



METHODOLOGY & ASSUMPTIONS MEMORANDUM (TM#1, APPENDIX A)

Date: April 17, 2023
To: Project Management Team
From: Kittelson & Associates, Inc.
Subject: OR138E Design Concept Plan

Project #: 23021.032

Purpose

This memorandum documents the methodology and key assumptions to be used in generating the existing conditions, future conditions, and concept analysis for the OR138E Design Concept Plan. The methodologies and assumptions used in this memorandum are based on guidance provided in the Oregon Department of Transportation (ODOT) Analysis Procedures Manual (APM – Reference 1), and direction provided by City and ODOT staff. The analyses described in this memorandum will help identify potential deficiencies in the OR138E corridor, including:

- Traffic operations at the study intersection under existing and future traffic conditions,
- Traffic safety at the study intersections and along study area roadways,
- Gaps and deficiencies in the bicycle and pedestrian network,
- Gaps and deficiencies in the transit service (service frequency, hours, coverage, etc.), and
- Gaps and deficiencies in other travel modes.

This information will serve as a baseline for identifying a comprehensive list of needs and deficiencies to be addressed as part of the OR138E Design Concept Plan. It will also serve as a baseline for identifying and evaluating potential solutions and developing a prioritized list of improvements for the OR138E Design Concept Plan.

Study Intersections

The study intersections for the OR138E Design Concept Plan were determined by the City and ODOT prior to the development of the scope of work. There are a total of 13 study intersections located along City and ODOT facilities, including four signalized and nine unsignalized intersections. Figure 1 and Table 1 summarize the location of the study intersections. The following provides information related to the traffic counts conducted at the study intersections and how they will be used to develop existing and future traffic volumes.

Figure 1: Study Intersections

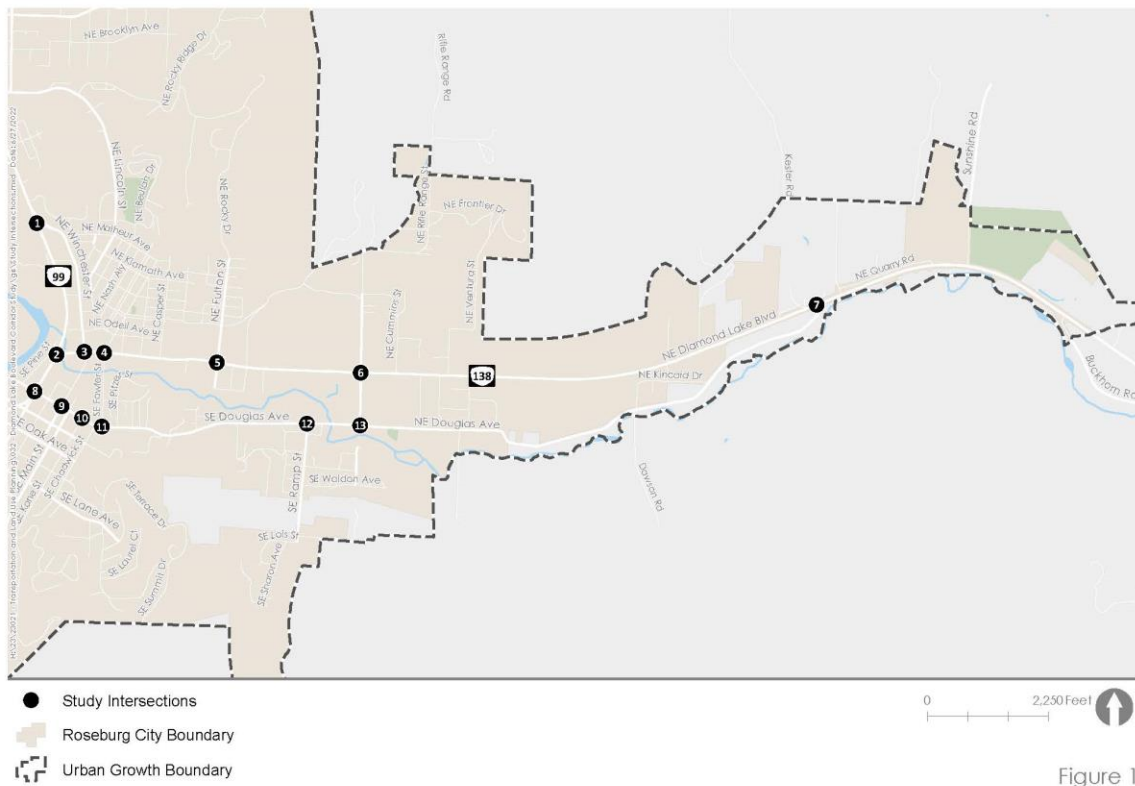


Figure 1



Study Intersections

Table 1: Study Area Intersections

Map ID	Intersection	Count Dates	Count Type
1	NE Stephens St. @ NE Winchester St.	04/06/2022	16 hour
2	NE Diamond Lake Blvd. @ SE Stephens St.	03/28/2022	16 hour
3	NE Diamond Lake Blvd. @ NE Jackson St./NE Winchester St.	03/28/2022	16 hour
4	NE Diamond Lake Blvd./NE Fowler St.	03/28/2022	4 hour
5	NE Diamond Lake Blvd. @ NE Fulton St.	03/28/2022	16 hour
6	NE Diamond Lake Blvd. @ NE Rifle Range St.	03/28/2022	16 hour
7	NE Diamond Lake Blvd @ 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 turning movement counts were conducted at the study intersections between March 28th and April 6th, 2022. The counts were conducted by the ODOT on a typical mid-weekday and consists of 16-hour and 4-hour counts as described in Table 1. 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 A.*

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 Diamond Lake Boulevard 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 Road.

Seasonal Factors

30th Hour Volumes (30 HV) for the OR138E Design Concept Plan will be developed based on the traffic counts collected at the study intersections and the application of seasonal adjustment factors consistent with the methodology identified in ODOT's Analysis Procedures Memo (APM). The APM identifies three methods for identifying seasonal adjustment factors for highway traffic volumes. All three methods utilize information provided by Automatic Traffic Recorders (ATRs) located in select locations throughout the State Highway System that collect traffic data 24-hours a day, 365 days a year.

Each method was evaluated to determine the most appropriate method for the study intersections. Based on the evaluations, the Seasonal Trend Table will be used for study intersections along OR138E to develop 30 HV volumes. The results of the evaluation are summarized below.

On-Site ATR Method

The On-Site ATR Method is used when an Automatic Traffic Recorder (ATR) is within or near the project area. ATR #10-004 is the closest ATR station to the study area, located approximately 25 miles east of the NE Diamond Lake Blvd/NE Douglas Ave intersection along Diamond Lake Blvd. While the average annual daily traffic at this site is within ten percent of segments of the OR 138E study corridor volumes, the ATR is a significant distance away and located in a predominately rural area. Nonetheless, a seasonal factor was calculated using this ATR for comparison purposes to the other methodologies described herein. As shown in Table 2, the seasonal adjustment factor calculation for the intersection counts averaging March and April using this method would be a factor of 2.68 which is well above an appropriate factor level.

Table 2 – Seasonal Adjustment Calculations for ATR #10-004

	2021	2019	2018	2017	2016	Avg.
ATR #10-004						
Peak Month (July)	104	163	159	167	158	160
Count Month (March)	79	55	57	55	54	55.67
Count Month (April)	94	63	66	57	62	63.67

- The average peak month (July) is: $(163\% + 159\% + 158\%) / 3 = 160\%$
- The average count month (March and April) is:
 - March: $(55\% + 57\% + 55\%) / 3 = 55.67\%$
 - April: $(63\% + 66\% + 62\%) / 3 = 63.67\%$
 - Average: $(55.67\% + 63.67\%) / 2 = 59.67\%$

- The seasonal adjustment factor is $160\%/59.67\% = 2.68$

ATR Characteristics Table

The ATR Characteristic Table provides general characteristics for each ATR in Oregon and is typically used when there is not a nearby ATR within the immediate study area. A review of the Characteristic Table found ATR #18-018 that closely matches the conditions within the site vicinity for a weekday traffic trend in an urban setting (small urban or small urban fringe) with average annual daily traffic within ten percent of typical traffic volumes within the study area. As shown in Table 3, the seasonal adjustment factor calculation for the intersection counts averaging March and April using this method would be a factor of 1.04. The ATR Seasonal Trend Method was also evaluated as described in the following section.

Table 3 – Seasonal Adjustment Calculations for ATR #18-018

	2021	2019	2018	2017	2016	Avg.
ATR #18-018						
Peak Month (July)	118	119	117	119	117	118
Count Month (March)	111	109	108	108	110	109
Count Month (April)	119	119	117	117	116	117.67

- The average peak month (July) is: $(118\% + 119\% + 117\%) / 3 = 118\%$
- The average count month (March and April) is:
 - March: $(109\% + 108\% + 110\%) / 3 = 109\%$
 - April: $(119\% + 117\% + 117\%) / 3 = 117.67\%$
 - Average: $(109\% + 117.67\%) / 2 = 113.33\%$
- The seasonal adjustment factor is $118\%/113.33\% = 1.04$

ATR Seasonal Trend Method

The seasonal trend table is used when there is not an ATR nearby or in a representative area. This method averages seasonal trend groupings from the ATR Characteristics Table. For the study area, an average of the “commuter” and “summer” trends was deemed appropriate. As shown in Table 4, the average of the seasonal adjustment factor calculations for the “Commuter” and “Summer” trends would be a factor of 1.13.

Table 4 – ATR Seasonal Trend Method for Commuter and Summer Trends (Year 2021)

	Count Month (April 1 st)	Seasonal Trend Peak Period Factor
Commuter	0.9836	0.9336
Summer	1.0061	0.8279

- The peak period seasonal factor is 0.9336 for the Commuter trend and 0.8279 for the Summer Trend.
- The count date seasonal factor (April 1st) is 0.9836 for the Commuter trend and 1.0061 for the Summer trend.

- The Commuter seasonal adjustment is 1.05 ($0.9836/0.9336 = 1.05$) and the Summer seasonal adjustment is 1.22 ($1.0061/0.8279 = 1.22$).
- An average of the Commuter and Summer season adjustments is 1.13.

Based on a comparison of the three methods, we propose to use an average of the Commuter and Summary trends (resulting in a season factor of 1.13) from the ATR Season Trend Table as it generates a reasonably conservative seasonal factor that is also consistent with the daily commuter traffic volumes and higher summer travel characteristics along the OR 138E corridor.

Historical Trends

The historical trends method uses traffic volumes from previous years to project future volumes. This method assumes that the future growth trend will be similar to the historical trend. Current and future year traffic volumes have been made available in the Future Volumes Table webpage.

2040 Traffic Volume Forecast

Oregon's Transportation Planning Rule (TPR) requires communities to develop a 20-year plan to support the transportation system needs. The City of Roseburg anticipates completing and adopting the OR138E Design Concept Plan into the City Transportation System Plan (TSP) in 2024, thus the year 2044 is an appropriate forecast horizon year.

The year 2044 traffic volumes were developed according to the Historical Trends methodology described in the APM. A summary of the traffic volume projection process is presented below.

Roseburg Travel Demand Model

The Roseburg Travel Demand Model will be the primary tool used to determine future traffic volumes in Roseburg and the surrounding region. Travel demand models are tools used to help predict the patterns of future commuters, school traffic, and recreational traffic. The model relies on socioeconomic data (e.g., households and employment) to determine the travel demand and system attributes (e.g., roadway capacity, speeds, and distances) to represent the transportation supply. The long-range regional growth forecasts are consistent with current land use zoning and State-approved population forecasts for the Roseburg urban area.

Intersection Operational Standards

ODOT uses volume-to-capacity (V/C) ratios to assess intersection operations. Table 6 of the *Oregon Highway Plan* (OHP – Reference 2) and Table 1200-1 of the *Oregon Highway Design Manual* (HDM – Reference 3) provide maximum volume-to-capacity ratios for all signalized and unsignalized intersections located outside the Portland metropolitan area.

The OHP 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 NE Diamond Lake Boulevard and Stephens Street within the project area with the exception of NE Stephens St. @ NE Winchester St. which is controlled by the City of Roseburg. Table 5 summarizes the v/c ratios that will be used to identify the existing and potential future operational issues at the ODOT study intersections.

Table 5: ODOT Mobility Targets/Standards

Map ID	Intersection	Traffic Control	OHP Mobility Target	HDM Standard
2	NE Diamond Lake Blvd/ SE Stephens St.	Signal	0.90	0.75

3	NE Diamond Lake Blvd/ NE Jackson St./NE Winchester St.	Signal	0.90	0.75
4	NE Diamond Lake Blvd./ NE Fowler St.	TWSC ¹	0.90 major approach/ 0.95 minor approach	0.75
5	NE Diamond Lake Blvd./ NE Fulton St.	TWSC ¹	0.90 major approach/ 0.95 minor approach	0.75
6	NE Diamond Lake Blvd./ NE Rifle Range St.	Signal	0.90	0.75
7	NE Diamond Lake Blvd./ 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

¹ Two-Way Stop-Controlled (TWSC)

Note: OR 138E is a Regional Highway. The posted speed on the eastern half of the study corridor is 55 mph, 45 mph from roughly the Phoenix Charter School of Roseburg to just east of Rifle Range Road, and 35 mph from Rifle Range Road to the western boundary of the study corridor.

City Facilities

As part of the 2020 TSP Update, City of Roseburg updated its mobility targets 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 against the capacity.

The City's current TSP sets a maximum LOS Standard of "E" for all signalized and unsignalized intersections. Table 6 summarizes the LOS 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 6 summarizes the City mobility standards for the one City owned intersection in the study area.

Table 6: City Mobility Standards

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

1. City intersections shall be analyzed at a peak hour factor of 1.0.

2. For roadways within the city of Roseburg that are under ODOT or Douglas County jurisdiction, the mobility standards/targets of those agencies will apply.

3. Two-Way Stop-Controlled (TWSC). 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).

Traffic operations at the study intersections will be evaluated based on the mobility targets and standards shown in Table 5 and Table 6. Potential solutions will be identified and evaluated for the study intersections that are found to exceed the mobility targets and standards under existing and/or future traffic conditions.

Analysis Model Parameters

The bullets below identify the specific sources of data and methodologies proposed to conduct the operational analyses. Analyses of all state facilities will be conducted according to the APM, unless otherwise agreed upon by the City and ODOT.

- *Intersection/Roadway Geometry* (lane numbers and arrangements, cross section elements, signal phasing, etc.) will be collected through aerial photography and confirmed through a site visit. Available as-built data may also be used to verify existing roadway geometry. The analysis model will be built on scaled roadway linework from GIS or aerial photography.
- *Operational Data* (such as posted speeds, intersection control, parking, transit stops, rail crossings, right-turn on red, etc.) will be collected through a site visit. Data will be reviewed and supplemented by available GIS data, traffic counts, aerials, and photographs.
- *Peak Hour Factors* (PHF) will be calculated for each intersection and applied to the existing conditions analyses. Per the APM, PHFs of 0.95 will be used for the year 2044 analysis for high-order facilities (arterials). With 0.90 applied to medium-order facilities (collectors) and 0.85 applied to local roads. If the existing PHF is greater than these default future values, the existing PHF will be applied.
- *Traffic Volume* development is described above.
- *Signal Timing Data* will be requested from ODOT for use in the existing conditions analysis. Signal parameters such as Flash Don't Walk, Walk, and Minimum Times will be retained in the forecast analysis with the signal splits optimized to better serve the future traffic volume patterns. Optimized signal cycle lengths may range between 60 and 120 seconds.
- *Traffic Operations*
 - The HCM 2017 methodology will be used to analyze traffic operations at the unsignalized and signalized study intersections.
 - Queuing analysis methodology will be based on Synchro 95th percentile queue lengths. Microsimulation is not scoped as part of this long-range planning effort.

Traffic Analysis Software and Input assumptions

The latest version of Syncho software will be used for the intersection analysis. The reported results will be the level of service, intersection delay, and v/c ratios generated by the HCM report. Analysis assumptions are listed in Table 7.

Table 7: Synchro Operations Parameters/Assumptions

Arterial Intersection Parameters	Existing Conditions
Peak Hour Factor	From traffic counts
Conflicting Bike and Pedestrian per Hour	From traffic counts, as available
Area Type	Other
Ideal Saturation Flow Rate (for all movements)	1,750 passenger cars per hour green per lane
Lane Width	12 feet unless field observations suggest otherwise
Percent Heavy Vehicles	From traffic counts by movement, as available
Percent Grade	Estimated based on field observations
Parking Maneuvers per Hour	Estimated based on field observations
Bus Blockages	Estimated based on frequency of service
Intersection Signal Phasing and Coordination	From ODOT/County/City
Intersection Signal Timing Optimization Limits	Maximum cycle length = 120 seconds
Minimum Green Time	From timing plans
Yellow and All-Red Time	From timing plans
95 th Percentile Vehicle Queues	Synchro 9 summary output

Multimodal Analysis

The multimodal analysis will be performed in accordance with the methodologies identified in Chapter 14 of the APM and identify the needs associated with the pedestrian, bicycle, and public transportation systems. Pedestrian, bicycle, and transit operations will be evaluated using the Qualitative Multimodal Assessment. The pedestrian and bicycle analyses will also include a Pedestrian Level of Traffic Stress (PLTS) and a Bicycle Level of Traffic Stress (BLTS) analysis, consistent with the methodologies identified in the APM. All analysis results will be presented in a tabular format and as part of a GIS map. Both PLTS and BLTS methods group facilities into four different stress levels for segments, intersection approaches, and intersection crossings. Facilities with an LTS 1 rating have little to no traffic stress, require less attention, and are suitable for all users. Facilities with an LTS 2 rating have little traffic stress, but require more attention and therefore, may or may not be suitable for small children. Facilities with an LTS 3 rating have moderate traffic stress and are suitable for adults. Facilities with an LTS 4 rating have high traffic stress and are only suitable for able-bodied adults with limited options.

Crash Analysis

The five most recent years of crash data will be reviewed at the study intersections and along the roadway segments between each study intersection consistent with the methodologies outlined in the APM. The data will be analyzed for number, type, severity, and location to identify potential crash patterns and million entering vehicle (MEV) crash rates (critical crash rates will also be developed and evaluated as applicable). Intersection crash rates will be compared to the published 90th percentile crash rates in Exhibit 4.1 of the APM and segment crash rates will be compared to Table II in the current ODOT Crash Rate Tables. In addition, ODOT's top 10% ODOT Safety Priority System sites will be reviewed, as appropriate. Any identified potential countermeasures (and any resulting crash percentage reduction) will be taken from the All Roads Transportation Safety (ARTS) Crash Reduction Factors (CRF) listing or the CRF Appendix.

References

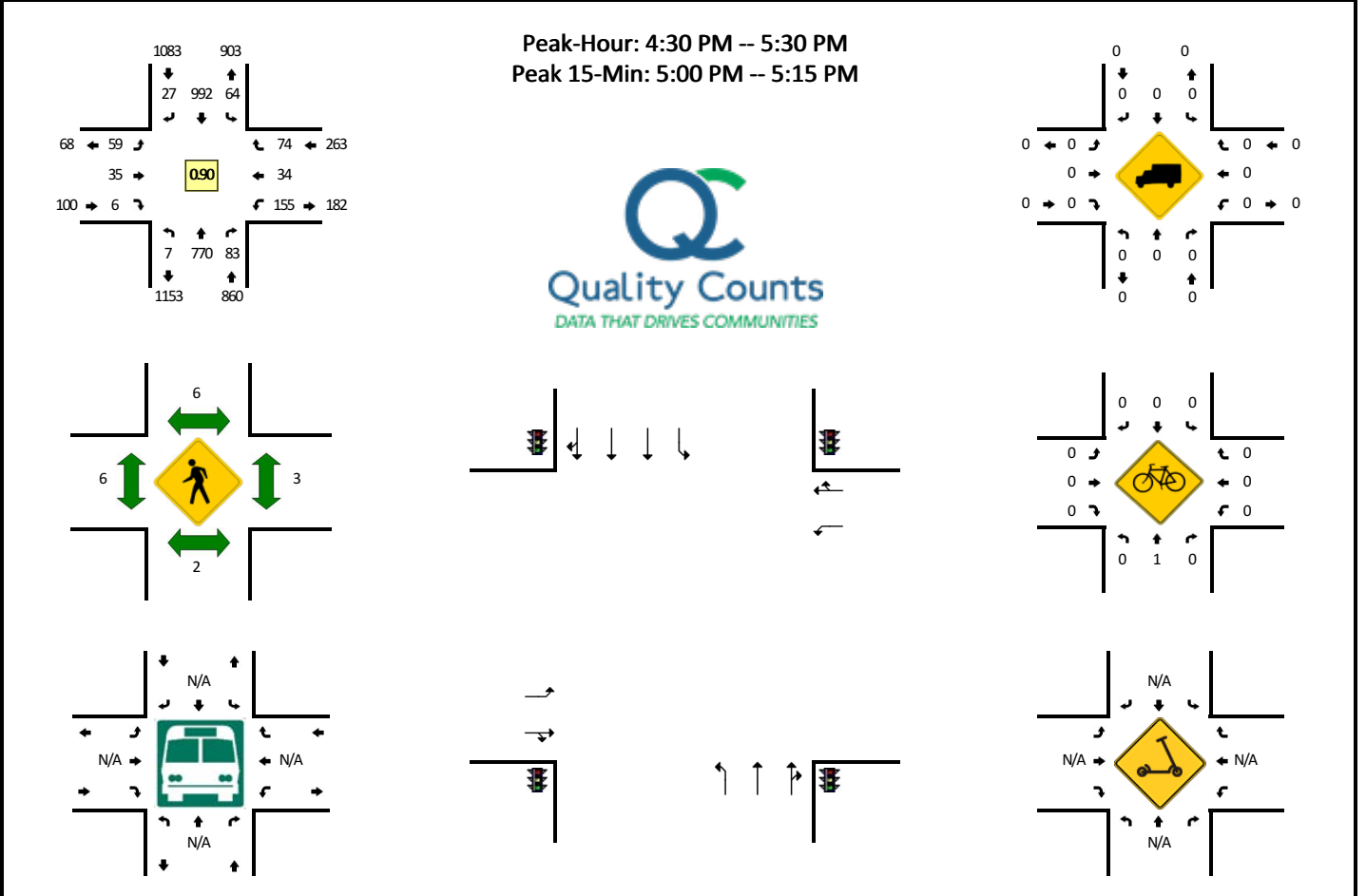
1. Oregon Department of Transportation. *Analysis Procedures Manual*, 2022.
2. Oregon Department of Transportation. *Oregon Highway Plan*, 2015.
3. Oregon Department of Transportation. *Highway Design Manual*, 2023.

Attachments

- A. Traffic Counts

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

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

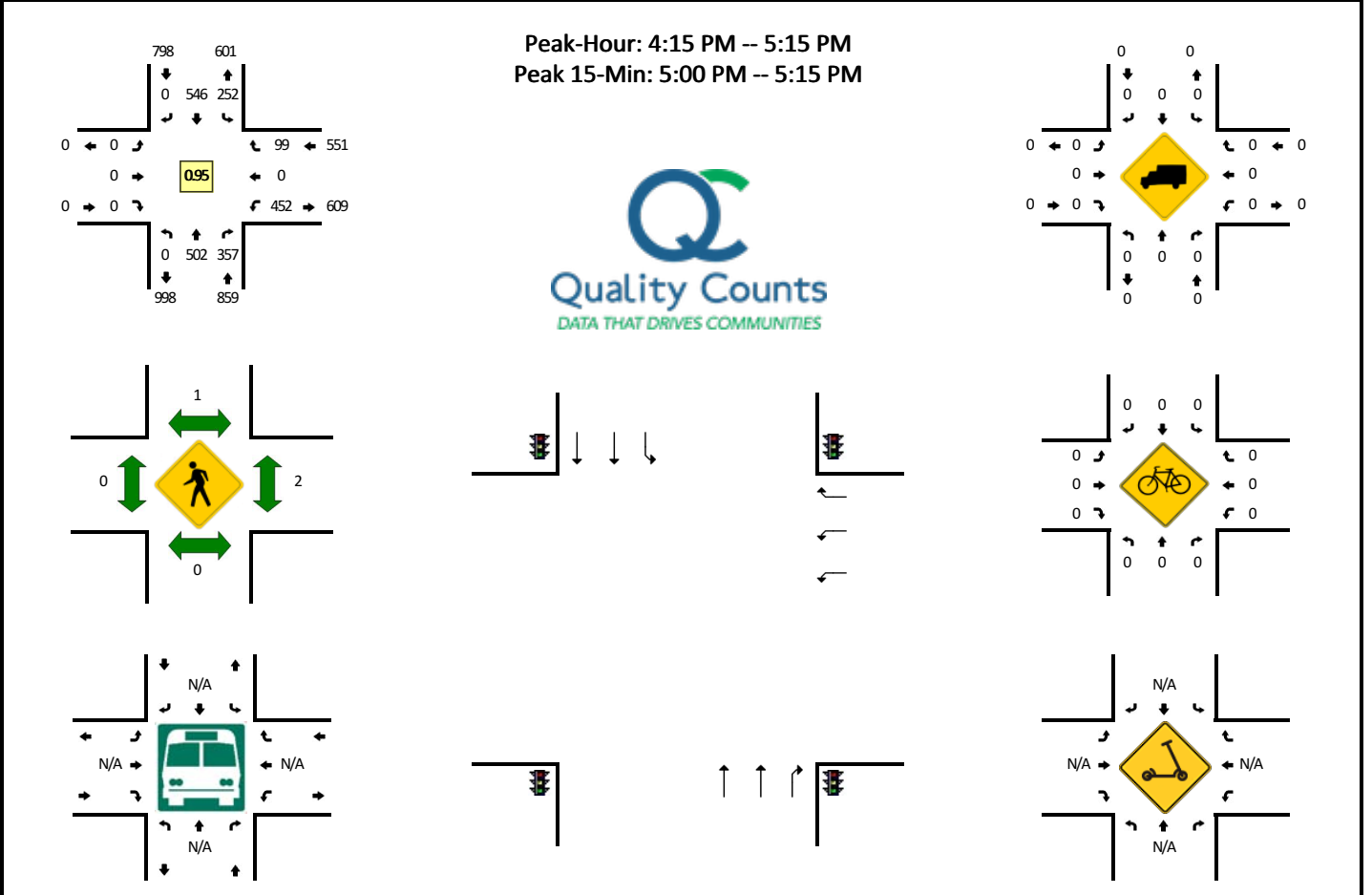


15-Min Count Period Beginning At	10012011 - SE Stephens St (Northbound)				10012011 - SE Stephens St (Southbound)				SE Douglas Ave (Eastbound)				SE Douglas Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	3	193	29	0	11	221	5	0	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	
Scoters																		

Comments:

LOCATION: 19853 - SE Stephens St -- NE Diamond Lake Blvd
CITY/STATE: Roseburg, OR

QC JOB #: 15952702
DATE: Mon, Mar 28 2022

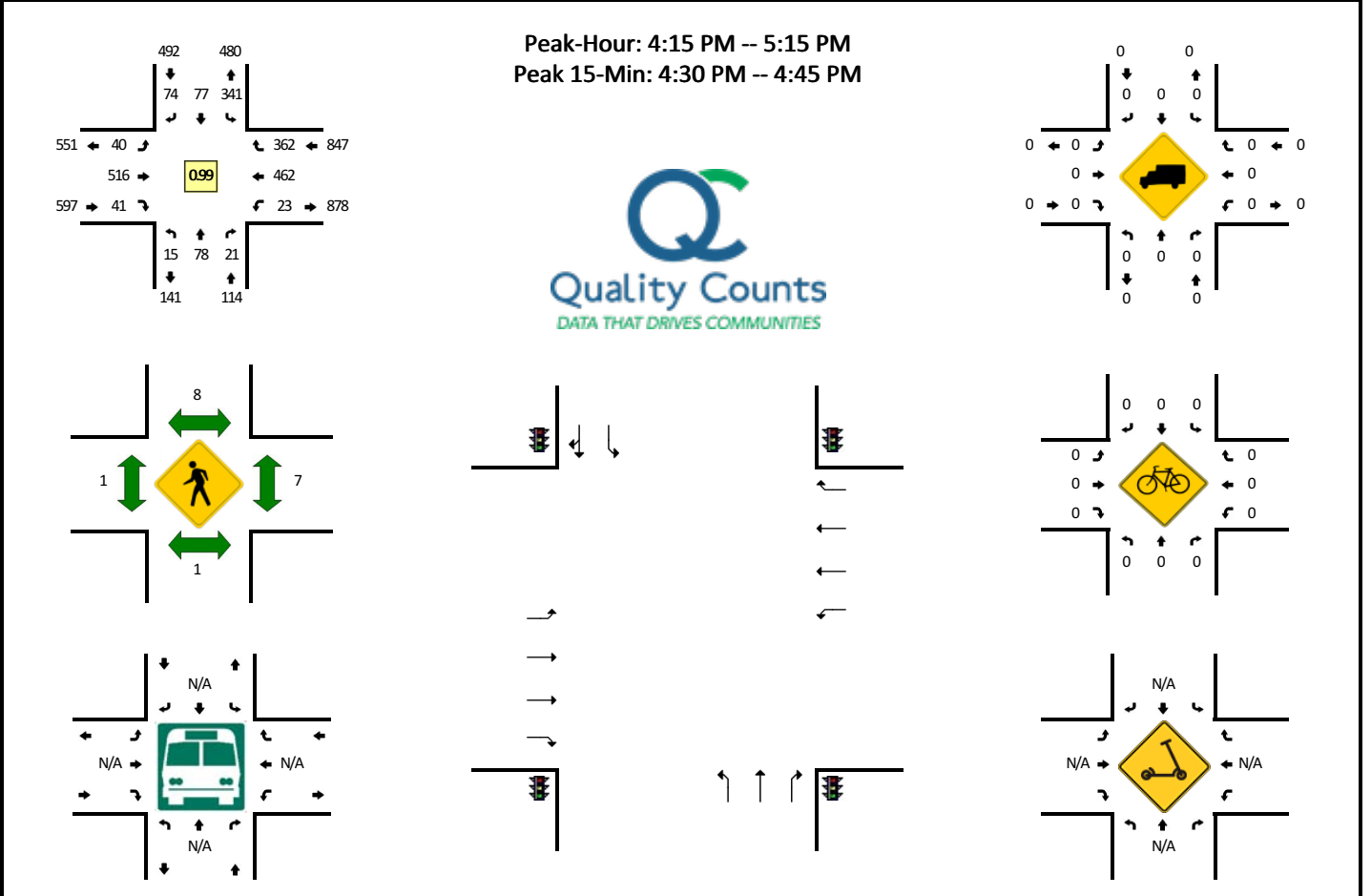


15-Min Count Period Beginning At	19853 - SE Stephens St (Northbound)				19853 - SE Stephens St (Southbound)				NE Diamond Lake Blvd (Eastbound)				NE Diamond Lake Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	117	66	0	50	111	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	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	
Scoters																		

Comments:

LOCATION: 37114 - NE Jackson St -- NE Diamond Lake Blvd
CITY/STATE: Roseburg, OR

QC JOB #: 15952703
DATE: Mon, Mar 28 2022

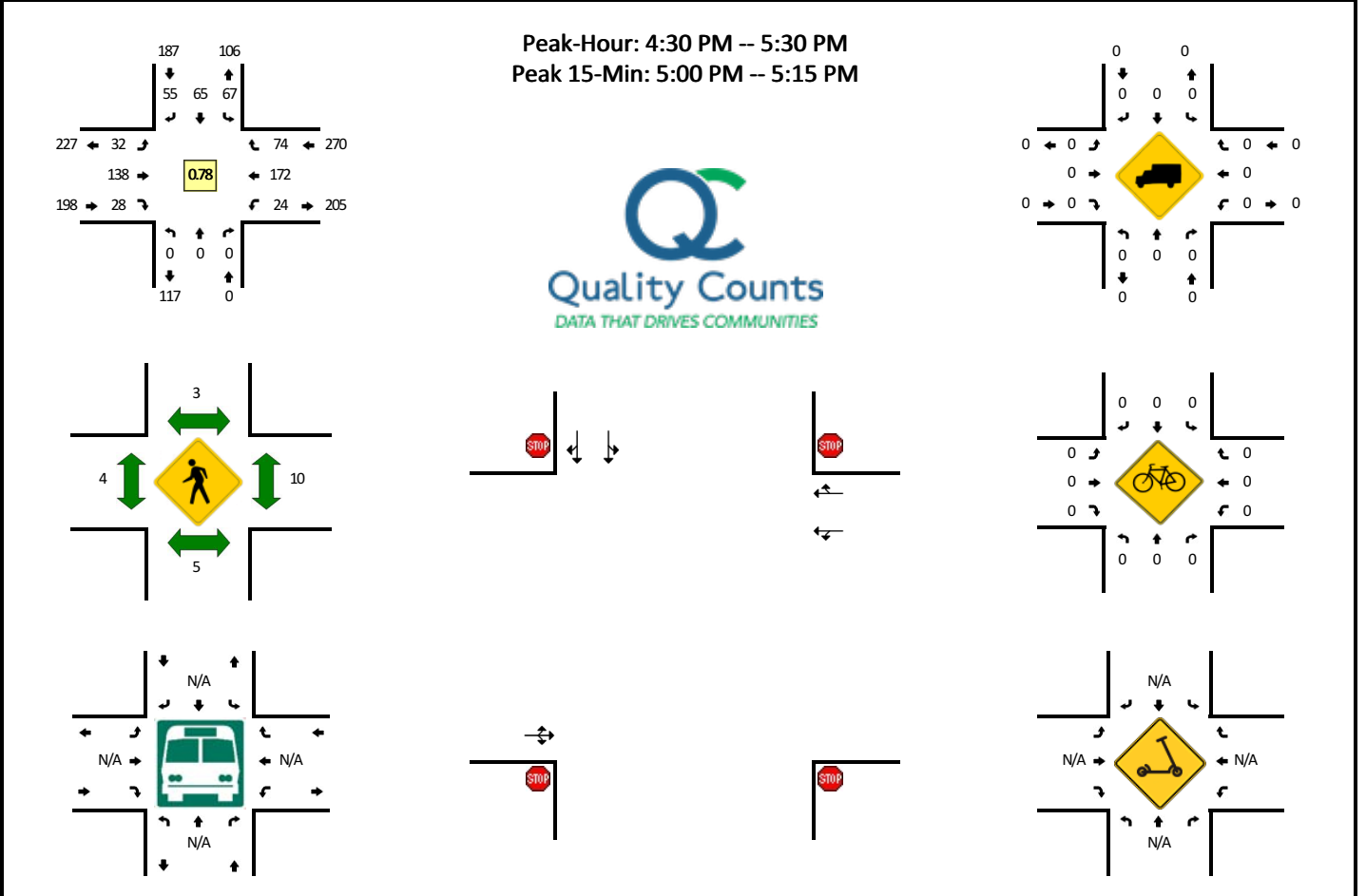


15-Min Count Period Beginning At	37114 - NE Jackson St (Northbound)				37114 - NE Jackson St (Southbound)				NE Diamond Lake Blvd (Eastbound)				NE Diamond Lake Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	3	23	3	0	55	21	17	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	
Scoters																		

Comments:

LOCATION: 37117 - SE Jackson St -- SE Douglas Ave
CITY/STATE: Roseburg, OR

QC JOB #: 15952706
DATE: Wed, Mar 30 2022

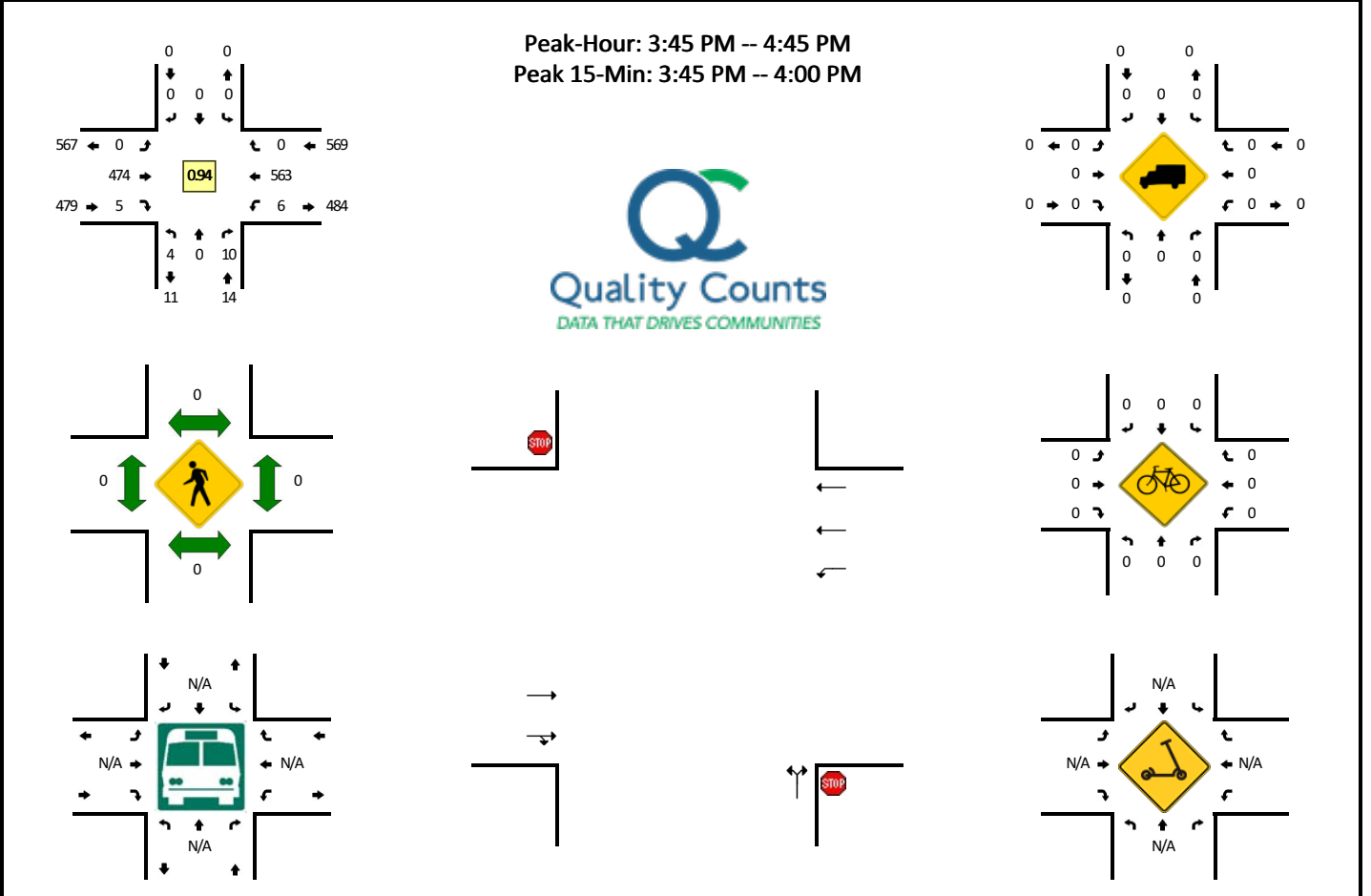


15-Min Count Period Beginning At	37117 - SE Jackson St (Northbound)				37117 - SE Jackson St (Southbound)				SE Douglas Ave (Eastbound)				SE Douglas Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	0	0	0	11	16	4	0	7	45	5	0	8	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	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	
Scoters																		

Comments:

LOCATION: 37122 - NE Douglas Ave -- NE Diamond Lake Blvd
CITY/STATE: Roseburg, OR

QC JOB #: 15952707
DATE: Mon, Mar 28 2022

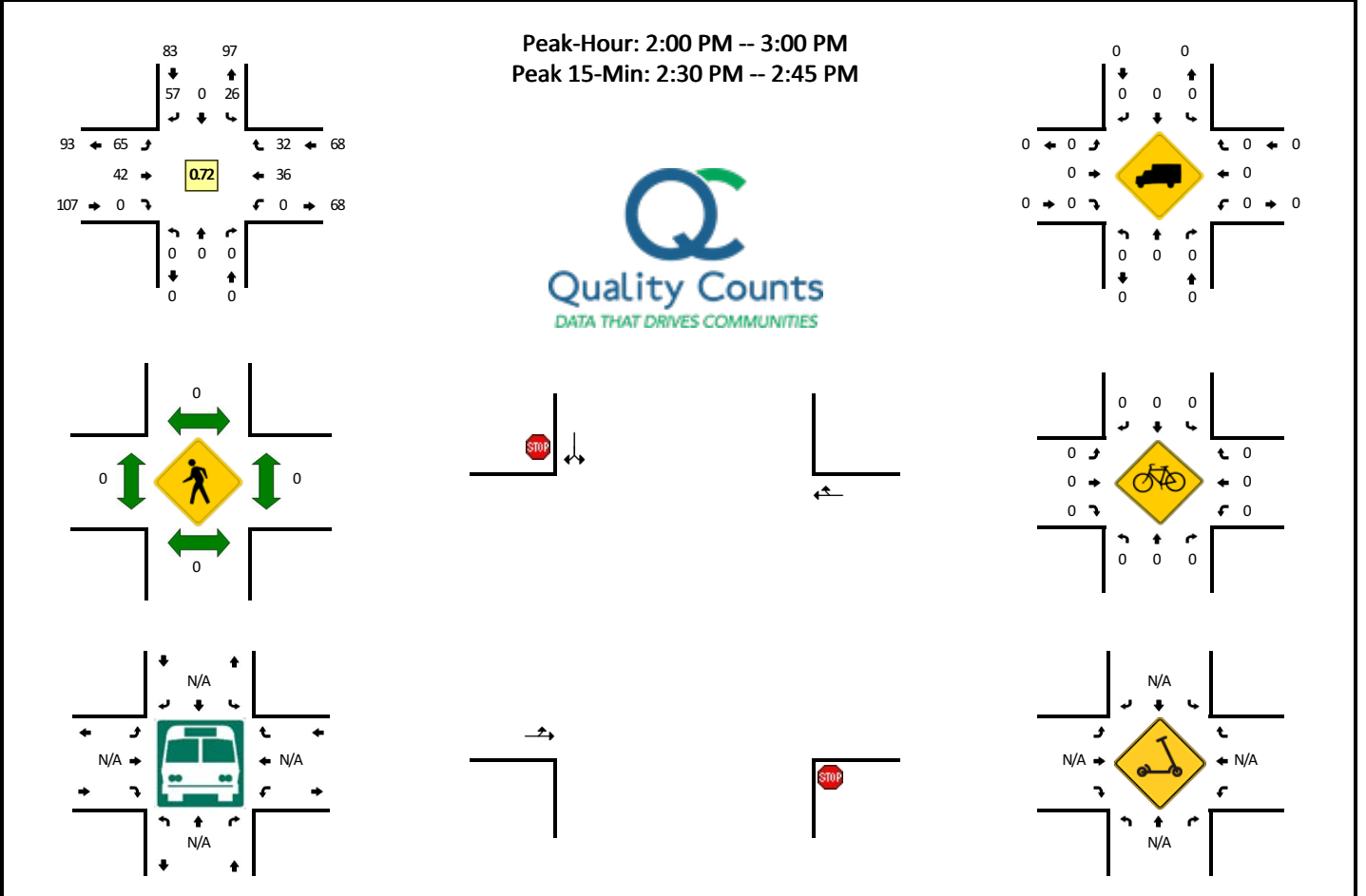


15-Min Count Period Beginning At	37122 - NE Douglas Ave (Northbound)				37122 - NE Douglas Ave (Southbound)				NE Diamond Lake Blvd (Eastbound)				NE Diamond Lake Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	1	0	0	0	0	0	0	0	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	0	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	0	139	0	0	253	868
3:15 PM	0	0	1	0	0	0	0	0	0	111	1	0	0	122	0	0	236	929
3:30 PM	1	0	1	0	0	0	0	0	0	113	1	0	0	129	0	0	248	974
3:45 PM	1	0	3	0	0	0	0	0	0	118	3	0	0	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	0	162	0	0	279	1053
4:30 PM	0	0	3	0	0	0	0	0	0	121	0	0	0	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	0	88	0	0	235	983
5:30 PM	0	0	1	0	0	0	0	0	0	125	0	0	0	62	0	0	189	915
5:45 PM	0	0	1	0	0	0	0	0	0	80	0	0	0	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	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																	0	

Comments:

LOCATION: 37123 - NE Rifle Range Rd -- NE Douglas Ave
CITY/STATE: Roseburg, OR

QC JOB #: 15952708
DATE: Wed, Mar 30 2022

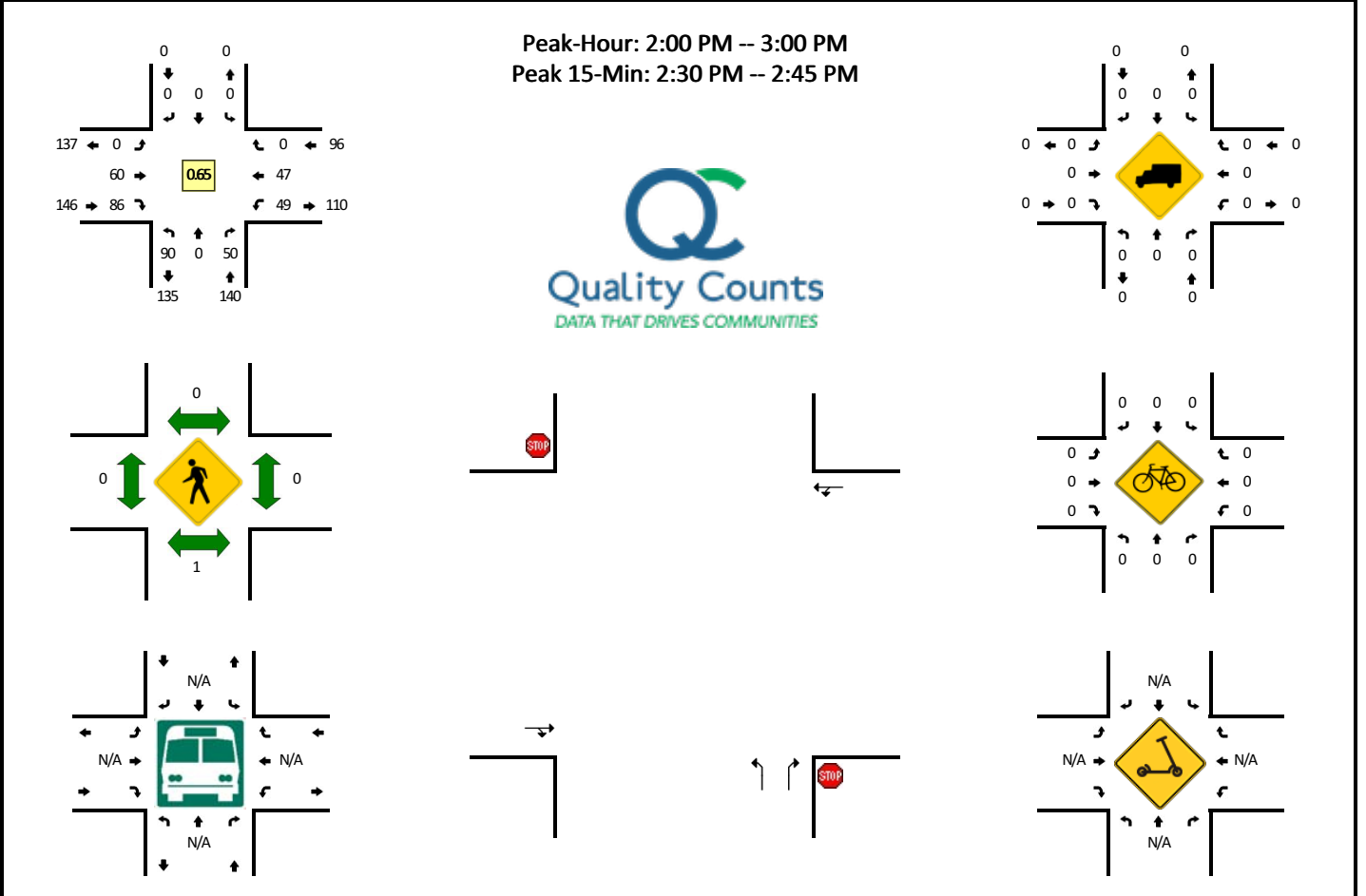


15-Min Count Period Beginning At	37123 - NE Rifle Range Rd (Northbound)				37123 - NE Rifle Range Rd (Southbound)				NE Douglas Ave (Eastbound)				NE Douglas Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	0	0	0	9	0	20	0	8	7	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	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	
Scoters																		

Comments:

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

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

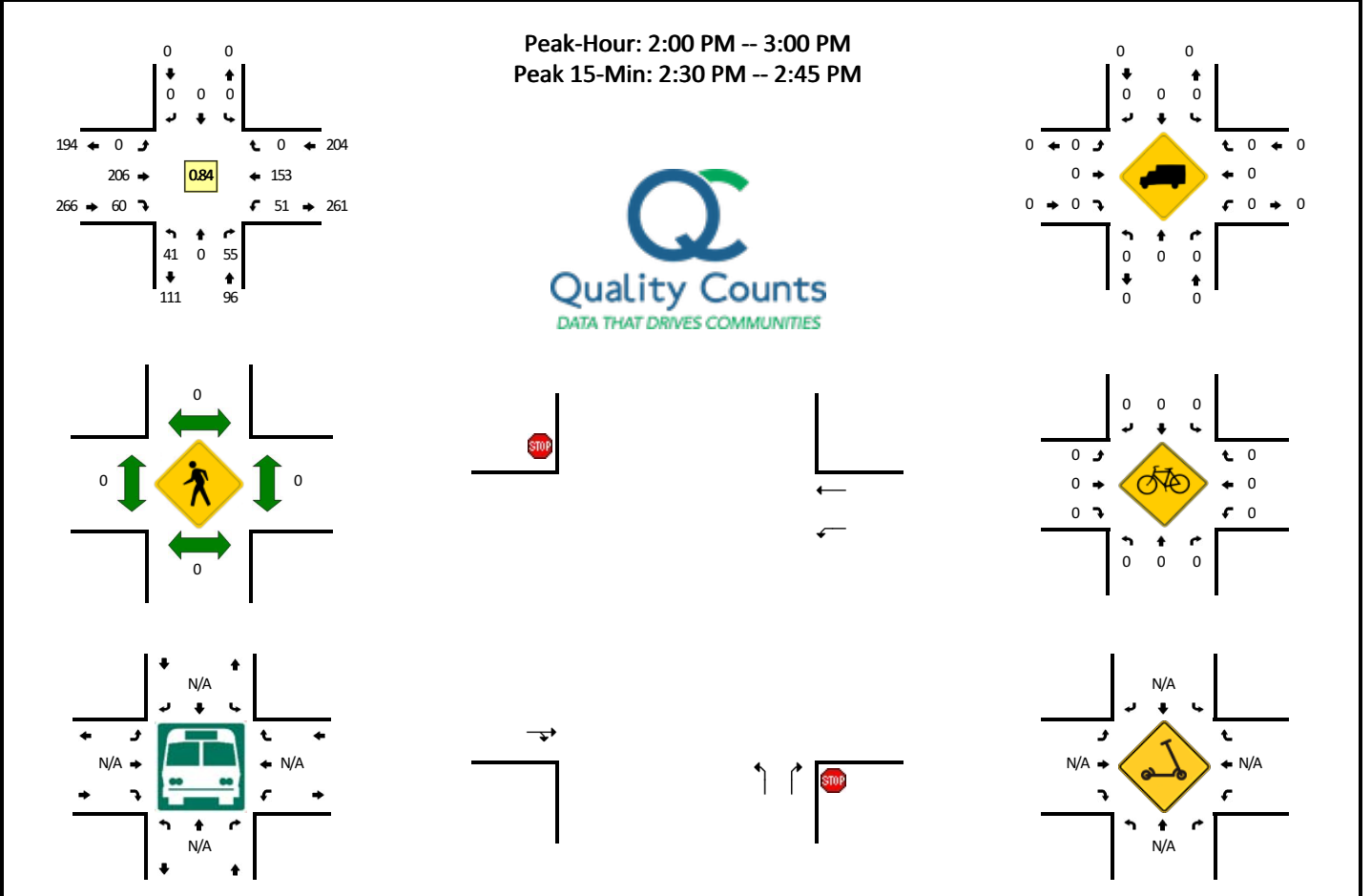


15-Min Count Period Beginning At	37124 - SE Ramp Rd (Northbound)				37124 - SE Ramp Rd (Southbound)				SE Douglas Ave (Eastbound)				SE Douglas Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	9	0	3	0	0	0	0	0	0	11	22	0	11	17	0	0	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	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	
Scoters																		

Comments:

LOCATION: 37125 - SE Kane St -- SE Douglas Ave
CITY/STATE: Roseburg, OR

QC JOB #: 15952710
DATE: Wed, Mar 30 2022

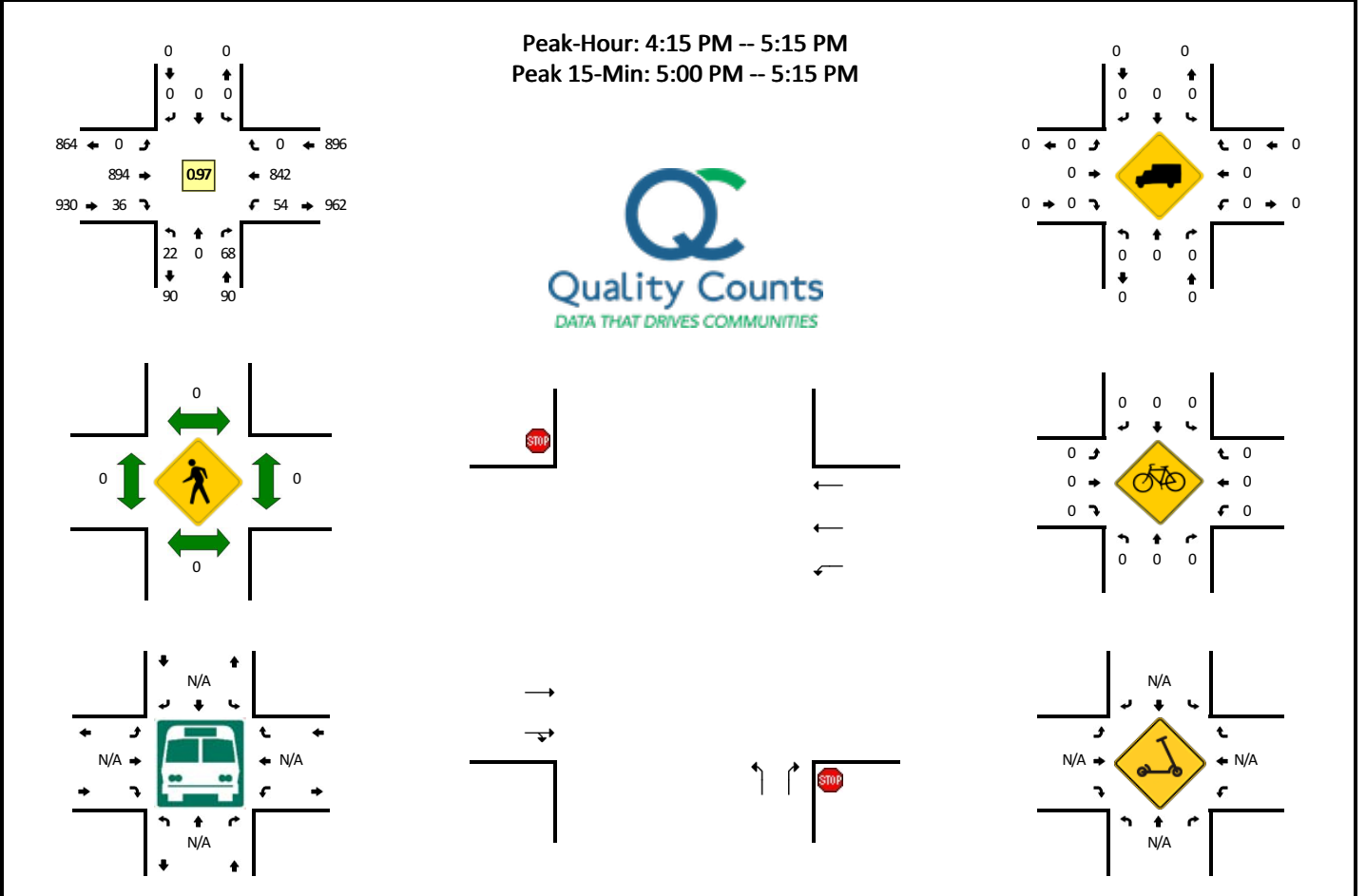


15-Min Count Period Beginning At	37125 - SE Kane St (Northbound)				37125 - SE Kane St (Southbound)				SE Douglas Ave (Eastbound)				SE Douglas Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	11	0	12	0	0	0	0	0	0	43	15	0	7	31	0	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	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	
Scoters																		

Comments:

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

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

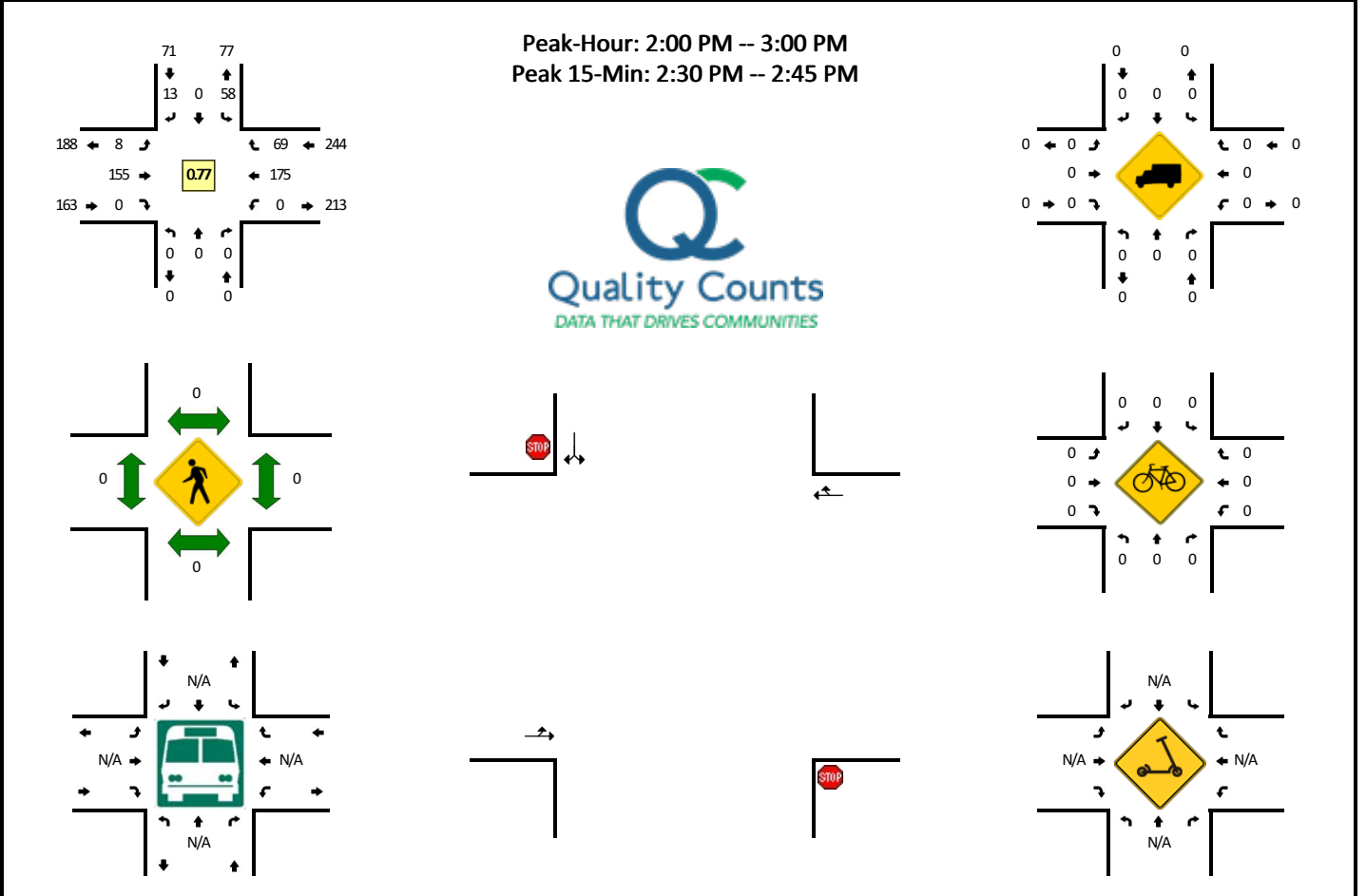


15-Min Count Period Beginning At	999110127 - NE Fowler St (Northbound)				999110127 - NE Fowler St (Southbound)				NE Diamond Lake Blvd (Eastbound)				NE Diamond Lake Blvd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	4	0	10	0	0	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	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	0	0	0	0	
Scoters																		

Comments:

LOCATION: 999110128 - SE Fowler St -- SE Douglas Ave
CITY/STATE: Roseburg, OR

QC JOB #: 15952713
DATE: Wed, Mar 30 2022



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	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	
Scoters																		

Comments: