TM#3: CURRENT TRANSPORTATION SYSTEM OPERATIONS

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

Purpose

The purpose of this technical memorandum is to document the existing multimodal operations and safety conditions along the OR 138E study corridor and supporting local roadways. Specific study elements include the following:

- Existing pedestrian and bicycle network assessment;
- Existing transit network assessment;
- Existing multimodal safety assessment at the study intersections and study area roadway segments;
- Existing traffic conditions 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.

Existing Pedestrian and Bicycle Network Assessment[1]

Pedestrian and Bicycle analyses were performed for roadway segments within the study area, including the OR 138E corridor between SE Douglas Avenue and the eastern Urban Growth Boundary (UGB). Other important parallel and perpendicular routes were also evaluated such as Douglas Avenue, Stephens Street, Winchester Street, and Jackson Street. The level of traffic stress (LTS)[2] methodology provides a measure of perceived stress experienced while walking or biking next to traffic.

The assessment of the existing pedestrian and bicycle network within the study area was performed using the LTS methodology from ODOT's *Analysis Procedures Manual Version 2* (APM). The APM classifies the experience for people walking into the following four Pedestrian Level of Traffic Street (PLTS) ratings:

- PLTS 1 represents low traffic stress and is suitable for most users including children. Typical locations have a wide sidewalk with low traffic speeds and/or a paved or landscaped buffer between the user and the travel lanes.
- PLTS 2 represents low traffic stress but requires more attention from users than PLTS 1 and is suitable for most users over 10 years old. Typical locations have sidewalks in good condition but may have higher speeds or traffic volumes than PLTS 1 segments.
- PLTS 3 represents moderate traffic stress and is suitable for most adults. Typical locations feature higher speeds and volumes and may have places that are challenging or impassible for wheeled mobility devices.
- PLTS 4 represents high traffic stress and is suitable only for able-bodied adults. Typical locations feature high traffic volumes and/or speeds. All streets without sidewalks fall into this category. All users should consider alternative routes.

The APM classifies the experience for people biking into the following four Bicycle Level of Traffic Street (BLTS) ratings:

- BLTS 1 represents low traffic stress and is suitable for most riders, including children. Speeds are low and there is only one travel lane per direction. Typical locations are local streets and separated bikeways.
- BLTS 2 represents low traffic stress but requires more attention than BLTS 1 and is suitable for most teens and adult riders. Typical locations are collector streets with bike lanes or central business districts.
- BLTS 3 represents moderate traffic stress and is suitable for most adult riders. Typical locations include arterials with low speeds and bike lanes and shared facilities with no more than one travel lane per direction.
- BLTS 4 represents high traffic stress and is only suitable for experienced and skilled riders. Typical locations are roadways with multiple lanes per direction and high speeds.

[1] The designations and recommendations as part of the OR 138E Design Concept Plan, if applicable, will take precedence over the City's Transportation System Plan.

[2] Level of traffic stress categories are ratings and are not performance measures.

Each study roadway was split into segments reflecting changes in posted speed, functional classification, and other roadway characteristics likely to affect LTS ratings. The Recommended Urban Context of the corridor based on Oregon Department of Transportation's (ODOT) *Highway Design Manual* (HDM) and shown in Technical Memorandum 1 was also considered as a segmentation framework. The City's BLTS from the 2019 Transportation System Plan (TSP) was used as a reference, although there are slight changes to segment identification. The BLTS ratings for this analysis differ from the TSP for some segments as the APM was updated since the TSP was completed.

Existing Pedestrian LTS

The APM sets a goal for PLTS ratings of 2 or better and PLTS ratings exceeding 2 should be identified as unfavorable for walking conditions. Table 1 and **Figure 1** show ratings for segments in the study area. The majority of the segments ratings PLTS 3 or 4. There are several key reasons for these results. On OR 138E, the lack of sidewalks east of Patterson Street and a lack of buffers such as bike lanes, on-street parking, or landscaping on the 5-lane western portion of OR 138E with posted speed of 35 miles per hour (mph) present unfavorable conditions for people walking along this corridor. Similarly, Douglas Avenue lacks sidewalks east of Ramp Road. The best ratings are found downtown centered around Jackson Street and on the western end of Douglas Avenue. Sidewalks are wider there and some include hard and landscaped buffers with trees. Speeds are lower, and the number of lanes is lower.

Some ratings are affected by the fact that certain sidewalk sections have effective widths of 2 feet or less due to the location of utility poles. Effective width is defined by the APM as the portion of the sidewalk that is clear of obstructions for pedestrians. This issue is particularly prevalent on the north side of OR 138E between Winchester Street and Casper Street. The issue is compounded by the fact that the right-of-way for much of OR 138E abuts existing structures and provides little to no room for roadway or sidewalk expansion. By comparison, the southern section of SE Stephens Street rates better (PLTS 3) due to wider sidewalks (7 feet) that are in good condition and adjacent to bike lane buffers. The 7-foot effective width of the sidewalks was enabled, in part, by relocating utility poles off of the sidewalks.

Existing Bicycle LTS

The BLTS analysis represented in Table 2 and in **Figure 2** shows that streets in the study area rating as either BLTS 3 or 4. The poorest ratings are along OR 138E, which has higher speeds, a higher number of lanes, and no bike lanes. Douglas Avenue rates as a 3 largely due to its relatively high traffic volume (Average Daily Traffic (ADT) of 3,000) for a collector street. Although Winchester Street has a bike lane, it rates poorly due to the narrow width of the bike lane (5 feet) and the posted speed (35 mph). SE Stephens Street between OR 138E and Douglas Avenue rates poorly despite having a bike lane due to the number of motor vehicle travel lanes in each direction (3) and narrow bike lane width (5 feet).

Figure 1. Existing Pedestrian Level of Traffic Stress Ratings (Roadway Segments)

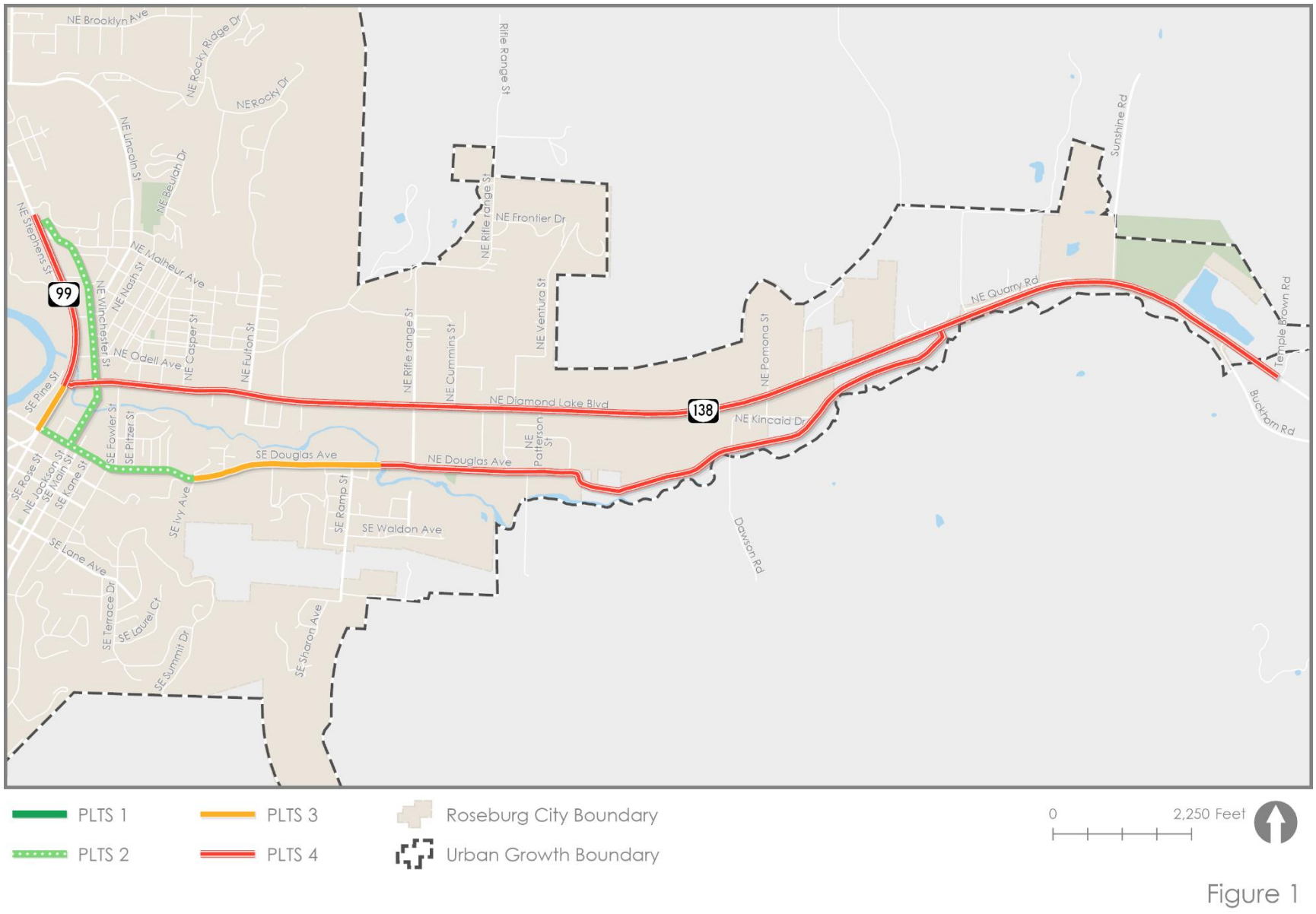


Figure 2. Existing Bicycle Level of Traffic Stress Ratings (Roadway Segments)

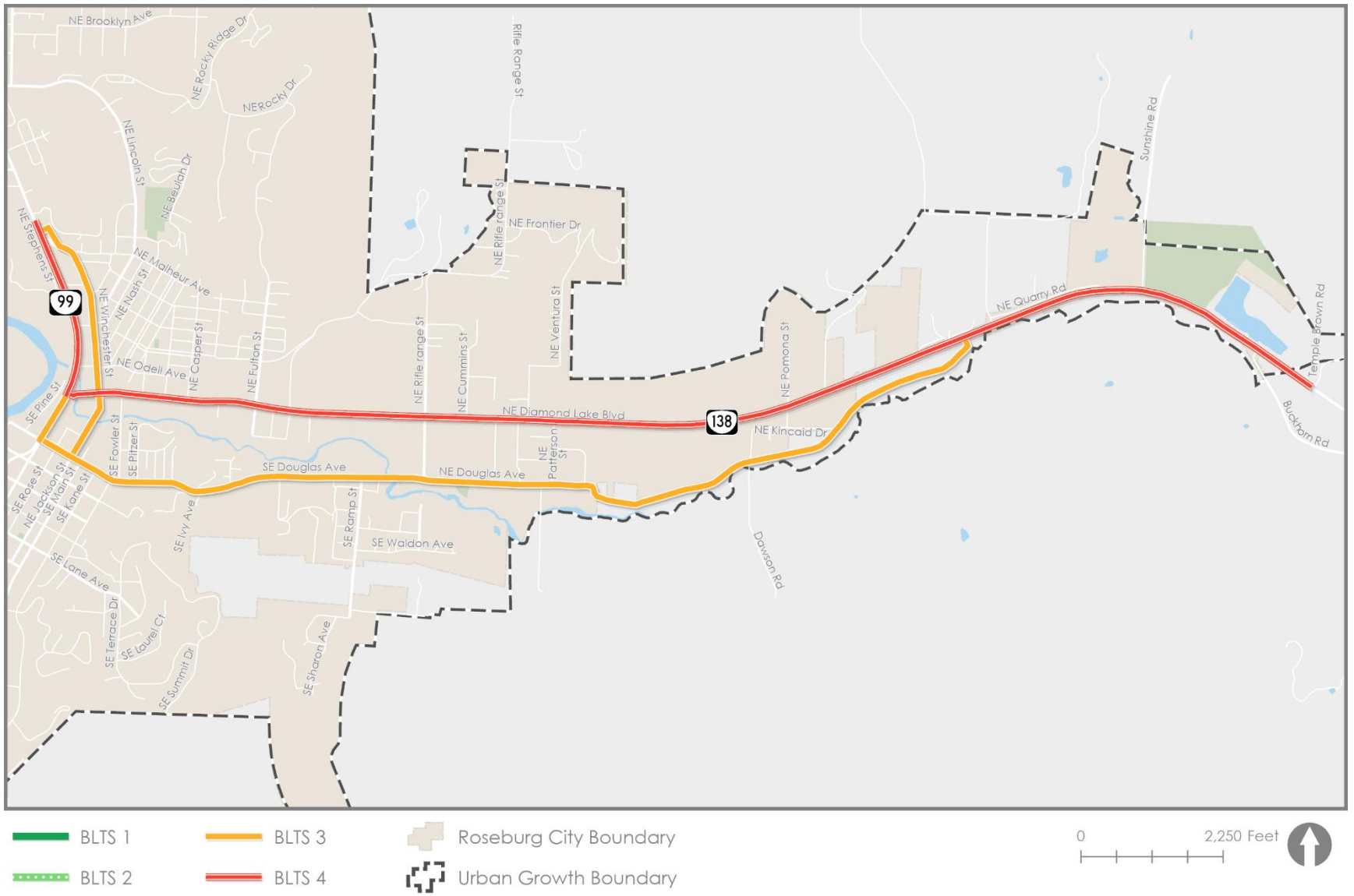


Figure 2

Table 1: Existing Pedestrian Level of Traffic Stress Ratings (Roadway Segments)

Segment	Sidewalk Effective Width (ft)	Sidewalk Condition	Buffer Type	Total Buffer Width (ft)	Travel Lanes	Maximum Posted Speed Limit (mph)	HDM Urban Context	APM Reference Table	Existing Pedestrian LTS Rating
OR 138E (NE Stephens St. to NE Pamona St.)	2	Fair	N/A	0	5	45	Commercial Corridor	14-23	**4**
OR 138E (NE Pamona St. to Buckhorn Rd.)	0	N/A	N/A	0	5	55	Suburban Fringe	14-21	**4**
SE Douglas Ave. (SE Stephens St. to SE Fowler St.)	5	Fair	Landscaped with Trees	4	3	20	Downtown/ CBD	14-23	**2**
SE Douglas Ave. (SE Fowler St. to SE Ivy Ave.)	5	Fair	Parking	7	2	25	Residential Corridor	14-23	**2**
SE/NE Douglas Ave. (SE Ivy Ave. to Deer Creek)	5	Fair	N/A	0	2	35	Residential Corridor	14-22	**3**
NE Douglas Ave. (Deer Creek to OR 138E)	0	N/A	N/A	0	2	35	Suburban Fringe	14-21	**3**
NE Stephens St. (NE Winchester St. to OR 138E)	5	Fair	bike Lane	5	5	35	Commercial Corridor	14-23	**3**
SE Stephens St. (OR 138E to SE Douglas Ave.)	7	Good	Bike Lane	5	5	25	Commercial Corridor	14-23	**3**
NE Winchester St. (NE Stephens St. to OR 138E)	5	Fair	Bike Lane	5	3	35	Urban Mix	14-23	**3**
NE Jackson St. (OR 138E to SE Douglas Ave.)	5	Fair	Landscaped with Trees, Parking	11	2	25	Downtown CBD	14-21	**2**

Table 2. Existing Bicycle Level of Traffic Stress Ratings (Roadway Segments)

Segment	Functional Class	Bike Lane	Bike Lane Width	Lanes Per Direction	Maximum Posted Speed Limit	APM Reference Table	Existing Bicycle LTS Rating
OR 138E (NE Stephens St. to NE Pamona St.)	Arterial	N	0	3	45	14-6	**4**
OR 138E (NE Pamona St. to Buckhorn Rd.)	Arterial	N	0	3	55	14-6	**4**
SE Douglas Ave. (SE Stephens St. to SE Fowler St.)	Collector	N	0	2	20	14-5	**3**
SE Douglas Ave. (SE Fowler St. to SE Ivy Ave.)	Collector	N	0	1	25	14-5	**3**
SE/NE Douglas Ave. (SE Ivy Ave. to Deer Creek)	Collector	N	0	1	35	14-6	**3**
NE Douglas Ave. (Deer Creek to OR 138E)	Collector	N	0	1	35	14-6	**3**
NE Stephens St. (NE Winchester St. to OR 138E)	Arterial	Y	5	3	35	14-4	**3**
SE Stephens St. (OR 138E to SE Douglas Ave.)	Arterial	Y	5	3	25	14-4	**3**
NE Winchester St. (NE Stephens St. to OR 138E)	Collector	Y	5	2	35	14-4	**3**
NE Jackson St. (OR 138E to SE Douglas Ave.)	Local	N	0	1	25	14-5	**3**

Existing Pedestrian Crossings Analysis

ODOT's 2023 HDM provides guidance on pedestrian crossing target spacing for state highways based on the urban context. The recommended urban context for the OR 138E corridor from SE Douglas Avenue to Pomona Street, established in Technical Memorandum #1: Corridor Vision, Definitions, and Background, is Urban Mix, for which the HDM recommends a maximum spacing between crossings of no more than 550 feet.

The recommended urban context for the eastern end of the corridor from Pomona Street to the City's eastern UGB is Suburban Fringe, for which the HDM recommends up to 1,500 feet between crossings.

There are four marked pedestrian crossings along the state highways within the project study area:

- 1) Stephens Street/Douglas Avenue
- 2) OR 138E/Stephens Street
- 3) Winchester Street/Jackson Street/OR 138E, and
- 4) Rifle Range Street/OR 138E

Existing marked pedestrian crossing is summarized in Table 3.Each crossing location is signalized with marked crosswalks. The OR 138E crossing at Rifle Range Street is the only crossing in the 3.75 miles between Winchester Street and the eastern edge of the study area, resulting in lengthy gaps in the crossing network. Along OR 138E, the distance between Winchester Street and Rifle Range Street is approximately 1 mile, while the distance between Rifle Range Street and the study area's eastern end is 2.8 miles.

Roseburg's TSP proposes a new signalized crossing on OR 138E at either Fulton Street or Lake Street, which will decrease the distances between several crossings (~2,500 feet), but not enough to meet the recommended HDM guidelines (550 feet in this segment).

Table 3: Distances Between Existing Signalized Crossings in Study Area

From	To	HDM Urban Context	Recommended Distances between Crossings	Actual Distance
SE Stephens St./ SE Douglas Avenue	OR 138E/ Stephens Street	Urban Mix	250-550 feet	820 feet
OR 138E/ NE Stephens Street	OR 138E/ Winchester Street	Urban Mix	250-550 feet	510 feet
OR 138E/ NE Winchester Street	OR 138E/ Rifle Range Street	Urban Mix	250-550 feet	1 mile
OR 138E/ NE Rifle Range Street	OR 138E/ Buckhorn Road	Urban Mix, Suburban Fringe	250-550 feet, 750-1,500 feet	2.8 miles

Existing Transit Network Assessment

A Qualitative Multimodal Analysis (QMA) was performed for transit facilities in the project corridor. QMA analysis is consistent with APM guidance and suitable for available data. Bus stop infrastructure was evaluated based on existing physical conditions and transit service features such service hours and frequency were reviewed from the Umpqua Public Transportation District (UPTD) Master Plan

There are three UPTD bus lines serving the study area: Roseburg Greenline, Roseburg Redline, and the Sunshine Park Route. The Greenline and Redline offer 1-hour service and the Sunshine Park Route has four arrivals between 7:30 AM and 7:00 PM. The Greenline is the major service line along OR 138E, while the end stop of the Sunshine Park Route is near the eastern edge of the study area. The Redline runs perpendicular, crossing the western edge of OR 138E along Winchester Street and Jackson Street, with several stops within a quarter mile of the study area.

The results of the QMA analysis can be found in Table 4. The two main study area transit routes (Greenline and Redline) feature hourly service and it is assumed that travel times and reliability are relatively consistent for each line. Accordingly, the QMA analysis focused on transit stop conditions such as shelters and marked signage, distances between transit stops and the nearest crossings, and the connecting pedestrian and bicycle environment. The QMA evaluation range for each transit stop is: Excellent, Good, Fair, Poor.

- **Excellent** is represented by stops that are marked with shelters and connected to a pedestrian network with a rating of PLTS 1.
- **Good** is represented by stops that are marked and are connected to a pedestrian network with a rating of PLTS 1 or 2.
- **Fair** is represented by stops that are marked or have a shelter and are connected to a pedestrian network with a rating of PLTS 3 or 4.
- **Poor** is represented by stops that are not marked, do not have shelters, and are connected to a pedestrian network with a rating of PLTS 3 or 4.
- Bicycle facilities were considered as a limiting factor. For segments rated as BLTS 4, the highest transit rating available was Fair. For segments rated as BLTS 3, the highest transit rating available was Good.

Some transit stops have shelters while some are not marked. The PLTS ratings for the areas surrounding the transit stops range from PLTS 2 to 4. Bus stops rated as "Poor" reflect areas that are not pedestrian friendly and do not provide any shelter. Unmarked stops also fall into this category. Bus stops rated as "Excellent" represent high-quality transit treatments with marked shelters and a PLTS rating of 1. While none of the current stops have an "Excellent" rating, there are several that could achieve this with minor improvements. The primary differentiation between "Good" and "Fair" is the split between PLTS ratings of 2 and higher. OR 138E has only one marked crossing between Winchester Street and the eastern edge of the study area. Stops that reside more than a quarter mile from the nearest formal crossing were downgraded one level in the QMA analysis. Some of these ratings could change when a signalized crossing is built at Fulton Street or Lake Street, as listed in the TSP.

Figure 3 Existing Transit Qualitative Multimodal Assessment Ratings (Transit Stops) and Signalized Crossings

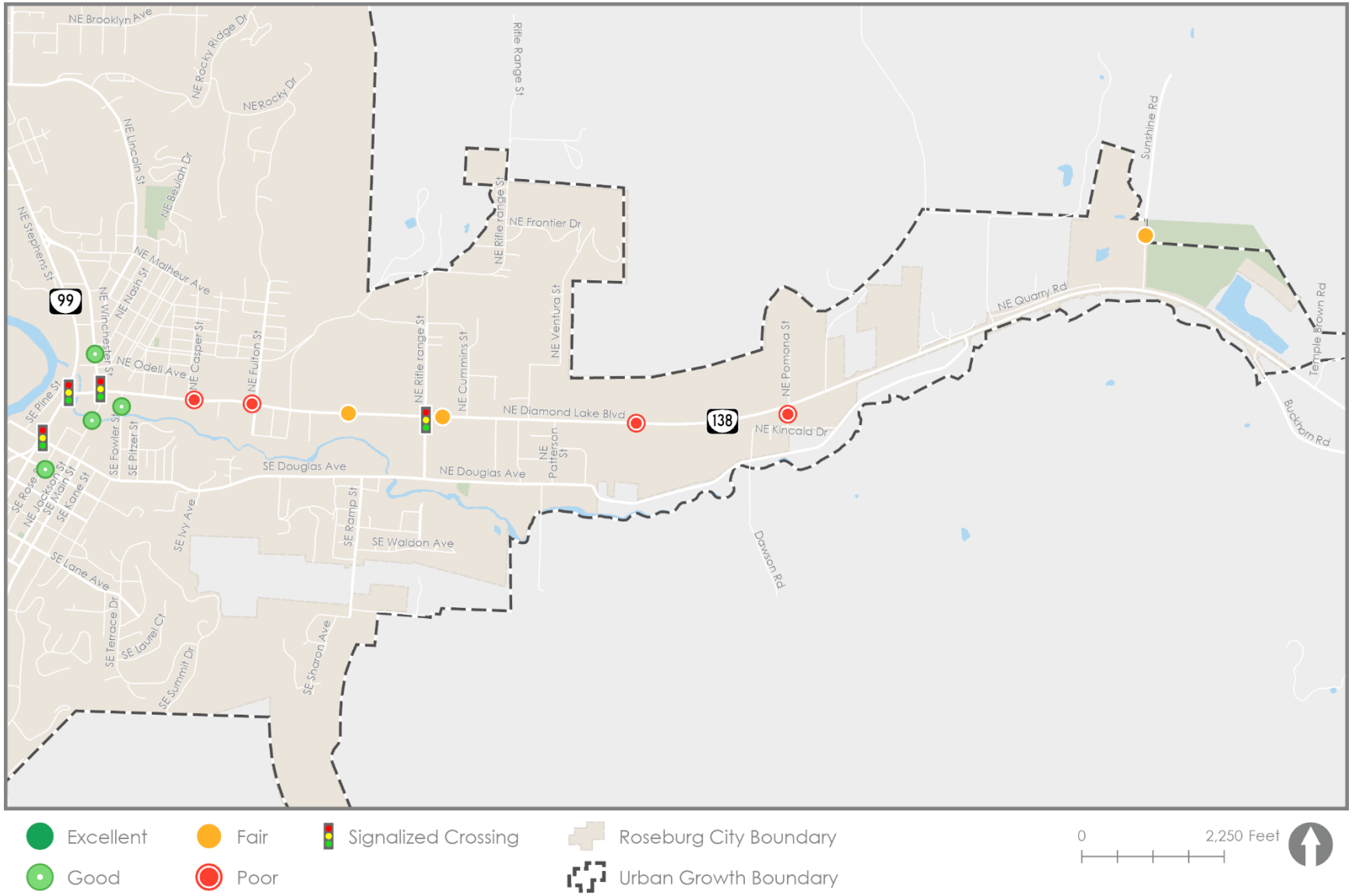


Figure 3

The pedestrian environment strongly impacts the QMA ratings of transit stops. The transit stops rated as Fair and Poor are located on OR 138E, a street with a pedestrian rating of PLTS 4, whereas transit stops rated as Good are located on streets with pedestrian rating of PLTS 2. Several transit stops would rate better with relatively minor improvements such as markings or shelters. Other transit stops will be harder to improve ratings for because they are limited by long distances to crossings.

New housing continues to grow in Roseburg, potentially increasing the need for expanded transit service into new areas. One of the primary areas that is growing is the study area's northeastern area, where hundreds of new lower-income and market rate units are currently being built. The Greenline may need to fill in the service gap between Pomona St. and Sunshine Park with additional stops to serve a growing population. Another potentially growing area is the subdivision area south of Douglas Avenue between Ramp Road and Pearce Road. As this area fills in, there may be a greater need for direct access to transit on OR 138E between the Kowloon Restaurant and Phoenix School stops.

Table 4: QMA Ratings for Existing Study Area Transit Stops

Route	Stop ID	Location	Marked	Shelter	BLTS	PLTS	Distance to Nearest Crossing	Ratings
Redline / Greenline	44, 18	Dairy Queen, Winchester Street	Y	N	3	2	540 feet	**Good**
Greenline	25	Library, Fowler Street	Y	Y	3	2	500 feet	**Good**
Greenline	19	76 Gas Station, OR 138E	N	N	4	4	1,500 feet	**Poor**
Greenline	24	Fulton Street/OR 138E	Y	N	4	4	0.5 miles	**Poor**
Greenline	23	Ten Down Bowling, OR 138E	Y	Y	4	4	1,140 feet	**Fair**
Greenline	22	Kowloon Restaurant, OR 138E	Y	Y	4	4	185 feet	**Fair**
Greenline	21	Phoenix School, OR 138E	Y	Y	4	4	0.6 mile	**Poor**
Greenline		Kincaid Drive, Les Schwab	N	N	4	4	1.1 miles	**Poor**
Redline / Greenline	43	Jackson Street, Library	Y	Y	3	2	270 feet	**Good**
Greenline	26	Washington Avenue and Rose Street	Y	Y	3	2	65 feet	**Good**
Sunshine Park	7	Sunshine Park	Y	Y	4	4	2.2 miles	**Fair**
Greenline	21	Douglas at Deer Creek Village Apts. east of Rifle Range Street	Y	Y	3	4	400 feet	**Fair**

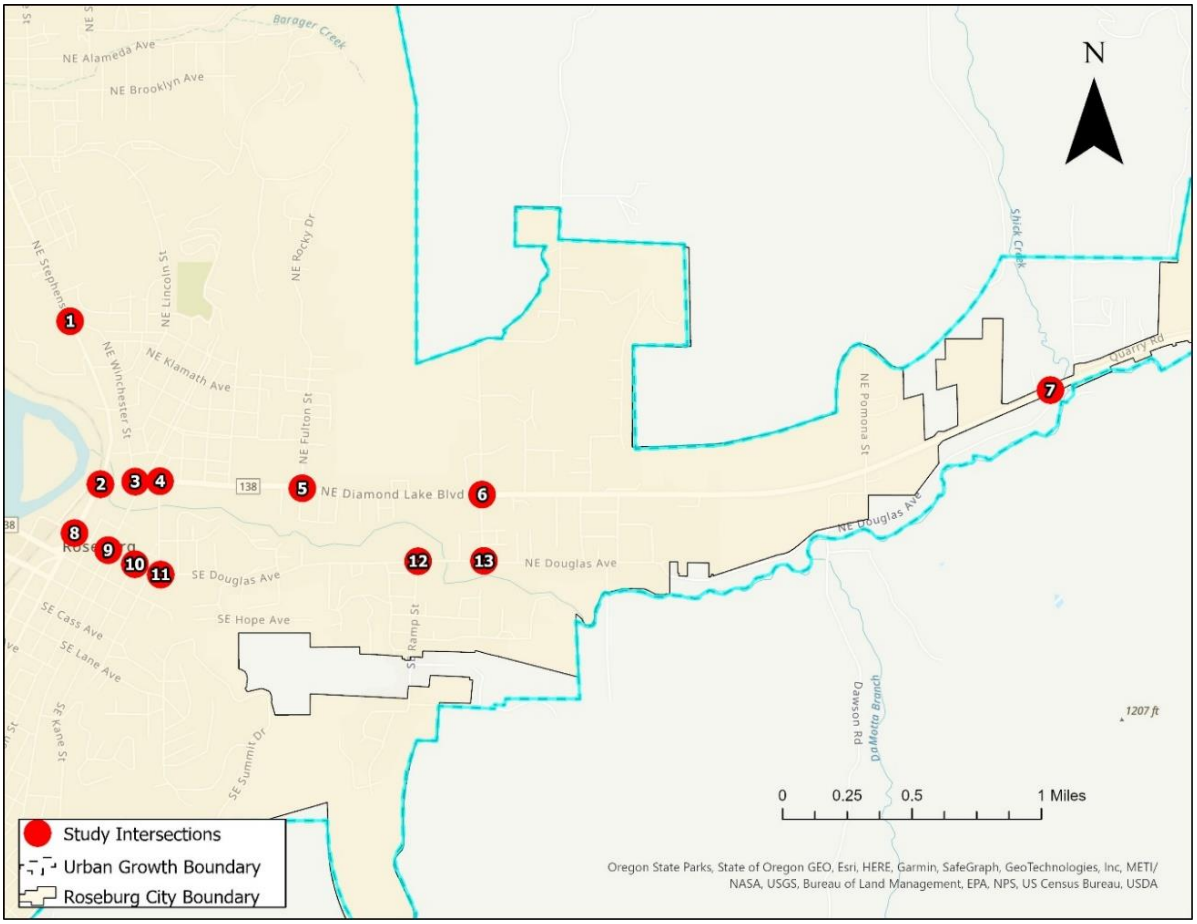
Safety Analysis

Methods from the ODOT *Analysis Procedures Manual* (APM)

[3], were used to identify the crash frequency, severity, type, and contributing factors at the study locations along OR 138E and parallel/connecting routes. Also, crash rates for intersections and segments were estimated and compared with appropriate Statewide average crash rates and critical crash rates. ODOT also uses the Safety Priority Index System (SPIS)[4], a scoring method, to identify potential safety concerns on state highways based on frequency, fatal crashes, and crash rate in a three-year period. The state 2021 SPIS ranking was also consulted and documented.

The safety analysis is done for intersection and segments in the study area, as shown in Figure 4. The study intersections are listed in Table 5.

Figure 4 Study Intersections



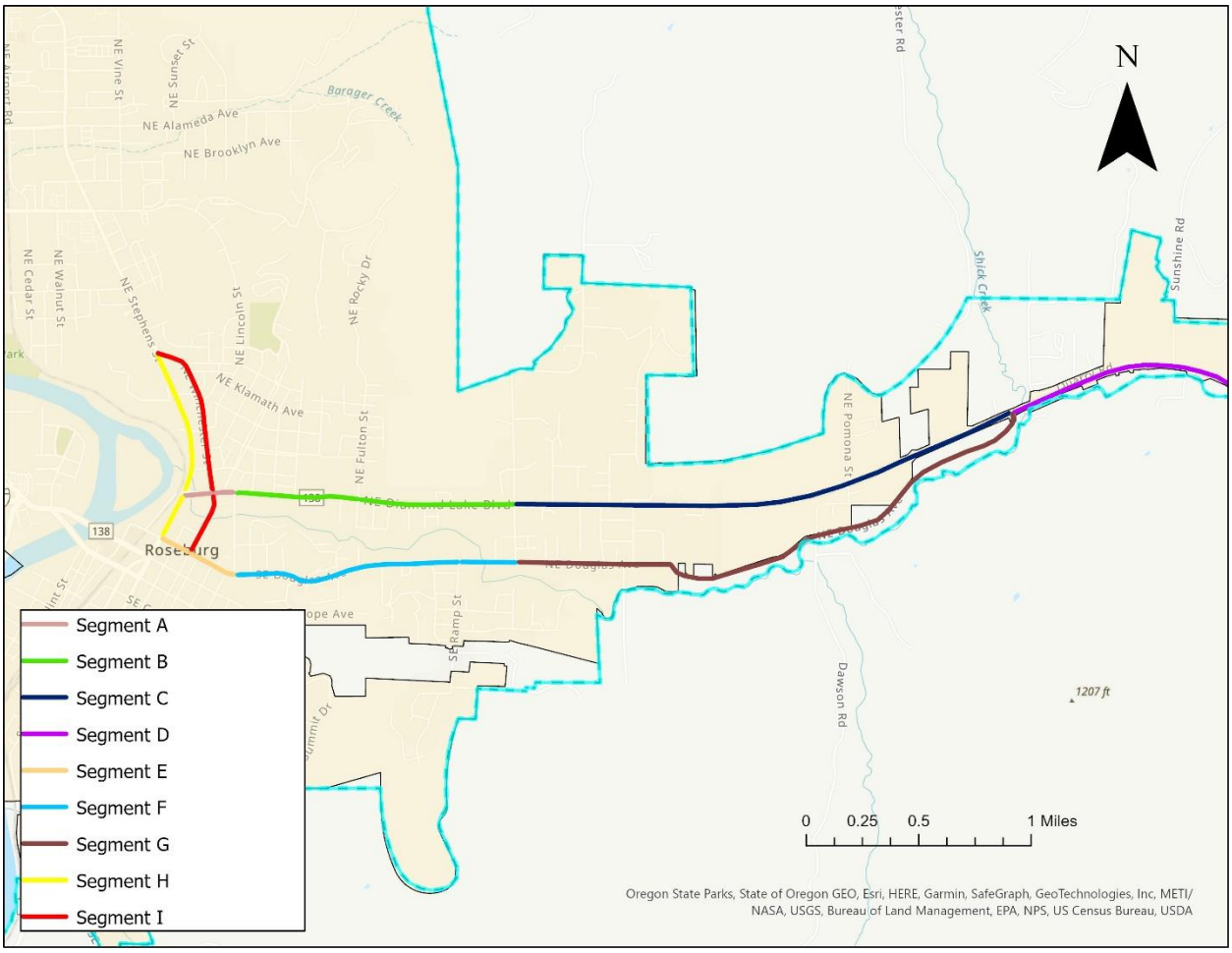
[3] Analysis Procedure Manual (APM Version 2), Chapter 4-Safety, Oregon Department of Transportation

[4] https://www.oregon.gov/odot/engineering/pages/spis-reports-on-state.aspx

Table 5: List of Study Intersections

Intersection ID	Intersection	Traffic Control
1	NE Stephens St./NE Winchester St.	Unsignalized
2	OR 138E/SE Stephens St.	Signalized
3	OR 138E/NE Jackson St./NE Winchester St.	Signalized
4	OR 138E/NE Fowler St	Unsignalized
5	OR 138E/NE Fulton St.	Unsignalized
6	OR 138E/NE Rifle Range St.	Signalized
7	OR 138E/NE Douglas Ave.	Unsignalized
8	SE Stephens St./SE Douglas Ave	Signalized
9	SE Douglas Ave./SE Jackson St.	Unsignalized
10	SE Douglas Ave./SE Kane St.	Unsignalized
11	SE Douglas Ave./SE Fowler St.	Unsignalized
12	SE Douglas Ave./SE Ramp Rd.	Unsignalized
13	NE Douglas Ave./NE Rifle Range St.	Unsignalized

Figure 5. Study Segment Safety Assessment



The most recent five-year crash data available (2016-2020) were obtained from ODOT[5]. ODOT crash data is based on reportable motor vehicle traffic crashes. According to ODOT's 2018 Motor Vehicle Traffic Crash Analysis and Code Manual[6] legally reportable motor vehicle traffic crashes involve a fatality, injury, or damage to personal property or any vehicle in excess of $2,500. The following sections provide summaries of the intersection and segment safety analysis.

Intersection Crashes

For this analysis, intersection-related crashes are defined as crashes that occurred within 250 feet of the intersection.

Crash Frequency and Severity

Table 6 presents the crash frequency and severity at the study intersections for the five-year analysis period (2016-2020). Based on the five most recent years of reported crash data, no fatalities and two serious injury crashes at the study intersections (one on OR 138E at NE Fowler Street and the other at SE Douglas Avenue at SE Jackson Street) were reported during the 5

[5] Oregon Transportation Safety Data Explorer (OTSDE) (arcgis.com)

[6] 2018 Motor Vehicle Traffic Crash Analysis and Code Manual

most recent years of reported crashes. The crash at the SE Douglas Avenue/SE Jackson Street intersection involved a pedestrian. Based on the 2021 SPIS Report[7], the intersection of OR 138E/NE Pomona Street is one of the top 10% SPIS site in the state.. Appendix A shows location of crashes by severity.

Table 6: Summary of Five-Year (2016-2020) Crash Frequency by Severity at Study Intersections

Intersections		Crash Severity					
		Fatal (K)	Serious Injury (A)	Minor Injury (B)	Possible Injury (C)	Property Damage Only (O)	Total
1	NE Stephens St./NE Winchester St.	0	0	3	1	2	6
2	OR 138E/SE Stephens St.	0	0	3	10	12	25
3	OR 138E/NE Jackson St./NE Winchester St.	0	0	3	4	4	11
4	OR 138E/NE Fowler St.	0	0	1	1	5	7
5	OR 138E/NE Fulton St.	0	1	1	1	0	3
6	OR 138E/NE Rifle Range St.	0	0	1	4	3	8
7	OR 138E/NE Douglas Ave.	0	0	1	0	0	1
8	SE Stephens St./SE Douglas Ave	0	0	4	10	8	22
9	SE Douglas Ave./SE Jackson St.	0	1	0	1	4	6
10	SE Douglas Ave./SE Kane St.	0	0	0	1	0	1
11	SE Douglas Ave./SE Fowler St.	0	0	0	1	2	3
12	SE Douglas Ave./SE Ramp Rd.	0	0	0	1	1	2
13	NE Douglas Ave./NE Rifle Range St.	0	0	1	0	0	1
Total		**0**	**2**	**18**	**35**	**41**	**96**

As shown in Table 6:

- At the OR 138E/SE Stephens Street signalized intersection – the highest number of reported crashes (25 crashes) were observed. 92% of the crashes (23) occurred on the SB approach of SE Stephens Street.
- SE Stephens Street/SE Douglas Avenue signalized intersection had the second highest number of crashes (22 crashes).
- OR 138E/NE Douglas Avenue (unsignalized), SE Douglas Avenue/SE Kane Street (unsignalized), and NE Douglas Avenue/NE Rifle Range Street (unsignalized) - had the lowest number of reported crashes (one each).

[7] https://www.oregon.gov/odot/engineering/pages/spis-reports-on-state.aspx

- OR 138E/NE Fulton Street and SE Douglas Avenue/SE Jackson Street - had the most serious injury crashes, one on each of these intersections, which are both unsignalized. The seriously injured road-user at SE Douglas Avenue/SE Jackson Street was a pedestrian and the crash involved a vehicle not yielding to the pedestrian. The lighting condition was reported dark with no streetlights which may have contributed to the driver not yielding to the pedestrian. The serious injury crash at OR 138E/NE Fulton Street was a turning movement related crash where one of the vehicles did not yield right of way and attempted to make improper left-turn movement.

Collision Type

Table 7 presents the crash frequency by collision type at the study intersections. Overall, turning movement and rear end crashes are the most frequent collision type.

Table 7: Summary of Five-Year (2016-2020) Crash Frequency by Collision Type at Study Intersections

Intersections		Collision Type								
		Rear-End	Fixed Object or Other Object	Turn	Ped	Head On	Side-swipe Over-taking	Angle	Other	Total
1	NE Stephens St./ NE Winchester St.	1	3	2	0	0	0	0	0	6
2	OR 138E/ SE Stephens St.	14	2	8	0	0	1	0	0	25
3	OR 138E/ NE Jackson St./ NE Winchester St.	3	0	3	1	0	1	3	0	11
4	OR 138E/ NE Fowler St.	1	0	5	1	0	0	0	0	7
5	OR 138E/ NE Fulton St.	1	1	1	0	0	0	0	0	3
6	OR 138E/ NE Rifle Range St.	1	0	6	0	1	0	0	0	8
7	OR 138E/ NE Douglas Ave.	0	0	1	0	0	0	0	0	1
8	SE Stephens St./ SE Douglas Ave.	8	1	5	1	0	0	7	0	22
9	SE Douglas Ave./ SE Jackson St.	1	0	2	1	0	0	2*	0	6
10	SE Douglas Ave./ SE Kane St.	0	0	1	0	0	0	0	0	1
11	SE Douglas Ave./ SE Fowler St.	1	0	1	0	0	0	0	1	3
12	SE Douglas Ave./ SE Ramp Rd.	0	0	2	0	0	0	0	0	2
13	NE Douglas Ave./ NE Rifle Range St.	0	1	0	0	0	0	0	0	1
Total		31	8	37	4	1	2	12	1	96

Note:
* Indicates one of the crashes involved a bicyclist

In summary:

- At OR 138E/SE Stephens Street signalized intersection - 14 out of the 25 crashes reported were rear-end crashes, and eight were turning movement crashes.
- At SE Stephens Street/SE Douglas Avenue signalized intersection - 91% of the crashes (20) occurred on SE Stephens Street approaches. Out of the 22 crashes occurring at SE Stephens Street/SE Douglas Avenue, eight of these crashes are rear-end crashes, seven of the crashes are angle, and five are turning movement related.
- At the unsignalized intersections on Diamond Lake Blvd - majority of the crashes were turning movement crashes, likely to be contributed by the uncontrolled left turn movements. Turning movement crashes are common crash type at uncontrolled intersections as drivers are burdened with the task of identifying gaps in traffic and safely crossing.
- There have been four crashes involving pedestrians; and two of these crashes resulted in minor injury of the pedestrians (at OR 138E/NE Fowler Street and OR 138E/NE Jackson Street/NE Winchester Street), one resulted in serious injury of the pedestrian (at SE Douglas Avenue/SE Jackson Street), and one in possible injury of the pedestrian (at SE Stephens Street/SE Douglas Avenue).
- At NE Douglas Avenue/NE Jackson St. there was also a crash involving a motorist disregarding a stop sign and hitting a bicyclist which resulted in possible injury of the bicyclist.

Contributing Factors

Table 8 presents the crash frequency by contributing factor. The most frequent contributing factors were "Did not yield right-of-way", "Failed to avoid vehicle ahead", and "Followed too closely". In summary:

- Majority of the crashes at the signalized intersections OR 138E/SE Stephens Street and SE Stephens Street/SE Douglas Avenue are reportedly contributed by driving behavior, particularly the causes reported are failed to avoid vehicle ahead (32%), did not yield right-of-way (23%), disregarded traffic signal (19%), and followed too closely (15%). The reasons for these crashes could be attributed to either drivers not expecting to stop at the signalized intersections or making risky turning movements at the same time when there are opposing through vehicles entering the intersection.
- Three of the pedestrian crashes were contributed by the factor "did not yield" to pedestrians at the intersections of SE Stephens Street/SE Douglas Avenue(signalized), SE Douglas Avenue/SE Jackson Street (unsignalized), and OR 138E/NE Jackson Street/NE Winchester Street (signalized).

Table 8: Summary of Five-Year (2016-2020) Crash Frequency by Crash Contributing Factors at Study Intersections

Intersections		Contributing Factor								
		Failed to avoid vehicle ahead	Followed too closely	Disregarded traffic signal	Careless Driving	Too fast for conditions	Did not yield right-of-way	Made improper turn	Other	Total
1	NE Stephens St./ NE Winchester St.	0	1	0	1	0	1	2	1	6
2	OR 138E/ SE Stephens St.	8	6	2	0	2	6	0	1	25
3	OR 138E/ NE Jackson St. / NE Winchester St.	1	2	4	0	0	2	1	1	11
4	OR 138E/ NE Fowler St.	0	1	0	0	0	4	0	2	7
5	OR 138E/ NE Fulton St.	0	1	0	1	0	1	0	0	3
6	OR 138E/ NE Rifle Range St.	0	1	0	0	0	6	0	1	8
7	OR 138E/ NE Douglas Ave.	0	0	0	0	0	1	0	0	1
8	SE Stephens St./ SE Douglas Ave	7	1	7	0	1	5	0	1	22
9	SE Douglas Ave./ SE Jackson St.	1	0	1	0	0	2	1	1	6
10	SE Douglas Ave./ SE Kane St.	0	0	0	0	0	1	0	0	1
11	SE Douglas Ave./ SE Fowler St.	1	0	1	0	0	0	1	0	3
12	SE Douglas Ave./ SE Ramp Rd.	0	0	0	0	0	0	2	0	2
13	NE Douglas Ave./ NE Rifle Range St.	0	0	0	0	0	0	0	1	1
Total		18	13	14	2	3	29	7	10	96

Crash Rates

The crash rates for each intersection were calculated based on the total entering average annual daily traffic (AADT) at the intersection. For example, the AADT of OR 138E is on average 15,600 vpd, estimated from the 2023 balanced peak hour volumes (PHV) with the assumption that the PHV is 10% of the AADT.

Critical crash rate was calculated for each intersection using the procedure provided in ODOT APM. According to the APM, there needs to be at least five to ten sites in each reference population for this method to be statistically valid. Therefore, to have enough candidates for a reference population the intersections were grouped into signalized (four in total) and unsignalized (nine in total) intersections. Statewide 90th percentile crash rates were obtained using comparable intersection referenced from the ODOT APM, Exhibit 4-11. Observed crash rates were compared to critical crash rate and the statewide 90th percentile crash rate. Table 9 presents the comparison of crash rates with the statewide 90th percentile crash rates and the critical crash rate.

From the comparative analysis of crash rates, it was found that:

- Signalized OR 138E/SE Stephens Street - exceeded the Statewide Crash Rate
- Unsignalized SE Douglas Avenue/SE Jackson Street - observed crash rate was higher than both Critical Crash Rate and the Statewide Crash Rate.
- Unsignalized SE Douglas Avenue/SE Fowler Street – exceeded the Statewide Crash Rate

Table 9: Comparison of Crash Rates per Million Entering Vehicles (MEV) with Statewide Crash Rate[8] and Critical Crash Rate

	Intersections	Intersection Type	Control Type	Observed Crash Rate	Critical Crash Rate	Statewide 90th Percentile Crash Rate
1	NE Stephens St./ NE Winchester St.	3ST	Unsignalized	0.13	0.26	0.29
2	OR 138E/ SE Stephens St.	3SG	Signalized	0.56	Not enough sites	0.51
3	OR 138E/ NE Jackson St. / NE Winchester St.	4SG	Signalized	0.27	Not enough sites	0.86
4	OR 138E/ NE Fowler St.	3ST	Unsignalized	0.18	0.27	0.29
5	OR 138E/ NE Fulton St.	4ST	Unsignalized	0.09	0.28	0.41
6	OR 138E/ NE Rifle Range St.	4SG	Signalized	0.26	Not enough sites	0.86
7	OR 138E/ NE Douglas Ave.	3ST	Unsignalized	0.05	0.32	0.29
8	SE Stephens St./ SE Douglas Ave	4SG	Signalized	0.50	Not enough sites	0.86
9	SE Douglas Ave./ SE Jackson St.	4ST	Unsignalized	0.45	0.37	0.41
10	SE Douglas Ave./ SE Kane St.	3ST	Unsignalized	0.09	0.39	0.29
11	SE Douglas Ave./ SE Fowler St.	3ST	Unsignalized	0.30	0.42	0.29
12	SE Douglas Ave./ SE Ramp Rd.	3ST	Unsignalized	0.25	0.45	0.29
13	NE Douglas Ave./ NE Rifle Range St.	3ST	Unsignalized	0.19	0.54	0.29

3SG three-leg signalized; 3ST: three-leg minor stop-control; 4SG: four-leg signalized; 4ST: four-leg minor stop-control

Red- indicates crash rates that exceed Statewide crash rates or critical crash rate

Segment Crashes

This section summarizes the crashes that occurred on OR 138E, SE Stephens Street, and Douglas Avenue from SE Stephens Street in the west to the Urban Growth Boundary in the east. The analysis focuses on crashes on the roadway segments as shown in Figure 5; crashes at the study intersections were excluded from these study segments.

[8] Analysis Procedure Manual (APM Version 2), Chapter 4-Safety, Oregon Department of Transportation

Crash Frequency and Severity

Table 10 presents the five-year crash summary by frequency and severity at the study segments. To summarize:

- OR 138E between NE Rifle Range Street and NE Douglas Avenue - the highest frequency of crashes occurred on this segment, with two of them resulting in fatal crashes and two in serious-injury crashes.
- OR 138E between NE Fowler Street and NE Rifle Range Street - this segment had the second highest frequency of crashes, with one of the fatal crashes occurring on this segment. Majority of the crashes on this segment are property damage only.
- OR 138E between NE Douglas Avenue to East - this segment had a high crash frequency (11) but none of them resulted in fatal or serious injury crash.
- NE Winchester Street/NE/SE Jackson Street - there were ten injury crashes on this segment with one of them being a serious injury crash. There were two crashes involving a bicyclist and a motorist resulting in a minor injury and possible injury of the bicyclists.
- SE Douglas Avenue between SE Fowler Street and NE Rifle Range Street – another segment with a high crash frequency (ten) and a serious injury crash (one). The serious injury crash resulted from a motorist hitting a bicyclist while the motorist was reportedly making an improper turning movement. Another crash involving a bicyclist and a motorist was observed on this segment which resulted in minor injury of the bicyclist.

Table 10: Summary of Five-Year (2016-2020) Crash Frequency by Severity at Study Segments

Segment	Crash Severity					
	Fatal (K)	Serious Injury (A)	Minor Injury (B)	Possible Injury (C)	Property Damage Only (O)	Total
A. OR 138E (SE Stephens St. to NE Fowler St.)	0	0	0	0	0	0
B. OR 138E (NE Fowler St. to NE Rifle Range St.)	1	0	4	3	11	19
C. OR 138E (NE Rifle Range St. to NE Douglas Ave.)	2	2	5	5	10	24
D. OR 138E (NE Douglas Ave. to East study area)	0	0	3	2	6	11
E. SE Douglas Ave. (SE Stephens St. to SE Fowler St.)	0	0	0	0	0	0
F. SE Douglas Ave. (SE Fowler St. to NE Rifle Range St.)	0	1	1	1	7	10
G. NE Douglas Ave. (NE Rifle Range St. to OR 138E)	0	0	1	0	1	2
H. SE Stephens St. (NE Winchester St. to SE Douglas Ave.)	0	0	0	3	2	5
I. NE Winchester St./NE Jackson St./SE Jackson St.	0	1	3	6	8	18
Total	3	4	17	20	45	89

Crash by Collision Type

Table 11 summarizes the segment crashes by collision types. Most frequent collision type reported was the turning movement crashes, followed by rear-end. There were no pedestrian crashes reported on these segments.

In summary:

- OR 138E (NE Rifle Range Street to NE Douglas Avenue) - one of the fatal crashes on the segment resulted from a head-on collision and another one from two vehicles colliding at an angle at the intersection of OR 138E/Kincaid Drive. The two serious injury crashes involved left turning movements at the same intersection where drivers apparently did not yield right of way.
- OR 138E (NE Fowler Street to the East study boundary) - majority of the crashes were turning movement crashes, with a high number of fixed object crashes and crashes which were reported as miscellaneous. Miscellaneous collisions include for example hitting a wild or domestic animal, lost load, or drive shaft fell from vehicle.
- SE Douglas Avenue (SE Fowler Street to NE Rifle Range Street) - collision types that were observed included three backing crashes, two rear-end and sideswipe crashes, and one turning movement, one angle, and one miscellaneous. The turning movement and angle crashes involved a motorist hitting a bicyclist.
- NE Winchester Street/NE/SE Jackson Street – majority of the crashes were rear-end and turning movement related. There were two crashes involving bicycles hit by motorists which were turning or collide in a straight angle.

Table 11: Summary of Five-Year (2016-2020) Crash Frequency by Collision Type at Study Segments

Segment	Collision Type									
	Rear -End	Turn	Fixed Object or Other Object	Head-On	Angle	Side-swipe	Back-ing	Misc.	Other	Total
A. OR 138E (SE Stephens St. to NE Fowler St.)	0	0	0	0	0	0	0	0	0	0
B. OR 138E (NE Fowler St. to NE Rifle Range St.)	1	15	3	0	0	0	0	0	0	19
C. OR 138E (NE Rifle Range St. to NE Douglas Ave)	3	11	5	1	1	1	0	2	0	24
D. OR 138E (NE Douglas Ave. to East)	1	3	1	0	0	2	0	3	1	11
E. SE Douglas Ave. (SE Stephens St. to SE Fowler St.)	0	0	0	0	0	0	0	0	0	0
F. SE Douglas Ave. (SE Fowler St. to NE Rifle Range St.)	2	1*	0	0	1*	2	3	1	0	10
G. NE Douglas Ave (NE Rifle Range St. to OR 138E)	0	1	1	0	0	0	0	0	0	2

H. SE Stephens St. (NE Winchester St. to SE Douglas Ave.)	2	3	0	0	0	0	0	0	0	5
I. NE Winchester St/ NE Jackson St./ SE Jackson St.	7	8*	1	0	2*	0	0	0	0	18
Total	16	42	11	1	4	5	3	6	1	89

Note:
* Indicates one of these crashes involved a bicyclist.

Contributing Factors

Table 12 presents the distribution of crashes by crash contributing factors on the study segments. Similar to the intersection crash trends, "Did not yield right-of-way" and "Followed too closely" were the major contributing factors of crashes on OR 138E The "Other" category included improper driving actions such as improper turn, improper change of lanes, inattention, etc.

Table 12: Summary of Five-Year (2016-2020) Crash Frequency by Crash Cause (by Segments)

Segment	Contributing Factor							
	Did not yield right-of-way	Followed too closely	Made improper turn	In-attention	Careless Driving	Failed to avoid vehicle ahead	Other	Total
A. OR 138E (SE Stephens St. to NE Fowler St.)	0	0	0	0	0	0	0	0
B. OR 138E (NE Fowler St. to NE Rifle Range)	11	1	4	0	0	0	3	19
C. OR 138E (NE Rifle Range St. to NE Douglas Ave.)	11	1	0	1	0	1	10	24
D. OR 138E (NE Douglas Ave. to East)	2	0	1	2	0	0	6	11
E. SE Douglas Ave. (SE Stephens St. to SE Fowler St.)	0	0	0	0	0	0	0	0
F. SE Douglas Ave. (SE Fowler St. to NE Rifle Range St.)	2	1	0	2	0	0	5	10
G. NE Douglas Ave. (NE Rifle Range St. to OR 138E)	1	0	0	0	0	0	1	2
H. SE Stephens St. (NE Winchester St. to SE Douglas Ave.)	2	2	1	0	0	0	0	5
I. NE Winchester St./NE Jackson St./SE Jackson St.	6	6	2	1	0	1	2	18
Total	35	11	8	6	0	2	27	89

Crash Rates

The crash rates for the OR 138E arterial segments and the collector roads connecting to the OR 138E were computed using the observed crashes (2016-2020) and the AADT estimated using 2023 turning movement data. The statewide average crash rates for "Other Principal Arterials" and "Urban Collectors" were computed using the Table II: Five-Year Comparison of State Highway Crash Rates[9], which provided statewide crash rates for the facilities between 2016 and 2020. Segment critical crash rates were also calculated using the Critical Rate Calculator[10] provided in the APM[11]. The segments were categorized as arterials and collectors. Since there were less than five sites in the collector category, no critical crash rate was calculated for collector roads in the corridor.The findings from the analysis in Table 13 are summarized below:

- OR 138E (NE Fowler Street to NE Rifle Range Street), and (NE Rifle Range Street to NE Douglas Avenue) – observed crash rates exceed the calculated critical crash rates for arterials.
- NE Winchester Street/NE/SE Jackson Street – observed crash rate was higher than the Statewide Average Crash Rate for Collector roads.

Table 13: Comparison of Crash Rates with the Statewide Crash Rates for Segments

Segment		Segment Type	Observed Crash Rate	Critical Crash Rate	Statewide Average Crash Rate
A.	OR 138E (SE Stephens St. to NE Fowler St.)	Arterial	0.00	2.68	0.55
B.	OR 138E (NE Fowler St. to NE Rifle Range St.)	Arterial	0.80	2.68	0.55
C.	OR 138E (NE Rifle Range St. to NE Douglas Ave.)	Arterial	0.64	2.68	0.55
D.	OR 138E (NE Douglas Ave. to East)	Arterial	0.34	2.68	0.55
E.	SE Douglas Ave. (SE Stephens St. to SE Fowler St.)	Collector	0.00	2.02	Not enough sites
F.	SE Douglas Ave. (SE Fowler St. to NE Rifle Range St.)	Collector	1.98	2.02	Not enough sites
G.	NE Douglas Ave. (NE Rifle Range St. to OR 138E)	Collector	0.30	2.02	Not enough sites
H.	SE Stephens St. (NE Winchester St. to SE Douglas Ave.)	Arterial	0.36	2.68	0.55
I.	NE Winchester St./NE Jackson St/SE Jackson St.	Collector	2.12	2.02	Not enough sites

Red- indicates crash rates that exceed Statewide Crash Rates or Critical Crash Rates.

Crash Trends and Potential Countermeasures

This section summarizes crash trends identified in the crash analysis and potential countermeasures. Countermeasures are often implemented as strategies intended to reduce crash frequency or severity on the road for all users. The Oregon Department of Transportation, under the All Roads Transportation Safety (ARTS) Program, provides safety practitioners with a list of effective countermeasures that are appropriate improvements to many common safety issues. Each countermeasure is associated with a Crash Reduction Factor (CRFs). CRFs indicate

[9] Five-Year Comparison of State Highway Crash Rates

[10] Critical Rate Calculator

[11] Analysis Procedures Manual Chapters 1-4 (oregon.gov)

the effectiveness of a countermeasure by providing the change (reduction) in crash frequency after the implementation of the countermeasure. Following are crash trends identified from the analysis and potential countermeasures shown in Table 14:

OR 138E/SE Stephens St. and SE Stephens St./SE Douglas Ave (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 St./NE Winchester St. (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 with the majority of these crashes occurring at the intersection of OR 138E/Kincaid Drive.
- 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/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 14: 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. Signalized SE Stephens St./SE Douglas Ave.	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
Pedestrian and Bicycle crashes	Unsignalized OR 138E/ NE Fowler St. Unsignalized SE Douglas Ave./SE Jackson St.	BP2	Provide Intersection Illumination (Bike & Ped)	42	Nighttime Pedestrian and Bicycle Crashes at All Injury Severities
		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. OR 138E (NE Fowler St. to NE Rifle Range St.)	H18	Install Roundabout from Minor Road Stop Control	82	All crashes at all Injury severities
		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					

Existing Traffic Conditions

This section summarizes the existing traffic conditions on the OR 138E study corridor and supporting local street network. The information in this section will provide a basis for comparison with future growth projections and will inform the identification of various multimodal improvement opportunities.

Current Transportation System Operations

Existing PM peak hour traffic operations were analyzed for the study intersections shown in Figure 6 and summarized in Table 15. The traffic operations analysis was completed in accordance with the methodology outlined in Technical Memorandum #1 (Methodology Memorandum), which is based on the guidance in the APM.

Figure 6. Study Intersections

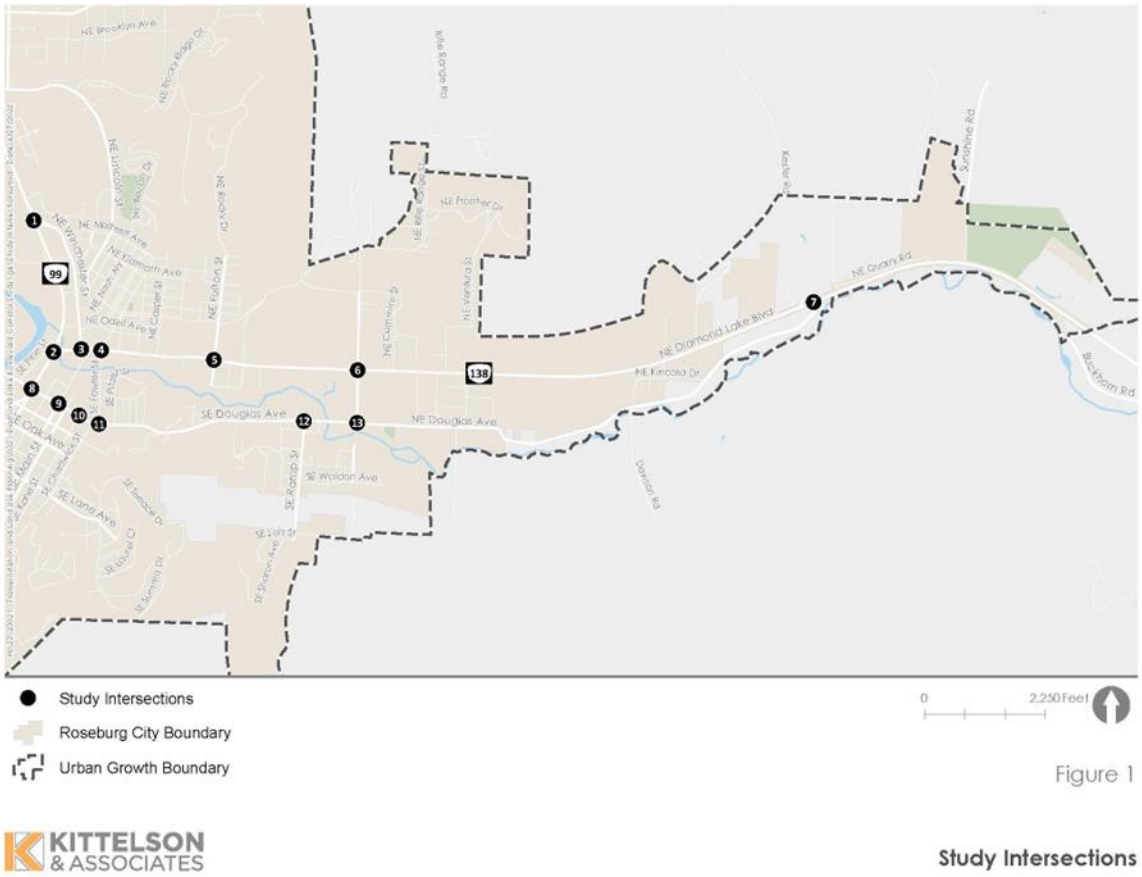


Table 15: Study Intersections

Map ID	Intersection	Count Dates	Count Type
1.	NE Stephens St./NE Winchester St.	04/06/2022	16 hour
2.	OR 138E/SE Stephens St.	03/28/2022	16 hour
3.	OR 138E/NE Jackson St./NE Winchester St.	03/28/2022	16 hour
4.	OR 138E/NE Fowler St.	03/28/2022	4 hour
5.	OR 138E/NE Fulton St.	03/28/2022	16 hour
6.	OR 138E/NE Rifle Range St.	03/28/2022	16 hour
7.	OR 138E/NE Douglas Ave.	03/28/2022	4 hour
8.	SE Stephens St./SE Douglas Ave.	03/30/2022	16 hour
9.	SE Douglas Ave./NE Jackson St.	03/30/2022	4 hour
10.	SE Douglas Ave./SE Kane St.	03/30/2022	4 hour
11.	SE Douglas Ave./NE Fowler St.	03/30/2022	4 hour
12.	SE Douglas Ave./SE Ramp Rd.	03/30/2022	4 hour
13.	NE Douglas Ave./NE Rifle Range St.	03/30/2022	4 hour

Traffic Counts

Manual vehicle turning movement, pedestrian, bicycle, and heavy vehicle counts were conducted at the study intersections between March 28th and April 6th 2022. The counts were conducted by ODOT on a typical mid-weekday and consists of 16-hour and 4-hour counts as outlined in Table 15. The counts include the total number of pedestrians, bicyclists, and motor vehicles that entered the study intersections in 15-minute intervals. The traffic count worksheets are provided in Attachment B.

Peak Hour Development

The traffic counts were reviewed to determine individual and system-wide peak hours for the operational analyses. A system-wide peak hour approach was determined to be most appropriate based on the data. Two system-wide peak hours were identified for the study intersections. A 4:00 to 5:00 PM peak hour was identified along OR 138E and SE Stephens Street and a 2:00 to 3:00 PM peak hour was identified along SE Douglas Avenue between SE Jackson Street and NE Rifle Range Street.

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 volume to capacity 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 St./NE Winchester St. which is controlled by the City of Roseburg. Table 16 summarizes the v/c ratios that will be used to identify the existing and potential future operational issues at the ODOT study intersections.

Table 16: 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.	TWSC[1]	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 Transportation System Plan update, City of Roseburg updated its mobility standards to be consistent across the City. A dual standard based on volume-to-capacity (v/c) and level of service (LOS) has been adopted. V/C and LOS are the measures to determine what is acceptable or unacceptable traffic flow on Roseburg streets. LOS is based on average seconds of delay and v/c is a measure of the traffic volume/demand compared to capacity.

The City's TSP sets a maximum LOS Standard of "E" for all signalized and unsignalized intersections including County and State roadways within Roseburg city limits. Table 17 summarizes the standards that will be used to identify existing and potential future operational issues at the City study intersections. City streets shall maintain a LOS of "E" and v/c no worse than 0.95 during the peak hour of the day.

Table 17: City of Roseburg Mobility Standards

Map ID	Intersection	Traffic Control	V/C[1]	LOS[2]
1	NE Stephens St./NE Winchester St.	TWSC3	0.95	E
9	SE Douglas Ave./NE Jackson St.	AWSC4	0.95	E
10	SE Douglas Ave./SE Kane St.	TWSC3	0.95	E
11	SE Douglas Ave./NE Fowler St.	TWSC3	0.95	E
12	SE Douglas Ave./SE Ramp Rd.	TWSC3	0.95	E
13	NE Douglas Ave./NE Rifle Range St.	TWSC3	0.95	E

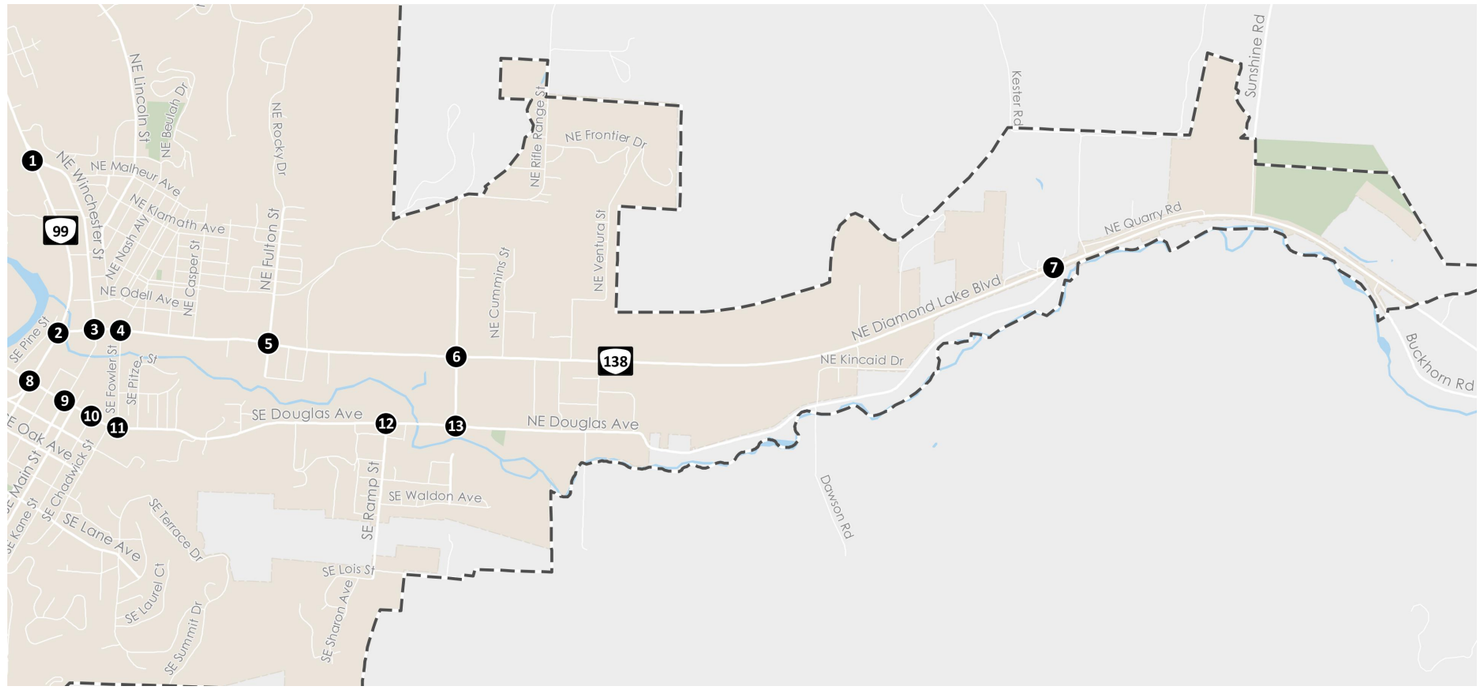
1. City intersections shall be analyzed at a peak hour factor of 1.0.
2. For roadways within the city of Roseburg that are under ODOT or Douglas County jurisdiction, the mobility standards/targets of those agencies will apply.
3. Two-Way Stop-Controlled (TWSC). Note the Stephens St/Winchester St intersection is a Right-in, Right-out, Left-in intersection with a yield controlled right-out, and stop-controlled right-in but for simplicity is referred to as a TWSC intersection.
4. All-Way Stop-Controlled (AWSC).

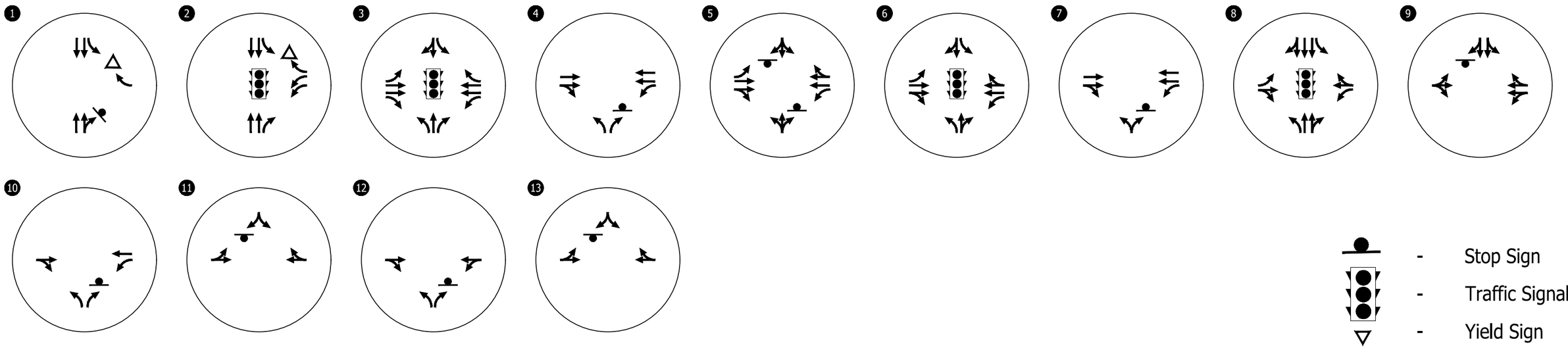
Intersection Operations

Figure 7 shows the existing lane configurations and traffic control devices while Figure 8 summarized the PM peak hour volumes and corresponding traffic operations. As shown in Figure 8 and Table 18, all of the study intersections currently operate under the applicable ODOT mobility target and/or City operating standards. *Appendix C contains the existing traffic conditions worksheets.*

Table 18: Existing Traffic Conditions, Weekday PM Peak Hour

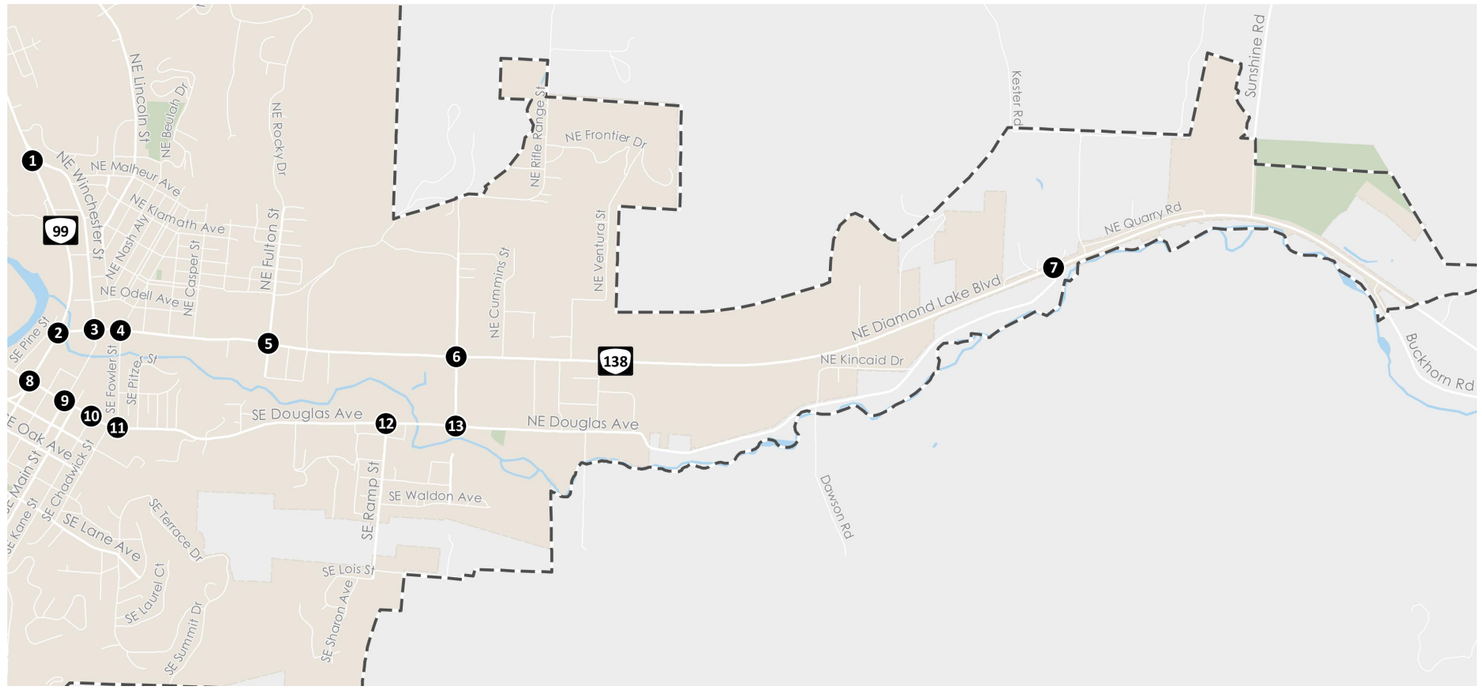
Intersection		Maximum Operating Standard/Target	Weekday PM Peak Hour			
			Critical Approach/Lane	LOS	Delay (sec)	V/C
1	NE Stephens St./ NE Winchester St.	V/C: 0.95; LOS E	WB	D	28.2	0.82
2	OR 138E/ SE Stephens St.	V/C: 0.90	-	C	22.3	0.61
3	OR 138E/NE Jackson St./ NE Winchester St.	V/C: 0.90	-	C	26.0	0.62
4	OR 138E/ NE Fowler St.	V/C: 0.90 major approach/ 0.95 minor approach	NB LT	F	69.1	0.28
5	OR 138E/ NE Fulton St.	V/C: 0.90 major approach/ 0.95 minor approach	NB	C	16.7	0.15
6	OR 138E/ NE Rifle Range St.	V/C: 0.90	-	A	6.5	0.46
7	OR 138E/ NE Douglas Ave.	V/C: 0.85 major approach/ 0.90 minor approach	NB	B	11.7	0.03
8	SE Stephens St./ SE Douglas Ave.	V/C: 0.90	-	B	14.7	0.62
9	SE Douglas Ave./ NE Jackson St.	V/C: 0.95; LOS E	SB TL	C	18.3	0.31
10	SE Douglas Ave./ SE Kane St.	V/C: 0.95; LOS E	NB LT	C	15.3	0.14
11	SE Douglas Ave./ NE Fowler St.	V/C: 0.95; LOS E	SB	B	13.7	0.20
12	SE Douglas Ave./ SE Ramp Rd.	V/C: 0.95; LOS E	NB LT	B	14.3	0.29
13	NE Douglas Ave./ NE Rifle Range St.	V/C: 0.95; LOS E	SB	B	10.2	0.16

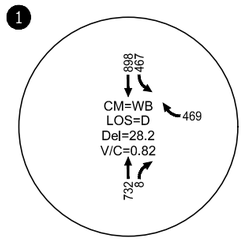


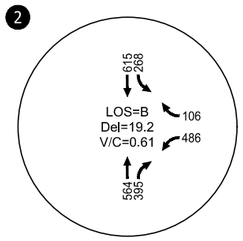


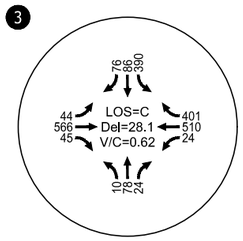
Existing Lane Configurations and Traffic Control Devices
Weekday PM Peak Hour
Roseburg, Oregon

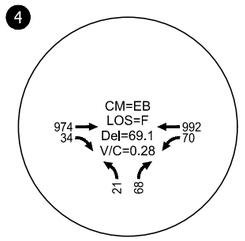
Figure 7

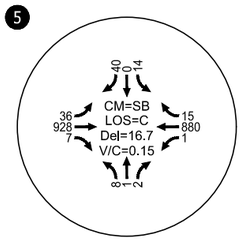


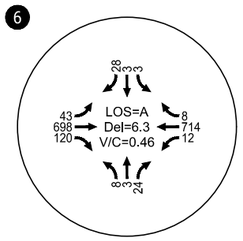


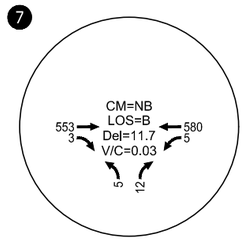


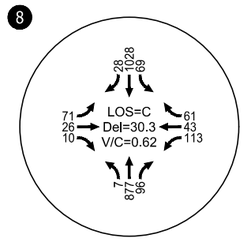


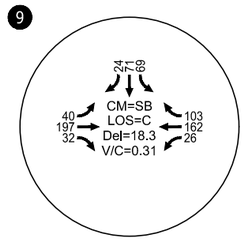


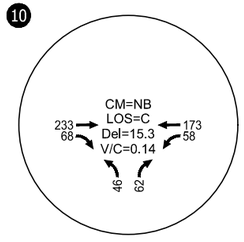


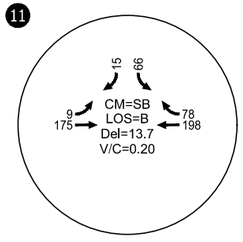


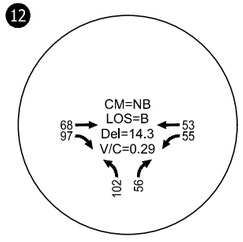


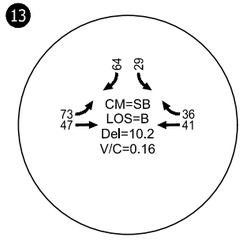












Existing Traffic Conditions
Weekday PM Peak Hour
Roseburg, Oregon

Figure
8

Table 19 shows the existing 95th percentile queues at the key high-volumes study intersections along the OR 138E corridor. As shown, all existing queues are contained within the defined/striped turn lanes or roadway approaches. While not summarized in Table 19, field observations noted insignificant or minimal queuing issues on intersections along the NE Douglas Avenue corridor.

Table 19: Existing 95th Percentile Queues (Synchro Output)

Intersection		Critical Movements	Storage (ft)	95th Percentile Queue (ft)	Queue Storage Adequate?
2	OR 138E/ SE Stephens St.	NB RT WB LT SB LT	125 375 200	50 100 150	Yes Yes Yes
3	OR 138E/ NE Jackson St./ NE Winchester St.	NB LT NB RT WB LT WB RT SB LT SB TH RT EB LT EB RT	80 125 250 50 400 300 175 50	25 100 50 50 400 100 75 50	Yes Yes Yes Yes Yes Yes Yes Yes
4	OR 138E/ NE Fowler St.	NB LT NB RT WB LT	125 200 150	25 25 25	Yes Yes Yes
5	OR 138E/ NE Fulton St.	WB LT EB LT	>200 >200	25 25	Yes Yes
6	OR 138E/ NE Rifle Range St.	NB LT NB THRT WB LT WB THRT SB LT SB THRT EB LT EB TH RT	300 300 250 >500 200 >200 250 >500	75 25 25 100 25 25 25 124	Yes Yes Yes Yes Yes Yes Yes Yes
7	OR 138E/ NE Douglas Ave.	NB WB LT	>300 150	25 25	Yes Yes
8	SE Stephens St./ SE Douglas Ave.	WB LT WB TH RT SB LT SB TH RT EB LT EB TH RT	200 200 150 >500 75 200	150 100 75 250 75 50	Yes Yes Yes Yes Yes Yes

Freight Analysis

Despite having a Regional Highway designation, the OR 138E study corridor is not formally classified as an Oregon Freight Route in the *Oregon Highway Plan,* nor is it classified as a National Highway Freight Route. It is however, classified as a Reduction Review Route. This designation protects the vertical and horizontal clearance of the highway used to accommodate motor vehicle from modification unless there is a viable safety or access consideration that would be solved by the modification.

Based on a review of historical count data available on the ODOT TransGIS website and the 2022 traffic volume counts collected as part of this project, Table 20 summarizes the percentage of heavy vehicles on key roadway segments within the study corridor.

Table 20: 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.)	~18,000	8.9%	11%
B. OR 138E (NE Fulton St. to NE Rifle Range St.)	~16,000	8.9%	9%
C. OR 138E (NE Rifle Range St. to NE Douglas Ave.)	~12,000	8.9%	8%
H. SE Stephens St. (SE Douglas Ave. to OR 138E)	~19,000	8.9%	7%
[1]Including FHWA Class 4 through Class 13 vehicles as categorized according to the Federal Highway Administration (FHWA) vehicle classification summary.			

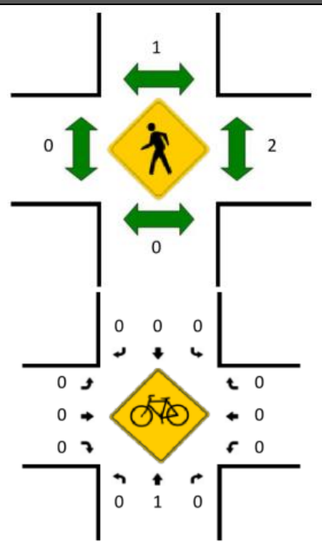
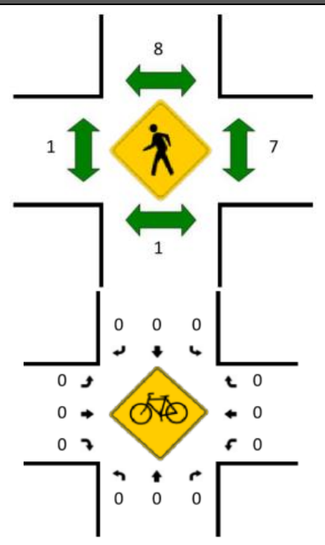
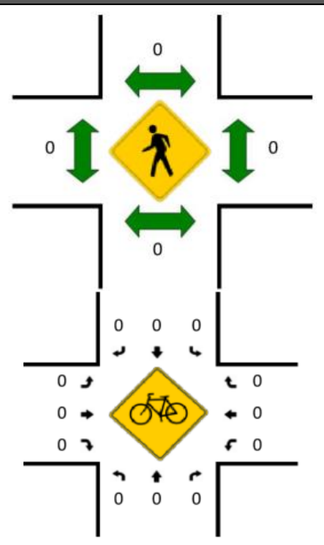
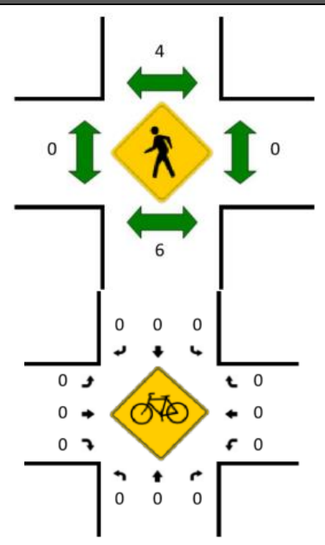
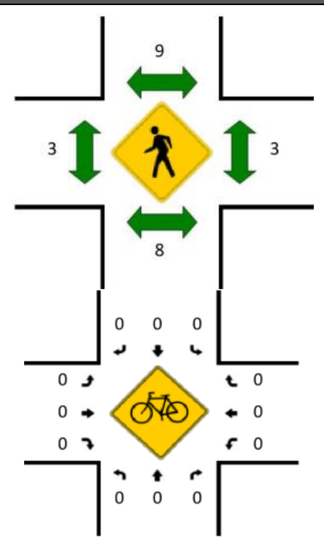
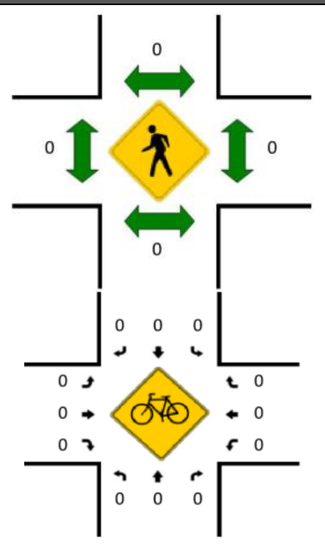
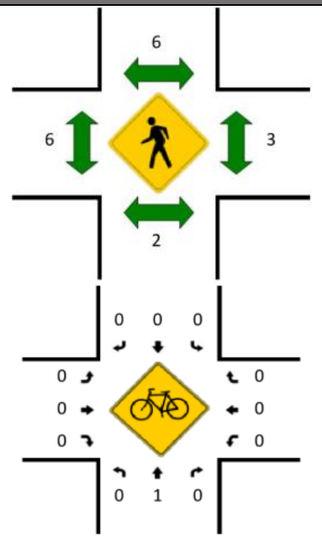
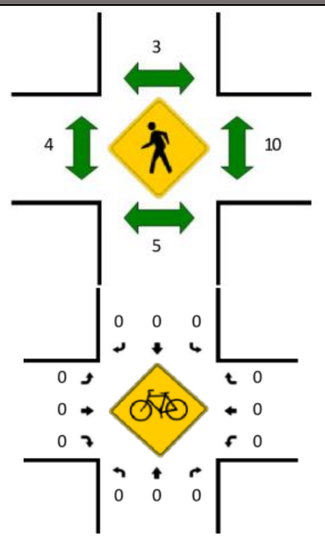
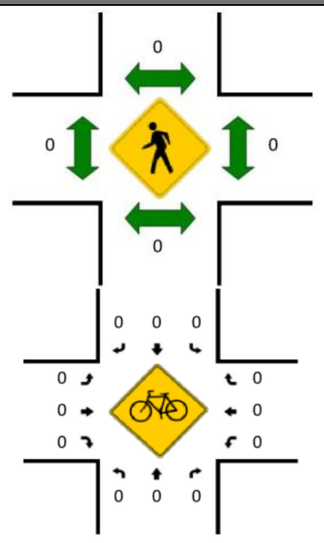
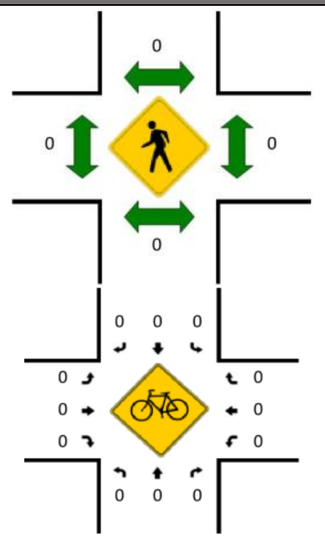
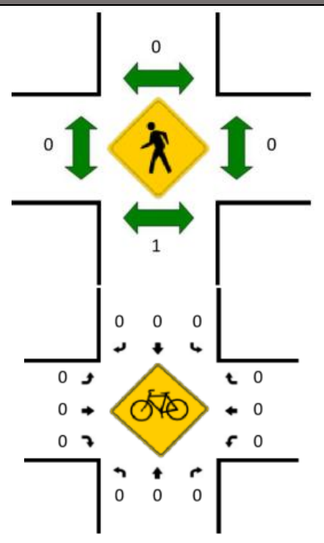
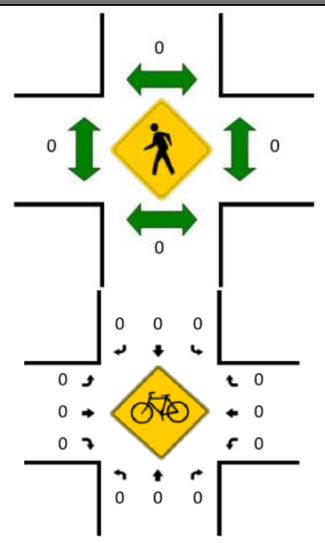
In general, heavy vehicle trips make up approximately 9%-11% of the overall daily traffic on the OR 138E corridor with a slightly higher percentage of heavy vehicles on the west end of the corridor. Although not summarized in Table 20, traffic counts along the SE Douglas Avenue corridor were relatively minimal.

Pedestrian and Bicycle Volumes

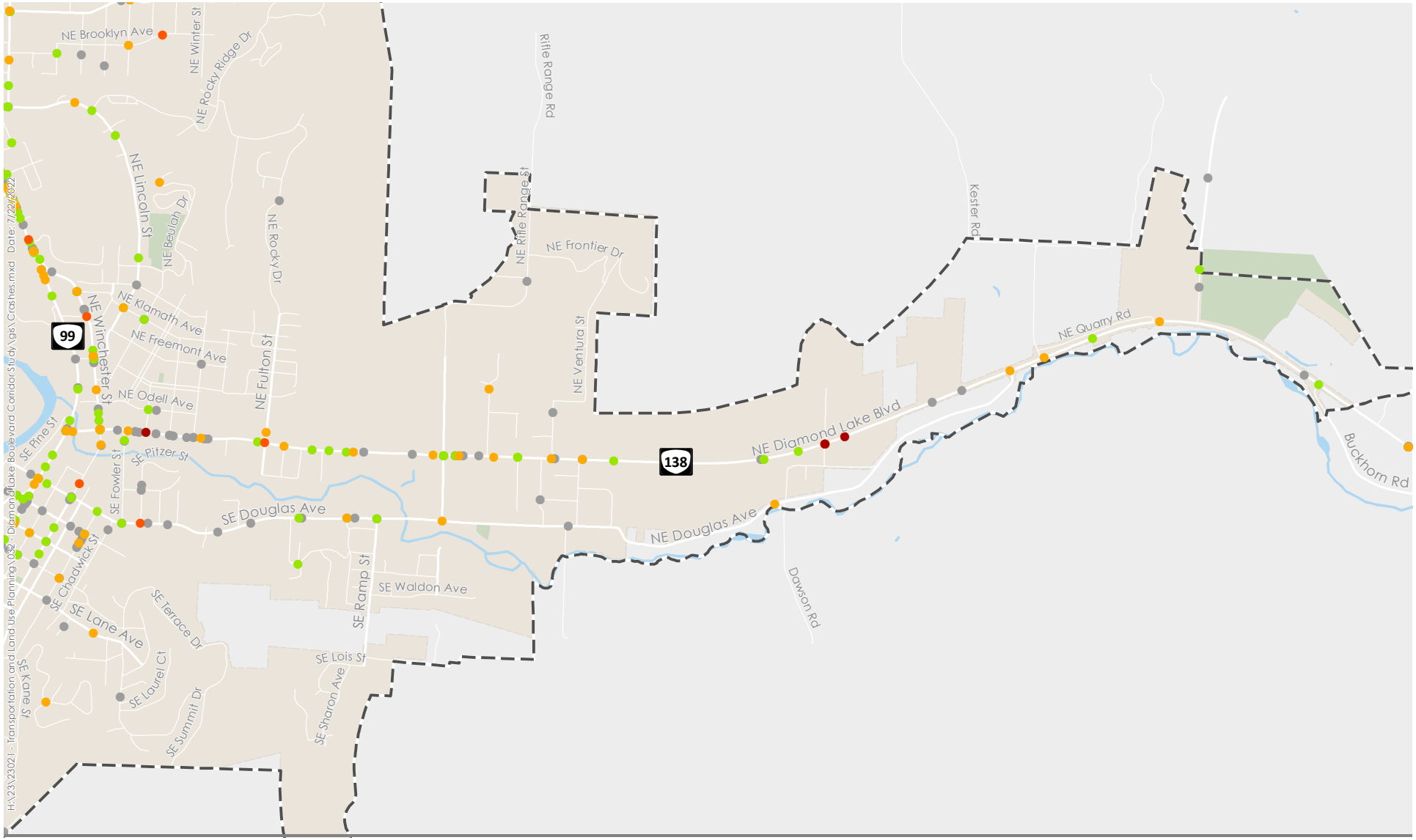
Appendix B includes detailed pedestrian and bicycle counts collected at each of the study intersections over the varying count durations. For a visual summary, the weekday PM peak hour pedestrian and bicycle movements at key study intersections are summarized in Table 21 below. Key findings from these counts:

- Pedestrian volumes are highest at the west end of the study area.
- NE Jackson Street and NE Rifle Range Street had the highest number of pedestrian crossings along the OR 138E corridor.
- There was minimal bicycle trips measured at the study area intersections. This is most likely a reflection of the lack of bicycle lane infrastructure in the study area.

Table 21: Pedestrian and Bicycle Count Summary, Weekday PM Peak Hour

OR 138E/ SE Stephens St.	OR 138E/NE Jackson St./ NE Winchester St.	OR 138E/ NE Fowler St.	OR 138E/ NE Fulton St.	OR 138E/ NE Rifle Range St.	OR 138E/ NE Douglas Ave.
					
SE Stephens St./ SE Douglas Ave.	**SE Douglas Ave./ NE Jackson St.**	**SE Douglas Ave./ SE Kane St.**	**SE Douglas Ave./ NE Fowler St.**	**SE Douglas Ave./ SE Ramp Rd.**	**NE Douglas Ave./ NE Rifle Range St.**
					

Appendix A Crash Data



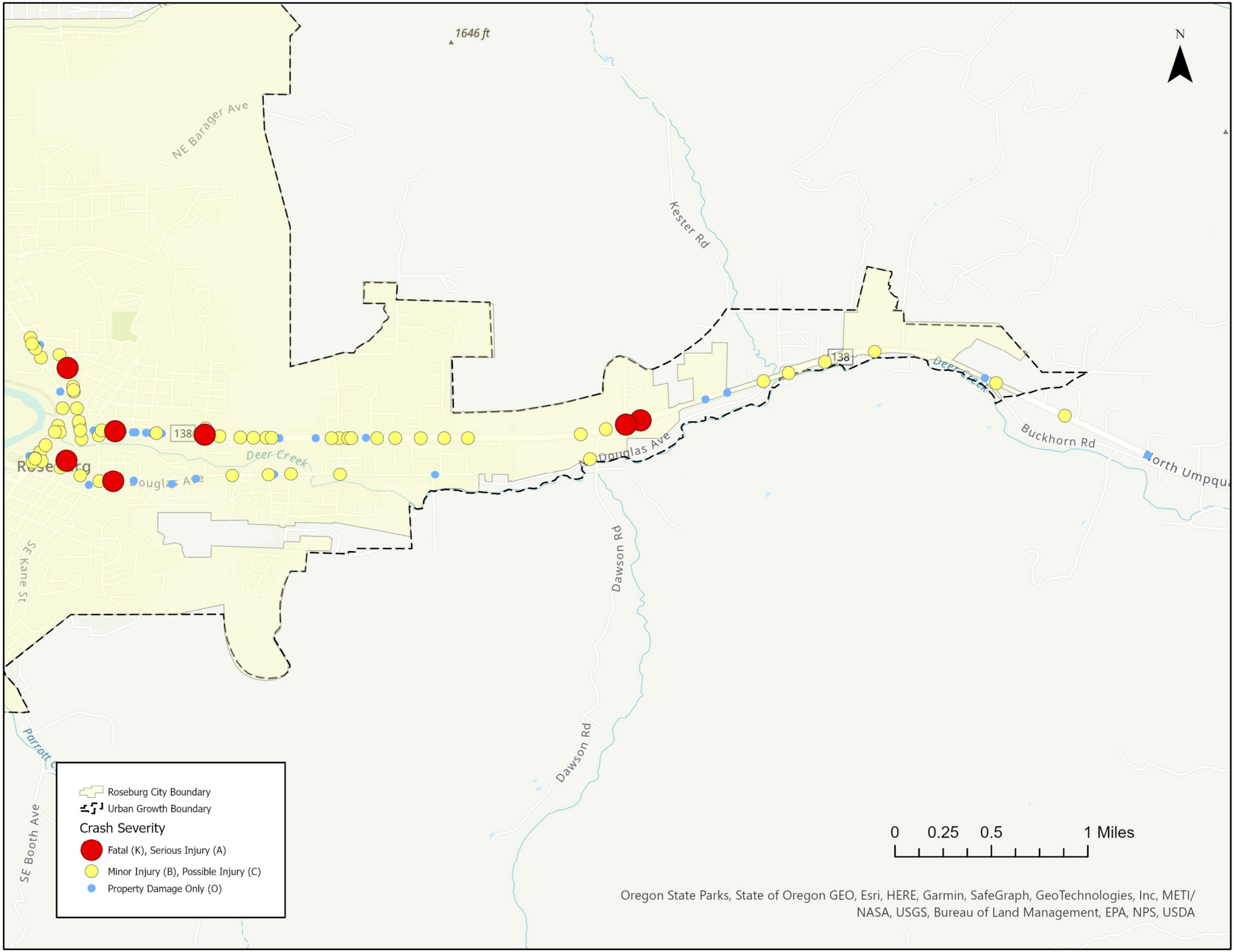
- Fatal Crash
- Severe Injury Crash
- Moderate Injury Crash
- Minor Injury Crash
- PDO Crash

- Roseburg City Boundary
- Urban Growth Boundary

0 2,250 Feet

KITTELSON & ASSOCIATES

Reported Crashes 2016-2020
Roseburg, Oregon


1646 ft
N
NE Barager Ave
Kester Rd
138
Deer Creek
Douglas Ave
Buckhorn Rd
Dawson Rd
SE Kane St
SE Booth Ave
Roseburg City Boundary
Urban Growth Boundary
Crash Severity
Fatal (K), Serious Injury (A)
Minor Injury (B), Possible Injury (C)
Property Damage Only (O)
0 0.25 0.5 1 Miles
Oregon State Parks, State of Oregon GEO, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/
NASA, USGS, Bureau of Land Management, EPA, NPS, USDA

Appendix B Traffic Counts

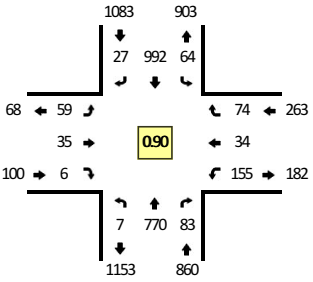
Type of peak hour being reported: Intersection Peak

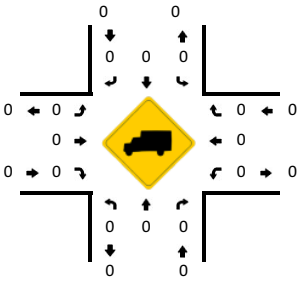
Method for determining peak hour: Total Entering Volume

LOCATION: 10012011 - SE Stephens St -- SE Douglas Ave
CITY/STATE: Roseburg, OR

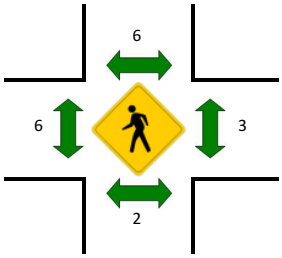
QC JOB #: 15952701
DATE: Wed, Mar 30 2022

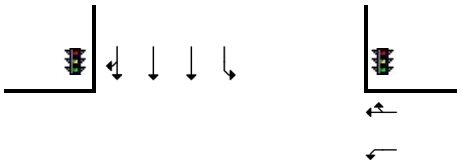
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

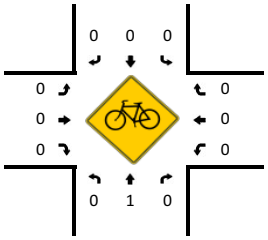


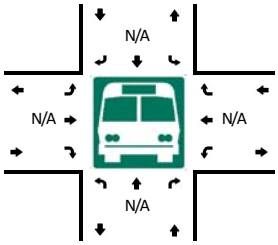


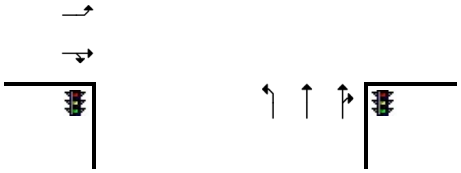
Quality Counts
DATA THAT DRIVES COMMUNITIES

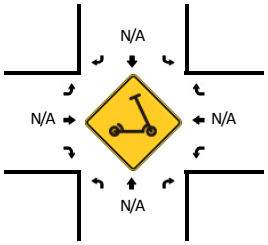












15-Min Count Period Beginning At	10012011 - SE Stephens St (Northbound)				10012011 - SE Stephens St (Southbound)				SE Douglas Ave (Eastbound)				SE Douglas Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	3	193	29	0	11	221	5	0	16	11	1	0	17	8	11	0	526	
2:15 PM	2	117	20	1	20	201	10	0	11	10	1	0	16	4	17	0	430	
2:30 PM	4	202	31	0	16	190	5	0	16	14	5	0	33	8	21	0	545	
2:45 PM	2	212	31	0	18	220	11	0	11	8	5	0	18	8	13	0	557	2058
3:00 PM	1	196	19	0	15	179	5	0	11	7	4	0	23	7	15	0	482	2014
3:15 PM	3	201	15	0	12	209	7	0	12	5	0	0	19	5	13	0	501	2085
3:30 PM	2	182	26	1	16	216	7	0	15	3	1	0	29	10	10	0	518	2058
3:45 PM	1	167	21	0	18	206	14	0	15	7	2	0	23	9	21	0	504	2005
4:00 PM	0	186	24	0	12	208	8	0	24	4	2	0	24	6	15	0	513	2036
4:15 PM	2	206	16	0	13	215	6	0	11	5	3	0	26	15	12	0	530	2065
4:30 PM	1	175	20	0	17	244	6	0	15	4	1	0	20	6	16	0	525	2072
4:45 PM	3	209	25	0	19	243	5	0	13	10	3	0	30	11	11	0	582	2150
5:00 PM	1	214	18	0	18	244	7	0	16	9	1	0	77	11	27	0	643	2280
5:15 PM	2	172	20	0	10	261	9	0	15	12	1	0	28	6	20	0	556	2306
5:30 PM	0	179	10	0	13	211	3	0	13	14	1	0	20	8	14	0	486	2267
5:45 PM	0	159	13	0	12	160	4	0	12	3	1	0	16	6	12	0	398	2083

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	856	72	0	72	976	28	0	64	36	4	0	308	44	108	0	2572
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Buses																	
Pedestrians		4				4				8				8			24
Bicycles	0	4	0		0	0	0		0	0	0		0	0	0		4
Scooters																	

Comments:

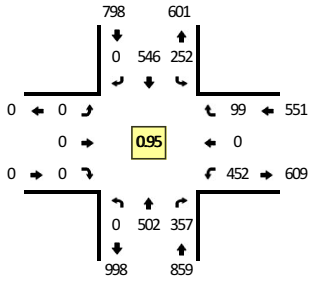
Report generated on 9/20/2022 8:29 AM

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

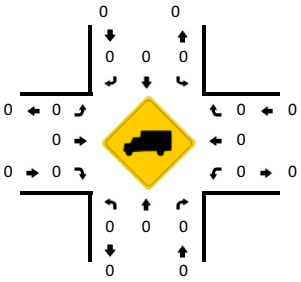
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

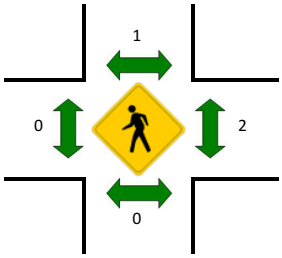
LOCATION: 19853 - SE Stephens St -- NE Diamond Lake Blvd | **QC JOB #:** 15952702
CITY/STATE: Roseburg, OR | **DATE:** Mon, Mar 28 2022

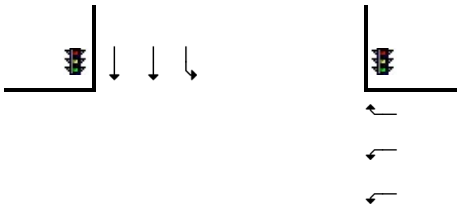
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

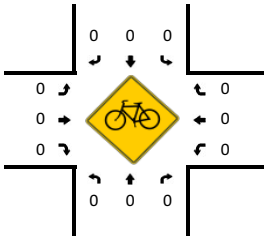


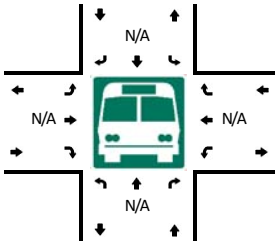
Quality Counts
DATA THAT DRIVES COMMUNITIES

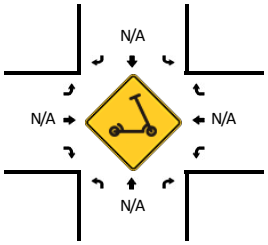












15-Min Count Period Beginning At	19853 - SE Stephens St (Northbound)				19853 - SE Stephens St (Southbound)				NE Diamond Lake Blvd (Eastbound)				NE Diamond Lake Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	117	66	0	50	111	0	0	0	0	0	0	74	0	24	0	442	
2:15 PM	0	114	86	0	52	142	0	0	0	0	0	0	97	0	30	0	521	
2:30 PM	0	133	59	0	52	136	0	0	0	0	0	0	82	0	28	0	490	
2:45 PM	0	136	98	0	50	142	0	0	0	0	0	0	83	0	17	0	526	1979
3:00 PM	0	152	76	0	44	138	0	0	0	0	0	0	104	0	25	0	539	2076
3:15 PM	0	127	73	0	53	132	0	0	0	0	0	0	115	0	46	0	546	2101
3:30 PM	0	128	95	0	57	119	0	0	0	0	0	0	97	0	34	0	530	2141
3:45 PM	0	141	99	0	54	126	0	0	0	0	0	0	123	0	36	0	579	2194
4:00 PM	0	135	82	0	54	139	0	0	0	0	0	0	92	0	26	0	528	2183
4:15 PM	0	130	83	0	65	144	0	0	0	0	0	0	118	0	28	0	568	2205
4:30 PM	0	122	87	0	57	133	0	0	0	0	0	0	114	0	19	0	532	2207
4:45 PM	0	112	98	0	61	128	0	0	0	0	0	0	106	0	21	0	526	2154
5:00 PM	0	138	89	0	69	141	0	0	0	0	0	0	114	0	31	0	582	2208
5:15 PM	0	108	94	0	54	151	0	0	0	0	0	0	88	0	28	0	523	2163
5:30 PM	0	89	77	0	49	116	0	0	0	0	0	0	79	0	29	0	439	2070
5:45 PM	0	67	52	0	29	107	0	0	0	0	0	0	82	0	21	0	358	1902

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	552	356	0	276	564	0	0	0	0	0	0	456	0	124	0	2328
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Buses																	
Pedestrians		0				4				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

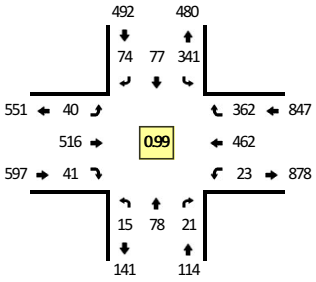
Comments:

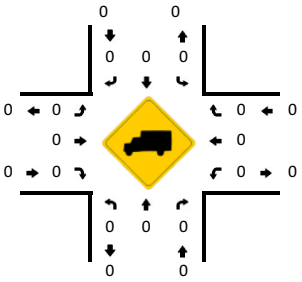
Report generated on 9/20/2022 8:29 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

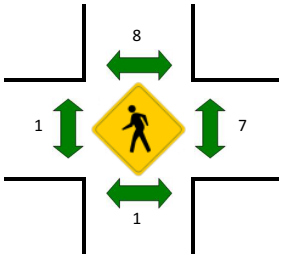
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

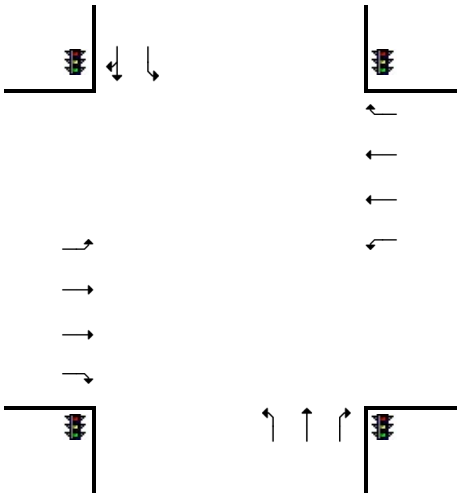
LOCATION: 37114 - NE Jackson St -- NE Diamond Lake Blvd | **QC JOB #:** 15952703
CITY/STATE: Roseburg, OR | **DATE:** Mon, Mar 28 2022

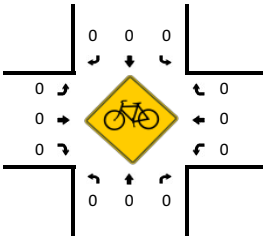
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 4:30 PM -- 4:45 PM

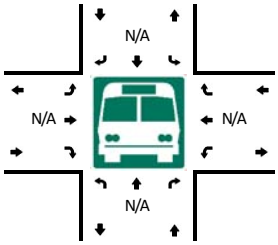


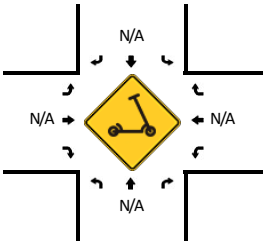












15-Min Count Period Beginning At	37114 - NE Jackson St (Northbound)				37114 - NE Jackson St (Southbound)				NE Diamond Lake Blvd (Eastbound)				NE Diamond Lake Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	3	23	3	0	55	21	17	0	7	97	14	0	4	75	70	0	389	
2:15 PM	6	10	1	0	62	23	10	0	8	109	8	0	6	109	72	0	424	
2:30 PM	1	17	6	0	74	18	5	0	6	106	7	0	4	104	71	0	419	
2:45 PM	2	29	2	0	78	26	13	0	14	112	12	0	7	88	62	0	445	1677
3:00 PM	3	18	4	0	82	24	11	0	8	117	2	0	3	124	102	0	498	1786
3:15 PM	7	13	5	0	79	21	10	0	4	120	6	0	8	138	92	0	503	1865
3:30 PM	2	24	3	0	64	19	8	0	11	132	10	0	5	120	100	0	498	1944
3:45 PM	0	20	1	0	83	16	14	0	7	136	11	0	1	143	92	0	524	2023
4:00 PM	1	17	8	0	80	23	8	0	8	109	9	0	2	105	71	0	441	1966
4:15 PM	3	14	9	0	78	12	18	0	10	121	11	0	7	130	105	0	518	1981
4:30 PM	3	21	2	0	86	24	12	0	10	127	8	0	8	118	100	0	519	2002
4:45 PM	2	17	2	0	101	17	29	0	11	144	12	0	4	98	79	0	516	1994
5:00 PM	7	26	8	0	76	24	15	0	9	124	10	0	4	116	78	0	497	2050
5:15 PM	4	21	4	0	96	24	11	0	7	151	7	0	1	105	75	0	506	2038
5:30 PM	3	7	1	0	62	17	10	0	8	110	10	0	3	90	68	0	389	1908
5:45 PM	2	19	2	0	63	10	9	0	7	66	5	0	2	91	51	0	327	1719

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	12	84	8	0	344	96	48	0	40	508	32	0	32	472	400	0	2076
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Buses																	
Pedestrians		4				0				4				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 9/20/2022 8:29 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

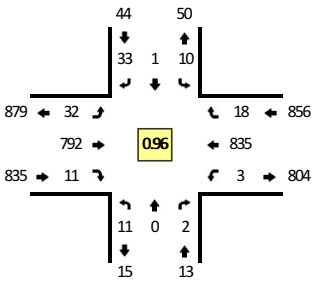
Type of peak hour being reported: Intersection Peak

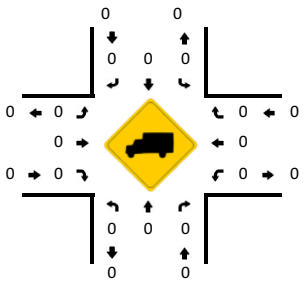
Method for determining peak hour: Total Entering Volume

LOCATION: 37115 - NE Fulton St -- NE Diamond Lake Blvd
CITY/STATE: Roseburg, OR

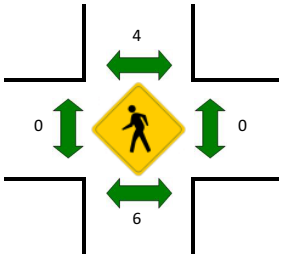
QC JOB #: 15952704
DATE: Mon, Mar 28 2022

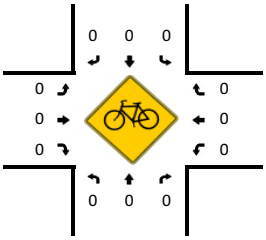
Peak-Hour: 3:45 PM -- 4:45 PM
Peak 15-Min: 3:45 PM -- 4:00 PM

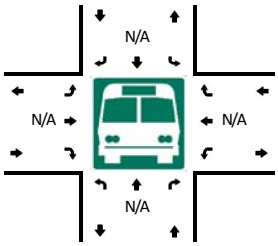


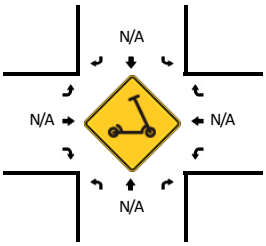


Quality Counts
DATA THAT DRIVES COMMUNITIES









15-Min Count Period Beginning At	37115 - NE Fulton St (Northbound)				37115 - NE Fulton St (Southbound)				NE Diamond Lake Blvd (Eastbound)				NE Diamond Lake Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	2	0	0	0	0	1	2	0	5	140	2	0	0	127	8	0	287	
2:15 PM	4	0	0	0	3	0	7	0	6	165	4	0	0	180	8	0	377	
2:30 PM	2	0	1	0	3	0	10	0	9	169	0	0	0	143	2	0	339	
2:45 PM	1	0	0	0	6	0	4	0	6	200	0	0	2	166	5	0	390	1393
3:00 PM	3	0	0	0	2	1	7	0	5	170	2	0	0	196	3	0	389	1495
3:15 PM	1	0	0	0	3	0	7	0	7	192	2	0	0	216	2	0	430	1548
3:30 PM	2	0	1	0	2	0	3	0	5	192	3	0	1	212	9	0	430	1639
3:45 PM	4	0	0	0	0	1	8	0	7	205	6	0	2	216	7	0	456	1705
4:00 PM	3	0	1	0	3	0	4	0	12	194	1	0	1	180	6	0	405	1721
4:15 PM	0	0	1	0	2	0	4	0	4	190	2	0	0	234	3	0	440	1731
4:30 PM	4	0	0	0	5	0	17	0	9	203	2	0	0	205	2	0	447	1748
4:45 PM	0	1	0	0	2	0	10	0	7	234	1	0	0	160	2	0	417	1709
5:00 PM	0	0	0	0	2	0	8	0	8	223	2	0	0	186	3	0	432	1736
5:15 PM	0	0	0	0	1	0	7	0	9	220	3	0	0	162	1	0	403	1699
5:30 PM	1	0	0	0	2	0	5	0	7	174	0	0	0	139	3	0	331	1583
5:45 PM	0	0	0	0	2	0	6	0	8	126	0	0	0	131	2	0	275	1441

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	16	0	0	0	0	4	32	0	28	820	24	0	8	864	28	0	1824
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Buses																	
Pedestrians		12				4				0				0			16
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

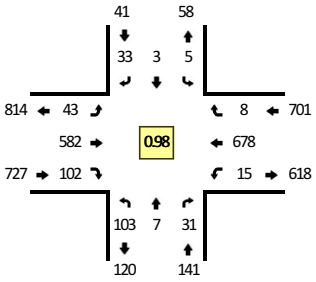
Report generated on 9/20/2022 8:29 AM

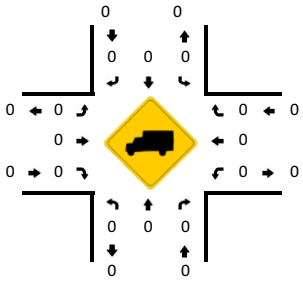
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

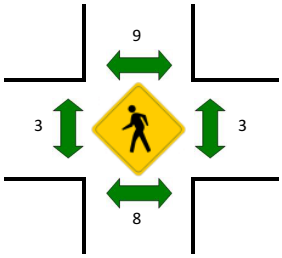
LOCATION: 37116 - NE Rifle Range Rd -- NE Diamond Lake Blvd | **QC JOB #:** 15952705
CITY/STATE: Roseburg, OR | **DATE:** Mon, Mar 28 2022

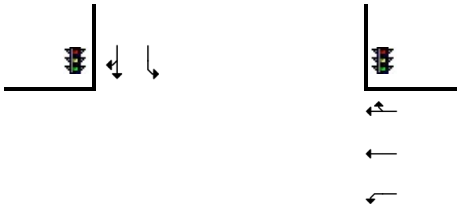
Peak-Hour: 3:30 PM -- 4:30 PM
Peak 15-Min: 4:15 PM -- 4:30 PM

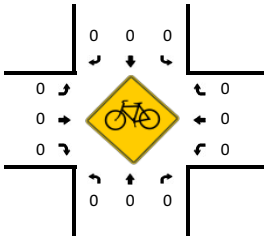


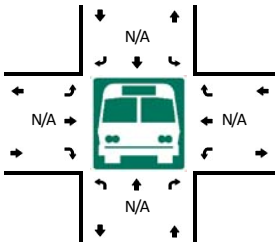


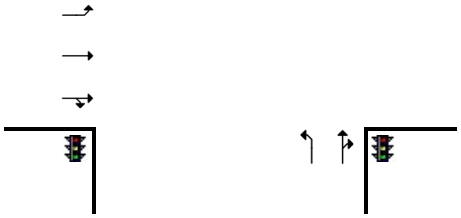
Quality Counts
DATA THAT DRIVES COMMUNITIES

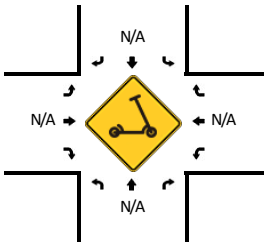












15-Min Count Period Beginning At	37116 - NE Rifle Range Rd (Northbound)				37116 - NE Rifle Range Rd (Southbound)				NE Diamond Lake Blvd (Eastbound)				NE Diamond Lake Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	14	1	4	0	1	0	6	0	11	110	10	0	3	96	2	0	258	
2:15 PM	12	2	1	0	0	1	8	0	8	130	15	0	0	129	1	0	307	
2:30 PM	13	1	5	0	0	1	7	0	5	142	20	0	1	110	2	0	307	
2:45 PM	15	0	6	0	0	0	4	0	5	149	26	0	5	147	2	0	359	1231
3:00 PM	14	1	8	0	1	0	10	0	12	126	21	0	2	159	3	0	357	1330
3:15 PM	10	0	1	0	1	4	15	0	11	141	29	0	6	153	0	0	371	1394
3:30 PM	41	3	13	0	2	0	5	0	12	146	22	0	2	164	0	0	410	1497
3:45 PM	23	1	5	0	1	0	10	0	13	145	26	0	8	176	3	0	411	1549
4:00 PM	15	1	10	0	2	1	9	0	8	150	31	0	3	146	1	0	377	1569
4:15 PM	24	2	3	0	0	2	9	0	10	141	23	0	2	192	4	0	412	1610
4:30 PM	16	0	5	0	1	0	4	0	6	161	26	0	1	170	1	0	391	1591
4:45 PM	23	0	3	0	0	0	3	0	14	166	26	0	5	124	1	0	365	1545
5:00 PM	18	0	8	0	3	1	8	0	11	167	28	0	6	148	3	0	401	1569
5:15 PM	18	0	5	0	4	0	8	0	11	165	32	0	2	129	2	0	376	1533
5:30 PM	16	1	5	0	1	0	17	0	2	146	12	0	3	85	0	0	288	1430
5:45 PM	12	0	8	0	1	1	5	0	5	97	15	0	1	97	1	0	243	1308

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	96	8	12	0	0	8	36	0	40	564	92	0	8	768	16	0	1648
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Buses																	
Pedestrians		8				4				8				0			20
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

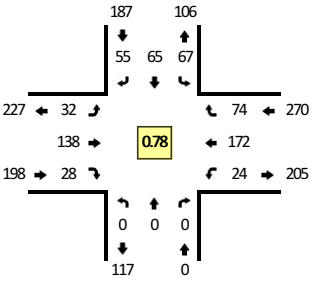
Comments:

Report generated on 9/20/2022 8:29 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

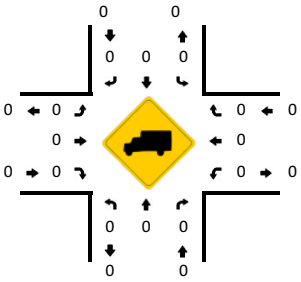
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

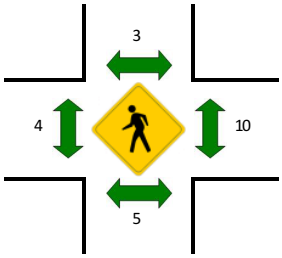
LOCATION: 37117 - SE Jackson St -- SE Douglas Ave | **QC JOB #:** 15952706
CITY/STATE: Roseburg, OR | **DATE:** Wed, Mar 30 2022

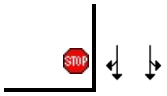
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

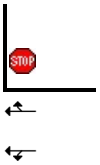


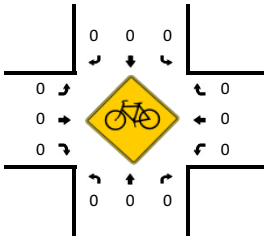
Quality Counts
DATA THAT DRIVES COMMUNITIES

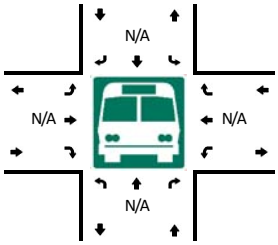


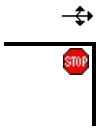


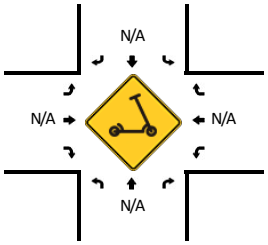












15-Min Count Period Beginning At	37117 - SE Jackson St (Northbound)				37117 - SE Jackson St (Southbound)				SE Douglas Ave (Eastbound)				SE Douglas Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	0	0	0	11	16	4	0	7	45	5	0	8	33	21	0	150	
2:15 PM	0	0	0	0	17	14	9	0	4	41	9	0	3	29	16	0	142	
2:30 PM	0	0	0	0	12	16	5	0	14	46	6	0	5	50	28	0	182	
2:45 PM	0	0	0	0	21	17	3	0	10	42	8	0	7	31	26	0	165	639
3:00 PM	0	0	0	0	12	8	6	0	3	34	5	0	4	38	15	0	125	614
3:15 PM	0	0	0	0	13	14	6	0	1	25	6	0	6	31	20	0	122	594
3:30 PM	0	0	0	0	14	11	2	0	1	35	8	0	3	41	18	0	133	545
3:45 PM	0	0	0	0	18	14	6	0	9	35	3	0	6	46	26	0	163	543
4:00 PM	0	0	0	0	16	12	7	0	4	32	5	0	5	33	13	0	127	545
4:15 PM	0	0	0	0	15	6	6	0	6	23	9	0	5	45	23	0	138	561
4:30 PM	0	0	0	0	14	16	10	0	9	29	6	0	4	31	15	0	134	562
4:45 PM	0	0	0	0	21	15	13	0	12	37	7	0	6	35	13	0	159	558
5:00 PM	0	0	0	0	14	18	26	0	5	38	7	0	6	68	27	0	209	640
5:15 PM	0	0	0	0	18	16	6	0	6	34	8	0	8	38	19	0	153	655
5:30 PM	0	0	0	0	12	13	2	0	5	25	5	0	1	42	17	0	122	643
5:45 PM	0	0	0	0	11	15	0	0	4	22	3	0	7	31	15	0	108	592

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	56	72	104	0	20	152	28	0	24	272	108	0	836
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Buses																	
Pedestrians		4				4				4				4			16
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

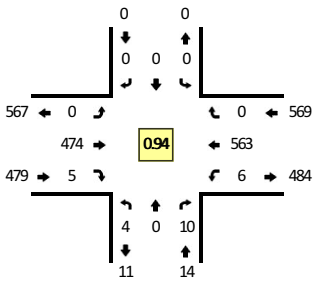
Comments:

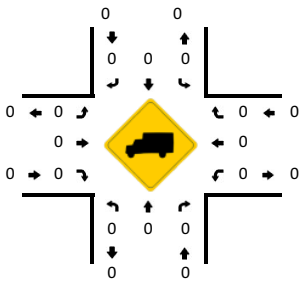
Report generated on 9/20/2022 8:29 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

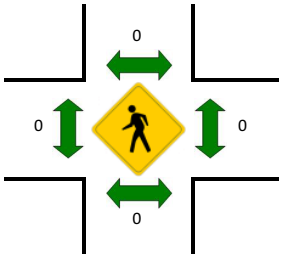
LOCATION: 37122 - NE Douglas Ave -- NE Diamond Lake Blvd | **QC JOB #:** 15952707
CITY/STATE: Roseburg, OR | **DATE:** Mon, Mar 28 2022

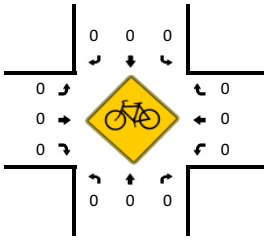
Peak-Hour: 3:45 PM -- 4:45 PM
Peak 15-Min: 3:45 PM -- 4:00 PM

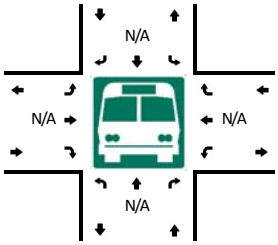


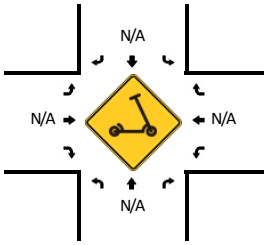


Quality Counts
DATA THAT DRIVES COMMUNITIES









15-Min Count Period Beginning At	37122 - NE Douglas Ave (Northbound)				37122 - NE Douglas Ave (Southbound)				NE Diamond Lake Blvd (Eastbound)				NE Diamond Lake Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	1	0	0	0	0	0	0	0	0	68	0	0	0	69	0	0	138	
2:15 PM	1	0	1	0	0	0	0	0	0	88	2	0	0	83	0	0	175	
2:30 PM	0	0	3	0	0	0	0	0	0	108	3	0	3	86	0	0	203	
2:45 PM	1	0	1	0	0	0	0	0	0	133	3	0	0	99	0	0	237	753
3:00 PM	1	0	2	0	0	0	0	0	0	109	1	0	1	139	0	0	253	868
3:15 PM	0	0	1	0	0	0	0	0	0	111	1	0	1	122	0	0	236	929
3:30 PM	1	0	1	0	0	0	0	0	0	113	1	0	3	129	0	0	248	974
3:45 PM	1	0	3	0	0	0	0	0	0	118	3	0	2	155	0	0	282	1019
4:00 PM	2	0	2	0	0	0	0	0	0	123	2	0	0	115	0	0	244	1010
4:15 PM	1	0	2	0	0	0	0	0	0	112	0	0	2	162	0	0	279	1053
4:30 PM	0	0	3	0	0	0	0	0	0	121	0	0	2	131	0	0	257	1062
4:45 PM	1	0	4	0	0	0	0	0	0	133	1	0	0	105	0	0	244	1024
5:00 PM	1	0	1	0	0	0	0	0	0	133	0	0	0	112	0	0	247	1027
5:15 PM	0	0	1	0	0	0	0	0	0	145	0	0	1	88	0	0	235	983
5:30 PM	0	0	1	0	0	0	0	0	0	125	0	0	1	62	0	0	189	915
5:45 PM	0	0	1	0	0	0	0	0	0	80	0	0	2	72	0	0	155	826

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	0	12	0	0	0	0	0	0	472	12	0	8	620	0	0	1128
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

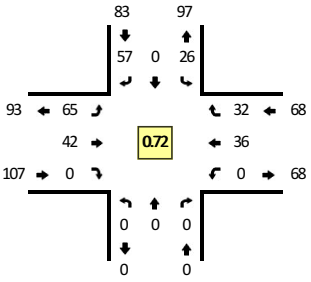
Comments:

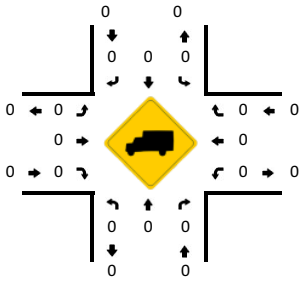
Report generated on 9/20/2022 8:29 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

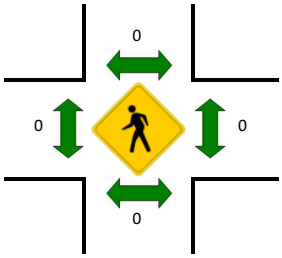
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

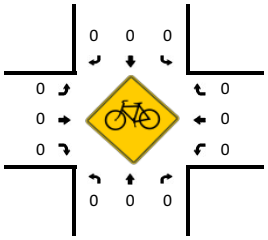
LOCATION: 37123 - NE Rifle Range Rd -- NE Douglas Ave | **QC JOB #:** 15952708
CITY/STATE: Roseburg, OR | **DATE:** Wed, Mar 30 2022

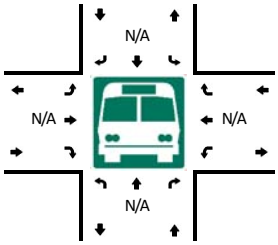
Peak-Hour: 2:00 PM -- 3:00 PM
Peak 15-Min: 2:30 PM -- 2:45 PM

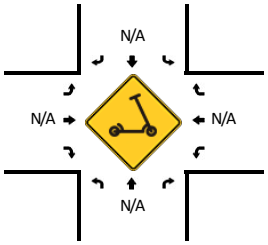












15-Min Count Period Beginning At	37123 - NE Rifle Range Rd (Northbound)				37123 - NE Rifle Range Rd (Southbound)				NE Douglas Ave (Eastbound)				NE Douglas Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	0	0	0	9	0	20	0	8	7	0	0	0	9	5	0	58	
2:15 PM	0	0	0	0	3	0	18	0	9	13	0	0	0	8	5	0	56	
2:30 PM	0	0	0	0	7	0	15	0	30	15	0	0	0	10	13	0	90	
2:45 PM	0	0	0	0	7	0	4	0	18	7	0	0	0	9	9	0	54	258
3:00 PM	0	0	0	0	8	0	12	0	5	5	0	0	0	7	8	0	45	245
3:15 PM	0	0	0	0	2	0	15	0	6	5	0	0	0	4	4	0	36	225
3:30 PM	0	0	0	0	3	0	9	0	15	8	0	0	0	6	7	0	48	183
3:45 PM	0	0	0	0	3	0	18	0	9	12	0	0	0	6	8	0	56	185
4:00 PM	0	0	0	0	4	0	10	0	15	4	0	0	0	4	4	0	41	181
4:15 PM	0	0	0	0	8	0	7	0	17	6	0	0	0	3	3	0	44	189
4:30 PM	0	0	0	0	9	0	12	1	14	4	0	0	0	4	8	0	52	193
4:45 PM	0	0	0	0	10	0	13	1	13	11	0	0	0	5	2	0	55	192
5:00 PM	0	0	0	0	9	0	15	0	14	8	0	0	0	6	7	0	59	210
5:15 PM	0	0	0	0	11	0	14	0	11	4	0	1	0	8	4	0	53	219
5:30 PM	0	0	0	0	5	0	13	0	8	5	0	0	0	6	3	0	40	207
5:45 PM	0	0	0	0	5	0	11	0	5	5	0	0	0	7	4	0	37	189

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	28	0	60	0	120	60	0	0	0	40	52	0	360
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 9/20/2022 8:29 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

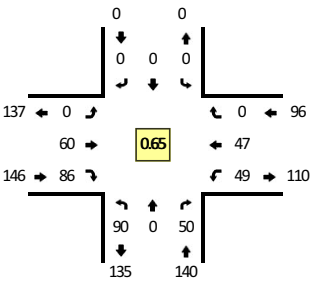
Type of peak hour being reported: Intersection Peak

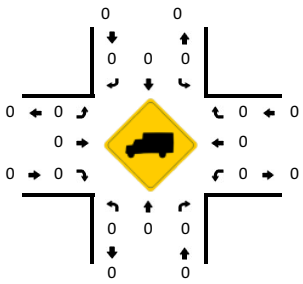
Method for determining peak hour: Total Entering Volume

LOCATION: 37124 - SE Ramp Rd -- SE Douglas Ave
CITY/STATE: Roseburg, OR

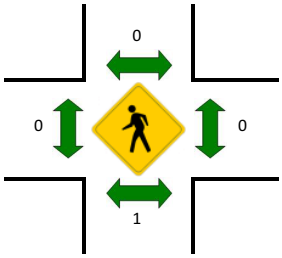
QC JOB #: 15952709
DATE: Wed, Mar 30 2022

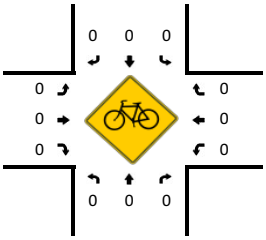
Peak-Hour: 2:00 PM -- 3:00 PM
Peak 15-Min: 2:30 PM -- 2:45 PM

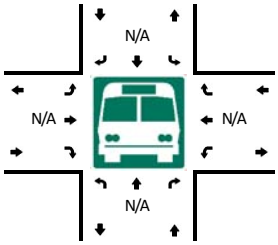


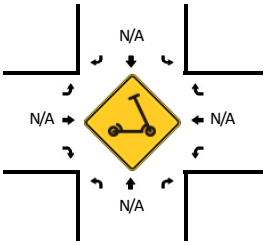


Quality Counts
DATA THAT DRIVES COMMUNITIES









15-Min Count Period Beginning At	37124 - SE Ramp Rd (Northbound)				37124 - SE Ramp Rd (Southbound)				SE Douglas Ave (Eastbound)				SE Douglas Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	9	0	3	0	0	0	0	0	0	11	22	0	11	17	0	0	73	
2:15 PM	10	0	7	0	0	0	0	0	0	16	30	0	19	9	0	0	91	
2:30 PM	52	0	29	0	0	0	0	0	0	19	21	0	15	11	0	0	147	
2:45 PM	19	0	11	0	0	0	0	0	0	14	13	0	4	10	0	0	71	382
3:00 PM	12	0	1	0	0	0	0	0	0	9	10	0	5	12	0	0	49	358
3:15 PM	6	0	3	0	0	0	0	0	0	11	12	0	9	10	0	0	51	318
3:30 PM	10	0	6	0	0	0	0	0	0	18	3	0	5	9	0	0	51	222
3:45 PM	10	0	5	0	0	0	0	0	0	14	10	0	5	16	0	0	60	211
4:00 PM	14	0	7	0	0	0	0	0	0	12	11	0	8	5	0	0	57	219
4:15 PM	7	0	11	0	0	0	0	0	0	13	8	0	4	8	0	0	51	219
4:30 PM	8	0	10	0	0	0	0	0	0	7	9	0	5	12	0	0	51	219
4:45 PM	15	0	6	0	0	0	0	0	0	20	16	0	10	7	0	0	74	233
5:00 PM	10	0	3	0	0	0	0	0	0	22	16	0	3	19	0	0	73	249
5:15 PM	5	0	5	0	0	0	0	0	0	13	15	0	9	11	0	0	58	256
5:30 PM	8	0	3	0	0	0	0	0	0	13	15	0	9	10	0	0	58	263
5:45 PM	11	0	1	0	0	0	0	0	0	10	6	0	3	17	0	0	48	237

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	208	0	116	0	0	0	0	0	0	76	84	0	60	44	0	0	588
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

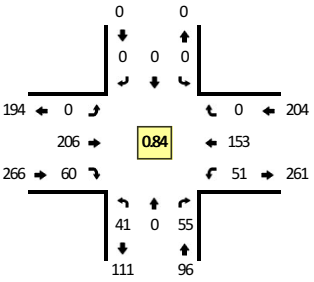
Report generated on 9/20/2022 8:29 AM

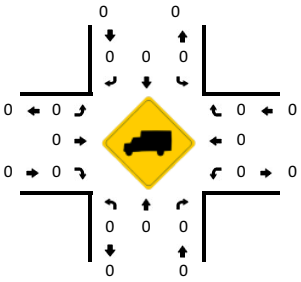
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

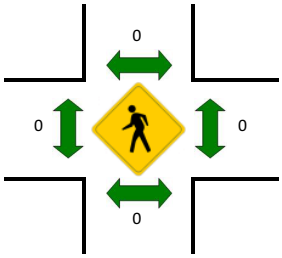
LOCATION: 37125 - SE Kane St -- SE Douglas Ave | **QC JOB #:** 15952710
CITY/STATE: Roseburg, OR | **DATE:** Wed, Mar 30 2022

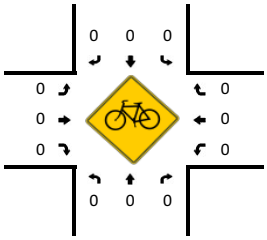
Peak-Hour: 2:00 PM -- 3:00 PM
Peak 15-Min: 2:30 PM -- 2:45 PM

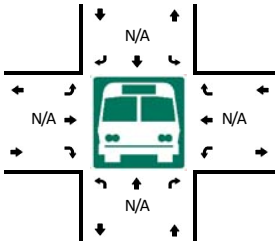


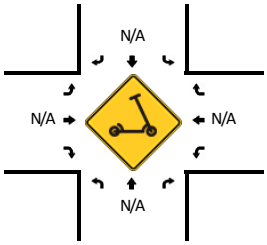


Quality Counts
DATA THAT DRIVES COMMUNITIES









15-Min Count Period Beginning At	37125 - SE Kane St (Northbound)				37125 - SE Kane St (Southbound)				SE Douglas Ave (Eastbound)				SE Douglas Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	11	0	12	0	0	0	0	0	0	43	15	0	7	31	0	0	119	
2:15 PM	11	0	12	0	0	0	0	0	0	58	14	0	12	30	0	0	137	
2:30 PM	8	0	20	0	0	0	0	0	0	52	12	0	21	56	0	0	169	
2:45 PM	11	0	11	0	0	0	0	0	0	53	19	0	11	36	0	0	141	566
3:00 PM	12	0	8	0	0	0	0	0	0	40	12	0	10	29	0	0	111	558
3:15 PM	18	0	9	0	0	0	0	0	0	28	14	0	6	30	0	0	105	526
3:30 PM	7	0	11	0	0	0	0	0	0	37	19	0	3	40	0	0	117	474
3:45 PM	8	0	12	0	0	0	0	0	0	46	14	0	15	51	0	0	146	479
4:00 PM	4	0	16	0	0	0	0	0	0	40	10	0	9	38	0	0	117	485
4:15 PM	12	0	12	0	0	0	0	0	0	30	16	0	13	41	0	0	124	504
4:30 PM	7	0	10	0	0	0	0	0	0	36	9	0	11	27	0	0	100	487
4:45 PM	8	0	16	0	0	0	0	0	0	47	20	0	8	36	0	0	135	476
5:00 PM	13	0	22	0	0	0	0	0	0	45	13	0	18	74	0	0	185	544
5:15 PM	6	0	12	0	0	0	0	0	0	44	17	0	12	41	0	0	132	552
5:30 PM	11	0	9	0	0	0	0	0	0	33	8	0	11	33	0	0	105	557
5:45 PM	5	0	8	0	0	0	0	0	0	28	8	0	7	38	0	0	94	516

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	32	0	80	0	0	0	0	0	0	208	48	0	84	224	0	0	676
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 9/20/2022 8:29 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

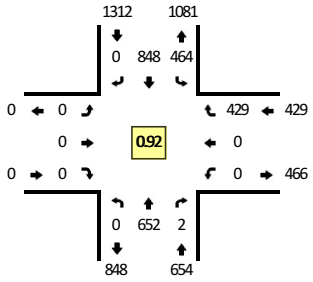
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

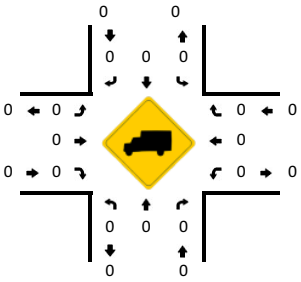
LOCATION: 37127 - NE Stephens St -- NE Winchester St
CITY/STATE: Roseburg, OR

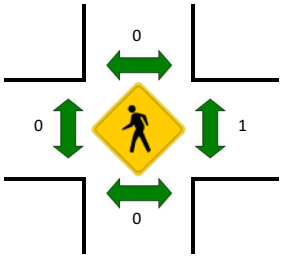
QC JOB #: 15952711
DATE: Wed, Apr 6 2022

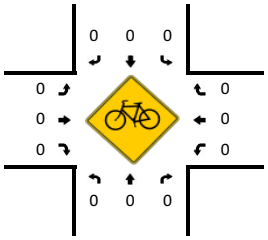
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

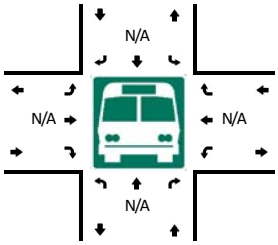


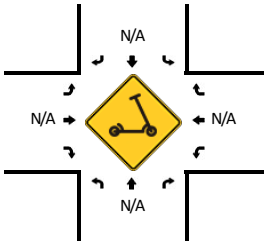
Quality Counts
DATA THAT DRIVES COMMUNITIES











15-Min Count Period Beginning At	37127 - NE Stephens St (Northbound)				37127 - NE Stephens St (Southbound)				NE Winchester St (Eastbound)				NE Winchester St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	133	3	0	109	215	0	0	0	0	0	0	0	0	121	0	581	
2:15 PM	0	165	1	0	86	191	0	0	0	0	0	0	0	0	73	0	516	
2:30 PM	0	184	1	0	112	188	0	0	0	0	0	0	0	0	91	0	576	
2:45 PM	0	162	0	0	101	172	0	0	0	0	0	0	0	0	110	0	545	2218
3:00 PM	0	169	1	0	105	205	0	0	0	0	0	0	0	0	110	0	590	2227
3:15 PM	0	177	2	0	78	195	0	0	0	0	0	0	0	0	122	0	574	2285
3:30 PM	0	152	0	0	124	215	0	0	0	0	0	0	0	0	114	0	605	2314
3:45 PM	0	165	1	0	96	160	0	0	0	0	0	0	0	0	123	0	545	2314
4:00 PM	0	172	2	0	98	212	0	0	0	0	0	0	0	0	106	0	590	2314
4:15 PM	0	160	3	0	99	188	0	0	0	0	0	0	0	0	101	0	551	2291
4:30 PM	0	159	2	0	109	185	0	0	0	0	0	0	0	0	107	0	562	2248
4:45 PM	0	157	0	0	107	210	0	0	0	0	0	0	0	0	101	0	575	2278
5:00 PM	0	162	0	0	128	243	0	0	0	0	0	0	0	0	118	0	651	2339
5:15 PM	0	174	0	0	120	210	0	0	0	0	0	0	0	0	103	0	607	2395
5:30 PM	0	160	3	0	117	184	0	0	0	0	0	0	0	0	90	0	554	2387
5:45 PM	0	115	1	0	99	131	0	0	0	0	0	0	0	0	103	0	449	2261

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	648	0	0	512	972	0	0	0	0	0	0	0	0	472	0	2604
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 9/20/2022 8:29 AM

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

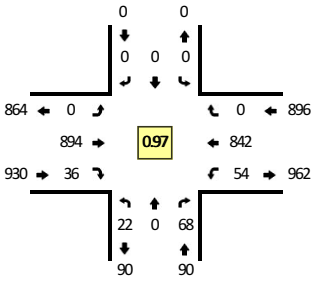
Type of peak hour being reported: Intersection Peak

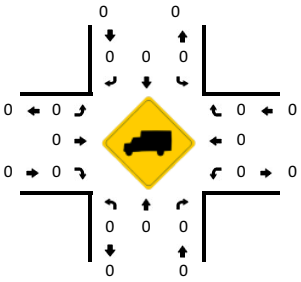
Method for determining peak hour: Total Entering Volume

LOCATION: 999110127 - NE Fowler St -- NE Diamond Lake Blvd
CITY/STATE: Roseburg, OR

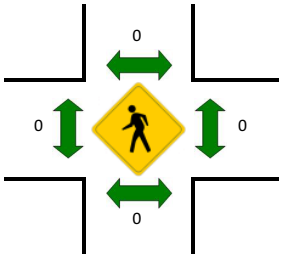
QC JOB #: 15952712
DATE: Wed, Mar 30 2022

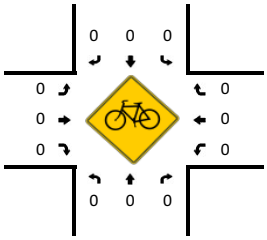
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

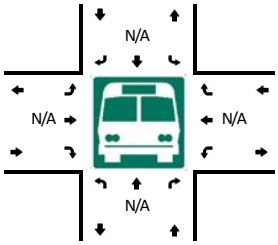


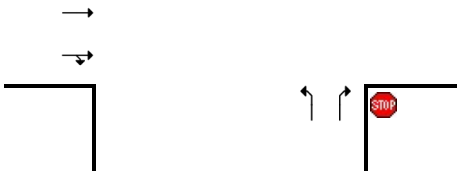


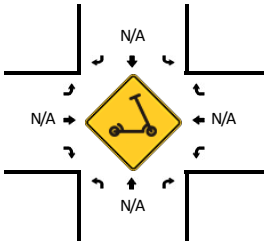
Quality Counts
DATA THAT DRIVES COMMUNITIES











15-Min Count Period Beginning At	999110127 - NE Fowler St (Northbound)				999110127 - NE Fowler St (Southbound)				NE Diamond Lake Blvd (Eastbound)				NE Diamond Lake Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	4	0	10	0	0	0	0	0	0	176	11	0	8	161	0	0	370	
2:15 PM	4	0	13	0	0	0	0	0	0	121	8	0	14	154	0	0	314	
2:30 PM	7	0	12	0	0	0	0	0	0	203	8	0	11	166	0	0	407	
2:45 PM	7	0	15	0	0	0	0	0	0	201	7	0	9	165	0	0	404	1495
3:00 PM	6	0	9	0	0	0	0	0	0	203	2	0	14	191	0	0	425	1550
3:15 PM	6	0	5	0	0	0	0	0	0	171	8	0	9	224	0	0	423	1659
3:30 PM	4	0	13	0	0	0	0	0	0	184	6	0	13	210	0	0	430	1682
3:45 PM	2	0	16	0	0	0	0	0	0	180	9	0	21	229	0	0	457	1735
4:00 PM	6	0	19	0	0	0	0	0	0	208	6	0	18	231	0	0	488	1798
4:15 PM	1	0	17	0	0	0	0	0	0	225	5	0	23	197	0	0	468	1843
4:30 PM	7	0	14	0	0	0	0	0	0	187	10	0	11	235	0	0	464	1877
4:45 PM	5	0	10	0	0	0	0	0	0	242	9	0	10	215	0	0	491	1911
5:00 PM	9	0	27	0	0	0	0	0	0	240	12	0	10	195	0	0	493	1916
5:15 PM	1	0	21	0	0	0	0	0	0	221	8	0	9	161	0	0	421	1869
5:30 PM	2	0	10	0	0	0	0	0	0	195	12	0	9	156	0	0	384	1789
5:45 PM	1	0	8	0	0	0	0	0	0	185	3	0	7	153	0	0	357	1655

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	36	0	108	0	0	0	0	0	0	960	48	0	40	780	0	0	1972
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

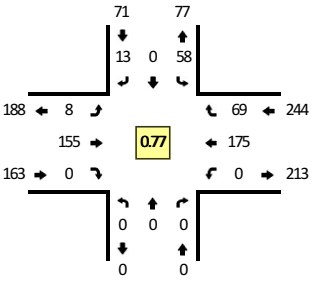
Report generated on 9/20/2022 8:29 AM

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

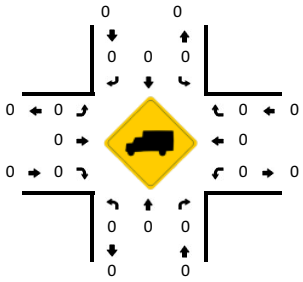
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

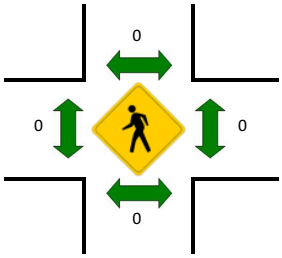
LOCATION: 999110128 - SE Fowler St -- SE Douglas Ave | **QC JOB #:** 15952713
CITY/STATE: Roseburg, OR | **DATE:** Wed, Mar 30 2022

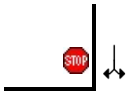
Peak-Hour: 2:00 PM -- 3:00 PM
Peak 15-Min: 2:30 PM -- 2:45 PM

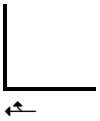


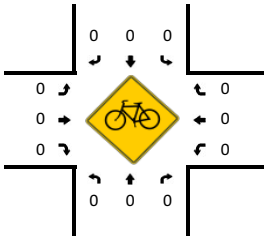
Quality Counts
DATA THAT DRIVES COMMUNITIES

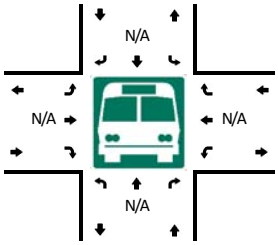


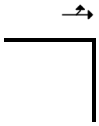


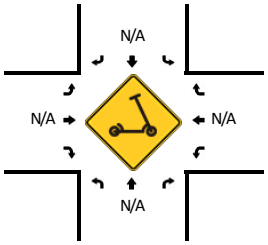












15-Min Count Period Beginning At	999110128 - SE Fowler St (Northbound)				999110128 - SE Fowler St (Southbound)				SE Douglas Ave (Eastbound)				SE Douglas Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	0	0	0	19	0	2	0	1	29	0	0	0	40	13	0	104	
2:15 PM	0	0	0	0	16	0	6	0	0	24	0	0	0	46	15	0	107	
2:30 PM	0	0	0	0	13	0	4	0	5	64	0	0	0	49	20	0	155	
2:45 PM	0	0	0	0	10	0	1	0	2	38	0	0	0	40	21	0	112	478
3:00 PM	0	0	0	0	19	0	1	0	1	23	0	0	0	30	11	0	85	459
3:15 PM	0	0	0	0	12	0	3	0	0	25	0	0	0	29	6	0	75	427
3:30 PM	0	0	0	0	14	0	1	0	1	27	0	0	0	28	16	0	87	359
3:45 PM	0	0	0	0	23	0	2	0	2	41	0	0	0	39	15	0	122	369
4:00 PM	0	0	0	0	16	0	1	0	4	27	0	0	0	31	18	0	97	381
4:15 PM	0	0	0	0	24	0	3	0	1	29	0	0	0	26	16	0	99	405
4:30 PM	0	0	0	0	17	0	4	0	0	21	0	0	0	30	13	0	85	403
4:45 PM	0	0	0	0	14	0	5	0	3	31	0	0	0	43	14	0	110	391
5:00 PM	0	0	0	0	49	0	5	0	0	36	0	0	0	47	15	0	152	446
5:15 PM	0	0	0	0	22	0	5	0	1	28	0	0	0	37	18	0	111	458
5:30 PM	0	0	0	0	21	0	3	0	0	27	0	0	0	35	4	0	90	463
5:45 PM	0	0	0	0	13	0	0	0	0	35	0	0	0	25	9	0	82	435

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	52	0	16	0	20	256	0	0	0	196	80	0	620
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 9/20/2022 8:29 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Appendix C Existing Traffic Conditions Worksheet

MOVEMENT SUMMARY

Site: 101 [DiamondLake_Winchester (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Yield (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Stephens St															
8	T1	All MCs	841	1.0	841	1.0	0.233	0.9	LOS A	0.3	8.7	0.04	0.03	0.04	39.1
18	R2	All MCs	9	0.0	9	0.0	0.233	120.4	LOS F	0.3	8.7	0.07	0.06	0.07	36.6
Approach			851	1.0	851	1.0	0.233	1.2	NA	0.3	8.7	0.04	0.03	0.04	39.1
East: Winchester St															
1	L2	All MCs	1	0.0	1	0.0	0.824	3288.9	LOS F	19.7	493.0	1.00	1.59	3.04	23.8
16	R2	All MCs	539	0.0	539	0.0	0.824	28.2	LOS D	19.7	493.0	1.00	1.59	3.04	23.9
Approach			540	0.0	540	0.0	0.824	29.0	LOS D	19.7	493.0	1.00	1.59	3.04	23.9
North: Stephens St															
7	L2	All MCs	537	0.0	537	0.0	0.670	16.3	LOS C	7.7	192.8	0.81	1.17	2.05	27.5
4	T1	All MCs	1032	1.0	1032	1.0	0.274	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	39.9
Approach			1569	0.7	1569	0.7	0.670	5.6	NA	7.7	192.8	0.28	0.40	0.70	34.6
All Vehicles			2960	0.6	2960	0.6	0.824	10.0	NA	19.7	493.0	0.34	0.51	0.94	32.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard (HCM).
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	523	114	606	425	288	661
v/c Ratio	0.45	0.08	0.70	0.41	0.75	0.41
Control Delay	16.3	0.1	35.9	2.4	28.4	15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.3	0.1	35.9	2.4	28.4	15.7
Queue Length 50th (ft)	52	0	175	10	104	128
Queue Length 95th (ft)	98	0	214	42	136	134
Internal Link Dist (ft)	453		312			334
Turn Bay Length (ft)				120	200	
Base Capacity (vph)	1153	1430	985	1056	516	2013
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.08	0.62	0.40	0.56	0.33

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	486	106	564	395	268	615
Future Volume (vph)	486	106	564	395	268	615
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.6	4.0	6.1	5.6	5.9	5.9
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	2959	1430	3292	1369	1614	3292
Flt Permitted	0.95	1.00	1.00	1.00	0.27	1.00
Satd. Flow (perm)	2959	1430	3292	1369	460	3292
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	523	114	606	425	288	661
RTOR Reduction (vph)	0	0	0	126	0	0
Lane Group Flow (vph)	523	114	606	299	288	661
Confl. Peds. (#/hr)				2	2	
Heavy Vehicles (%)	9%	4%	1%	8%	3%	1%
Turn Type	Prot	Free	NA	pm+ov	D.P+P	NA
Protected Phases	4		6	4	5	2
Permitted Phases		Free		6	6	
Actuated Green, G (s)	37.0	95.0	25.0	62.0	40.4	46.5
Effective Green, g (s)	37.0	95.0	25.0	62.0	40.4	46.5
Actuated g/C Ratio	0.39	1.00	0.26	0.65	0.43	0.49
Clearance Time (s)	5.6		6.1	5.6	5.9	5.9
Vehicle Extension (s)	2.5		4.2	2.5	2.5	4.2
Lane Grp Cap (vph)	1152	1430	866	893	382	1611
v/s Ratio Prot	c0.18		0.18	0.13	c0.12	0.20
v/s Ratio Perm		0.08		0.09	c0.20	
v/c Ratio	0.45	0.08	0.70	0.34	0.75	0.41
Uniform Delay, d1	21.5	0.0	31.6	7.3	19.8	15.5
Progression Factor	0.65	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	0.1	2.8	0.3	7.8	0.3
Delay (s)	15.1	0.1	34.4	7.7	27.6	15.7
Level of Service	B	A	C	A	C	B
Approach Delay (s)	12.4		23.4			19.4
Approach LOS	B		C			B

Intersection Summary			
HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	17.6
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	486	106	564	395	268	615
Future Volume (veh/h)	486	106	564	395	268	615
Number	7	14	6	16	5	2
Initial Q, veh	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Lanes Open During Work Zone						
Adj Sat Flow, veh/h/ln	1627	1695	1736	1641	1709	1736
Adj Flow Rate, veh/h	523	0	606	425	288	661
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	9	4	1	8	3	1
Opposing Right Turn Influence	Yes				Yes	
Cap, veh/h	1245		805	914	370	1526
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.41	0.00	0.24	0.24	0.16	0.46
Unsig. Movement Delay						
Ln Grp Delay, s/veh	20.7	0.0	36.5	8.6	26.9	17.5
Ln Grp LOS	C		D	A	C	B
Approach Vol, veh/h	523		1031			949
Approach Delay, s/veh	20.7		25.0			20.3
Approach LOS	C		C			C

Timer:	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Case No		4.0		9.0	1.2	7.0		
Phs Duration (G+Y+Rc), s		50.0		45.0	20.8	29.3		
Change Period (Y+Rc), s		* 6.1		5.6	* 5.9	6.1		
Max Green (Gmax), s		* 58		25.4	* 24	27.9		
Max Allow Headway (MAH), s		5.4		3.8	3.8	5.6		
Max Q Clear (g_c+I1), s		14.8		13.7	14.2	18.2		
Green Ext Time (g_e), s		5.7		1.6	0.6	5.0		
Prob of Phs Call (p_c)		1.00		1.00	1.00	1.00		
Prob of Max Out (p_x)		0.00		0.03	0.02	0.67		

Left-Turn Movement Data								
Assigned Mvmt				7	5	1		
Mvmt Sat Flow, veh/h				3006	1628	0		

Through Movement Data								
Assigned Mvmt		2		4		6		
Mvmt Sat Flow, veh/h		3386		0		3386		

Right-Turn Movement Data								
Assigned Mvmt		12		14		16		
Mvmt Sat Flow, veh/h		0		1437		1385		

Left Lane Group Data								
Assigned Mvmt	0	0	0	7	5	1	0	0
Lane Assignment				LL (Pr/Pm)				

Lanes in Grp	0	0	0	2	1	0	0	0
Grp Vol (v), veh/h	0	0	0	523	288	0	0	0
Grp Sat Flow (s), veh/h/ln	0	0	0	1503	1628	0	0	0
Q Serve Time (g_s), s	0.0	0.0	0.0	11.7	12.2	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	11.7	12.2	0.0	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	0	0	1503	543	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	0.0	0.0	23.2	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	7.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.0	0.0	7.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	23.2	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	0	0	1245	370	0	0	0
V/C Ratio (X)	0.00	0.00	0.00	0.42	0.78	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	0	0	1245	529	0	0	0
Upstream Filter (I)	0.00	0.00	0.00	0.92	1.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	19.7	23.1	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.0	3.8	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	20.7	26.9	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	3.9	4.4	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.2	0.4	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	4.1	4.8	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	0.25	0.62	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	0
Lane Assignment		T				T		
Lanes in Grp	0	2	0	0	0	2	0	0
Grp Vol (v), veh/h	0	661	0	0	0	606	0	0
Grp Sat Flow (s), veh/h/ln	0	1650	0	0	0	1650	0	0
Q Serve Time (g_s), s	0.0	12.8	0.0	0.0	0.0	16.2	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	12.8	0.0	0.0	0.0	16.2	0.0	0.0
Lane Grp Cap (c), veh/h	0	1526	0	0	0	805	0	0
V/C Ratio (X)	0.00	0.43	0.00	0.00	0.00	0.75	0.00	0.00
Avail Cap (c_a), veh/h	0	2018	0	0	0	969	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	17.2	0.0	0.0	0.0	33.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.0	3.3	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	17.5	0.0	0.0	0.0	36.5	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	4.6	0.0	0.0	0.0	6.3	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.1	0.0	0.0	0.0	0.4	0.0	0.0

3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00
%ile Back of Q (50%), veh/ln	0.0	4.6	0.0	0.0	0.0	6.6	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.32	0.00	0.00	0.00	0.46	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	0
Lane Assignment				R		R		
Lanes in Grp	0	0	0	1	0	1	0	0
Grp Vol (v), veh/h	0	0	0	0	0	425	0	0
Grp Sat Flow (s), veh/h/ln	0	0	0	1437	0	1385	0	0
Q Serve Time (g_s), s	0.0	0.0	0.0	0.0	0.0	14.4	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	0.0	0.0	14.4	0.0	0.0
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	1390.5	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	39.4	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	0	0	595	0	914	0	0
V/C Ratio (X)	0.00	0.00	0.00	0.00	0.00	0.46	0.00	0.00
Avail Cap (c_a), veh/h	0	0	0	595	0	983	0	0
Upstream Filter (I)	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	0.0	0.0	8.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	8.6	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	0.0	0.0	9.9	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	0.00	0.00	2.22	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	22.3
HCM 6th LOS	C

Notes

* HCM 6th Edition computational engine requires equal clearance times for the phases crossing the barrier.

User approved changes to right turn type.

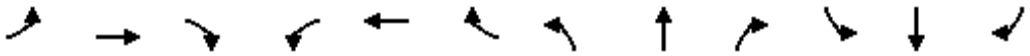
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	46	590	47	25	531	418	10	81	25	406	169
v/c Ratio	0.35	0.41	0.06	0.22	0.40	0.36	0.10	0.48	0.09	0.90	0.27
Control Delay	41.4	26.7	0.5	45.8	23.3	2.3	44.0	49.1	0.6	57.6	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.4	26.7	0.5	45.8	23.3	2.3	44.0	49.1	0.6	57.6	14.6
Queue Length 50th (ft)	28	157	0	15	132	10	6	47	0	225	41
Queue Length 95th (ft)	m55	237	m2	40	200	49	22	90	0	#396	100
Internal Link Dist (ft)		453			292			86			62
Turn Bay Length (ft)	100		60	85		50	80		80	155	
Base Capacity (vph)	181	1450	761	133	1324	1160	190	331	408	478	672
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.41	0.06	0.19	0.40	0.36	0.05	0.24	0.06	0.85	0.25

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	566	45	24	510	401	10	78	24	390	86	76
Future Volume (vph)	44	566	45	24	510	401	10	78	24	390	86	76
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1646	3107	1453	1646	3050	1469	1646	1750	1466	1662	1610	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1646	3107	1453	1646	3050	1469	1646	1750	1466	1662	1610	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	46	590	47	25	531	418	10	81	25	406	90	79
RTOR Reduction (vph)	0	0	28	0	0	125	0	0	22	0	33	0
Lane Group Flow (vph)	46	590	19	25	531	293	10	81	3	406	136	0
Confl. Peds. (#/hr)	1		2	2		1	1		3	3		1
Heavy Vehicles (%)	1%	7%	0%	1%	9%	0%	1%	0%	0%	0%	0%	1%
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6	7	3	8		7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	5.4	38.4	38.4	3.2	36.2	62.0	1.4	10.6	10.6	25.8	35.0	
Effective Green, g (s)	5.4	38.4	38.4	3.2	36.2	62.0	1.4	10.6	10.6	25.8	35.0	
Actuated g/C Ratio	0.06	0.40	0.40	0.03	0.38	0.65	0.01	0.11	0.11	0.27	0.37	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	2.5	4.2	4.2	2.5	4.2	2.5	2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	93	1255	587	55	1162	958	24	195	163	451	593	
v/s Ratio Prot	c0.03	c0.19		0.02	0.17	0.08	0.01	c0.05		c0.24	0.08	
v/s Ratio Perm			0.01			0.12			0.00			
v/c Ratio	0.49	0.47	0.03	0.45	0.46	0.31	0.42	0.42	0.02	0.90	0.23	
Uniform Delay, d1	43.5	20.8	17.1	45.0	22.0	7.2	46.4	39.3	37.6	33.4	20.7	
Progression Factor	0.86	1.29	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.7	1.1	0.1	4.3	1.3	0.1	8.3	1.0	0.0	20.7	0.1	
Delay (s)	40.1	27.9	17.2	49.3	23.3	7.3	54.7	40.4	37.6	54.1	20.8	
Level of Service	D	C	B	D	C	A	D	D	D	D	C	
Approach Delay (s)		28.0			17.1			41.0			44.3	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	566	45	24	510	401	10	78	24	390	86	76
Future Volume (veh/h)	44	566	45	24	510	401	10	78	24	390	86	76
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Lanes Open During Work Zone												
Adj Sat Flow, veh/h/ln	1736	1654	1750	1736	1627	1750	1736	1750	1750	1750	1750	1736
Adj Flow Rate, veh/h	46	590	47	25	531	418	10	81	25	406	90	79
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	7	0	1	9	0	1	0	0	0	0	1
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	61	1435	675	42	1375	1046	20	136	114	436	281	246
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.04	0.46	0.46	0.03	0.44	0.44	0.01	0.08	0.08	0.26	0.33	0.33
Unsig. Movement Delay												
Ln Grp Delay, s/veh	56.0	18.0	14.7	55.4	18.5	6.8	59.9	45.5	41.8	58.1	0.0	24.3
Ln Grp LOS	E	B	B	E	B	A	E	D	D	E	A	C
Approach Vol, veh/h		683			974			116			575	
Approach Delay, s/veh		20.3			14.4			45.9			48.2	
Approach LOS		C			B			D			D	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Case No	2.0	3.0	2.0	4.0	2.0	3.0	2.0	3.0
Phs Duration (G+Y+Rc), s	6.9	47.9	5.2	35.1	8.0	46.8	28.9	11.4
Change Period (Y+Rc), s	4.5	4.5	4.0	4.0	4.5	4.5	4.0	4.0
Max Green (Gmax), s	7.5	25.5	11.0	34.0	10.5	22.5	27.0	18.0
Max Allow Headway (MAH), s	3.3	6.3	3.3	4.8	3.3	5.8	3.3	4.4
Max Q Clear (g_c+I1), s	3.4	13.9	2.6	9.5	4.6	13.0	24.6	6.3
Green Ext Time (g_e), s	0.0	4.3	0.0	0.7	0.0	4.9	0.3	0.2
Prob of Phs Call (p_c)	0.48	1.00	0.23	1.00	0.70	1.00	1.00	1.00
Prob of Max Out (p_x)	0.21	0.46	0.00	0.00	0.01	0.70	1.00	0.00

Left-Turn Movement Data								
Assigned Mvmt	1		3		5		7	
Mvmt Sat Flow, veh/h	1654		1654		1654		1667	

Through Movement Data								
Assigned Mvmt		2		4		6		8
Mvmt Sat Flow, veh/h		3143		858		3092		1750

Right-Turn Movement Data								
Assigned Mvmt		12		14		16		18
Mvmt Sat Flow, veh/h		1480		753		1480		1466

Left Lane Group Data								
Assigned Mvmt	1	0	3	0	5	0	7	0
Lane Assignment	L (Prot)		L (Prot)		L (Prot)		L (Prot)	

Lanes in Grp	1	0	1	0	1	0	1	0
Grp Vol (v), veh/h	25	0	10	0	46	0	406	0
Grp Sat Flow (s), veh/h/ln	1654	0	1654	0	1654	0	1667	0
Q Serve Time (g_s), s	1.4	0.0	0.6	0.0	2.6	0.0	22.6	0.0
Cycle Q Clear Time (g_c), s	1.4	0.0	0.6	0.0	2.6	0.0	22.6	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	0	0	0	0	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Lane Grp Cap (c), veh/h	42	0	20	0	61	0	436	0
V/C Ratio (X)	0.59	0.00	0.50	0.00	0.75	0.00	0.93	0.00
Avail Cap (c_a), veh/h	131	0	191	0	183	0	474	0
Upstream Filter (I)	1.00	0.00	1.00	0.00	0.82	0.00	1.00	0.00
Uniform Delay (d1), s/veh	45.8	0.0	46.6	0.0	45.3	0.0	34.2	0.0
Incr Delay (d2), s/veh	9.6	0.0	13.3	0.0	10.7	0.0	23.9	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	55.4	0.0	59.9	0.0	56.0	0.0	58.1	0.0
1st-Term Q (Q1), veh/ln	0.6	0.0	0.2	0.0	1.1	0.0	8.8	0.0
2nd-Term Q (Q2), veh/ln	0.1	0.0	0.1	0.0	0.2	0.0	2.9	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
%ile Back of Q (50%), veh/ln	0.7	0.0	0.3	0.0	1.2	0.0	11.7	0.0
%ile Storage Ratio (RQ%)	0.20	0.00	0.10	0.00	0.31	0.00	1.89	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment		T				T		T
Lanes in Grp	0	2	0	0	0	2	0	1
Grp Vol (v), veh/h	0	590	0	0	0	531	0	81
Grp Sat Flow (s), veh/h/ln	0	1572	0	0	0	1546	0	1750
Q Serve Time (g_s), s	0.0	11.9	0.0	0.0	0.0	10.9	0.0	4.3
Cycle Q Clear Time (g_c), s	0.0	11.9	0.0	0.0	0.0	10.9	0.0	4.3
Lane Grp Cap (c), veh/h	0	1435	0	0	0	1375	0	136
V/C Ratio (X)	0.00	0.41	0.00	0.00	0.00	0.39	0.00	0.60
Avail Cap (c_a), veh/h	0	1435	0	0	0	1375	0	332
Upstream Filter (I)	0.00	0.82	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	17.3	0.0	0.0	0.0	17.7	0.0	42.4
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.0	0.0	0.8	0.0	3.1
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	18.0	0.0	0.0	0.0	18.5	0.0	45.5
1st-Term Q (Q1), veh/ln	0.0	4.1	0.0	0.0	0.0	3.7	0.0	1.8
2nd-Term Q (Q2), veh/ln	0.0	0.1	0.0	0.0	0.0	0.2	0.0	0.1

3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	4.2	0.0	0.0	0.0	3.9	0.0	1.9
%ile Storage Ratio (RQ%)	0.00	0.26	0.00	0.00	0.00	0.36	0.00	0.44
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment		R		T+R		R		R
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	47	0	169	0	418	0	25
Grp Sat Flow (s), veh/h/ln	0	1480	0	1612	0	1480	0	1466
Q Serve Time (g_s), s	0.0	1.7	0.0	7.5	0.0	11.0	0.0	1.5
Cycle Q Clear Time (g_c), s	0.0	1.7	0.0	7.5	0.0	11.0	0.0	1.5
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	1483.1	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	24.9	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	1.00	0.00	0.47	0.00	1.00	0.00	1.00
Lane Grp Cap (c), veh/h	0	675	0	527	0	1046	0	114
V/C Ratio (X)	0.00	0.07	0.00	0.32	0.00	0.40	0.00	0.22
Avail Cap (c_a), veh/h	0	675	0	577	0	1046	0	278
Upstream Filter (I)	0.00	0.82	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	14.5	0.0	24.0	0.0	5.7	0.0	41.1
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.3	0.0	1.1	0.0	0.7
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	14.7	0.0	24.3	0.0	6.8	0.0	41.8
1st-Term Q (Q1), veh/ln	0.0	0.5	0.0	2.8	0.0	2.7	0.0	0.5
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.6	0.0	2.8	0.0	3.0	0.0	0.6
%ile Storage Ratio (RQ%)	0.00	0.24	0.00	0.84	0.00	1.51	0.00	0.18
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	26.0
HCM 6th LOS	C

Notes

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

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	974	34	70	992	21	68
Future Vol, veh/h	974	34	70	992	21	68
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	0	-	50	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1004	35	72	1023	22	70

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1039	0	1678	520
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	656	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	665	-	86	501
Stage 1	-	-	-	-	308	-
Stage 2	-	-	-	-	478	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	665	-	77	501
Mov Cap-2 Maneuver	-	-	-	-	77	-
Stage 1	-	-	-	-	308	-
Stage 2	-	-	-	-	426	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	26.5
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	77	501	-	-	665	-
HCM Lane V/C Ratio	0.281	0.14	-	-	0.109	-
HCM Control Delay (s)	69.1	13.4	-	-	11.1	-
HCM Lane LOS	F	B	-	-	B	-
HCM 95th %tile Q(veh)	1	0.5	-	-	0.4	-

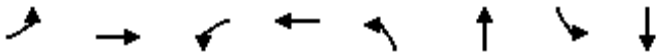
Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	36	928	7	1	880	15	8	1	2	14	0	40
Future Vol, veh/h	36	928	7	1	880	15	8	1	2	14	0	40
Conflicting Peds, #/hr	3	0	6	6	0	3	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	5	4	11	5	2	3	0	18	1	0	2
Mvmt Flow	38	967	7	1	917	16	8	1	2	15	0	42

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	936	0	0	980	0	0	1514	1991	493	1490	1986	470
Stage 1	-	-	-	-	-	-	1053	1053	-	930	930	-
Stage 2	-	-	-	-	-	-	461	938	-	560	1056	-
Critical Hdwy	4.14	-	-	4.32	-	-	7.56	6.5	7.26	7.52	6.5	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.56	5.5	-	6.52	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.56	5.5	-	6.52	5.5	-
Follow-up Hdwy	2.22	-	-	2.31	-	-	3.53	4	3.48	3.51	4	3.32
Pot Cap-1 Maneuver	727	-	-	648	-	-	81	61	481	87	62	540
Stage 1	-	-	-	-	-	-	240	306	-	289	349	-
Stage 2	-	-	-	-	-	-	547	346	-	483	305	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	725	-	-	644	-	-	71	57	478	82	58	538
Mov Cap-2 Maneuver	-	-	-	-	-	-	166	161	-	190	169	-
Stage 1	-	-	-	-	-	-	226	288	-	273	347	-
Stage 2	-	-	-	-	-	-	504	344	-	454	287	-

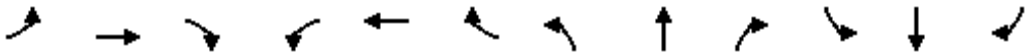
Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	25.4	16.7
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	188	725	-	-	644	-	-	365
HCM Lane V/C Ratio	0.061	0.052	-	-	0.002	-	-	0.154
HCM Control Delay (s)	25.4	10.2	-	-	10.6	-	-	16.7
HCM Lane LOS	D	B	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0.2	0.2	-	-	0	-	-	0.5



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	46	871	13	769	94	29	3	33
v/c Ratio	0.11	0.43	0.04	0.35	0.39	0.10	0.01	0.11
Control Delay	6.1	6.3	5.4	5.9	23.1	9.5	16.7	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.1	6.3	5.4	5.9	23.1	9.5	16.7	9.2
Queue Length 50th (ft)	5	57	1	50	20	1	1	1
Queue Length 95th (ft)	19	114	8	97	63	18	6	19
Internal Link Dist (ft)		695		509		305		334
Turn Bay Length (ft)					225			
Base Capacity (vph)	569	2840	518	3062	702	838	718	826
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.31	0.03	0.25	0.13	0.03	0.00	0.04

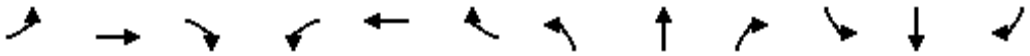
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	698	120	12	714	8	88	3	24	3	3	28
Future Volume (vph)	43	698	120	12	714	8	88	3	24	3	3	28
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	5.9	5.9		5.9	5.9		5.5	5.5		5.5	5.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.87		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1628	3074		1660	3318		1628	1484		1662	1462	
Flt Permitted	0.36	1.00		0.32	1.00		0.74	1.00		0.74	1.00	
Satd. Flow (perm)	617	3074		561	3318		1261	1484		1291	1462	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	46	743	128	13	760	9	94	3	26	3	3	30
RTOR Reduction (vph)	0	15	0	0	1	0	0	22	0	0	26	0
Lane Group Flow (vph)	46	856	0	13	768	0	94	7	0	3	7	0
Confl. Peds. (#/hr)	5		4	4		5	2		1	1		2
Heavy Vehicles (%)	2%	6%	2%	0%	0%	0%	2%	0%	1%	0%	4%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	29.0	29.0		29.0	29.0		7.1	7.1		7.1	7.1	
Effective Green, g (s)	29.0	29.0		29.0	29.0		7.1	7.1		7.1	7.1	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.15	0.15		0.15	0.15	
Clearance Time (s)	5.9	5.9		5.9	5.9		5.5	5.5		5.5	5.5	
Vehicle Extension (s)	4.8	4.8		4.8	4.8		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	376	1876		342	2025		188	221		192	218	
v/s Ratio Prot		c0.28			0.23			0.00			0.01	
v/s Ratio Perm	0.07			0.02			c0.07			0.00		
v/c Ratio	0.12	0.46		0.04	0.38		0.50	0.03		0.02	0.03	
Uniform Delay, d1	3.9	5.0		3.7	4.7		18.6	17.3		17.2	17.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.3		0.1	0.2		1.5	0.0		0.0	0.0	
Delay (s)	4.2	5.3		3.8	4.9		20.1	17.3		17.2	17.3	
Level of Service	A	A		A	A		C	B		B	B	
Approach Delay (s)		5.3			4.9			19.4			17.3	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	6.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	47.5	Sum of lost time (s)	11.4
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	698	120	12	714	8	88	3	24	3	3	28
Future Volume (veh/h)	43	698	120	12	714	8	88	3	24	3	3	28
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Lanes Open During Work Zone												
Adj Sat Flow, veh/h/ln	1723	1668	1723	1750	1750	1750	1723	1750	1736	1750	1695	1723
Adj Flow Rate, veh/h	46	743	128	13	760	9	94	3	26	3	3	30
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	6	2	0	0	0	2	0	1	0	4	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	492	1519	262	444	1892	22	352	22	187	359	18	184
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.56	0.56	0.56	0.56	0.56	0.56	0.14	0.14	0.14	0.14	0.14	0.14
Unsig. Movement Delay												
Ln Grp Delay, s/veh	6.7	5.9	5.9	7.2	5.3	5.2	16.2	0.0	14.7	14.8	0.0	14.8
Ln Grp LOS	A	A	A	A	A	A	B	A	B	B	A	B
Approach Vol, veh/h		917			782			123			36	
Approach Delay, s/veh		5.9			5.3			15.8			14.8	
Approach LOS		A			A			B			B	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Case No		6.0		6.0		6.0		6.0
Phs Duration (G+Y+Rc), s		27.4		10.8		27.4		10.8
Change Period (Y+Rc), s		5.9		5.5		5.9		5.5
Max Green (Gmax), s		45.0		25.0		45.0		25.0
Max Allow Headway (MAH), s		7.0		5.1		6.7		3.6
Max Q Clear (g_c+I1), s		8.4		2.8		8.8		5.2
Green Ext Time (g_e), s		13.1		0.1		9.7		0.3
Prob of Phs Call (p_c)		1.00		0.82		1.00		0.82
Prob of Max Out (p_x)		0.17		0.00		0.07		0.00

Left-Turn Movement Data								
Assigned Mvmt		5		7		1		3
Mvmt Sat Flow, veh/h		699		1397		645		1371

Through Movement Data								
Assigned Mvmt		2		4		6		8
Mvmt Sat Flow, veh/h		2701		132		3365		155

Right-Turn Movement Data								
Assigned Mvmt		12		14		16		18
Mvmt Sat Flow, veh/h		465		1320		40		1346

Left Lane Group Data								
Assigned Mvmt	0	5	0	7	0	1	0	3
Lane Assignment		L		L		L		L

Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	46	0	3	0	13	0	94
Grp Sat Flow (s), veh/h/ln	0	699	0	1397	0	645	0	1371
Q Serve Time (g_s), s	0.0	1.5	0.0	0.1	0.0	0.5	0.0	2.5
Cycle Q Clear Time (g_c), s	0.0	6.4	0.0	0.7	0.0	6.8	0.0	3.2
Perm LT Sat Flow (s_l), veh/h/ln	0	699	0	1397	0	645	0	1371
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	21.5	0.0	5.3	0.0	21.5	0.0	5.3
Perm LT Serve Time (g_u), s	0.0	16.6	0.0	4.7	0.0	15.1	0.0	4.6
Perm LT Q Serve Time (g_ps), s	0.0	1.5	0.0	0.1	0.0	0.5	0.0	2.5
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Lane Grp Cap (c), veh/h	0	492	0	359	0	444	0	352
V/C Ratio (X)	0.00	0.09	0.00	0.01	0.00	0.03	0.00	0.27
Avail Cap (c_a), veh/h	0	922	0	1079	0	841	0	1058
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	6.5	0.0	14.7	0.0	7.1	0.0	15.9
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.3
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	6.7	0.0	14.8	0.0	7.2	0.0	16.2
1st-Term Q (Q1), veh/ln	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.6
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.6
%ile Storage Ratio (RQ%)	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.07
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment		T				T		
Lanes in Grp	0	1	0	0	0	1	0	0
Grp Vol (v), veh/h	0	436	0	0	0	375	0	0
Grp Sat Flow (s), veh/h/ln	0	1585	0	0	0	1663	0	0
Q Serve Time (g_s), s	0.0	6.3	0.0	0.0	0.0	4.9	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	6.3	0.0	0.0	0.0	4.9	0.0	0.0
Lane Grp Cap (c), veh/h	0	891	0	0	0	935	0	0
V/C Ratio (X)	0.00	0.49	0.00	0.00	0.00	0.40	0.00	0.00
Avail Cap (c_a), veh/h	0	1867	0	0	0	1958	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	5.0	0.0	0.0	0.0	4.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.8	0.0	0.0	0.0	0.5	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	5.9	0.0	0.0	0.0	5.3	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.9	0.0	0.0	0.0	0.5	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.0

3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	1.1	0.0	0.0	0.0	0.7	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.04	0.00	0.00	0.00	0.03	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment		T+R		T+R		T+R		T+R
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	435	0	33	0	394	0	29
Grp Sat Flow (s), veh/h/ln	0	1582	0	1452	0	1743	0	1502
Q Serve Time (g_s), s	0.0	6.3	0.0	0.8	0.0	4.9	0.0	0.6
Cycle Q Clear Time (g_c), s	0.0	6.3	0.0	0.8	0.0	4.9	0.0	0.6
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.29	0.00	0.91	0.00	0.02	0.00	0.90
Lane Grp Cap (c), veh/h	0	890	0	202	0	980	0	209
V/C Ratio (X)	0.00	0.49	0.00	0.16	0.00	0.40	0.00	0.14
Avail Cap (c_a), veh/h	0	1863	0	950	0	2053	0	983
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	5.0	0.0	14.5	0.0	4.7	0.0	14.4
Incr Delay (d2), s/veh	0.0	0.8	0.0	0.3	0.0	0.5	0.0	0.2
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	5.9	0.0	14.8	0.0	5.2	0.0	14.7
1st-Term Q (Q1), veh/ln	0.0	0.9	0.0	0.2	0.0	0.5	0.0	0.2
2nd-Term Q (Q2), veh/ln	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	1.1	0.0	0.2	0.0	0.7	0.0	0.2
%ile Storage Ratio (RQ%)	0.00	0.04	0.00	0.02	0.00	0.03	0.00	0.01
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	6.5
HCM 6th LOS	A

Notes

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

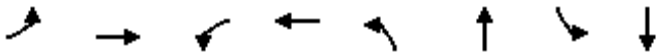
Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	553	3	5	580	5	12
Future Vol, veh/h	553	3	5	580	5	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	0	-
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	0	11	4	0	7
Mvmt Flow	601	3	5	630	5	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	604	0	928	302
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	325	-
Critical Hdwy	-	-	4.32	-	6.8	7.04
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.31	-	3.5	3.37
Pot Cap-1 Maneuver	-	-	911	-	271	679
Stage 1	-	-	-	-	515	-
Stage 2	-	-	-	-	711	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	911	-	270	679
Mov Cap-2 Maneuver	-	-	-	-	390	-
Stage 1	-	-	-	-	515	-
Stage 2	-	-	-	-	707	-

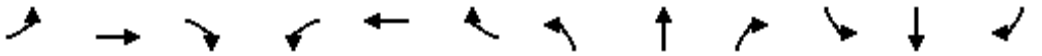
Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	557	-	-	911	-
HCM Lane V/C Ratio	0.033	-	-	0.006	-
HCM Control Delay (s)	11.7	-	-	9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	85	43	135	124	8	1158	82	1257
v/c Ratio	0.19	0.06	0.34	0.24	0.05	0.85	0.44	0.53
Control Delay	24.4	17.9	37.8	20.6	24.1	39.1	22.7	20.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.4	17.9	37.8	20.6	24.1	39.1	22.7	20.2
Queue Length 50th (ft)	42	15	85	41	4	435	31	231
Queue Length 95th (ft)	72	36	139	85	15	502	54	247
Internal Link Dist (ft)		389		479		92		142
Turn Bay Length (ft)					100		150	
Base Capacity (vph)	485	679	394	527	146	1364	268	2379
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.06	0.34	0.24	0.05	0.85	0.31	0.53

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	26	10	113	43	61	7	877	96	69	1028	28
Future Volume (vph)	71	26	10	113	43	61	7	877	96	69	1028	28
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.91		1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1658	1670		1659	1579		1660	3125		1662	4533	
Flt Permitted	0.58	1.00		0.73	1.00		0.19	1.00		0.09	1.00	
Satd. Flow (perm)	1008	1670		1273	1579		338	3125		163	4533	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	85	31	12	135	51	73	8	1044	114	82	1224	33
RTOR Reduction (vph)	0	7	0	0	38	0	0	6	0	0	2	0
Lane Group Flow (vph)	85	36	0	135	86	0	8	1152	0	82	1255	0
Confl. Peds. (#/hr)	5		2	2		5	3		3	3		3
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	5%	0%	0%	5%	1%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		D.P+P	NA	
Protected Phases	3	8			4			6		5	2	
Permitted Phases	8			4			6			6		
Actuated Green, G (s)	50.4	50.4		38.1	38.1		51.7	51.7		59.1	63.6	
Effective Green, g (s)	50.4	50.4		38.1	38.1		51.7	51.7		59.1	63.6	
Actuated g/C Ratio	0.41	0.41		0.31	0.31		0.42	0.42		0.48	0.52	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	2.5	2.5		2.5	2.5		4.2	4.2		3.0	4.2	
Lane Grp Cap (vph)	454	684		394	489		142	1313		168	2343	
v/s Ratio Prot	c0.01	0.02			0.05			c0.37		0.03	c0.28	
v/s Ratio Perm	0.06			c0.11			0.02			0.20		
v/c Ratio	0.19	0.05		0.34	0.18		0.06	0.88		0.49	0.54	
Uniform Delay, d1	22.8	21.9		32.8	31.0		21.2	32.7		22.6	19.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1		2.4	0.8		0.8	8.5		2.2	0.9	
Delay (s)	22.9	22.0		35.1	31.8		21.9	41.2		24.8	20.7	
Level of Service	C	C		D	C		C	D		C	C	
Approach Delay (s)		22.6			33.5			41.1			21.0	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	30.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	123.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	26	10	113	43	61	7	877	96	69	1028	28
Future Volume (veh/h)	71	26	10	113	43	61	7	877	96	69	1028	28
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		0.99	0.99		0.99	1.00		1.00	1.00		0.98
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Lanes Open During Work Zone												
Adj Sat Flow, veh/h/ln	1750	1750	1750	1750	1750	1750	1750	1682	1750	1750	1682	1736
Adj Flow Rate, veh/h	85	31	12	135	51	73	8	1044	114	82	1224	33
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	0	0	0	0	0	0	0	5	0	0	5	1
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	290	292	113	367	158	226	313	1984	216	309	3137	85
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.00	0.24	0.24	0.24	0.24	0.24	0.68	0.68	0.68	0.00	0.68	0.68
Unsig. Movement Delay												
Ln Grp Delay, s/veh	44.5	0.0	36.6	43.9	0.0	40.4	11.9	11.5	11.4	18.0	9.0	9.4
Ln Grp LOS	D	A	D	D	A	D	B	B	B	B	A	A
Approach Vol, veh/h		128			259			1166			1339	
Approach Delay, s/veh		41.9			42.2			11.5			9.7	
Approach LOS		D			D			B			A	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4	5	6		8
Case No		4.0	1.2	6.3	1.2	6.3		4.0
Phs Duration (G+Y+Rc), s		88.5	0.0	34.5	0.0	88.5		34.5
Change Period (Y+Rc), s		4.5	4.5	4.5	4.5	4.5		4.5
Max Green (Gmax), s		45.0	15.0	30.0	15.0	45.0		30.0
Max Allow Headway (MAH), s		0.0	0.0	0.0	0.0	0.0		0.0
Max Q Clear (g_c+I1), s		0.0	0.0	0.0	0.0	0.0		0.0
Green Ext Time (g_e), s		0.0	0.0	0.0	0.0	0.0		0.0
Prob of Phs Call (p_c)		1.00	0.00	1.00	0.00	1.00		1.00
Prob of Max Out (p_x)		0.00	0.00	0.00	0.00	0.00		0.00

Left-Turn Movement Data								
Assigned Mvmt			3	7	5	1		
Mvmt Sat Flow, veh/h			1667	1377	1667	449		

Through Movement Data								
Assigned Mvmt		2		4		6		8
Mvmt Sat Flow, veh/h		4593		648		2905		1199

Right-Turn Movement Data								
Assigned Mvmt		12		14		16		18
Mvmt Sat Flow, veh/h		124		928		317		464

Left Lane Group Data								
Assigned Mvmt	0	0	3	7	5	1	0	0
Lane Assignment		L (Pr/Pm)		LL (Pr/Pm)		L		

Lanes in Grp	0	0	1	1	1	1	0	0
Grp Vol (v), veh/h	0	0	85	135	82	8	0	0
Grp Sat Flow (s), veh/h/ln	0	0	1667	1377	1667	449	0	0
Q Serve Time (g_s), s	0.0	0.0	0.1	10.4	0.1	1.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	0.0	0.1	12.8	0.1	15.1	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	0	1282	1377	493	449	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	32.0	30.0	84.0	84.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	22.1	27.5	62.1	69.8	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	7.0	10.4	11.7	1.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	0	290	367	309	313	0	0
V/C Ratio (X)	0.00	0.00	0.29	0.37	0.27	0.03	0.00	0.00
Avail Cap (c_a), veh/h	0	0	492	367	511	313	0	0
Upstream Filter (I)	0.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	0.0	44.1	41.1	17.5	11.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.4	2.8	0.5	0.2	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	44.5	43.9	18.0	11.9	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.0	2.3	3.6	1.3	0.1	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00
%ile Back of Q (50%), veh/ln	0.0	0.0	2.3	3.9	1.3	0.1	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.14	0.21	0.22	0.03	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment		T				T		
Lanes in Grp	0	2	0	0	0	1	0	0
Grp Vol (v), veh/h	0	816	0	0	0	574	0	0
Grp Sat Flow (s), veh/h/ln	0	1530	0	0	0	1598	0	0
Q Serve Time (g_s), s	0.0	14.2	0.0	0.0	0.0	21.9	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	14.2	0.0	0.0	0.0	21.9	0.0	0.0
Lane Grp Cap (c), veh/h	0	2090	0	0	0	1091	0	0
V/C Ratio (X)	0.00	0.39	0.00	0.00	0.00	0.53	0.00	0.00
Avail Cap (c_a), veh/h	0	2090	0	0	0	1091	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	8.4	0.0	0.0	0.0	9.6	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	0.0	1.8	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	9.0	0.0	0.0	0.0	11.5	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	4.3	0.0	0.0	0.0	6.9	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.2	0.0	0.0	0.0	0.6	0.0	0.0

3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	4.4	0.0	0.0	0.0	7.5	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.62	0.00	0.00	0.00	1.44	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment		T+R		T+R		T+R		T+R
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	441	0	124	0	584	0	43
Grp Sat Flow (s), veh/h/ln	0	1656	0	1576	0	1624	0	1663
Q Serve Time (g_s), s	0.0	14.2	0.0	7.9	0.0	21.9	0.0	2.5
Cycle Q Clear Time (g_c), s	0.0	14.2	0.0	7.9	0.0	21.9	0.0	2.5
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.07	0.00	0.59	0.00	0.20	0.00	0.28
Lane Grp Cap (c), veh/h	0	1131	0	384	0	1109	0	406
V/C Ratio (X)	0.00	0.39	0.00	0.32	0.00	0.53	0.00	0.11
Avail Cap (c_a), veh/h	0	1131	0	384	0	1109	0	406
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	8.4	0.0	38.2	0.0	9.7	0.0	36.1
Incr Delay (d2), s/veh	0.0	1.0	0.0	2.2	0.0	1.8	0.0	0.5
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	9.4	0.0	40.4	0.0	11.4	0.0	36.6
1st-Term Q (Q1), veh/ln	0.0	4.6	0.0	3.1	0.0	7.0	0.0	1.0
2nd-Term Q (Q2), veh/ln	0.0	0.3	0.0	0.2	0.0	0.6	0.0	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	5.0	0.0	3.4	0.0	7.6	0.0	1.1
%ile Storage Ratio (RQ%)	0.00	0.70	0.00	0.18	0.00	1.46	0.00	0.07
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	14.7
HCM 6th LOS	B

Notes

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

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	197	32	26	162	103	0	0	0	69	71	24
Future Vol, veh/h	40	197	32	26	162	103	0	0	0	69	71	24
Conflicting Peds, #/hr	6	0	6	6	0	6	7	0	7	7	0	7
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	1082226688		-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	45	224	36	30	184	117	0	0	0	78	81	27

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	307	0	0	266	0	0			648	665	164
Stage 1	-	-	-	-	-	-			309	309	-
Stage 2	-	-	-	-	-	-			339	356	-
Critical Hdwy	4.1	-	-	4.1	-	-			6.6	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-			5.8	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.4	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-			3.5	4	3.3
Pot Cap-1 Maneuver	1265	-	-	1310	-	-			423	383	858
Stage 1	-	-	-	-	-	-			724	663	-
Stage 2	-	-	-	-	-	-			726	633	-
Platoon blocked, %		-	-		-	-					
Mov Cap-1 Maneuver	1258	-	-	1310	-	-			389	0	847
Mov Cap-2 Maneuver	-	-	-	-	-	-			389	0	-
Stage 1	-	-	-	-	-	-			689	0	-
Stage 2	-	-	-	-	-	-			701	0	-

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0.8	15.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1258	-	-	1310	-	-	389	847
HCM Lane V/C Ratio	0.036	-	-	0.023	-	-	0.305	0.08
HCM Control Delay (s)	8	0	-	7.8	0.1	-	18.3	9.6
HCM Lane LOS	A	A	-	A	A	-	C	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-	-	1.3	0.3

Intersection	
Int Delay, s/veh	2.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	233	68	58	173	46	62
Future Vol, veh/h	233	68	58	173	46	62
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	80	-	30	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	277	81	69	206	55	74

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	358	0	662	318
Stage 1	-	-	-	-	318	-
Stage 2	-	-	-	-	344	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1201	-	427	723
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	718	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1201	-	403	723
Mov Cap-2 Maneuver	-	-	-	-	403	-
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	677	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	12.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	403	723	-	-	1201	-
HCM Lane V/C Ratio	0.136	0.102	-	-	0.057	-
HCM Control Delay (s)	15.3	10.5	-	-	8.2	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.5	0.3	-	-	0.2	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	175	198	78	66	15
Future Vol, veh/h	9	175	198	78	66	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	227	257	101	86	19

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	358	0	-	0	559	308
Stage 1	-	-	-	-	308	-
Stage 2	-	-	-	-	251	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1201	-	-	-	490	732
Stage 1	-	-	-	-	745	-
Stage 2	-	-	-	-	791	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1201	-	-	-	485	732
Mov Cap-2 Maneuver	-	-	-	-	485	-
Stage 1	-	-	-	-	737	-
Stage 2	-	-	-	-	791	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	13.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1201	-	-	-	517
HCM Lane V/C Ratio	0.01	-	-	-	0.203
HCM Control Delay (s)	8	0	-	-	13.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.8

Intersection	
Int Delay, s/veh	5.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	68	97	55	53	102	56
Future Vol, veh/h	68	97	55	53	102	56
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	50	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	65	65	65	65	65	65
Heavy Vehicles, %	0	0	1	1	0	2
Mvmt Flow	105	149	85	82	157	86

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	255	0	433	181
Stage 1	-	-	-	-	181	-
Stage 2	-	-	-	-	252	-
Critical Hdwy	-	-	4.11	-	6.4	6.22
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.209	-	3.5	3.318
Pot Cap-1 Maneuver	-	-	1316	-	584	862
Stage 1	-	-	-	-	855	-
Stage 2	-	-	-	-	795	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1315	-	544	861
Mov Cap-2 Maneuver	-	-	-	-	544	-
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	741	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4	12.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	544	861	-	-	1315	-
HCM Lane V/C Ratio	0.288	0.1	-	-	0.064	-
HCM Control Delay (s)	14.3	9.6	-	-	7.9	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	1.2	0.3	-	-	0.2	-

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	73	47	41	36	29	64
Future Vol, veh/h	73	47	41	36	29	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	72	72	72	72	72	72
Heavy Vehicles, %	1	0	0	1	0	1
Mvmt Flow	101	65	57	50	40	89

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	107	0	-	0	349	82
Stage 1	-	-	-	-	82	-
Stage 2	-	-	-	-	267	-
Critical Hdwy	4.11	-	-	-	6.4	6.21
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.209	-	-	-	3.5	3.309
Pot Cap-1 Maneuver	1490	-	-	-	652	980
Stage 1	-	-	-	-	946	-
Stage 2	-	-	-	-	782	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1490	-	-	-	606	980
Mov Cap-2 Maneuver	-	-	-	-	606	-
Stage 1	-	-	-	-	880	-
Stage 2	-	-	-	-	782	-

Approach	EB	WB	SB
HCM Control Delay, s	4.6	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1490	-	-	-	822
HCM Lane V/C Ratio	0.068	-	-	-	0.157
HCM Control Delay (s)	7.6	0	-	-	10.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.6