	36.5		10.7	30.7	30.7	16.9	36.9	
Effective Green, g (s)	16.7	32.0	32.0	21.7	37.0		11.2	31.2	31.2	17.4	37.4	
Actuated g/C Ratio	0.14	0.27	0.27	0.18	0.31		0.09	0.26	0.26	0.15	0.32	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	221	450	381	296	499		293	835	347	239	989	
v/s Ratio Prot	0.13	c0.26		c0.17	0.26		0.08	0.14		c0.12	c0.30	
v/s Ratio Perm			0.11						0.03			
v/c Ratio	0.90	0.96	0.39	0.93	0.83		0.89	0.52	0.10	0.82	0.94	
Uniform Delay, d1	50.0	42.5	35.1	47.6	37.8		52.9	37.1	33.0	48.9	39.4	
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	35.5	32.6	0.4	35.3	11.6		27.1	0.4	0.1	19.6	16.8	
Delay (s)	85.5	75.2	35.6	82.9	49.5		80.1	37.6	33.1	68.6	56.2	
Level of Service	F	E	D	F	D		F	D	C	E	E	
Approach Delay (s/veh)		63.7			62.7			50.0			58.4	
Approach LOS		E			E			D			E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	58.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	118.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	186	403	309	258	324	73	244	406	134	183	759	120
Future Volume (veh/h)	186	403	309	258	324	73	244	406	134	183	759	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1668	1682	1709	1709	1654	1709	1695	1682	1614	1723	1695	1709
Adj Flow Rate, veh/h	200	433	0	277	348	78	262	437	90	197	816	118
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	6	5	3	3	7	3	4	5	10	2	4	3
Cap, veh/h	226	459		300	411	92	294	860	357	229	889	129
Arrive On Green	0.14	0.27	0.00	0.18	0.31	0.31	0.09	0.27	0.27	0.14	0.31	0.31
Sat Flow, veh/h	1589	1682	1448	1628	1306	293	3132	3195	1326	1641	2823	408
Grp Volume(v), veh/h	200	433	0	277	0	426	262	437	90	197	465	469
Grp Sat Flow(s),veh/h/ln	1589	1682	1448	1628	0	1599	1566	1598	1326	1641	1611	1621
Q Serve(g_s), s	14.7	30.1	0.0	20.0	0.0	29.7	9.9	13.8	6.4	14.0	33.2	33.3
Cycle Q Clear(g_c), s	14.7	30.1	0.0	20.0	0.0	29.7	9.9	13.8	6.4	14.0	33.2	33.3
Prop In Lane	1.00		1.00	1.00		0.18	1.00		1.00	1.00		0.25
Lane Grp Cap(c), veh/h	226	459		300	0	503	294	860	357	229	507	510
V/C Ratio(X)	0.88	0.94		0.92	0.00	0.85	0.89	0.51	0.25	0.86	0.92	0.92
Avail Cap(c_a), veh/h	226	459		300	0	504	294	860	357	261	515	519
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.2	42.5	0.0	47.9	0.0	38.2	53.5	36.9	34.2	50.2	39.4	39.5
Incr Delay (d2), s/veh	30.7	28.0	0.0	32.5	0.0	12.4	26.6	0.4	0.3	21.3	21.2	21.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	15.8	0.0	10.7	0.0	13.1	4.9	5.4	2.1	7.0	15.8	15.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	80.9	70.5	0.0	80.3	0.0	50.6	80.1	37.3	34.5	71.5	60.6	60.5
LnGrp LOS	F	E		F		D	F	D	C	E	E	E
Approach Vol, veh/h		633			703			789			1131	
Approach Delay, s/veh		73.8			62.3			51.2			62.5	
Approach LOS		E			E			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.2	41.6	21.0	41.6	20.7	36.1	26.0	36.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	10.7	37.7	16.5	37.1	18.5	29.9	21.5	32.1
Max Q Clear Time (g_c+I1), s	11.9	35.3	16.7	31.7	16.0	15.8	22.0	32.1
Green Ext Time (p_c), s	0.0	1.7	0.0	0.9	0.2	4.1	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	61.9
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	9.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	509	195	36	507	163	129
Future Vol, veh/h	509	195	36	507	163	129
Conflicting Peds, #/hr	0	1	1	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	100	-	-	0	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	7	0	0	8	0	2
Mvmt Flow	547	210	39	545	175	139

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	548	0	1171	549
Stage 1	-	-	-	-	548	-
Stage 2	-	-	-	-	623	-
Critical Hdwy	-	-	4.1	-	6.4	6.22
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.318
Pot Cap-1 Maneuver	-	-	1031	-	215	535
Stage 1	-	-	-	-	583	-
Stage 2	-	-	-	-	539	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1030	-	203	534
Mov Cap-2 Maneuver	-	-	-	-	203	-
Stage 1	-	-	-	-	582	-
Stage 2	-	-	-	-	510	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.57	51.1
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	203	534	-	-	119	-
HCM Lane V/C Ratio	0.863	0.26	-	-	0.038	-
HCM Control Delay (s/veh)	80.4	14.1	-	-	8.6	0
HCM Lane LOS	F	B	-	-	A	A
HCM 95th %tile Q(veh)	6.6	1	-	-	0.1	-

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	45	553	42	4	477	6	20	2	5	4	1	30
Future Vol, veh/h	45	553	42	4	477	6	20	2	5	4	1	30
Conflicting Peds, #/hr	2	0	3	3	0	2	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	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	6	0	0	8	0	0	0	20	0	0	0
Mvmt Flow	48	588	45	4	507	6	21	2	5	4	1	32

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	516	0	0	636	0	0	1226	1234	614	1206	1253	513
Stage 1	-	-	-	-	-	-	709	709	-	521	521	-
Stage 2	-	-	-	-	-	-	516	524	-	685	732	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.4	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.48	3.5	4	3.3
Pot Cap-1 Maneuver	1060	-	-	957	-	-	157	178	461	162	174	565
Stage 1	-	-	-	-	-	-	428	440	-	542	535	-
Stage 2	-	-	-	-	-	-	545	533	-	441	430	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1058	-	-	954	-	-	136	164	459	146	160	564
Mov Cap-2 Maneuver	-	-	-	-	-	-	136	164	-	274	277	-
Stage 1	-	-	-	-	-	-	397	408	-	539	531	-
Stage 2	-	-	-	-	-	-	511	530	-	403	399	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.6	0.07	32.6	12.94
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	159	125	-	-	954	-	-	490
HCM Lane V/C Ratio	0.181	0.045	-	-	0.004	-	-	0.076
HCM Control Delay (s/veh)	32.6	8.6	0	-	8.8	-	-	12.9
HCM Lane LOS	D	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	40	528	462	9	17	20
Future Vol, veh/h	40	528	462	9	17	20
Conflicting Peds, #/hr	2	0	0	2	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	-	1	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	6	8	2	2	2
Mvmt Flow	43	568	497	10	18	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	508	0	-	0	1157	504
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	654	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1057	-	-	-	217	568
Stage 1	-	-	-	-	607	-
Stage 2	-	-	-	-	517	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1055	-	-	-	207	567
Mov Cap-2 Maneuver	-	-	-	-	344	-
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	517	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.6	0	14.07
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1055	-	-	-	437
HCM Lane V/C Ratio	0.041	-	-	-	0.091
HCM Control Delay (s/veh)	8.6	-	-	-	14.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection						
Int Delay, s/veh	0.8					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	56	488	448	23	6	22
Future Vol, veh/h	56	488	448	23	6	22
Conflicting Peds, #/hr	3	0	0	3	3	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	7	8	0	0	0
Mvmt Flow	61	530	487	25	7	24

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	515	0	-	0	1158	505
Stage 1	-	-	-	-	502	-
Stage 2	-	-	-	-	655	-
Critical Hdwy	4.14	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.236	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1041	-	-	-	219	571
Stage 1	-	-	-	-	612	-
Stage 2	-	-	-	-	521	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1038	-	-	-	205	568
Mov Cap-2 Maneuver	-	-	-	-	342	-
Stage 1	-	-	-	-	574	-
Stage 2	-	-	-	-	519	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.89	0	12.71
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1038	-	-	-	497
HCM Lane V/C Ratio	0.059	-	-	-	0.061
HCM Control Delay (s/veh)	8.7	-	-	-	12.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.2

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	408	80	89	409	0	25	0	59	2	1	6
Future Vol, veh/h	5	408	80	89	409	0	25	0	59	2	1	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	400	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	20	7	3	0	9	0	5	0	3	0	0	0
Mvmt Flow	5	439	86	96	440	0	27	0	63	2	1	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	440	0	0	525	0	0	1124	1124	482	1081	1167	440
Stage 1	-	-	-	-	-	-	492	492	-	631	631	-
Stage 2	-	-	-	-	-	-	632	631	-	449	535	-
Critical Hdwy	4.3	-	-	4.1	-	-	7.15	6.5	6.23	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.38	-	-	2.2	-	-	3.545	4	3.327	3.5	4	3.3
Pot Cap-1 Maneuver	1031	-	-	1052	-	-	180	207	582	197	195	622
Stage 1	-	-	-	-	-	-	553	551	-	472	477	-
Stage 2	-	-	-	-	-	-	464	477	-	593	527	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1031	-	-	1052	-	-	160	187	582	159	177	622
Mov Cap-2 Maneuver	-	-	-	-	-	-	285	303	-	159	177	-
Stage 1	-	-	-	-	-	-	550	548	-	429	434	-
Stage 2	-	-	-	-	-	-	416	434	-	525	524	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.09	1.57	15.15	16.5
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	445	1031	-	-	1052	-	-	323
HCM Lane V/C Ratio	0.203	0.005	-	-	0.091	-	-	0.03
HCM Control Delay (s/veh)	15.1	8.5	-	-	8.8	-	-	16.5
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.8	0	-	-	0.3	-	-	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	219	84	168	291	118	215	470	105	93	318	92
Future Volume (vph)	125	219	84	168	291	118	215	470	105	93	318	92
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	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	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1568	1549	1252	1554	1523		2906	3107	1282	2733	2826	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1568	1549	1252	1554	1523		2906	3107	1282	2733	2826	
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)	132	231	88	177	306	124	226	495	111	98	335	97
RTOR Reduction (vph)	0	0	63	0	14	0	0	0	76	0	21	0
Lane Group Flow (vph)	132	231	25	177	416	0	226	495	35	98	411	0
Confl. Peds. (#/hr)	4		3	3		4						
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	6%	13%	17%	7%	10%	8%	11%	7%	16%	18%	12%	18%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8						6			
Actuated Green, G (s)	12.5	27.3	27.3	15.9	30.7		11.6	30.1	30.1	6.4	24.9	
Effective Green, g (s)	13.0	27.8	27.8	16.4	31.2		12.1	30.6	30.6	6.9	25.4	
Actuated g/C Ratio	0.13	0.28	0.28	0.17	0.32		0.12	0.31	0.31	0.07	0.26	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	208	440	356	260	486		359	973	401	193	734	
v/s Ratio Prot	0.08	0.15		c0.11	c0.27		c0.08	0.16		0.04	c0.15	
v/s Ratio Perm			0.02						0.03			
v/c Ratio	0.63	0.53	0.07	0.68	0.86		0.63	0.51	0.09	0.51	0.56	
Uniform Delay, d1	40.1	29.4	25.5	38.2	31.2		40.7	27.4	23.7	43.8	31.3	
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	5.4	0.9	0.1	6.6	13.7		3.0	0.3	0.1	1.5	0.7	
Delay (s)	45.5	30.3	25.6	44.7	44.9		43.6	27.7	23.8	45.3	32.0	
Level of Service	D	C	C	D	D		D	C	C	D	C	
Approach Delay (s/veh)		33.8			44.8			31.5			34.5	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	35.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	97.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	219	84	168	291	118	215	470	105	93	318	92
Future Volume (veh/h)	125	219	84	168	291	118	215	470	105	93	318	92
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1668	1573	1518	1654	1614	1641	1600	1654	1532	1504	1586	1504
Adj Flow Rate, veh/h	132	231	0	177	306	113	226	495	64	98	335	71
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	13	17	7	10	8	11	7	16	18	12	18
Cap, veh/h	173	446		226	357	132	326	862	356	267	643	135
Arrive On Green	0.11	0.28	0.00	0.14	0.32	0.31	0.11	0.27	0.27	0.10	0.26	0.25
Sat Flow, veh/h	1589	1573	1286	1576	1122	415	2956	3143	1298	2779	2474	518
Grp Volume(v), veh/h	132	231	0	177	0	419	226	495	64	98	202	204
Grp Sat Flow(s),veh/h/ln	1589	1573	1286	1576	0	1537	1478	1572	1298	1390	1507	1485
Q Serve(g_s), s	6.4	9.7	0.0	8.5	0.0	20.2	5.8	10.7	3.0	2.6	9.1	9.3
Cycle Q Clear(g_c), s	6.4	9.7	0.0	8.5	0.0	20.2	5.8	10.7	3.0	2.6	9.1	9.3
Prop In Lane	1.00		1.00	1.00		0.27	1.00		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	173	446		226	0	488	326	862	356	267	392	386
V/C Ratio(X)	0.76	0.52		0.78	0.00	0.86	0.69	0.57	0.18	0.37	0.52	0.53
Avail Cap(c_a), veh/h	322	758		499	0	916	525	1275	527	317	516	508
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.1	23.7	0.0	32.6	0.0	25.3	33.8	24.7	21.8	33.4	25.0	25.1
Incr Delay (d2), s/veh	5.1	0.7	0.0	4.4	0.0	3.4	2.0	0.5	0.2	0.6	0.8	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	3.5	0.0	3.4	0.0	7.3	2.1	3.8	0.9	0.9	3.1	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.2	24.4	0.0	37.0	0.0	28.7	35.8	25.1	22.0	34.0	25.7	25.9
LnGrp LOS	D	C		D		C	D	C	C	C	C	C
Approach Vol, veh/h		363			596			785			504	
Approach Delay, s/veh		29.8			31.1			27.9			27.4	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.7	24.5	12.6	29.1	11.6	25.6	15.3	26.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	13.5	26.5	15.5	46.5	8.5	31.5	24.5	37.5
Max Q Clear Time (g_c+I1), s	7.8	11.3	8.4	22.2	4.6	12.7	10.5	11.7
Green Ext Time (p_c), s	0.4	3.4	0.2	1.8	0.1	5.3	0.5	0.8

Intersection Summary	
HCM 7th Control Delay, s/veh	29.0
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	219	84	168	291	118	215	470	105	93	318	92
Future Volume (vph)	125	219	84	168	291	118	215	470	105	93	318	92
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.5	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	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	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1568	1549	1252	1554	1591	1356	2906	3107	1282	1409	2827	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1568	1549	1252	1554	1591	1356	2906	3107	1282	1409	2827	
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)	132	231	88	177	306	124	226	495	111	98	335	97
RTOR Reduction (vph)	0	0	68	0	0	93	0	0	77	0	24	0
Lane Group Flow (vph)	132	231	20	177	306	31	226	495	34	98	408	0
Confl. Peds. (#/hr)	4		3	3		4						
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	6%	13%	17%	7%	10%	8%	11%	7%	16%	18%	12%	18%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4			6			
Actuated Green, G (s)	11.8	19.3	19.3	14.7	22.2	22.2	11.4	26.9	26.9	9.4	24.9	
Effective Green, g (s)	12.3	19.8	19.8	15.2	22.7	22.2	11.9	27.4	27.4	9.9	25.4	
Actuated g/C Ratio	0.14	0.22	0.22	0.17	0.26	0.25	0.13	0.31	0.31	0.11	0.29	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	218	347	280	267	409	340	391	964	397	157	813	
v/s Ratio Prot	0.08	0.15		c0.11	c0.19		c0.08	c0.16		0.07	0.14	
v/s Ratio Perm			0.02			0.02			0.03			
v/c Ratio	0.61	0.67	0.07	0.66	0.75	0.09	0.58	0.51	0.09	0.62	0.50	
Uniform Delay, d1	35.7	31.2	27.0	34.2	30.2	25.3	35.8	25.0	21.6	37.4	26.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.0	4.3	0.1	5.5	6.9	0.1	1.7	0.3	0.1	6.5	0.4	
Delay (s)	39.7	35.5	27.1	39.6	37.1	25.4	37.5	25.3	21.7	44.0	26.5	
Level of Service	D	D	C	D	D	C	D	C	C	D	C	
Approach Delay (s/veh)		35.1			35.5			28.2			29.8	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	31.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	88.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	219	84	168	291	118	215	470	105	93	318	92
Future Volume (veh/h)	125	219	84	168	291	118	215	470	105	93	318	92
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1668	1573	1518	1654	1614	1641	1600	1654	1532	1504	1586	1504
Adj Flow Rate, veh/h	132	231	0	177	306	71	226	495	64	98	335	71
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	13	17	7	10	8	11	7	16	18	12	18
Cap, veh/h	179	338		228	399	332	354	967	399	149	723	151
Arrive On Green	0.11	0.21	0.00	0.14	0.25	0.24	0.12	0.31	0.31	0.10	0.29	0.29
Sat Flow, veh/h	1589	1573	1286	1576	1614	1384	2956	3143	1298	1433	2474	518
Grp Volume(v), veh/h	132	231	0	177	306	71	226	495	64	98	202	204
Grp Sat Flow(s),veh/h/ln	1589	1573	1286	1576	1614	1384	1478	1572	1298	1433	1507	1485
Q Serve(g_s), s	5.6	9.5	0.0	7.6	12.4	2.9	5.1	9.1	2.5	4.6	7.7	7.9
Cycle Q Clear(g_c), s	5.6	9.5	0.0	7.6	12.4	2.9	5.1	9.1	2.5	4.6	7.7	7.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	179	338		228	399	332	354	967	399	149	440	434
V/C Ratio(X)	0.74	0.68		0.78	0.77	0.21	0.64	0.51	0.16	0.66	0.46	0.47
Avail Cap(c_a), veh/h	317	717		427	851	720	590	1613	666	347	838	826
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.1	25.3	0.0	28.9	24.5	21.3	29.4	19.9	17.7	30.2	20.3	20.4
Incr Delay (d2), s/veh	4.4	1.8	0.0	4.2	2.3	0.2	1.4	0.3	0.1	3.6	0.6	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	3.5	0.0	3.0	4.6	0.9	1.8	3.1	0.7	1.7	2.6	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.5	27.2	0.0	33.1	26.8	21.6	30.8	20.3	17.8	33.8	20.8	21.0
LnGrp LOS	C	C		C	C	C	C	C	B	C	C	C
Approach Vol, veh/h		363			554			785			504	
Approach Delay, s/veh		29.8			28.2			23.1			23.4	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.4	24.5	11.9	21.3	11.3	25.6	14.2	19.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	13.5	38.5	13.5	36.5	16.5	35.5	18.5	31.5
Max Q Clear Time (g_c+I1), s	7.1	9.9	7.6	14.4	6.6	11.1	9.6	11.5
Green Ext Time (p_c), s	0.5	4.4	0.2	1.3	0.2	5.9	0.4	0.8

Intersection Summary	
HCM 7th Control Delay, s/veh	25.6
HCM 7th LOS	C

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	400	309	254	321	71	244	406	127	182	759	120
Future Volume (vph)	186	400	309	254	321	71	244	406	127	182	759	120
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.99	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	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1568	1667	1410	1614	1598		3101	3167	1332	3162	3130	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1568	1667	1410	1614	1598		3101	3167	1332	3162	3130	
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)	200	430	332	273	345	76	262	437	137	196	816	129
RTOR Reduction (vph)	0	0	182	0	7	0	0	0	96	0	10	0
Lane Group Flow (vph)	200	430	150	273	414	0	262	437	41	196	935	0
Confl. Peds. (#/hr)	3		9	9		3	5		2	2		2
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	6%	5%	3%	3%	7%	3%	4%	5%	10%	2%	4%	3%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8						6			
Actuated Green, G (s)	16.1	31.5	31.5	21.5	36.9		10.5	34.9	34.9	11.6	36.0	
Effective Green, g (s)	16.6	32.0	32.0	22.0	37.4		11.0	35.4	35.4	12.1	36.5	
Actuated g/C Ratio	0.14	0.27	0.27	0.19	0.32		0.09	0.30	0.30	0.10	0.31	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	221	453	384	302	508		290	954	401	325	972	
v/s Ratio Prot	0.13	c0.26		c0.17	0.26		c0.08	0.14		0.06	c0.30	
v/s Ratio Perm			0.11						0.03			
v/c Ratio	0.90	0.95	0.39	0.90	0.82		0.90	0.46	0.10	0.60	0.96	
Uniform Delay, d1	49.7	42.0	34.8	46.7	36.9		52.7	33.3	29.6	50.4	39.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	35.6	29.4	0.5	28.4	9.5		29.2	0.3	0.1	2.7	20.1	
Delay (s)	85.2	71.3	35.3	75.1	46.4		81.9	33.5	29.7	53.1	59.9	
Level of Service	F	E	D	E	D		F	C	C	D	E	
Approach Delay (s/veh)		61.8			57.7			48.1			58.7	
Approach LOS		E			E			D			E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	56.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	117.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	186	400	309	254	321	71	244	406	127	182	759	120
Future Volume (veh/h)	186	400	309	254	321	71	244	406	127	182	759	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1668	1682	1709	1709	1654	1709	1695	1682	1614	1723	1695	1709
Adj Flow Rate, veh/h	200	430	0	273	345	76	262	437	83	196	816	118
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	6	5	3	3	7	3	4	5	10	2	4	3
Cap, veh/h	229	459		303	413	91	293	1026	431	267	879	127
Arrive On Green	0.14	0.27	0.00	0.19	0.31	0.31	0.09	0.32	0.32	0.08	0.31	0.31
Sat Flow, veh/h	1589	1682	1448	1628	1311	289	3132	3195	1344	3183	2823	408
Grp Volume(v), veh/h	200	430	0	273	0	421	262	437	83	196	465	469
Grp Sat Flow(s),veh/h/ln	1589	1682	1448	1628	0	1599	1566	1598	1344	1591	1611	1621
Q Serve(g_s), s	14.5	29.4	0.0	19.3	0.0	28.8	9.7	12.7	5.3	7.1	32.9	33.0
Cycle Q Clear(g_c), s	14.5	29.4	0.0	19.3	0.0	28.8	9.7	12.7	5.3	7.1	32.9	33.0
Prop In Lane	1.00		1.00	1.00		0.18	1.00		1.00	1.00		0.25
Lane Grp Cap(c), veh/h	229	459		303	0	504	293	1026	431	267	501	505
V/C Ratio(X)	0.87	0.94		0.90	0.00	0.84	0.89	0.43	0.19	0.74	0.93	0.93
Avail Cap(c_a), veh/h	230	472		318	0	530	293	1026	431	379	506	510
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.3	41.8	0.0	46.8	0.0	37.5	52.8	31.4	28.9	52.6	39.3	39.3
Incr Delay (d2), s/veh	28.2	25.9	0.0	25.9	0.0	10.4	27.3	0.2	0.2	3.5	23.3	23.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	15.2	0.0	9.9	0.0	12.5	4.9	4.9	1.7	2.9	16.0	16.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	77.5	67.7	0.0	72.7	0.0	47.9	80.0	31.6	29.1	56.1	62.6	62.6
LnGrp LOS	E	E		E		D	F	C	C	E	E	E
Approach Vol, veh/h		630			694			782			1130	
Approach Delay, s/veh		70.8			57.7			47.6			61.5	
Approach LOS		E			E			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	40.6	21.0	41.1	13.9	41.8	25.9	36.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	10.5	36.5	16.5	38.5	13.5	33.5	22.5	32.5
Max Q Clear Time (g_c+I1), s	11.7	35.0	16.5	30.8	9.1	14.7	21.3	31.4
Green Ext Time (p_c), s	0.0	1.1	0.0	1.1	0.3	4.7	0.1	0.2

Intersection Summary	
HCM 7th Control Delay, s/veh	59.1
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	400	309	254	321	71	244	406	127	182	759	120
Future Volume (vph)	186	400	309	254	321	71	244	406	127	182	759	120
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.5	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1568	1667	1410	1614	1636	1422	3101	3167	1318	1630	3130	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1568	1667	1410	1614	1636	1422	3101	3167	1318	1630	3130	
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)	200	430	332	273	345	76	262	437	137	196	816	129
RTOR Reduction (vph)	0	0	184	0	0	53	0	0	102	0	10	0
Lane Group Flow (vph)	200	430	148	273	345	23	262	437	35	196	935	0
Confl. Peds. (#/hr)	3		9	9		3	5		2	2		2
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	6%	5%	3%	3%	7%	3%	4%	5%	10%	2%	4%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4			6			
Actuated Green, G (s)	17.6	31.5	31.5	21.5	35.4	35.4	10.5	29.8	29.8	17.3	36.6	
Effective Green, g (s)	18.1	32.0	32.0	22.0	35.9	35.4	11.0	30.3	30.3	17.8	37.1	
Actuated g/C Ratio	0.15	0.27	0.27	0.19	0.30	0.30	0.09	0.26	0.26	0.15	0.31	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	240	451	382	300	497	426	288	812	338	245	983	
v/s Ratio Prot	0.13	c0.26		c0.17	c0.21		c0.08	0.14		c0.12	c0.30	
v/s Ratio Perm			0.10			0.02			0.03			
v/c Ratio	0.83	0.95	0.39	0.91	0.69	0.05	0.91	0.54	0.10	0.80	0.95	
Uniform Delay, d1	48.5	42.3	35.1	47.1	36.3	29.4	53.1	37.9	33.5	48.4	39.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	20.9	30.6	0.5	29.9	3.9	0.0	30.3	0.5	0.1	16.4	18.0	
Delay (s)	69.5	72.9	35.5	77.0	40.1	29.5	83.4	38.4	33.6	64.8	57.6	
Level of Service	E	E	D	E	D	C	F	D	C	E	E	
Approach Delay (s/veh)		59.3			53.4			51.7			58.8	
Approach LOS		E			D			D			E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	56.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	118.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	186	400	309	254	321	71	244	406	127	182	759	120
Future Volume (veh/h)	186	400	309	254	321	71	244	406	127	182	759	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1668	1682	1709	1709	1654	1709	1695	1682	1614	1723	1695	1709
Adj Flow Rate, veh/h	200	430	0	273	345	38	262	437	83	196	816	118
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	6	5	3	3	7	3	4	5	10	2	4	3
Cap, veh/h	232	459		303	519	444	293	847	351	229	879	127
Arrive On Green	0.15	0.27	0.00	0.19	0.31	0.31	0.09	0.27	0.27	0.14	0.31	0.31
Sat Flow, veh/h	1589	1682	1448	1628	1654	1436	3132	3195	1325	1641	2823	408
Grp Volume(v), veh/h	200	430	0	273	345	38	262	437	83	196	465	469
Grp Sat Flow(s),veh/h/ln	1589	1682	1448	1628	1654	1436	1566	1598	1325	1641	1611	1621
Q Serve(g_s), s	14.5	29.4	0.0	19.3	21.3	2.2	9.7	13.7	5.8	13.7	32.9	33.0
Cycle Q Clear(g_c), s	14.5	29.4	0.0	19.3	21.3	2.2	9.7	13.7	5.8	13.7	32.9	33.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.25
Lane Grp Cap(c), veh/h	232	459		303	519	444	293	847	351	229	501	505
V/C Ratio(X)	0.86	0.94		0.90	0.67	0.09	0.89	0.52	0.24	0.86	0.93	0.93
Avail Cap(c_a), veh/h	270	472		318	519	444	293	847	351	279	506	510
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.1	41.8	0.0	46.8	35.0	28.8	52.8	36.8	33.9	49.5	39.3	39.3
Incr Delay (d2), s/veh	20.8	25.9	0.0	25.9	3.0	0.1	27.3	0.4	0.3	18.2	23.3	23.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.0	15.2	0.0	9.9	8.9	0.8	4.9	5.3	1.9	6.7	16.0	16.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.9	67.7	0.0	72.7	38.0	28.9	80.0	37.2	34.2	67.6	62.6	62.6
LnGrp LOS	E	E		E	D	C	F	D	C	E	E	E
Approach Vol, veh/h		630			656			782			1130	
Approach Delay, s/veh		68.4			51.9			51.3			63.5	
Approach LOS		E			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	40.6	21.2	40.9	20.4	35.2	25.9	36.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	10.5	36.5	19.5	35.5	19.5	27.5	22.5	32.5
Max Q Clear Time (g_c+I1), s	11.7	35.0	16.5	23.3	15.7	15.7	21.3	31.4
Green Ext Time (p_c), s	0.0	1.1	0.2	1.2	0.2	3.6	0.1	0.2

Intersection Summary	
HCM 7th Control Delay, s/veh	59.1
HCM 7th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	229	84	179	301	124	215	470	116	99	318	92
Future Volume (vph)	125	229	84	179	301	124	215	470	116	99	318	92
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1568	1549	1252	1554	1522		2906	3107	1282	2733	2826	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1568	1549	1252	1554	1522		2906	3107	1282	2733	2826	
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)	132	241	88	188	317	131	226	495	122	104	335	97
RTOR Reduction (vph)	0	0	63	0	13	0	0	0	84	0	22	0
Lane Group Flow (vph)	132	241	25	188	435	0	226	495	38	104	410	0
Confl. Peds. (#/hr)	4		3	3		4						
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	6%	13%	17%	7%	10%	8%	11%	7%	16%	18%	12%	18%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8						6			
Actuated Green, G (s)	12.5	27.9	27.9	16.5	31.9		11.7	30.2	30.2	6.4	24.9	
Effective Green, g (s)	13.0	28.4	28.4	17.0	32.4		12.2	30.7	30.7	6.9	25.4	
Actuated g/C Ratio	0.13	0.29	0.29	0.17	0.33		0.12	0.31	0.31	0.07	0.26	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	205	444	359	266	498		358	963	397	190	725	
v/s Ratio Prot	0.08	0.16		c0.12	c0.29		c0.08	0.16		0.04	c0.15	
v/s Ratio Perm			0.02						0.03			
v/c Ratio	0.64	0.54	0.07	0.70	0.87		0.63	0.51	0.09	0.54	0.56	
Uniform Delay, d1	40.8	29.8	25.6	38.6	31.3		41.2	28.0	24.2	44.5	32.0	
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	5.9	1.0	0.0	7.7	15.3		3.1	0.3	0.0	2.5	0.8	
Delay (s)	46.8	30.8	25.7	46.3	46.7		44.4	28.3	24.3	47.0	32.8	
Level of Service	D	C	C	D	D		D	C	C	D	C	
Approach Delay (s/veh)		34.4			46.6			32.0			35.5	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	37.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	99.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	69.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	229	84	179	301	124	215	470	116	99	318	92
Future Volume (veh/h)	125	229	84	179	301	124	215	470	116	99	318	92
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1668	1573	1518	1654	1614	1641	1600	1654	1532	1504	1586	1504
Adj Flow Rate, veh/h	132	241	0	188	317	120	226	495	75	104	335	71
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	13	17	7	10	8	11	7	16	18	12	18
Cap, veh/h	173	450		237	365	138	324	844	349	267	631	132
Arrive On Green	0.11	0.29	0.00	0.15	0.33	0.32	0.11	0.27	0.27	0.10	0.25	0.25
Sat Flow, veh/h	1589	1573	1286	1576	1114	422	2956	3143	1298	2779	2474	518
Grp Volume(v), veh/h	132	241	0	188	0	437	226	495	75	104	202	204
Grp Sat Flow(s),veh/h/ln	1589	1573	1286	1576	0	1536	1478	1572	1298	1390	1507	1485
Q Serve(g_s), s	6.5	10.4	0.0	9.3	0.0	21.5	5.9	11.0	3.6	2.8	9.3	9.5
Cycle Q Clear(g_c), s	6.5	10.4	0.0	9.3	0.0	21.5	5.9	11.0	3.6	2.8	9.3	9.5
Prop In Lane	1.00		1.00	1.00		0.27	1.00		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	173	450		237	0	503	324	844	349	267	384	378
V/C Ratio(X)	0.76	0.54		0.79	0.00	0.87	0.70	0.59	0.22	0.39	0.53	0.54
Avail Cap(c_a), veh/h	316	743		490	0	897	514	1250	516	311	506	498
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.8	24.2	0.0	33.0	0.0	25.5	34.5	25.5	22.8	34.2	25.8	26.0
Incr Delay (d2), s/veh	5.1	0.7	0.0	4.4	0.0	3.6	2.0	0.5	0.2	0.7	0.8	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	3.7	0.0	3.7	0.0	7.8	2.1	3.9	1.1	0.9	3.3	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.0	24.9	0.0	37.4	0.0	29.0	36.6	26.0	23.1	34.8	26.6	26.9
LnGrp LOS	D	C		D		C	D	C	C	C	C	C
Approach Vol, veh/h		373			625			796			510	
Approach Delay, s/veh		30.3			31.5			28.7			28.4	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.8	24.5	12.8	30.4	11.7	25.6	16.1	27.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	13.5	26.5	15.5	46.5	8.5	31.5	24.5	37.5
Max Q Clear Time (g_c+I1), s	7.9	11.5	8.5	23.5	4.8	13.0	11.3	12.4
Green Ext Time (p_c), s	0.4	3.4	0.2	1.9	0.1	5.3	0.5	0.9

Intersection Summary	
HCM 7th Control Delay, s/veh	29.7
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	229	84	179	301	124	215	470	116	99	318	92
Future Volume (vph)	125	229	84	179	301	124	215	470	116	99	318	92
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.5	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.95	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1568	1549	1252	1554	1591	1356	2906	3107	1282	1409	2827	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1568	1549	1252	1554	1591	1356	2906	3107	1282	1409	2827	
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)	132	241	88	188	317	131	226	495	122	104	335	97
RTOR Reduction (vph)	0	0	68	0	0	97	0	0	84	0	24	0
Lane Group Flow (vph)	132	241	20	188	317	34	226	495	38	104	408	0
Confl. Peds. (#/hr)	4		3	3		4						
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	6%	13%	17%	7%	10%	8%	11%	7%	16%	18%	12%	18%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4			6			
Actuated Green, G (s)	11.8	19.4	19.4	15.2	22.8	22.8	11.4	26.9	26.9	9.6	25.1	
Effective Green, g (s)	12.3	19.9	19.9	15.7	23.3	22.8	11.9	27.4	27.4	10.1	25.6	
Actuated g/C Ratio	0.14	0.22	0.22	0.18	0.26	0.26	0.13	0.31	0.31	0.11	0.29	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	216	345	279	273	416	346	388	955	394	159	812	
v/s Ratio Prot	0.08	0.16		c0.12	c0.20		c0.08	c0.16		0.07	0.14	
v/s Ratio Perm			0.02			0.02			0.03			
v/c Ratio	0.61	0.69	0.07	0.68	0.76	0.09	0.58	0.51	0.09	0.65	0.50	
Uniform Delay, d1	36.1	31.8	27.3	34.4	30.3	25.2	36.2	25.4	22.0	37.8	26.4	
Progression Factor	1.00	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	5.5	0.0	6.4	7.7	0.0	1.8	0.3	0.0	8.3	0.3	
Delay (s)	40.4	37.4	27.3	40.8	38.0	25.3	38.1	25.7	22.0	46.1	26.8	
Level of Service	D	D	C	D	D	C	D	C	C	D	C	
Approach Delay (s/veh)		36.3			36.2			28.5			30.5	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	32.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	89.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	229	84	179	301	124	215	470	116	99	318	92
Future Volume (veh/h)	125	229	84	179	301	124	215	470	116	99	318	92
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1668	1573	1518	1654	1614	1641	1600	1654	1532	1504	1586	1504
Adj Flow Rate, veh/h	132	241	0	188	317	78	226	495	75	104	335	71
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	6	13	17	7	10	8	11	7	16	18	12	18
Cap, veh/h	177	335		240	409	341	351	953	393	151	717	150
Arrive On Green	0.11	0.21	0.00	0.15	0.25	0.25	0.12	0.30	0.30	0.11	0.29	0.28
Sat Flow, veh/h	1589	1573	1286	1576	1614	1384	2956	3143	1298	1433	2474	518
Grp Volume(v), veh/h	132	241	0	188	317	78	226	495	75	104	202	204
Grp Sat Flow(s),veh/h/ln	1589	1573	1286	1576	1614	1384	1478	1572	1298	1433	1507	1485
Q Serve(g_s), s	5.7	10.1	0.0	8.1	12.9	3.2	5.2	9.2	3.0	5.0	7.8	8.0
Cycle Q Clear(g_c), s	5.7	10.1	0.0	8.1	12.9	3.2	5.2	9.2	3.0	5.0	7.8	8.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	177	335		240	409	341	351	953	393	151	437	430
V/C Ratio(X)	0.74	0.72		0.78	0.78	0.23	0.64	0.52	0.19	0.69	0.46	0.47
Avail Cap(c_a), veh/h	314	711		423	844	714	585	1600	661	344	831	819
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.4	25.9	0.0	28.9	24.5	21.3	29.7	20.4	18.2	30.5	20.6	20.8
Incr Delay (d2), s/veh	4.5	2.2	0.0	4.2	2.4	0.3	1.5	0.3	0.2	4.1	0.6	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	3.7	0.0	3.2	4.8	1.0	1.8	3.2	0.9	1.8	2.6	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	35.0	28.1	0.0	33.0	26.9	21.5	31.2	20.7	18.4	34.6	21.2	21.4
LnGrp LOS	C	C		C	C	C	C	C	B	C	C	C
Approach Vol, veh/h		373			583			796			510	
Approach Delay, s/veh		30.5			28.2			23.5			24.0	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.4	24.5	11.9	21.9	11.5	25.4	14.8	19.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	13.5	38.5	13.5	36.5	16.5	35.5	18.5	31.5
Max Q Clear Time (g_c+I1), s	7.2	10.0	7.7	14.9	7.0	11.2	10.1	12.1
Green Ext Time (p_c), s	0.5	4.4	0.2	1.4	0.2	5.9	0.4	0.8

Intersection Summary	
HCM 7th Control Delay, s/veh	26.0
HCM 7th LOS	C

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	403	309	258	324	73	244	406	134	183	759	120
Future Volume (vph)	186	403	309	258	324	73	244	406	134	183	759	120
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.98	1.00	0.99	
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	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1568	1667	1410	1614	1597		3101	3167	1332	3162	3130	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1568	1667	1410	1614	1597		3101	3167	1332	3162	3130	
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)	200	433	332	277	348	78	262	437	144	197	816	129
RTOR Reduction (vph)	0	0	176	0	7	0	0	0	99	0	10	0
Lane Group Flow (vph)	200	433	156	277	419	0	262	437	45	197	935	0
Confl. Peds. (#/hr)	3		9	9		3	5		2	2		2
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	6%	5%	3%	3%	7%	3%	4%	5%	10%	2%	4%	3%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8						6			
Actuated Green, G (s)	16.2	31.5	31.5	21.2	36.5		10.7	36.0	36.0	11.2	36.5	
Effective Green, g (s)	16.7	32.0	32.0	21.7	37.0		11.2	36.5	36.5	11.7	37.0	
Actuated g/C Ratio	0.14	0.27	0.27	0.18	0.31		0.09	0.31	0.31	0.10	0.31	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5		2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	222	452	382	297	501		294	980	412	313	982	
v/s Ratio Prot	0.13	c0.26		c0.17	0.26		c0.08	0.14		0.06	c0.30	
v/s Ratio Perm			0.11						0.03			
v/c Ratio	0.90	0.95	0.40	0.93	0.83		0.89	0.44	0.10	0.62	0.95	
Uniform Delay, d1	49.7	42.2	35.1	47.3	37.6		52.7	32.6	29.0	51.0	39.5	
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	34.7	31.3	0.5	34.7	11.3		26.6	0.2	0.0	3.4	18.1	
Delay (s)	84.5	73.6	35.7	82.1	49.0		79.4	32.8	29.1	54.4	57.7	
Level of Service	F	E	D	F	D		E	C	C	D	E	
Approach Delay (s/veh)		62.8			62.0			46.6			57.1	
Approach LOS		E			E			D			E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	57.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	117.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	186	403	309	258	324	73	244	406	134	183	759	120
Future Volume (veh/h)	186	403	309	258	324	73	244	406	134	183	759	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1668	1682	1709	1709	1654	1709	1695	1682	1614	1723	1695	1709
Adj Flow Rate, veh/h	200	433	0	277	348	67	262	437	96	197	816	102
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	6	5	3	3	7	3	4	5	10	2	4	3
Cap, veh/h	227	460		301	424	82	295	1035	435	265	902	113
Arrive On Green	0.14	0.27	0.00	0.18	0.32	0.31	0.09	0.32	0.32	0.08	0.31	0.31
Sat Flow, veh/h	1589	1682	1448	1628	1346	259	3132	3195	1344	3183	2880	360
Grp Volume(v), veh/h	200	433	0	277	0	415	262	437	96	197	456	462
Grp Sat Flow(s),veh/h/ln	1589	1682	1448	1628	0	1605	1566	1598	1344	1591	1611	1630
Q Serve(g_s), s	14.7	30.0	0.0	19.9	0.0	28.4	9.8	12.7	6.2	7.2	32.3	32.3
Cycle Q Clear(g_c), s	14.7	30.0	0.0	19.9	0.0	28.4	9.8	12.7	6.2	7.2	32.3	32.3
Prop In Lane	1.00		1.00	1.00		0.16	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	227	460		301	0	506	295	1035	435	265	504	510
V/C Ratio(X)	0.88	0.94		0.92	0.00	0.82	0.89	0.42	0.22	0.74	0.90	0.90
Avail Cap(c_a), veh/h	227	461		301	0	507	295	1035	435	348	517	523
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.0	42.3	0.0	47.6	0.0	37.7	53.3	31.5	29.3	53.3	39.1	39.2
Incr Delay (d2), s/veh	30.1	27.8	0.0	31.7	0.0	10.0	26.0	0.2	0.2	5.1	18.8	18.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	15.7	0.0	10.6	0.0	12.3	4.9	4.9	2.0	3.0	15.1	15.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	80.1	70.1	0.0	79.4	0.0	47.7	79.3	31.7	29.5	58.4	58.0	57.9
LnGrp LOS	F	E		E		D	E	C	C	E	E	E
Approach Vol, veh/h		633			692			795			1115	
Approach Delay, s/veh		73.2			60.4			47.1			58.0	
Approach LOS		E			E			D			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.2	41.3	21.0	41.5	13.9	42.5	26.0	36.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	10.7	37.7	16.5	37.1	12.5	35.9	21.5	32.1				
Max Q Clear Time (g_c+I1), s	11.8	34.3	16.7	30.4	9.2	14.7	21.9	32.0				
Green Ext Time (p_c), s	0.0	2.3	0.0	1.0	0.2	5.0	0.0	0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			58.8									
HCM 7th LOS			E									

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Signalized Intersection V/C Calculation Summary

1. Molalla Road (OR 211)/Mt. Hood Avenue (OR 214) & N Pacific Highway (OR 99E)

MORNING PEAK HOUR

Year 2023 Existing	Protected Left-Turn Phasing				Protected Left-Turn Phasing				
Critical Movement:	EBL	EBT	WBL	WBTR	NBL	NBT	NBR	SBL	SBTR
Adjusted Flow Rate:	128	217	153	361	194	473	55	86	392
Saturated Flow:	1589	1573	1576	1543	2956	3143	1298	1433	2991
Flow Ratio:	0.08	0.14	0.10	0.23	0.07	0.15	0.04	0.06	0.13
	0.31				0.21				

Sum of Critical Flow Ratios:	0.53	Critical Intersection V/C:	0.67
Cycle Length (seconds):	73.7		
Lost Time per phase (seconds)	4		
Number of Phases	4		

Year 2025 Background	Protected Left-Turn Phasing				Protected Left-Turn Phasing				
Critical Movement:	EBL	EBT	WBL	WBTR	NBL	NBT	NBR	SBL	SBTR
Adjusted Flow Rate:	132	231	177	419	226	495	64	98	406
Saturated Flow:	1589	1573	1576	1537	2956	3143	1298	1433	2992
Flow Ratio:	0.08	0.15	0.11	0.27	0.08	0.16	0.05	0.07	0.14
	0.36				0.23				

Sum of Critical Flow Ratios:	0.58	Critical Intersection V/C:	0.73
Cycle Length (seconds):	78.5		
Lost Time per phase (seconds)	4		
Number of Phases	4		

Year 2025 Buildout	Protected Left-Turn Phasing				Protected Left-Turn Phasing				
Critical Movement:	EBL	EBT	WBL	WBTR	NBL	NBT	NBR	SBL	SBTR
Adjusted Flow Rate:	132	241	188	437	226	495	75	104	406
Saturated Flow:	1589	1573	1576	1536	2956	3143	1298	1433	2992
Flow Ratio:	0.08	0.15	0.12	0.28	0.08	0.16	0.06	0.07	0.14
	0.37				0.23				

Sum of Critical Flow Ratios:	0.60	Critical Intersection V/C:	0.75
Cycle Length (seconds):	80.1		
Lost Time per phase (seconds)	4		
Number of Phases	4		

EVENING PEAK HOUR

Year 2023 Existing	Protected Left-Turn Phasing				Protected Left-Turn Phasing				
Critical Movement:	EBL	EBT	WBL	WBTR	NBL	NBT	NBR	SBL	SBTR
Adjusted Flow Rate:	196	397	256	383	238	420	62	175	902
Saturated Flow:	1589	1682	1628	1607	3132	3195	1327	1641	3231
Flow Ratio:	0.12	0.24	0.16	0.24	0.08	0.13	0.05	0.11	0.28
	0.39				0.36				

Sum of Critical Flow Ratios:	0.75	Critical Intersection V/C:	0.87
Cycle Length (seconds):	113.4		
Lost Time per phase (seconds)	4		
Number of Phases	4		

Year 2025 Background	Protected Left-Turn Phasing				Protected Left-Turn Phasing				
Critical Movement:	EBL	EBT	WBL	WBTR	NBL	NBT	NBR	SBL	SBTR
Adjusted Flow Rate:	200	430	273	416	262	437	83	196	934
Saturated Flow:	1589	1682	1628	1602	3132	3195	1327	1641	3231
Flow Ratio:	0.13	0.26	0.17	0.26	0.08	0.14	0.06	0.12	0.29
	0.42				0.37				

Sum of Critical Flow Ratios:	0.80	Critical Intersection V/C:	0.92
Cycle Length (seconds):	116.8		
Lost Time per phase (seconds)	4		
Number of Phases	4		

Year 2025 Buildout	Protected Left-Turn Phasing				Protected Left-Turn Phasing				
Critical Movement:	EBL	EBT	WBL	WBTR	NBL	NBT	NBR	SBL	SBTR
Adjusted Flow Rate:	200	433	277	426	262	437	90	197	934
Saturated Flow:	1589	1682	1628	1599	3132	3195	1327	1641	3232
Flow Ratio:	0.13	0.26	0.17	0.27	0.08	0.14	0.07	0.12	0.29
	0.43				0.37				

Sum of Critical Flow Ratios:	0.80	Critical Intersection V/C:	0.92
Cycle Length (seconds):	119.4		
Lost Time per phase (seconds)	4		
Number of Phases	4		

Notes:

Since EB and WB left-turn phases are protected, critical ring is either EBL+WBT or WBL+EBT

Since NB and SB left-turn phases are protected, critical ring is either NBL+SBT or SBL+NBT

Signalized Intersection V/C Calculation Summary

1. Molalla Road (OR 211)/Mt. Hood Avenue (OR 214) & N Pacific Highway (OR 99E)
MITIGATION OPTION 1 - TSP - DUAL SOUTHBOUND LEFT-TURN LANES

MORNING PEAK HOUR

Year 2025 Background	Protected Left-Turn Phasing						Protected Left-Turn Phasing				
Critical Movement:	EBL	EBT		WBL	WBTR		NBL	NBT	NBR	SBL	SBTR
Adjusted Flow Rate:	132	231		177	419		226	495	64	98	406
Saturated Flow:	1589	1573		1576	1537		2956	3143	1298	2779	2992
Flow Ratio:	0.08	0.15		0.11	0.27		0.08	0.16	0.05	0.04	0.14
			0.36						0.21		

Sum of Critical Flow Ratios:	0.57	Critical Intersection V/C:	0.71
Cycle Length (seconds):	78.9		
Lost Time per phase (seconds)	4		
Number of Phases	4		

Year 2025 Buildout	Protected Left-Turn Phasing						Protected Left-Turn Phasing				
Critical Movement:	EBL	EBT		WBL	WBTR		NBL	NBT	NBR	SBL	SBTR
Adjusted Flow Rate:	132	241		188	437		226	495	75	104	406
Saturated Flow:	1589	1573		1576	1536		2956	3143	1298	2779	2992
Flow Ratio:	0.08	0.15		0.12	0.28		0.08	0.16	0.06	0.04	0.14
			0.37						0.21		

Sum of Critical Flow Ratios:	0.58	Critical Intersection V/C:	0.72
Cycle Length (seconds):	80.5		
Lost Time per phase (seconds)	4		
Number of Phases	4		

EVENING PEAK HOUR

Year 2025 Background	Protected Left-Turn Phasing						Protected Left-Turn Phasing				
Critical Movement:	EBL	EBT		WBL	WBTR		NBL	NBT	NBR	SBL	SBTR
Adjusted Flow Rate:	200	430		273	416		262	437	83	196	934
Saturated Flow:	1589	1682		1628	1602		3132	3195	1327	3183	3231
Flow Ratio:	0.13	0.26		0.17	0.26		0.08	0.14	0.06	0.06	0.29
			0.42						0.37		

Sum of Critical Flow Ratios:	0.80	Critical Intersection V/C:	0.92
Cycle Length (seconds):	117.7		
Lost Time per phase (seconds)	4		
Number of Phases	4		

Year 2025 Buildout	Protected Left-Turn Phasing						Protected Left-Turn Phasing				
Critical Movement:	EBL	EBT		WBL	WBTR		NBL	NBT	NBR	SBL	SBTR
Adjusted Flow Rate:	200	433		277	426		262	437	90	197	934
Saturated Flow:	1589	1682		1628	1599		3132	3195	1327	3183	3232
Flow Ratio:	0.13	0.26		0.17	0.27		0.08	0.14	0.07	0.06	0.29
			0.43						0.37		

Sum of Critical Flow Ratios:	0.80	Critical Intersection V/C:	0.92
Cycle Length (seconds):	119		
Lost Time per phase (seconds)	4		
Number of Phases	4		

Notes:
Since EB and WB left-turn phases are protected, critical ring is either EBL+WBT or WBL+EBT
Since NB and SB left-turn phases are protected, critical ring is either NBL+SBT or SBL+NBT

Signalized Intersection V/C Calculation Summary

1. Molalla Road (OR 211)/Mt. Hood Avenue (OR 214) & N Pacific Highway (OR 99E)
MITIGATION OPTION 2 - WOODBURN PLACE TIAS - WESTBOUND RIGHT-TURN LANE

MORNING PEAK HOUR

Year 2025 Background	Protected Left-Turn Phasing						Protected Left-Turn Phasing				
Critical Movement:	EBL	EBT		WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBTR
Adjusted Flow Rate:	132	231		177	306	71	226	495	64	98	406
Saturated Flow:	1589	1573		1576	1614	1384	2956	3143	1298	1433	2992
Flow Ratio:	0.08	0.15		0.11	0.19	0.05	0.08	0.16	0.05	0.07	0.14
			0.27						0.23		

Sum of Critical Flow Ratios:	0.50	Critical Intersection V/C:	0.65
Cycle Length (seconds):	70.1		
Lost Time per phase (seconds)	4		
Number of Phases	4		

Year 2025 Buildout	Protected Left-Turn Phasing						Protected Left-Turn Phasing				
Critical Movement:	EBL	EBT		WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBTR
Adjusted Flow Rate:	132	241		188	317	78	226	495	75	104	406
Saturated Flow:	1589	1573		1576	1614	1384	2956	3143	1298	1433	2992
Flow Ratio:	0.08	0.15		0.12	0.20	0.06	0.08	0.16	0.06	0.07	0.14
			0.28						0.23		

Sum of Critical Flow Ratios:	0.51	Critical Intersection V/C:	0.66
Cycle Length (seconds):	70.7		
Lost Time per phase (seconds)	4		
Number of Phases	4		

EVENING PEAK HOUR

Year 2025 Background	Protected Left-Turn Phasing						Protected Left-Turn Phasing				
Critical Movement:	EBL	EBT		WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBTR
Adjusted Flow Rate:	200	430		273	345	38	262	437	83	196	934
Saturated Flow:	1589	1682		1628	1654	1436	3132	3195	1327	1641	3231
Flow Ratio:	0.13	0.26		0.17	0.21	0.03	0.08	0.14	0.06	0.12	0.29
			0.42						0.37		

Sum of Critical Flow Ratios:	0.80	Critical Intersection V/C:	0.92
Cycle Length (seconds):	117.7		
Lost Time per phase (seconds)	4		
Number of Phases	4		

Year 2025 Buildout	Protected Left-Turn Phasing						Protected Left-Turn Phasing				
Critical Movement:	EBL	EBT		WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBTR
Adjusted Flow Rate:	200	433		277	348	35	262	437	90	197	934
Saturated Flow:	1589	1682		1628	1654	1436	3132	3195	1325	1641	3232
Flow Ratio:	0.13	0.26		0.17	0.21	0.02	0.08	0.14	0.07	0.12	0.29
			0.43						0.37		

Sum of Critical Flow Ratios:	0.80	Critical Intersection V/C:	0.92
Cycle Length (seconds):	119.7		
Lost Time per phase (seconds)	4		
Number of Phases	4		

Notes:
Since EB and WB left-turn phases are protected, critical ring is either EBL+WBT or WBL+EBT
Since NB and SB left-turn phases are protected, critical ring is either NBL+SBT or SBL+NBT

Intersection: 1: N Pacific Hwy(99E) & Mt Hood Ave (OR 214)/Molalla Road (OR 211)

Movement	EB	EB	WB	WB	NB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	L	TR	L	L	T	T	R	L	T	TR
Maximum Queue (ft)	175	272	186	308	184	228	225	154	71	161	206	178
Average Queue (ft)	82	131	99	204	58	112	108	76	16	57	102	65
95th Queue (ft)	153	225	168	313	154	191	186	153	50	123	185	145
Link Distance (ft)		915	295	295			743	743			524	524
Upstream Blk Time (%)				2								
Queuing Penalty (veh)				7								
Storage Bay Dist (ft)	350				325	325			185	350		
Storage Blk Time (%)						0		0				
Queuing Penalty (veh)						0		0				

Intersection: 2: Safeway Access & Molalla Road (OR 211)

Movement	EB	EB	WB	NB	NB
Directions Served	T	R	LT	L	R
Maximum Queue (ft)	36	10	138	106	58
Average Queue (ft)	1	0	17	49	19
95th Queue (ft)	16	7	79	86	47
Link Distance (ft)	295		723	327	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		100			150
Storage Blk Time (%)				0	
Queuing Penalty (veh)				0	

Intersection: 3: June Way/Woodburn Place West & Molalla Road (OR 211)

Movement	EB	WB	NB	SB
Directions Served	LTR	L	LTR	LTR
Maximum Queue (ft)	50	40	35	72
Average Queue (ft)	6	3	16	34
95th Queue (ft)	30	24	33	57
Link Distance (ft)	723		501	173
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		100		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Molalla Road (OR 211) & Primary Site Access

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 5: Molalla Road (OR 211) & Woodburn Place East

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	31	26	20	55
Average Queue (ft)	4	1	1	20
95th Queue (ft)	21	12	10	47
Link Distance (ft)		122	396	278
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	50			
Storage Blk Time (%)	0	0		
Queuing Penalty (veh)	0	0		

Intersection: 6: Cooley Road & Molalla Road (OR 211)

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	13	30	66	74
Average Queue (ft)	1	5	31	22
95th Queue (ft)	14	21	59	65
Link Distance (ft)			510	271
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	50	400		
Storage Blk Time (%)	0			
Queuing Penalty (veh)	0			

Network Summary

Network wide Queuing Penalty: 7

Intersection: 1: N Pacific Hwy(99E) & Mt Hood Ave (OR 214)/Molalla Road (OR 211)

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	TR	L	L	T	T	R	L	T
Maximum Queue (ft)	450	675	221	309	310	204	242	237	191	100	219	345
Average Queue (ft)	203	349	38	208	224	105	151	112	89	28	105	222
95th Queue (ft)	428	623	151	330	339	199	216	195	166	78	187	326
Link Distance (ft)		915	915	295	295			743	743			524
Upstream Blk Time (%)				6	4							
Queuing Penalty (veh)				21	13							
Storage Bay Dist (ft)	350					325	325			185	350	
Storage Blk Time (%)	1	19							0			0
Queuing Penalty (veh)	3	35							0			0

Intersection: 1: N Pacific Hwy(99E) & Mt Hood Ave (OR 214)/Molalla Road (OR 211)

Movement	SB
Directions Served	TR
Maximum Queue (ft)	303
Average Queue (ft)	202
95th Queue (ft)	304
Link Distance (ft)	524
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: Safeway Access & Molalla Road (OR 211)

Movement	EB	EB	WB	NB	NB
Directions Served	T	R	LT	L	R
Maximum Queue (ft)	31	41	329	336	250
Average Queue (ft)	1	4	75	130	70
95th Queue (ft)	22	24	239	279	195
Link Distance (ft)	295		723	327	
Upstream Blk Time (%)				6	
Queuing Penalty (veh)				0	
Storage Bay Dist (ft)		100			150
Storage Blk Time (%)	0			20	
Queuing Penalty (veh)	0			26	

Intersection: 3: June Way/Woodburn Place West & Molalla Road (OR 211)

Movement	EB	WB	NB	SB
Directions Served	LTR	L	LTR	LTR
Maximum Queue (ft)	104	28	58	54
Average Queue (ft)	27	2	18	25
95th Queue (ft)	78	15	44	50
Link Distance (ft)	723		501	173
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		100		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Molalla Road (OR 211) & Primary Site Access

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 5: Molalla Road (OR 211) & Woodburn Place East

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	58	51	44	31
Average Queue (ft)	21	4	2	14
95th Queue (ft)	48	28	17	39
Link Distance (ft)		122	396	278
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	50			
Storage Blk Time (%)	0	0		
Queuing Penalty (veh)	1	0		

Intersection: 6: Cooley Road & Molalla Road (OR 211)

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	25	60	74	31
Average Queue (ft)	1	23	34	9
95th Queue (ft)	12	49	63	31
Link Distance (ft)			510	271
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	50	400		
Storage Blk Time (%)	0			
Queuing Penalty (veh)	0			

Network Summary

Network wide Queuing Penalty: 101

Intersection: 1: N Pacific Hwy(99E) & Mt Hood Ave (OR 214)/Molalla Road (OR 211)

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	TR	L	L	T	T	R	L	T
Maximum Queue (ft)	192	274	35	258	307	199	235	229	195	99	195	208
Average Queue (ft)	88	140	2	125	231	67	129	126	95	23	73	99
95th Queue (ft)	164	237	27	217	339	169	205	201	176	69	151	174
Link Distance (ft)		915	915	295	295			743	743			524
Upstream Blk Time (%)				0	4							
Queuing Penalty (veh)				1	12							
Storage Bay Dist (ft)	350					325	325			185	350	
Storage Blk Time (%)		0							0			
Queuing Penalty (veh)		0							0			

Intersection: 1: N Pacific Hwy(99E) & Mt Hood Ave (OR 214)/Molalla Road (OR 211)

Movement	SB
Directions Served	TR
Maximum Queue (ft)	190
Average Queue (ft)	75
95th Queue (ft)	156
Link Distance (ft)	524
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: Safeway Access & Molalla Road (OR 211)

Movement	EB	EB	WB	NB	NB
Directions Served	T	R	LT	L	R
Maximum Queue (ft)	20	18	228	226	101
Average Queue (ft)	1	1	35	74	24
95th Queue (ft)	11	9	140	165	76
Link Distance (ft)	295		723	327	
Upstream Blk Time (%)				1	
Queuing Penalty (veh)				0	
Storage Bay Dist (ft)		100			150
Storage Blk Time (%)				3	
Queuing Penalty (veh)				1	

Intersection: 3: June Way/Woodburn Place West & Molalla Road (OR 211)

Movement	EB	WB	NB	SB
Directions Served	LTR	L	LTR	LTR
Maximum Queue (ft)	96	47	45	59
Average Queue (ft)	8	2	16	31
95th Queue (ft)	48	17	37	53
Link Distance (ft)	723		501	173
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		100		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Molalla Road (OR 211) & Primary Site Access

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	54	72
Average Queue (ft)	17	32
95th Queue (ft)	45	55
Link Distance (ft)		277
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Molalla Road (OR 211) & Woodburn Place East

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	57	28	29	54
Average Queue (ft)	10	1	1	30
95th Queue (ft)	38	13	15	51
Link Distance (ft)		122	396	278
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	50			
Storage Blk Time (%)	0	0		
Queuing Penalty (veh)	1	0		

Intersection: 6: Cooley Road & Molalla Road (OR 211)

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	L	LTR	LTR
Maximum Queue (ft)	26	4	34	96	81
Average Queue (ft)	1	0	7	37	22
95th Queue (ft)	11	3	26	71	67
Link Distance (ft)		396		510	271
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	50		400		
Storage Blk Time (%)	0				
Queuing Penalty (veh)	0				

Network Summary

Network wide Queuing Penalty: 15

Intersection: 1: N Pacific Hwy(99E) & Mt Hood Ave (OR 214)/Molalla Road (OR 211)

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	TR	L	L	T	T	R	L	T
Maximum Queue (ft)	410	652	512	306	308	229	261	218	192	109	276	411
Average Queue (ft)	216	372	113	208	237	113	158	121	92	33	125	251
95th Queue (ft)	430	664	401	328	343	218	244	196	172	81	228	375
Link Distance (ft)		915	915	293	293			743	743			518
Upstream Blk Time (%)		0	0	4	5							
Queuing Penalty (veh)		0	0	15	18							
Storage Bay Dist (ft)	350					325	325			185	350	
Storage Blk Time (%)	2	17					0		0			2
Queuing Penalty (veh)	7	35					0		1			4

Intersection: 1: N Pacific Hwy(99E) & Mt Hood Ave (OR 214)/Molalla Road (OR 211)

Movement	SB
Directions Served	TR
Maximum Queue (ft)	390
Average Queue (ft)	240
95th Queue (ft)	367
Link Distance (ft)	518
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: Safeway Access & Molalla Road (OR 211)

Movement	EB	WB	NB	NB
Directions Served	R	LT	L	R
Maximum Queue (ft)	29	325	300	199
Average Queue (ft)	2	76	137	68
95th Queue (ft)	19	224	282	179
Link Distance (ft)		723	328	
Upstream Blk Time (%)			4	
Queuing Penalty (veh)			0	
Storage Bay Dist (ft)	100			150
Storage Blk Time (%)			20	0
Queuing Penalty (veh)			26	1

Intersection: 3: June Way/Woodburn Place West & Molalla Road (OR 211)

Movement	EB	WB	NB	SB
Directions Served	LTR	L	LTR	LTR
Maximum Queue (ft)	126	16	57	54
Average Queue (ft)	30	1	19	23
95th Queue (ft)	92	9	44	50
Link Distance (ft)	723		501	173
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		100		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Molalla Road (OR 211) & Primary Site Access

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	48	66
Average Queue (ft)	17	26
95th Queue (ft)	46	54
Link Distance (ft)		277
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Molalla Road (OR 211) & Woodburn Place East

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	68	37	34	57
Average Queue (ft)	21	2	1	22
95th Queue (ft)	52	21	13	50
Link Distance (ft)		122	396	278
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	50			
Storage Blk Time (%)	0	0		
Queuing Penalty (veh)	2	0		

Intersection: 6: Cooley Road & Molalla Road (OR 211)

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	38	60	89	32
Average Queue (ft)	3	24	40	9
95th Queue (ft)	19	51	70	31
Link Distance (ft)			510	271
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	50	400		
Storage Blk Time (%)	0			
Queuing Penalty (veh)	0			

Network Summary

Network wide Queuing Penalty: 109

Intersection: 1: N Pacific Hwy(99E) & Mt Hood Ave (OR 214)/Molalla Road (OR 211)

Movement	EB	EB	WB	WB	NB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	L	TR	L	L	T	T	R	L	L	T
Maximum Queue (ft)	190	262	212	297	161	204	225	190	65	134	101	192
Average Queue (ft)	81	116	102	196	54	113	115	88	11	46	17	95
95th Queue (ft)	151	214	179	303	145	185	191	168	43	104	60	171
Link Distance (ft)		915	295	295			743	743				523
Upstream Blk Time (%)			0	1								
Queuing Penalty (veh)			0	4								
Storage Bay Dist (ft)	350				325	325			185	350	350	
Storage Blk Time (%)								0				
Queuing Penalty (veh)								0				

Intersection: 1: N Pacific Hwy(99E) & Mt Hood Ave (OR 214)/Molalla Road (OR 211)

Movement	SB
Directions Served	TR
Maximum Queue (ft)	166
Average Queue (ft)	65
95th Queue (ft)	145
Link Distance (ft)	523
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: Safeway Access & Molalla Road (OR 211)

Movement	EB	EB	WB	NB	NB
Directions Served	T	R	LT	L	R
Maximum Queue (ft)	41	24	124	125	52
Average Queue (ft)	2	1	14	56	20
95th Queue (ft)	20	13	79	100	46
Link Distance (ft)	295		316	315	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		100			150
Storage Blk Time (%)				0	
Queuing Penalty (veh)				0	

Zone Summary

Zone wide Queuing Penalty: 4

Intersection: 1: N Pacific Hwy(99E) & Mt Hood Ave (OR 214)/Molalla Road (OR 211)

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	L	T	R	L	L	T	T	R	L	T
Maximum Queue (ft)	155	282	250	294	92	162	214	209	179	103	170	179
Average Queue (ft)	77	137	117	155	44	48	111	112	82	21	61	82
95th Queue (ft)	138	235	203	261	78	137	186	186	158	62	136	159
Link Distance (ft)		915	288	288	288			743	743			509
Upstream Blk Time (%)			0	0								
Queuing Penalty (veh)			0	1								
Storage Bay Dist (ft)	350					325	325			185	350	
Storage Blk Time (%)		0							0			
Queuing Penalty (veh)		0							0			

Intersection: 1: N Pacific Hwy(99E) & Mt Hood Ave (OR 214)/Molalla Road (OR 211)

Movement	SB
Directions Served	TR
Maximum Queue (ft)	182
Average Queue (ft)	56
95th Queue (ft)	144
Link Distance (ft)	509
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: Safeway Access & Molalla Road (OR 211)

Movement	EB	WB	NB	NB
Directions Served	T	LT	L	R
Maximum Queue (ft)	36	82	122	54
Average Queue (ft)	1	8	53	21
95th Queue (ft)	17	40	96	47
Link Distance (ft)	288	723	327	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				150
Storage Blk Time (%)	0		0	
Queuing Penalty (veh)	0		0	

Zone Summary

Zone wide Queuing Penalty: 1

Intersection: 1: N Pacific Hwy(99E) & Mt Hood Ave (OR 214)/Molalla Road (OR 211)

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	TR	L	L	T	T	R	L	L
Maximum Queue (ft)	448	636	292	298	307	199	236	192	159	57	156	131
Average Queue (ft)	188	312	54	190	223	106	148	105	77	13	78	38
95th Queue (ft)	380	578	205	304	330	195	212	176	143	40	141	99
Link Distance (ft)		915	915	295	295			743	743			
Upstream Blk Time (%)				2	2							
Queuing Penalty (veh)				7	7							
Storage Bay Dist (ft)	350					325	325			185	350	350
Storage Blk Time (%)	1	12							0			
Queuing Penalty (veh)	3	23							0			

Intersection: 1: N Pacific Hwy(99E) & Mt Hood Ave (OR 214)/Molalla Road (OR 211)

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	458	402
Average Queue (ft)	245	230
95th Queue (ft)	387	366
Link Distance (ft)	523	523
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)	2	
Queuing Penalty (veh)	4	

Intersection: 2: Safeway Access & Molalla Road (OR 211)

Movement	EB	EB	WB	NB	NB
Directions Served	T	R	LT	L	R
Maximum Queue (ft)	21	43	285	269	179
Average Queue (ft)	1	3	62	114	48
95th Queue (ft)	16	24	200	235	145
Link Distance (ft)	295		316	315	
Upstream Blk Time (%)			0	2	
Queuing Penalty (veh)			2	0	
Storage Bay Dist (ft)		100			150
Storage Blk Time (%)				14	
Queuing Penalty (veh)				18	

Zone Summary

Zone wide Queuing Penalty: 64

Intersection: 1: N Pacific Hwy(99E) & Mt Hood Ave (OR 214)/Molalla Road (OR 211)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	T	R	L	T	R	L	L	T	T	R	L
Maximum Queue (ft)	406	637	383	286	286	55	201	244	199	177	104	198
Average Queue (ft)	160	299	66	160	181	25	115	156	113	89	32	98
95th Queue (ft)	336	540	241	254	279	49	202	230	175	158	84	176
Link Distance (ft)		915	915	286	286	286			743	743		
Upstream Blk Time (%)		0		1	1							
Queuing Penalty (veh)		0		2	2							
Storage Bay Dist (ft)	350						325	325			185	350
Storage Blk Time (%)		11								0		
Queuing Penalty (veh)		22								0		

Intersection: 1: N Pacific Hwy(99E) & Mt Hood Ave (OR 214)/Molalla Road (OR 211)

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	379	386
Average Queue (ft)	222	210
95th Queue (ft)	329	327
Link Distance (ft)	503	503
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)	1	
Queuing Penalty (veh)	1	

Intersection: 2: Safeway Access & Molalla Road (OR 211)

Movement	EB	EB	WB	NB	NB
Directions Served	T	R	LT	L	R
Maximum Queue (ft)	6	53	184	222	137
Average Queue (ft)	0	3	27	82	48
95th Queue (ft)	4	21	101	170	102
Link Distance (ft)	286		724	326	
Upstream Blk Time (%)				0	
Queuing Penalty (veh)				0	
Storage Bay Dist (ft)		100			150
Storage Blk Time (%)				4	0
Queuing Penalty (veh)				5	0

Zone Summary

Zone wide Queuing Penalty: 33

Intersection: 1: N Pacific Hwy(99E) & Mt Hood Ave (OR 214)/Molalla Road (OR 211)

Movement	EB	EB	WB	WB	NB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	L	TR	L	L	T	T	R	L	L	T
Maximum Queue (ft)	183	280	235	304	180	210	234	200	80	169	150	203
Average Queue (ft)	82	133	118	210	68	122	118	91	15	56	23	103
95th Queue (ft)	145	236	203	304	167	194	197	177	51	128	81	182
Link Distance (ft)		915	295	295			743	743				523
Upstream Blk Time (%)				1								
Queuing Penalty (veh)				3								
Storage Bay Dist (ft)	350				325	325			185	350	350	
Storage Blk Time (%)								1				
Queuing Penalty (veh)								1				

Intersection: 1: N Pacific Hwy(99E) & Mt Hood Ave (OR 214)/Molalla Road (OR 211)

Movement	SB
Directions Served	TR
Maximum Queue (ft)	218
Average Queue (ft)	83
95th Queue (ft)	174
Link Distance (ft)	523
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: Safeway Access & Molalla Road (OR 211)

Movement	EB	EB	WB	NB	NB
Directions Served	T	R	LT	L	R
Maximum Queue (ft)	12	7	111	195	135
Average Queue (ft)	0	0	16	63	23
95th Queue (ft)	6	5	65	132	75
Link Distance (ft)	295		316	315	
Upstream Blk Time (%)				0	
Queuing Penalty (veh)				0	
Storage Bay Dist (ft)		100			150
Storage Blk Time (%)				2	
Queuing Penalty (veh)				0	

Zone Summary

Zone wide Queuing Penalty: 4

Queuing and Blocking Report

03/19/2024

Intersection: 1: N Pacific Hwy(99E) & Mt Hood Ave (OR 214)/Molalla Road (OR 211)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	T	R	L	T	R	L	L	T	T	R	L
Maximum Queue (ft)	159	309	34	231	294	82	162	200	227	183	81	154
Average Queue (ft)	84	147	2	111	164	38	61	117	118	85	20	57
95th Queue (ft)	149	252	34	193	265	70	156	192	195	164	61	120
Link Distance (ft)		915	915	288	288	288			743	743		
Upstream Blk Time (%)				0	1							
Queuing Penalty (veh)				1	1							
Storage Bay Dist (ft)	350						325	325			185	350
Storage Blk Time (%)										0		
Queuing Penalty (veh)										0		

Intersection: 1: N Pacific Hwy(99E) & Mt Hood Ave (OR 214)/Molalla Road (OR 211)

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	179	156
Average Queue (ft)	81	52
95th Queue (ft)	152	127
Link Distance (ft)	509	509
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Safeway Access & Molalla Road (OR 211)

Movement	EB	WB	NB	NB
Directions Served	R	LT	L	R
Maximum Queue (ft)	8	93	111	70
Average Queue (ft)	0	12	54	21
95th Queue (ft)	6	57	91	52
Link Distance (ft)		723	327	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	100			150
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 2

Intersection: 1: N Pacific Hwy(99E) & Mt Hood Ave (OR 214)/Molalla Road (OR 211)

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	TR	L	L	T	T	R	L	L
Maximum Queue (ft)	400	694	581	302	310	200	236	232	192	79	175	290
Average Queue (ft)	223	392	151	204	236	105	147	122	93	19	90	58
95th Queue (ft)	448	768	492	318	341	195	214	208	180	54	159	166
Link Distance (ft)		915	915	295	295			743	743			
Upstream Blk Time (%)		2	0	3	5							
Queuing Penalty (veh)		0	0	12	19							
Storage Bay Dist (ft)	350					325	325			185	350	350
Storage Blk Time (%)	1	21							0			
Queuing Penalty (veh)	5	40							0			

Intersection: 1: N Pacific Hwy(99E) & Mt Hood Ave (OR 214)/Molalla Road (OR 211)

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	444	442
Average Queue (ft)	262	256
95th Queue (ft)	385	386
Link Distance (ft)	523	523
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)	2	
Queuing Penalty (veh)	4	

Intersection: 2: Safeway Access & Molalla Road (OR 211)

Movement	EB	EB	WB	NB	NB
Directions Served	T	R	LT	L	R
Maximum Queue (ft)	20	54	264	283	178
Average Queue (ft)	1	4	70	134	58
95th Queue (ft)	15	28	201	275	170
Link Distance (ft)	295		316	315	
Upstream Blk Time (%)			0	3	
Queuing Penalty (veh)			1	0	
Storage Bay Dist (ft)		100			150
Storage Blk Time (%)				24	
Queuing Penalty (veh)				33	

Zone Summary

Zone wide Queuing Penalty: 115

Intersection: 1: N Pacific Hwy(99E) & Mt Hood Ave (OR 214)/Molalla Road (OR 211)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	T	R	L	T	R	L	L	T	T	R	L
Maximum Queue (ft)	450	744	610	295	298	89	239	275	206	190	156	261
Average Queue (ft)	234	419	145	207	176	31	132	172	122	99	40	121
95th Queue (ft)	461	741	472	322	289	67	234	259	189	175	106	213
Link Distance (ft)		915	915	286	286	286			743	743		
Upstream Blk Time (%)		1	0	5	2							
Queuing Penalty (veh)		0	0	12	6							
Storage Bay Dist (ft)	350						325	325			185	350
Storage Blk Time (%)		25						0		0	0	
Queuing Penalty (veh)		49						0		0	0	

Intersection: 1: N Pacific Hwy(99E) & Mt Hood Ave (OR 214)/Molalla Road (OR 211)

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	406	447
Average Queue (ft)	249	239
95th Queue (ft)	386	385
Link Distance (ft)	503	503
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)	2	
Queuing Penalty (veh)	3	

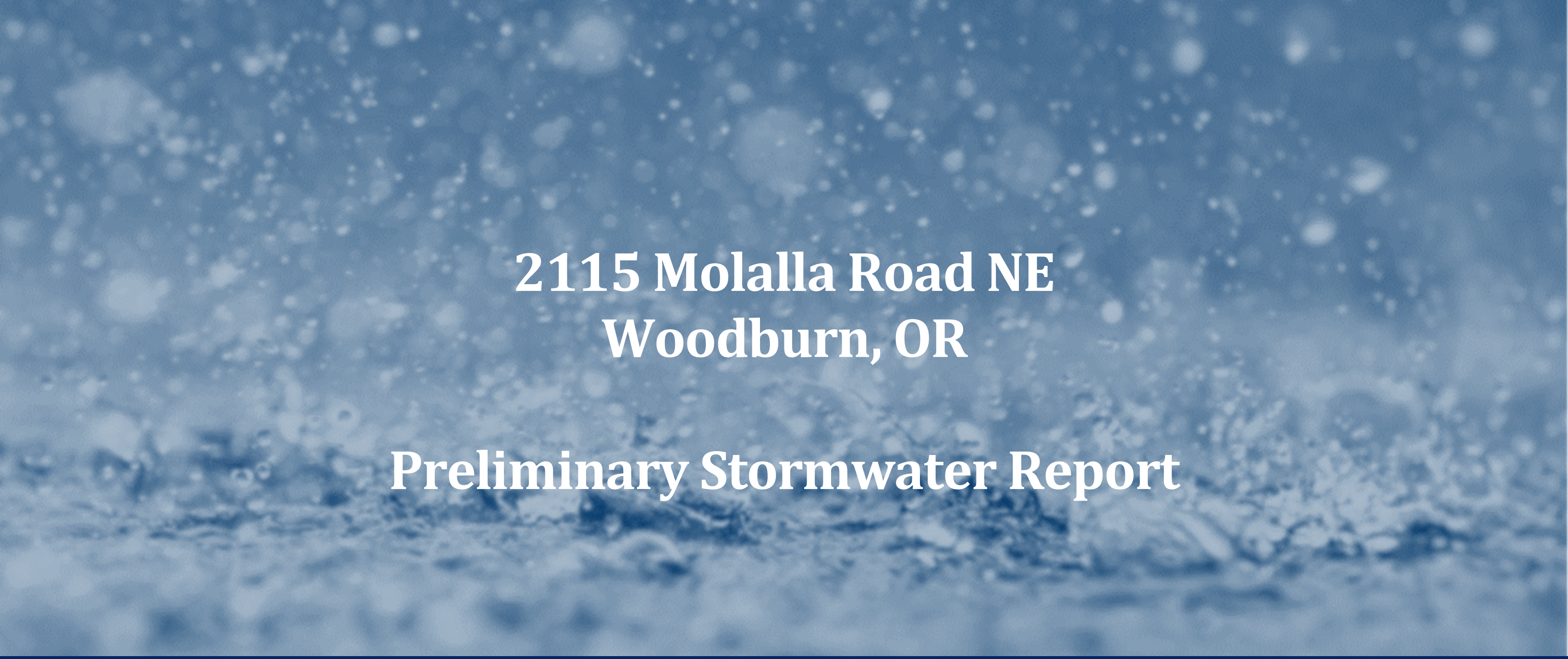
Intersection: 2: Safeway Access & Molalla Road (OR 211)

Movement	EB	WB	NB	NB
Directions Served	R	LT	L	R
Maximum Queue (ft)	26	254	319	215
Average Queue (ft)	1	55	134	76
95th Queue (ft)	11	185	293	198
Link Distance (ft)		724	326	
Upstream Blk Time (%)			6	
Queuing Penalty (veh)			0	
Storage Bay Dist (ft)	100			150
Storage Blk Time (%)			19	0
Queuing Penalty (veh)			26	0

Zone Summary

Zone wide Queuing Penalty: 96

Attachment 5:: Preliminary Stormwater Report



2115 Molalla Road NE
Woodburn, OR

Preliminary Stormwater Report

Date: February 2024

Client: I & E Construction
27375 SW Parkway Avenue
Wilsonville, OR 97070

Engineering Contact: Tyler Roth, PE
503.400.6028 | rotht@aks-eng.com

Prepared By: Elizabeth De La Lima

Engineering Firm: AKS Engineering & Forestry, LLC
3700 River Road N
Suite 1
Keizer, OR 97303

AKS Job Number: 9438

REGISTERED PROFESSIONAL ENGINEER
96330PE
OREGON
MARCH 9, 2021
TYLER D. ROTH
RENEWS: DECEMBER 31, 2022

Preliminary

AKS
ENGINEERING & FORESTRY

www.aks-eng.com

Contents

Tables

Figures

Appendices

1.0 Project Overview and Description

1.1. Size and Location of Project Site

The total project site subject to this stormwater report is ±0.92 acres and is located at 2115 Molalla Road NE, Woodburn, Marion County, Oregon, Tax Lots 1000, 1100, and 1200 of Marion County Assessor's Map 05 1W 09B.

1.2. Property Scope and Proposed Improvements

The property is zoned Commercial General (CG) in the City of Woodburn. The proposed development involves demolishing an existing residential home and building a new gas station, convenience store, and car wash including associated parking lots, landscaped areas, utilities, and infrastructure. Also, the site will share three driveways with the neighboring apartments.

1.3. Watershed Description

Current site runoff flows into an existing storm manhole located southeast of the project site that discharges into an Oregon Department of Transportation (ODOT) storm system along Molalla Road.

1.4. Historical Site Conditions

The historical use for this site is residential. The site consisted of a home, a gravel path, and an open field, and was relatively flat. The site sloped from a high point of ±182 feet at the northern portion of the site to a low point of ±181 feet at the southeast corner of the site.

1.5. Existing Trees and Native Vegetation Impact/Preservation

The site historically contained 11 trees within the site boundary. These trees were removed as part of the adjacent apartment development. New landscaping will be planted, per the Landscape Plan approved by the City of Woodburn (City), during construction.

1.6 ODOT and City of Woodburn Detention and Water Quality Requirements.

This project will produce new impervious area, which triggers water quality requirements as specified in the April 2014 *ODOT Hydraulics Design Manual* Section 14.5.1. Also, the total impervious area for this proposed development is greater than 0.25 acres, which triggers detention requirements as specified in Section 12.5.1e. Additionally, the City of Woodburn also requires stormwater detention. Section 11.H of the *City of Woodburn Storm Drainage Master Plan* (December 1996) states that detention may be required for small developments that create 2.5 acres of total impervious area or less. To meet both ODOT and City of Woodburn requirements, an underground chamber detention system and a water quality manhole are proposed for the site.

1.7 Regulatory Permits Required

Building, driveway, and sitework permits through the City of Woodburn will be required for this project. Also, any applicable Oregon Department of Environmental Quality (DEQ) 1200-C permits for Erosion and Sediment Control (ESC) will be required.

1.8 Emergency Overflow Escape Route

The stormwater system has been designed to convey stormwater runoff from storms with intensities higher than the 25-year design storm through an overflow within the flow control manhole. Emergency overland overflow, should the stormwater system be overwhelmed, is out the southern driveway approach and onto Molalla Road (Highway 211).

2.0 Methodology

2.0 Depth to Groundwater

A geotechnical investigation was not required for this project since infiltration will not be utilized as part of the stormwater design.

2.1 Soils and Geologic Features

The pre-developed site contains Amity Silt Loam, belonging to Hydrologic Soil Group C/D, per the Natural Resources Conservation Service (NRCS) Soil Resource Web Survey. See Appendix A for NRCS Soil Resource Web Survey Results.

2.2 Hazardous Materials

We are not aware of any existing hazardous material contamination on-site.

3.0 Analysis

3.0 Computational Methods and Software Used

The Rational Method was used to analyze the site’s stormwater runoff.

3.1 Design Assumptions

The design of the stormwater system was analyzed for runoff generated by the post-developed 25-year design storm event and the pre-developed 5-year design storm event per City of Woodburn requirements on Section 11.G.1 of the *Storm Drainage Master Plan.* This results in a more stringent allowable release rate than if the 10-year design storm event for the pre- and post-developed conditions stated in *ODOT Hydraulics Manual* Section 12.5.1.A had been used. It was confirmed with ODOT staff that the stricter jurisdiction requirement, City or ODOT, should be followed for the stormwater analysis of this project.

The runoff coefficient for the pre-developed and post-developed conditions were obtained from *ODOT Hydraulics Manual* Table 1 Runoff Coefficients for the Rational Method. The following runoff coefficients were used for this analysis:

- Pre-Developed – C=0.25 for meadows and pastureland, C=0.85 for gravel, C=0.90 for pavements and roofs
- Post-Developed – C=0.90 for all impervious areas, C=0.17 for landscaping areas

A time of concentration of 68 minutes was used for the pre-developed peak flow discharge based on a sheet flow length of 287 feet and an average slope across the site of 0.3 percent.

3.2 Hydrology Calculations

For the pre-developed calculations, the site consisted of one basin, Pre Basin 1. For the post-developed runoff calculations, the site also consisted of one basin, Post Basin 1. See attached Figure 3 for Post-Developed Basin Map. Table 3-1 summarizes the pre-developed conditions and peak flow discharge. See supporting calculations provided in Appendix B.

Table 3-1: Pre-Developed Peak Flow

Basin ID	Area (acres)	Weighted Runoff Coefficient	Design Storm Event	Time of Concentration (minutes)	Rainfall Intensity (inches/hour)	Peak Flow Discharge (cfs)
Pre Basin 1	0.92	0.34	5-year	68	0.49	0.15

3.3 Conveyance Capacity Calculations

The proposed drainage conveyance system has been designed to convey the peak flows for the 25-year storm event per City of Woodburn standards.

3.4 Treatment Sizing

Water quality calculations are provided in Appendix C and cartridge capacity information is provided in Appendix F. The cartridges will be located inside the Contech water quality manhole. Table 3-2 summarizes the water quality calculations.

Table 3-2: Water Quality (WQ) Sizing

Weighted Runoff Coefficient	WQ Storm Intensity (inches/hour)	WQ Peak Flowrate	Low Drop Cartridge Flowrate	Number of Cartridges in WQ Manhole	Total Cartridge Flowrate
0.83	0.06	0.05 cfs (22.42 gpm)	0.02 cfs (10 gpm)	3	0.06 cfs (30 gpm)

3.5 Flow Control Sizing

The detention facility was designed to detain the difference between the pre-developed 5-year storm event and the post-developed 25-year storm event per the City of Woodburn standards discussed in Section 3.1 of this report. The pre-developed allowable release rate was 0.15 cfs based on the 5-year design storm event. Therefore, the underground chamber detention system is intended to include stormwater storage and convey runoff to a flow control manhole with a 2.21-inch orifice. See Appendix B for orifice sizing and detention calculations and Appendix E for the proposed ADS chamber system. For events greater than the 25-year storm event, runoff will flow through an overflow within the manhole. Table 3-3 summarizes the detention volume sizing.

Table 3-3: Detention Facility

Facility ID	Allowable Release Rate (5-Year Pre-Developed) (cfs)	Required Detention Volume (cubic feet)	Provided Detention Volume (cubic feet)	Top of Chambers Elevation
Chamber System	0.15	1,570	1,865	179.09

Table 3-4 shows the orifice sizing and elevations for the orifice and overflow within the flow control manhole to release stormwater runoff at the allowable release rate.

Table 3-4: Flow Control Manhole

Facility ID	Calculated Flow Control Orifice Diameter, D (inches)	Head on Orifice, H (feet)	Orifice Elevation (feet)	Overflow Elevation (feet)	Allowable Release Rate, Q (cfs)
FCMH	2.21	1.36	175.07	179.09	0.15

Note: Refer to Appendix B for calculations.

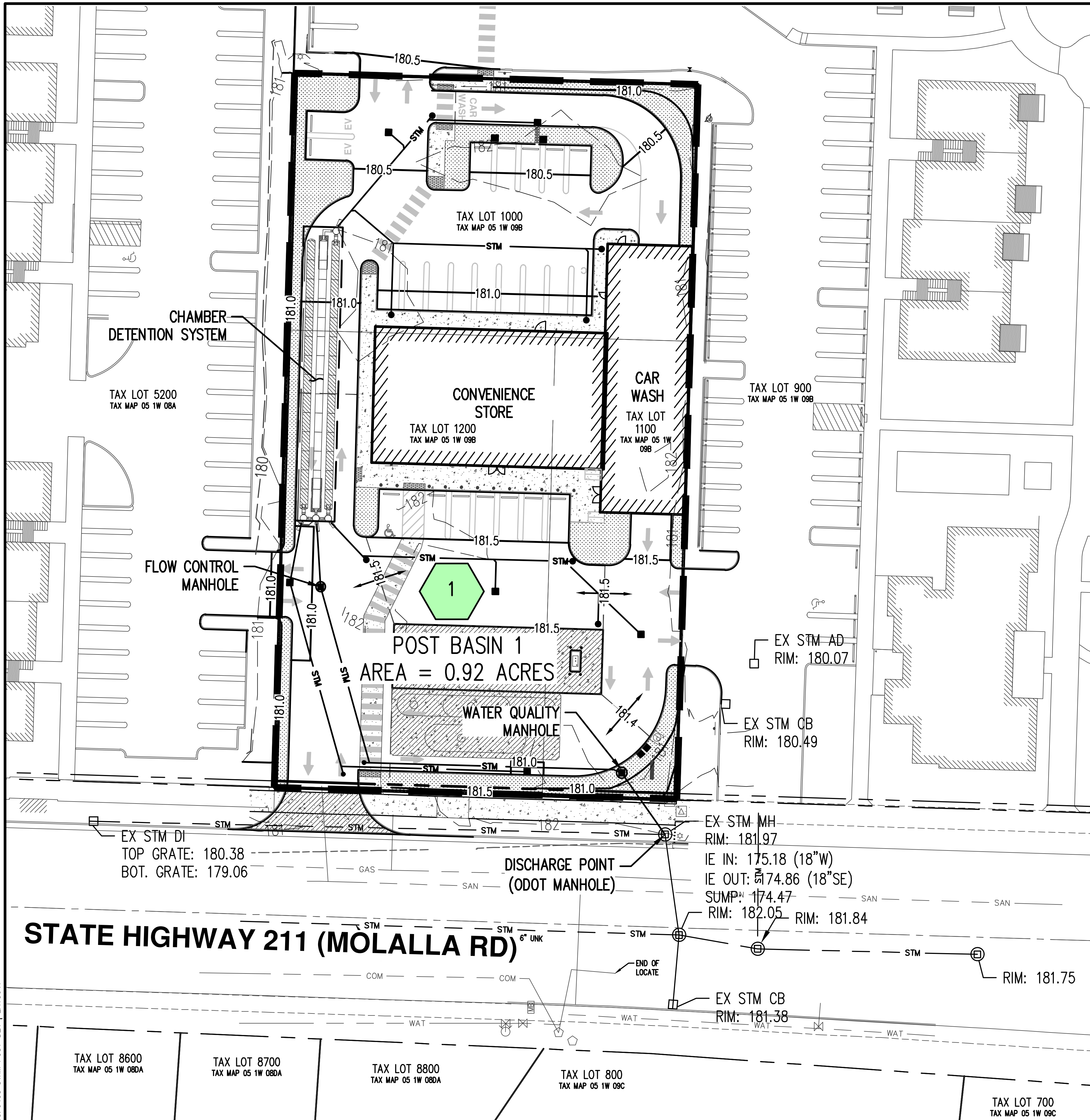
4.0 Conclusion

This stormwater report describes the engineering and design process that was used for design of the stormwater facilities for this project. The detention and water quality facilities have been designed in compliance with the *ODOT Hydraulics Manual* and the *City of Woodburn Storm Drainage Master Plan.* Supporting calculations are included in Appendices B and C. Runoff from the buildings, parking lot, and immediate surrounding areas will be conveyed to the chamber system then to the flow control manhole that will release runoff at the allowable discharge rate. Finally, runoff will flow into the water quality manhole where it will be treated before discharging into the ODOT storm manhole on Molalla Road.

Figure 1: Vicinity Map


VICINITY MAP
2115 MOLALLA RD
WOODBURN, OR 97071
Legend
PROJECT LOCATION
NE Carl Rd
Industrial Ave
Progress Way
N Front St
National Way
99E
Mt Hood Ave
211
Molalla Rd
Woodburn-Estacada Hwy NE
214
June Way
Granite St
Cooley Rd
Tierra Lynn Dr
Meadow Ln NE
Audrey Way
James St
Greenview Dr
Hardcastle Ave
Hardcastle St NE
N
3000 ft
Google Earth

Figure 2: Post-Developed Basin Map



LEGEND

EXISTING GROUND CONTOUR (1 FT)	181
EXISTING GROUND CONTOUR (5 FT)	180
BASIN DELINEATION	

SCALE: 1"= 40 FEET

40 0 8 20 40

DATE: 12/19/2023

POST-DEVELOPED CONDITIONS	EXHIBIT B
2115 MOLALLA RD NE	
AKS ENGINEERING & FORESTRY, LLC 3700 RIVER RD N, STE 1 KEIZER, OR 97303 503.400.6028 WWW.AKS-ENG.COM	DRWN: ED CHKD: TDR AKS JOB: 9438

DWG: 9438 STRM POST-DEV | LAYOUT1

Appendix A: NRCS Soil Resource Web Survey Results

Map Scale: 1:521 if printed on A portrait (8.5" x 11") sheet.

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Marion County Area, Oregon
Survey Area Data: Version 20, Sep 14, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 26, 2022—Oct 11, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Marion County Area, Oregon

Am—Amity silt loam

Map Unit Setting

National map unit symbol: 24ns
Elevation: 120 to 350 feet
Mean annual precipitation: 40 to 45 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 190 to 210 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Amity and similar soils: 85 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Amity

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Mixed silty alluvium

Typical profile

H1 - 0 to 24 inches: silt loam
H2 - 24 to 37 inches: silty clay loam
H3 - 37 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: R002XC007OR - Valley Swale Group
Forage suitability group: Somewhat Poorly Drained (G002XY005OR)
Other vegetative classification: Somewhat Poorly Drained (G002XY005OR)

Hydric soil rating: No

Minor Components

Concord

Percent of map unit: 5 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Marion County Area, Oregon
Survey Area Data: Version 20, Sep 14, 2022

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Am	Amity silt loam	1.0	100.0%
Totals for Area of Interest		**1.0**	**100.0%**

Appendix B: Detention Calculations

STORMWATER RUNOFF CALCS
RATIONAL METHOD

PROJECT NUMBER 9438
PROJECT NAME 2115 Molalla Rd NE - Woodburn
DATE 7/5/2023
BY ED

EXISTING CONDITIONS				Notes/References/Assumptions
	AREA, A =	0.92	ac	
	A1	0.087	ac	
	C1	0.9		Pavements and Roofs
	A2	0.044	ac	
	C2	0.85		Gravel Pavement
	A3	0.789	ac	
	C3	0.25		Meadows and Pasture Land
	RUNOFF COEFFICIENT, C =	0.34		C values from ODOT's Hyraulic Manual Ch 7 Ap F Rational Method Table 1
	TIME OF CONCENTRATION			
	DRAINAGE PATH, L =	287	ft	
	AVERAGE SLOPE =	0.003	ft/ft	182-181/287
	OVERLAND SHEET FLOW			
	L =	287	ft	
	S =	0.003	ft/ft	
	n =	0.150		From Table 3 Ap F ODOT's HM. Meadows, Pastures and Range Land
	Recurrence Interval	5	yr	
	Rainfall Intensity, i=	0.49	in/hr	
	Tosf =	68	min	
	TOTAL Tc =	68.0	min	Assuming all flow is overland sheet flow
	PEAK FLOW DISCHARGE, Q	0.15	cfs	Q=CiA

POST-DEVELOPED CONDITIONS				Notes/References/Assumptions
	AREA, A =	0.92	ac	
	A1	0.09	ac	
	C1	0.17		Lawns
	A2	0.83	ac	
	C2	0.9		Pavements and Roofs
	RUNOFF COEFFICIENT, C =	0.83		C values from Table 1
	TIME OF CONCENTRATION	10	min	Assumed for post-developed
	Recurrence Interval	25	yr	
	Rainfall Intensity, i=	1.90		From IDF Zone 7 Curve
	C_f	1.10		Table 2 ODOT's HM
	PEAK FLOW DISCHARGE, Q	1.59	cfs	$Q=C_fCiA$

Woodburn, OR
Required Storm Water Detention

Post-Development Conditions			Existing Conditions	
C1 (Rational Coeff), Area 1:	0.17		Pre-existing Storm Frequency:	5 year
A1, Area 1, Acres	0.09		C1 (Rational Coeff), Area 1:	0.90
C2 (Rational Coeff), Area 2:	0.90		A1, Area 1, Acres	0.09
A2, Area 2, Acres	0.83		C2 (Rational Coeff), Area 2:	0.85
C3 (Rational Coeff), Area 3:	0.00		A2, Area 2, Acres	0.04
A3, Area 3, Acres	0.00		C3 (Rational Coeff), Area 3:	0.25
Cc (Composite Rational Coeff):	0.83	sum Ci*Ai/A	A3, Area 3, Acres	0.79
A, Total Area, Acres:	0.92		Cc (Composite Rational Coeff):	0.34
IDF Zone:	7		A, Total Area, Acres:	0.92
Q, Design Outlet Restriction:	0.15	cfs	Q, Existing Runoff (cfs):	0.15
Design Storm Frequency:	25	year	Time of Concentration (min):	68
Date:	7/7/2023		Rainfall Intensity (in/hr):	0.49

TIME IN MIN.	C * A ACRES	RAIN INTENSITY IN/HR	INFLOW Q CFS	ACCUM. INFLOW VOL. CU.FT.	OUTFLOW Q CFS	ACCUM. OUTFLOW CU.FT.	REQUIRED STORAGE CU.FT.
5	0.76	2.45	1.87	560.3	0.15	46.0	514.3
6	0.76	2.30	1.75	631.2	0.15	55.2	576.0
7	0.76	2.19	1.67	701.2	0.15	64.4	636.8
8	0.76	2.09	1.59	764.7	0.15	73.6	691.1
9	0.76	2.00	1.52	823.3	0.15	82.8	740.5
10	0.76	1.90	1.45	869.0	0.15	92.0	777.0
11	0.76	1.85	1.41	930.8	0.15	101.2	829.6
12	0.76	1.78	1.36	977.0	0.15	110.4	866.6
13	0.76	1.72	1.31	1022.7	0.15	119.6	903.1
14	0.76	1.67	1.27	1069.4	0.15	128.8	940.5
15	0.76	1.61	1.23	1104.6	0.15	138.0	966.6
20	0.76	1.40	1.07	1280.7	0.15	184.0	1096.6
25	0.76	1.24	0.95	1417.9	0.15	230.0	1187.9
30	0.76	1.12	0.85	1536.8	0.15	276.0	1260.8
35	0.76	1.00	0.76	1600.8	0.15	322.0	1278.8
40	0.76	0.91	0.69	1664.9	0.15	368.0	1296.8
45	0.76	0.84	0.64	1728.9	0.15	414.0	1314.9
50	0.76	0.78	0.59	1783.8	0.15	460.0	1323.7
55	0.76	0.74	0.56	1861.5	0.15	506.0	1355.5
60	0.76	0.69	0.53	1893.6	0.15	552.0	1341.5
70	0.76	0.64	0.49	2049.1	0.15	644.1	1405.0
80	0.76	0.59	0.45	2158.8	0.15	736.1	1422.8
90	0.76	0.56	0.43	2305.2	0.15	828.1	1477.1
100	0.76	0.53	0.40	2424.1	0.15	920.1	1504.0
110	0.76	0.50	0.38	2515.6	0.15	1012.1	1503.5
120	0.76	0.48	0.37	2634.5	0.15	1104.1	1530.4
130	0.76	0.46	0.35	2735.1	0.15	1196.1	1539.0
140	0.76	0.44	0.34	2817.5	0.15	1288.1	1529.4
150	0.76	0.43	0.33	2950.1	0.15	1380.1	1570.0
160	0.76	0.41	0.31	3000.4	0.15	1472.1	1528.3
170	0.76	0.40	0.30	3110.2	0.15	1564.1	1546.1
180	0.76	0.39	0.30	3210.8	0.15	1656.1	1554.7
190	0.76		0.00	0.0	0.15	1748.1	-1748.1
200	0.76		0.00	0.0	0.15	1840.1	-1840.1

*Requirement for Woodburn is to detain difference between a pre developed 5 year storm and a post developed 25-year storm

Required Storage: 1569.99 cubic feet

Input

RAINFALL INTENSITY - DURATION - RECURRENCE INTERVAL CURVES

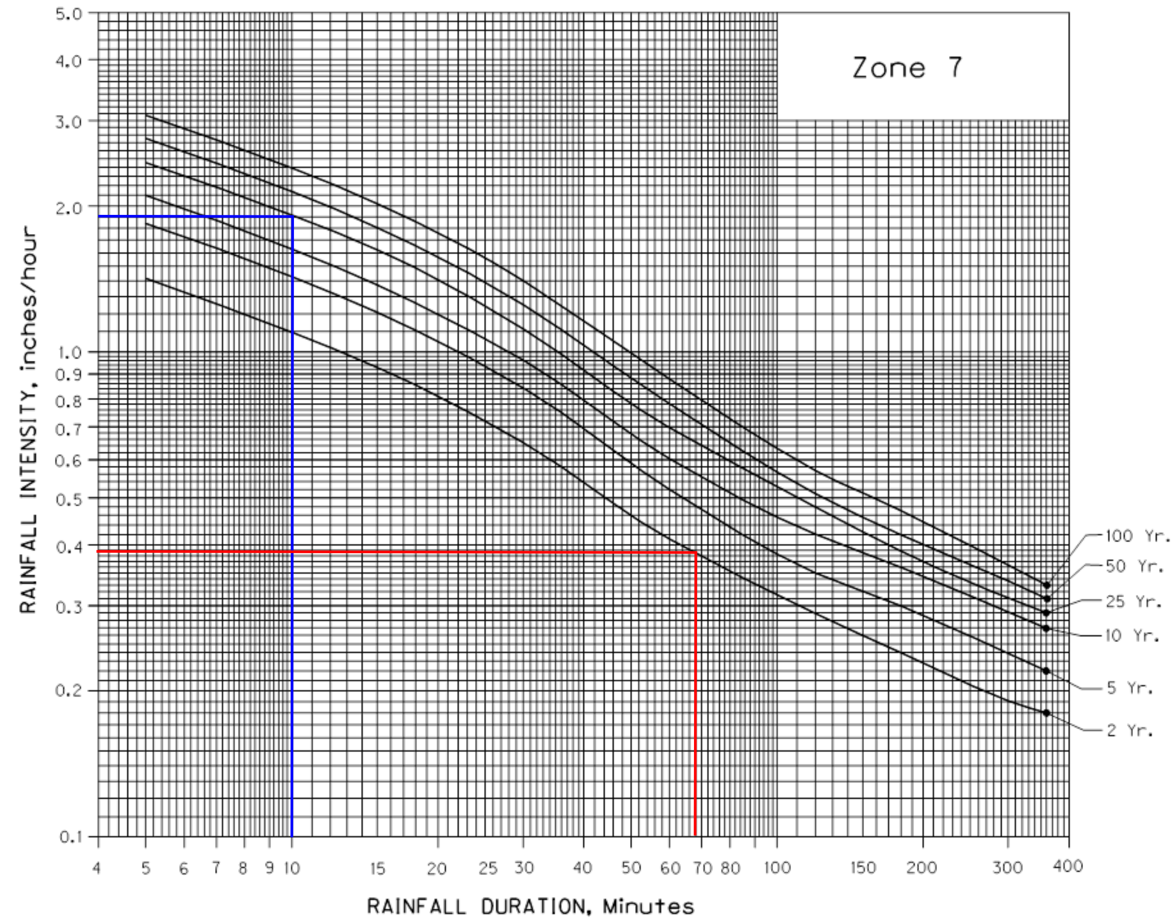


Table 1 Runoff Coefficients for the Rational Method

	FLAT	ROLLING	HILLY
Pavement & Roofs	**0.90**	**0.90**	**0.90**
Earth Shoulders	0.50	0.50	0.50
Drives & Walks	0.75	0.80	**0.85**
Gravel Pavement	**0.85**	**0.85**	**0.85**
City Business Areas	0.80	**0.85**	**0.85**
Apartment Dwelling Areas	0.50	0.60	0.70
Light Residential: 1 to 3 units/acre	0.35	0.40	0.45
Normal Residential: 3 to 6 units/acre	0.50	0.55	0.60
Dense Residential: 6 to 15 units/acre	0.70	0.75	0.80
Lawns	0.17	0.22	0.35
Grass Shoulders	0.25	0.25	0.25
Side Slopes, Earth	0.60	0.60	0.60
Side Slopes, Turf	0.30	0.30	0.30
Median Areas, Turf	0.25	0.30	0.30
Cultivated Land, Clay & Loam	0.50	0.55	0.60
Cultivated Land, Sand & Gravel	0.25	0.30	0.35
Industrial Areas, Light	0.50	0.70	0.80
Industrial Areas, Heavy	0.60	0.80	**0.90**
Parks & Cemeteries	0.10	0.15	0.25
Playgrounds	0.20	0.25	0.30
Woodland & Forests	0.10	0.15	0.20
Meadows & Pasture Land	0.25	0.30	0.35
Unimproved Areas	0.10	0.20	0.30

Note:

- ***Impervious surfaces in bold***
- *Rolling = ground slope between 2 percent to 10 percent*
- *Hilly = ground slope greater than 10 percent*

Table 2 Runoff Coefficient Adjustment Factors

RECURRENCE INTERVAL	RUNOFF COEFFICIENT ADJUSTMENT FACTOR
10 years or less	1.0
25 years	1.1
50 years	1.2
100 years	1.25

- **Time of Concentration "T_c" -** The time of concentration (T_c), is defined as the time it takes for runoff to travel from the hydraulically most distant point in the watershed to the point of reference downstream. Most drainage paths consist of overland flow segments as well as channel flow segments. The overland flow component can be further divided into a sheet flow segment and a shallow concentrated flow segment. Urban drainage basins often will have one or more pipe flow segments. The travel time is computed for each flow segment and the time of concentration is equal to the sum of the individual travel times, as follows:

  $$T_c = T_{osf} + T_{scf} + T_{ocf} + T_{pf} \qquad \text{(Equation 3)}$$

  Where:

  T_c = Time of concentration in minutes (min.)
  T_{osf} = Travel time for the overland sheet flow segment in minutes (min.)
  T_{scf} = Travel time for the shallow concentrated flow segment in minutes (min.)
  T_{ocf} = Travel time for the open-channel flow segment(s) in minutes (min.)
  T_{pf} = Travel time for the pipe flow segment(s) in minutes (min.)

  The drainage path used to determine the time of concentration need not include all of the listed segments. As an example, a roadway pavement bounded by curbs and drained by an inlet connected to a storm drain will have segments of overland sheet flow (pavement), open-channel flow (gutter), and pipe flow (storm drain). There is no shallow concentrated flow segment.

The travel times for the flow segments are determined as follows.

- **Overland Sheet Flow -** Overland sheet flow is shallow flow over a plane surface. It occurs in the furthest upstream segment of the drainage path, which is located immediately downstream from the drainage divide. The length of the overland sheet flow segment is the shorter of: the distance between the drainage divide and the upper end of a defined channel,

or a distance of 300 feet. The overland sheet flow velocity is usually slower than the velocities further downstream.
The kinematic wave equation can be used to estimate the time of concentration associated with overland sheet flow. The equation is shown below, and it is only applicable for travel

$$T_{osf} = \frac{0.93(L^{0.6}n^{0.6})}{(i^{0.4}S^{0.3})} \qquad \text{(Equation 4)}$$

distances equal to or less than 300 feet.
Where:

T_{osf} = Travel time for the overland sheet flow segment in minutes (min.)
L = Length of the overland sheet flow segment in feet (ft)
n = Manning's roughness coefficient (See Table 3)
i = Rainfall intensity in inches per hour (in/hr) See Appendix A.
S = The average slope of the overland area in feet per feet (ft/ft)

Note: Calculating the time of concentration for overland sheet flow is an iterative or trial and error solution because both the flow time and the rainfall intensity are unknown. The procedure is illustrated in the Example.

Table 3 Manning's Roughness Coefficients for Overland Sheet Flow

(Maximum Flow Depth = 1 inch)

Pavement & Roofs	0.014
City Business Areas	0.014
Graveled Surfaces	0.020
Apartment Dwelling Areas	0.050
Industrial Areas	0.050
Urban Residential Areas (more than 6 units acre)	0.080
Meadows, Pastures & Range Land	0.150
Rural Residential Areas (more than 6 units acre)	0.240
Playgrounds, Light Turf	0.240
Parks & Cemeteries, Heavy Turf	0.400
Woodland & Forests	0.400

- **Shallow Concentrated Flow -** Overland sheet flow often becomes either shallow concentrated flow or open-channel flow as it progresses down the drainage. It becomes

FLOW CONTROL ORIFICE SIZING

RATIONAL METHOD

PROJECT NUMBER	9438
PROJECT NAME	2115 Molalla Rd NE - Woodburn
DATE	8/28/2023
BY	ED

PRE-DEVELOPED CONDITIONS				Notes/References/Assumptions
	EFFECTIVE HEAD, H	1.36	ft	H=Overflow-Outlet
	OVERFLOW ELEVATION	179.09	ft	
	OUTLET ELEVATION	177.73	ft	
	PEAK FLOW ELEVATION, Q	0.15	cfs	
	ORIFICE DIAMETER, D	2.21	in	$D=6.166\ (Q/H^{1/2})^{1/2}$

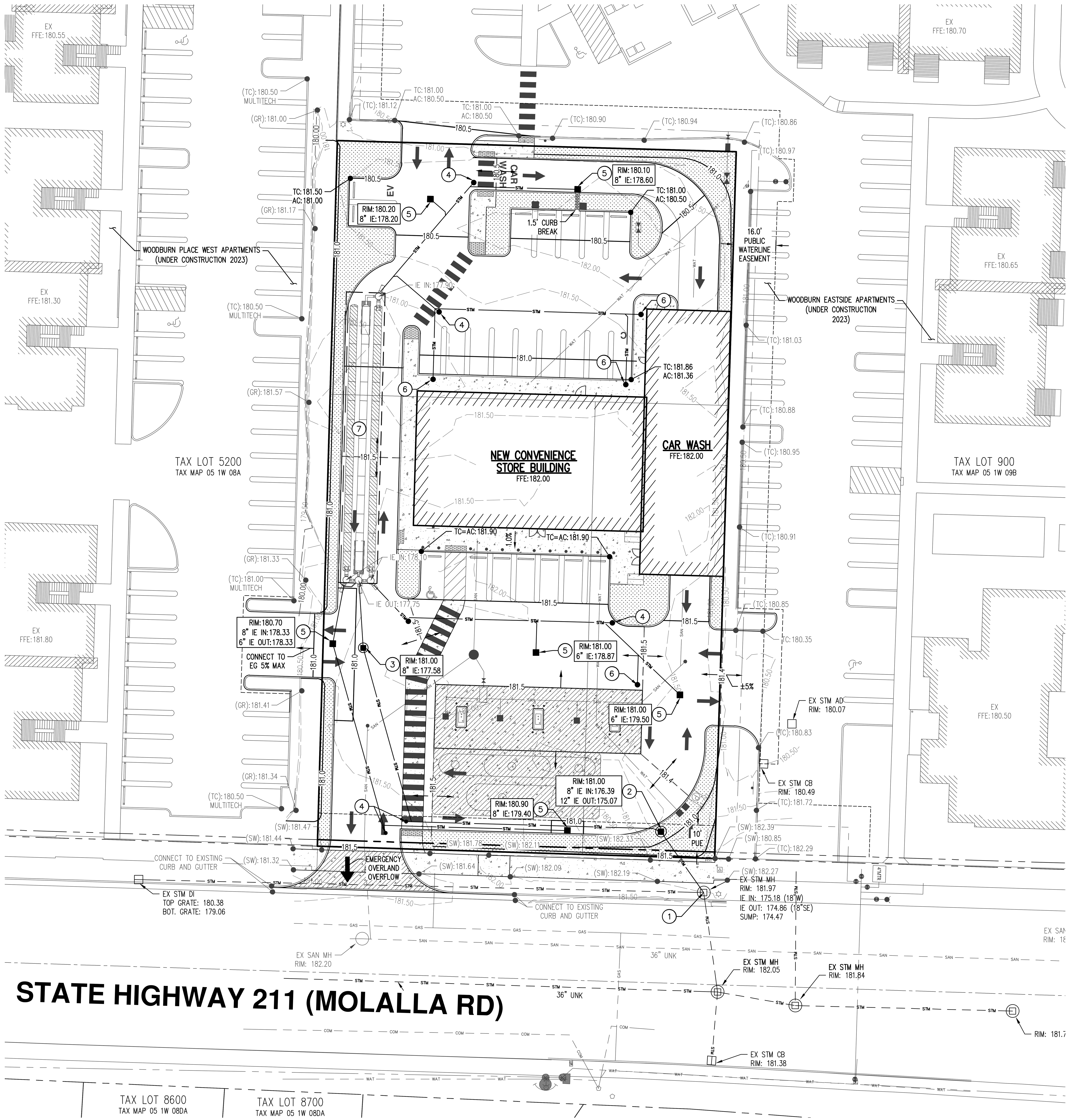
Appendix C: Water Quality Calculations

STORMWATER RUNOFF CALCS
RATIONAL METHOD

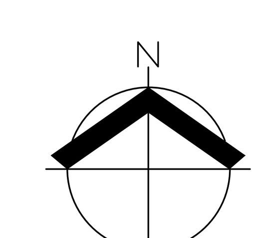
PROJECT NUMBER 9438
PROJECT NAME 2115 Molalla Rd NE - Woodburn
DATE 7/5/2023
BY ED

WATER QUALITY				Notes/References/Assumptions
	AREA, A =	0.92	ac	
	A1	0.09	ac	
	C1	0.17		Lawns
	A2	0.83	ac	
	C2	0.9		Pavements and Roofs
	RUNOFF COEFFICIENT, C =	0.83		C values from Table 1
	Rainfall Intensity, i=	0.06	in/hr	City of Salem design storm event is 1.38 in/24 hour period, so 138/24=0.06
	PEAK FLOW DISCHARGE, Q	0.05	cfs	Q=CiA

Appendix D: Grading and Drainage Plan



AKS DRAWING FILE: 9438 GRADING.DWG | LAYOUT: C200 PRELIMINARY GRADING AND DRAINAGE PLAN



SCALE: 1"= 20 FEET

20 0 4 10 20

ORIGINAL PAGE SIZE: 22" x 34"

STORM DRAIN (SD) KEYED NOTES:

1. CONNECT TO EXISTING SD MANHOLE.
   12" IE IN (N): 174.90
2. CONTECH 48" STORMFILTER WATER QUALITY MANHOLE.
   RIM AND INVERTS PER PLAN.
   3 LOW DROP CARTRIDGES.
3. FLOW CONTROL MANHOLE.
   ORIFICE SIZE: 2.21"
   OVERFLOW: 179.09
4. SD CLEANOUT.
5. SD CATCH BASIN. RIM AND INVERT ELEVATIONS SHOWN ON PLAN.
6. 4" DOWNSPOUT CONNECTION WITH CLEANOUT.
7. ADS UNDERGROUND STORMTECH SC-310 CHAMBER DETENTION SYSTEM.
   NUMBER OF CHAMBER: 42
   SYSTEM VOLUME: 1,865 CFS

ABBREVIATIONS:

EXISTING:

(SW): EXISTING SIDEWALK ELEVATION
(TC): EXISTING TOP OF CURB ELEVATION
(GR): EXISTING GRAVEL ELEVATION
(EG): EXISTING GROUND ELEVATION

PROPOSED:

FFE: FINISHED FLOOR ELEVATION
RIM: RIM ELEVATION
TC: TOP OF CURB ELEVATION
AC: ASPHALT CONCRETE ELEVATION

LEGEND

EXISTING GROUND CONTOUR (1 FT)	181
EXISTING GROUND CONTOUR (5 FT)	180
FINISHED GRADE CONTOUR (1 FT)	181
FINISHED GRADE CONTOUR (5 FT)	180
PROPOSED MANHOLE (MH)	
PROPOSED CLEANOUT (CO)\DOWNSPOUT (DS)	
PROPOSED CATCH BASIN (CB)	
GRADING RIDGE	

AKS ENGINEERING & FORESTRY, LLC
3700 RIVER RD N, STE 1
KEIZER, OR 97303
503.400.6028
WWW.AKS-ENG.COM

ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

PRELIMINARY GRADING AND DRAINAGE PLAN
2115 MOLALLA RD NE
MOLALLA PETROLEUM, LLC
WOODBURN, OR

REGISTERED PROFESSIONAL ENGINEER
OREGON
MARCH 9, 2021
TYLER D. ROTH

PRELIMINARY NOT FOR CONSTRUCTION

RENEWS: DECEMBER 31, 2024

JOB NUMBER:	9438
DATE:	12/19/2023
DESIGNED BY:	TDR
DRAWN BY:	ED
CHECKED BY:	TDR

C200

Appendix E: ADS StormTech SC-310 Chambers

PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER	COLIN STEER 971-710-3750 COLIN.STEER@ADSPIPE.COM
ADS SALES REP	SARAH SIEVERS 503-949-3980 SARAH.SIEVERS@ADSPIPE.COM
PROJECT NO.	S369238

Advanced Drainage Systems, Inc.

SiteAssist™
FOR STORMTECH
INSTALLATION INSTRUCTIONS
VISIT OUR APP

MOLALLA RD

WOODBURN, OR, USA

SC-310 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH SC-310.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE OR POLYETHYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2922 (POLETHYLENE) OR ASTM F2418 (POLYPROPYLENE), "STANDARD SPECIFICATION FOR CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 400 LBS/FT/%. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2922 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-310 SYSTEM

1. STORMTECH SC-310 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH SC-310 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4-2" (20-50 mm).
8. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
9. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH SC-310 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
2. THE USE OF CONSTRUCTION EQUIPMENT OVER SC-310 & SC-740 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

PROPOSED LAYOUT

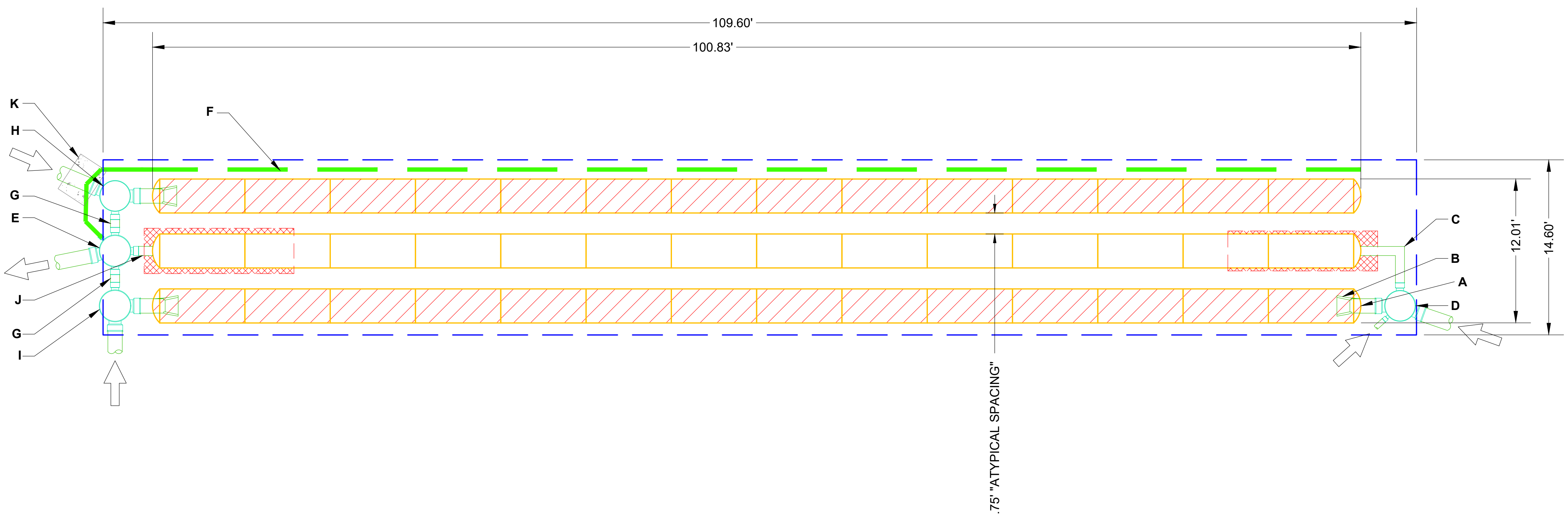
42	STORMTECH SC-310 CHAMBERS
6	STORMTECH SC-310 END CAPS
6	STONE ABOVE (in)
6	STONE BELOW (in)
40	% STONE VOID
1,865	**INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED)**
1,600	SYSTEM AREA (ft²)
248	SYSTEM PERIMETER (ft)

PROPOSED ELEVATIONS

187.09	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)
181.09	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC)
180.59	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)
180.59	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT)
180.59	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT)
179.59	TOP OF STONE
179.09	TOP OF SC-310 CHAMBER
178.05	8" TOP MANIFOLD / CONNECTION INVERT
177.84	12" ISOLATOR ROW PLUS CONNECTION INVERT
177.81	8" BOTTOM CONNECTION INVERT
177.76	BOTTOM OF SC-310 CHAMBER
177.26	UNDERDRAIN INVERT
177.26	BOTTOM OF STONE

*INVERT ABOVE BASE OF CHAMBER

PART TYPE	ITEM ON LAYOUT	DESCRIPTION	INVERT*	MAX FLOW
PREFABRICATED EZ END CAP	A	12" BOTTOM PREFABRICATED EZ END CAP, PART#: SC310ECEZ / TYP OF ALL 12" BOTTOM CONNECTIONS AND ISOLATOR PLUS ROWS	0.90"	
FLAMP	B	INSTALL FLAMP ON 12" ACCESS PIPE / PART#: SC31012RAMP		
MANIFOLD	C	8" x 8" TOP MANIFOLD, MOLDED FITTINGS	3.50"	
NYLOPLAST (INLET W/ ISO PLUS ROW)	D	30" DIAMETER (24.00" SUMP MIN)		0.8 CFS IN
NYLOPLAST (OUTLET)	E	30" DIAMETER (DESIGN BY ENGINEER)		0.7 CFS OUT
UNDERDRAIN	F	4" ADS N-12 DUAL WALL PERFORATED HDPE UNDERDRAIN		
CONNECTION	G	8" TOP CONNECTION	3.50"	
NYLOPLAST (INLET W/ ISO PLUS ROW)	H	30" DIAMETER (24.00" SUMP MIN)		
NYLOPLAST (INLET W/ ISO PLUS ROW)	I	30" DIAMETER (24.00" SUMP MIN)		
CONNECTION	J	8" BOTTOM CONNECTION	0.06"	0.8 CFS IN
FLOWABLE FILL	K	FLOWABLE FILL AT PIPE CROSSING		



ISOLATOR ROW PLUS (SEE DETAIL)

PLACE MINIMUM 12.50' OF ADSPLUS125 WOVEN GEOTEXTILE OVER BEDDING STONE AND UNDERNEATH CHAMBER FEET FOR SCOUR PROTECTION AT ALL CHAMBER INLET ROWS

BED LIMITS

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH NOTE #6.32 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.
- **NOT FOR CONSTRUCTION**: THIS LAYOUT IS FOR DIMENSIONAL PURPOSES ONLY TO PROVE CONCEPT & THE REQUIRED STORAGE VOLUME CAN BE ACHIEVED ON SITE.

MOLALLA RD
WOODBURN, OR, USA

DATE: 08/15/23 | DRAWN: KT
PROJECT #: S369238 | CHECKED: RC

DATE	DRW	CHK	DESCRIPTION

StormTech® Chamber System
888-892-2694 | WWW.STORMTECH.COM

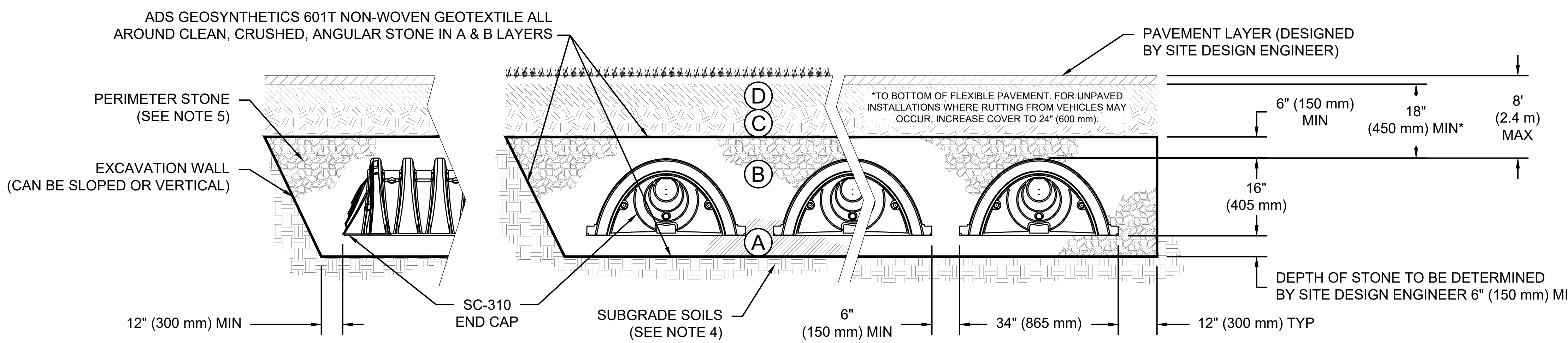
ADS
4640 TRUEMAN BLVD
HILLIARD, OH 43026
1-800-733-7473

0 10 20

ACCEPTABLE FILL MATERIALS: STORMTECH SC-310 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

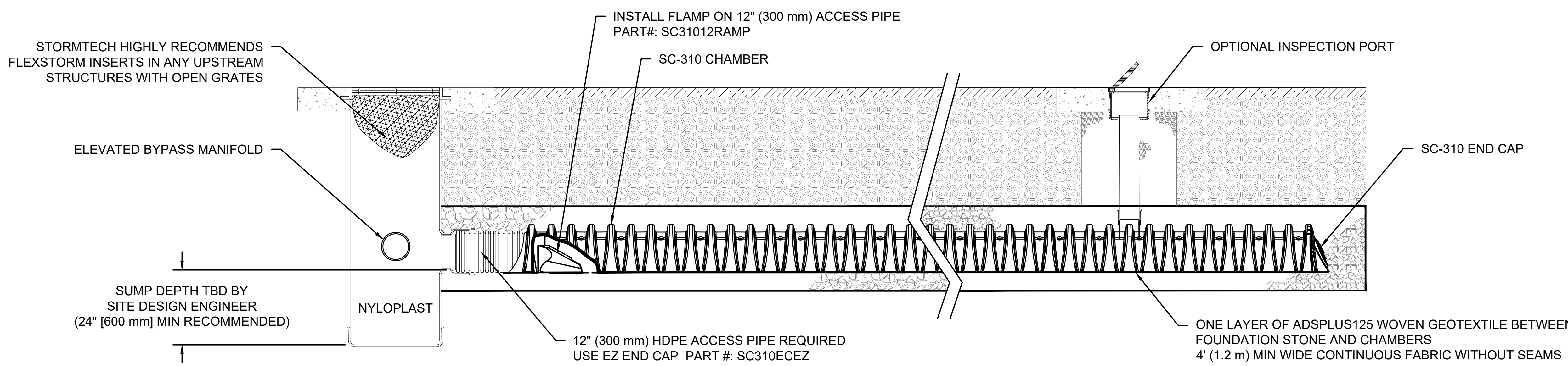
1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2922 (POLETHYLENE) OR ASTM F2418 (POLYPROPYLENE), "STANDARD SPECIFICATION FOR CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-310 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 400 LBS/FT/%. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

MOLALLA RD
WOODBURN, OR, USA
DATE: 08/15/23
DRAWN: KT
PROJECT #: S369238
CHECKED: RC

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

DATE	DRW	CHK	DESCRIPTION

StormTech®
Chamber System
888-892-2694 | WWW.STORMTECH.COM
4640 TRUEMAN BLVD
HILLIARD, OH 43026
1-800-733-7473



SC-310 ISOLATOR ROW PLUS DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.

2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

MOLALLA RD
WOODBURN, OR, USA

DATE: 08/15/23 | DRAWN: KT
PROJECT #: S369238 | CHECKED: RC

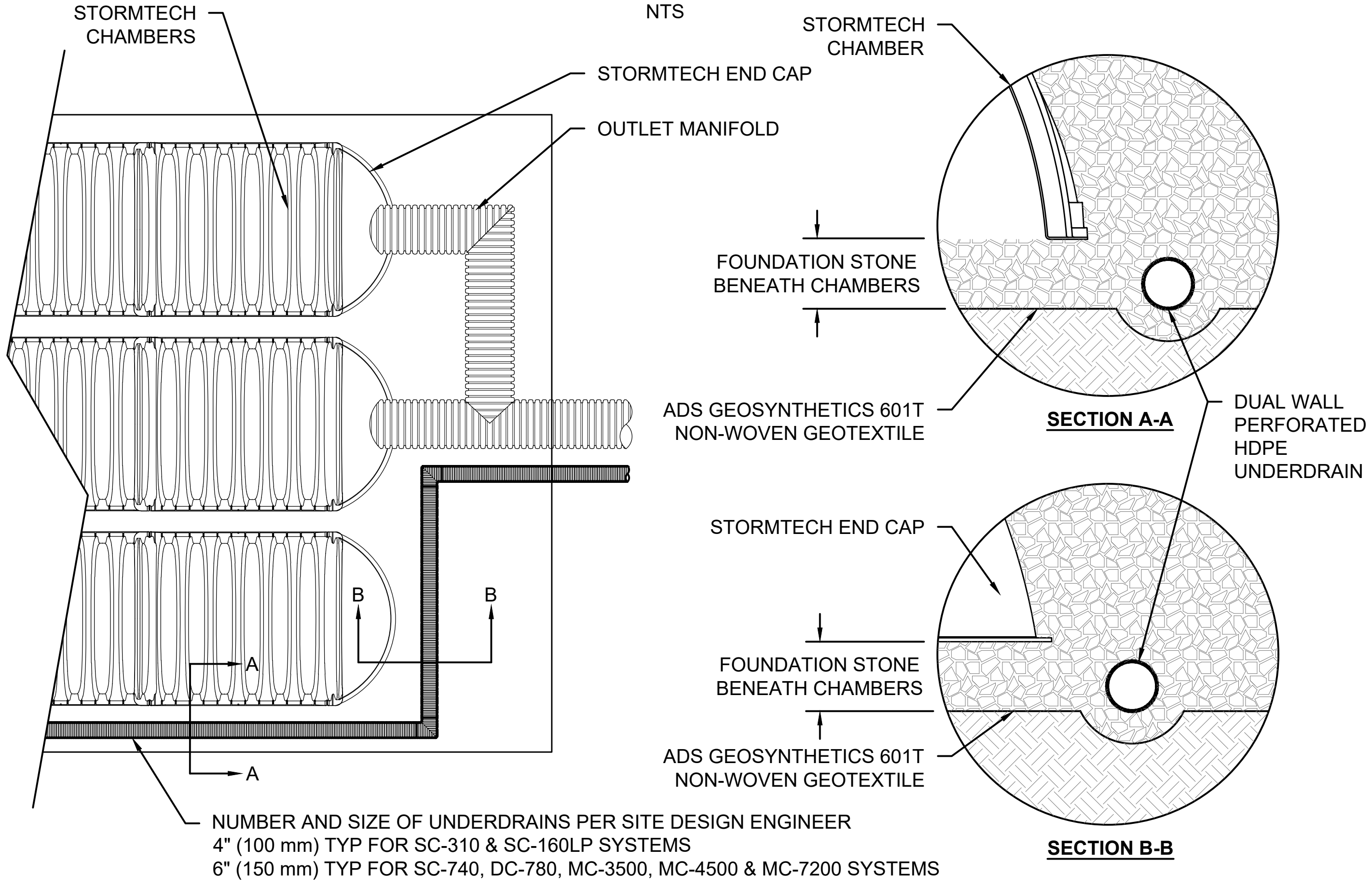
DATE	DRW	CHK	DESCRIPTION

ADS
4640 TRUEMAN BLVD
HILLIARD, OH 43026
1-800-733-7473

StormTech®
Chamber System
888-892-2694 | WWW.STORMTECH.COM

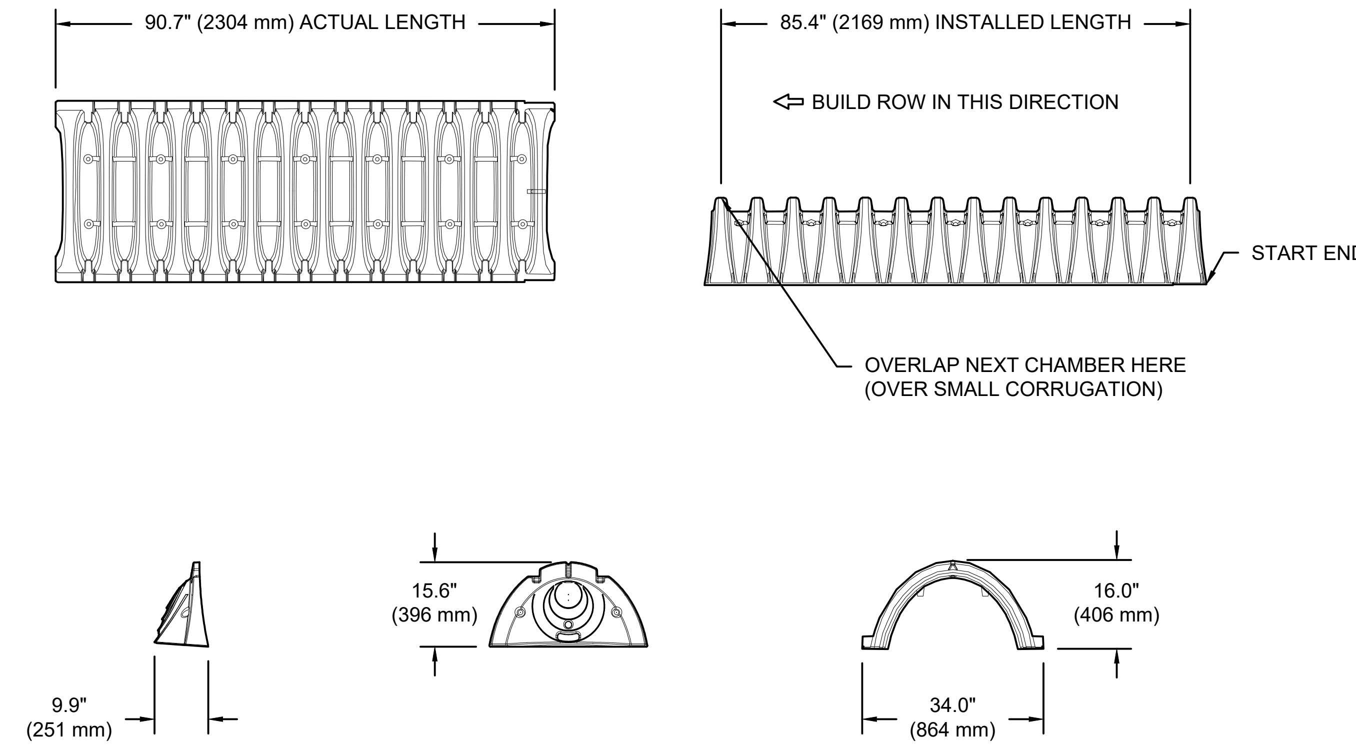
UNDERDRAIN DETAIL

NTS



SC-310 TECHNICAL SPECIFICATION

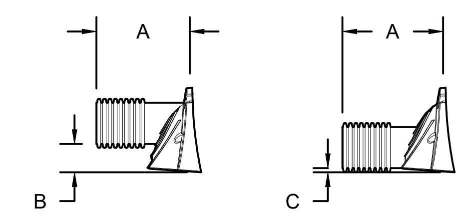
NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	34.0" X 16.0" X 85.4"	(864 mm X 406 mm X 2169 mm)
CHAMBER STORAGE	14.7 CUBIC FEET	(0.42 m³)
MINIMUM INSTALLED STORAGE*	31.0 CUBIC FEET	(0.88 m³)
WEIGHT	35.0 lbs.	(16.8 kg)

*ASSUMES 6" (152 mm) ABOVE, BELOW, AND BETWEEN CHAMBERS



PRE-FAB STUB AT BOTTOM OF END CAP WITH FLAMP END WITH "BR"
PRE-FAB STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PRE-FAB STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
PRE CORED END CAPS END WITH "PC"

PART #	STUB	A	B	C
SC310EPE06T / SC310EPE06TPC	6" (150 mm)	9.6" (244 mm)	5.8" (147 mm)	---
SC310EPE06B / SC310EPE06BPC			---	0.5" (13 mm)
SC310EPE08T / SC310EPE08TPC	8" (200 mm)	11.9" (302 mm)	3.5" (89 mm)	---
SC310EPE08B / SC310EPE08BPC			---	0.6" (15 mm)
SC310EPE10T / SC310EPE10TPC	10" (250 mm)	12.7" (323 mm)	1.4" (36 mm)	---
SC310EPE10B / SC310EPE10BPC			---	0.7" (18 mm)
SC310ECEZ*	12" (300 mm)	13.5" (343 mm)	---	0.9" (23 mm)

ALL STUBS, EXCEPT FOR THE SC310ECEZ ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

* FOR THE SC310ECEZ THE 12" (300 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 0.25" (6 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL

MOLALLA RD
WOODBURN, OR, USA

DATE: 08/15/23 | PROJECT #: S369238 | DRAWN: KT | CHECKED: RC

DATE	DRW	CHK	DESCRIPTION

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ADS
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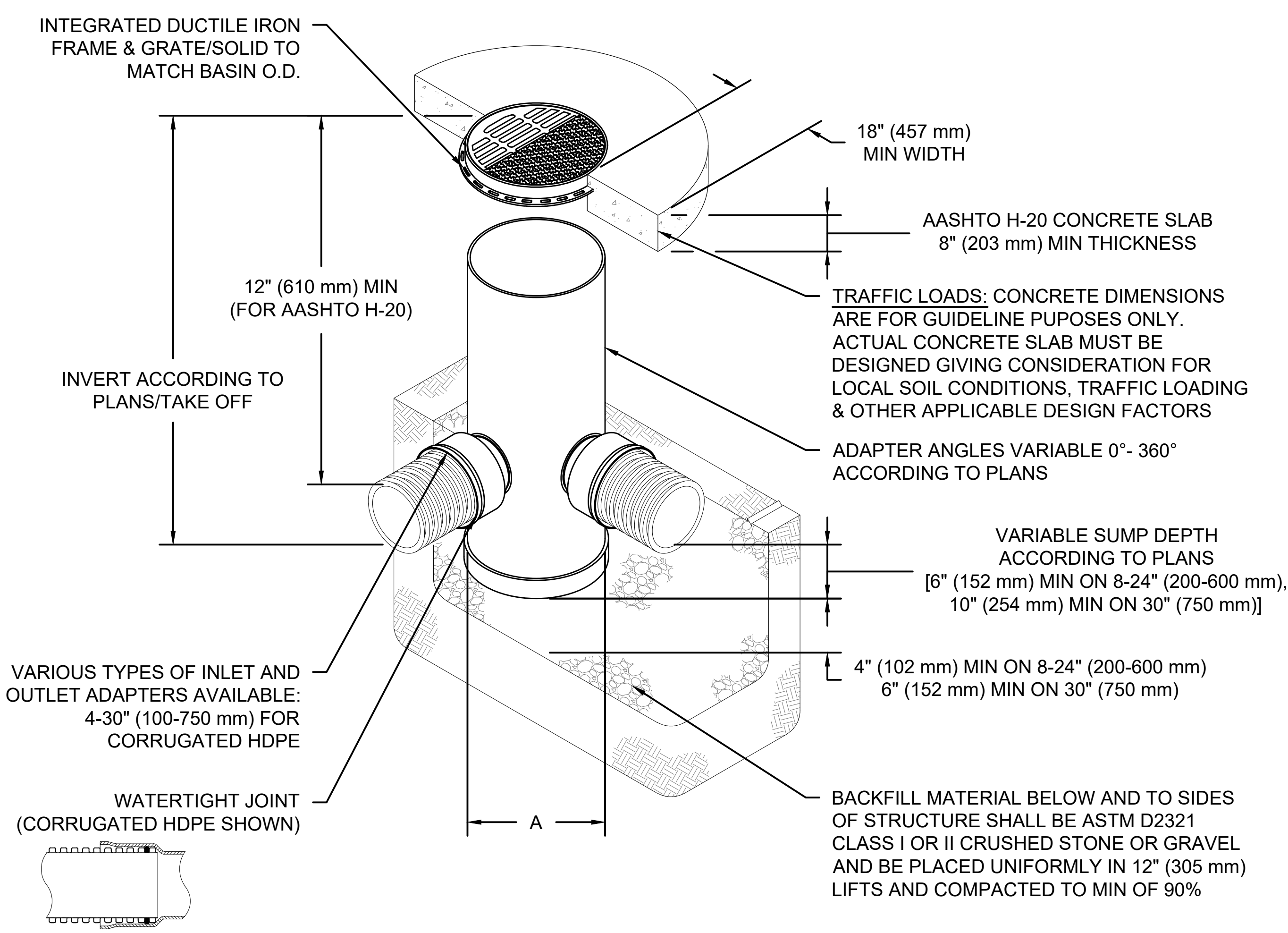
1-800-733-7473

NYLOPLAST DRAIN BASIN

NTS



NOTES

1. 8-30" (200-750 mm) GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
2. 12-30" (300-750 mm) FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
5. FOR COMPLETE DESIGN AND PRODUCT INFORMATION: **WWW.NYLOPLAST-US.COM**
6. TO ORDER CALL: **800-821-6710**

A	PART #	GRATE/SOLID COVER OPTIONS		
8" (200 mm)	2808AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
10" (250 mm)	2810AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
12" (300 mm)	2812AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
15" (375 mm)	2815AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
18" (450 mm)	2818AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
24" (600 mm)	2824AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
30" (750 mm)	2830AG	PEDESTRIAN AASHTO H-20	STANDARD AASHTO H-20	SOLID AASHTO H-20

MOLALLA RD
WOODBURN, OR, USA

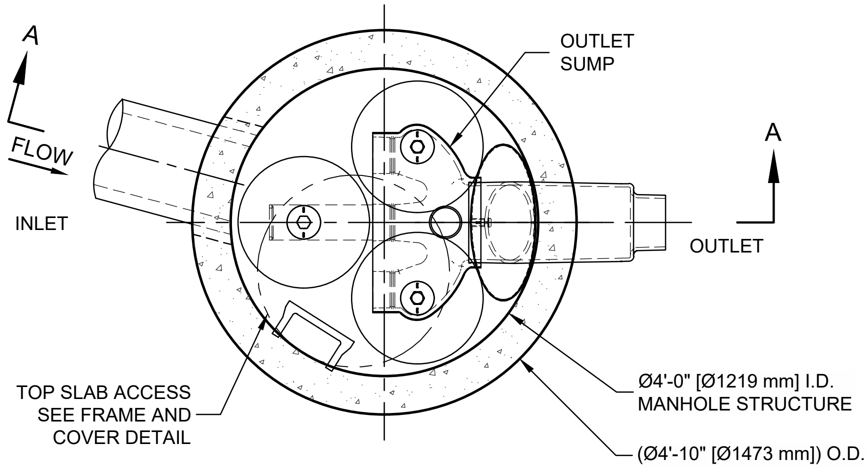
DATE: 08/15/23 | DRAWN: KT
PROJECT #: S369238 | CHECKED: RC

DATE	DRW	CHK	DESCRIPTION

Nyloplast®
770-932-2443 | WWW.NYLOPLAST-US.COM

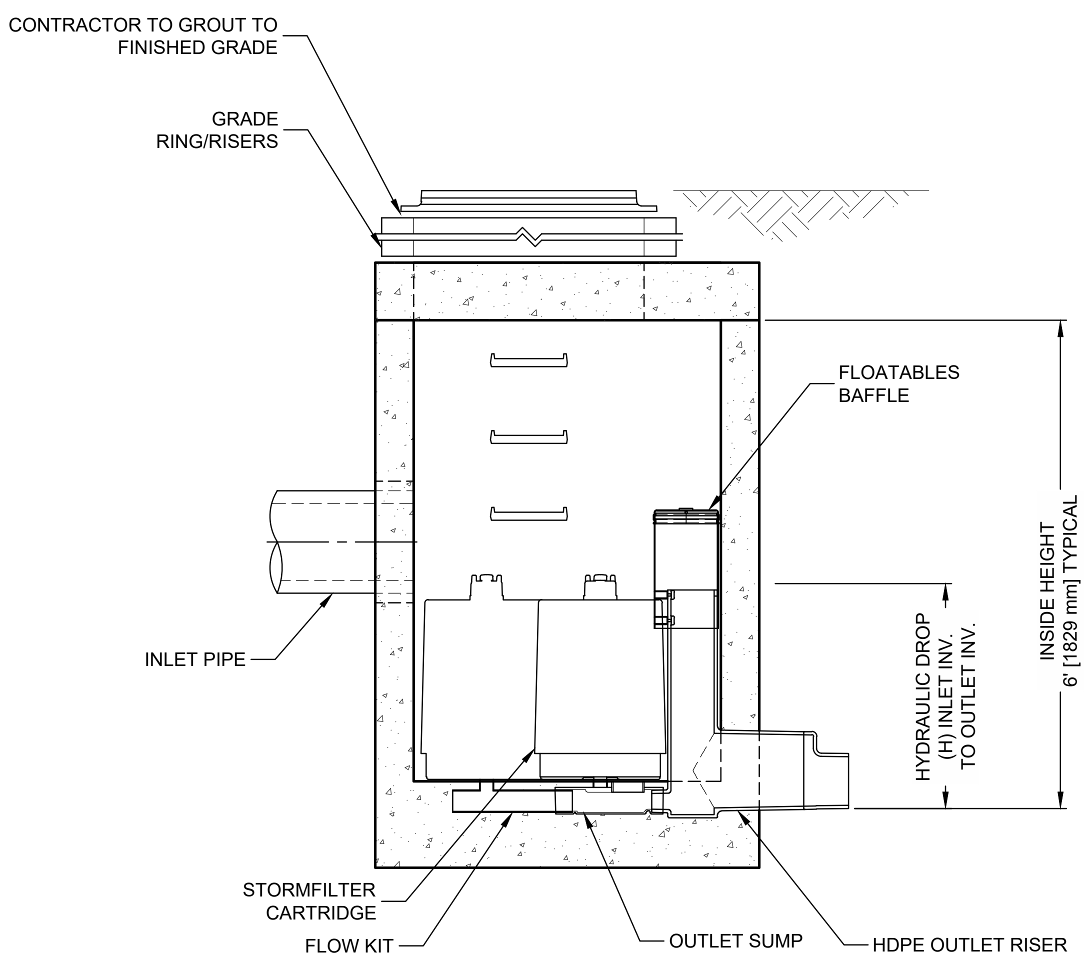
ADS
4640 TRUEMAN BLVD
HILLIARD, OH 43026
1-800-733-7473

Appendix F: Contech Stormfilter Manhole



PLAN VIEW

STANDARD OUTLET RISER
FLOWKIT: 40A



SECTION A-A

The Stormwater Management StormFilter®

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,322,629; 5,524,576; 5,707,527; 5,985,157; 6,027,639; 6,649,048; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

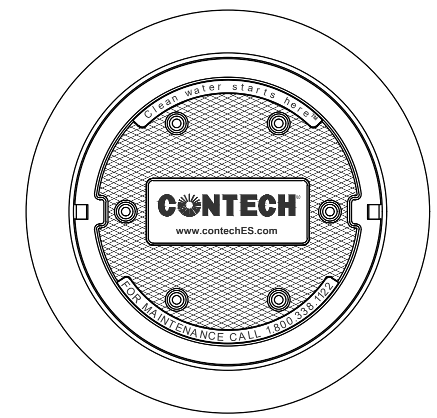
STORMFILTER DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. THE STANDARD MANHOLE STYLE IS SHOWN WITH THE MAXIMUM NUMBER OF CARTRIDGES (3). VOLUME SYSTEM IS ALSO AVAILABLE WITH MAXIMUM 3 CARTRIDGES.
Ø4 [1219 mm] MANHOLE STORMFILTER PEAK HYDRAULIC CAPACITY IS 1.0 CFS [28.3 L/s] . IF THE SITE CONDITIONS EXCEED 1.0 CFS [28.3 L/s] AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

CARTRIDGE SELECTION

CARTRIDGE HEIGHT	27" [686 mm]			18" [458 mm]			LOW DROP		
RECOMMENDED HYDRAULIC DROP (H)	3.05' [930 mm]			2.3' [700 mm]			1.8' [550 mm]		
SPECIFIC FLOW RATE (gpm/sf) [L/s/m²]	2 [1.30]	1.67* [1.08]	1 [0.65]	2 [1.30]	1.67* [1.08]	1 [0.65]	2 [1.30]	1.67* [1.08]	1 [0.65]
CARTRIDGE FLOW RATE (gpm) [L/s]	22.5 [1.42]	18.79 [1.19]	11.25 [0.71]	15 [0.95]	12.53 [0.79]	7.5 [0.44]	10 [0.63]	8.35 [0.54]	5 [0.32]

* 1.67 gpm/sf [1.08 L/s/m²] SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY



FRAME AND COVER

(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	*
WATER QUALITY FLOW RATE (cfs) [L/s]	*
PEAK FLOW RATE (cfs) [L/s]	*
RETURN PERIOD OF PEAK FLOW (yrs)	*
CARTRIDGE HEIGHT (SEE TABLE ABOVE)	*
NUMBER OF CARTRIDGES REQUIRED	*
CARTRIDGE FLOW RATE	*
MEDIA TYPE (PERLITE, ZPG, PSORB)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE #1	*	*	*
INLET PIPE #2	*	*	*
OUTLET PIPE	*	*	*

RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR SITE SPECIFIC DRAWINGS WITH DETAILED VAULT DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5' [1524 mm] AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
6. FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES [178 mm]. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
7. SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) [L/s] DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft)[m²].
8. STORMFILTER STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET PIPE(S).
E. CONTRACTOR TO PROVIDE AND INSTALL CONNECTOR TO THE OUTLET RISER STUB. STORMFILTER EQUIPPED WITH A DUAL DIAMETER HDPE OUTLET STUB AND SAND COLLAR. IF OUTLET PIPE IS LARGER THAN 8 INCHES [200 mm], CONTRACTOR TO REMOVE THE 8 INCH [200 mm] OUTLET STUB AT MOLDED-IN CUT LINE. COUPLING BY FERNCO OR EQUAL AND PROVIDED BY CONTRACTOR.
F. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

CONTECH® ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

SFMH48
STORMFILTER
STANDARD DETAIL

I:\STORMWATER\COMMOPS\10 STORMFILTER\40 STANDARD DRAWINGS\MANHOLE\SFMH48-DTL.DWG 4/5/2019 10:54 AM

Attachment 6: Letter of Incompleteness for CU 24-01, DR 24-01, & ZA 24-01

February 22, 2024

Zach Pelz, Principal
AKS Engineering & Forestry, LLC
3700 River Road N., Suite 1
Keizer, OR 97303-5699

RE: Status of CU 24-01, DR 24-01, & ZA 24-01 “US Market gas station” at 2115 Molalla Rd (Tax Lots 051W09B001000, 1100, & 1200 [primary])

Dear Mr. Pelz:

Staff reviewed the degree of completion of the Conditional Use (CU) consolidated applications package for the subject property with materials submitted January 23, 2024 and determined it incomplete as of February 22, 2024. Staff sends this letter to demonstrate compliance with Oregon Revised Statutes (ORS) 227.178(2).

This letter is divided into two parts:

- Part I: Missing items required to make the application package complete; and
- Part II: Recommendations and initial site plan revision directions that are optional for a completeness response by the applicant and, if the applicant defers, would be resolved by the time of conditioning.

Section references are to the Woodburn Development Ordinance (WDO).

Part I

A. Narrative: Revise the conditional use narrative under Table 2.03A to specify that the CU request for a "gasoline station" is for that subset of the whole group of "automotive maintenance and gasoline stations, including repair services" as listed in Table 2.03, Use B2, and so excludes any automotive maintenance and repair services (as appears to be the case).

B. Frontage/street improvements: Revise the Sheet L100 landscape plan to:
   1. Indicate in the legend for each tree species either the size category at maturity as Table 3.06B describes or height in feet at maturity.
   2. Demonstrate that the landscape strip conforms with the 3.01.04B last paragraph (grass and irrigation).

C. Vision clearance area (VCA) / sight triangles: Revise the site plan sight triangles to shift them north to align with the post-dedication right-of-way (ROW) boundary instead of the existing one, in order to conform with Figure 3.03A.

D. Driveway: Regarding the proposed driveway at 26 feet width:
   1. Submit Woodburn Fire District documentation allowing the developer to make use of Table 3.04A footnote 7 and revise the narrative under 3.04.04 to refer to the documentation.
   2. Revise Sheet C100 and its keyed Note 1 to (a) symbolize a driveway apron that conforms with standard drawings 4150-1 & 4150-4 and (b) end the note with, "conforming with City of Woodburn Public Works unless the Oregon Dept. of Transportation in writing directs otherwise".

E. Directional signage: Based on 3.05.02J, indicate directional signs (max 3½ ft high if ground-mounted) identifying the way out to the highway, such as showing the state highway symbol and an arrow.

F. TIA: Revise the transportation impact analysis to address:
   1. City transportation consultant comments 2 & 3 from the enclosed memo of February 20 (Enclosure 2); and
   2. Oregon Department of Transportation (ODOT) comment 1 from the enclosed memo of February 21 (Enclosure 3).

G. Bicycle parking: The site plan indicates through Keyed Note 19 for covered bicycle parking that it is, "covered by building overhang". Elevation Sheet A3.1 does not allow determination of conformance – that the roof overhang of the convenience store is at least 4 ft deep, enough to span the two 2-ft wide bicycle parking stalls. Use any of drawings and text to demonstrate conformance.

H. Parking:

1. Minimum parking: The proposed use requires minimum 25 parking stalls, which the narrative under Table 3.05A correctly describes, but the site plans illustrate only 23 stalls.

2. Apartments parking: There is also the problem that necessary additional parking that would make up for the parking stalls displaced by the cross accesses at Woodburn Place and Woodburn Place West Apartments are missing, 2 displaced from the east and as many as 3 displaced from the west. (See also Part II, Item AA). The required parking is as many as 30 stalls.
   If wanting to investigate deviation, see Zoning Adjustment (ZA) of Table 3.05A row 6 as 5.02.06C.9 allows (max 5% reduction) or variance (VAR) through 5.03.12. (Without deviation, means of conformance could necessitate removing the proposed car wash or shrinking the convenience store.)

3. Carports: The west cross access that eliminates 3 parking stalls from Woodburn Place West Apartments at 2045 Molalla Road eliminates specifically 3 from under a carport. To maintain conformance, provide a carport over a minimum stalls on the subject property equal to the number of displaced stalls. (3.05.03F.2 requires that minimum half of apartment parking be in garages or under carports. See also Part II, Item AA).

4. Shared parking agreement: The parking displacement situation necessitates a shared parking agreement through 3.05.05. Revise the narrative to address, and submit a draft agreement among the two apartment complexes and the subject property that addresses at least 3.05.05D.2. If the convenience store operator has opinions about time, place and manner restrictions, outline them (in the revised narrative) for City consideration.

5. Operations: Besides a condition for a shared parking agreement, expect also a condition that requires signage indicating that apartment tenants may park on the subject property (at least in certain stalls north past the convenience store). If the convenience store operator has opinions about how to administer, outline these.

6. Carpool/vanpool (C/V): The narrative under Table 3.05C says that the site plan has a C/V stall at the north rear of the convenience store, but there is none – unless the stall marked with a bold gray "C" means to indicate C/V instead of a compact stall. Revise the site plan to designate the C/V stall as "C/V" on the site plan.

I. Walkway islands/peninsulas: To conform with 3.06.03C.4, revise the site and landscape plans to provide a landscaped island or peninsula along the west side of the wide walkway where it passes through the parking aisle at the convenience store. (Revision could change the walkway alignment.)

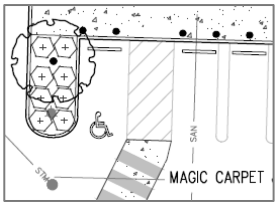


Exhibit I

J. Recycling and trash enclosure: Revise the narrative under 3.06.06 and if necessary to site plans to clarify if any outdoor storage of recycling and trash is proposed or not, and if proposed, how it conforms to Table 3.06D, row 15, and 3.06.06B.5, 6, & 7.

If an enclosure is required, staff recommends that the darker color or hue be along the wall bottom faces and the lighter along the wall upper faces. Staff recommends also that, assuming concrete masonry unit (CMU), that the max 20% of wall that may be ground-face CMU (i.e. CMU that is neither scored nor textured), if any, be either at elbow level (beginning at 6th course of CMU from ground) or along the wall upper faces. Include wall elevation detail drawings.

K. Lighting:
1. Revise the Sheet C105 photometrics plan, specifically the luminaire and pole schedule, to indicate how the vendor models conform to the hue / color temperature specification of 3.11.02C.
2. Submit cut/spec sheets for the vendor models.

L. Building code: The Building Official identified that the car wash east wall is proposed at the property line, and that one of the following needs to happen:
1. The east elevation is revised to indicate no doors, windows, or other penetrations because the wall would require a certain level of fire-rated construction;
2. The east wall is set back from the property line; or
3. The developer grants on the adjacent property a “no-build” easement.

The Building Official can elaborate on any of these. Contact Melissa Gitt, (503) 980-2430, melissa.gitt@ci.woodburn.or.us. Revise the narrative under Table 2.03C to address the issue, and if necessary the site plans too.

M. Storm report:
1. The storm report was missing both in Adobe PDF and from the binders – only the divider cover tabs for Exhibit H were present – but first see 2. below.
2. If the report does not already do so, revise to address ODOT direction per the enclosed e-mail of February 22 (Enclosure 4): the means of stormwater run-off detention and treatment, including the size of the proposed underground detention facility.

N. Pumps: Revise site plan Keyed Note 7 to specify if the number of gas pumps is a half dozen (3 islands times 2 equals 6).

O. Queueing: There appears too little room for vehicle queues at the pumps, and the application materials lack information about how queueing and circulation would operate. Guiding questions include:
   1. Is queueing one way?
   2. Are some pumps allocated for self-serve and others for attendant service or "mini serve"?
   3. What signage and striping should the site plans illustrate and note to describe intended queueing?
   4. How is queueing handled in the field during operations?
   5. What would prevent queued vehicles from backing up onto the highway?
   6. Because the site plan indicates no attendant booth, where and how would the attendant(s) be stationed?

P. Water station: Explain what a "water station" is, which the site plan illustrates near the site southeast corner, revising Keyed Note 9 to describe.

Q. Public Works: See the enclosed Public Works Department comments (Enclosure 1). The contact is Dago Garcia, P.E., City Engineer, (503) 982-5248, dago.garcia@ci.woodburn.or.us.

Part II

Part II anticipates developer actions and revisions, whether before or after public hearing and ideally before staff finalizes conditions of approval. Read in whole first, taking notes, before asking staff to clarify or revising app materials. I'd be happy to set up a virtual meeting between staff and the applicant or applicant's team to help understand the items and continue discussion from there. A phone call to me would also suffice, (503) 980-2485.

AA. Cross access drive aisles: Revise the west cross access drive aisles from two-way at 24 ft wide with two striped arrows to one-way eastbound at minimum 10 ft and maximum 12 ft wide with one striped arrow and an *MUTCD*-compliant "do not enter" sign. (See also Part I, Item H).

BB. Architectural Wall: Staff is considering a compromise position: A low Architectural Wall minimum height 4 ft (which is equal to 6 courses if CMU), with a cap of smoother concrete, extending along a fraction of the property perimeter:

- The east property line segment north of the car wash and the north property line westerly to 5 ft short of the walkway near the cross access drive aisle.
- The east property line segment south of the car wash to 2 ft short of the cross access drive aisle.
- The east property line segment starting 2 ft south of the cross access drive aisle and ending at the edge of the streetside public utility easement (PUE) as well as stair-stepping at the south if and as necessary to conform with Figures 2.06A & B.

Have each wall segment end shall have a pier or pilaster minimum 16 inches wide relative to wall face and projecting minimum 4 inches. Each segment is to have a minimum number of piers or pilasters equal to a ratio of 1 per 40 ft of wall. Each pier or pilaster is to be capped with ornamental concrete in the form of any of a shallow-sloped pyramid or sphere or other finial atop such pyramid. The site northeast corner wall may be partly made of opaque cedar wood fencing if the wall remains mostly masonry.

CC. Architecture:

1. Awnings/canopies: Based on WDO 3.07.06B.1b(4) & B.5a, provide of any of a canopy, fixed awning, or roof overhang at the convenience store main entrance, minimum depth 4 ft, minimum width 9 ft, and minimum height clearance 9 ft:
2. Windows: Add 2:
   a. 1, which could be translucent, on the convenience store west elevation, at least 2 ft narrowest dimension and at least approximately 8 square ft (sq ft).
   b. 1, which could be translucent or spandrel glass, on the convenience store north elevation, at least 2 ft narrowest dimension and at least approximately 8 square ft (sq ft), ideally aligned with the west gable end.
3. Lighting: Revise the convenience store west wall-packs from 3 to 2.
4. Gas pump canopy: Revise the elevations to indicate maximum height 16 ft.

DD. SDCs: Regarding system development charges (SDCs), the traffic one can be very expensive per Resolution No. 2188 (April 25, 2022), Exhibit "A" that provides for charges based on Institute of Transportation Engineers (ITE) codes including ITE code 960, super convenience market/gas station, based on vehicle fueling positions. Regarding a car wash, footnote 3 explains, "For ITE codes not listed in the schedule above, the SDC charges shall be calculated in accordance with the April 2022 Transportation System Development Charges Study." Please investigate, ask the Public Works Department Engineering Division any questions about SDC administration, and determine if the developer's budget can accommodate all SDCs.

In closing, please provide to my attention all revised and new materials both in print (3 copies of site plans plotted at site plan size and 2 copies of other documents) and in Adobe PDF files. Acceptable print sizes are letter, ledger, and 24” x 36” plan size. Include a cover letter quoting and addressing each incompleteness item, referencing the plan set and sheet(s) or other document(s) and page number(s) that address each item.

You may email the PDF files if the total attachments remain under 10MB in size. Either a USB thumb drive or use of a file sharing website are also acceptable means to convey electronic files, and staff prefers a file sharing service.

Please contact me at (503) 980-2485 or colin.cortes@ci.woodburn.or.us with questions.

Sincerely,

Colin Cortes, AICP, CNU-A
Senior Planner

cc: Architect: Ronald “Ron” Ped, President/Architect, Ronald James Ped Architect, PC, 1220 20th St SE, Ste 125, Salem, OR 97302-1205
Chris Kerr, Community Development Director
Dan Handel, Planner
Cassandra Martinez, Administrative Specialist
Curtis Stultz, Public Works Director
Dago Garcia, P.E., City Engineer
Cole Grube, P.E., Project Engineer

Enclosures (5):

1. Public Works comments (February 22, 2024; 2 pages plus exhibit of 12 pages)
2. City transportation consultant memo (February 20, 2024; 2 pages)
3. Oregon Dept. of Transportation (ODOT) comments on TIA (February 21, 2024; 2 pages)
4. ODOT comments on stormwater management (February 22, 2024)
5. Site, landscape, and floor plans and elevation sheets (5 sheets)

file(s): CU 24-01, DR 24-01, & ZA 24-01 “US Market gas station” at 2115 Molalla Rd (Tax Lots 051W09B001000, 1100, & 1200 (primary); Accela record no. 971-24-000006-PLNG; AKS Engineering & Forestry job number 9438

MARKET/GAS STATION/ CAR WASH
2115 MOLALLA ROAD
Public Works Comments

February 22, 2024

REQUIRE INFORMATION PRIOR TO DEEM APPLICATION COMPLETE:

1. Applicant needs to provide additional information on how the proposed private storm system and private sewer system comply with the City's Storm Drainage and Sanitary Sewer ordinances, see Ordinances 1790 and 2620. The gas pumps area shall comply with Federal, State, and City's regulations for containment of spills and storm discharges.

   Pending ODOT's and Marion County Plumbing permit review and approval the minimum requirement is to have an oil/water and sand separator on the private storm system.

   Pending Marion County Plumbing permits approval, the minimum requirement is to have an oil/water separator and grease interceptor in the private sewer system. Please submit the attached "nonresidential wastewater discharge Survey" form to Carol Limbach for additional information/requirements (carol.leimbach@ci.woodbur.or.us).

GENERAL NOTES FOR REFERENCE ONLY:

2. The Applicant/owner, not the City, is responsible for obtaining permits from City, State, County and/or Federal agencies that may require such permit or approval.

3. Applicant to provide a storm drainage report prior to Civil Plans approval. The storm drainage report shall comply with the City of Woodburn storm master plan and ODOT's approval for discharging the private storm system into ODOT's system along Hwy 211 (Molalla Road).

4. All City-maintained facilities located on private property shall require a minimum of 16-foot-wide utility easement conveyed to the City by the property owner. Provide and record the required right-of-way dedication, public utility easements, and waterline easements prior to building permit issuance if required. All water meters shall be within the right-of-way or public utility easements.

5. The Applicant shall obtain the required 1200C Erosion Control Permit from the Department of Environmental Quality prior to City issuance of permit(s), if applicable.

Enclosure 1

6. Final review of the Civil Plans will be done during the building permit application. Public infrastructure will be constructed in accordance with plans approved by public works, ODOT, and other agencies that may require the applicant to obtain permits.

7. All sanitary sewer laterals serving the proposed developments are private up to the main line. All existing sewer laterals shall be abandoned at the main if they are not going to be utilized.

8. Fire hydrants locations and fire protection requirements shall be as per the Woodburn Fire District and City of Woodburn requirements.

9. System Development Charges shall be paid prior to building permit issuance.

10. All work within ODOT's jurisdiction shall comply with ODOT's permits and requirements.

11. All onsite private storm systems and sewer lateral lines shall comply with Marion County plumbing permit and requirements.

NONRESIDENTIAL WASTEWATER DISCHARGE SURVEY

Under the Code of Federal Regulations (40 CFR) Part 403.8(f)(2) and Woodburn's Sewer Use Ordinance #2556 Section 4, 4.1, all Nonresidential and Industrial Users of the municipal wastewater system, must submit information regarding the characteristics of their wastewater discharge, by completing a wastewater discharge survey. Publicly Owned Treatment Works (POTW) are required to identify and locate all possible industrial users subject to the pretreatment program. The Nonresidential Wastewater Discharge Survey or the Baseline Monitoring Report (BMR) is commonly used to obtain this information.

Enclosed is a Nonresidential Wastewater Discharge Survey that must be filled out and signed by an authorized official. Please complete and return within **45** days to the **Pretreatment Coordinator** at the address below.

Failure to complete and return this survey shall be considered a **violation** of Woodburn's Sewer Use Ordinance and subjects the wastewater or industrial user to the enforcement sanctions set out in Woodburn's Sewer Use Ordinance #2556, Sections 10-12.

Thank you for your cooperation. If you have any questions, please don't hesitate to call between 8:30am to 4:00 pm Monday through Friday or email:

Carol Leimbach
Pretreatment Coordinator
City of Woodburn, POTW
2815 Molalla Rd.
Woodburn, OR 97071
503.982-5283
carol.leimbach@ci.woodburn.or.us

CITY OF WOODBURN

Publically Owned Treatment Works

Nonresidential Wastewater Discharge Survey

PLEASE PRINT OR TYPE

Section I General Information

A. Company Name: ____

Facility Address: ____

Zip Code: ________________ Telephone: ______________________________

B. Provide the name(s) of the owner, manager of the facility and person(s) responsible for compliance with environmental requirements. Include the titles, addresses and telephone number for each person identified.

____

____

C. Provide a brief description of the service(s) and product(s) that are or will be produced at this facility.

____

____

____

D. Provide a listing of any environmental control permits held by or for the facility. This includes any permits for air, water, solid waste, etc. ______________________________

Section II Facility Operations

A. What is the date the facility began or expected to begin operations at this location? _________

B. List the Standard Industrial Classification [SIC] or NAICS number(s) of the operations performed at the facility: ____

C.

Work Days	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Shifts per work day:	___	___	___	___	___	___	___

Shift times: 1st ___________ 2nd __________ 3rd ____________

\# Employees per shift: 1st ___________ 2nd __________ 3rd ____________

Section III Chemical Storage

A. List the types and quantities of chemicals used or stored. Use additional sheets or attach list if necessary.

Chemical	Quantity
____________________	____________________
____________________	____________________
____________________	____________________
____________________	____________________
____________________	____________________
____________________	____________________
____________________	____________________
____________________	____________________
____________________	____________________
____________________	____________________
____________________	____________________
____________________	____________________

B. Briefly describe the storage facility for these chemicals:

____

____

____

____

C. Are there floor drains in the chemical storage area? [ ]Yes [ ]No

D. Could an accidental spill discharge to:

[ ] an on-site disposal system?
[ ] public sanitary sewer system?
[ ] storm drain?
[ ] to ground?
[ ] other?, specify:_______________________________________
[ ] no possible discharge to any of the above routes

E. Do you have an accidental spill prevention plan to prevent spills of chemicals or slug discharges from entering the City's sanitary sewer system?

[ ] Yes - (Enclose a copy with the survey)   [ ] No

Section IV Waste

A. If you generate any of the following waste, indicate the method of disposal and the quantity disposed of for each method. Use additional sheets if necessary.

Waste Generated	Disposal Method[1] (state all)	Quantity/year (gallons or lbs)
1. Acids	________	________
2. Alkalies	________	________
3. Pretreatment Sludge	________	________
4. Other Sludge (from parts cleaner, etc.)	________	________
5. Plating Waste	________	________
6. Organic Compounds	________	________
7. Pesticides	________	________
8. Oil and Grease	________	________
9. Inks and Dyes	________	________
10. Solvents/Thinners	________	________
11. Other Waste (specify)	________	________

[1] Enter the appropriate code letter indicating disposal method:

(a) On-site storage (c) On-site disposal (b) Off-site storage (d) Off-site disposal
(e) Other ____________________

B. Briefly describe the method(s) of storage for the waste generated above.

____

____

____

C. If an outside firm removes any of the above waste, provide the name of all waste transporters, which waste they transport and the disposal location.

Waste	Transporter	Disposal Location

Section V Water/Sewer Information

A. Show the average quantity of water used in gallons per day (GPD). Indicate if it is estimated (E) or measured (M) and if it is discharge to the City sewer or other discharge point (i.e. storm sewer, septic system, etc.). New business can provide estimates.

			Discharged to	
USE	**GPD**	**E or M**	**City Sewer**	**Other**
Domestic (restroom, dishwasher, etc..)				
Contained in Product				
Process				
Washdown				
Contact Cooling Water				
Non-Contact Cooling Water				
Boiler Blowdown				
Cooling Tower				
Lawn Watering				
Evaporation				
Other (specify)				

B. Are there any backflow prevention devices? [ ]Yes [ ]No

Section VI Process Activities

A. Indicate which process activities occur at the facility.

□ Anodizing
□ Assembly
□ Brazing
□ Burnishing
□ Calibration
□ Cathode Ray Tube
□ Chemical Etching & Milling
□ Cleaning
□ Coatings (chromating, phosphating)
□ Common Metals Plating
□ Conversion Coating
□ Electrical Discharge Machining
□ Electrochemical Machining
□ Electroless Plating
□ Electronic Crystals
□ Electropainting
□ Electroplating
□ Mechanical Plating
□ Other Abrasive Jet Machining
□ Paint Stripping
□ Painting
□ Plasma Arc Machining
□ Polishing
□ Precious Metals Plating
□ Pressure Deformation
□ Printed Circuit Board Mfg.
□ Salt Bath Descaling
□ Sand Blasting
□ Semiconductor
□ Shearing
□ Sintering
□ Soldering
□ Solvent Degreasing
□ Sputtering

□ Electrostatic Painting
□ Grinding
□ Hot Dip Coating
□ Impact Deformation
□ Laminating
□ Laser Beam Machining
□ Luminescent Materials
□ Machining
□ Testing
□ Thermal Cutting
□ Thermal Infusion
□ Tumbling (Barrel Finishing)
□ Ultrasonic Machining
□ Vacuum Metalizing
□ Vapor Plating
□ Welding
□ Others: ____

B. Diagrams

1. For <u>each process</u> from which wastewater is or will be generated, provide a diagram of the process from the start of the activity to its completion. Include the following:
   a. name of process (number each)
   b. date installed
   c. principal product produced
   d. raw materials used
   e. point of discharge from process
   f. where discharge flows (i.e. treatment, sewer, etc...)
   g. average daily and maximum flows (indicate if measured or estimated)
   h. if production is batch, continuous or both
   i. any applicable Pretreatment Standards
   (Metal Finishing, Leather Tanning, Plastics Molding and Forming, etc.) See Appendix A.

2. Provide a description of the average rate of production expressed in production units per average month over the last year and the maximum production units produced in any one month over that same time frame.

3. Draw to scale the location of each building on the premises. Show map orientation, location of all water meters, numbered unit processes (from Part A-1 above), sampling points, and each building sewer line that is connected to the sanitary sewer line.

   A blueprint of the facility showing the above items may be attached in lieu of submitting a drawing.

C. Pretreatment Processes

1. Indicate which pretreatment devices or processes your facility is or will be using for treating wastewater or sludge (check as many as appropriate).

[ ] Air Flotation
[ ] Centrifuge
[ ] Chemical Precipitation
[ ] Chlorination
[ ] Cyclone
[ ] Electrowinning
[ ] Filtration, type: ________________________________
[ ] Flow Equalization
[ ] Oil separator, size: ______________________________
[ ] Grease Trap, size: ________________________
[ ] Ion Exchange
[ ] Neutralization, pH correction
[ ] Ozonation
[ ] Reverse Osmosis
[ ] Screen
[ ] Sedimentation
[ ] Septic Tank, size: ________________________
[ ] Solvent separation
[ ] Spill Protection
[ ] Sump
[ ] Biological treatment, type: ____
[ ] Other chemical treatment, type: ____
[ ] Other physical treatment, type: ____
[ ] Other, describe: ____

2. Attach a process flow diagram for each pretreatment device. Include design criteria.

Section VII Priority Pollutant Information

Place an "**X**" in the space provided below to indicate whether each pollutant, or any other pollutant, has a reasonable potential of being present in the discharge from your facility. Use additional sheets if necessary. (See next page).

Table II - Organic Toxic Pollutants

Volatiles

________Acrolein
________Acrylonitrile
________Benzene
________Bromoform
________Carbon tetrachloride
________Chlorobenzene
________Chlorodibromomethane
________Chloroethane
________2-chloroethylvinyl ether
________Chloroform
________Dichlorobromomethane
________1,1-dichloroethane
________1,2-dichloroethane
________1,1-dichloroethylene
________1,2-dichloropropane
________1,3-dichloropropylene
________Ethylbenzene
________Methyl bromide
________Methyl chloride
________Methylene chloride
________1,1,2,2-tetrachloroethane
________Tetrachloroethylene
________Toluene
________1,2-trans-dichloroethylene
________1,1,1-trichloroethane
________1,1,2-trichloroethane
________Trichloroethylene
________Vinyl chloride

Acid Compounds

________2-chlorophenol
________2,4-dichlorophenol
________2,4-dimethylphenol
________4,6-dinitro-o-cresol
________2,4-dinitrophenol
________2-nitrophenol
________4-nitrophenol
________P-chloro-m-cresol
________Pentachlorophenol
________Phenol
________2,4,6-trichlorophenol

Base Neutral

________Acenaphthene
________Acenaphthylene
________Anthracene
________Benzidine
________Benzo(a)anthracene
________Benzo(a)pyrene
________3,4-benzofluoranthene
________Benzo(ghi)perylene
________Benzo(k)fluoranthene
________Bis(2-chloroethoxy)methane
________Bis(2-chloroethyl)ether
________Bis(2-chloroisopropyl)ether
________Bis(2-ethylhexyl)phthalate
________4-bromophenyl phenyl ether
________Butylbenzyl phthalate
________2-chloronaphthalene
________4-chlorophenyl phenyl ether
________Chrysene
________Dibenzo(a,h)anthracene
________1,2-dichlorobenzene
________1,3-dichlorobenzene
________1,4-dichlorobenzene
________3,3-dichlorobenzidine
________Diethyl phthalate
________Dimethyl phthalate
________Di-n-butyl phthalate
________2,4-dinitrotoluene
________2,6-dinitrotoluene
________Di-n-octyl phthalate
________1,2-diphenylhydrazine (as azobenzene)
________Fluroranthene
________Fluorene
________Hexachlorobenzene
________Hexachlorobutadiene
________Hexachlorocyclopentadiene
________Hexachloroethane
________Indeno(1,2,3-cd)pyrene
________Isophorone
________Napthalene
________Nitrobenzene
________N-nitrosodimethylamine
________N-nitrosodi-n-propylamine
________N-nitrosodiphenylamine
________Phenanthrene
________Pyrene
________1,2,4-trichlorobenzene

Pesticides
________Aldrin
________Alpha-BHC
________Beta-BHC
________Gamma-BHC
________Delta-BHC
________Chlordane
________4,4'-DDT
________4,4'-DDE
________4,4'-DDD
________dieldrin
________Alpha-endosulfan
________Beta-endosulfan
________Endosulfan sulfate
________Endrin
________Endrin aldehyde
________Heptachlor
________Heptachlor epoxide
________PCB-1242
________PCB-1254
________PCB-1221
________PCB-1232
________PCB-1248
________PCB-1260
________PCB-1O16
________Toxaphene

Table III - Other Toxic Pollutants and Total Phenols
________Antimony
________Arsenic
________Beryllium
________Cadmium
________Chromium
________Copper
________Lead
________Mercury
________Nickel
________Selenium
________Silver
________Thallium
________Zinc
________Cyanide
________Phenols

Table IV - Conventional and Nonconventional Pollutants
________Bromide
________Chlorine
________Color
________Fecal Coliform
________Fluoride
________Nitrate-Nitrite
________Nitrogen, Total Organic
________Oil and Grease
________Phosphorus
________Radioactivity
________Sulfate
________Sulfide
________Sulfite
________Surfactants
________Aluminum
________Barium
________Boron
________Cobalt
________Iron
________Magnesium
________Molybdenum
________Manganese
________Tin
________Titanium

Table V - Toxic Pollutants and Hazardous Substances

Toxic Pollutants
________Asbestos

Hazardous Substances
________Acetaldehyde
________Allyl alcohol
________Allyl chloride
________Amyl acetate
________Aniline
________Benzonitrile
________Benzyl chloride
________Butyl acetate
________Butylamine
________Captan
________Carbaryl
________Carbofuran
________Carbon disulfide
________Chlorpyrifos
________Coumaphos
________Cresol
________Crotonaldehyde
________Cyclohexane
________2,4-D (2,4-Dichlorophenoxy acetic acid)
________Diazinon
________Dicamba
________Dichlobenil
________Dichlone
________2,2-Dichloropropionic acid
________Dichlorvos
________Diethyl amine
________Dimethyl amine
________Dintrobenzene
________Diquat

Hazardous Substances continued

________Disulfoton
________Diuron
________Epichlorohydrin
________Ethion
________Ethylene diamine
________Ethylene dibromide
________Formaldehyde
________Furfural
________Guthion
________Isoprene
________Isopropanolamine Dodecylbenzenesulfonate
________Kelthane
________Kepone
________Malathion
________Mercaptodimethur
________Methoxychlor
________Methyl mercaptan
________Methyl methacrylate
________Methyl parathion
________Mevinphos
________Mexacarbate
________Monoethyl amine
________Monomethyl amine
________Naled
________Napthenic acid
________Nitrotoluene
________Parathion
________Phenolsulfanate
________Phosgene
________Propargite
________Propylene oxide
________Pyrethrins
________Quinoline
________Resorcinol
________Strontium
________Strychnine
________Styrene
________2,4,5-T (2.4,5-Trichlorophenoxy acetic acid)
________TDE (Tetrachlorodiphenylethane)
________2,4,5-TP [2-(2,4,5-Trichlorophenoxy)
________ propanoic acid]
________Trichlorofan
________Triethanolamine dodecylbenzenesulfonate
________Triethylamine
________Trimethylamine
________Uranium
________Vanadium
________Vinyl acetate
________Xylene
________Xylenol
________Zirconium

Other

________Molybdenum
________pH <5.5
________pH >10.0
________BOD >200 mg/l
________Suspended Solids >250 mg/l
________Temperature >104EF
________Flashpoint < 140EF
________ ________________________________
________ ________________________________
________ ________________________________
________ ________________________________
________ ________________________________
________ ________________________________
________ ________________________________

Section VIII Laboratory Analysis

A. If any wastewater analysis has been performed on the wastewater discharge(s) from the processes or from the facility, attach a copy of the most recent data. Include the date of the analysis, name of laboratory, and location(s) from which sample(s) were taken (attach sketches, plans, etc., as necessary).

Section IX Verification

The following statement must be signed by an authorized officer or agent of the company.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

________________________________ ____________________________

Signature Title

________________________________ ____________________________

Printed Name Date

Be sure you have enclosed the following information requested in:

Section	Part
I	B & D
III	E
VI	B 1,2,3 and C2
VIII	A

The City may follow up with a site visit and/or additional questions.

Return this survey to: **City of Woodburn POTW**
Pretreatment Coordinator
2815 Molalla Road
Woodburn, OR 97071

APPENDIX A

Industrial Categories subject to National Categorical Pretreatment Standards

Aluminum Forming
Asbestos Manufacturing
Battery Manufacturing
Builders Paper
Carbon Black
Cement Manufacturing
Coil Coating
Copper Forming
Dairy Products Processing
Electrical/Electronic Components
Electroplating
Feedlots
Ferroalloy Manufacturing
Fertilizer Manufacturing
Fruits/Vegetables Processing Manufacturing
Glass Manufacturing
Grain Mills Manufacturing
Ink Formulating
Inorganic Chemicals
Iron & Steel Manufacturing
Leather Tanning & Finishing
Meat Processing
Metal Finishing
Metal Molding & Casting
Nonferrous Metals Forming
Nonferrous Metals Manufacturing
Paint Formulating
Paving & Roofing (Tars and Asphalt)
Pesticides
Petroleum Refining
Pharmaceuticals
Phosphate Manufacturing
Plastics Molding and Forming
Porcelain Enameling
Pulp and Paper
Rubber Processing
Seafood Processing
Soaps & Detergents Manufacturing
Steam Electric
Sugar Processing
Textile Mills
Timber Products Manufacturing

DKS

DKSASSOCIATES.COM

TIA REVIEW COMMENTS

DATE: February 20, 2024

TO: Colin Cortes and Chris Kerr | City of Woodburn

FROM: Reah Flisakowski, PE and Jenna Bogert, PE | DKS Associates

SUBJECT: US Market Gas Station TIA Review (CU 24-01) Project #24150-000

INTRODUCTION

DKS Associates has conducted a review of the transportation impact analysis (TIA) for the US Market Gas Station.[1] The proposed development is located at 2115 Molalla Road in Woodburn, Oregon, and consists of six vehicle fueling pumps, a convenience store, and car wash.

The purpose of this TIA review is to determine whether the submitted TIA meets the requirements of Section 3.04.05 in the Woodburn Development Ordinance and to also provide comments related to the analysis methodology and assumptions, proposed mitigations, and any suggested revisions to the TIA.

TIA COMMENTS

1. The proposed trip generation rate (combination of 11th Edition rates and 9th Edition rates) appears appropriate and reasonable for this project as it captures all of the proposed on-site land uses (gas station, convenience market, and car wash). The internal trip reductions and pass-by reductions are consistent with the ITE Trip Generation Manual methodology. Therefore, DKS is in agreement with the vehicle trip generation as shown in Table 5.
2. On Page 13, the TIA states that half of the pass-by trip reduction was applied to OR 211 and half to OR 99E and OR 214. However, based on the definition of a pass-by trip, pass-by trips should only be applied only to OR 211 (i.e., the roadway directly adjacent to the proposed development). DKS would suggest removing the pass-by trip reductions from the OR 214/OR 99E intersection and re-evaluating the vehicle operations at the OR 214/OR 99E intersection and the OR 211/Gas Station Driveway intersection. It is unlikely that this adjustment will change the overall vehicle operations findings at either intersection, but it may alter the proportionate share calculations.
3. Please include an evaluation of left-turn lane warrants for the gas station site driveway in addition to the Safeway Access and June Way/Woodburn Place West Access intersections.

[1] 2115 Molalla Road Transportation Impact Analysis, Lancaster Mobley, November 28, 2023.

Enclosure 2

4. The construction of a dedicated westbound right turn lane at OR 214/OR 99E is consistent with the findings of previous traffic studies and conversations with ODOT regarding the desired improvements at this intersection. DKS agrees that the developer should pay their proportionate share towards this mitigation improvement (which is consistent with conditions of approval for nearby developments). The proportionate share percentage should be re-calculated after Comment #2 is addressed.

Oregon
Tina Kotek, Governor

Department of Transportation
Region 2 Tech Center
455 Airport Road SE, Building B
Salem, Oregon 97301-5397
Telephone (503) 986-2990
Fax (503) 986-2839

DATE: February 21, 2024

TO: Casey Knecht, PE
Development Review Coordinator

FROM: Arielle Ferber, PE
Traffic Analysis Engineer

SUBJECT: 2115 Molalla Road Development (Woodburn, OR) – Outright Use
TIA Review Comments

ODOT Region 2 Traffic has completed our review of the submitted traffic impact analysis (dated November 28, 2023) to address traffic impacts due to development north of OR 211 between June Way and Cooley Road in the city of Woodburn, with respect to consistency and compliance with ODOT's Analysis Procedures Manual, Version 2 (APM). The APM was most recently updated in November 2023. The current version is published online at: http://www.oregon.gov/ODOT/TD/TP/Pages/APM.aspx. As a result, we submit the following comments for the City's consideration:

Analysis items to note:

1. The *Oregon Highway Plan* (*OHP*) v/c mobility target for OR 211 (district highway, within UGB, non-MPO, 45 MPH) at the Cooley Road intersection is 0.90 rather than 0.95 as cited. As the intersection is operating well below the mobility target, this will not have an effect on the operational analysis results nor the conclusions of the study.

Proposed mitigation comments:

2. ODOT maintains jurisdiction of the Woodburn-Estacada Highway No. 161 (OR 211), Hillsboro-Silverton Highway No. 140 (OR 214), and Pacific Highway East No. 81 (OR 99E) and ODOT approval shall be required for any proposed mitigation measures to these facilities.
3. The study proposes installing a westbound right-turn lane on OR 211 at the intersection with OR 99E. This mitigation measure appears appropriate. As the study proposed a proportionate share, ODOT recommends the method of calculation align with those determined for previously approved nearby developments.
4. Approval for the proposed signalized westbound right turn lane is required under the authority of the Region Traffic Engineer with support from the City. Both the City and the applicant shall be aware no approval for the proposed mitigation has been issued at this time and proposed mitigations shall not be considered approved for installation until formal written approval has been issued. Approval

Enclosure 3

request will need to be submitted to Region 2 Traffic and be accompanied by the appropriate analysis including operational and queuing analysis, preliminary design layout, and a preliminary signal operations design (PSOD). The approval process takes time and any approval could possibly have added features required to obtain such approval.

Thank you for the opportunity to review this traffic impact analysis. As the analysis software files were not provided, Region 2 Traffic has only reviewed the submitted report.

<u>This traffic impact study has been, for the most part, prepared in accordance with ODOT analysis procedures and methodologies. The mitigation measure recommended within this study may be expected to acceptably mitigate traffic effects of the proposed development. Additional work may be required to accompany approval requests for the proposed mitigation measure (i.e. operational and queuing analysis, preliminary design layout, preliminary signal operations design, progression analysis etc.).</u>

If there are any questions regarding these comments, please contact me at (971) 208-1290 or Arielle.CHILDRESS@odot.oregon.gov.

From:	KNECHT Casey
To:	Dago Garcia
Cc:	Colin Cortes
Subject:	RE: ODOT TIA Review Comments for Woodburn 2115 Molalla Road
Date:	Thursday, February 22, 2024 7:14:07 AM

We'll need to see a storm report showing how they plan to detain and treat the runoff. I saw on the plans that they are proposing underground detention, which would be acceptable, but we'll need to see the analysis to make sure they are appropriately sized. We'll rely on the city and county ordinances to address requirements specific to gas station spills and drainage at the pumps.

We'll also need an approach application for the connection to the highway

Casey Knecht, P.E.
ODOT Region 2

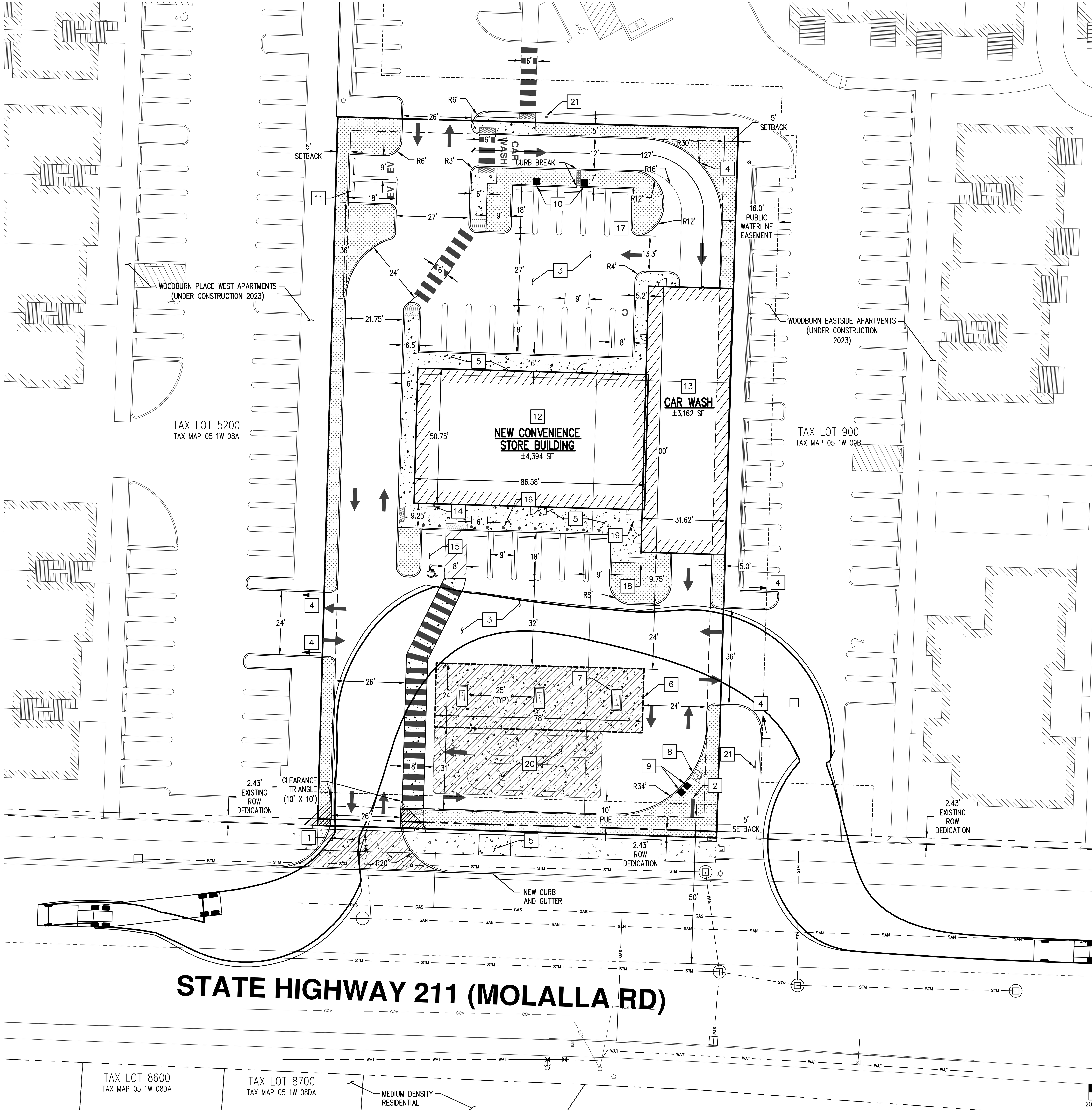
From: Dago Garcia <Dago.Garcia@ci.woodburn.or.us>
Sent: Wednesday, February 21, 2024 4:55 PM
To: KNECHT Casey <Casey.KNECHT@odot.oregon.gov>
Cc: Colin Cortes <Colin.Cortes@ci.woodburn.or.us>
Subject: RE: ODOT TIA Review Comments for Woodburn 2115 Molalla Road

Hi Casey,

Does ODOT have comments regarding the proposed private storm system including detention and discharge to the ODOT's storm system, including any requirements for self-containing spills at gas stations. Currently the plan is for the applicant to comply with the City of Woodburn Sewer and Storm Ordinances and Marion County plumbing requirements for work on private properties.

Thank You

From: KNECHT Casey <Casey.KNECHT@odot.oregon.gov>
Sent: Wednesday, February 21, 2024 4:24 PM
To: Colin Cortes <Colin.Cortes@ci.woodburn.or.us>; Dago Garcia <Dago.Garcia@ci.woodburn.or.us>; Jenna Bogert <jenna.bogert@dksassociates.com>
Cc: CHILDRESS Arielle <Arielle.CHILDRESS@odot.oregon.gov>
Subject: ODOT TIA Review Comments for Woodburn 2115 Molalla Road



SITE PLAN KEYED NOTES:

1. COMMERCIAL DRIVEWAY DROP AND APPROACH.
2. FREESTANDING SIGN.
3. AC PAVEMENT.
4. TYPE "C" CONCRETE CURB (TYP).
5. CONCRETE SIDEWALK.
6. FUEL STATION OVERHEAD (CANOPY TO BE CONSTRUCTED DESIGN-BUILD).
7. FUEL PUMP ISLAND (TYP).
8. PROPANE TANK FILLING STATION.
9. AIR AND WATER STATION.
10. VACUUM STATION (2 STALLS EACH).
11. WHEEL STOP (TYP).
12. CONVENIENCE STORE BUILDING.
13. DRIVE THROUGH CARWASH.
14. ACCESSIBLE PARKING SIGNAGE MOUNTED ON BUILDING. COORDINATE WITH BUILDING PLANS.
15. ACCESSIBLE PARKING STALL AND ACCESS AISLE.
16. BOLLARD (TYP).
17. CARPOOL/VANPOOL PARKING STALL.
18. UNCOVERED BICYCLE PARKING.
19. COVERED BICYCLE PARKING (COVERED BY BUILDING OVERHANG).
20. UNDERGROUND FUEL TANKS.
21. RELOCATED "NO PARKING FIRE LANE" SIGN.

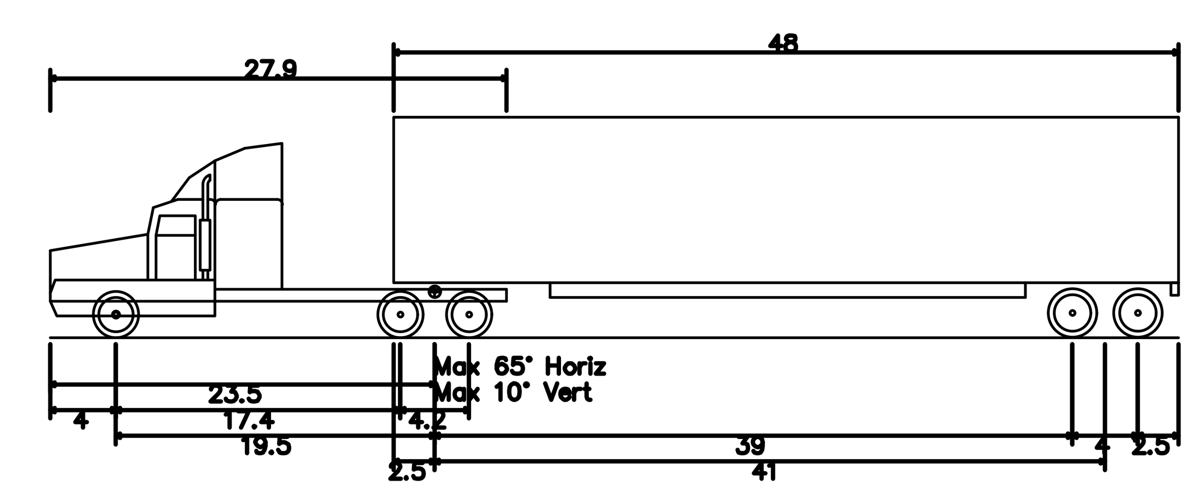
SITE AREA SUMMARY

AREA DESCRIPTION	AREA (SF)	% OF TOTAL AREA
TOTAL SITE AREA:	±40,000	--
STRUCTURES:	±7,556	±19%

PARKING COUNT:

TOTAL SPACES REQUIRED:	25 (1 STALL/200 SF OF RETAIL AREA + 1 STALL/PUMP STATION)
STANDARD SPACES PROVIDED:	14
COMPACT SPACES PROVIDED:	1
ADA SPACES PROVIDED:	1
ELECTRIC VEHICLE SPACES PROVIDED:	2
CARPOOL/VANPOOL SPACES PROVIDED:	1
FUEL SPACES PROVIDED:	6
TOTAL SPACES PROVIDED:	25
BICYCLE PARKING REQUIRED:	4 (15% OF REQUIRED PARKING SPACES)
BICYCLE PARKING PROVIDED:	4

BASIS OF TRUCK TURNING MODELING



WB-62 - Interstate Semi-Trailer

Overall Length	69.000ft
Overall Width	8.500ft
Overall Body Height	13.500ft
Min Body Ground Clearance	1.334ft
Max Track Width	8.500ft
Lock-to-lock time	6.00s
Max Steering Angle (Virtual)	28.40°

LEGEND

Enclosure 5
Sheet 1 of 5

CONCRETE SIDEWALK (4" MIN THICKNESS)

CONCRETE PAVEMENT SECTION (8" MIN THICKNESS)

LANDSCAPE

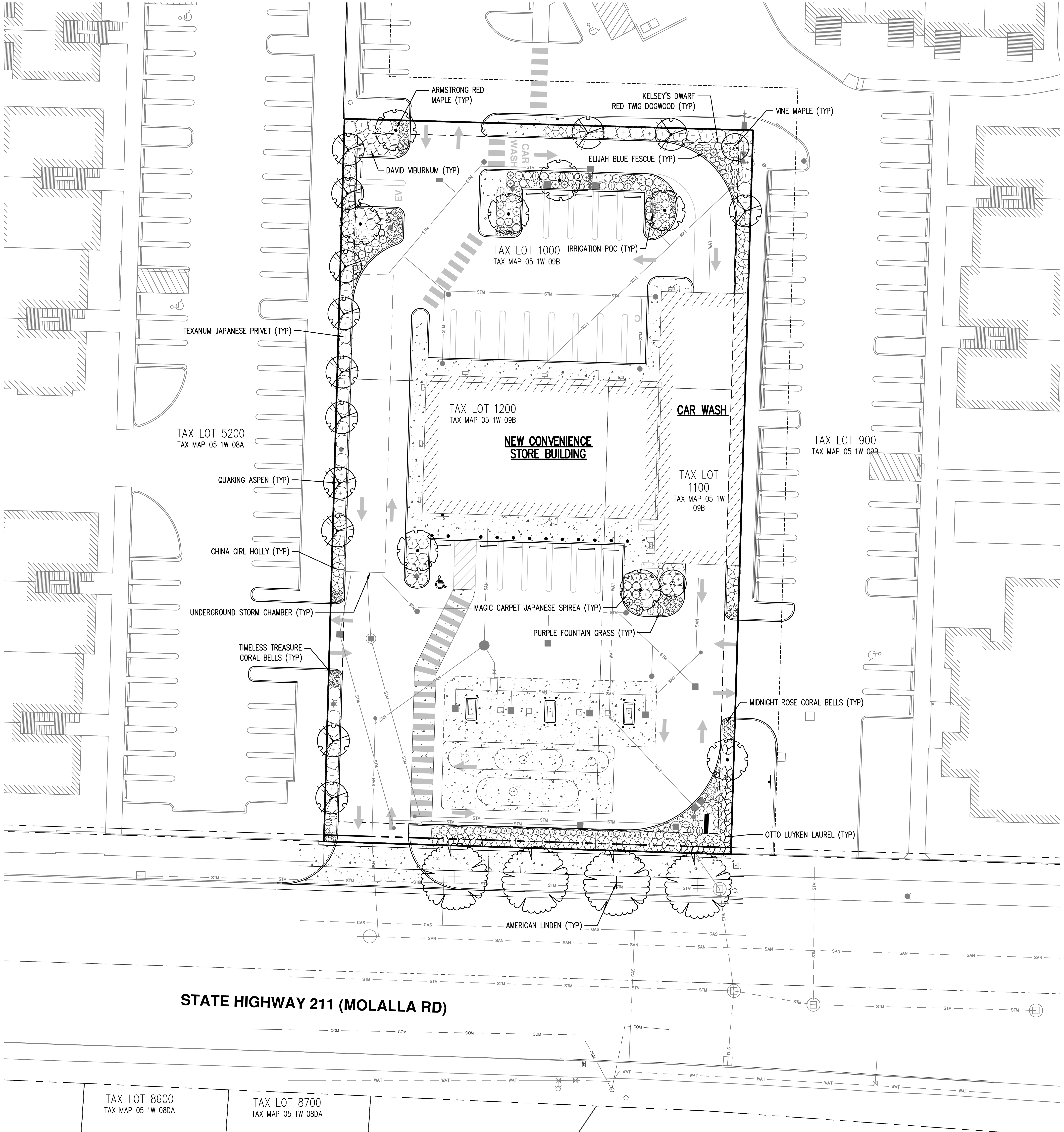
PRELIMINARY SITE PLAN
2115 MOLALLA RD NE
MOLALLA PETROLEUM, LLC
WOODBURN, OR

AKS
AKS ENGINEERING & FORESTRY, LLC
3700 RIVER RD N, STE 1
KEIZER, OR 97303
503.400.6028
WWW.AKS-ENG.COM
ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

PRELIMINARY NOT FOR CONSTRUCTION
RENEWS: DECEMBER 31, 2024

JOB NUMBER:	9438
DATE:	01/18/2024
DESIGNED BY:	TDR
DRAWN BY:	ED
CHECKED BY:	TDR

C100



PRELIMINARY PLANT SCHEDULE

TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
	2	ACER CIRCINATUM	VINE MAPLE	5'-6' HT. B&B MULTI-TRUNK	AS SHOWN
	8	ACER RUBRUM 'ARMSTRONG'	ARMSTRONG RED MAPLE	2" CAL. B&B	AS SHOWN
	13	POPULUS TREMULOIDES 'ERECTA'	COLUMNAR QUAKING ASPEN	2" CAL. B&B	AS SHOWN
	4	TILIA AMERICANA	AMERICAN LINDEN	2" CAL. B&B	AS SHOWN

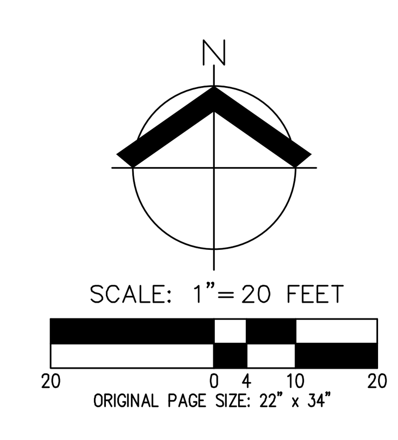
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
	32	CORNUS SERICEA 'KELSEYI'	KELSEY'S DWARF RED TWIG DOGWOOD	2 GAL. CONT.	36" o.c.
	95	FESTUCA GLAUCA 'ELIJAH BLUE'	ELIJAH BLUE FESCUE	1 GAL. CONT.	24" o.c.
	47	HEUCHERA X 'MIDNIGHT ROSE'	MIDNIGHT ROSE CORAL BELLS	1 GAL. CONT.	24" o.c.
	28	HEUCHERA X 'TIMELESS TREASURE'	TIMELESS TREASURE CORAL BELLS	1 GAL. CONT.	24" o.c.
	38	ILEX X MESERVEAE 'CHINA GIRL'	CHINA GIRL HOLLY	5 GAL. CONT.	60" o.c.
	47	LIGUSTRUM JAPONICUM 'TEXANUM'	TEXANUM JAPANESE PRIVET	5 GAL. CONT.	60" o.c.
	56	PENNISETUM SETACEUM 'RUBRUM'	PURPLE FOUNTAIN GRASS	1 GAL. CONT.	36" o.c.
	18	PRUNUS LAUROCERASUS 'OTTO LUYKEN'	OTTO LUYKEN ENGLISH LAUREL	5 GAL. CONT.	48" o.c.
	35	SPIRAEA JAPONICA 'WALBUMA'	MAGIC CARPET JAPANESE SPIREA	2 GAL. CONT.	36" o.c.
	31	VIBURNUM DAVIDII	DAVID VIBURNUM	2 GAL. CONT.	48" o.c.

PRELIMINARY LANDSCAPE NOTES

1. PRELIMINARY LANDSCAPE PLAN IS INTENDED TO PORTRAY DESIGN INTENT ONLY. PLAN CHANGES, INCLUDING CHANGES TO PLANT VARIETY, LOCATIONS, AND OTHER PLAN ELEMENTS MAY OCCUR PRIOR TO FINAL PLAN APPROVAL, WHERE ALLOWED BY CITY OF WOODBURN STANDARDS.
2. ALL LANDSCAPING SHALL CONFORM TO APPLICABLE CITY OF WOODBURN STANDARDS (WOODBURN DEVELOPMENT ORDINANCE (WDO) CHAPTER 3.06) AND TO AMERICAN STANDARDS FOR NURSERY STOCK, ANSI Z60.1, CURRENT EDITION. ALL LANDSCAPING MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH RECOGNIZED, BEST-PRACTICE INDUSTRY STANDARDS, SUCH AS THOSE ADOPTED BY THE OREGON LANDSCAPE CONTRACTORS BOARD (OLCB).
3. CONTRACTOR SHALL BE RESPONSIBLE FOR PLANTING AND PROVIDING IRRIGATION, AS NECESSARY, FOR ALL LANDSCAPE AREAS, PER WDO 3.06.02. IRRIGATION SYSTEM SHALL BE DESIGN-BUILD BY THE LANDSCAPE CONTRACTOR.
4. ALL PLANT MATERIAL SHALL BE OF HIGH GRADE, HEALTHY, EVENLY BRANCHED, TYPICAL FOR THEIR SPECIES, AND MEET THE SIZE AND GRADING OF THE AMERICAN STANDARDS FOR NURSERY STOCK (ANSI Z60.1). CONTAINERIZED PLANT STOCK SHALL BE FULLY ROOTED, BUT NOT ROOT-BOUND, IN THE CONTAINERS IN WHICH THEY ARE DELIVERED.
5. MULCH: APPLY 3" DEEP WELL-AGED MEDIUM GRIND OR SHREDDED DARK HEMLOCK BARK MULCH IN PLANTING BEDS, TAKING CARE TO NOT COVER FOLIAGE OR BURY ROOT CROWNS.
6. CHINA GIRL HOLLY AND OTTO LUYKEN LAUREL HEDGE IS TO BE MAINTAINED AT A HEIGHT OF NO MORE THAN 42" WITHIN VISION CLEARANCE AREAS. THE CHINA GIRL HOLLY AND TEXANUM JAPANESE PRIVET HEDGE ALONG THE REST OF THE PERIMETER IS TO BE MAINTAINED AT A HEIGHT OF 6-7 FEET FOR SCREENING IN LIEU OF ARCHITECTURAL WALL.

LANDSCAPE DATA

TOTAL PAVEMENT AREA: ±24,387 SF
TOTAL LANDSCAPE AREA: ±4,901 SF (20.1%)



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PRELIMINARY LANDSCAPE PLAN
2115 MOLALLA RD NE
MOLALLA PETROLEUM, LLC
WOODBURN, OR

REGISTERED LANDSCAPE ARCHITECT
TIMOTHY E. BAUER
OREGON
11/01/19
PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER: 9438
DATE: 1/18/2024
DESIGNED BY: JRH
DRAWN BY: JRH
CHECKED BY: TEB

L100

AKS DRAWING FILE: 9438 LANDSCAPE.DWG | LAYOUT: L100

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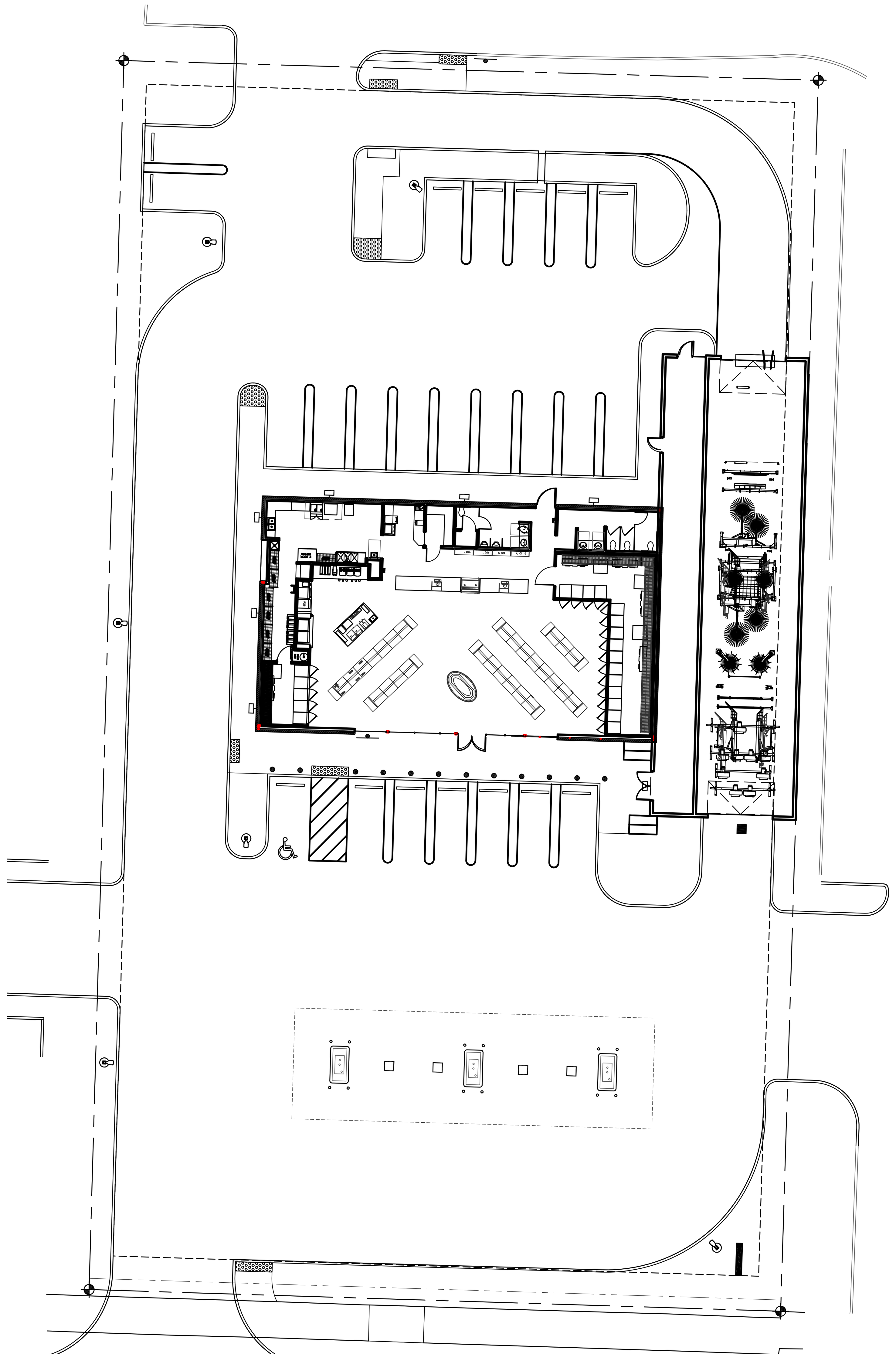
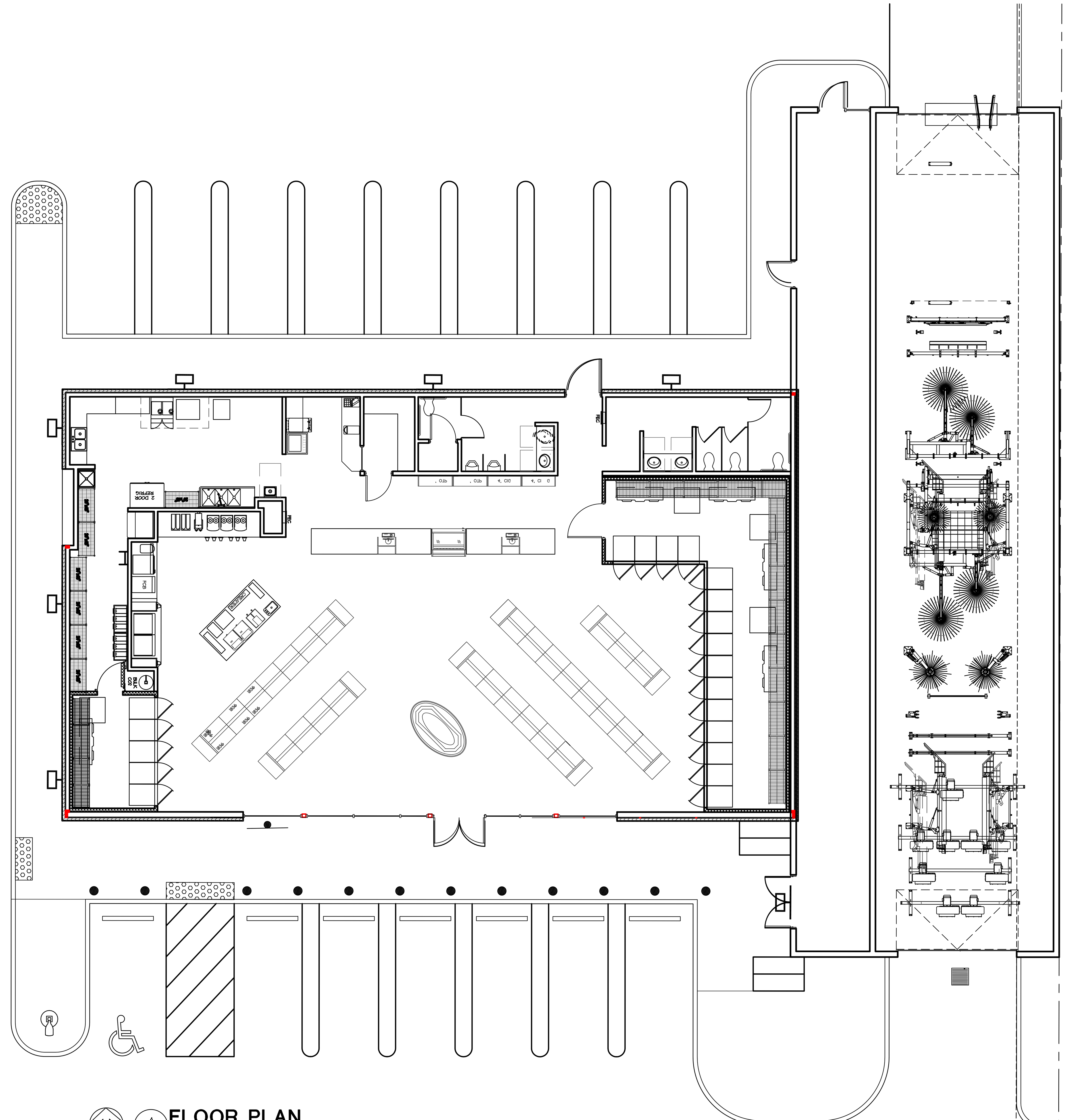


LIGHTING PLAN

A / A2.1
SCALE : 1" = 20'-0"
0 2' 10' 20' 40'

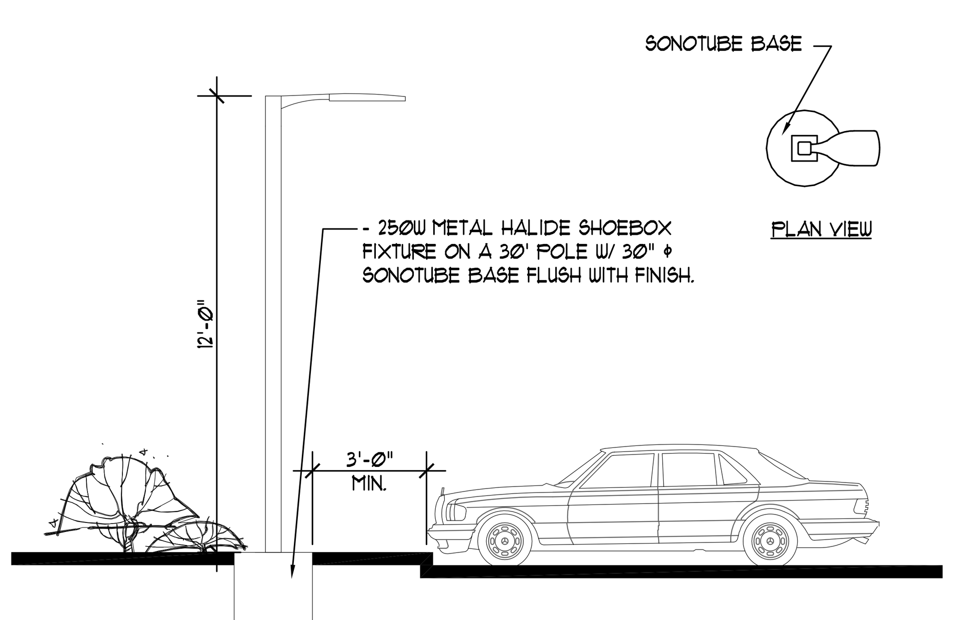
LIGHTING SCHEDULE

- PARKING POLE LIGHT
  LEOTEK ARIETA 13 ARCHITECTURAL
  LED AREA LUMINARIE
- CANOPY LIGHT
  GE EVOLVE CANOPY
  LED SOFFIC ECLS
- LUMARK XTOR
  CROSSTOUR LED
- EXISTING PARKING
  POLE LIGHT



FLOOR PLAN

A / A2.1
SCALE : 1/8" = 1'-0"
0 4' 8' 16'



1 PARKING LOT LIGHTING

SHOEBOX FIXTURE ON 14' POLE
SCALE: NTS
M:/02SITEWK/850YDLIT/02850 LOT LIGHT BELOW

RONALD JAMES PED ARCHITECT P.C.
(503) 363-1456
1220 TWENTIETH ST SE #125
SALEM, OREGON 97302

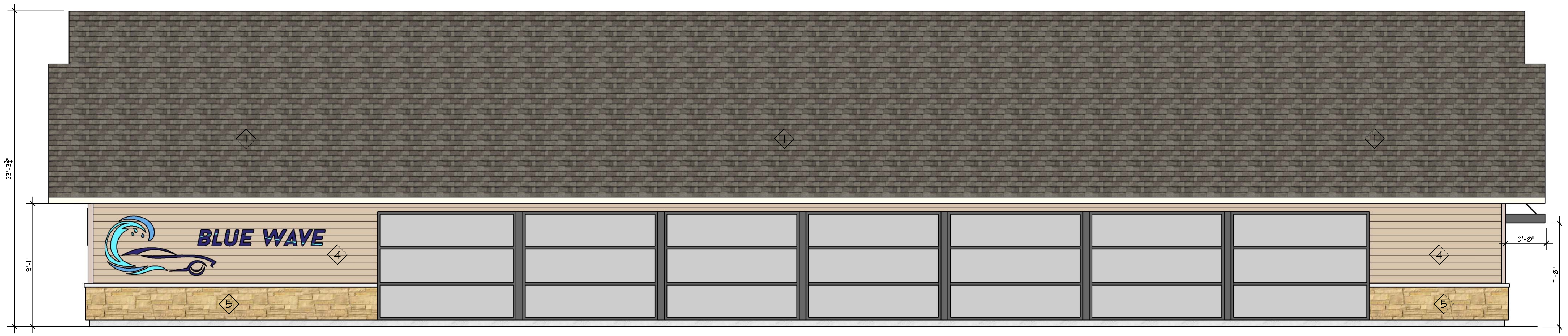
REGISTERED ARCHITECT
RONALD JAMES PED
SALEM, OREGON
STATE OF OREGON

NEW CONVIENCE STORE FOR:
US MARKET
2115 MOLALLA ROAD, WOODBURN, OR

DATE: MAY 17,2022
DRAWN:
JOB NO.: 2231

A2.1

SOUTH ELEVATION
SCALE : 1/4" = 1'-0"



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

EXTERIOR FINSHES

1	ARCHITECTURAL COMP
2	HARDI TRIM BOARD
3	HARDI SHAKE
4	HARDI SIDING 6" WEATHER
5	CULTURED STONE VENEER

NORTH ELEVATION
SCALE : 1/4" = 1'-0"

RONALD JAMES PED ARCHITECT P.C.

REGISTERED ARCHITECT
RONALD JAMES PED
SALEM, OREGON
STATE OF OREGON

NEW CONVIENCE STORE FOR:
US MARKET
2115 MOLALLA ROAD, WOODBURN, OR

DATE: MAY 17,2022
DRAWN:
JOB NO.: 2231

A3.1

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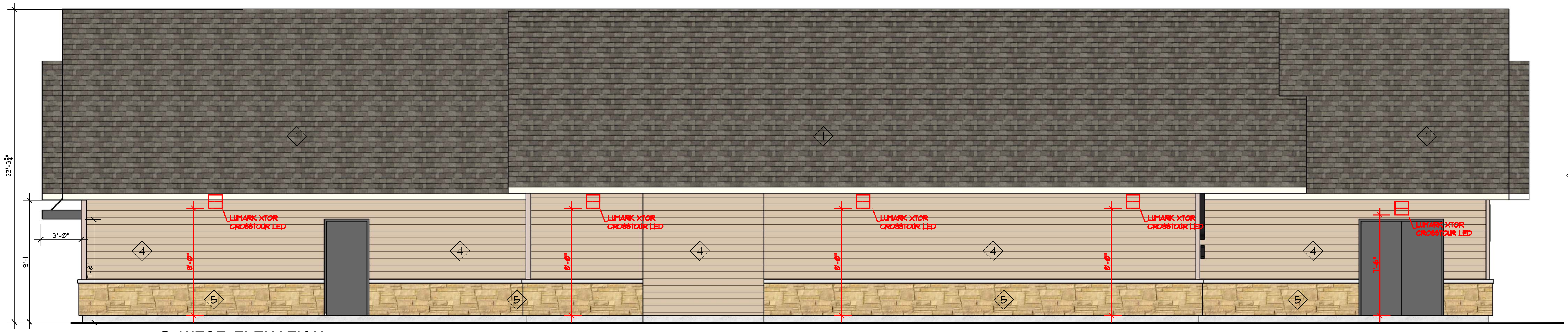
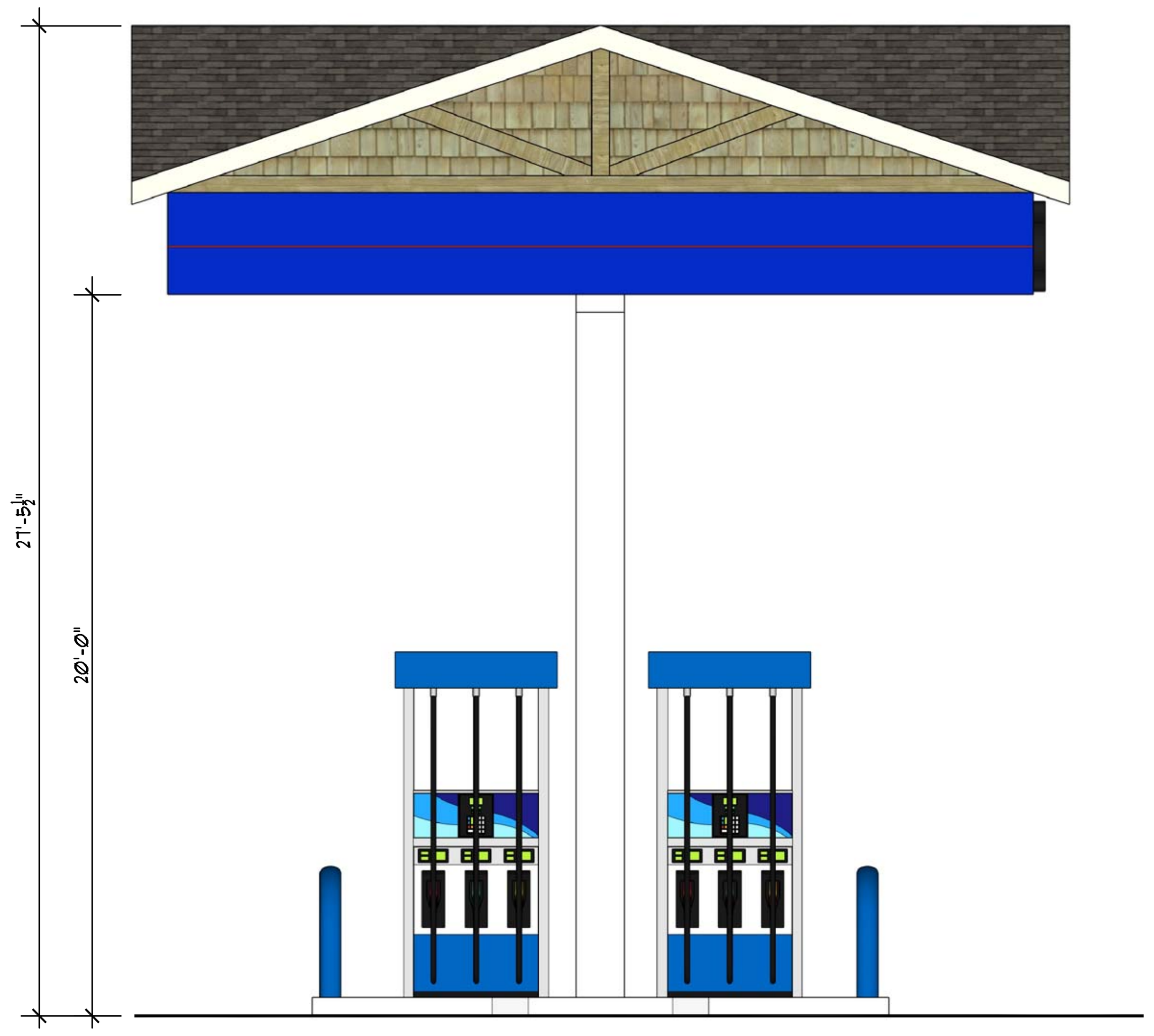
EXTERIOR FINSHES

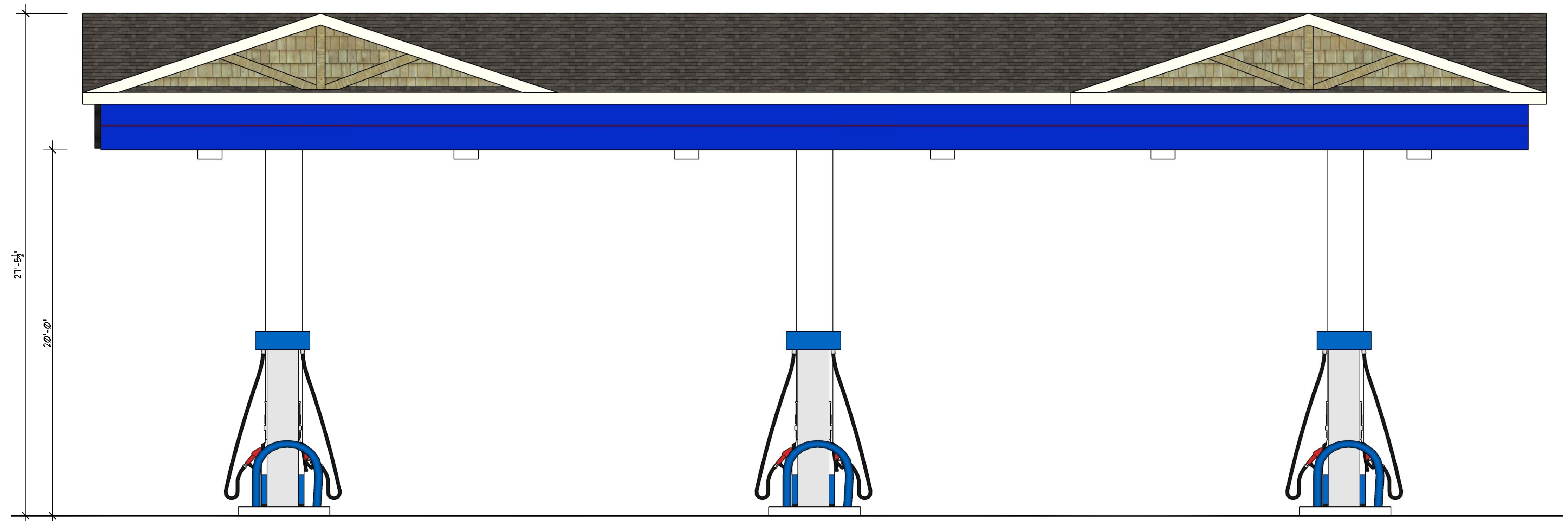
1. ARCHITECTURAL COMP
2. HARDI TRIM BOARD
3. HARDI SHAKE
4. HARDI SIDING 6" WEATHER
5. CULTURED STONE VENEER



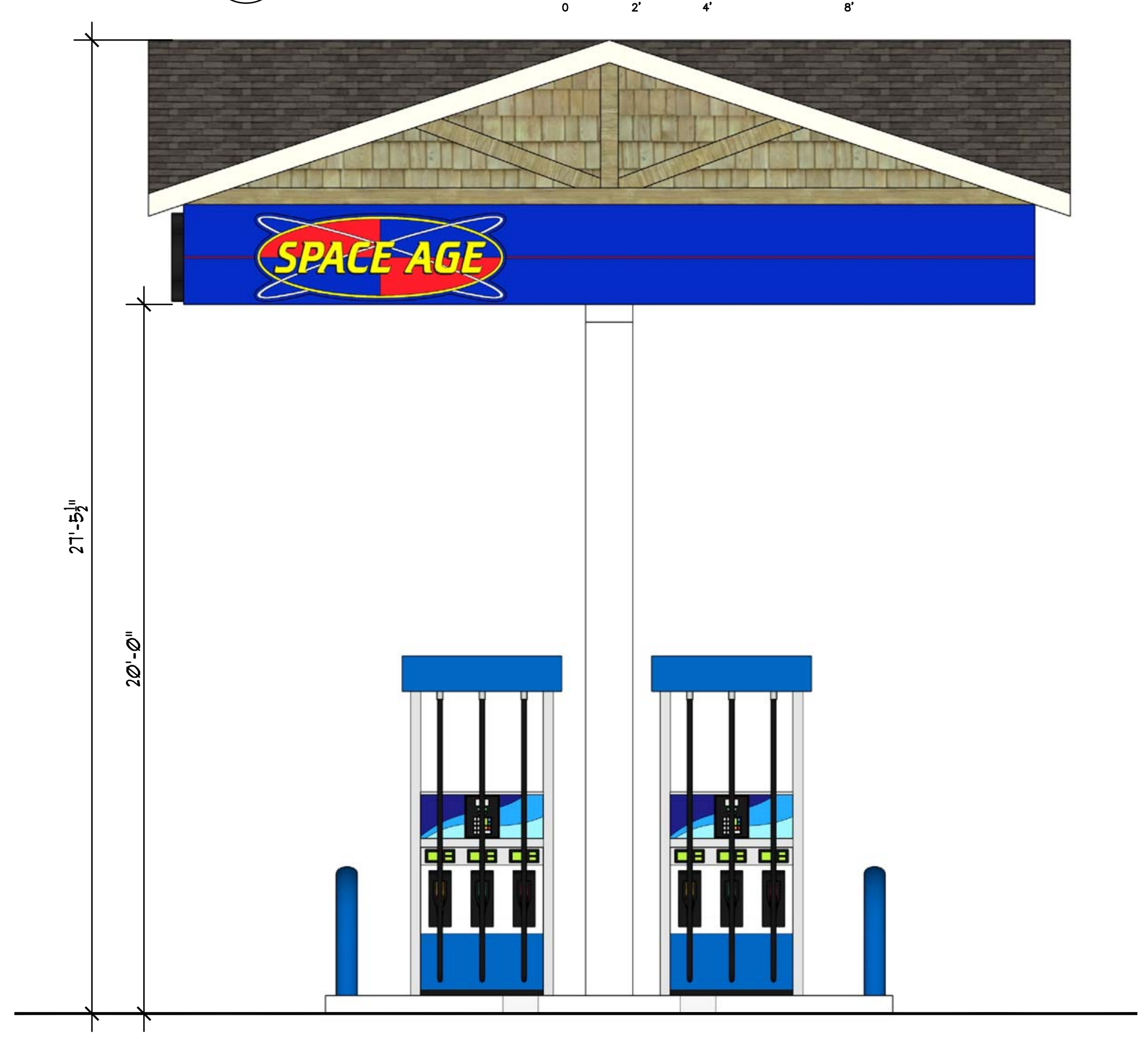
A/A3.2 WEST ELEVATION
SCALE : 1/4" = 1'-0"



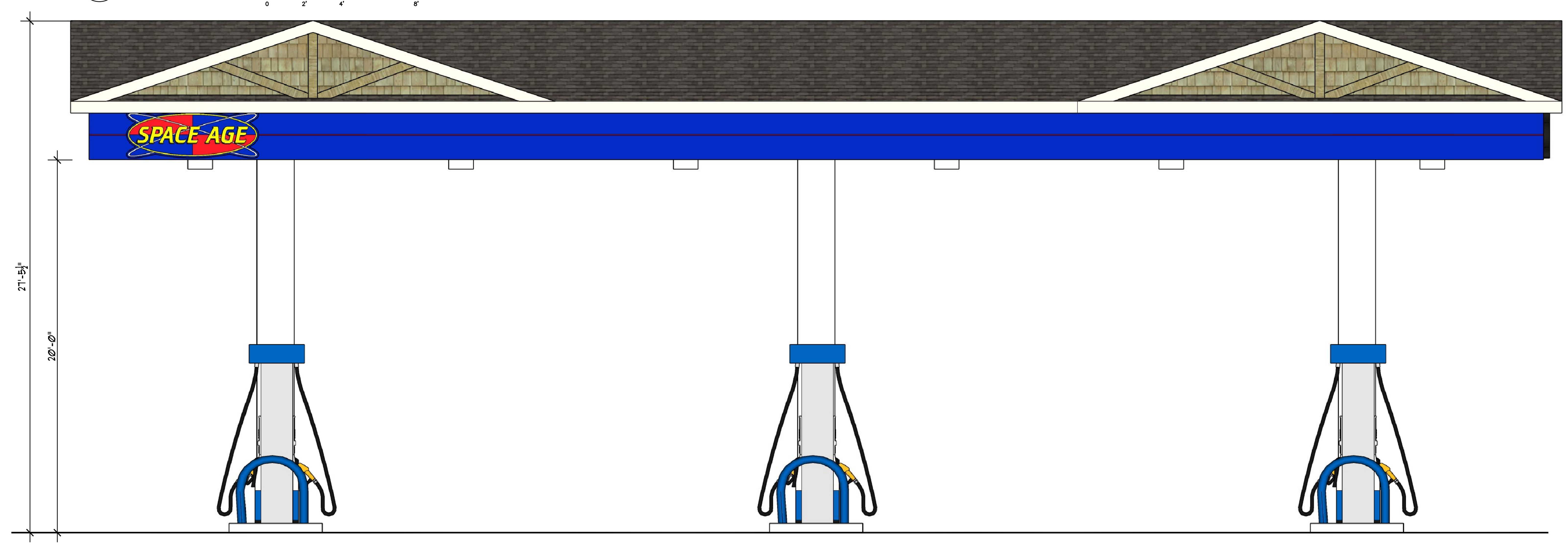
B/A3.2 CANOPY WEST ELEVATION
SCALE : 1/4" = 1'-0"



C/A3.2 CANOPY NORTH ELEVATION
SCALE : 1/4" = 1'-0"



D/A3.2 CANOPY EAST ELEVATION
SCALE : 1/4" = 1'-0"



E/A3.2 CANOPY SOUTH ELEVATION
SCALE : 1/4" = 1'-0"

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(503) 363-1456
1220 TWENTIETH ST SE #125
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REGISTERED ARCHITECT
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STATE OF OREGON

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A3.2

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