TM#4: FUTURE BASELINE (NO BUILD)

Date:	December 4, 2023	Project #: 23021.032
To:	Project Management Team	
From:	Kittelson & Associates, Inc., and HDR, Inc.	
Subject:	OR 138E Design Concept Plan	

Purpose

This technical memorandum presents the future baseline no-build conditions for the OR 138E Design Concept Plan. The purpose of this analysis is to evaluate how the study area is anticipated to perform through the planning horizon year 2045 assuming no changes will occur to the existing street network other than what is currently planned and funded.

The City of Roseburg Transportation System Plan (TSP) and 2024-2027 Oregon Department of Transportation (ODOT) Statewide Transportation Improvement Program (STIP) were reviewed for planned and funded projects located within the study area. Two financially constrained (Tier 1) projects in the City's TSP are planned at the NE Stephens Street / NE Winchester Street and OR 138E / NE Fulton Street study intersections, which are described later in this memorandum. No applicable projects were identified in the STIP.

Documented herein are the future multimodal operations and safety conditions along the OR 138E study corridor and supporting local roadways, including the following:

- A future no-build pedestrian and bicycle network assessment;
- A future no-build transit network assessment;
- A future no-build multimodal safety assessment at the study intersections and study area roadway segments;
- A future no-build traffic conditions analysis at the study intersections along the OR 138E study corridor and other key study area roadways;

The analyses summarized in this memorandum will serve as a baseline for identifying and evaluating potential solutions and developing a prioritized list of improvements for the OR 138E Design Concept Plan.

Future No-Build Pedestrian and Bicycle Network Assessment

The 2045 No-Build scenario assumes the same built environment that was evaluated as part of Technical Memorandum #3 Current Transportation System Operations (TM #3), with no improvements to the OR 138E corridor. This includes current sidewalk and bike lane extents and widths, number of travel lanes and widths, posted speed limits, and buffers. The scenario considers the impacts that future traffic volumes will have on the multimodal network if no infrastructure changes are made. PM peak-hour traffic volumes were forecast for the study year using ODOT's Roseburg travel demand model and ADT was assumed to be 10 times peak-hour volumes.

Bicycle Level of Traffic Stress (BLTS) and Pedestrian Level of Traffic Stress (PLTS) definitions and assumptions can be found in TM #3.

Future No-Build Pedestrian LTS

The future No-Build PLTS ratings shown below in Figure 1 and Table 1 are unchanged from TM #3. This is because PLTS ratings for segments are based on factors like sidewalk condition and width, posted speed limit, buffer type and width, and do not consider ADT. No improvements on OR 138E are assumed under the No-Build scenario, therefore PLTS ratings for segments on OR 138E would continue to be PLTS 4 within the study area.

Future No-Build Bicycle LTS

The future No-Build BLTS ratings are shown below in Figure 2 and Table 2. Table 2. Future No-Build BLTS Ratings (Roadway Segments)The results for the study segments are unchanged from the original BLTS of 3 and 4. BLTS methodology for segments with bike lanes does not consider traffic volumes as a criterion for determining Level of Stress. For segments with bike lanes in the future No-Build scenario, no changes to speeds, separation from traffic, or lane widths are anticipated, so BLTS would continue to represent a high rating of BLTS 3 or 4.

For segments where bikes share the road with traffic – such as those on NE/SE Douglas Avenue and NE Jackson Street – BLTS methodology considers ADT as one of the criteria for determining BLTS. For those segments, ADT is estimated to increase, which generally leads to worse levels of traffic-based stress for bicycle riders. These segments have an existing rating of BLTS 3 based on ODOT's Analysis Procedures Manual (APM) BLTS tables where ADT is considered, but for which other factors, such as speed limits, have more weight. For instance, a segment like SE Douglas Avenue between SE Fowler Street and SE Ivy Avenue with one lane per direction and a posted speed limit of 25 miles per hour (mph) will rate as BLTS 3 in both scenarios even though existing ADT is 3,060 and No-Build ADT increases to 5,590.

Figure 1. Future No-Build PLTS Ratings (Roadway Segments)

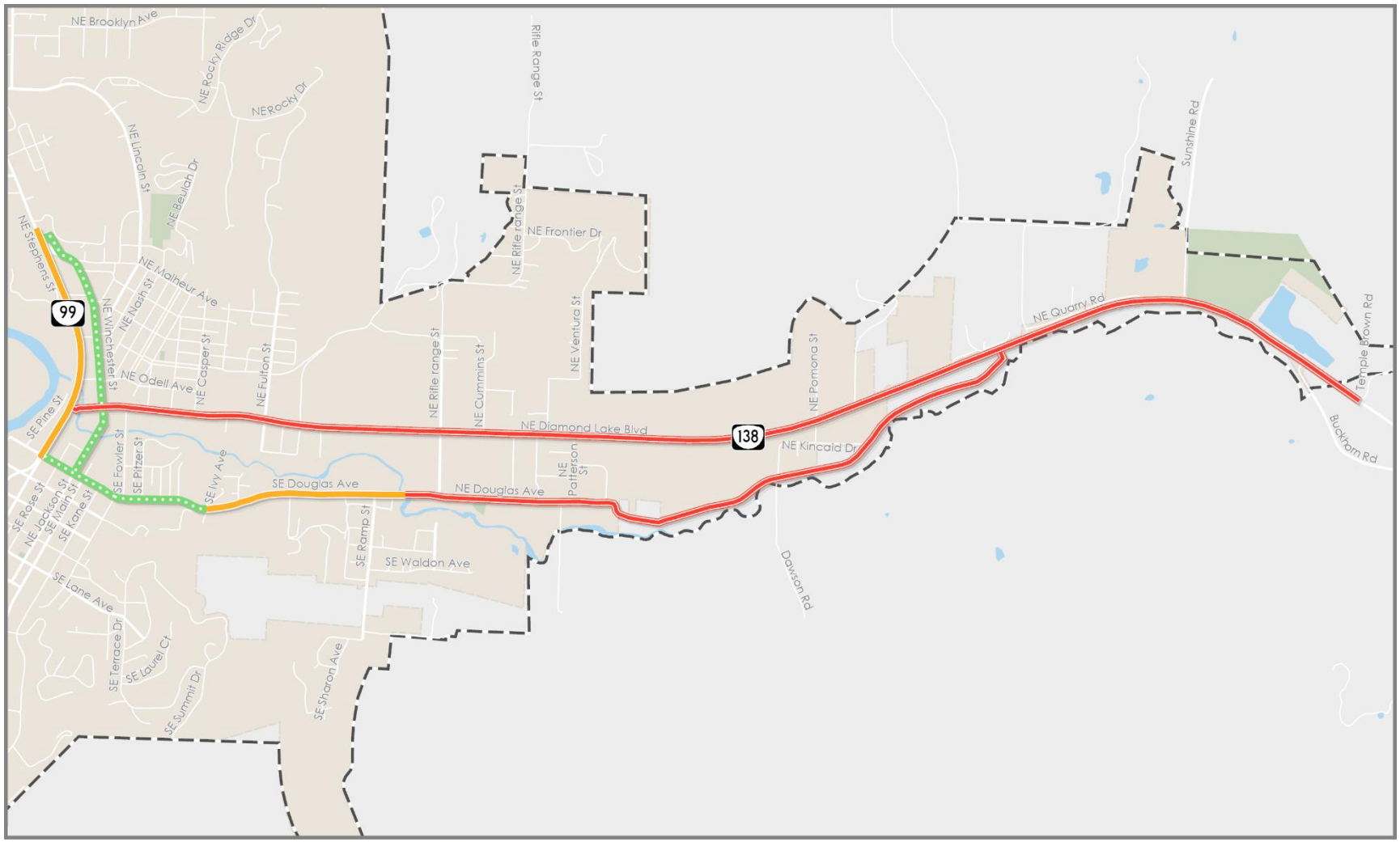


Figure 1

Figure 2. Future No-Build BLTS Ratings (Roadway Segments)

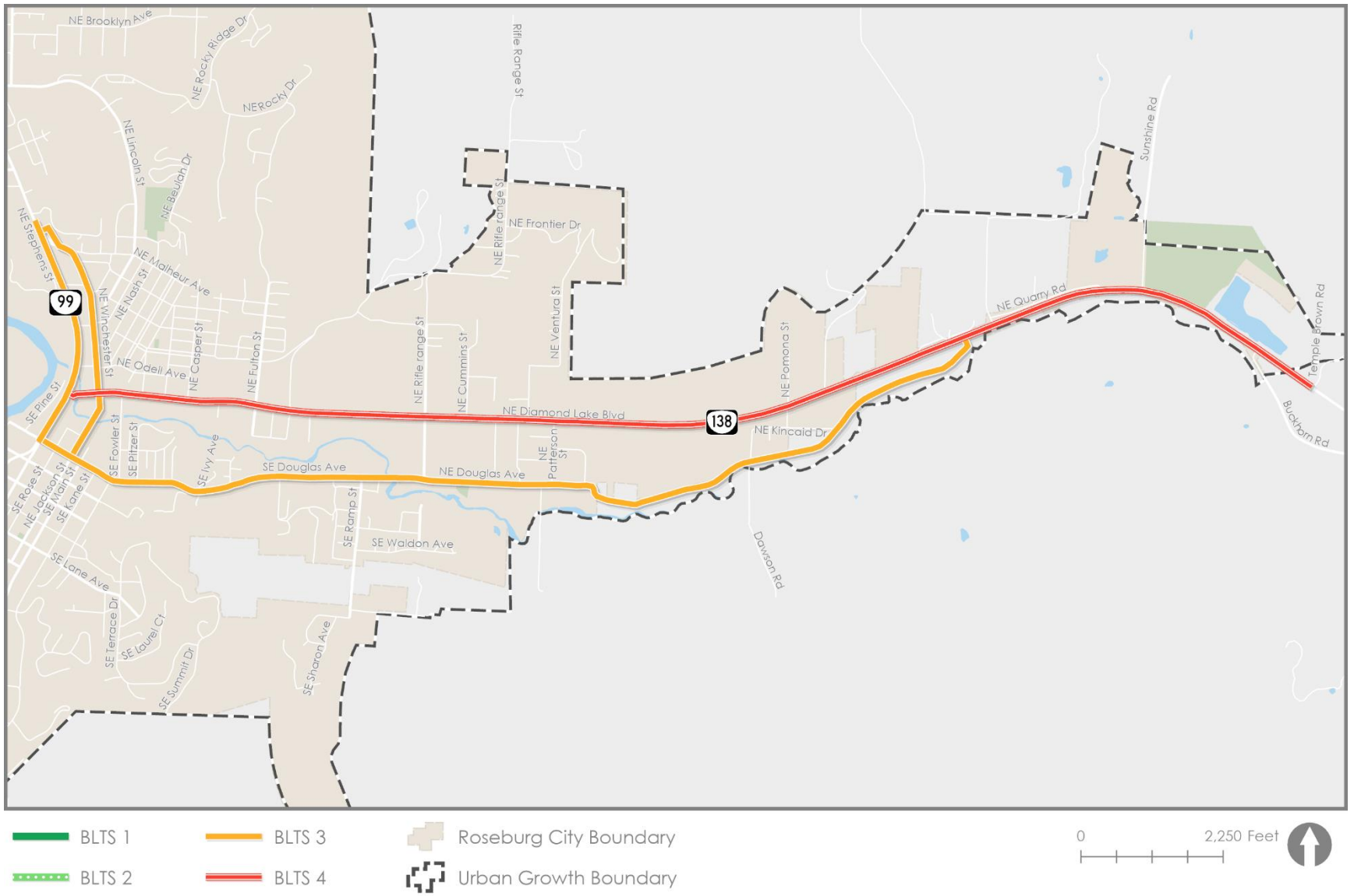


Figure 2

Table 1: Future No-Build PLTS Ratings (Roadway Segments)

Segment	Sidewalk Effective Width (ft)	Sidewalk Condition	Buffer Type	Total Buffer Width (ft)	Travel Lanes	Max Posted Speed Limit (mph)	HDM Urban Context	APM Reference Table	Existing PLTS Rating	No-Build PLTS Rating
OR 138E (NE Stephens St. to NE Pomona St.)	2	Fair	N/A	0	5	45	Commercial Corridor	14-23	**4**	**4**
OR 138E (NE Pomona St. to Buckhorn Rd.)	0	N/A	N/A	0	5	55	Suburban Fringe	14-21	**4**	**4**
SE Douglas Ave. (SE Stephens St. to SE Fowler St.)	5	Fair	Landscaped with Trees	4	3	20	Downtown/ CBD	14-23	**2**	**2**
SE Douglas Ave. (SE Fowler St. to SE Ivy Ave.)	5	Fair	Parking	7	2	25	Residential Corridor	14-23	**2**	**2**
SE/NE Douglas Ave. (SE Ivy Ave. to Deer Creek)	5	Fair	N/A	0	2	35	Residential Corridor	14-22	**3**	**3**
NE Douglas Ave. (Deer Creek to OR 138E)	0	N/A	N/A	0	2	35	Suburban Fringe	14-21	**3**	**3**
NE Stephens St. (NE Winchester St. to OR 138E)	5	Fair	Bike Lane	5	5	35	Commercial Corridor	14-23	**3**	**3**
SE Stephens St. (OR 138E to SE Douglas Ave.)	7	Good	Bike Lane	5	5	25	Commercial Corridor	14-23	**3**	**3**
NE Winchester St. (NE Stephens St. to OR 138E)	5	Fair	Bike Lane	5	3	35	Urban Mix	14-23	**3**	**3**
NE Jackson St. (OR 138E to SE Douglas Ave.)	5	Fair	Landscaped with Trees, Parking	11	2	25	Downtown CBD	14-21	**2**	**2**

Table 2. Future No-Build BLTS Ratings (Roadway Segments)

Segment	Functional Class	Bike Lane	Bike Lane Width (ft)	Lanes Per Direction	Max Posted Speed Limit (mph)	APM Reference Table	Existing BLTS Rating	2045 No-Build BLTS Rating
NE Diamond Lake Blvd. between NE Stephens St. and NE Pomona St.	Arterial	N	0	3	45	14-6	**4**	**4**
NE Diamond Lake Blvd between NE Pomona St. and Temple Brown Rd.	Arterial	N	0	3	55	14-6	**4**	**4**
SE Douglas Ave. between SE Stephens St. and SE Fowler St.	Collector	N	0	2	20	14-5	**3**	**3**
SE Douglas Ave. between SE Fowler St. and SE Ivy Ave.	Collector	N	0	1	25	14-5	**3**	**3**
SE/NE Douglas Ave. between SE Ivy Ave. and Deer Creek	Collector	N	0	1	35	14-6	**3**	**3**
NE Douglas Ave. between Deer Creek and NE Diamond Lake Blvd.	Collector	N	0	1	35	14-6	**3**	**3**
NE Stephens St. between NE Winchester St. and NE Diamond Lake Blvd.	Arterial	N	0	3	35	14-6	**4**	**4**
SE Stephens St. between NE Diamond Lake Blvd. and SE Douglas Ave.	Arterial	Y	5	3	25	14-4	**3**	**3**
NE Winchester St. between NE Stephens St. and NE Diamond Lake Blvd.	Collector	Y	5	2	35	14-4	**3**	**3**
NE Jackson St. between NE Diamond Lake Blvd. and SE Douglas Ave.	Local	N	0	1	25	14-5	**3**	**3**

Future No-Build Transit Network Assessment

A Qualitative Multimodal Analysis (QMA) was performed based on data from the future No-Build scenario. Similar to the other analyses performed, this analysis was designed around the assumption that the built environment will be unchanged from existing conditions, including stop locations, markings, shelters, and distances to nearest crossing. The primary factor for change in this QMA compared to that performed in TM #3 is the traffic volumes that were estimated for the No-Build study year.

ADT was not directly included in the original QMA, but it plays a role in the PLTS and BLTS rating components. The future No-Build LTS ratings were unchanged from the original analyses; therefore, the LTS ratings for transit stops considered in the QMA are also unchanged, resulting in the same overall QMA ratings. This is a continuation of the fact that several study area roadway segments and transit stops currently rate poorly, which will not be improved by higher traffic volumes. The results of this analysis are shown below in Figure 3 and Table 3.

Figure 3. Future No-Build Transit Qualitative Multimodal Assessment Ratings (Transit Stops) and Signalized Crossings

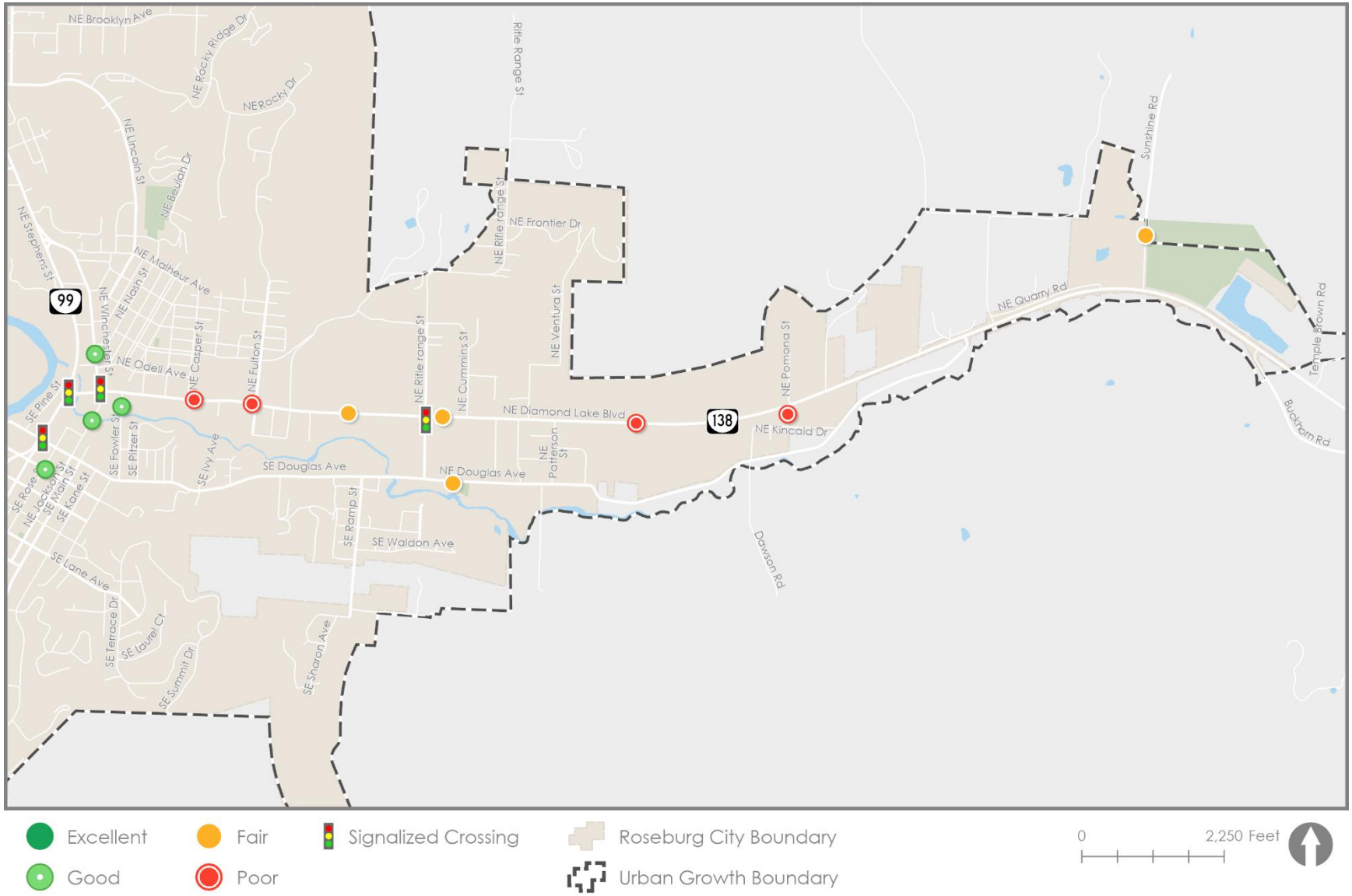


Figure 3

Table 3: QMA Ratings for Future No-Build Study Area Transit Stops

Route	Stop ID	Location	Marked	Shelter	BLTS	PLTS	Distance to Nearest Crossing	Existing Conditions Ratings	No-Build Ratings
Redline/ Greenline	44, 18	Dairy Queen, Winchester Street	Y	N	3	2	540 feet	**Good**	**Good**
Greenline	25	Library, Fowler Street	Y	Y	3	2	500 feet	**Good**	**Good**
Greenline	19	76 Gas Station, OR 138E	N	N	4	4	1,500 feet	**Poor**	**Poor**
Greenline	24	Fulton Street/OR 138E	Y	N	4	4	0.5 miles	**Poor**	**Poor**
Greenline	23	Ten Down Bowling, OR 138E	Y	Y	4	4	1,140 feet	**Fair**	**Fair**
Greenline	22	Kowloon Restaurant, OR 138E	Y	Y	4	4	185 feet	**Fair**	**Fair**
Greenline	21	Phoenix School, OR 138E	Y	Y	4	4	0.6 miles	**Poor**	**Poor**
Greenline		Kincaid Drive, Les Schwab	N	N	4	4	1.1 miles	**Poor**	**Poor**
Redline/Greenline	43	Jackson Street, Library	Y	Y	3	2	270 feet	**Good**	**Good**
Greenline	26	Washington Avenue and Rose Street	Y	Y	3	2	65 feet	**Good**	**Good**
Sunshine Park	7	Sunshine Park	Y	Y	4	4	2.2 miles	**Fair**	**Fair**
Greenline	21	Douglas at Deer Creek Village Apts. east of Rifle Range Street	Y	Y	3	4	400 feet	**Fair**	**Fair**

Future Planned and Funded Projects

Through previous planning efforts, the City of Roseburg has identified several projects within the study area for planning and funding. These improvements were not included in the future No-Build analysis but are identified below, as they will be considered in the subsequent steps of this plan.

The City's Transportation System Plan (TSP) highlights opportunities to improve multimodal connectivity through several Tier 1 (financially constrained) projects:

- BP2a: Douglas Avenue from Fowler Street to Eastern City Limits: Add bike facilities and sidewalks.
- BP2b: ODOT Douglas Avenue bridge replacement (Preliminary Engineering)
- BP20b: Diamond Lake Boulevard sidewalk improvements, power poles, easements.
- R10: Winchester Street/Stephens Street Intersection improvements to unsignalized intersection.
- R11: Diamond Lake Boulevard at Fulton Street or at Lake Street: Install traffic signal.
- R16e: Commercial Avenue extension (Phase 1) from Fulton Street to Rifle Range Street.
- R16f: Champion Site connection to Diamond Lake Boulevard (Phase 1) Klamath Avenue between Fulton Street and Rifle Range Street.
- UR1: Rifle Range Street north of Diamond Lake Boulevard: Provide multimodal improvements.

Future Safety Conditions

The following section summarizes crash trends identified in the crash analyses presented in Technical Memorandum #3 (Current Transportation System Operations), as well as potential countermeasures, based on the most recent five years of available crash data at the time of analysis (2016-2020). Countermeasures are often implemented as strategies intended to reduce crash frequency or severity on streets for all users. ODOT, under the All Roads Transportation Safety (ARTS) Program, provides safety practitioners with a list of effective countermeasures that are appropriate treatments to reduce common crashes. Each countermeasure includes a Crash Reduction Factor (CRF), which indicates the potential effectiveness of a countermeasure to reduce crash frequency following its implementation. Summarized below are crash characteristics identified from the analysis and Table 4 identifies potential countermeasures.

OR 138E / SE Stephens Street and SE Stephens Street / SE Douglas Avenue (Signalized)

- Highest observed crash frequencies.
- Majority of these crashes are rear-end crashes and turning movement crashes on the SB approach of the intersections.
- Contributed mostly by improper driving behavior.
- One pedestrian crash at SE Stephens Street / SE Douglas Avenue resulting in possible injury of the pedestrian.
- Observed crash rate at OR 138E / SE Stephens Street exceeded the Statewide Crash Rate

OR 138E / NE Jackson Street / NE Winchester Street (Signalized)

- A pedestrian crash possibly contributed by motorist not yielding right of way resulting in minor injury.

Unsignalized intersections

- Majority of the crashes are turning movement crashes, likely to be contributed by the uncontrolled left turn movements.
- Two of the pedestrian crashes at unsignalized intersections (OR 138E / NE Fowler Street and SE Douglas Avenue / SE Jackson Street) resulted in injuries of the pedestrians.
- At SE Douglas Avenue / SE Jackson Street, a pedestrian crash reportedly occurred in darkness with no streetlights.
- At SE Douglas Avenue / SE Jackson Street, a bicyclist sustained possible injury when hit by a motorist disregarding a stop sign.
- Observed crash rate at SE Douglas Avenue / SE Jackson Street exceeded both critical crash rate and Statewide Crash Rate.

Segments on OR 138E

- Highest frequency of crashes between NE Fowler Street and NE Douglas Avenue with three fatal injury crashes and two serious injury crashes.
- The two segments on OR 138 between NE Fowler Street and NE Douglas Avenue exceed the calculated critical crash rates for arterials.

Segments on Douglas Avenue

- Three backing crashes occurred on segments of Douglas Avenue which are two-way one-lane in each direction with on-street parking observed on Google Streetview.
- There were two bicycle crashes at or near the unsignalized intersections of Douglas Avenue. It must be mentioned that Douglas Avenue does not have a dedicated bike lane.

Segments on NE Winchester Street, NE Jackson Street, and SE Jackson Street

- None of the intersections of NE Winchester Street with the local streets are signalized. Majority of the crashes observed are rear-end and turning movement.
- Seven of these rear-end/turning movement crashes are at the non-study intersection of NE Winchester Street / NE Wright Avenue
- There were two bicyclists involved crashes with injuries sustained by the bicyclists. The crashes were of turning movement and angle collision type.
- Observed crash rate exceeded the Statewide Average Crash Rate.

Based on the summary provided above, it appears that the following intersections and segments need to be the focus of further safety assessment and potential countermeasures should be identified:

1. Intersection 2: OR 138E / SE Stephens Street
2. Intersection 8: SE Stephens Street / SE Douglas Avenue
3. Intersection 3: OR 138E / NE Jackson Street / NE Winchester Street
4. Intersection 4: OR 138E / NE Fowler Street
5. Intersection 9: SE Douglas Avenue / SE Jackson Street
6. Segment B: OR 138E between NE Fowler Street and NE Rifle Range Street
7. Segment C: OR 138E between NE Rifle Range Street and NE Douglas Avenue
8. Segment F: SE Douglas Avenue between SE Fowler Street and NE Rifle Range Street
9. Segment I: NE Winchester Street / NE Jackson Street / SE Jackson Street

Table 4: Potential Countermeasures

		Potential Countermeasures			
Target crashes	**Location**	**#**	**Description**	**CRF**	**Target Crash**
Left turning movement crashes	Signalized OR 138E/ SE Stephens St. Signalized SE Stephens St./ SE Douglas Ave.	I9	Replace Urban Permissive or Protected/Permissive Left Turns to Protected Only	99	Left Turning Crashes at All Severities
		I13	Install Coordination or Adaptive Signal Timing of Urban Traffic Signals	17	All Crashes at All Severities
		I16	Install Actuated/Coordinated Flashing Beacons as Advance Warning for Signalized Intersections	36	Rear End Crashes at All Severities
Pedestrian and Bicycle crashes	Signalized OR 138E/ NE Jackson St./ NE Winchester St. Signalized OR 138E/ NE Jackson St./ NE Winchester St.	BP1	Install Pedestrian Countdown Timer(s)	70	Pedestrian Crashes at All Severities
		BP3	Install Urban Leading Pedestrian or Bicycle Interval at Signalized Intersections	37	Pedestrian and Bicycle Crashes at All Severities

		Potential Countermeasures			
Target crashes	**Location**	**#**	**Description**	**CRF**	**Target Crash**
	Signalized SE Stephens St./SE Douglas Ave.				
Pedestrian and Bicycle crashes	Unsignalized OR 138E/ NE Fowler St.	BP2	Provide Intersection Illumination (Bike & Ped)	42	Nighttime Pedestrian and Bicycle Crashes at All Injury Severities
	Unsignalized SE Douglas Ave./SE Jackson St.	BP11	Install Rectangular Rapid Flashing Beacon with Median (3-Lane or More Roadway)	56	Pedestrian Crashes at All Severities
Bicycle crashes	SE Douglas Ave.	BP22	Install Bike Lanes	36	Bicycle crashes at all severities
Bicycle crashes	SE Douglas Ave/ OR 138E	BP23	Install Cycle Tracks	59	Bicycle crashes at all severities
Bicycle Crashes	Segment NE Winchester St./ NE Jackson St./ SE Jackson St.	BP6	Install Urban Green Bike Lanes at Conflict Points	39	Bicycle Crashes at All Severities
Turning movement crashes	NE Winchester St./ NE Jackson St./ SE Jackson St.	H18	Install Roundabout from Minor Road Stop Control	82	All crashes at all Injury severities
	OR 138E (NE Fowler St. to NE Rifle Range St.)	H22 H23	Install Urban Traffic Signal	67 angle -143 rear end	Angle & Rear End Crashes at All Severities
# - ODOT Countermeasure Number; CRF - ODOT Crash Reduction Factor					

Future Baseline Traffic Conditions

The future baseline traffic conditions analysis identifies how the study intersections are expected to operate under year 2045 traffic conditions during the weekday PM peak hour. This analysis helps to understand the future needs of people driving within the OR 138E study corridor and supporting local street network. The following section summarizes how forecast traffic volumes were developed at the study intersections and their resultant traffic operations.

Forecast Traffic Volumes

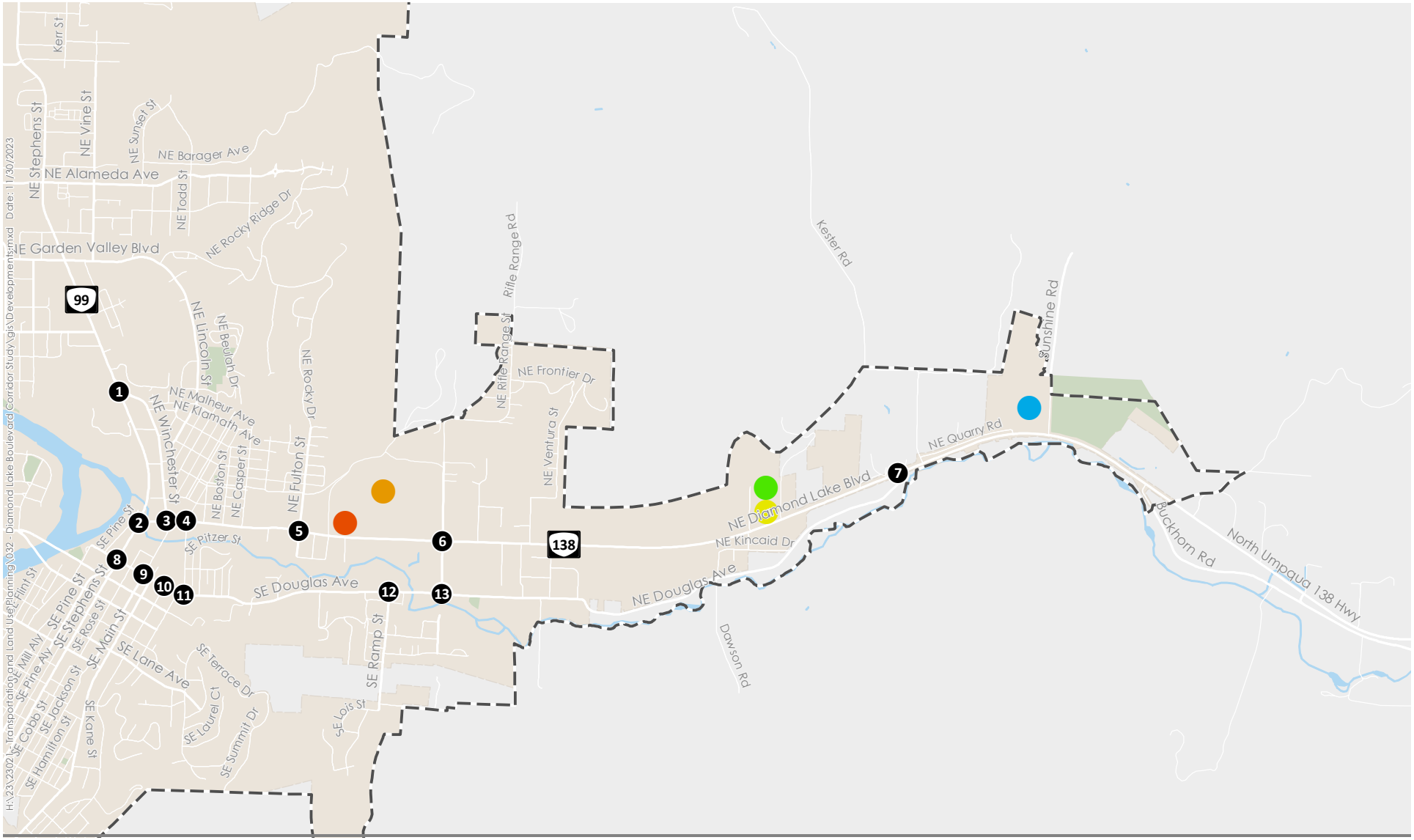
Year 2045 no-build forecast traffic volumes were developed at the study intersections based on existing traffic volumes (see Technical Memorandum #3) and information from the Roseburg travel demand model produced by ODOT's Transportation Planning and Analysis Unit (TPAU). The Roseburg travel demand model provides base year 2019 and forecast year 2045 traffic volume projections for study area roadways that reflect anticipated land use changes and planning transportation improvements within Roseburg.

The forecast volumes were developed by applying a post-processing methodology identified in the National Cooperative Highway Research Program (NCHRP) Report 765 (*Analytical Travel Forecasting Approaches for Project-Level Planning and Design*), which is the update to NCHRP Report 255 (*Highway Traffic Data for Urbanized Area Project Planning and Design*). The methodology derives forecast traffic volumes at the study intersection based on the existing traffic volumes and base and future traffic volume projects. Forecasting traffic volumes also included engineering judgment and knowledge of the study area, including anticipated growth in specific areas.

The base year 2019 and forecast year 2045 travel demand models were also used for the recent update to the Roseburg TSP, and therefore, the anticipated future traffic volumes in the study area align between planning efforts. However, the project team requested Transportation Analysis Zone (TAZ) data from TPAU to evaluate whether undeveloped and developing parcels along the OR 138E corridor demonstrated reasonable employment and population projections. Based on the assessment and direction from the City of Roseburg, trip generation was estimated for specific parcels near the corridor in order to forecast traffic volumes that more closely reflect their potential future development. That process is described below.

Trip Generation

Figure 4 identifies the locations of completed and planned developments, as well as a site that is likely to be redeveloped within the planning horizon, near the OR 138E corridor. Consistent with the zoning designations of the parcels where these sites are located, the completed and planned developments include various apartment complexes and a hypothetical redevelopment of the existing Young Bay Lumber property to apartments and a shopping plaza. Trip generation estimates for these land uses were prepared using the standard reference *Trip Generation, 11th Edition*, published by the Institute of Transportation Engineers (ITE), and they are shown in Table 5, Table 6, and Table 7. These estimated trips were distributed throughout the study area network and added onto the forecast traffic volumes at the study intersections to arrive at refined traffic volume projections for 2045. The estimated trip distribution is described in the next section.



Study Intersections

Roseburg City Boundary

Urban Growth Boundary

Youngs Bay Lumber - Shopping Plaza *Hypothetical*

Youngs Bay Lumber - Apartments *Hypothetical*

Ash Springs Apartments

Oak Springs Apartments

Sunshine Park Apartments

0 2,820 Feet

Figure 4

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Existing and Potential Developments

Table 5. Youngs Bay Lumber Yard Hypothetical Redevelopment Trips

Land Use	ITE Code	Units	Size	PM Peak Rate	Weekday PM Peak Hour		
					Total	In	Out
Low-Rise Multifamily	220	Dwelling Units	250	0.51	128	80	48
Shopping Plaza*	821	SQF	75,000	0.00519	389	191	198
Total Trips					517	271	246
*Total Pass-by Trips***					*156*	*76*	*79*
Net Proposed Trips					**361**	**195**	**167**

*No supermarket; **Pass-by rate: 40%

Table 6. Oak Springs Apartments and Ash Springs Apartments Trips

Land Use	ITE Code	Units	Size	PM Peak Rate	Weekday PM Peak Hour		
					Total	In	Out
Low-Rise Multifamily	220	Dwelling Units	190	0.51	97	60	37
Total Trips					**97**	**60**	**37**

Table 7. Sunshine Park Apartments Trips

Land Use	ITE Code	Units	Size	PM Peak Rate	Weekday PM Peak Hour		
					Total	In	Out
Low-Rise Multifamily	220	Dwelling Units	145	0.51	74	46	28
Total Trips					**74**	**46**	**28**

Trip Distribution

The hypothetical shopping plaza was sited such that it fronts OR 138E just to the east of Fulton Street. The hypothetical apartment complex was sited at the northern edge of the former Youngs Bay Lumber lot; access would therefore likely occur via Commercial Avenue (off Fulton Street) to the west and Rifle Range Road to the east. This would send trips through the OR 138E / Fulton Street and OR 138E / Rifle Range Street study intersections. The Oak Springs Apartments and Ash Springs Apartments are located near the intersection of OR 138E / Pomona Street. Given that both have access via Pomona Street and are the same land use, they were modeled as a singular combined site. The Sunshine Park Apartments are on the far eastern edge of the study area and have access via Sunshine Road.

Downtown Roseburg is located near the southwest region of the study area and a popular shopping district is located beyond the northwest region of the study area. The eastern edge of the study area aligns with city limits, with sparse rural areas beyond it. With these destinations in mind, 90 percent of the generated trips from all sites were anticipated to travel to and from the west. Access to Interstate 5 (I-5) is most convenient in the southwest region of the study area. Therefore, inbound and outbound trips were split at OR 138E/SW Stephens 60 percent/40 percent in favor of the south. No trips were distributed between any two added sites; apartment-to-apartment trips are uncommon, and trips to the shopping plaza are largely expected to be pass-by for apartment residents.

The resultant forecast traffic volumes are presented in the next section.

Future Transportation System Operations

The future 2045 PM peak hour traffic operations analysis helps to identify study intersections that are expected to not meet their applicable mobility targets. The traffic operations analysis was completed in accordance with the methodology outlined in Technical Memorandum #1 (Methodology Memorandum), which is based on guidance in the APM. This analysis helps inform the transportation projects, policies, and programs to support economic growth within the study area through the planning horizon. As stated in the introduction to this memorandum, a review of the City's TSP and ODOT's 2024-2027 STIP was completed as part of this analysis to identify any planned and funded projects. Identified improvements are described below.

Planned and Funded Improvements

No applicable projects were identified in ODOT's 2024-2027 STIP, but two financially constrained (Tier 1) projects listed in the City's TSP are planned at the following study intersections.

- NE Stephens Street / NE Winchester Street: this and OR 138E / NE Fulton Street intersection fails to meet the City's mobility standards under projected 2045 peak hour traffic conditions with its current traffic control and lane configurations. The TSP identifies two potential modifications to this intersection:
  - **Option A**: Realign intersection to a T-intersection and stop control. Given the projected future volumes, this would likely operate worse than the existing yield control on Winchester.
  - **Option B**: Signalize, realign, and provide dual right-turn lanes.
- OR 138E / NE Fulton Street: this intersection fails to meet ODOT's mobility target under projected 2045 peak hour traffic conditions with its current traffic control and lane configurations. The TSP identifies a traffic signal at this intersection, or, alternatively, the nearby intersection of OR 138E/NE Lake Street (not a study intersection).

Provided that these planned improvements are financially constrained in the City's TSP, the future baseline intersection operations analysis assumes they are in place by the year 2045. Due to the level of traffic forecast on NE Winchester Street, only Option B was considered for NE Stephens Street / NE Winchester Street. The traffic signal at this location was modeled using comparable phasing and signal timing to that of OR 138E / NE Stephens Street because of the similarity in intersection geometry and posted speeds. Due to the connectivity that NE Fulton Street provides across OR 138E (and future connections planned south of OR 138E from the TSP), as opposed to NE Lake Street, a traffic signal was considered at OR 138E / NE Fulton Street and was modeled using comparable phasing and signal timing to that of OR 138E / NE Rifle Range Street because of the similarity in intersection geometry and posted speeds.

Intersection Operational Standards

ODOT uses volume-to-capacity (v/c) ratios to assess intersection operations. Table 6 of the *Oregon Highway Plan* (OHP) and Table 1200-1 of the *Oregon Highway Design Manual* (HDM) provide maximum volume-to-capacity ratios for all signalized and unsignalized intersections located outside the Portland metropolitan area.

The OHP v/c ratios are used to evaluate existing and future no-build conditions, while the HDM ratios are used in the creation of design concept plan alternatives including projects along state highways. ODOT controls all intersections along OR 138E and Stephens Street within the project area except for NE Stephens Street / NE Winchester Street, which is controlled by the City of Roseburg. Table 8 summarizes the v/c ratios that were used to identify potential future operational deficiencies at the ODOT study intersections.

Table 8: ODOT Mobility Targets/Standards

Map ID	Intersection	Traffic Control	OHP Mobility Target	HDM Standard
2	OR 138E / SE Stephens St.	Signal	0.90	0.75
3	OR 138E / NE Jackson St./ NE Winchester St.	Signal	0.90	0.75
4	OR 138E / NE Fowler St.	TWSC[1]	0.90 major approach/ 0.95 minor approach	0.75
5	OR 138E / NE Fulton St.	Signal (planned)	0.90 major approach/ 0.95 minor approach	0.75
6	OR 138E / NE Rifle Range St.	Signal	0.90	0.75
7	OR 138E / NE Douglas Ave.	TWSC[1]	0.85 major approach/ 0.90 minor approach	0.75
8	SE Stephens St. / SE Douglas Ave.	Signal	0.90	0.75

As part of the 2019 TSP update, City of Roseburg revised its mobility standards to be consistent across the City, resulting in a dual standard based on v/c and level of service (LOS). V/C and LOS are the measures to determine what traffic flow is acceptable or unacceptable on Roseburg streets. LOS is based on average seconds of delay and v/c is a measure of the traffic volume on a street compared to the capacity it was designed to support. Table 9 summarizes the standards that were used to identify potential future operational deficiencies at the City study intersections. As shown, City streets shall maintain a LOS of "E" and v/c no worse than 0.95 during the peak hour of the day.

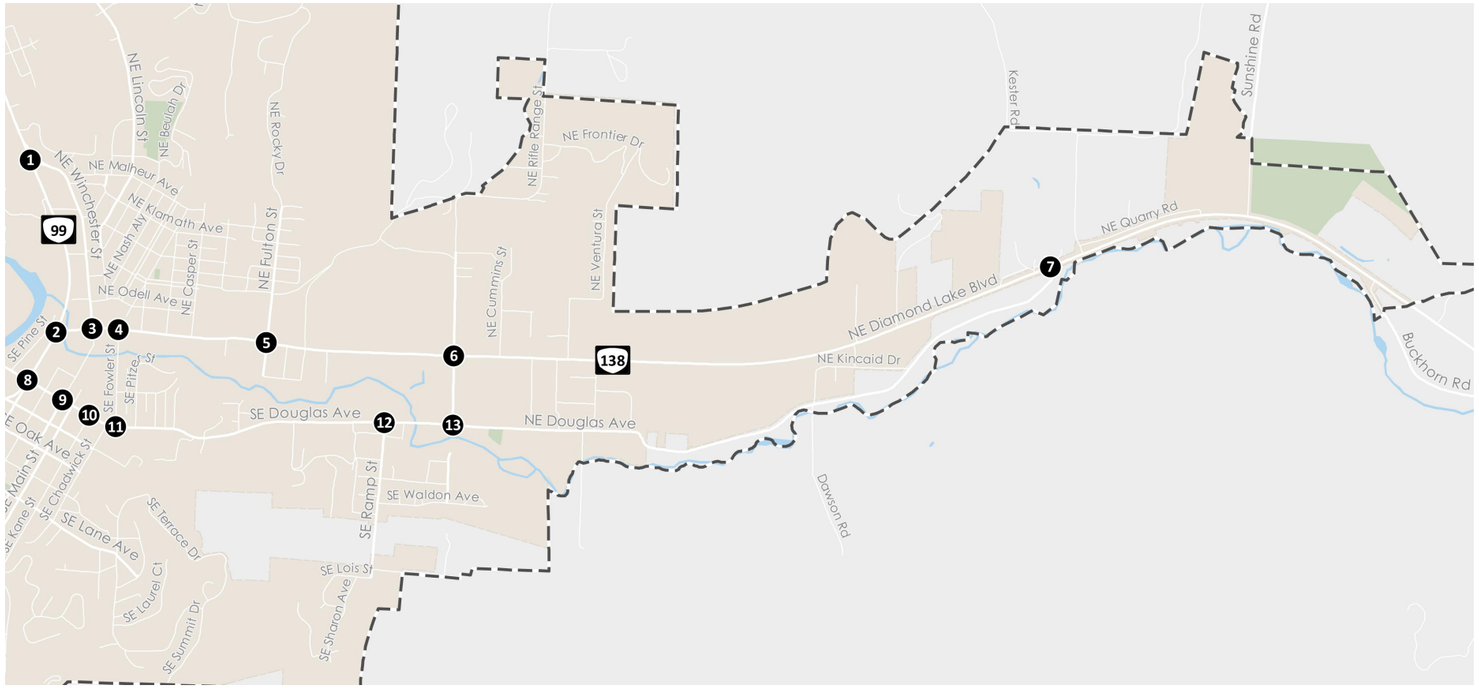
Table 9: City of Roseburg Mobility Standards

Map ID	Intersection	Traffic Control	V/C[1]	LOS[2]
1	NE Stephens St./NE Winchester St.	Signal (planned)	0.95	E
9	SE Douglas Ave./NE Jackson St.	AWSC[4]	0.95	E
10	SE Douglas Ave./SE Kane St.	TWSC[3]	0.95	E
11	SE Douglas Ave./NE Fowler St.	TWSC[3]	0.95	E
12	SE Douglas Ave./SE Ramp Rd.	TWSC[3]	0.95	E
13	NE Douglas Ave./NE Rifle Range St.	TWSC[3]	0.95	E

1. City intersections shall be analyzed at a peak hour factor of 1.0.
2. For roadways within the City of Roseburg that are under ODOT or Douglas County jurisdiction, the mobility standards/targets of those agencies will apply.
3. Two-Way Stop-Controlled (TWSC).
4. All-Way Stop-Controlled (AWSC).

Intersection Operations

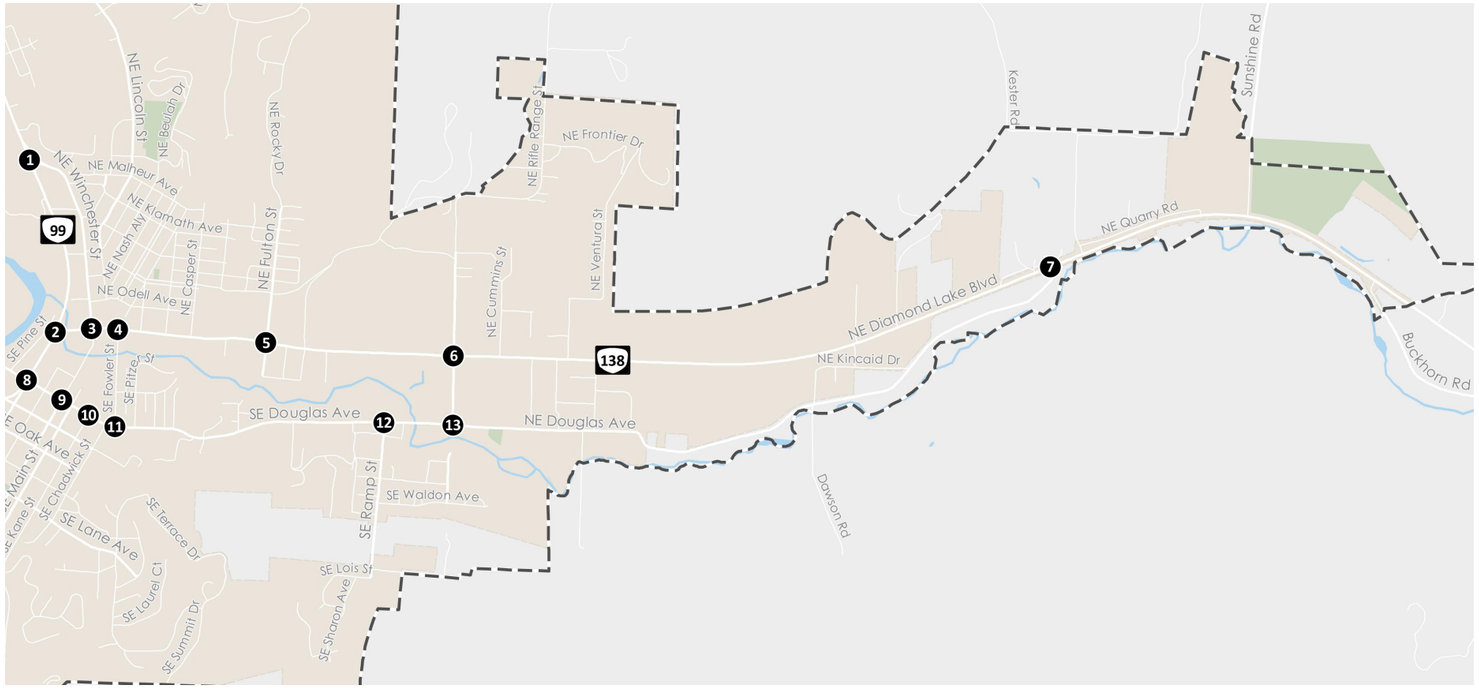
Figure 5 shows the lane configurations and traffic control devices assumed to be at the study intersections in the year 2045. Figure 6 presents the future 2045 PM peak hour traffic volumes estimated for the study intersections, as described in previous sections of this memorandum, and the resultant intersection operations. The resultant operations are also summarized in Table 10. As shown in Figure 6 and Table 10, **no study intersection is projected to exceed its applicable ODOT mobility target and/or City operating standard by 2045, except for OR 138E / NE Fowler Street**. *Appendix C contains the future traffic conditions worksheets.*

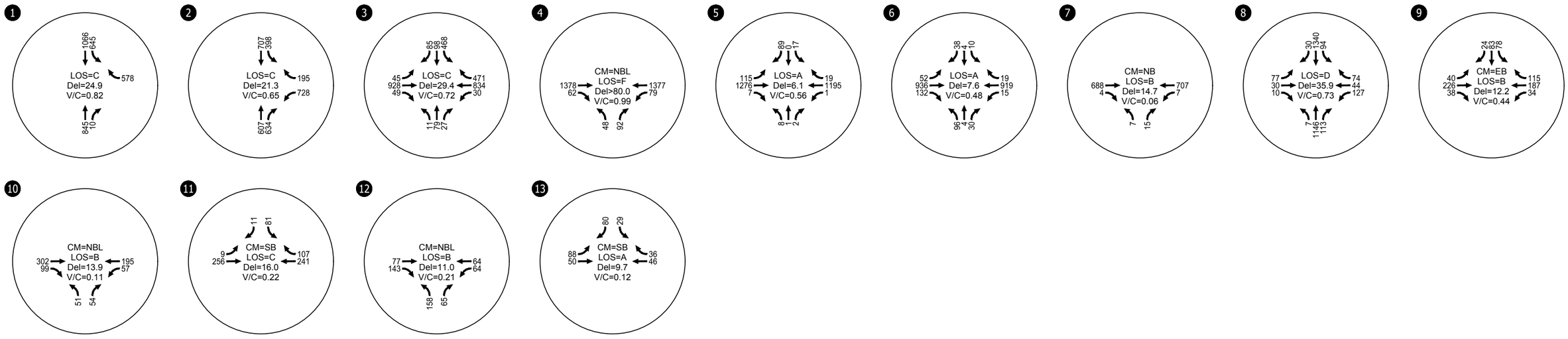


- Stop Sign
- Traffic Signal
- Yield Sign

Future Lane Configurations and Traffic Control Devices
Roseburg, Oregon

Figure 5





Future 2045 No Build Traffic Conditions
Weekday PM Peak Hour
Roseburg, Oregon

Figure
6

Table 10: Future 2045 Traffic Conditions, Weekday PM Peak Hour

Intersection		Maximum Operating Standard/Target	Weekday PM Peak Hour			
			Critical Approach/ Lane[1]	LOS	Delay (sec)	V/C
1	NE Stephens St./ NE Winchester St.[2]	V/C: 0.95; LOS E	-	C	24.9	0.82
2	OR 138E/ SE Stephens St.	V/C: 0.90	-	C	21.3	0.65
3	OR 138E/NE Jackson St./ NE Winchester St.	V/C: 0.90	-	C	29.4	0.72
4	OR 138E/ NE Fowler St.	V/C: 0.90 major approach/ 0.95 minor approach	NBL	F	>80.0	0.99
5	OR 138E/ NE Fulton St.[2]	V/C: 0.90 major approach/ 0.95 minor approach	-	A	6.1	0.56
6	OR 138E/ NE Rifle Range St.	V/C: 0.90	-	A	7.6	0.48
7	OR 138E/ NE Douglas Ave.	V/C: 0.85 major approach/ 0.90 minor approach	NB	B	14.7	0.06
8[2]	SE Stephens St./ SE Douglas Ave.	V/C: 0.90	-	D	35.9	0.73
9	SE Douglas Ave./ NE Jackson St.	V/C: 0.95; LOS E	EB	B	12.2	0.44
10	SE Douglas Ave./ SE Kane St.	V/C: 0.95; LOS E	NBL	B	13.9	0.11
11	SE Douglas Ave./ NE Fowler St.	V/C: 0.95; LOS E	SB	C	16.0	0.22
12	SE Douglas Ave./ SE Ramp Rd.	V/C: 0.95; LOS E	NBL	B	11.0	0.21
13	NE Douglas Ave./ NE Rifle Range St.	V/C: 0.95; LOS E	SB	A	9.7	0.12

[1]NB = northbound; SB = southbound; EB = eastbound; WB = westbound; L = left; T = through; R = right; [2]Modeled as signalized intersection according to planned improvements, although existing intersection is not.
[2]Signal timing was optimized at this intersection to better accommodate traffic demand, as is to be expected over the next 20 years.

At NE Stephens Street / NE Winchester Street, the growth in conflicting volumes between the northbound movements and westbound right-turn movements lead to delays for the yield-controlled westbound approach. At OR 138E / NE Fowler Street, the growth in eastbound and westbound movements causes higher delays for the northbound minor street movements.

Table 11 summarizes the future 95th percentile queues at key high-volume study intersections in the study area. **As shown, most forecast queues are contained within the defined/striped turn lanes or roadway approaches, except for the following:**

- OR 138E / NE Jackson Street-NE Winchester Street
  - The westbound right-turn 95th percentile queue length exceeds the available turn lane pocket striped storage, including the taper.
- SE Stephens Street / SE Douglas Avenue
  - The southbound and northbound through 95th percentile queue lengths are shown to spill back into upstream traffic signals.

Table 11: 95th Percentile Queues

Intersection		Critical Movements[1]	Storage (ft)[2]	95th Percentile Queue (ft)[3]	Queue Storage Adequate?
1	NE Stephens St./ NE Winchester St.	SBL WBR	175 425	300 275	Yes[4] Yes
2	OR 138E/ SE Stephens St.	NBR WBL SBL	125 375 200	175 250 200	Yes[5] Yes Yes
3	OR 138E/ NE Jackson St./ NE Winchester St.	NBL NBR WBL WBR SBL SBTR EBL EBR	80 125 250 50 300 300 175 50	25 50 50 150 550 150 75 50	Yes Yes Yes **No** Yes[4] Yes Yes Yes
4	OR 138E/ NE Fowler St.	NBL NBR WBL	125 200 150	125 25 25	Yes Yes Yes
5	OR 138E/ NE Fulton St.	WBL EBL	>200 >200	25 50	Yes Yes
6	OR 138E/ NE Rifle Range St.	NBL NBTR WBL WBTR SBL SBTR EBL EBTR	300 300 250 >500 200 >200 250 >500	50 25 25 75 25 25 25 100	Yes Yes Yes Yes Yes Yes Yes Yes
7	OR 138E/ NE Douglas Ave.	NB WBL	>300 150	25 25	Yes Yes
8[6]	SE Stephens St./ SE Douglas Ave.	NBTR WBL WBTR SBL SBTR EBL EBTR	300 200 200 150 200 75 200	>500 50 50 100 450 25 25	**No** Yes Yes Yes **No** Yes Yes

[1]NB = northbound; SB = southbound; EB = eastbound; WB = westbound; L = left; T = through; R = right
[2]Storage lengths reflect striped storage for each turn lane pocket at the intersections or available storage to the upstream intersection.
[3]Vehicle queues were rounded up to the nearest 25 feet.
[4]Storage is adequate as vehicles can queue within the center left turn lane and only block upstream driveways or minor streets and not spill back into major intersections.
[5]Storage is adequate as vehicles can queue within the taper of the turn lane pocket.
[6]Signal timing was optimized at this intersection to better accommodate traffic demand as is to be expected over the next 20 years.

Freight Analysis

Despite having a Regional Highway designation, the OR 138E study corridor is not formally classified as an Oregon Freight Route in the OHP, nor is it classified as a National Highway Freight Route. It is, however, classified as a Reduction Review Route.

Freight volume ratios are not expected to change significantly from what was observed under existing traffic conditions. Therefore, Table 12 summarizes the percentage of heavy vehicles on key roadway segments within the study corridor.

Table 12: OR 138E Freight Summary

Segment	Average Annual Daily Traffic	% of Heavy Vehicles[1] from ODOT TransGIS Data	% of Heavy Vehicles[1] from 2022 Traffic Counts
A. OR 138E (SE Stephens St. to NE Fulton St.)	~25,240	8.9%	11%
B. OR 138E (NE Fulton St. to NE Rifle Range St.)	~23,410	8.9%	9%
C. OR 138E (NE Rifle Range St. to NE Douglas Ave.)	~16,670	8.9%	8%
H. SE Stephens St. (SE Douglas Ave. to OR 138E)	~27,190	8.9%	7%

[1]Including FHWA Class 4 through Class 13 vehicles as categorized according to the Federal Highway Administration (FHWA) vehicle classification summary.

In general, heavy vehicle trips make up approximately 9-11 percent of the overall daily traffic on the OR 138E corridor with a slightly higher percentage of heavy vehicles on the west end of the corridor. Although not summarized in Table 12, traffic counts along the SE Douglas Avenue corridor were relatively minimal.

Pedestrian and Bicycle Volumes

Redevelopment along the OR 138E corridor, particularly with additional residential units, is likely to result in an increase in pedestrian and bicycle demand. However, the increase in non-motorized demand may be regulated by the limited bicycle and pedestrian infrastructure within the study area, particularly in the more rural eastern segments. Although difficult to quantify, it is likely that existing demand (as summarized in the Existing Conditions memo) will increase consistent with the growth in residential units being developed along the corridor.

Summary

Higher traffic volume estimates from the future no-build scenario did not change the PLTS, BLTS or QMA analyses compared to the existing conditions, but that does not mean that there will not be an impact on pedestrians, cyclists, and transit users. On OR 138E, pedestrians and cyclists would continue to experience unfavorable conditions, and more traffic is likely to make it more stressful and less comfortable to access the OR 138E Diamond Lake Boulevard corridor and connecting streets without a vehicle. This could lead to fewer residents choosing these active modes and a lower quality of life for residents who rely on them.

The crash patterns identified within the study area that are summarized in this memorandum may worsen over time with increasing vehicular, pedestrian, and bicycle volumes and if no changes are made to the study area street network. Additionally, all study intersections are forecast to meet their applicable mobility targets in the year 2045 except for OR 138E / NE Fowler Street. Further, the study intersections are expected to have adequate storage for the forecast traffic volumes, except for the following:

- OR 138E / NE Jackson Street-NE Winchester Street
  - The westbound right-turn 95th percentile queue length exceeds the available turn lane pocket striped storage, including the taper.
- SE Stephens Street / SE Douglas Avenue
  - The southbound and northbound through 95th percentile queue lengths are shown to spill back into upstream traffic signals.

Lastly, the percentage of truck traffic moving through study area is not expected to change significantly from what was observed under existing traffic conditions.

Appendix A Future Traffic Conditions Worksheet

Intersection Level Of Service Report
Intersection 1: NE Winchester St / NE Stephens St

Control Type:	Signalized	Delay (sec / veh):	24.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.822

Intersection Setup

Name	SE Stephens St		SE Stephens St		NE Winchester St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	175.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	4.00		0.00		-3.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	SE Stephens St		SE Stephens St		NE Winchester St	
Base Volume Input [veh/h]	762	10	645	957	0	578
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	0.00	0.00	1.00	0.00	0.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	83	0	0	109	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	845	10	645	1066	0	578
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	0.8700	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	211	3	161	267	0	145
Total Analysis Volume [veh/h]	845	10	645	1066	0	578
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	6	4	5	2	0	4
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	10	5	5	10	0	5
Maximum Green [s]	40	30	24	40	0	30
Amber [s]	4.1	4.1	4.1	4.1	0.0	4.1
All red [s]	2.0	1.5	1.8	1.8	0.0	1.5
Split [s]	34	31	30	64	0	31
Vehicle Extension [s]	4.2	1.0	2.5	4.2	0.0	1.0
Walk [s]	7	7	0	7	0	7
Pedestrian Clearance [s]	14	20	0	0	0	20
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No		No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	0.0	2.0
I2, Clearance Lost Time [s]	4.1	3.6	3.9	3.9	0.0	3.6
Minimum Recall	Yes		No	Yes		No
Maximum Recall	No		No	No		No
Pedestrian Recall	No		No	No		No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	0.0	0.0	0.0	50.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R
C, Cycle Length [s]	95	95	95	95	95
L, Total Lost Time per Cycle [s]	6.10	6.10	5.90	5.90	5.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.10	4.10	0.00	3.90	3.60
g_i, Effective Green Time [s]	31	31	61	61	23
g / C, Green / Cycle	0.32	0.32	0.64	0.64	0.24
(v / s)_i Volume / Saturation Flow Rate	0.27	0.27	0.39	0.32	0.22
s, saturation flow rate [veh/h]	1591	1585	1664	3306	2632
c, Capacity [veh/h]	516	514	1065	2116	629
d1, Uniform Delay [s]	29.66	29.71	10.06	9.09	35.27
k, delay calibration	0.50	0.50	0.50	0.50	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.20	14.51	2.56	0.86	2.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.83	0.61	0.50	0.92
d, Delay for Lane Group [s/veh]	43.86	44.22	12.61	9.95	37.70
Lane Group LOS	D	D	B	A	D
Critical Lane Group	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	10.63	10.68	7.48	5.28	6.50
50th-Percentile Queue Length [ft/ln]	265.87	267.11	187.06	131.93	162.55
95th-Percentile Queue Length [veh/ln]	15.98	16.05	11.97	9.04	10.68
95th-Percentile Queue Length [ft/ln]	399.58	401.13	299.21	226.11	267.09

Movement, Approach, & Intersection Results

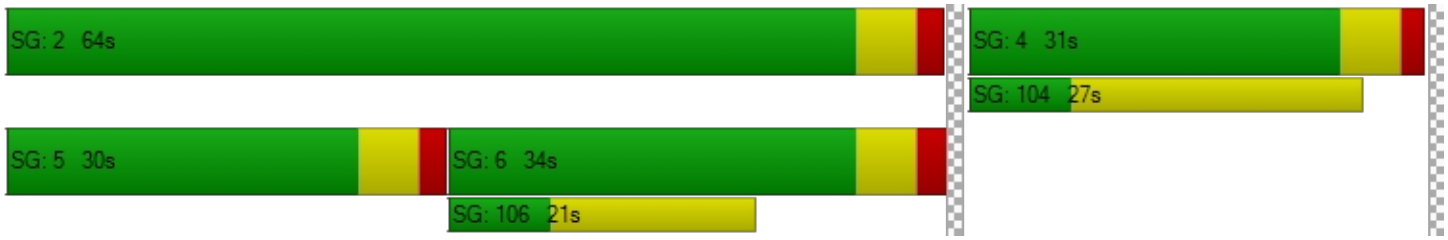
d_M, Delay for Movement [s/veh]	44.04	44.22	12.61	9.95	0.00	37.70
Movement LOS	D	D	B	A		D
d_A, Approach Delay [s/veh]	44.04		10.95		37.70	
Approach LOS	D		B		D	
d_I, Intersection Delay [s/veh]	24.87					
Intersection LOS	C					
Intersection V/C	0.822					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	11584.47
d_p, Pedestrian Delay [s]	37.15	37.15	37.15
l_p,int, Pedestrian LOS Score for Intersection	2.680	3.015	2.484
Crosswalk LOS	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	587	1223	535
d_b, Bicycle Delay [s]	23.71	7.18	25.51
l_b,int, Bicycle LOS Score for Intersection	2.265	2.971	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: NE Diamond Lake Blvd / SE Stephens St

Control Type:	Signalized	Delay (sec / veh):	21.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.646

Intersection Setup

Name	SE Stephens St		Stephens St		NE Diamond Lake Blvd	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	120.00	335.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	SE Stephens St		Stephens St		NE Diamond Lake Blvd	
Base Volume Input [veh/h]	607	470	289	707	606	112
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	8.00	3.00	1.00	9.00	4.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	607	470	289	707	606	112
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	163	126	78	190	163	30
Total Analysis Volume [veh/h]	653	505	311	760	652	120
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	90.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Overlap	ProtPerm	Permissive	Permissive	Unsignalized
Signal Group	6	4	5	2	4	0
Auxiliary Signal Groups		4,6				
Lead / Lag	-	-	Lead	-	Lag	-
Minimum Green [s]	10	5	5	10	5	0
Maximum Green [s]	40	30	24	40	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	0.0
All red [s]	2.0	1.5	1.8	1.8	1.5	0.0
Split [s]	34	31	30	64	31	0
Vehicle Extension [s]	4.2	1.0	2.5	4.2	1.0	0.0
Walk [s]	7	8	0	0	8	0
Pedestrian Clearance [s]	12	16	0	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.1	3.6	3.9	3.9	3.6	0.0
Minimum Recall	Yes	No	No	Yes	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	50.0	50.0	50.0	50.0	50.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L
C, Cycle Length [s]	95	95	95	95	95
L, Total Lost Time per Cycle [s]	6.10	5.60	5.90	5.90	5.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.10	0.00	0.00	3.90	3.60
g_i, Effective Green Time [s]	25	69	46	46	38
g / C, Green / Cycle	0.26	0.72	0.48	0.48	0.40
(v / s)_i Volume / Saturation Flow Rate	0.20	0.36	0.33	0.23	0.22
s, saturation flow rate [veh/h]	3306	1393	955	3306	3007
c, Capacity [veh/h]	857	1004	484	1593	1194
d1, Uniform Delay [s]	32.52	5.82	18.79	16.58	22.06
k, delay calibration	0.17	0.50	0.17	0.17	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.17	1.80	2.18	0.34	1.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.50	0.64	0.48	0.55
d, Delay for Lane Group [s/veh]	34.69	7.62	20.97	16.92	23.86
Lane Group LOS	C	A	C	B	C
Critical Lane Group	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	6.96	3.88	4.36	5.30	5.62
50th-Percentile Queue Length [ft/ln]	173.92	97.03	109.05	132.45	140.61
95th-Percentile Queue Length [veh/ln]	11.28	6.99	7.79	9.07	9.51
95th-Percentile Queue Length [ft/ln]	282.06	174.65	194.68	226.82	237.85

Movement, Approach, & Intersection Results

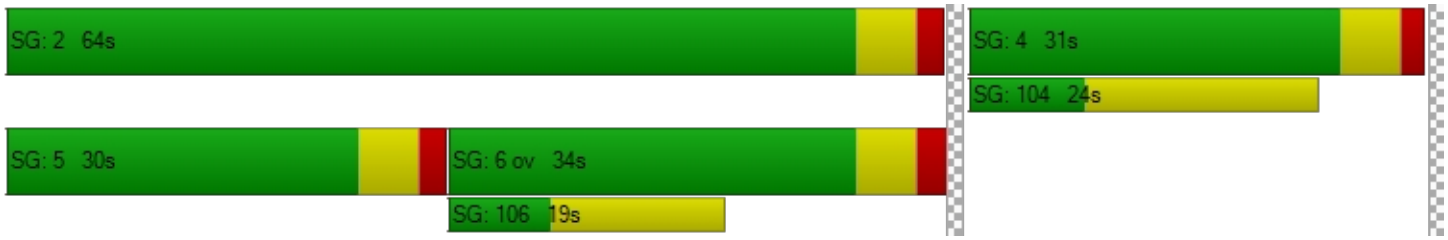
d_M, Delay for Movement [s/veh]	34.69	7.62	20.97	16.92	23.86	0.00
Movement LOS	C	A	C	B	C	
d_A, Approach Delay [s/veh]	22.89		18.10		23.86	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	21.33					
Intersection LOS	C					
Intersection V/C	0.646					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	12.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	36.29	37.17
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.655	2.754
Crosswalk LOS	F	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	587	1222	534
d_b, Bicycle Delay [s]	23.73	7.19	25.53
l_b,int, Bicycle LOS Score for Intersection	2.515	2.443	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: NE Diamond Lake Blvd / NE Winchester St

Control Type:	Signalized	Delay (sec / veh):	29.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.719

Intersection Setup

Name	Jackson St			NE Winchester St			NE Diamond Lake Blvd			NE Diamond Lake Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	95.00	100.00	110.00	210.00	100.00	100.00	185.00	100.00	80.00	160.00	100.00	90.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			35.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Jackson St			NE Winchester St			NE Diamond Lake Blvd			NE Diamond Lake Blvd		
Base Volume Input [veh/h]	11	79	27	468	98	85	45	655	49	30	629	471
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	0.00	0.00	0.00	0.00	1.00	1.00	7.00	0.00	1.00	9.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	79	27	468	98	85	45	655	49	30	629	471
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	21	7	122	26	22	12	171	13	8	164	123
Total Analysis Volume [veh/h]	11	82	28	488	102	89	47	682	51	31	655	491
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	8	7	4	4	5	2	2	1	6	7
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	10	10	5	10	5
Maximum Green [s]	15	30	30	40	35	35	30	50	50	15	50	40
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.0	3.5
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Split [s]	15	22	22	31	38	38	15	30	30	12	27	31
Vehicle Extension [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	4.2	4.2	2.5	4.2	2.5
Walk [s]	0	9	9	0	9	9	0	9	9	0	8	0
Pedestrian Clearance [s]	0	26	26	0	27	27	0	21	21	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5	2.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	100.0	100.0	20.0	100.0	100.0	20.0	100.0	100.0	20.0	100.0	100.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	R
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.50	4.50	4.50	4.50	4.50	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.50	2.50	2.50	2.50	2.50	0.00
g_i, Effective Green Time [s]	1	8	8	27	34	4	40	40	3	40	71
g / C, Green / Cycle	0.01	0.08	0.08	0.28	0.35	0.04	0.43	0.43	0.03	0.42	0.75
(v / s)_i Volume / Saturation Flow Rate	0.01	0.05	0.02	0.29	0.12	0.03	0.22	0.03	0.02	0.21	0.33
s, saturation flow rate [veh/h]	1654	1750	1466	1667	1616	1654	3148	1484	1654	3095	1485
c, Capacity [veh/h]	23	145	122	473	570	64	1336	630	50	1287	1109
d1, Uniform Delay [s]	46.62	42.04	40.84	34.12	22.63	45.30	20.14	16.34	45.66	20.61	4.55
k, delay calibration	0.08	0.08	0.08	0.22	0.08	0.08	0.50	0.50	0.08	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.74	2.55	0.71	35.68	0.25	11.29	1.39	0.25	8.98	1.44	1.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	0.57	0.23	1.03	0.34	0.73	0.51	0.08	0.62	0.51	0.44
d, Delay for Lane Group [s/veh]	57.37	44.59	41.55	69.80	22.89	56.60	21.53	16.59	54.64	22.05	5.83
Lane Group LOS	E	D	D	F	C	E	C	B	D	C	A
Critical Lane Group	No	Yes	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.33	1.94	0.63	15.14	3.07	1.28	5.52	0.68	0.84	5.37	2.99
50th-Percentile Queue Length [ft/ln]	8.15	48.53	15.85	378.42	76.81	32.01	137.94	17.05	20.91	134.16	74.77
95th-Percentile Queue Length [veh/ln]	0.59	3.49	1.14	21.93	5.53	2.30	9.37	1.23	1.51	9.17	5.38
95th-Percentile Queue Length [ft/ln]	14.67	87.36	28.52	548.18	138.26	57.62	234.24	30.69	37.64	229.13	134.58

Movement, Approach, & Intersection Results

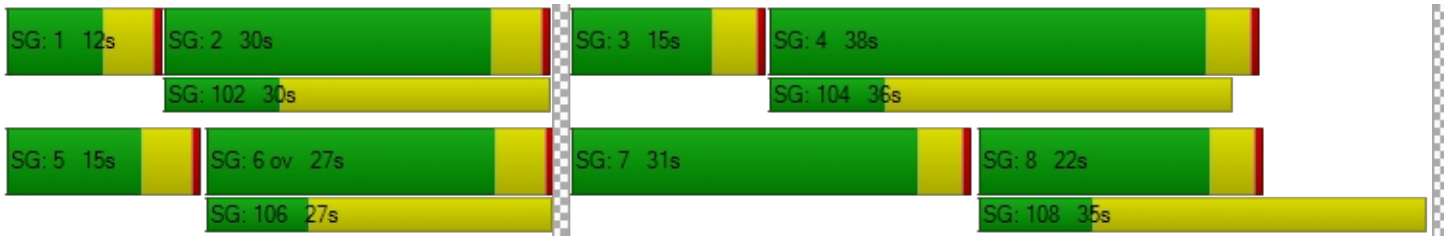
d_M, Delay for Movement [s/veh]	57.37	44.59	41.55	69.80	22.89	22.89	56.60	21.53	16.59	54.64	22.05	5.83
Movement LOS	E	D	D	F	C	C	E	C	B	D	C	A
d_A, Approach Delay [s/veh]	45.05			56.60			23.32			16.14		
Approach LOS	D			E			C			B		
d_I, Intersection Delay [s/veh]	29.41											
Intersection LOS	C											
Intersection V/C	0.719											

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	12.0	13.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	35.46	36.33	35.46	35.46
l_p,int, Pedestrian LOS Score for Intersection	2.206	2.434	2.844	2.904
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	378	715	536	473
d_b, Bicycle Delay [s]	31.27	19.65	25.49	27.73
l_b,int, Bicycle LOS Score for Intersection	1.759	2.680	2.203	2.531
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: NE Diamond Lake Blvd / SE Fowler St

Control Type:	Two-way stop	Delay (sec / veh):	256.4
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.992

Intersection Setup

Name	Fowler St		NE Diamond Lake Blvd		NE Diamond Lake Blvd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	50.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Fowler St		NE Diamond Lake Blvd		NE Diamond Lake Blvd	
Base Volume Input [veh/h]	48	92	1105	62	79	1172
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	48	92	1105	62	79	1172
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	24	285	16	20	302
Total Analysis Volume [veh/h]	49	95	1139	64	81	1208
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.99	0.21	0.01	0.00	0.14	0.01
d_M, Delay for Movement [s/veh]	256.36	15.33	0.00	0.00	12.27	0.00
Movement LOS	F	C	A	A	B	A
95th-Percentile Queue Length [veh/ln]	4.26	0.80	0.00	0.00	0.49	0.00
95th-Percentile Queue Length [ft/ln]	106.53	20.10	0.00	0.00	12.18	0.00
d_A, Approach Delay [s/veh]	97.35		0.00		0.77	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	5.69					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 5: NE Diamond Lake Blvd / NE Fulton St

Control Type:	Signalized	Delay (sec / veh):	6.1
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.556

Intersection Setup

Name	NE Fulton St			NE Fulton St			Diamond Lake Blvd			Diamond Lake Blvd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NE Fulton St			NE Fulton St			Diamond Lake Blvd			Diamond Lake Blvd		
Base Volume Input [veh/h]	8	1	2	17	0	47	42	1076	7	1	1032	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	0.00	18.00	1.00	0.00	2.00	2.00	5.00	4.00	11.00	5.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	42	73	200	0	0	163	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	1	2	17	0	89	115	1276	7	1	1195	19
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	0	1	4	0	23	30	332	2	0	311	5
Total Analysis Volume [veh/h]	8	1	2	18	0	93	120	1329	7	1	1245	20
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	12	0	0	12	0
Maximum Green [s]	0	25	0	0	25	0	0	45	0	0	45	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	4.9	0.0	0.0	4.9	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	2.5	0.0	0.0	2.5	0.0	0.0	4.8	0.0	0.0	4.8	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	13	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	3.9	0.0	0.0	3.9	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	52	52	52	52	52	52	52	52
L, Total Lost Time per Cycle [s]	5.50	5.50	5.90	5.90	5.90	5.90	5.90	5.90
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	3.50	3.90	3.90	3.90	3.90	3.90	3.90
g_i, Effective Green Time [s]	5	5	36	36	36	36	36	36
g / C, Green / Cycle	0.09	0.09	0.69	0.69	0.69	0.69	0.69	0.69
(v / s)_i Volume / Saturation Flow Rate	0.01	0.07	0.27	0.40	0.40	0.00	0.38	0.38
s, saturation flow rate [veh/h]	1611	1535	438	1681	1678	380	1681	1671
c, Capacity [veh/h]	271	224	342	1154	1152	308	1154	1148
d1, Uniform Delay [s]	21.45	22.94	10.30	4.23	4.23	7.99	4.09	4.09
k, delay calibration	0.08	0.08	0.21	0.21	0.21	0.21	0.21	0.21
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	1.25	1.20	0.90	0.90	0.01	0.80	0.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.04	0.49	0.35	0.58	0.58	0.00	0.55	0.55
d, Delay for Lane Group [s/veh]	21.50	24.19	11.50	5.13	5.13	8.00	4.89	4.90
Lane Group LOS	C	C	B	A	A	A	A	A
Critical Lane Group	No	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.12	1.32	0.88	1.84	1.84	0.01	1.68	1.67
50th-Percentile Queue Length [ft/ln]	2.97	33.01	21.92	45.96	45.92	0.14	41.94	41.78
95th-Percentile Queue Length [veh/ln]	0.21	2.38	1.58	3.31	3.31	0.01	3.02	3.01
95th-Percentile Queue Length [ft/ln]	5.34	59.42	39.46	82.72	82.66	0.25	75.49	75.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	21.50	21.50	21.50	24.19	24.19	24.19	11.50	5.13	5.13	8.00	4.89	4.90
Movement LOS	C	C	C	C	C	C	B	A	A	A	A	A
d_A, Approach Delay [s/veh]	21.50			24.19			5.66			4.90		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	6.10											
Intersection LOS	A											
Intersection V/C	0.556											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	3531.75	6209.68	0.00	0.00
d_p, Pedestrian Delay [s]	16.09	16.09	16.09	16.09
l_p,int, Pedestrian LOS Score for Intersection	1.693	1.957	2.917	2.889
Crosswalk LOS	A	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	964	964	1736	1736
d_b, Bicycle Delay [s]	6.95	6.95	0.45	0.45
l_b,int, Bicycle LOS Score for Intersection	1.578	1.743	2.761	2.604
Bicycle LOS	A	A	C	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 6: NE Diamond Lake Blvd / NE Rifle Range St

Control Type:	Signalized	Delay (sec / veh):	7.6
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.482

Intersection Setup

Name	NE Rifle Range Rd			NE Rifle Range Rd			NE Diamond Lake Blvd					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	300.00	100.00	100.00	100.00	100.00	100.00	260.00	100.00	100.00	260.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	25.00			40.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NE Rifle Range Rd			NE Rifle Range Rd			NE Diamond Lake Blvd					
Base Volume Input [veh/h]	96	4	30	5	4	38	52	827	132	15	852	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	1.00	0.00	4.00	2.00	2.00	6.00	2.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	96	4	30	5	4	38	52	827	132	15	852	11
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	1	8	1	1	10	14	220	35	4	227	3
Total Analysis Volume [veh/h]	102	4	32	5	4	40	55	880	140	16	906	12
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	81
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	8	8	8	4	4	4	2	2	2	6	6	6
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	6	6	6	6	6	6	12	12	12	12	12	12
Maximum Green [s]	25	25	25	25	25	25	45	45	45	45	45	45
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	4.9	4.9	4.9	4.9	4.9	4.9
All red [s]	2.0	2.0	2.0	2.0	2.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	30	30	30	30	30	30	30	30	30	30	30	30
Vehicle Extension [s]	2.5	2.5	2.5	2.5	2.5	2.5	4.8	4.8	4.8	4.8	4.8	4.8
Walk [s]	7	7	7	7	7	7	7	7	7	8	8	8
Pedestrian Clearance [s]	21	21	21	21	21	21	15	15	15	24	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.9	3.9	3.9	3.9	3.9	3.9
Minimum Recall		No			No			Yes			Yes	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
C, Cycle Length [s]	41	41	41	41	41	41	41	41	41	41
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	5.90	5.90	5.90	5.90	5.90	5.90
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.50	3.50	3.50	3.50	3.90	3.90	3.90	3.90	3.90	3.90
g_i, Effective Green Time [s]	7	7	7	7	23	23	23	23	23	23
g / C, Green / Cycle	0.16	0.16	0.16	0.16	0.56	0.56	0.56	0.56	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.08	0.02	0.00	0.03	0.09	0.31	0.31	0.03	0.26	0.26
s, saturation flow rate [veh/h]	1357	1510	1392	1453	608	1667	1586	561	1750	1742
c, Capacity [veh/h]	294	248	305	239	388	933	888	347	980	975
d1, Uniform Delay [s]	18.57	14.79	17.03	14.89	9.54	5.83	5.84	10.18	5.44	5.44
k, delay calibration	0.08	0.08	0.08	0.08	0.21	0.21	0.21	0.21	0.21	0.21
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.52	0.20	0.02	0.27	0.32	1.03	1.08	0.11	0.68	0.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.14	0.02	0.18	0.14	0.56	0.56	0.05	0.47	0.47
d, Delay for Lane Group [s/veh]	19.09	14.99	17.04	15.16	9.86	6.86	6.92	10.29	6.12	6.12
Lane Group LOS	B	B	B	B	A	A	A	B	A	A
Critical Lane Group	Yes	No	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.91	0.27	0.04	0.30	0.30	1.75	1.68	0.09	1.40	1.40
50th-Percentile Queue Length [ft/ln]	22.64	6.75	0.92	7.57	7.42	43.75	42.07	2.25	35.10	34.96
95th-Percentile Queue Length [veh/ln]	1.63	0.49	0.07	0.55	0.53	3.15	3.03	0.16	2.53	2.52
95th-Percentile Queue Length [ft/ln]	40.76	12.15	1.66	13.63	13.36	78.75	75.72	4.05	63.17	62.93

Movement, Approach, & Intersection Results

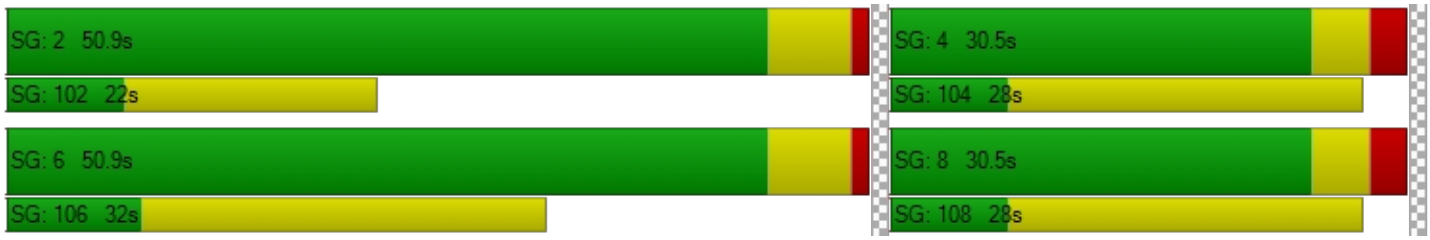
d_M, Delay for Movement [s/veh]	19.09	14.99	14.99	17.04	15.16	15.16	9.86	6.89	6.92	10.29	6.12	6.12
Movement LOS	B	B	B	B	B	B	A	A	A	B	A	A
d_A, Approach Delay [s/veh]	18.02			15.35			7.04			6.19		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	7.56											
Intersection LOS	A											
Intersection V/C	0.482											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	12.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	11.18	10.45	11.18	11.18
l_p,int, Pedestrian LOS Score for Intersection	1.998	2.022	2.882	2.765
Crosswalk LOS	A	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1207	1207	2172	2172
d_b, Bicycle Delay [s]	3.26	3.26	0.15	0.15
l_b,int, Bicycle LOS Score for Intersection	1.787	1.640	2.446	2.330
Bicycle LOS	A	A	B	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: NE Diamond Lake Blvd / NE Douglas Ave

Control Type:	Two-way stop	Delay (sec / veh):	21.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.036

Intersection Setup

Name	NE Douglas Ave		NE Diamond Lake Blvd		NE Diamond Lake Blvd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	75.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	NE Douglas Ave		NE Diamond Lake Blvd		NE Diamond Lake Blvd	
Base Volume Input [veh/h]	7	15	625	4	7	658
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	7.00	4.00	0.00	11.00	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	15	625	4	7	658
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	4	170	1	2	179
Total Analysis Volume [veh/h]	8	16	679	4	8	715
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.02	0.01	0.00	0.01	0.01
d_M, Delay for Movement [s/veh]	21.79	11.22	0.00	0.00	9.29	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.19	0.19	0.00	0.00	0.03	0.00
95th-Percentile Queue Length [ft/ln]	4.85	4.85	0.00	0.00	0.71	0.00
d_A, Approach Delay [s/veh]	14.74		0.00		0.10	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.30					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: SE Douglas Ave / SE Stephens St

Control Type:	Signalized	Delay (sec / veh):	35.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.729

Intersection Setup

Name	SE Stephens St			Stephens St			SE Douglas Ave			SE Douglas Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	155.00	100.00	100.00	150.00	100.00	100.00	130.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	SE Stephens St			Stephens St			SE Douglas Ave			SE Douglas Ave		
Base Volume Input [veh/h]	7	982	113	94	1218	30	77	30	10	127	44	74
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.00	0.00	0.00	5.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	164	0	0	122	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	1146	113	94	1340	30	77	30	10	127	44	74
Peak Hour Factor	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	341	34	28	399	9	23	9	3	38	13	22
Total Analysis Volume [veh/h]	8	1364	135	112	1595	36	92	36	12	151	52	88
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	6.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	6	5	2	2	3	8	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	3	10	10	3	10	10	3	5	5	5	5	5
Maximum Green [s]	15	45	45	15	45	45	0	30	30	30	30	30
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Split [s]	34	68	68	8	42	42	8	44	44	36	36	36
Vehicle Extension [s]	2.5	4.2	4.2	2.5	4.2	4.2	2.5	2.5	2.5	2.5	2.5	2.5
Walk [s]	0	7	7	0	7	7	0	8	8	8	8	8
Pedestrian Clearance [s]	0	11	11	0	13	13	0	24	24	23	23	23
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	Yes		No	Yes			Yes			Yes	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	0.00	2.50	2.50	0.00	2.50	2.50	2.50
g_i, Effective Green Time [s]	1	63	63	71	66	66	39	39	35	35
g / C, Green / Cycle	0.01	0.53	0.53	0.60	0.55	0.55	0.33	0.33	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.01	0.50	0.51	0.27	0.37	0.37	0.08	0.03	0.12	0.10
s, saturation flow rate [veh/h]	1500	1513	1464	421	2880	1493	1164	1507	1237	1412
c, Capacity [veh/h]	10	799	773	180	1589	823	378	496	372	412
d1, Uniform Delay [s]	59.46	26.72	27.02	27.82	19.22	19.25	32.93	27.87	38.22	33.40
k, delay calibration	0.08	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	63.57	21.44	23.67	15.20	2.32	4.45	1.52	0.39	3.28	2.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.95	0.96	0.62	0.68	0.68	0.24	0.10	0.41	0.34
d, Delay for Lane Group [s/veh]	123.03	48.16	50.69	43.02	21.54	23.69	34.45	28.26	41.50	35.64
Lane Group LOS	F	D	D	D	C	C	C	C	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.42	23.88	23.99	2.04	10.81	11.74	2.09	1.03	4.17	3.51
50th-Percentile Queue Length [ft/ln]	10.51	597.01	599.79	50.99	270.37	293.42	52.26	25.75	104.21	87.77
95th-Percentile Queue Length [veh/ln]	0.76	31.89	32.02	3.67	16.21	17.36	3.76	1.85	7.50	6.32
95th-Percentile Queue Length [ft/ln]	18.92	797.37	800.61	91.79	405.21	433.88	94.06	46.35	187.57	157.99

Movement, Approach, & Intersection Results

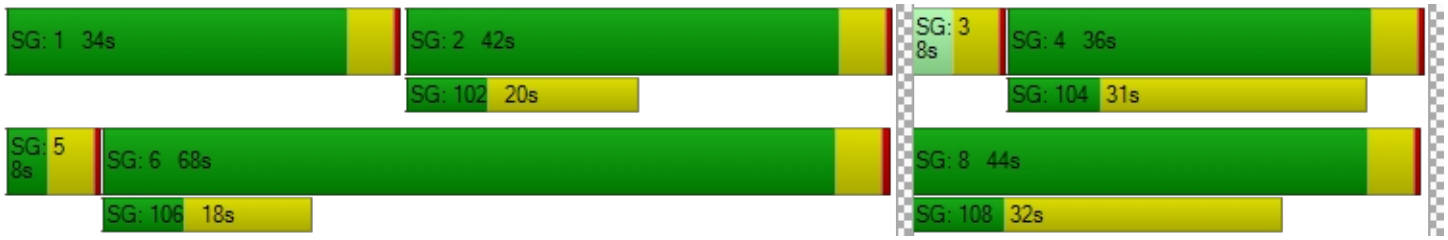
d_M, Delay for Movement [s/veh]	123.03	49.29	50.69	43.02	22.25	23.69	34.45	28.26	28.26	41.50	35.64	35.64
Movement LOS	F	D	D	D	C	C	C	C	C	D	D	D
d_A, Approach Delay [s/veh]	49.80			23.61			32.33			38.68		
Approach LOS	D			C			C			D		
d_I, Intersection Delay [s/veh]	35.86											
Intersection LOS	D											
Intersection V/C	0.729											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	2418.15	1700.38	2255.46	706.38
d_p, Pedestrian Delay [s]	48.58	48.58	49.48	49.48
l_p,int, Pedestrian LOS Score for Intersection	3.300	3.051	2.018	2.196
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1059	625	659	525
d_b, Bicycle Delay [s]	13.28	28.35	26.98	32.61
l_b,int, Bicycle LOS Score for Intersection	2.803	2.518	1.791	2.040
Bicycle LOS	C	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: SE Douglas Ave / SE Jackson St

Control Type:	All-way stop	Delay (sec / veh):	10.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.439

Intersection Setup

Name	SE Jackson St			SE Douglas Ave			SE Douglas Ave			Jackson St		
Approach	Southbound			Eastbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	25.00	100.00	100.00	100.00	100.00	100.00	25.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			0.00		
Grade [%]	7.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	SE Jackson St			SE Douglas Ave			SE Douglas Ave			Jackson St		
Base Volume Input [veh/h]	78	83	24	40	226	38	34	187	115	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	78	83	24	40	226	38	34	187	115	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	21	6	10	57	10	9	47	29	0	0	0
Total Analysis Volume [veh/h]	78	83	24	40	226	38	34	187	115	0	0	0
Pedestrian Volume [ped/h]	6			7			7			6		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	558	616	692	656	734	
Degree of Utilization, x	0.17	0.15	0.44	0.26	0.23	

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.59	0.53	2.25	1.02	0.88	
95th-Percentile Queue Length [ft]	14.76	13.16	56.15	25.43	22.01	
Approach Delay [s/veh]	10.01		12.21	9.57		0.00
Approach LOS	B		B	A		A
Intersection Delay [s/veh]	10.64					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 10: SE Douglas Ave / SE Kane St

Control Type:	Two-way stop	Delay (sec / veh):	13.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.112

Intersection Setup

Name	SE Kane St		SE Douglas Ave		SE Douglas Ave	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	80.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		30.00		25.00	
Grade [%]	-3.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	SE Kane St		SE Douglas Ave		SE Douglas Ave	
Base Volume Input [veh/h]	51	54	302	99	57	195
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	54	302	99	57	195
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	14	76	25	14	49
Total Analysis Volume [veh/h]	51	54	302	99	57	195
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.08	0.00	0.00	0.05	0.00
d_M, Delay for Movement [s/veh]	13.93	10.47	0.00	0.00	8.27	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.38	0.25	0.00	0.00	0.16	0.00
95th-Percentile Queue Length [ft/ln]	9.42	6.13	0.00	0.00	3.88	0.00
d_A, Approach Delay [s/veh]	12.15		0.00		1.87	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	2.30					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 11: SE Douglas Ave / SE Fowler St

Control Type:	Two-way stop	Delay (sec / veh):	16.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.204

Intersection Setup

Name	SE Fowler St		Douglas Ave		SE Douglas Ave	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		30.00		25.00	
Grade [%]	6.00		0.00		-7.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	SE Fowler St		Douglas Ave		SE Douglas Ave	
Base Volume Input [veh/h]	81	11	9	256	241	107
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	81	11	9	256	241	107
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	3	2	64	60	27
Total Analysis Volume [veh/h]	81	11	9	256	241	107
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.20	0.02	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	16.47	12.48	7.98	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.83	0.83	0.02	0.02	0.00	0.00
95th-Percentile Queue Length [ft/ln]	20.68	20.68	0.38	0.38	0.00	0.00
d_A, Approach Delay [s/veh]	15.99		0.27		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	2.19					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 12: SE Douglas Ave / SE Ramp St

Control Type:	Two-way stop	Delay (sec / veh):	11.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.209

Intersection Setup

Name	SE Ramp Rd		SE Douglas Ave		SE Douglas Ave	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	50.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	-10.00		-5.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	SE Ramp Rd		SE Douglas Ave		SE Douglas Ave	
Base Volume Input [veh/h]	158	65	77	143	64	64
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	0.00	1.00	1.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	158	65	77	143	64	64
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	16	19	36	16	16
Total Analysis Volume [veh/h]	158	65	77	143	64	64
Pedestrian Volume [ped/h]	1		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.21	0.07	0.00	0.00	0.05	0.00
d_M, Delay for Movement [s/veh]	11.01	9.14	0.00	0.00	7.73	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.78	0.22	0.00	0.00	0.11	0.11
95th-Percentile Queue Length [ft/ln]	19.59	5.60	0.00	0.00	2.76	2.76
d_A, Approach Delay [s/veh]	10.47		0.00		3.87	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	4.95					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 13: NE Douglas Ave / NE Rifle Range St

Control Type:	Two-way stop	Delay (sec / veh):	11.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.044

Intersection Setup

Name	Rifle Range St		NE Douglas Ave		NE Douglas Ave	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Rifle Range St		NE Douglas Ave		NE Douglas Ave	
Base Volume Input [veh/h]	29	80	88	50	46	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.00	1.00	0.00	0.00	1.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	29	80	88	50	46	36
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	20	22	13	12	9
Total Analysis Volume [veh/h]	29	80	88	50	46	36
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.08	0.06	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.00	9.16	7.47	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.42	0.42	0.15	0.15	0.00	0.00
95th-Percentile Queue Length [ft/ln]	10.52	10.52	3.85	3.85	0.00	0.00
d_A, Approach Delay [s/veh]	9.65		4.76		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	5.20					
Intersection LOS	B					