STATE OF OREGON **INTEROFFICE MEMO**

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Date: August 14, 2018

TO: **Tom Guevara, Region 3 Planning**
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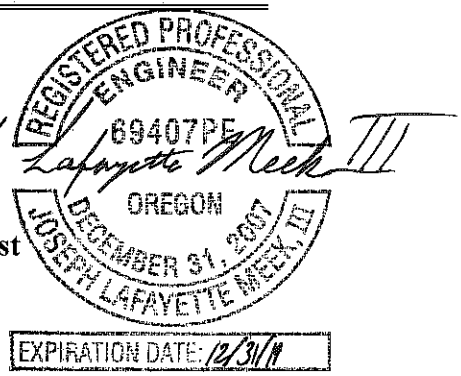


FROM: **Joseph Meek III PE, PTOE, Transportation Analyst**
Transportation Planning Analysis Unit

SUBJECT: **UPDATED: Rogue River Technical Memorandum #5 Future 2040 No-build Conditions**

This memo analyzes Rogue River's 2040 future-no-build conditions. This memorandum is updated from the March 2018 version with revised volume-capacity and level of service values. This will provide an overview of future transportation system operations and deficiencies. This analysis includes an evaluation of the study intersections. Analysis results will identify future transportation system needs for motorized and non-motorized travel modes.

In the 2040 future conditions analysis, there were intersections exceeding volume-to-capacity (V/C) targets or standards, especially the I5 interchange and downtown area. There will be substantial queuing impacts and safety related issues on the I5 off-ramps and Depot Street starting at OR99 going through the interchange area and up to the Pine & Main Street intersection. Heavier traffic conditions will make walking and bicycling less comfortable and transit potentially less reliable.

Background

The City of Rogue River is in Jackson County along I5 and OR99 and is part of the Middle Rogue Metropolitan Planning Organization (MRMPO). In July 2011, Rogue River's population was 2,140. This is projected to grow 40% to 3,975 by 2040 by Portland State University's Center for Population Research, stated in Technical Memorandum #3. The city has expanded south beyond manmade and natural barriers of railroad tracks, an interstate, and a river. The I5/Depot Street interchange is crammed in between the Central Oregon and Pacific railroad tracks and the Rogue River which becomes a series of restrictive barriers in close proximity to each other. To add to this

of the river. Pine/Classick Dr is even closer and a difficult barrier to cross. This leads to safety risks, traffic operations issues, and problems in future planning.

The City has developed from south of the Rogue River and stretched north beyond the city limits to build the high school on East Evans Creek Road (Pine Street in Rogue River). The main street of the community is the east/west oriented E Main Street/W Main Street/Foothill Boulevard. This is connected to I5 and OR99 by way of Depot Street.

Evaluation Criteria and Analysis

Intersection operations analysis results were compared to ODOT and the county standards and targets to assess performance and potential improvement. The City appears not to have traffic operational standards, so a v/c ratio of 0.95 was used, equivalent to both a state district-level highway v/c target in the Oregon Highway Plan (OHP) and Jackson County's inside-MPO standard. Jackson County and ODOT use volume to capacity (V/C) ratios, which compare traffic volume entering an intersection to theoretical capacity of an intersection. A v/c ratio of 1.0 indicates an intersection operating at capacity, while a v/c ratio over 1.0 indicates an intersection's capacity is exceeded.

The 1999 OHP mobility standards (amended in 2015) were used to evaluate v/c ratios for state highways in an MPO. Under the OHP, the maximum acceptable V/C ratio for I5 and the interchange ramp terminals is 0.85 and 0.95 for OR99. Jackson County uses V/C standard of 0.95 for intersections within an MPO.

The intersection operations analysis was conducted using SIDRA Version 7 software, with Highway Capacity Manual (HCM) 2010 methodologies. Signalized intersection V/C's were calculated using the critical volume to capacity ratio process described in HCM 2010. The I5 mainline segments and merge/diverge areas were analyzed with HCS 2010. Queuing was developed using the SIDRA software.

Volume Development

The 2040 volumes were grown from the 2016 30th highest hour volumes developed in Technical Memorandum #4. This aggregates the 2016 existing year conditions with the through trip growth and separate estimates of residential, commercial and industrial growth to compute the 2040 future volumes. See Appendix A for calculations and volume components for developing 2040 volumes.

The background through trip growth is based on historical Jackson County counts and ODOT's Future Volume Tables. These were taken approximately where the study area roadways cross the Urban Growth Boundary (UGB).

The residential, industrial, and commercial growths were based on differences between the 2040 and 2016 values in Technical Memorandum #3. New single family homes, manufactured homes, and apartments were placed following City zoning and direction.

Residential volumes were calculated using Institute of Traffic Engineers (ITE) Trip Generation equations and then distributed to destinations.

In determining commercial and industrial growth, commuters traveling in and out of the city were split out from internal city commuters. ODOT's Statewide Integrated Model (SWIM) determined percentages of commuters traveling to Jackson County (Medford area), Josephine County (Grants Pass area) and local destinations, which determined:

- 32% of workers commuting via a vehicle go or from Jackson County
- 42% of workers commuting via a vehicle go or from Josephine County
- 26% commute locally

The commuter trips were further modified with American Community Survey (ACS) 2010-2015 commuting–to-work data for Rogue River:

- 13% walked/other
- 9% worked from home
- 8% carpooled

Commuting commercial and industrial employees going outside Rogue River were reduced by the carpool percentage. Local commercial employees were reduced by the walk/other and working from home percentages, while industrial employees were only reduced by the walk/other percentage.

SWIM determined commercial employee trip generation. The ITE Trip Generation "General Light Industrial" equation converted industrial employees to trips. A combination of typical land use types (i.e. gas station, motel, specialty retail, etc.) determined the inbound/outbound percentages.

SWIM also determined distribution of trips using the 2034 future scenario. The surrounding area was split into districts indicated below. "Outside" zones are trips to anywhere else, such as to Douglas County or California. The resulting distributions were generally consistent with the ACS, commuter patterns, and local perceptions. The general trip distribution was:

- From/to rest of Jackson County (via I5 and OR99) : 28%
- From/to Josephine County (via I5 and OR99): 47%
- From/to zones south of OR99 (via OR99 in both directions) : 20%
- From/to Outside zones (via I5, both directions) : 5%

The resulting individual residential, commercial, industrial, and total 2040 volumes are shown in Appendix A.

2040 Existing Conditions Analysis Results

Preliminary Signal Warrants

Preliminary Signal Warrants (PSW) were evaluated to determine if study area intersections were eligible for potential traffic control changes including signalization.

ODOT's Preliminary Signal Warrants (PSW) are based on Manual of Uniform Traffic Control Devices (MUTCD) Warrant 1 (Case A and B). Case A and B deal primarily with high volumes on the minor street and high volumes on the major street, respectively. Meeting preliminary signal warrants does not guarantee that a signal (or other change) will be installed. An intersection traffic control study would be needed by the appropriate jurisdiction weighing costs and benefits of such a change. For example, traffic signals can degrade a previously non-stopped major roadway while enhancing minor street operation. A traffic signal may introduce safety hazards that outweigh the benefits. In ODOT's jurisdiction, traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal is installed. No intersections met PSW's for 2040; however Main & Pine Street and Pine & Depot Street are close.

Volume to Capacity ratio & Level of Service

For 2040, future volumes were evaluated to describe operating conditions. Table 1 shows v/c ratios for project area intersections; some are beyond the maximum allowable V/C ratio (0.85 or 0.95 for OHP) or 0.95 for county jurisdiction. For additional information on operation, delay-based LOS is shown.

Table 1: 2040 V/C Ratios & LOS

Intersection	LOS[1]	Highest Movement[2]	V/C Ratio[3]	Queue[4] (ft)	Agency	Standard
Depot St at Pine St	F (east)	EB	0.72	**max**	City	0.95
Depot St and I5 NB	E	SB	**1.07**	**max**	ODOT	0.85
Depot St and I5 SB	F	NB	**1.07**	**max**	ODOT	0.85
Depot St and OR99	E	EB	0.63	275	ODOT	0.85
Depot St and Main St	C (south)	NB	0.36	50	City	0.95
Main St and Wards Creek Rd	B (north)	SB	0.13	< 50	City	0.95
Main St and Cedar St	C (north)	SB	0.29	< 50	City	0.95
Main St and Broadway St	C (north)	SB	0.35	< 50	City	0.95
Foothill Blvd and W Evans Creek Rd	B (north)	SB	0.28	< 50	City	0.95
Main St and Pine St	E	WB	**1.08**	**325**	City	0.95
N River Rd and Classick Dr	B (east)	EB	0.13	< 50	City	0.95

[1]Corresponding leg that applies to the LOS is shown.
[2]The Highest Movement describes queues
[3] Black cells are V/Cs at or exceeding standard
[4]Black cells are queues that block other intersections

The ramp terminal intersections are over capacity at 1.07.

Table 2 shows the v/c for mainline I5 and the merge and diverge areas of the ramps. Under normal operation I5 should perform quite well, as seen in Table 2; no locations were over the 0.85 maximum OHP v/c target. Analysis worksheets are in Appendix B.

Table 2: 2040 Mainline & Merge/Diverge v/c for I5 at Rogue River Interchange

Section	V/C
NB north of interchange	0.28
SB north of interchange	0.28
NB Diverge from I5	0.62
SB Diverge from I5	0.61
NB between ramps	0.23
SB between ramps	0.23
NB Merge onto I5	0.67
SB Merge onto I5	0.65
NB south of interchange	0.28
SB south of interchange	0.28

Average Daily Traffic to Capacity Ratio

With high volume to capacity ratios on Depot and Pine Streets and potential extensive queuing, peak spreading was investigated. This is when more traffic is on the roadway network than can be handled in a single peak hour and traffic spreads into adjacent hours. Adjacent peak hours will still be busy. Any spreading to occur in Rogue River would spread later beyond the 3:30-4:30 PM system peak hour as the school release time limits this from moving earlier in the day. The ADT/C ratio measures the potential of peak spreading and impact of congestion. The ADT/C is the ratio of daily traffic to capacity (capacity is defined by intersection approach). The highest approach ADT/C is reported for each intersection, except for Depot and Pine Street as the Classick Drive ADT/C was excessively high due to a very low approach capacity.

Table 3: 2040 ADT/C Ratio:

Intersection	Highest ADT/C
Depot St at Pine St	7.01
Depot St and I5 NB	11.06
Depot St and I5 SB	10.36
Depot St and OR99	6.31
Depot St and Main St	10.76
Main St and Wards Creek Rd	1.17
Main St and Cedar St	2.94
Main St and Broadway St	5.80
Foothill Blvd and W Evans Creek Rd	3.43
Main St and Pine St	12.94
N River Rd and Classick Dr	1.30

The ADT/C methodology was developed for FHWA (i) and has been used by ODOT for the statewide congestion management system. It is a higher level of congestion rating compared to queueing. ADT/C thresholds are as shown in Table 4.

ADT/C ratios of 6.75 – 10.75 are more of the standard peak "15-min" typical urban congestion that stays within a single hour. Peak spreading is more likely to occur once the

ADT/C exceeds 10.75 when speeds decrease for good portions of the peak hour. Peak spreading is occurring with ADT/C's of 15.25 or greater.

Table 4: ADT/C Congestion Level Thresholds

Level	Condition	Description	Lower ADT/C	Upper ADT/C
1	Uncongested	No decrease in speeds during the peak hour.	0.00	6.75
2	Uncongested to Moderately		6.75	8.25
3	Moderately Congested	Speeds decrease slightly during portions of the peak hour.	8.25	9.25
4	Moderately to Congested		9.25	9.75
5	Congested	Speeds decrease significantly during portions of the peak hour.	9.75	10.75
6	Congested to Very		10.75	12.25
7	Very Congested	Speeds decrease substantially for substantial portions of the peak hour.	12.25	13.75
8	Very to Extremely		13.75	15.25
9	Extremely Congested	Speeds decrease substantially for more than the peak hour.	15.25	24.00

Peak spreading was investigated and while peak hours will be heavy through the entire hour, trips will likely not delay to another hour. Main & Pine Street's high potential for extended congestion, reflected in queuing and ADT/C, merits investigation for improvements.

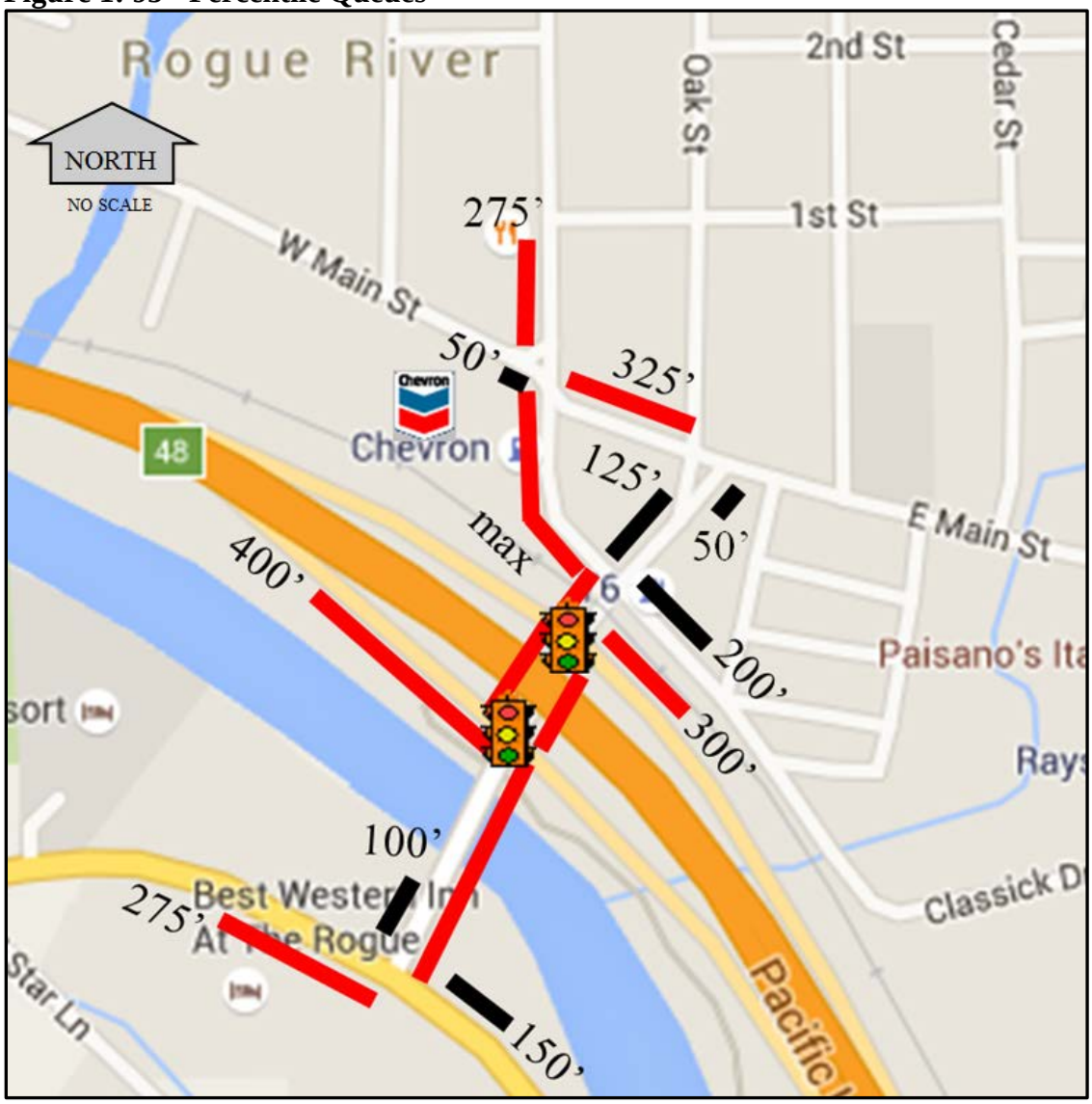
95th Percentile Queues

In addition to V/C ratios, ADT/C ratios, and LOS, the 95th percentile queues were analyzed to better understand system operation. Excessively long queues are often seen in areas where V/C ratios exceed standards. Figure 1 shows 2040 95th percentile queuing of the study area. The largest queuing concerns are:

Depot Street and Pine Street: eastbound queue extends to intersection of Main Street and Pine Street. Therefore, the southbound queue waiting for a gap in traffic may extend more than shown, affecting Depot Street.

Depot St and I5 NB: southbound and northbound queues extend to the Pine Street intersection as well as the southbound ramp. The 300 foot queue is a concern as it potentially extends into the ramp deceleration portion.

Figure 1: 95th Percentile Queues



Depot St and I5 SB: southbound and northbound queues extend under I5 from intersection ramp to intersection ramp (both directions). This also means there is a queue that spills back to OR99. The 400 foot queue up the ramp is a significant concern as it may extend into the ramp deceleration portion.

Depot St and Main St: with only a minor delay at one intersection, there will be continuous standing traffic from OR99 to Main Street (entire length of Depot Street). The queue from Pine Street and Main Street will affect operation of this intersection.

The constrained interchange section can cause a number of operational issues. Any kind of incident or delay (parking operation or large truck turning) on Depot Street or a train crossing can quickly create congestion up the ramps and onto I5 mainline. Extending queues into the ramp deceleration portion or mainline traffic is a safety issue. Drivers may have to prematurely brake or brake harder than expected. This would increase the potential of rear-end crashes. The southbound off-ramp is more likely to have this problem more often than the northbound direction.

Southbound ramp terminal geometry is tight enough that trucks turning left can interfere with vehicles waiting in the left turn lane to head south on I5. The ramp is between I5 and the Rogue River Greenway and the Rogue River.

Non-Motorized Operations

The pedestrians and bicyclists counted from 3:00 to 5:00 p.m. were updated with the 40% population growth rate (Technical Memorandum #3) from 2016 to 2040, Tables 5 and 6. There is a base level of use on the pedestrian and bicycle system throughout the City even in the highest vehicular volume areas.

Table 5: Pedestrian Crossings

Intersection	Pedestrian Crossings 3-5PM peak period			
	North	East	South	West
Depot St at Pine St	0	4	0	3
Depot St and I5 NB	1	10	0	10
Depot St and I5 SB	3	6	4	8
Depot St and OR99	0	1	3	3
Depot Stand Main St	11	7	8	48
Main St and Wards Creek Rd	4	0	N/A	3
Main St and Cedar St	36	17	N/A	3
Main St and Broadway St	14	4	N/A	14
Foothill Blvd and W Evans Creek Rd	5	15	N/A	0
Main St and Pine St	14	13	39	20
N River Rd and Classick Dr	6	N/A	0	0

Bicycle, pedestrian, and transit are largely influenced by adjacent modes. Without any planned projects, there is no difference between the 2016 and 2040 conditions. As traffic congestion grows comfort of bicyclists and pedestrians will decrease. Congestion at the interchange and surrounding roadways may cause issues with transit schedule.

Table 6: Bicycle Movements

Intersection	Bicycles Entering Volumes 3-5PM peak period			
	North	East	South	West
Depot St at Pine St	0	0	4	1
Depot St and I5 NB	1	0	4	N/A
Depot St and I5 SB	1	N/A	4	0
Depot St and OR99	11	4	0	0
Depot St and Main St	0	0	1	1
Main St and Wards Creek Rd	1	0	N/A	1
Main St and Cedar St	No Data	No Data	N/A	No Data
Main St and Broadway St	0	1	N/A	3
Foothill Blvd and W Evans Creek Rd	3	0	N/A	1
Main St and Pine St	0	0	0	1
N River Rd and Classick Dr	0	N/A	0	0

Summary

There are intersections beyond the maximum allowable v/c ratios in 2040 specifically at the interchange and along Pine Street. None of these intersections meet PSWs. Queuing and congestion along Pine and Depot Streets are extensive. This may cause issues on I5 off-ramps as drivers may need to brake prematurely, increasing the potential of crashes. Increasing vehicular flows will mean decreased bicycle and pedestrian comfort as well as less reliable transit service.

If you have any questions, please feel free to contact me at 503-986-4112.

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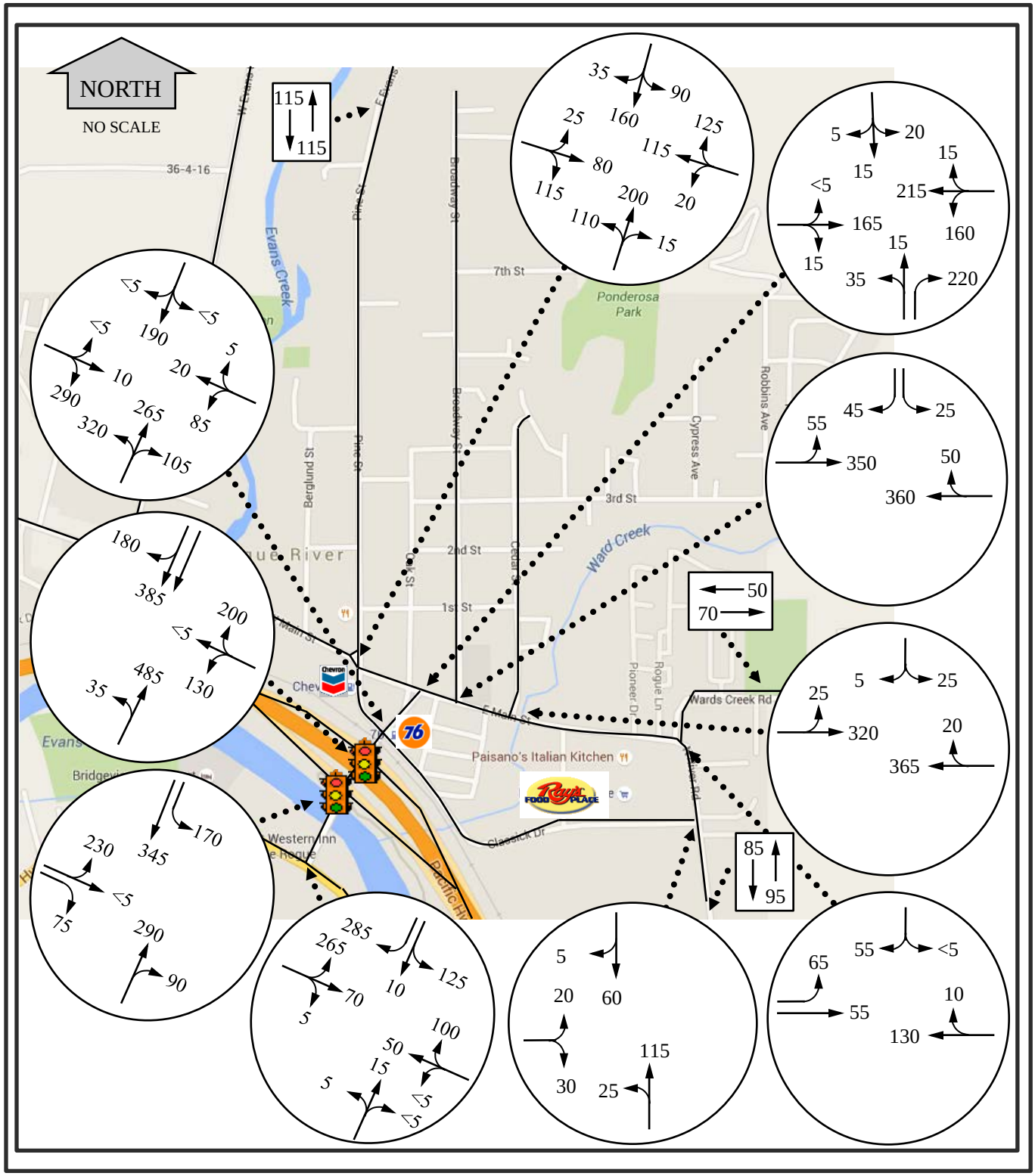
cc: Peter Schuytema, TPAU
Brian Dunn, TPAU
Michael Baker, Region 3 Planning
Dan Dorrell, District 8 Traffic
File

(i) Estimating the Impacts of Urban Transportation Alternatives, Participant's Notebook, FHWA/NHI December, 1995.

Appendix A: 2040 Future Volumes and Lane Configurations & Volume Development



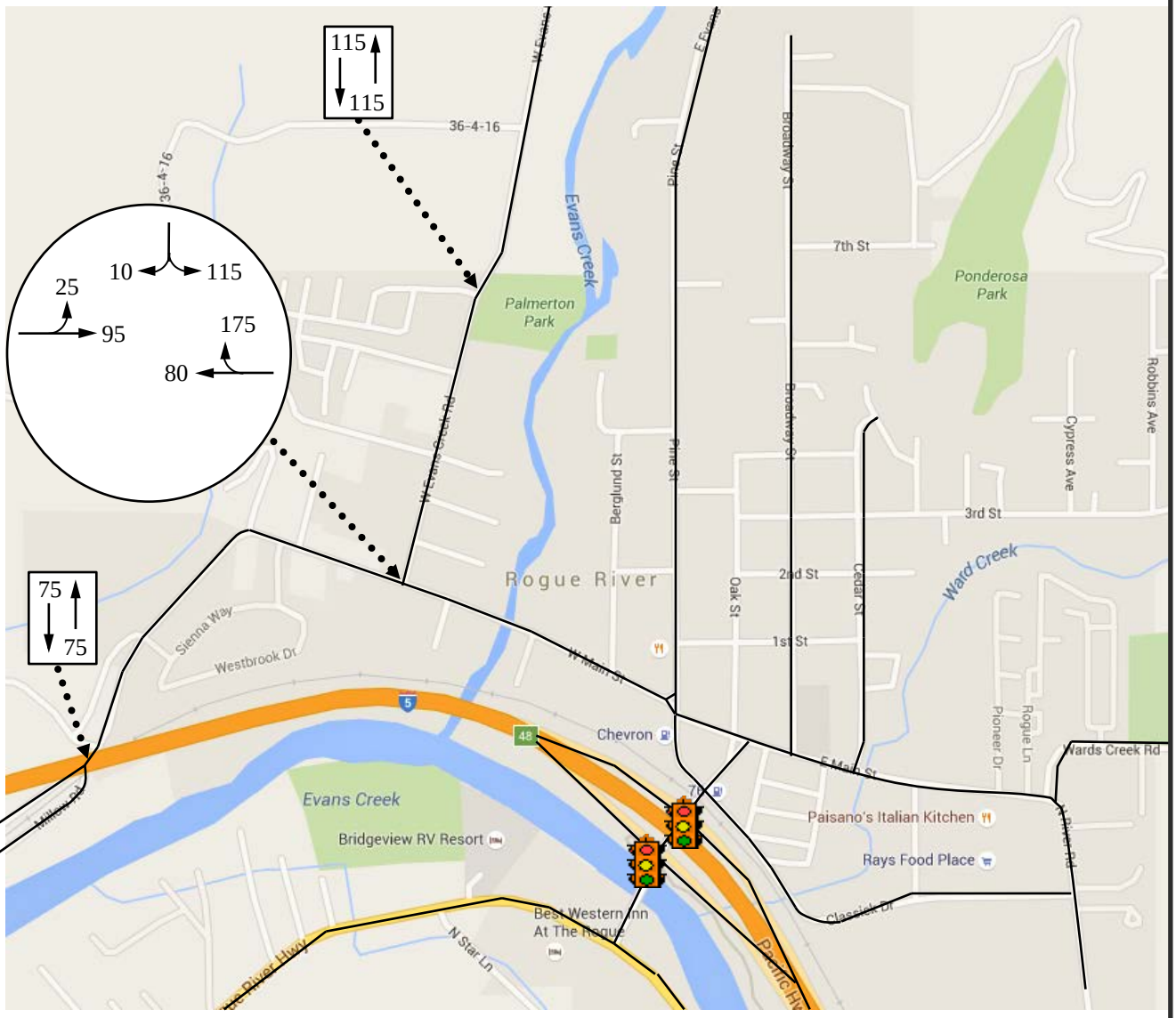
OREGON DEPARTMENT OF TRANSPORTATION **TPAU** TRANSPORTATION PLANNING ANALYSIS UNIT

No-build 2016 Peak Hour volumes 3:30 – 4:30 PM **30th Highest hour volumes seasonally adjusted and balanced** **Rogue River TSP** **Highway No. 1 and 60 (I5 and 99)**	**FILE : Rogue River.**	**Prepared By: Joe Meek PE PTOE**	Figure A1
	DATE: 11/25/2016	**Reviewed By: Peter Schuytema, P.E.**	

NORTH

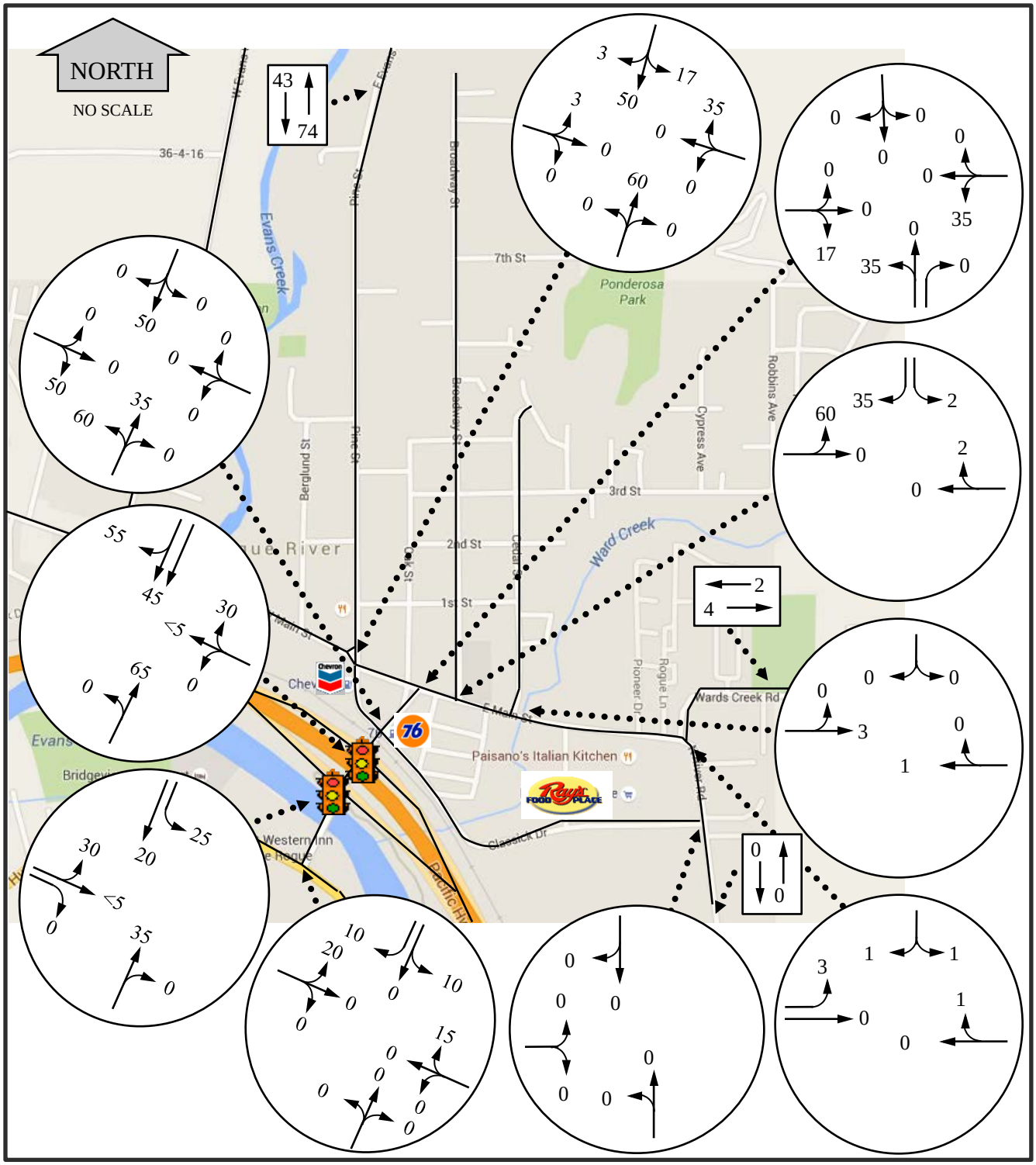
NO SCALE

West of Evans Creek



OREGON DEPARTMENT OF TRANSPORTATION **TPAU** TRANSPORTATION PLANNING ANALYSIS UNIT

No-build 2016 Peak Hour volumes 3:30 – 4:30 PM **30th Highest hour volumes seasonally adjusted and balanced** **Rogue River TSP** **Highway No. 1 and 60 (I5 and 99)**	**FILE : Rogue River.**	**Prepared By: Joe Meek PE PTOE**	Figure A2
	DATE: 11/25/2016	**Reviewed By: Peter Schuytema, P.E.**	



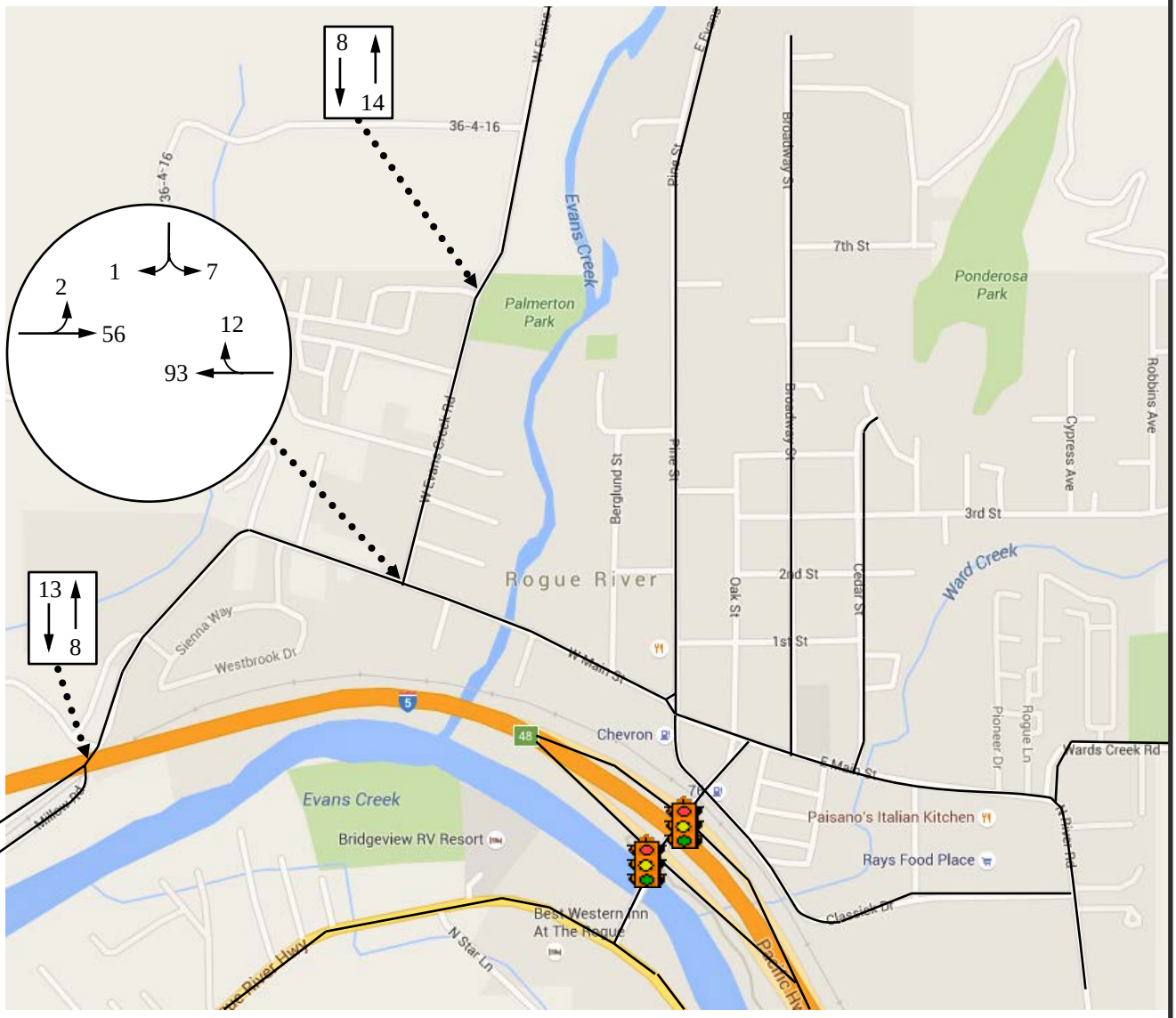
OREGON DEPARTMENT OF TRANSPORTATION **TPAU** TRANSPORTATION PLANNING ANALYSIS UNIT

No-build Peak Hour volumes 3:30 – 4:30 PM **2040 additional residential trips** **Rogue River TSP** **Highway No. 1 and 60 (I5 and 99)**	**FILE : Rogue River.**	**Prepared By: Joe Meek PE PTOE**	Figure A3
	DATE: 10/2/2017	**Reviewed By: Peter Schuytema, P.E.**	

NORTH

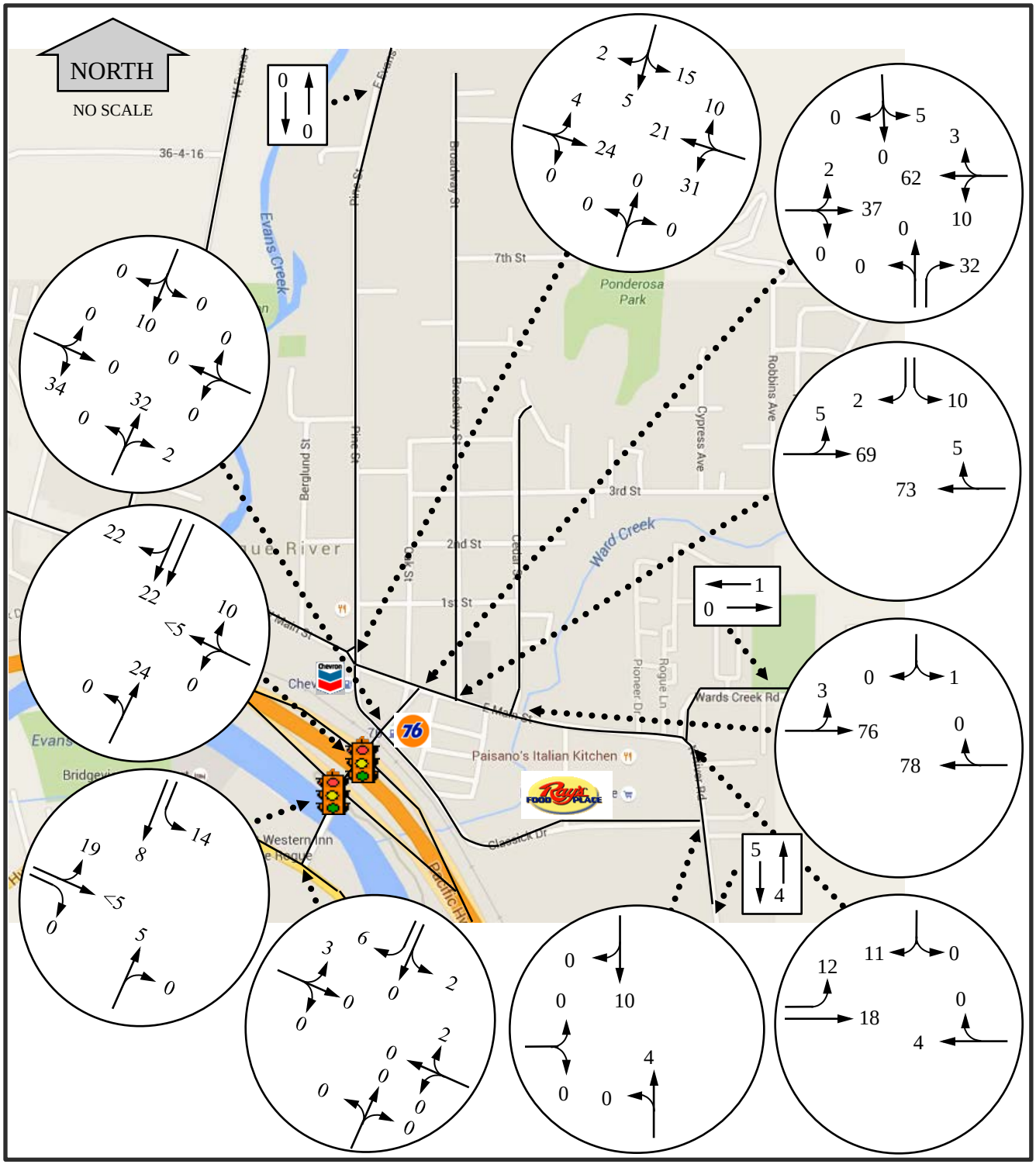
NO SCALE

West of Evans Creek



OREGON DEPARTMENT OF TRANSPORTATION **TPAU** TRANSPORTATION PLANNING ANALYSIS UNIT

No-build Peak Hour volumes 3:30 – 4:30 PM **2040 additional residential trips** **Rogue River TSP** **Highway No. 1 and 60 (I5 and 99)**	**FILE : Rogue River.** **DATE: 10/2/2017**	**Prepared By: Joe Meek PE PTOE** **Reviewed By: Peter Schuytema, P.E.**	Figure A4



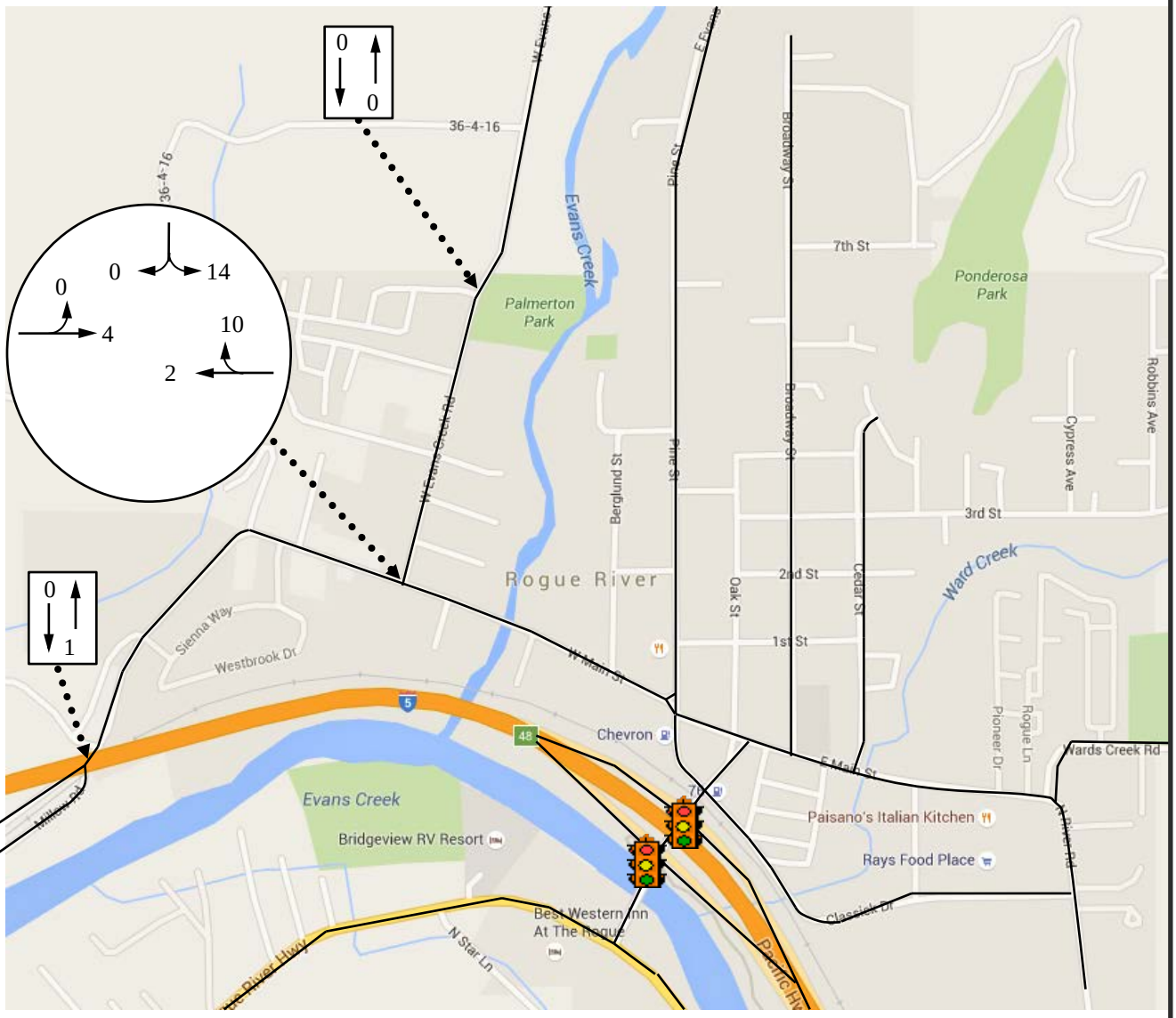
OREGON DEPARTMENT OF TRANSPORTATION **TPAU** TRANSPORTATION PLANNING ANALYSIS UNIT

No-build Peak Hour volumes 3:30 – 4:30 PM **2040 additional commercial trips** **Rogue River TSP** **Highway No. 1 and 60 (I5 and 99)**	**FILE : Rogue River.**	**Prepared By: Joe Meek PE PTOE**	Figure A5
	DATE: 10/2/2017	**Reviewed By: Peter Schuytema, P.E.**	

NORTH

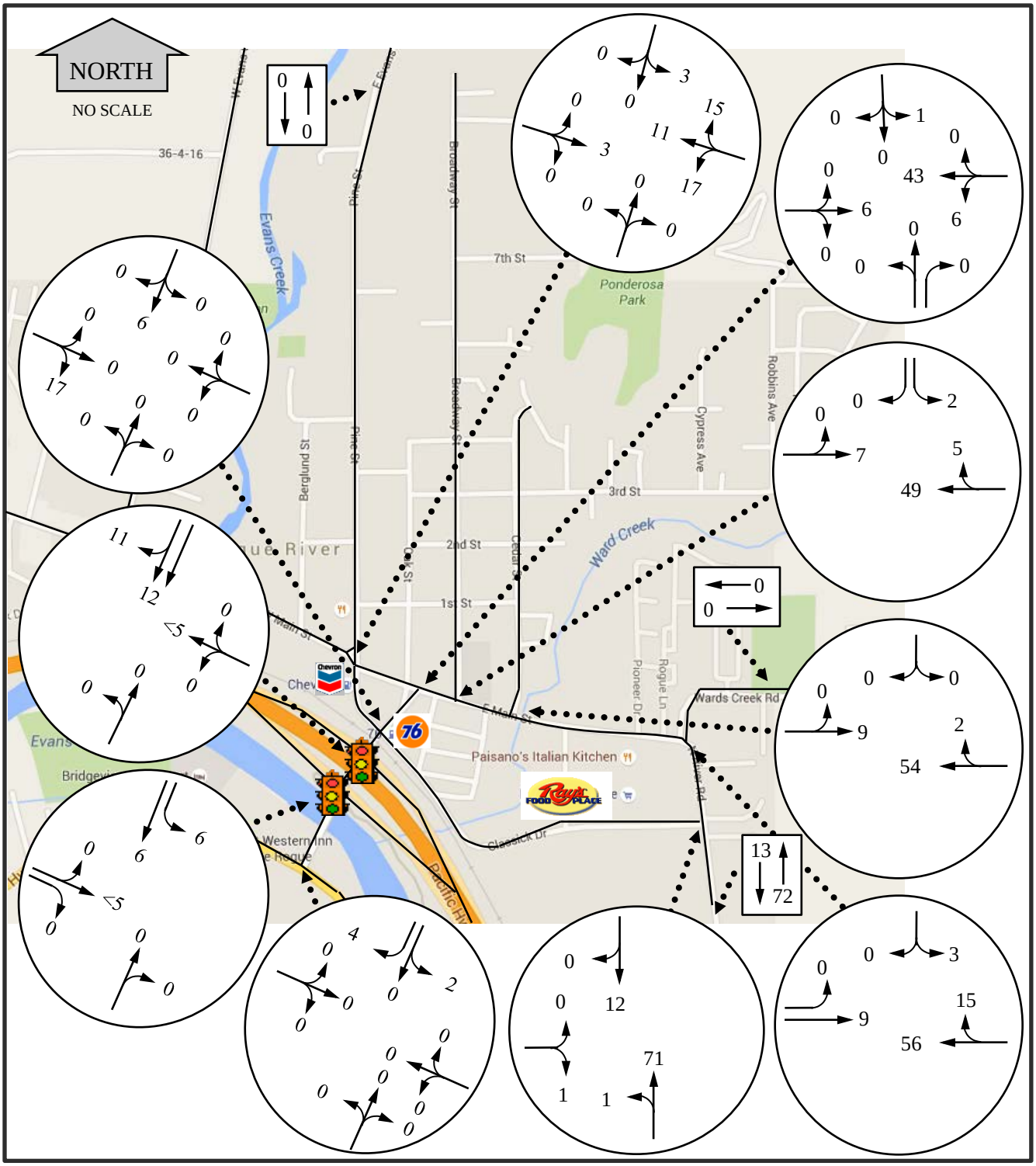
NO SCALE

West of Evans Creek



OREGON DEPARTMENT OF TRANSPORTATION **TPAU** TRANSPORTATION PLANNING ANALYSIS UNIT

No-build Peak Hour volumes 3:30 – 4:30 PM **2040 additional commercial trips** **Rogue River TSP** **Highway No. 1 and 60 (I5 and 99)**	**FILE : Rogue River.** **DATE: 10/2/2017**	**Prepared By: Joe Meek PE PTOE** **Reviewed By: Peter Schuytema, P.E.**	Figure A6



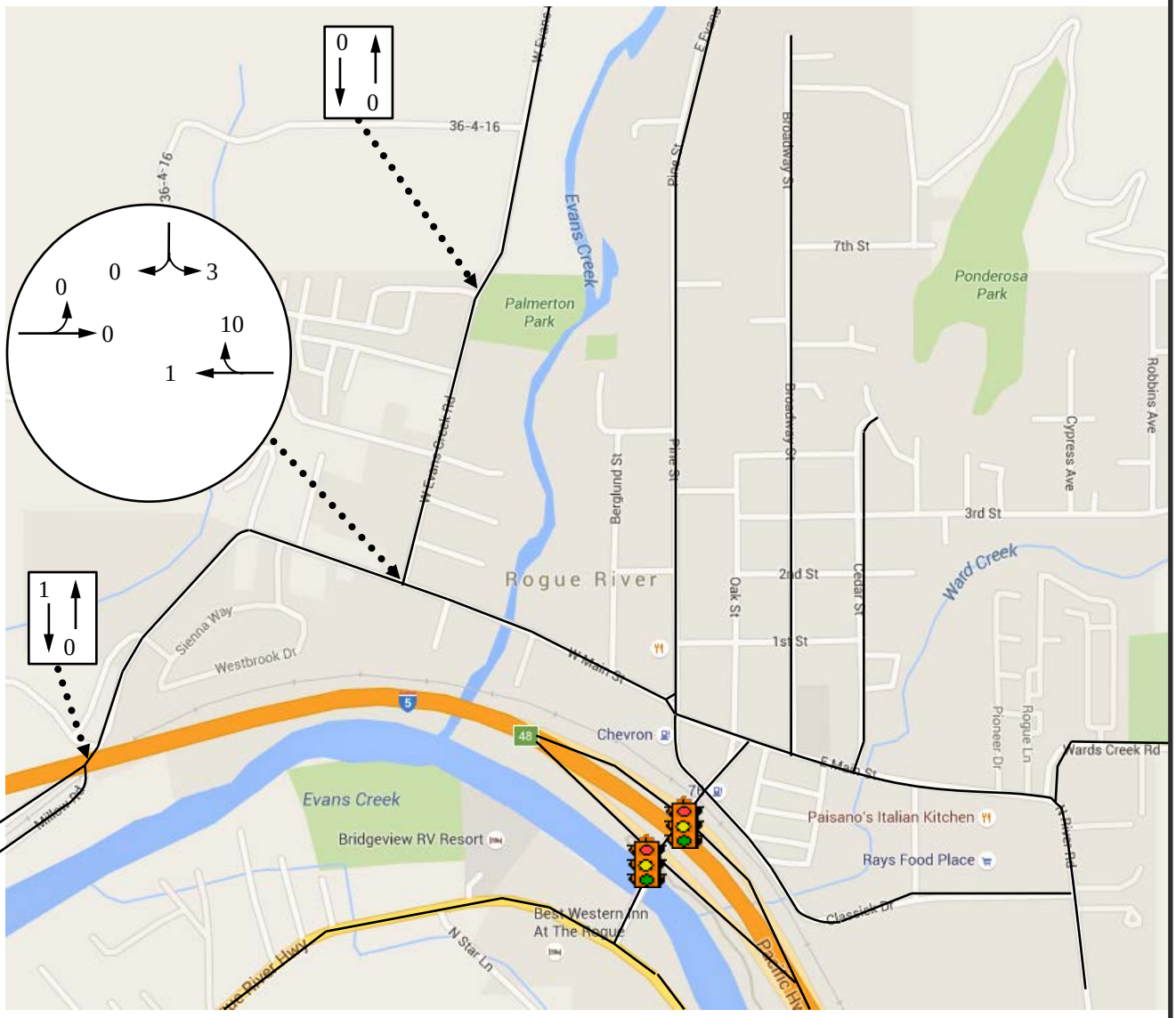
OREGON DEPARTMENT OF TRANSPORTATION **TPAU** TRANSPORTATION PLANNING ANALYSIS UNIT

No-build Peak Hour volumes 3:30 – 4:30 PM **2040 additional industrial trips** **Rogue River TSP** **Highway No. 1 and 60 (I5 and 99)**	**FILE : Rogue River.**	**Prepared By: Joe Meek PE PTOE**	Figure A7
	DATE: 10/2/2017	**Reviewed By: Peter Schuytema, P.E.**	

NORTH

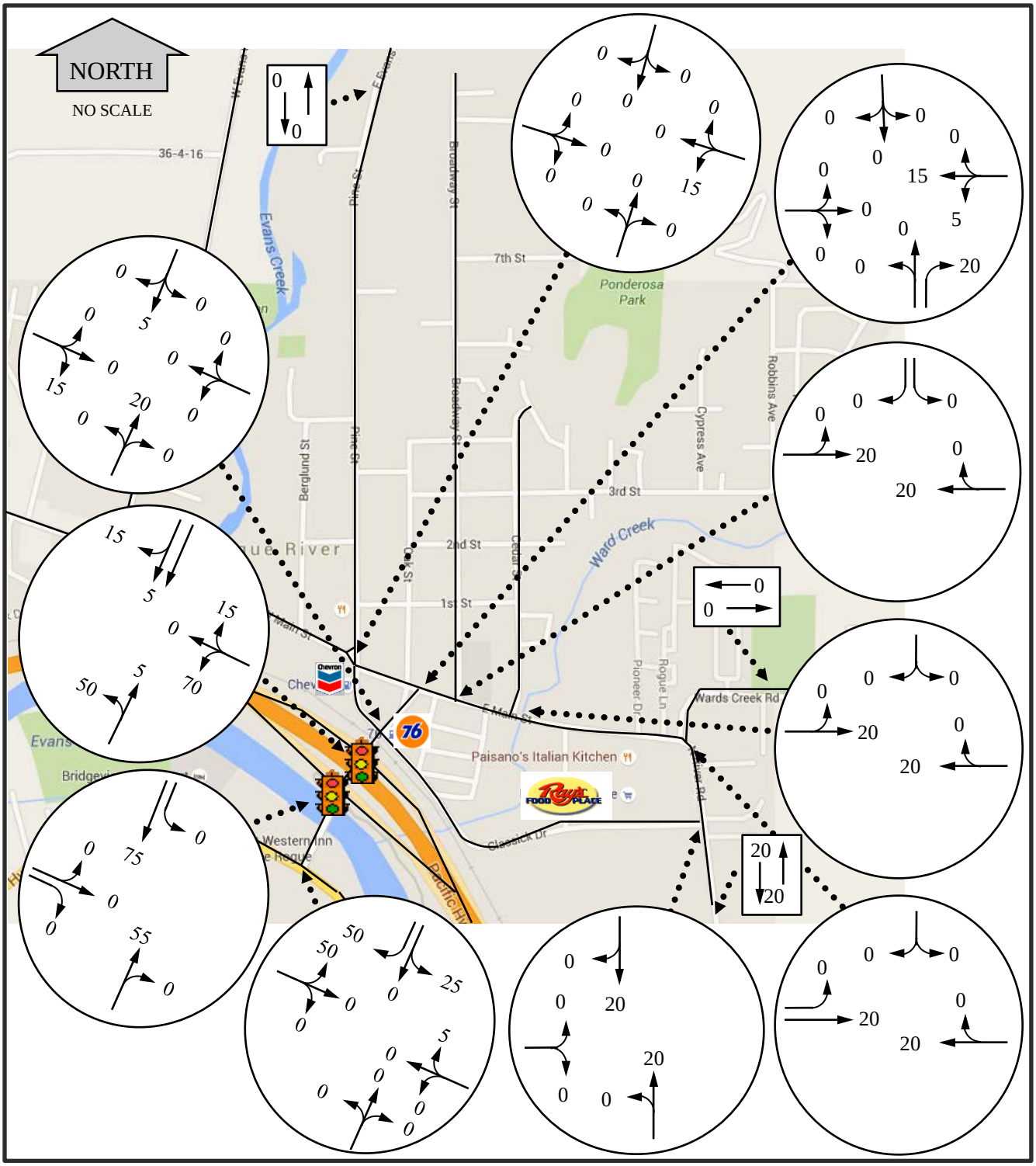
NO SCALE

West of Evans Creek



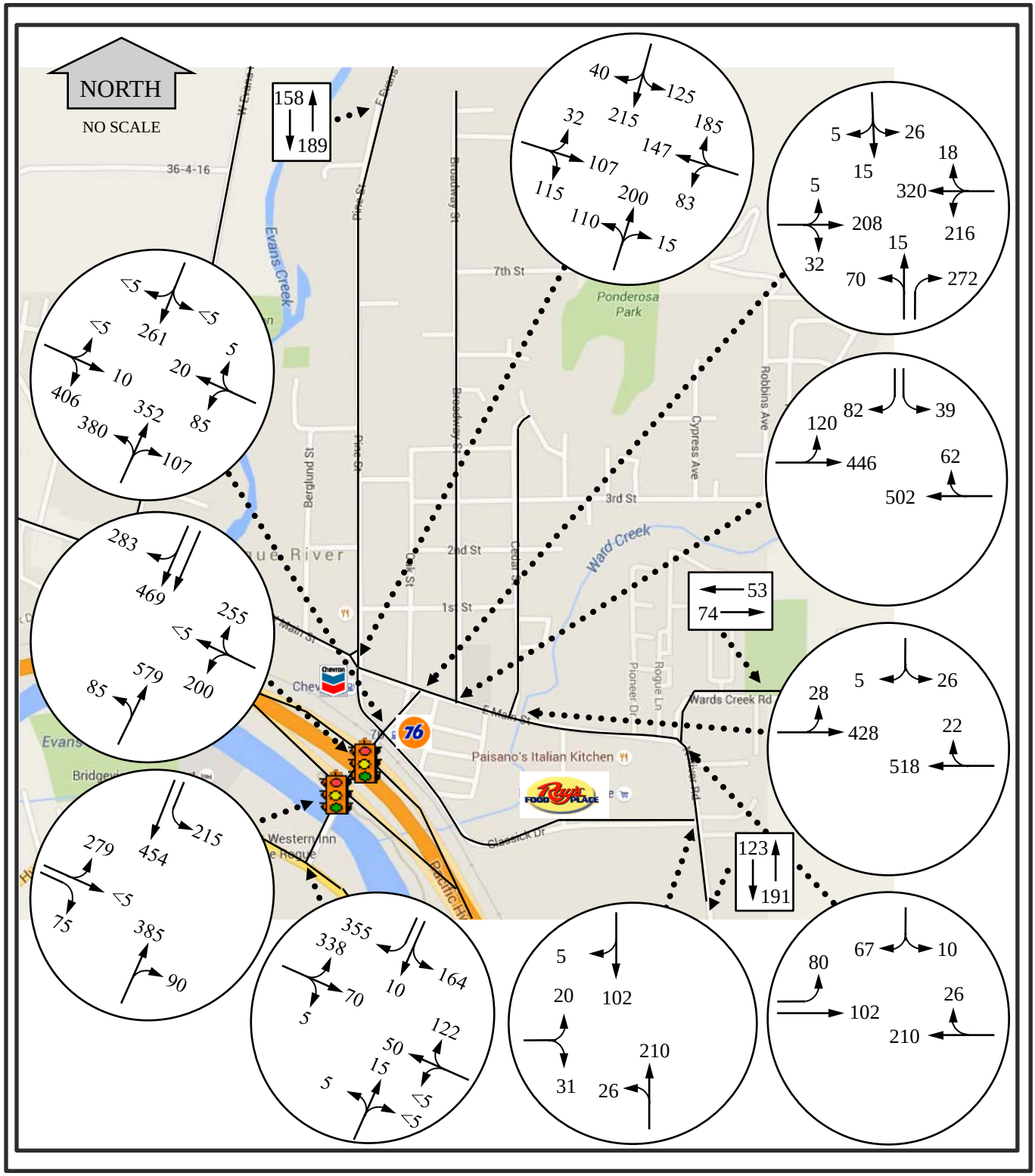
OREGON DEPARTMENT OF TRANSPORTATION **TPAU** TRANSPORTATION PLANNING ANALYSIS UNIT

No-build Peak Hour volumes 3:30 – 4:30 PM **2040 additional industrial trips** **Rogue River TSP** **Highway No. 1 and 60 (I5 and 99)**	**FILE : Rogue River.** **DATE: 10/2/2017**	**Prepared By: Joe Meek PE PTOE** **Reviewed By: Peter Schuytema, P.E.**	Figure A8



OREGON DEPARTMENT OF TRANSPORTATION **TPAU** TRANSPORTATION PLANNING ANALYSIS UNIT

No-build Peak Hour volumes 3:30 – 4:30 PM **2040 Max External /External Growth** **Rogue River TSP** **Highway No. 1 and 60 (I5 and 99)**	**FILE : Rogue River.**	**Prepared By: Joe Meek PE PTOE**	Figure A9
	DATE: 10/2/2017	**Reviewed By: Peter Schuytema, P.E.**	



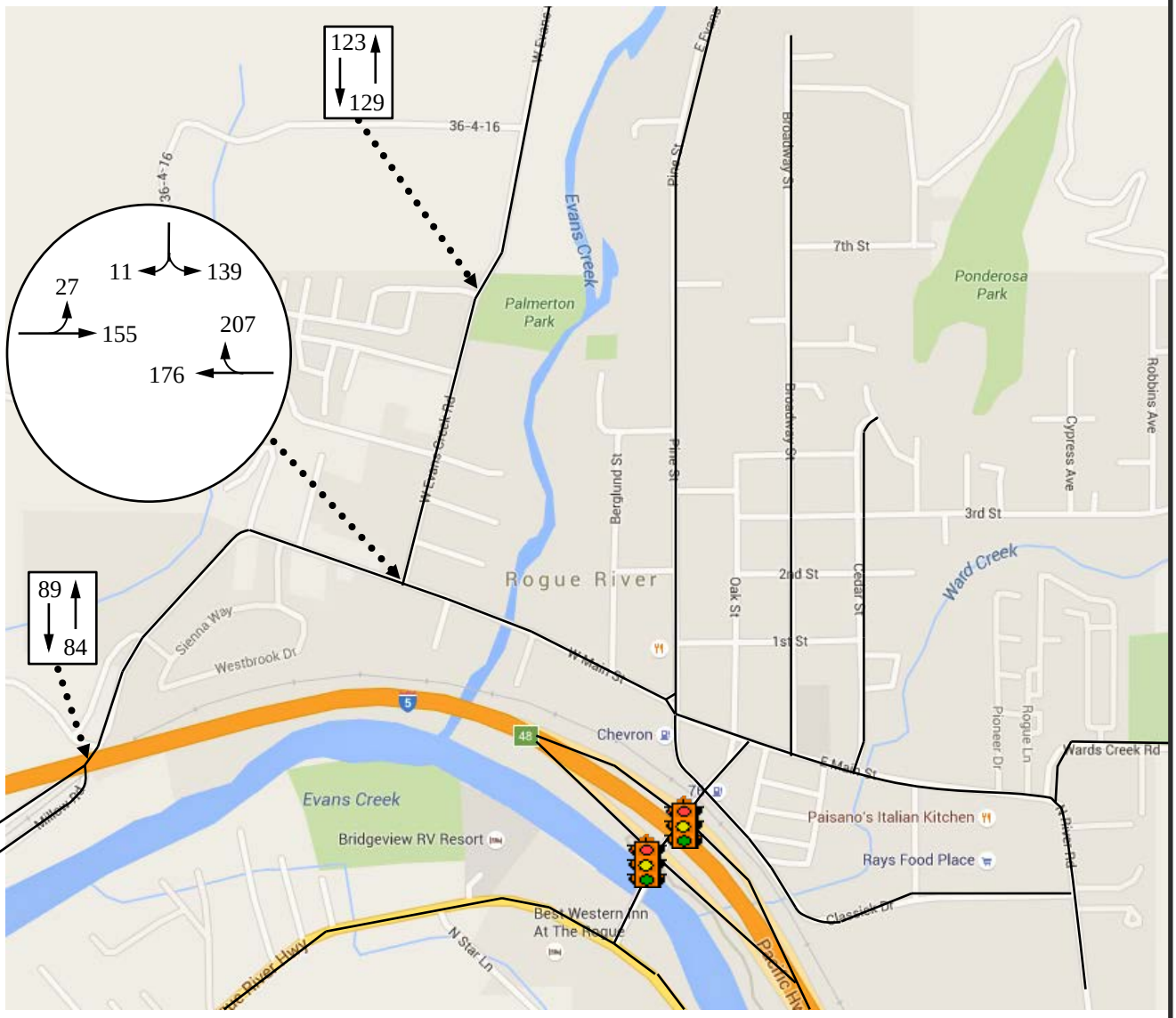
OREGON DEPARTMENT OF TRANSPORTATION **TPAU** TRANSPORTATION PLANNING ANALYSIS UNIT

No-build Peak Hour volumes 3:30 – 4:30 PM **2040 volumes total** **Rogue River TSP** **Highway No. 1 and 60 (I5 and 99)**	**FILE : Rogue River.**	**Prepared By: Joe Meek PE PTOE**	Figure A10
	DATE: 10/2/2017	**Reviewed By: Peter Schuytema, P.E.**	

NORTH

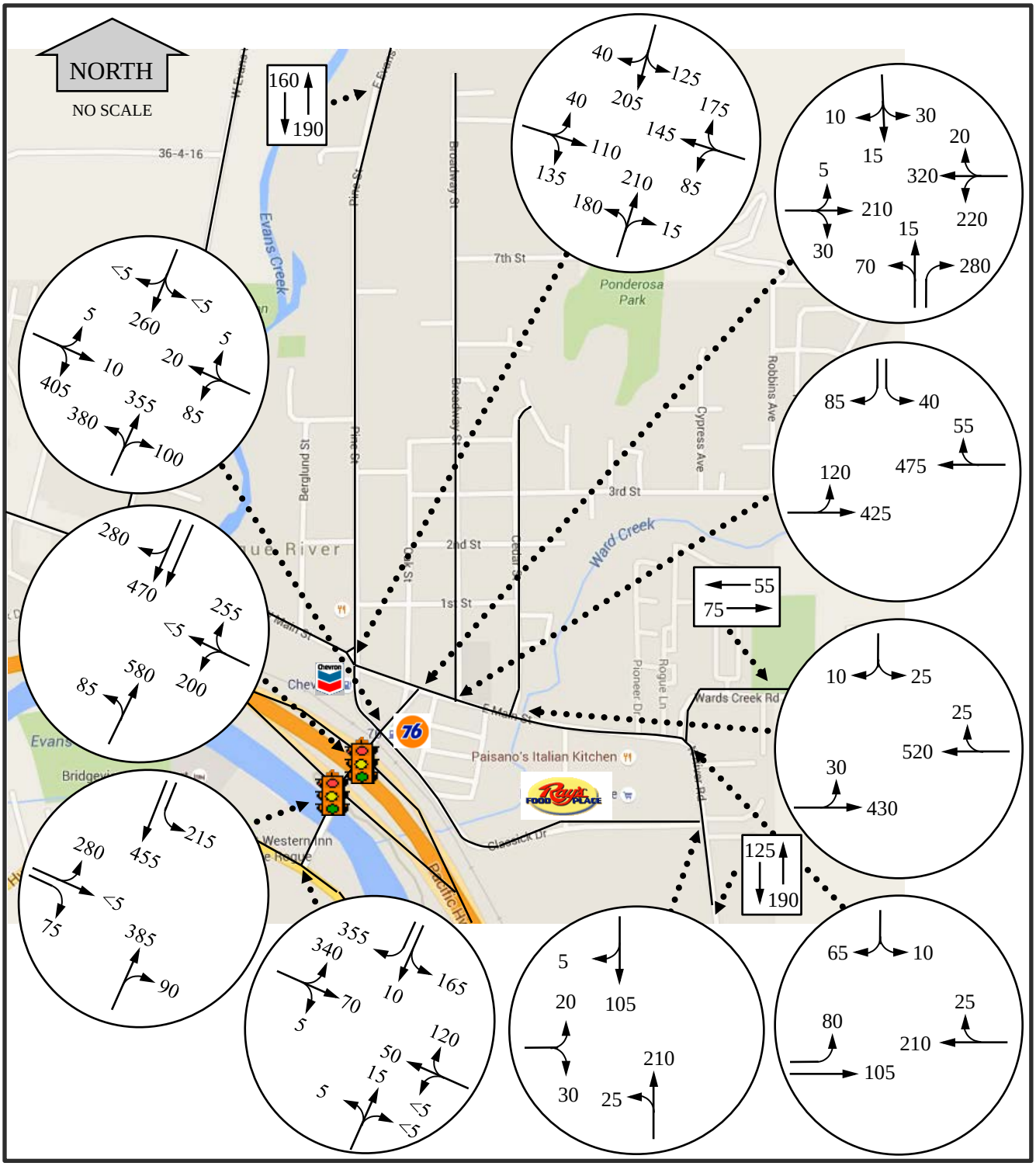
NO SCALE

West of Evans Creek



OREGON DEPARTMENT OF TRANSPORTATION **TPAU** TRANSPORTATION PLANNING ANALYSIS UNIT

No-build Peak Hour volumes 3:30 – 4:30 PM **2040** **Rogue River TSP** **Highway No. 1 and 60 (I5 and 99)**	**FILE : Rogue River.**	**Prepared By: Joe Meek PE PTOE**	Figure A11
	DATE: 10/2/2017	**Reviewed By: Peter Schuytema, P.E.**	



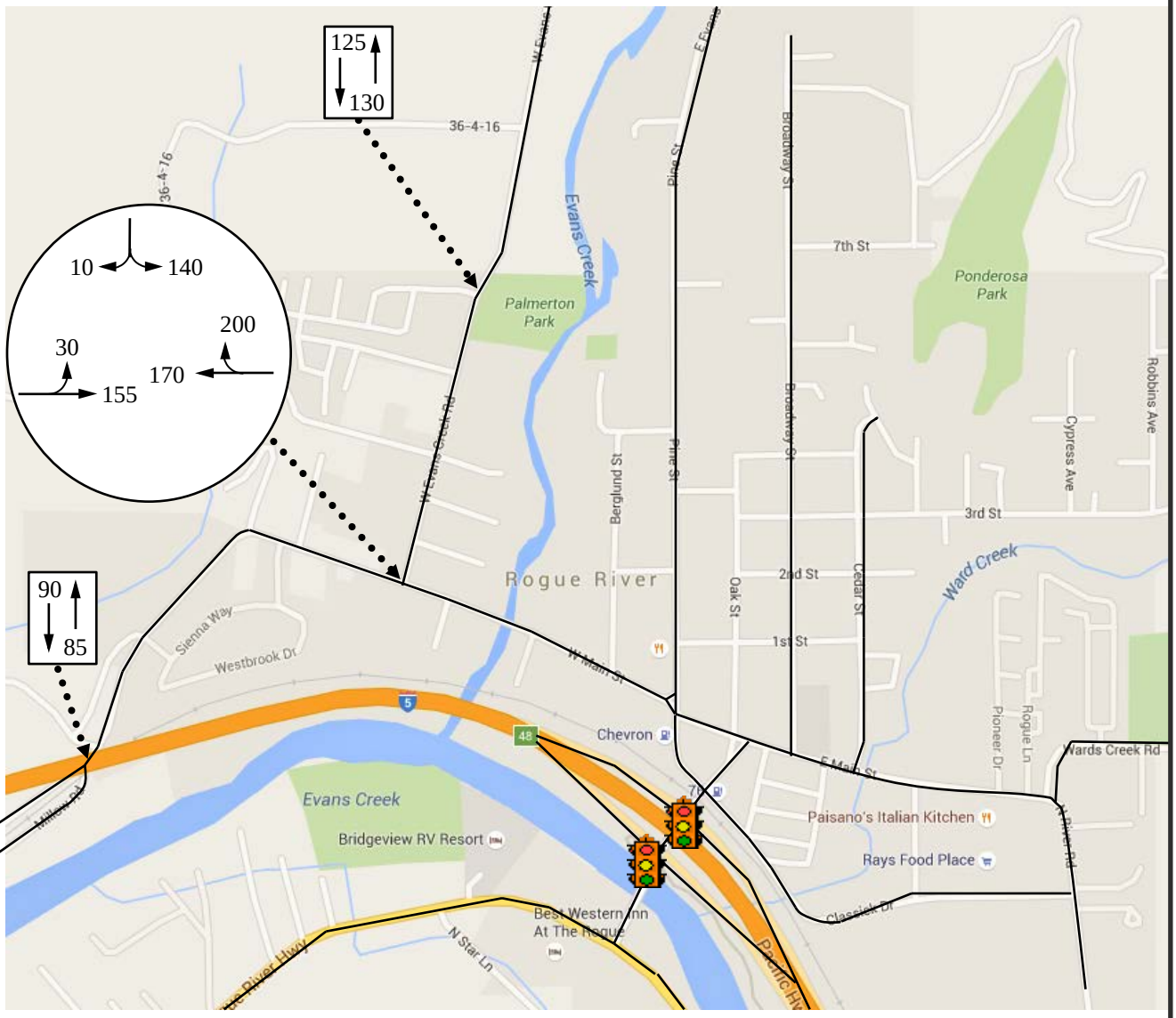
OREGON DEPARTMENT OF TRANSPORTATION **TPAU** TRANSPORTATION PLANNING ANALYSIS UNIT

No-build Peak Hour volumes 3:30 – 4:30 PM **2040 volumes total rounded and balanced** **Rogue River TSP** **Highway No. 1 and 60 (I5 and 99)**	**FILE : Rogue River.**	**Prepared By: Joe Meek PE PTOE**	Figure A12
	DATE: 10/2/2017	**Reviewed By: Peter Schuytema, P.E.**	

NORTH

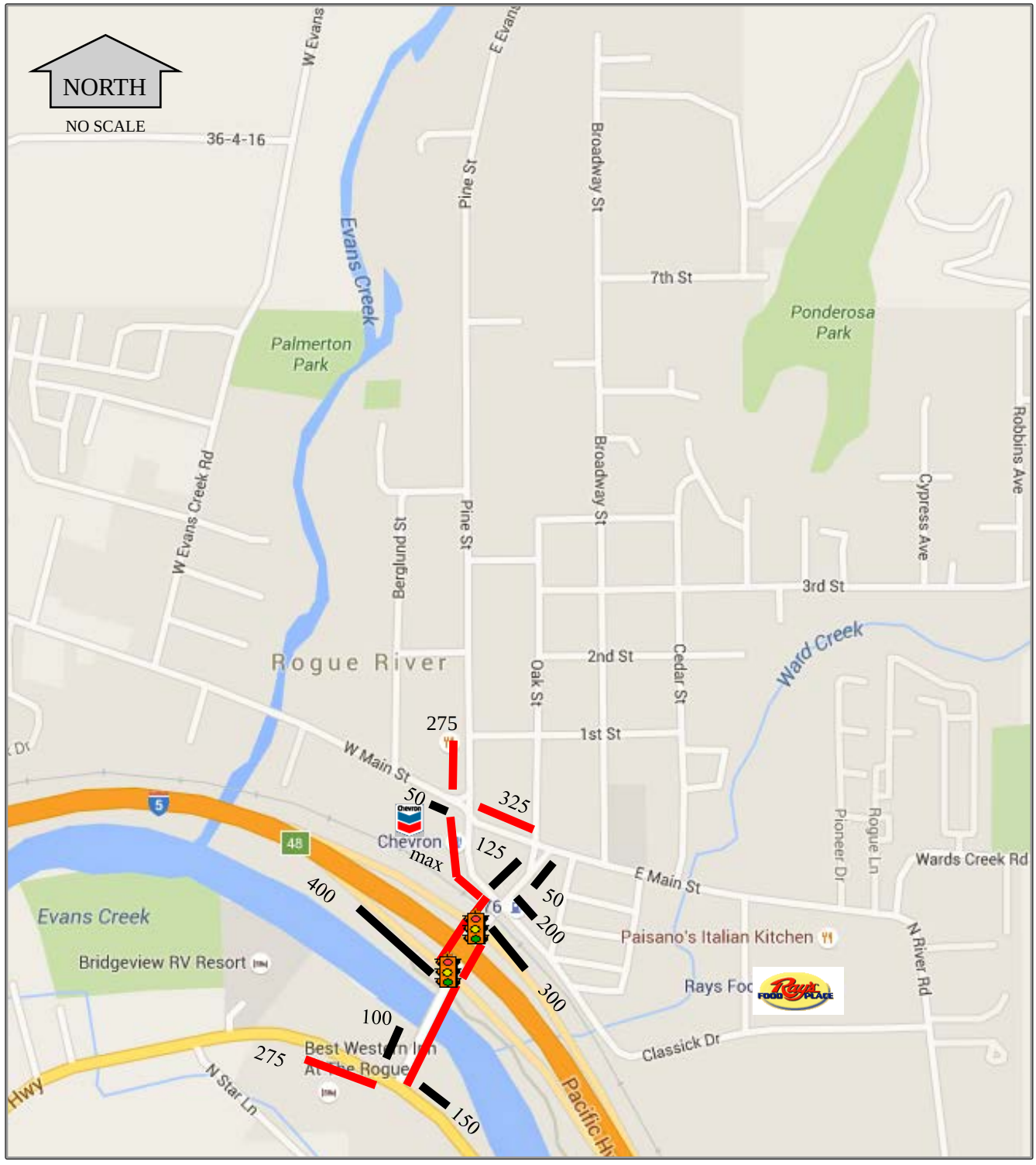
NO SCALE

West of Evans Creek



OREGON DEPARTMENT OF TRANSPORTATION **TPAU** TRANSPORTATION PLANNING ANALYSIS UNIT

No-build Peak Hour volumes 3:30 – 4:30 PM **2040** **Rogue River TSP** **Highway No. 1 and 60 (I5 and 99)**	**FILE : Rogue River.** **DATE: 10/2/2017**	**Prepared By: Joe Meek PE PTOE** **Reviewed By: Peter Schuytema, P.E.**	Figure A13



OREGON DEPARTMENT OF TRANSPORTATION **TPAU** TRANSPORTATION PLANNING ANALYSIS UNIT

No-build 2040 Peak Hour volumes 3:30 – 4:30 PM **Network queues** **Rogue River TSP** **Highway No. 1 and 60 (I5 and 99)**	**FILE : Rogue River.**	**Prepared By: Joe Meek PE PTOE**	Figure A14
	DATE: 11/25/2017	**Reviewed By: Peter Schuytema, P.E.**	

Future Volumes

Intersection	by lane total capacity	2040	2040/k adt	adt/cap	worst
Depot St at Pine St					
South	1645	1095	10950	6.66	
East	47	130	1300	27.66	27.66
North	528	418	4180	7.92	
West	612	804	8040	13.14	13.14
Depot St and I5 NB					
South	642	795	7950	12.38	12.38
East	643	566	5660	8.80	
North	858	565	5650	6.59	
	1123	740	7400	6.59	
Depot St and I5 SB					
South	522	505	5050	9.67	9.67
North	421	295	2950	7.01	
	531	480	4800	9.04	
West	479	381	3810	7.95	
	581	90	900	1.55	
Depot St and OR99					
South	282	24	240	0.85	
East	379	189	1890	4.99	
North	720	175	1750	2.43	
	563	395	3950	7.02	7.02
West	803	450	4500	5.60	
Depot St and Main St					
South	79	130	1300	16.46	16.46
	580	370	3700	6.38	
East	1487	1095	10950	7.36	
North	60	95	950	15.83	15.83
West	1795	529	5290	2.95	
Main St and Wards Creek Rd					
East	1837	325	3250	1.77	1.77
North	641	110	1100	1.72	
West	1184	160	1600	1.35	
	1863	145	1450	0.78	
Main St and Cedar St					
East	1855	1015	10150	5.47	5.47
North	125	50	500	4.00	
West	1730	765	7650	4.42	
Main St and Broadway St					
East	1840	1035	10350	5.63	
North	69	65	650	9.42	9.42
	285	130	1300	4.56	
West	1340	870	8700	6.49	
Foothill Blvd and W Evans Creek Rd					
East	1681	515	5150	3.06	

North	437	280	2800	6.41	6.41
West	1684	255	2550	1.51	
Main St and Pine St					
South	313	515	5150	16.45	16.45
East	310	315	3150	10.16	
	344	565	5650	16.42	
North	329	550	5500	16.72	16.72
	292	65	650	2.23	
West	523	35	350	0.67	
	720	455	4550	6.32	
N River Rd and Classick Dr					
South	1804	325	3250	1.80	1.80
North	1848	115	1150	0.62	
West	710	60	600	0.85	

revised							
2040							
835	8350	5.08					
110	1100	23.40	23.4				
370	3700	7.01					
285	2850	4.66		east leg is actually higher, has no capacity			
665	6650	10.36	10.36				
455	4550	7.08					
280	2800	3.26		1981	1305	13050	6.59
470	4700	4.19					
475.00	4750	9.10	9.1				
215	2150	5.11		952	775	7750	8.14
455	4550	8.57					
280	2800	5.85		1060	471	4710	4.44
75	750	1.29					
24	240	0.85					
179	1790	4.72					
175	1750	2.43		1283	570	5700	4.44
355.00	3550	6.31					
415.00	4150	5.17					
85.00	850	10.76	10.76	659	500	5000	7.59
280.00	2800	4.83					
560.00	5600	3.77					
55.00	550	9.17					
245.00	2450	1.36					
185.00	1850	1.01					
75.00	750	1.17					
80.00	800	0.68					
105.00	1050	0.56					
545.00	5450	2.94					
35.00	350	2.80					
460.00	4600	2.66					
40.00	400	5.80		354	195	1950	5.51
85.00	850	2.98					
545.00	5450	4.07					
370.00	3700	2.20					

150.00	1500	3.43					
185.00	1850	1.10					
405.00	4050	12.94	12.94				
85.00	850	2.74		654	880	8800	13.46
320.00	3200	9.30					
330.00	3300	10.03		621	615	6150	9.90
40.00	400	1.37					
40.00	400	0.76		1243	490	4900	3.94
245.00	2450	3.40					
235.00	2350	1.30					
110.00	1100	0.60					
50.00	500	0.70					

Appendix B: Analysis Worksheets

Critical Movement Analysis 2040 no build

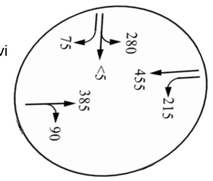
Sum of Critical Volumes (Vehicles/Hour/Lane)	Performance
0 to 1,200	Under Capacity
1,201 to 1,400	Near Capacity
1,401 and Above	Over Capacity

10%

25%

SB
east west
wb left and eb thru 215 + 385 = 600 vi

noth south +
SB thru left and SBR 285 75 = 285
=
sum of critical movement volumes 885
Under Capacity



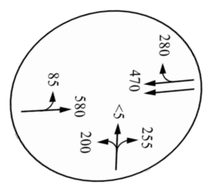
SB
east west
wb left and eb thru 240 + 425 = 665 vi

noth south +
SB thru left and SBR 315 + 85 = 400
=
sum of critical movement volumes 1065
Under Capacity

SB
east west
wb left and eb thru 270 + 480 = 750 vi

noth south +
SB thru left and SBR 355 + 95 = 450
=
sum of critical movement volumes 1200
Near Capacity

NB
east west (470 + 280)/2
eb left and wb thru 85 + 375 = 460
larger 665
noth south +
NB thru left and NBR 255 + 200 = 455
=
1120
Under Capacity



NB
east west
eb left and wb thru 95 + 572 = 667
larger 730
noth south +
NB thru left and NBR 285 + 220 = 505
=
1235
Near Capacity

NB
east west
eb left and wb thru 105 + 590 = 695
larger 830
noth south +
NB thru left and NBR 325 + 250 = 575
=
1405
Over Capacity

V/C

$Xc = \frac{C}{C - L} Sum\left(\frac{Vi}{Nsi}\right)$ 1.09 1.14

L = loss time 4 sec/phase = NB 2 SB 3
C = cycle length = 100 sec
Vi = demand = NB 1125 SB 1050
Nsi = Sat Flow = NB 1048 594 3234 SB 743 1716 1454 816
Northbound int V/C = 1.52
Southbound int V/C = 0.92

1.07
1.07

V/C

$Xc = \frac{C}{C - L} Sum\left(\frac{Vi}{Nsi}\right)$

L = loss time 4 sec/phase = NB 2 SB 3
C = cycle length = 100 sec
Vi = demand = NB 1125 SB 1050
Nsi = Sat Flow = NB 1045 1467 2158 4316 SB 723 1784.5 1471
Northbound int V/C = 1.07
Southbound int V/C = 1.06

$\frac{C}{C - L}$ 1.09 1.14

1.09 .691 +.472 1.163 1.26413

1.07
1.13

V/C

$Xc = \frac{C}{C - L} Sum\left(\frac{Vi}{Nsi}\right)$ 1.08 1.13

L = loss time 4 sec/phase = NB 2 SB 3
C = cycle length = 105 sec
Vi = demand = NB 1125 SB 1050
Nsi = Sat Flow = NB 792 458 764 SB 706 1757
Northbound int V/C = 2.49
Southbound int V/C = 1.47

0.12 flow ratio
0.154541

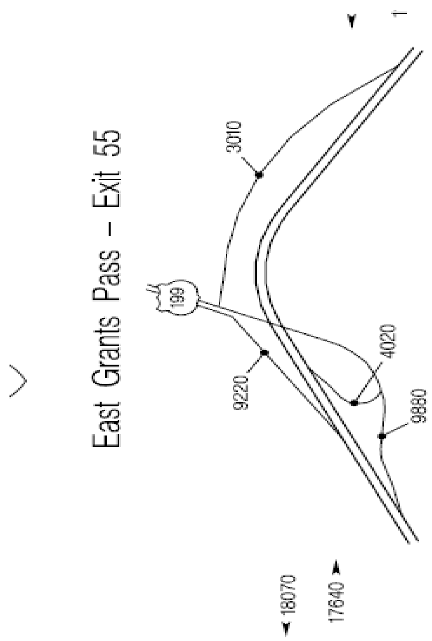
1.44
1.68

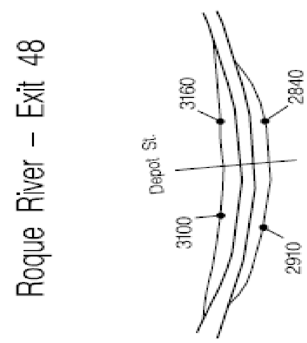
HCM 2010 Chapter 11								
Capacity of freeway segment varies by FFS								
(pc/h/ln)	FFS	# of lanes	2					
2400	70,75							2040-2015
2350	65	k factor	0.10					24
2300	60							
2250	55	15 to 16	1.189759	0.189759		21	0.009036	
	2016		Directional			Seasonal Trend Factor		2040
Segment:	NB, south of interchange	2015 vol	2015 vol	2016 volume			0.9182	2368
Flow Rate, Vp:	1094	17710	1771	1787			1946	1332
FFS:	70		X 0.10 =					70
Capacity:	4800							4800
v/c	**0.23**							**0.28**
Segment:	SB, south of interchange							2408
Flow Rate, Vp:	1094	18010	1801	1817			1979	1354
FFS:	70							70
Capacity:	4800							4800
v/c	**0.23**							**0.28**
Segment:	NB, north of interchange							2359
Flow Rate, Vp:	1090	17640	1764	1780			1939	1327
FFS:	70							70
Capacity:	4800							4800
v/c	**0.23**							**0.28**
Segment:	SB, north of interchange							2416
Flow Rate, Vp:	1117	18070	1807	1823			1986	1359
FFS:	70							70
Capacity:	4800							4800
v/c	**0.23**							**0.28**
Segment:	NB, between ramps							1979
Flow Rate, Vp:	914	14800	1480	1493			1626	1113
FFS:	70							70
Capacity:	4800							4800
v/c	**0.19**							**0.23**
Segment:	SB, between ramps							1994
Flow Rate, Vp:	922	14910	1491	1504			1639	1121
FFS:	70							70
Capacity:	4800							4800
v/c	**0.19**							**0.23**

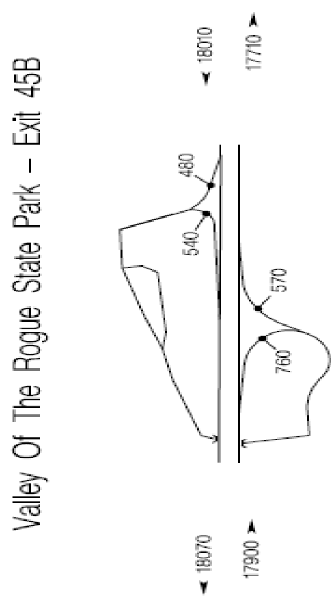
11860
11780

2016

I-5 NB off ramp	Actual Flowaximum Flc	v/c





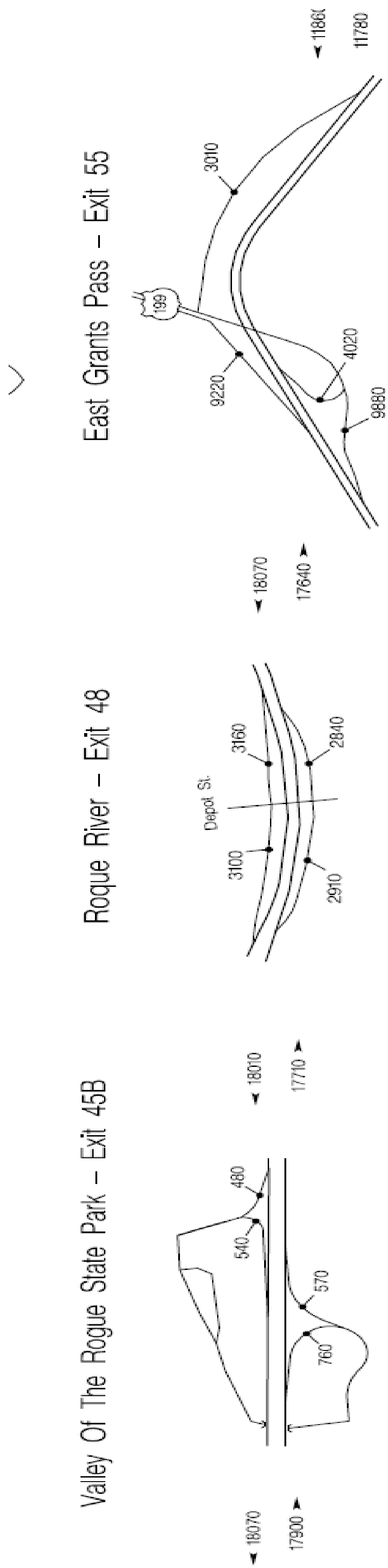


VFi	1641	4800	0.34
VF0	1264	4800	0.26
VR	377	2100	0.18
V12	1641	4400	0.37
I-5 SB off ramp	Actual Flowaximum Flc		v/c
VFi	2010	4800	0.42
VF0	1535	4800	0.32
VR	475	2100	0.23
V12	2010	4400	0.46
Merge			
I-5 NB on ramp	Actual Flowaximum Flc		v/c
VF0	1882	4800	0.39
VR12	1882	4600	0.41
I-5 SB on ramp	Actual Flowaximum Flc		v/c
VF0	2412	4800	0.50
VR12	2412	4600	0.52

2040

I-5 NB off ramp	Actual Flowaximum Flc		v/c
VFi	2717	4800	0.57
VF0	2200	4800	0.46
VR	517	2100	0.25
V12	2717	4400	0.62
I-5 SB off ramp	Actual Flowaximum Flc		v/c
VFi	2663	4800	0.55
VF0	2264	4800	0.47
VR	399	2100	0.19
V12	2663	4400	0.61
Merge			
I-5 NB on ramp	Actual Flowaximum Flc		v/c
VF0	3098	4800	0.65
VR12	3098	4600	0.67
I-5 SB on ramp	Actual Flowaximum Flc		v/c
VF0	2979	4800	0.62
VR12	2979	4600	0.65

HCM 2010 Chapter 11							
Capacity of freeway segment varies by FFS							
(pc/h/ln)	FFS	# of lanes	2				
2400	70,75						2040-2015
2350	65	k factor	0.10				24
2300	60						
2250	55	15 to 16	1.189759	0.189759	21	0.009036	
			Directional		Seasonal Trend Factor		2040
Segment:	NB, south of interchange	2015 vol	2015 vol	2016 volume		0.9182	2368
Flow Rate, Vp:		17710	1771	1787		1946	1332
FFS:			X 0.10 =				70
Capacity:							4800
v/c							**0.28**
Segment:	SB, south of interchange						2408
Flow Rate, Vp:		18010	1801	1817		1979	1354
FFS:							70
Capacity:							4800
v/c							**0.28**
Segment:	NB, north of interchange						2359
Flow Rate, Vp:		17640	1764	1780		1939	1327
FFS:							70
Capacity:							4800
v/c							**0.28**
Segment:	SB, north of interchange						2416
Flow Rate, Vp:		18070	1807	1823		1986	1359
FFS:							70
Capacity:							4800
v/c							**0.28**
Segment:	NB, between ramps						1979
Flow Rate, Vp:		14800	1480	1493		1626	1113
FFS:							70
Capacity:							4800
v/c							**0.23**
Segment:	SB, between ramps						1994
Flow Rate, Vp:		14910	1491	1504		1639	1121
FFS:							70
Capacity:							4800
v/c							**0.23**



2040

I-5 NB off ramp	Actual Flow	aximum Flc	v/c
V_{Fi}	2717	4800	0.57
V_{F0}	2200	4800	0.46
V_{R}	517	2100	0.25
V_{12}	2717	4400	0.62
I-5 SB off ramp	**Actual Flow**	**aximum Flc**	**v/c**
V_{Fi}	2663	4800	0.55
V_{F0}	2264	4800	0.47
V_{R}	399	2100	0.19
V_{12}	2663	4400	0.61
Merge			
I-5 NB on ramp	**Actual Flow**	**aximum Flc**	**v/c**
V_{F0}	3098	4800	0.65
V_{R12}	3098	4600	0.67
I-5 SB on ramp	**Actual Flow**	**aximum Flc**	**v/c**
V_{F0}	2979	4800	0.62
V_{R12}	2979	4600	0.65

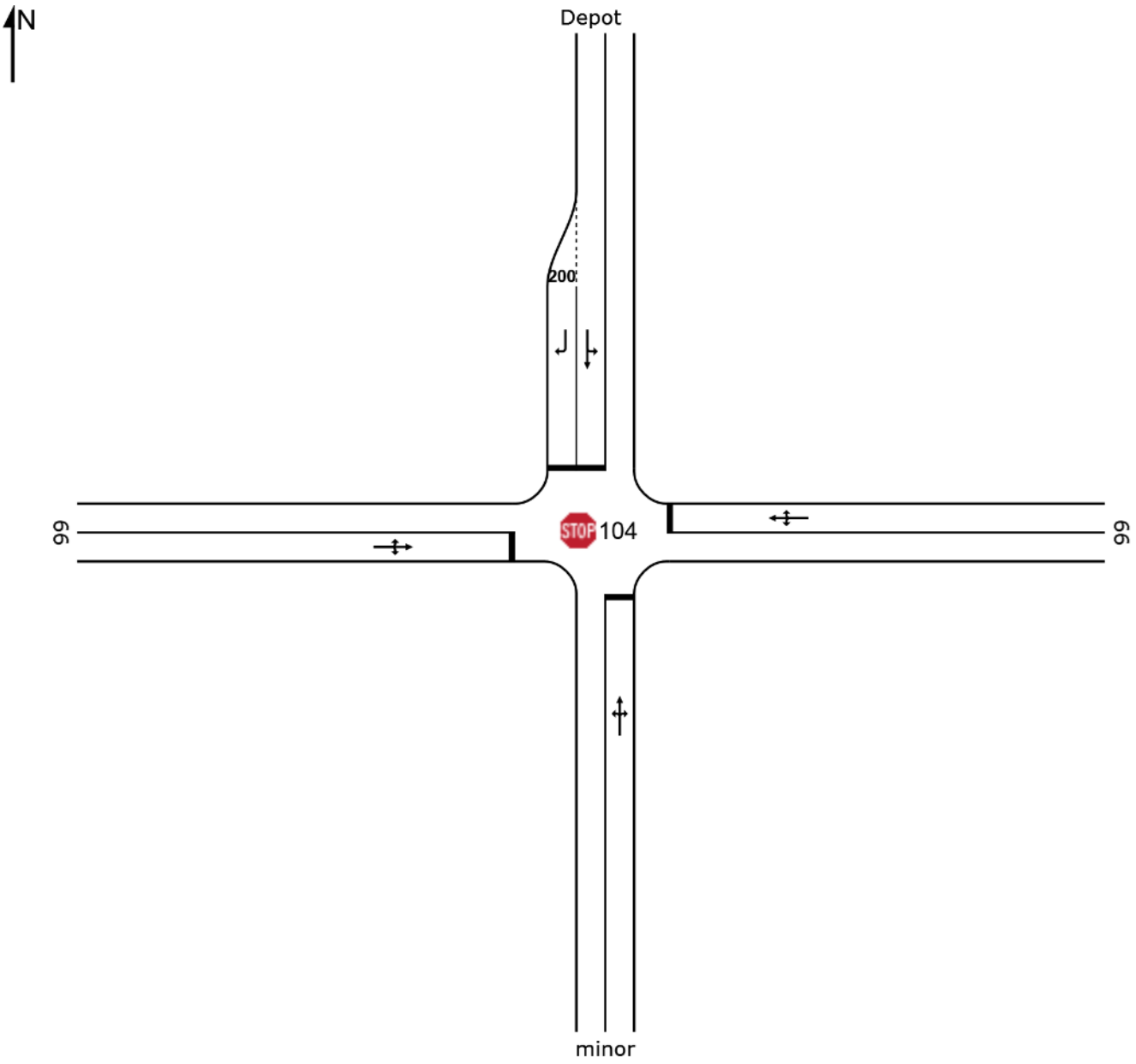
SIDRA Intersection Output

SITE LAYOUT

Site: 104 [DepotSt99 - Conversion]

Depot St at 99 (Stop control)

Stop (All-Way)



Organisation: OREGON DEPARTMENT OF TRANSPORTATION | Created: Thursday, October 05, 2017 3:55:21 PM
Project: Z:\County\Jackson\RogueRiver\TSP_Update_Analysis\08_Future_NoBuild_Analysis\20170926existing2040_AnalysisIntersections.sip7

INPUT VOLUMES

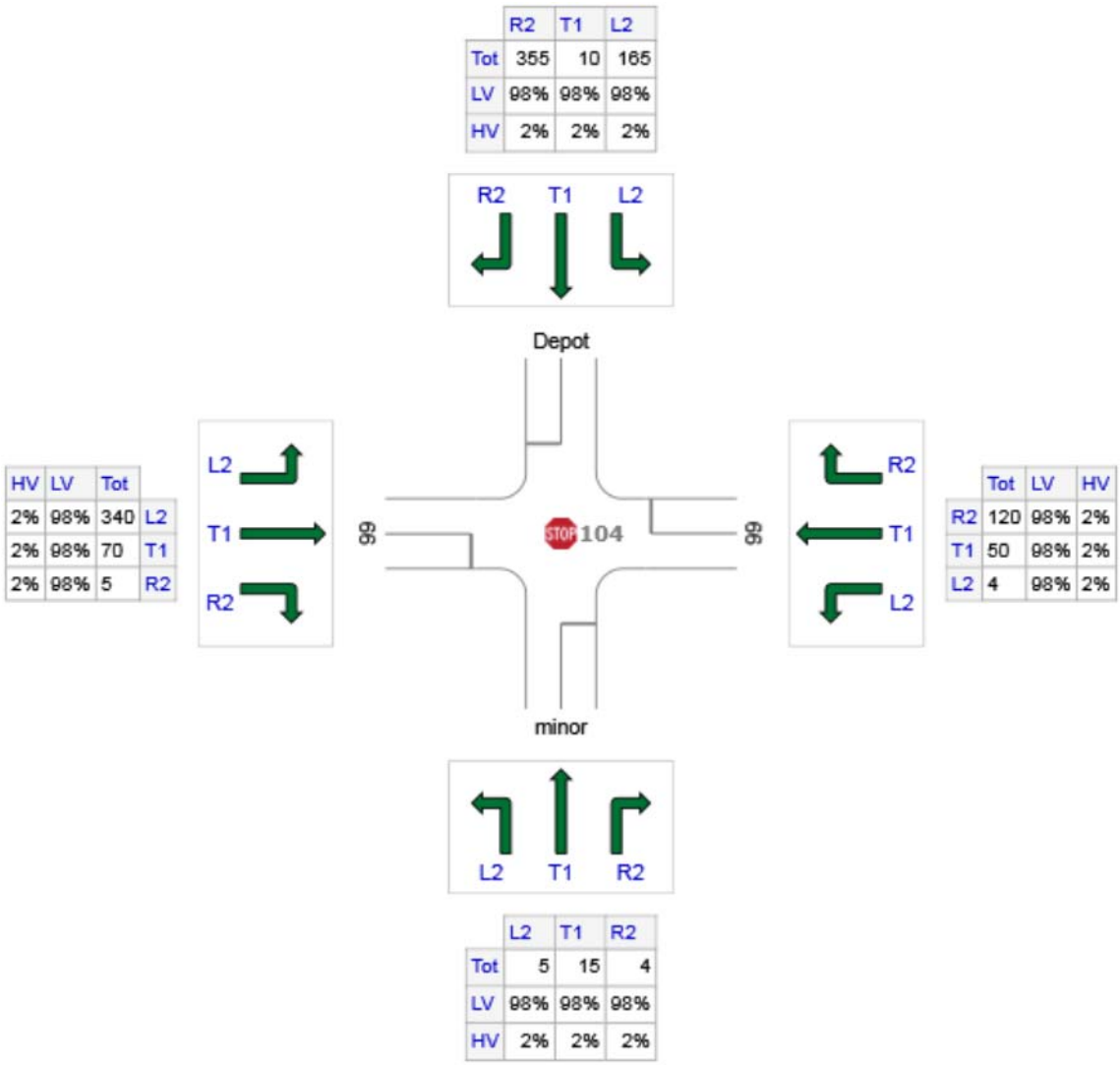
Vehicles and pedestrians per 60 minutes

Site: 104 [DepotSt99 - Conversion]

Depot St at 99 (Stop control)

Stop (All-Way)

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: minor	24	24	0
E: 99	174	171	3
N: Depot	530	519	11
W: 99	415	407	8
Total	1143	1120	23

LANE SUMMARY

Site: 104 [DepotSt99 - Conversion]

Depot St at 99 (Stop control)

Stop (All-Way)

Lane Use and Performance													
	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: minor													
Lane 1	24	2.0	269	0.089	100	17.7	LOS C	0.3	7.7	Full	1600	0.0	0.0
Approach	24	2.0		0.089		17.7	LOS C	0.3	7.7				
East: 99													
Lane 1	174	2.0	358	0.486	100	22.2	LOS C	2.3	58.7	Full	1600	0.0	0.0
Approach	174	2.0		0.486		22.2	LOS C	2.3	58.7				
North: Depot													
Lane 1	175	2.0	720	0.243	100	7.4	LOS A	0.8	21.1	Full	550	0.0	0.0
Lane 2	355	2.0	563	0.631	100	16.1	LOS C	3.7	93.7	Short	200	0.0	NA
Approach	530	2.0		0.631		13.2	LOS B	3.7	93.7				
West: 99													
Lane 1	415	2.0	787	0.527	100	12.6	LOS B	2.5	64.3	Full	100	0.0	0.0
Approach	415	2.0		0.527		12.6	LOS B	2.5	64.3				
Intersection	1143	2.0		0.631		14.4	LOS B	3.7	93.7				

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 104 [DepotSt99 - Conversion]

Depot St at 99 (Stop control)

Stop (All-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: minor											
1	L2	5	2.0	0.089	17.7	LOS C	0.3	7.7	0.95	1.19	20.3
6	T1	15	2.0	0.089	17.7	LOS C	0.3	7.7	0.95	1.19	23.5
16	R2	4	2.0	0.089	17.7	LOS C	0.3	7.7	0.95	1.19	27.3
Approach		24	2.0	0.089	17.7	LOS C	0.3	7.7	0.95	1.19	23.7
East: 99											
7	L2	4	2.0	0.486	22.2	LOS C	2.3	58.7	0.98	1.40	25.6
4	T1	50	2.0	0.486	22.2	LOS C	2.3	58.7	0.98	1.40	19.0
14	R2	120	2.0	0.486	22.2	LOS C	2.3	58.7	0.98	1.40	22.0
Approach		174	2.0	0.486	22.2	LOS C	2.3	58.7	0.98	1.40	21.3
North: Depot											
5	L2	165	2.0	0.243	7.4	LOS A	0.8	21.1	0.73	1.03	27.7
2	T1	10	2.0	0.243	7.4	LOS A	0.8	21.1	0.73	1.03	27.8
12	R2	355	2.0	0.631	16.1	LOS C	3.7	93.7	0.94	1.51	13.2
Approach		530	2.0	0.631	13.2	LOS B	3.7	93.7	0.87	1.35	19.3
West: 99											
3	L2	340	2.0	0.527	12.6	LOS B	2.5	64.3	0.80	1.27	15.7
8	T1	70	2.0	0.527	12.6	LOS B	2.5	64.3	0.80	1.27	24.6
18	R2	5	2.0	0.527	12.6	LOS B	2.5	64.3	0.80	1.27	24.8
Approach		415	2.0	0.527	12.6	LOS B	2.5	64.3	0.80	1.27	18.0
All Vehicles		1143	2.0	0.631	14.4	LOS B	3.7	93.7	0.86	1.33	19.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site 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).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

QUEUE DISTANCE (%ILE)

Largest 95% Back of Queue Distance for any lane used by vehicle movement (feet)

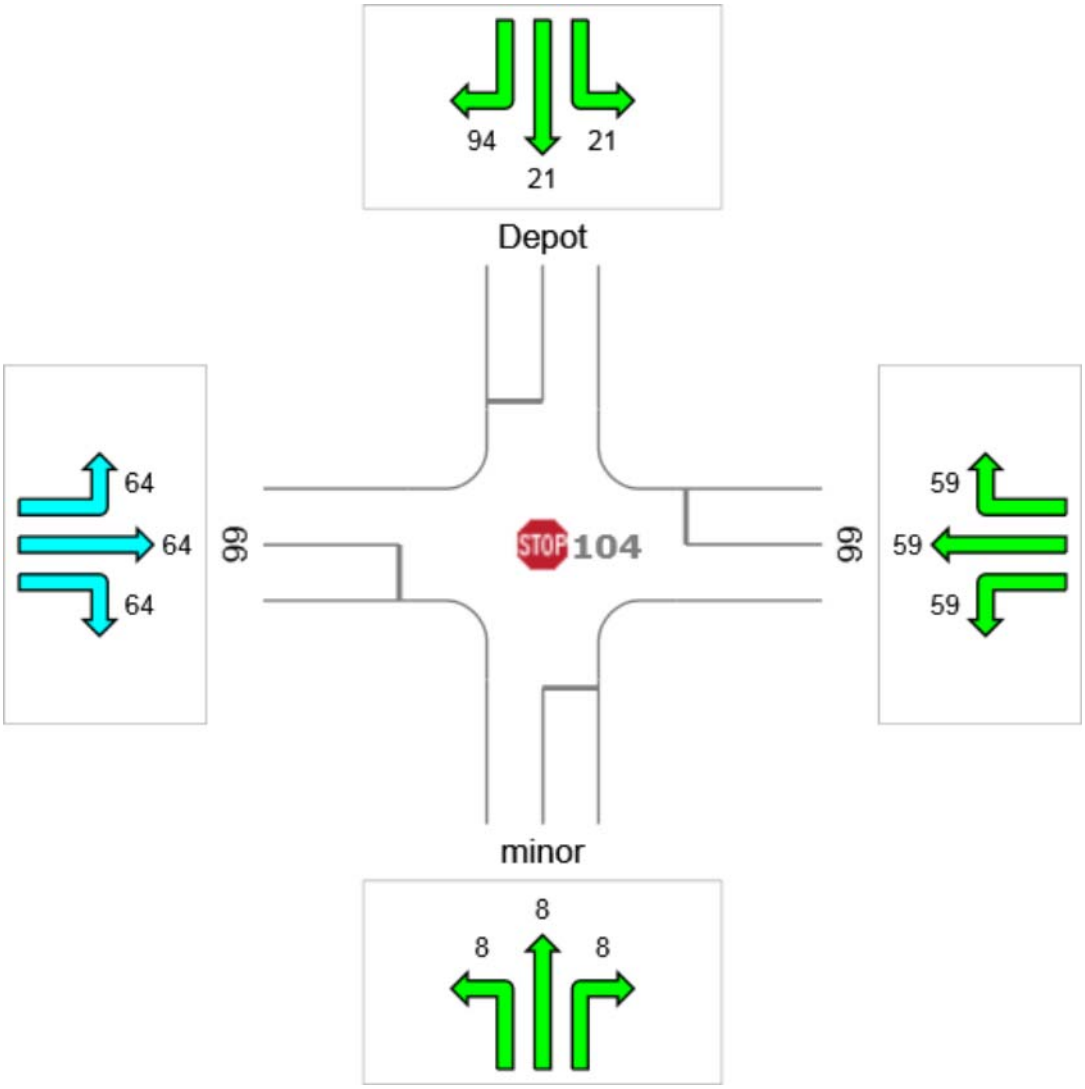
Site: 104 [DepotSt99 - Conversion]

Depot St at 99 (Stop control)

Stop (All-Way)

All Movement Classes

	South	East	North	West	Intersection
Vehicle Queue (%ile)	8	59	94	64	94



Colour code based on Queue Storage Ratio

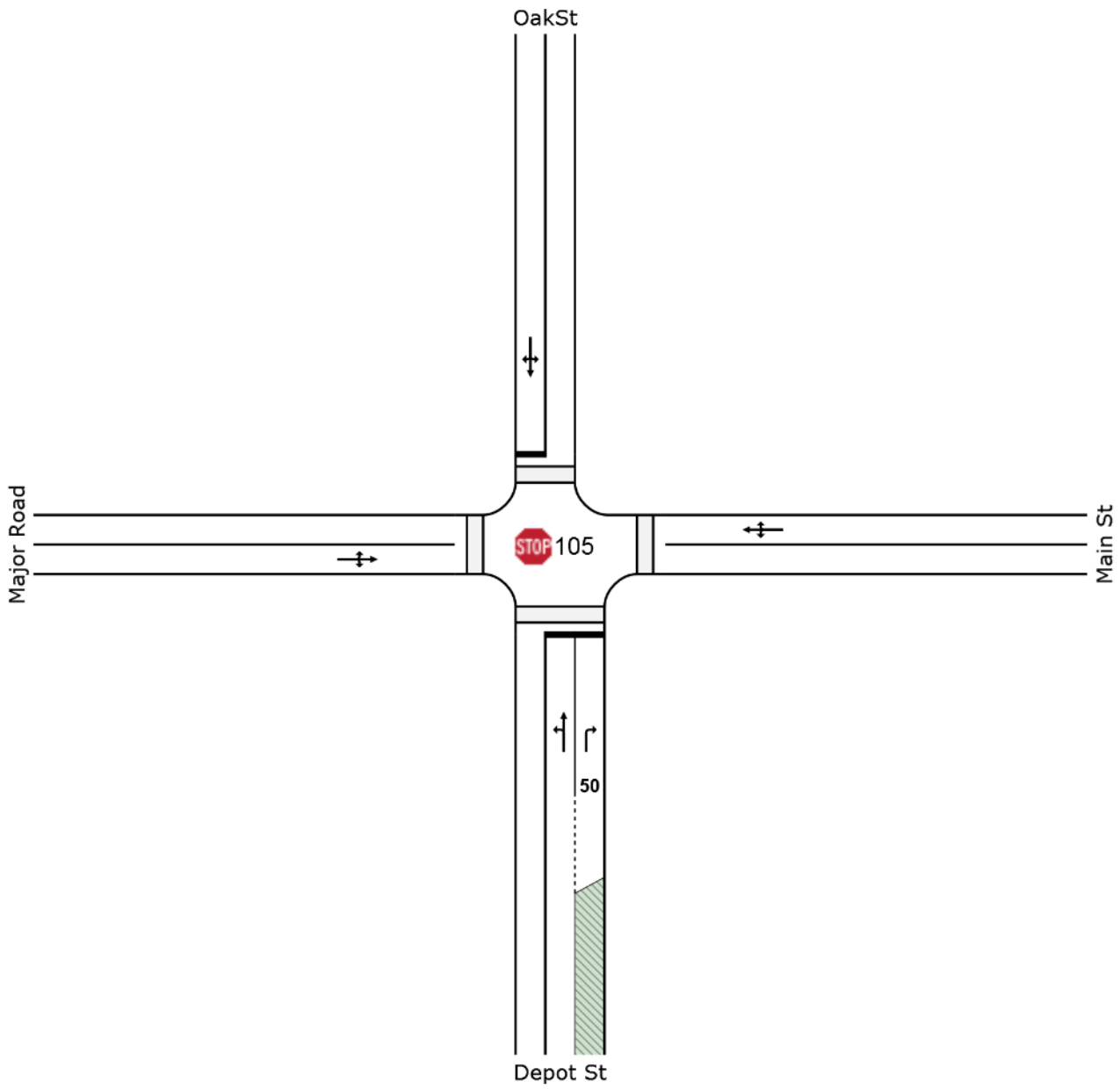
[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

SITE LAYOUT

Site: 105 [DepotStMainSt]

Depot St at Main St (Stop control)

Stop (Two-Way)



Organisation: OREGON DEPARTMENT OF TRANSPORTATION | Created: Thursday, October 05, 2017 2:41:56 PM
Project: Z:\County\Jackson\RogueRiver\TSP_Update_Analysis\08_Future_NoBuild_Analysis\20170926existing2040_AnalysisIntersections.sip7

INPUT VOLUMES

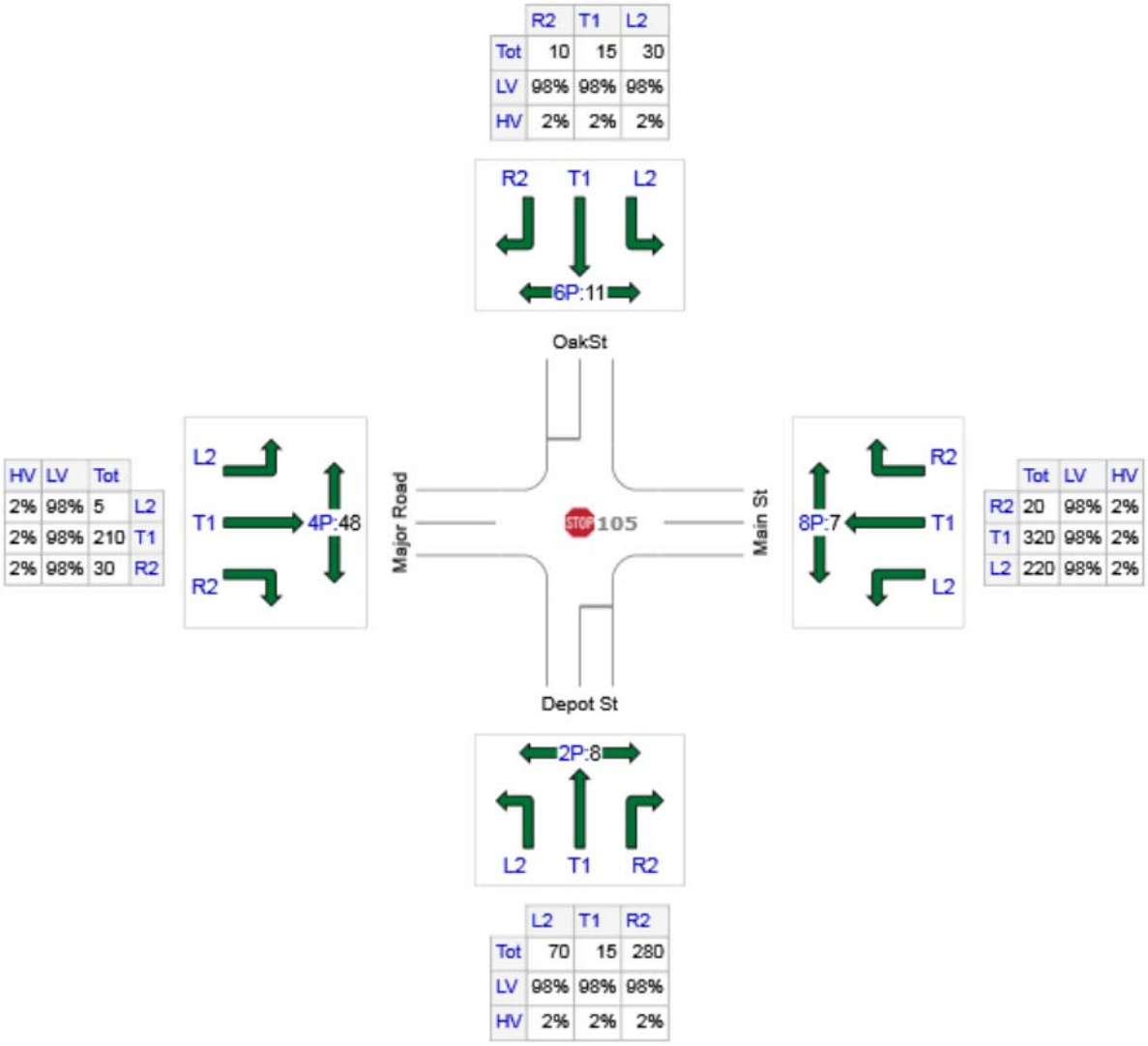
Vehicles and pedestrians per 60 minutes

Site: 105 [DepotStMainSt]

Depot St at Main St (Stop control)

Stop (Two-Way)

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Depot St	365	358	7
E: Main St	560	549	11
N: OakSt	55	54	1
W: Major Road	245	240	5
Total	1225	1201	25

LANE SUMMARY

Site: 105 [DepotStMainSt]

Depot St at Main St (Stop control)

Stop (Two-Way)

Lane Use and Performance													
	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Depot St													
Lane 1	85	2.0	285	0.299	100	23.0	LOS C	1.3	32.7	Full	350	0.0	0.0
Lane 2	280	2.0	794	0.353	100	12.0	LOS B	1.9	47.3	Short (P)	50	0.0	NA
Approach	365	2.0		0.353		14.5	LOS B	1.9	47.3				
East: Main St													
Lane 1	560	2.0	1557	0.360	100	5.4	LOS A	2.0	50.3	Full	300	0.0	0.0
Approach	560	2.0		0.360		5.4	NA	2.0	50.3				
North: OakSt													
Lane 1	55	2.0	240	0.229	100	24.4	LOS C	0.9	21.6	Full	1600	0.0	0.0
Approach	55	2.0		0.229		24.4	LOS C	0.9	21.6				
West: Major Road													
Lane 1	245	2.0	1800	0.136	100	3.0	LOS A	0.1	1.6	Full	400	0.0	0.0
Approach	245	2.0		0.136		3.0	NA	0.1	1.6				
Intersection	1225	2.0		0.360		8.5	NA	2.0	50.3				

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 105 [DepotStMainSt]

Depot St at Main St (Stop control)

Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Depot St											
3	L2	70	2.0	0.299	23.7	LOS C	1.3	32.7	0.77	0.81	11.8
8	T1	15	2.0	0.299	19.3	LOS C	1.3	32.7	0.77	0.81	20.6
18	R2	280	2.0	0.353	12.0	LOS B	1.9	47.3	0.49	0.37	14.0
Approach		365	2.0	0.353	14.5	LOS B	1.9	47.3	0.55	0.47	14.0
East: Main St											
1	L2	220	2.0	0.360	6.5	LOS A	2.0	50.3	0.36	0.10	20.9
6	T1	320	2.0	0.360	4.6	LOS A	2.0	50.3	0.36	0.10	24.8
16	R2	20	2.0	0.360	6.4	LOS A	2.0	50.3	0.36	0.10	30.7
Approach		560	2.0	0.360	5.4	NA	2.0	50.3	0.36	0.10	23.6
North: OakSt											
7	L2	30	2.0	0.229	33.3	LOS D	0.9	21.6	0.75	0.75	19.7
4	T1	15	2.0	0.229	17.6	LOS C	0.9	21.6	0.75	0.75	20.0
14	R2	10	2.0	0.229	7.9	LOS A	0.9	21.6	0.75	0.75	20.5
Approach		55	2.0	0.229	24.4	LOS C	0.9	21.6	0.75	0.75	19.9
West: Major Road											
5	L2	5	2.0	0.136	40.2	LOS E	0.1	1.6	0.03	0.00	33.6
2	T1	210	2.0	0.136	1.7	LOS A	0.1	1.6	0.03	0.00	30.7
12	R2	30	2.0	0.136	6.0	LOS A	0.1	1.6	0.03	0.00	26.5
Approach		245	2.0	0.136	3.0	NA	0.1	1.6	0.03	0.00	30.3
All Vehicles		1225	2.0	0.360	8.5	NA	2.0	50.3	0.37	0.22	20.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site 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 2010).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

QUEUE DISTANCE (%ILE)

95% Back of Queue Distance per lane (feet)

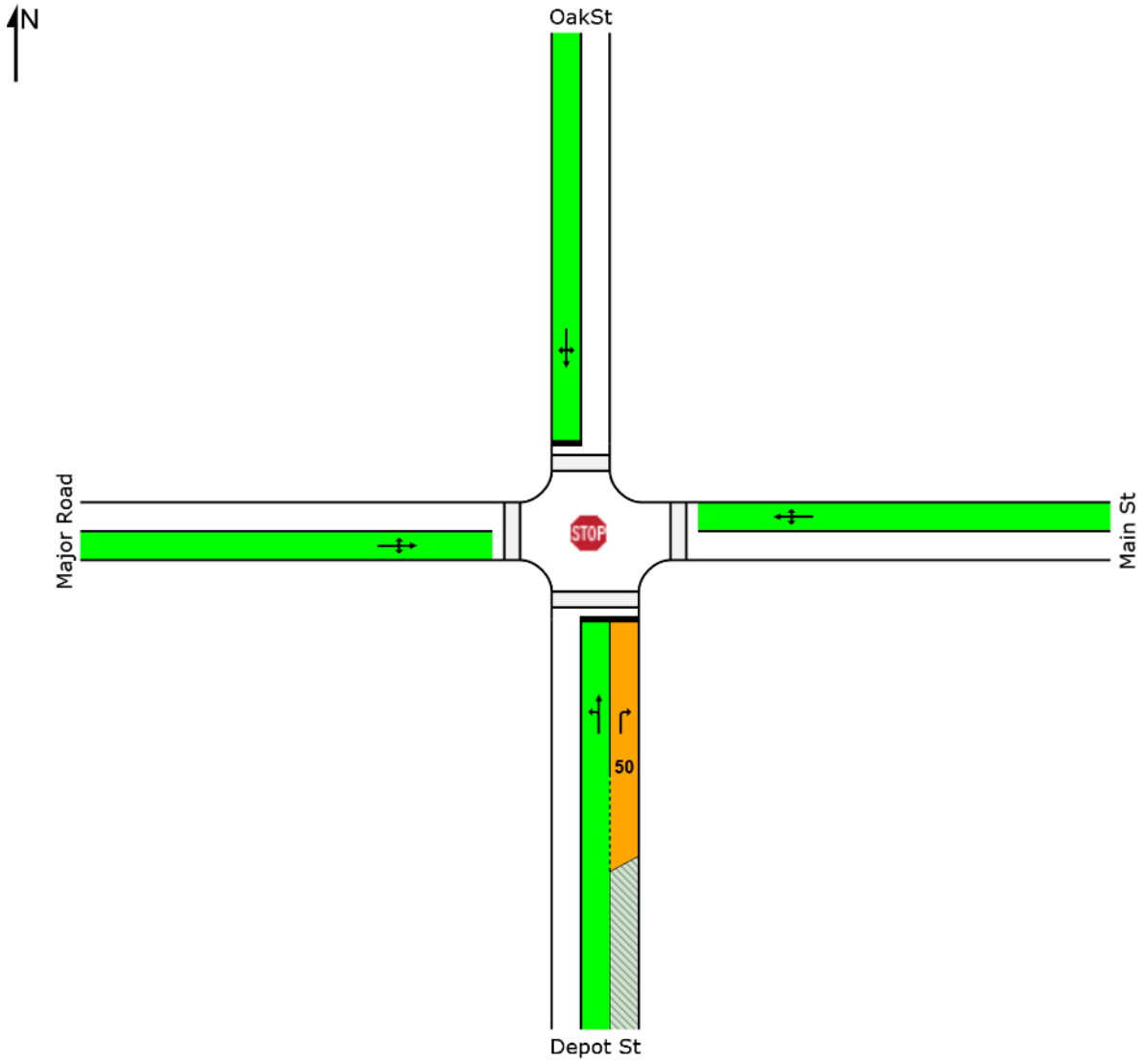
Site: 105 [DepotStMainSt]

Depot St at Main St (Stop control)

Stop (Two-Way)

All Movement Classes

	South	East	North	West	Intersection
Vehicle Queue (%ile)	47	50	22	2	50



Colour code based on Queue Storage Ratio

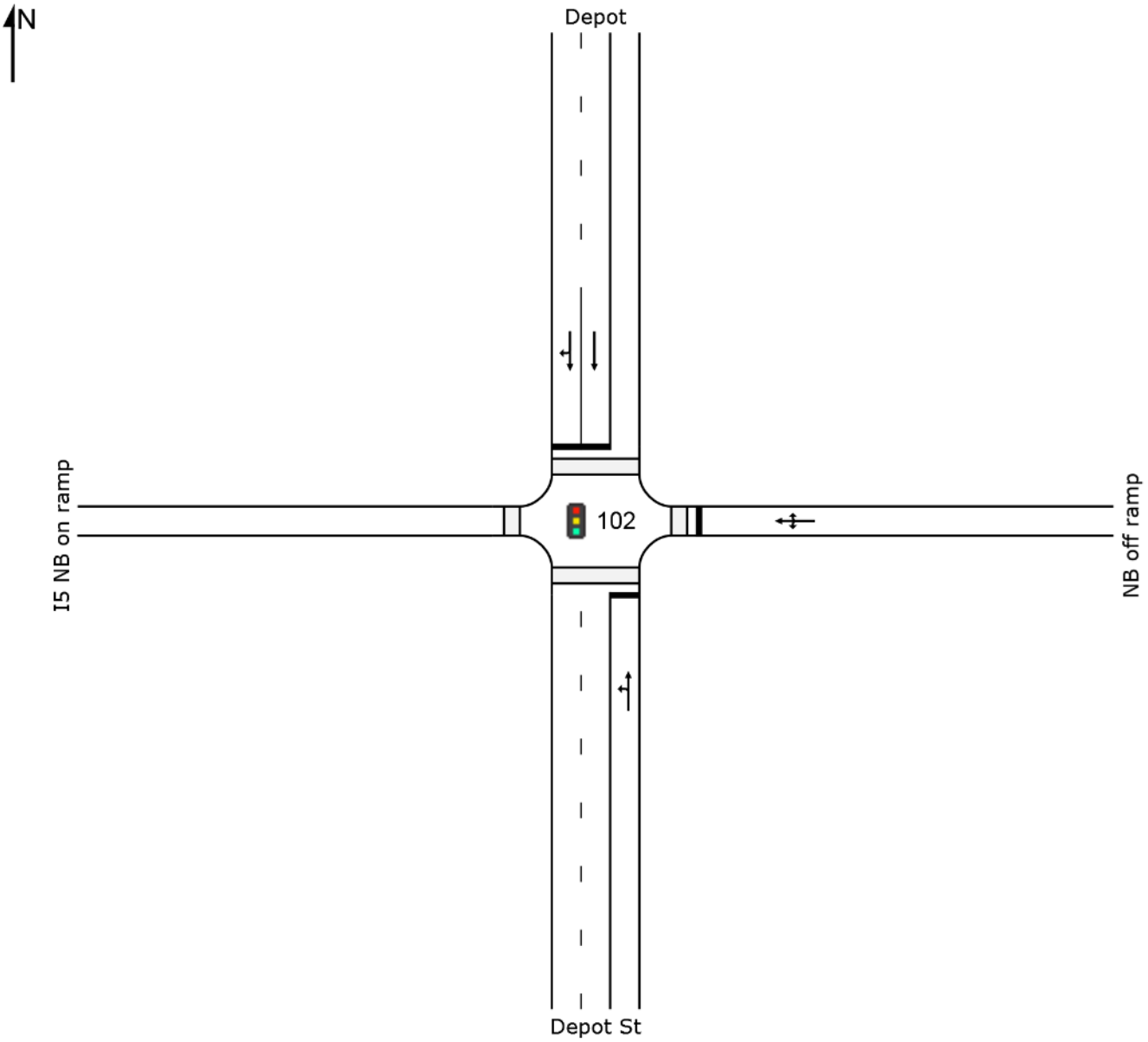
[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

SITE LAYOUT

Site: 102 [DepotStNBi5]

Depot St at I5 NB entrance

Signals - Actuated Isolated



INPUT VOLUMES

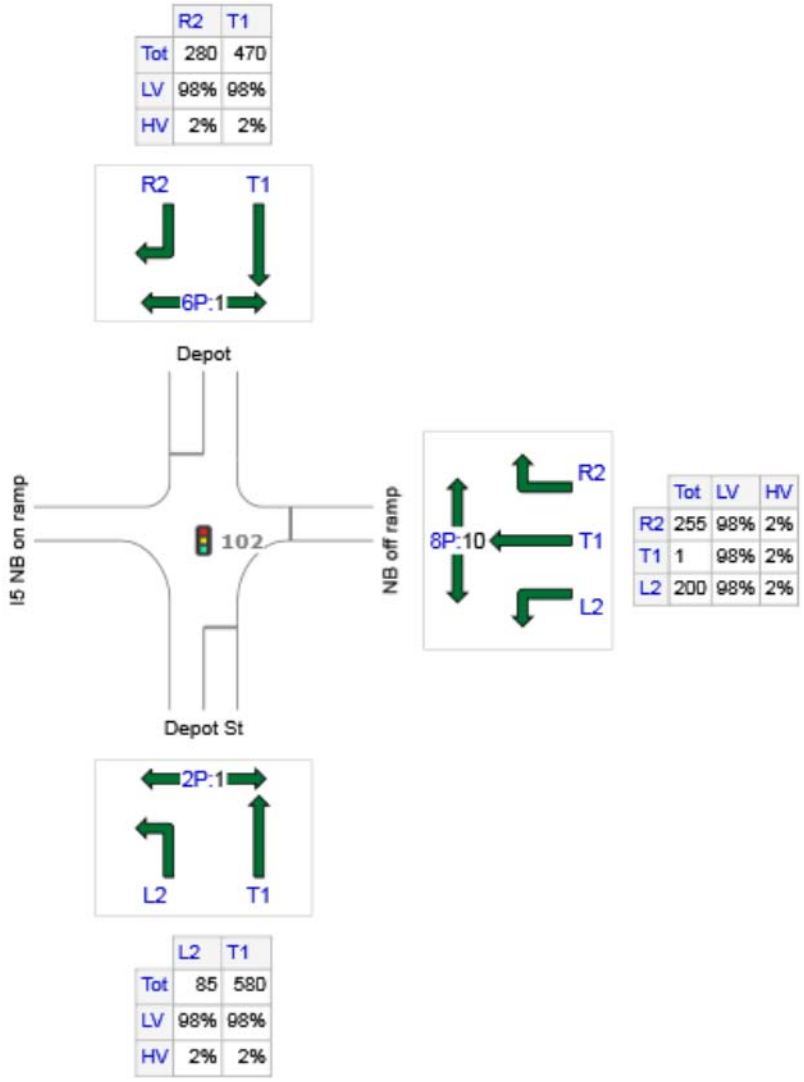
Vehicles and pedestrians per 60 minutes

Site: 102 [DepotStNBi5]

Depot St at I5 NB entrance

Signals - Actuated Isolated

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Depot St	665	652	13
E: NB off ramp	456	447	9
N: Depot	750	735	15
Total	1871	1834	37

MOVEMENT SUMMARY

Site: 102 [DepotStNBi5]

Network: N101 [Existing]

Depot St at I5 NB entrance

Signals - Actuated Coordinated Cycle Time = 100 seconds (Network Cycle Time - Program)
Common Control Group: CCG1 [CCGName]

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Depot St													
3	L2	85	2.0	85	2.0	1.107	101.0	LOS F	19.3	489.6	1.00	1.34	8.8
8	T1	580	2.0	580	2.0	1.107	101.0	LOS F	19.3	489.6	1.00	1.34	2.0
Approach		665	2.0	665	2.0	1.107	101.0	LOS F	19.3	489.6	1.00	1.34	3.1
East: NB off ramp													
1	L2	200	2.0	200	2.0	0.956	62.4	LOS E	27.1	687.6	1.00	1.16	8.7
6	T1	1	2.0	1	2.0	0.956	62.4	LOS E	27.1	687.6	1.00	1.16	13.4
16	R2	255	2.0	255	2.0	0.956	62.4	LOS E	27.1	687.6	1.00	1.16	8.7
Approach		456	2.0	456	2.0	0.956	62.4	LOS E	27.1	687.6	1.00	1.16	8.7
North: Depot													
4	T1	470	2.0	465	2.0	0.627	23.8	LOS C	3.2	81.6	0.75	0.67	2.2
14	R2	280	2.0	277	2.0	0.627	18.3	LOS B	3.2	81.6	0.73	0.66	15.3
Approach		750	2.0	742 N1	2.0	0.627	21.7	LOS C	3.2	81.6	0.75	0.66	10.5
All Vehicles		1871	2.0	1863 N1	2.0	1.107	60.0	LOS E	27.1	687.6	0.90	1.03	6.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Network Data dialog (Network 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).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 21.1 %
Number of Iterations: 10 (maximum specified: 10)

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance ft	Prop. Queued	Effective Stop Rate per ped
2P	South Full Crossing	1	20.5	LOS C	0.0	0.0	0.64	0.64
8P	East Full Crossing	11	12.5	LOS B	0.0	0.0	0.50	0.50
6P	North Full Crossing	1	20.5	LOS C	0.0	0.0	0.64	0.64
4P	West Full Crossing	11	12.5	LOS B	0.0	0.0	0.50	0.50
All Pedestrians		24	13.2	LOS B			0.51	0.51

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 102 [DepotStNBi5]

Network: N101 [Existing]

Depot St at I5 NB entrance

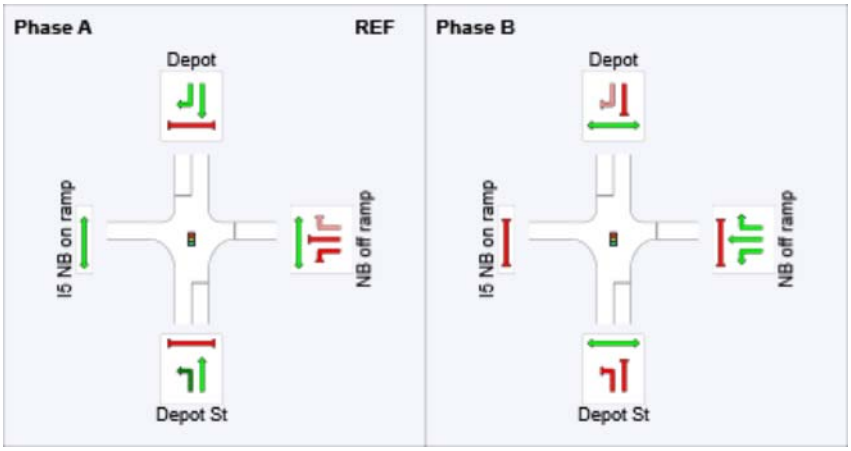
Signals - Actuated Coordinated Cycle Time = 100 seconds (Network Cycle Time - Program)
Common Control Group: CCG1 [CCGName]

Phase Times determined by the program
Phase Sequence: CCG Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Phase Timing Results

Phase	A	B
Phase Change Time (sec)	0	54
Green Time (sec)	50	42
Phase Time (sec)	54	46
Phase Split	54 %	46 %

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

TIMING ANALYSIS

Site: 102 [DepotStNBi5]

Network: N101 [Existing]

Depot St at I5 NB entrance

Signals - Actuated Coordinated Cycle Time = 100 seconds (Network Cycle Time - Program)
Common Control Group: CCG1 [CCGName]

Phase Times determined by the program
Phase Sequence: CCG Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Movement Timing Information

Mov ID	Mov Class	Mov Type	PHASE MATRIX [From	First Green To	Oppd	Priority	Und] [From	Second Green To	Oppd	Priority	Und]	Lost Time 1st Grn sec	Lost Time 2nd Grn sec	ReqMovTime 1st Grn sec	ReqMovTime 2nd Grn sec	Eff Green 1st Grn sec	Eff Green 2nd Grn sec
South		Depot St															
3	#		A	B	Yes	High						26		54.0 Max		28	
8	#		*A	B		High						4		54.0 Max		50	
East		NB off ramp															
1	#		B	A								4		50.0		42	
1	HV		*B	A								4		50.7		42	
6	#		B	A								4		49.5		42	
6	HV		B	A								4		50.0		42	
16	#		A	B	Yes	High	B	A		High		33	4	10.0 Min	49.2	21	42
North		Depot															
4	#		A	B		High						4		44.4		50	
4	HV		A	B		High						4		44.9		50	
14	#		A	B		High	B	A	Yes	High		4	4	47.6	10.0 Min	50	42
14	HV		A	B		High	B	A	Yes	High		4	4	48.3	10.0 Min	50	42
Pedestrian Movements																	
2P		Ped	B	A								0		10.0^Min		36	
8P		Ped	A	B								2		10.0^Min		50	
6P		Ped	B	A								0		10.0^Min		36	
4P		Ped	A	B								2		10.0^Min		50	

\# Combined timing results are shown for all Movement Classes except any listed separately.
* Critical Movement/Green Period
^ Pedestrian Actuation / Phase Actuation for probability of no arrivals in an average signal cycle:
For Pedestrian / Vehicle Movements, the Minimum Required Time, Lost Time and Effective Green Time have been reduced.

Critical Movements and Cycle Time

Critical Mov ID	Appr & Dest	Green Period	Phases [From	To]	Adjusted Lost Time sec	Adjusted Flow Ratio	Req Green Time Ratio	Required Mov Time sec	
8LV	S_N	1	A	B	54	–	–	54.0	Max
1HV	E_S	1	B	A	4	0.429	0.467	50.7	
				Total	58	0.429	0.467	104.7	

Cycle Time (sec):	Minimum	Maximum	Practical	Chosen
	20	150	109	100

Min/Max When the Required Movement Time is subject to minimum or maximum condition, the Flow Ratio and the corresponding Required Green Time Ratio are not used for cycle time calculations and the Adjusted Lost Time equals the Required Movement Time.

Phase Information

Phase	Ref. Phase	Change Time sec	Starting Intergreen sec	Green Start sec	Displayed Green sec	Green End sec	Terminating Intergreen sec	Phase Time sec	Phase Split %
A	Yes	0	4	4	50	54	4	54	54
B	No	54	4	58	42	100	4	46	46

This table gives adjusted values of Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%. See the Phase Information section in the Detailed Output report for input values of Yellow Time, All-Red Time and the unadjusted Intergreen Times.

MOVEMENT TIMING

Site: 102 [DepotStNBi5]

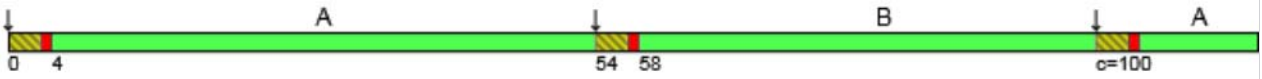
Network: N101 [Existing]

Depot St at I5 NB entrance

Signals - Actuated Coordinated Cycle Time = 100 seconds (Network Cycle Time - Program)
Common Control Group: CCG1 [CCGName]

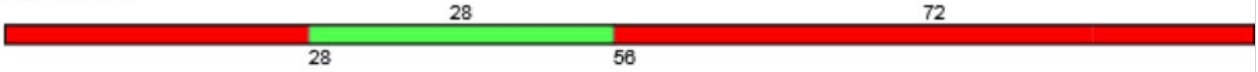
Phase Times determined by the program
Phase Sequence: CCG Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

DISPLAYED SIGNAL TIMING - PHASES

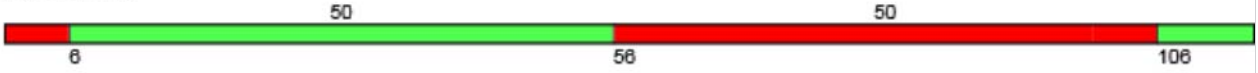


EFFECTIVE SIGNAL TIMING - MOVEMENTS

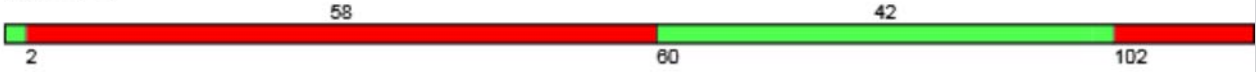
3 (South L2)



8 (South T1)



1 (East L2)

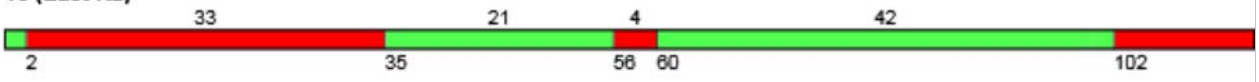


1 (East L2) Heavy Vehicles

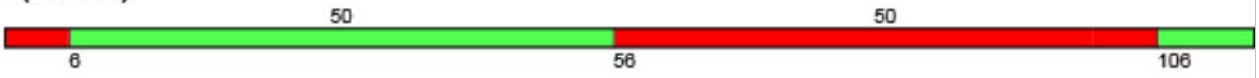
6 (East T1)

6 (East T1) Heavy Vehicles

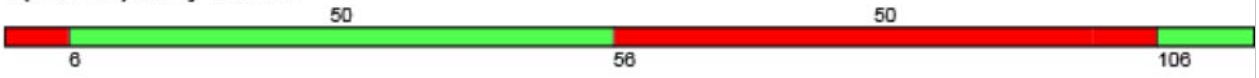
16 (East R2)



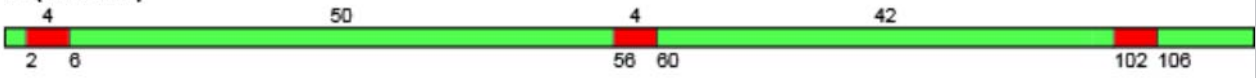
4 (North T1)



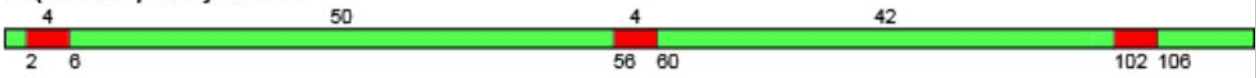
4 (North T1) Heavy Vehicles



14 (North R2)



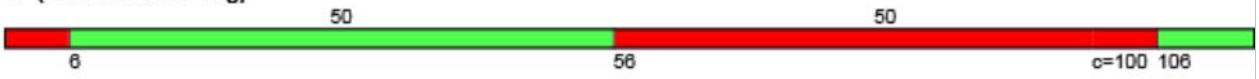
14 (North R2) Heavy Vehicles



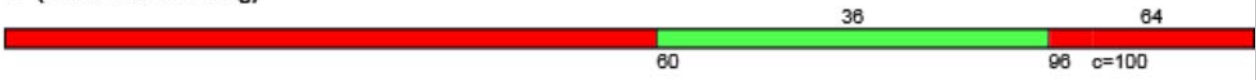
PEDESTRIAN SIGNAL TIMING

2P (South Full Crossing)

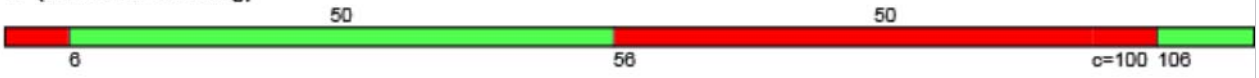
8P (East Full Crossing)



6P (North Full Crossing)



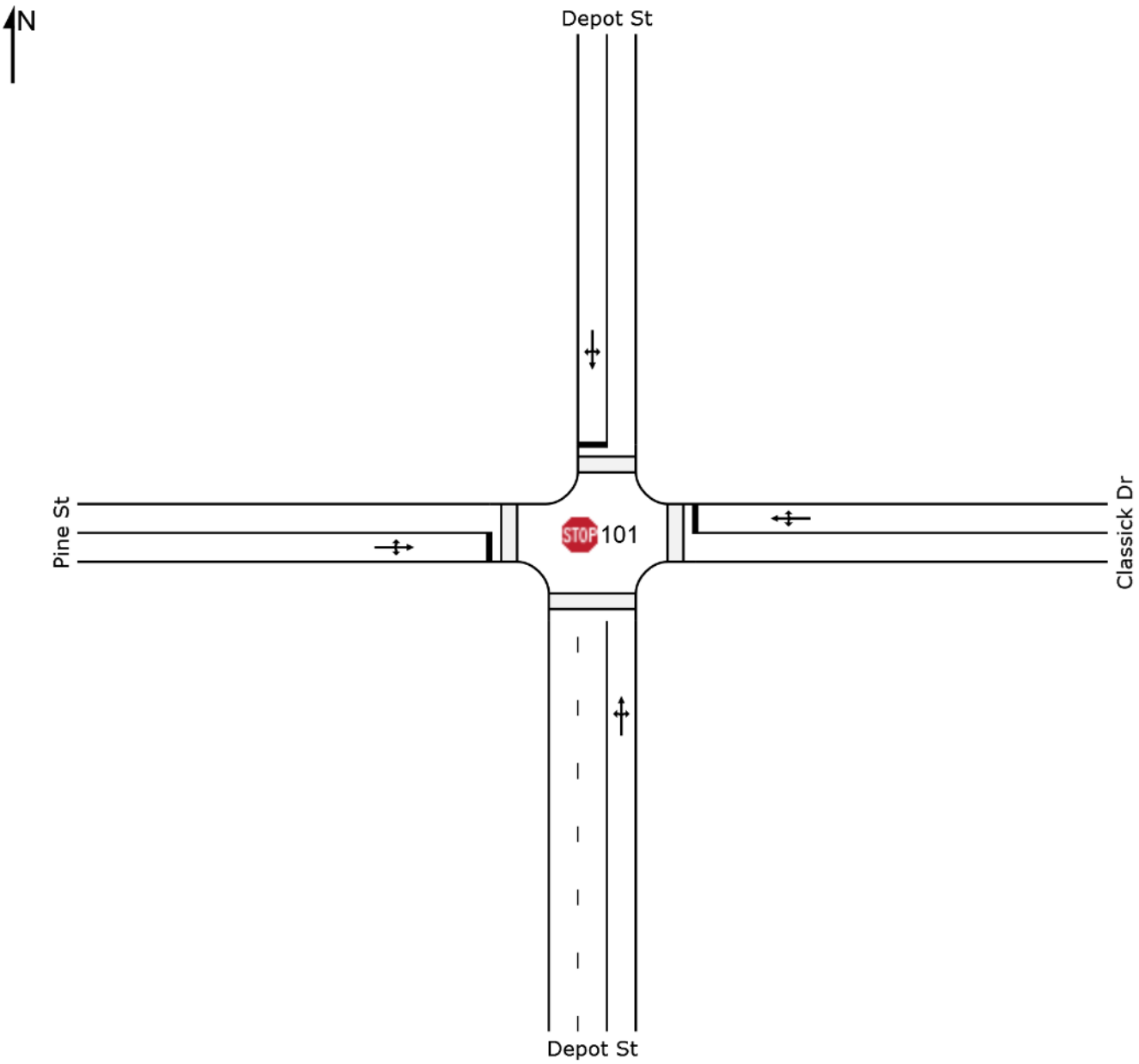
4P (West Full Crossing)



SITE LAYOUT

Site: 101 [DepotStPineSt]

Depot at Pine St
Stop (Two-Way)



Organisation: OREGON DEPARTMENT OF TRANSPORTATION | Created: Thursday, October 05, 2017 4:00:57 PM
Project: Z:\County\Jackson\RogueRiver\TSP_Update_Analysis\08_Future_NoBuild_Analysis\20170926existing2040_AnalysisIntersections.sip7

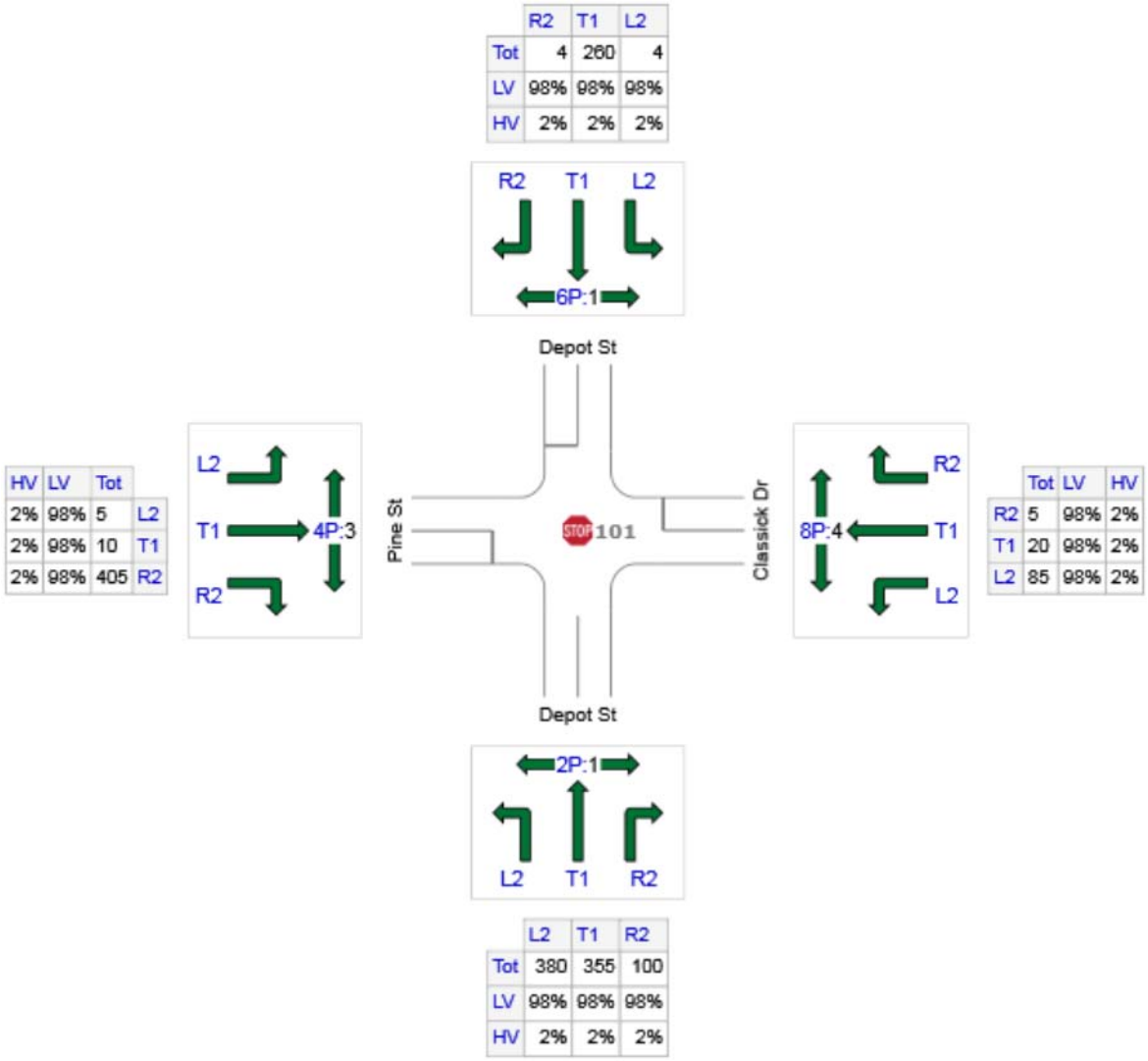
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: 101 [DepotStPineSt]

Depot at Pine St
Stop (Two-Way)

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Depot St	835	818	17
E: Classick Dr	110	108	2
N: Depot St	268	263	5
W: Pine St	420	412	8
Total	1633	1600	33

LANE SUMMARY

Site: 101 [DepotStPineSt]

Depot at Pine St
Stop (Two-Way)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Depot St													
Lane 1	835	2.0	1643	0.508	100	0.0	LOS A	0.0	0.0	Full	50	0.0	0.0
Approach	835	2.0		0.508		0.0	NA	0.0	0.0				
East: Classick Dr													
Lane 1	110	2.0	152	0.724	100	74.2	LOS F	3.8	97.3	Full	1600	0.0	0.0
Approach	110	2.0		0.724		74.2	LOS F	3.8	97.3				
North: Depot St													
Lane 1	268	2.0	604	0.444	100	15.6	LOS C	2.6	65.3	Full	400	0.0	0.0
Approach	268	2.0		0.444		15.6	LOS C	2.6	65.3				
West: Pine St													
Lane 1	420	2.0	733	0.573	100	16.3	LOS C	5.7	143.9	Full	400	0.0	0.0
Approach	420	2.0		0.573		16.3	LOS C	5.7	143.9				
Intersection	1633	2.0		0.724		11.8	NA	5.7	143.9				

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [DepotStPineSt]

Depot at Pine St
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Depot St											
3	L2	380	2.0	0.508	0.0	LOS A	0.0	0.0	0.00	0.00	27.6
8	T1	355	2.0	0.508	0.0	LOS A	0.0	0.0	0.00	0.00	34.1
18	R2	100	2.0	0.508	0.0	LOS A	0.0	0.0	0.00	0.00	35.4
Approach		835	2.0	0.508	0.0	NA	0.0	0.0	0.00	0.00	31.8
East: Classick Dr											
1	L2	85	2.0	0.724	79.5	LOS F	3.8	97.3	0.94	1.15	10.4
6	T1	20	2.0	0.724	58.2	LOS F	3.8	97.3	0.94	1.15	11.9
16	R2	5	2.0	0.724	48.6	LOS E	3.8	97.3	0.94	1.15	11.9
Approach		110	2.0	0.724	74.2	LOS F	3.8	97.3	0.94	1.15	10.8
North: Depot St											
7	L2	4	2.0	0.444	23.2	LOS C	2.6	65.3	0.60	0.66	23.3
4	T1	260	2.0	0.444	15.5	LOS C	2.6	65.3	0.60	0.66	10.5
14	R2	4	2.0	0.444	16.8	LOS C	2.6	65.3	0.60	0.66	14.8
Approach		268	2.0	0.444	15.6	LOS C	2.6	65.3	0.60	0.66	10.9
West: Pine St											
5	L2	5	2.0	0.573	73.0	LOS F	5.7	143.9	0.66	0.67	14.4
2	T1	10	2.0	0.573	42.1	LOS E	5.7	143.9	0.66	0.67	23.1
12	R2	405	2.0	0.573	15.0	LOS B	5.7	143.9	0.66	0.67	10.4
Approach		420	2.0	0.573	16.3	LOS C	5.7	143.9	0.66	0.67	11.0
All Vehicles		1633	2.0	0.724	11.8	NA	5.7	143.9	0.33	0.36	16.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site 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 2010).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

QUEUE DISTANCE (%ILE)

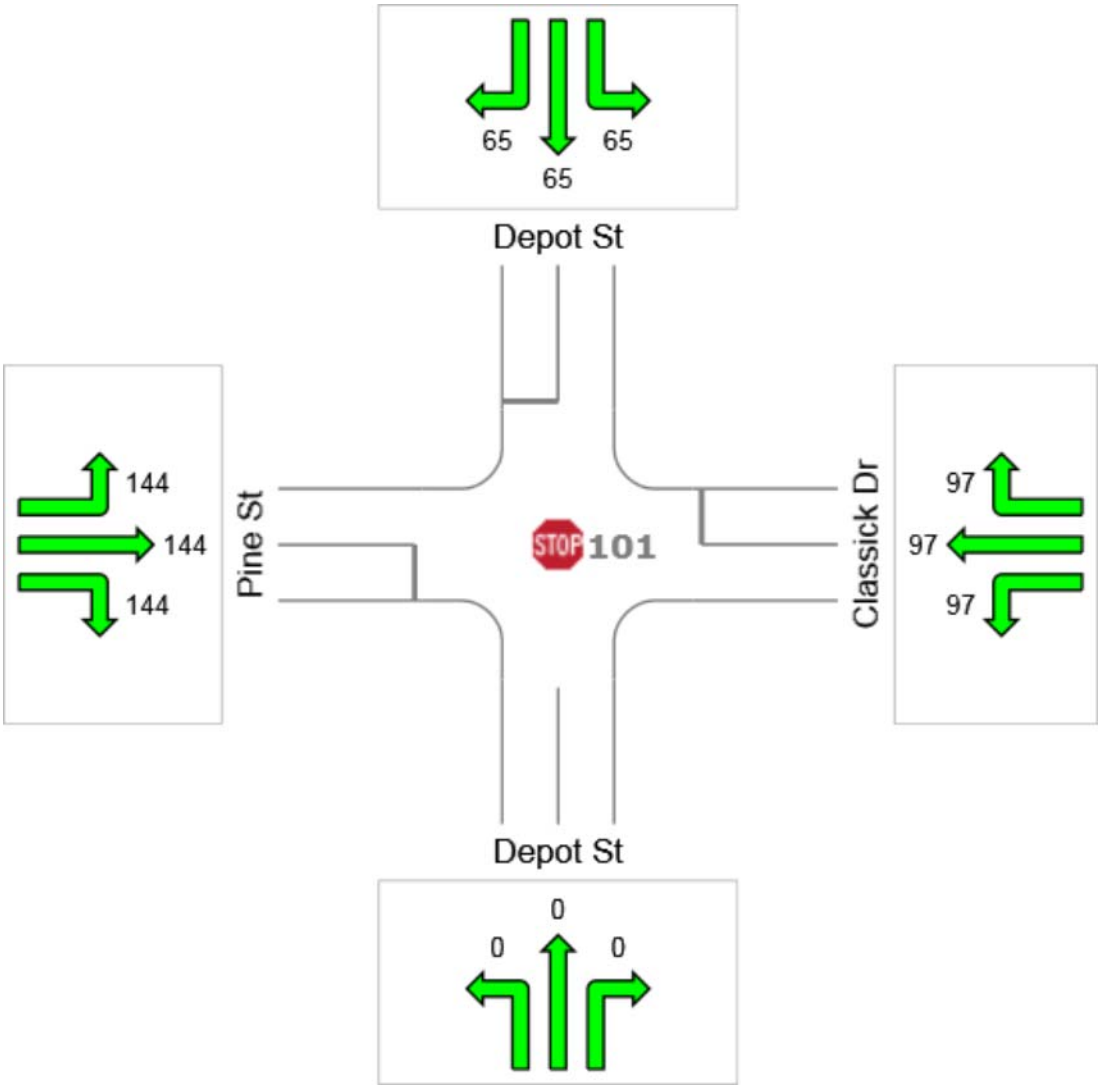
Largest 95% Back of Queue Distance for any lane used by vehicle movement (feet)

Site: 101 [DepotStPineSt]

Depot at Pine St
Stop (Two-Way)

All Movement Classes

	South	East	North	West	Intersection
Vehicle Queue (%ile)	0	97	65	144	144



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

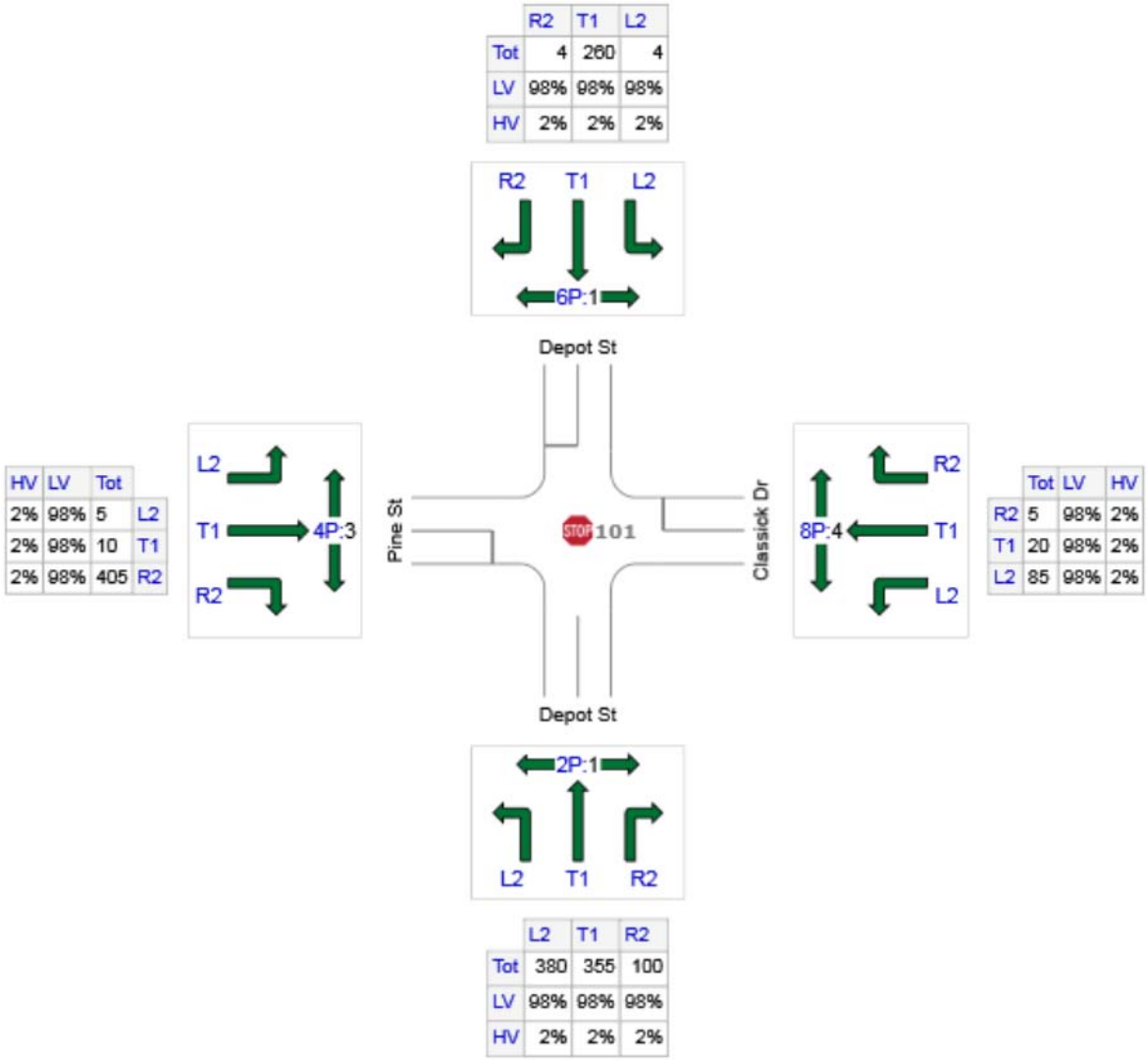
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: 101 [DepotStPineSt]

Depot at Pine St
Stop (Two-Way)

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Depot St	835	818	17
E: Classick Dr	110	108	2
N: Depot St	268	263	5
W: Pine St	420	412	8
Total	1633	1600	33

LANE SUMMARY

Site: 101 [DepotStPineSt]

Network: N101 [Existing]

Depot at Pine St
Stop (Two-Way)

Lane Use and Performance

	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Average Delay	Level of Service	95% Back of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	Total veh/h	HV %	Total veh/h	HV %	veh/h	v/c	%	sec		Veh	Dist ft		ft	%	%
South: Depot St															
Lane 1	835	2.0	703	2.0	1643	0.428	100	0.0	LOS A	0.0	0.0	Full	50	0.0	0.0
Approach	835	2.0	703[N1]	2.0		0.428		0.0	NA	0.0	0.0				
East: Classick Dr															
Lane 1	110	2.0	110	2.0	103	1.065	100	184.5	LOS F	7.0	178.7	Full	1600	-43.6[N3]	0.0
Approach	110	2.0	110	2.0		1.065		184.5	LOS F	7.0	178.7				
North: Depot St															
Lane 1	268	2.0	267	2.0	330	0.811	100	49.6	LOS E	4.2	107.8	Full	400	-49.2[N3]	0.0
Approach	268	2.0	267[N1]	2.0		0.811		49.6	LOS E	4.2	107.8				
West: Pine St															
Lane 1	420	2.0	418	2.0	378	1.104	100	110.7	LOS F	27.6	701.9	Full	400	-49.1[N3]	25.4
Approach	420	2.0	418[N1]	2.0		1.104		110.7	LOS F	27.6	701.9				
Intersection	1633	2.0	1498[N1]	2.2		1.104		53.2	NA	27.6	701.9				

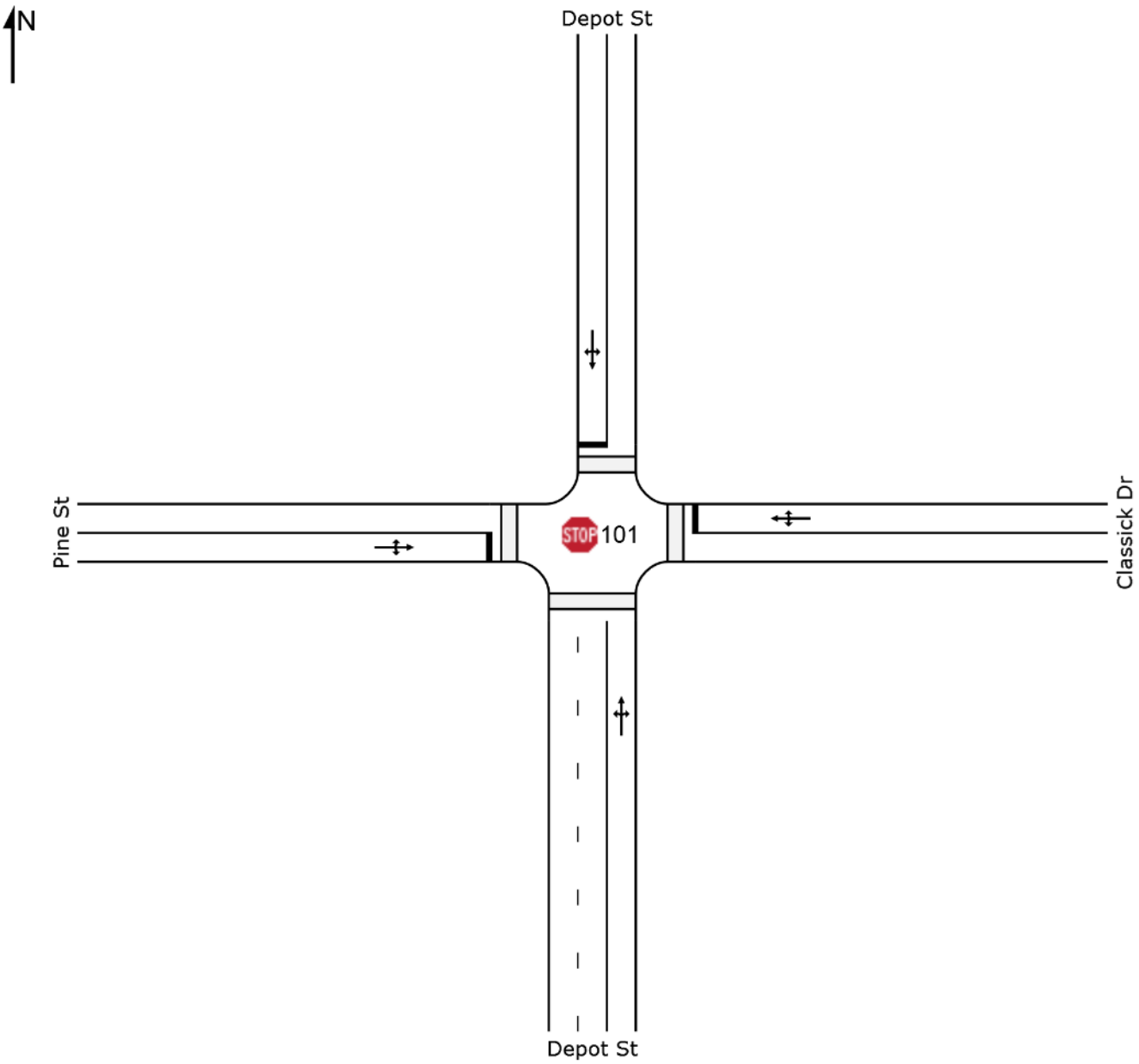
Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Network Data dialog (Network tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 12.6 %
Number of Iterations: 10 (maximum specified: 10)

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.
N3 Capacity Adjustment due to downstream lane blockage determined by the program.

SITE LAYOUT

Site: 101 [DepotStPineSt]

Depot at Pine St
Stop (Two-Way)



Organisation: OREGON DEPARTMENT OF TRANSPORTATION | Created: Thursday, October 05, 2017 4:02:57 PM
Project: Z:\County\Jackson\RogueRiver\TSP_Update_Analysis\08_Future_NoBuild_Analysis\20170926existing2040_AnalysisIntersections.sip7

MOVEMENT SUMMARY

Site: 101 [DepotStPineSt]

Network: N101 [Existing]

Depot at Pine St
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Depot St													
3	L2	380	2.0	320	2.0	0.428	0.0	LOS A	0.0	0.0	0.00	0.00	21.0
8	T1	355	2.0	299	2.0	0.428	0.0	LOS A	0.0	0.0	0.00	0.00	21.0
18	R2	100	2.0	84	2.0	0.428	0.0	LOS A	0.0	0.0	0.00	0.00	21.0
Approach		835	2.0	703 N1	2.0	0.428	0.0	NA	0.0	0.0	0.00	0.00	21.0
East: Classick Dr													
1	L2	85	2.0	85	2.0	1.065	191.9	LOS F	7.0	178.7	1.00	1.69	5.1
6	T1	20	2.0	20	2.0	1.065	162.1	LOS F	7.0	178.7	1.00	1.69	5.1
16	R2	5	2.0	5	2.0	1.065	148.9	LOS F	7.0	178.7	1.00	1.69	5.1
Approach		110	2.0	110	2.0	1.065	184.5	LOS F	7.0	178.7	1.00	1.69	5.1
North: Depot St													
7	L2	4	2.0	4	2.0	0.811	60.4	LOS F	4.2	107.8	0.55	0.82	4.7
4	T1	260	2.0	259	2.0	0.811	49.4	LOS E	4.2	107.8	0.55	0.82	4.7
14	R2	4	2.0	4	2.0	0.811	51.3	LOS F	4.2	107.8	0.55	0.82	4.7
Approach		268	2.0	267 N1	2.0	0.811	49.6	LOS E	4.2	107.8	0.55	0.82	4.7
West: Pine St													
5	L2	5	2.0	5	2.0	1.104	178.2	LOS F	27.6	701.9	1.00	2.12	2.5
2	T1	10	2.0	10	2.0	1.104	138.3	LOS F	27.6	701.9	1.00	2.12	2.5
12	R2	405	2.0	403	2.0	1.104	109.2	LOS F	27.6	701.9	1.00	2.12	2.5
Approach		420	2.0	418 N1	2.0	1.104	110.7	LOS F	27.6	701.9	1.00	2.12	2.5
All Vehicles		1633	2.0	1498 N1	2.2	1.104	53.2	NA	27.6	701.9	0.45	0.86	3.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Network Data dialog (Network 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 2010).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 12.6 %
Number of Iterations: 10 (maximum specified: 10)

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

QUEUE DISTANCE (%ILE)

Largest 95% Back of Queue Distance for any lane used by vehicle movement (feet)

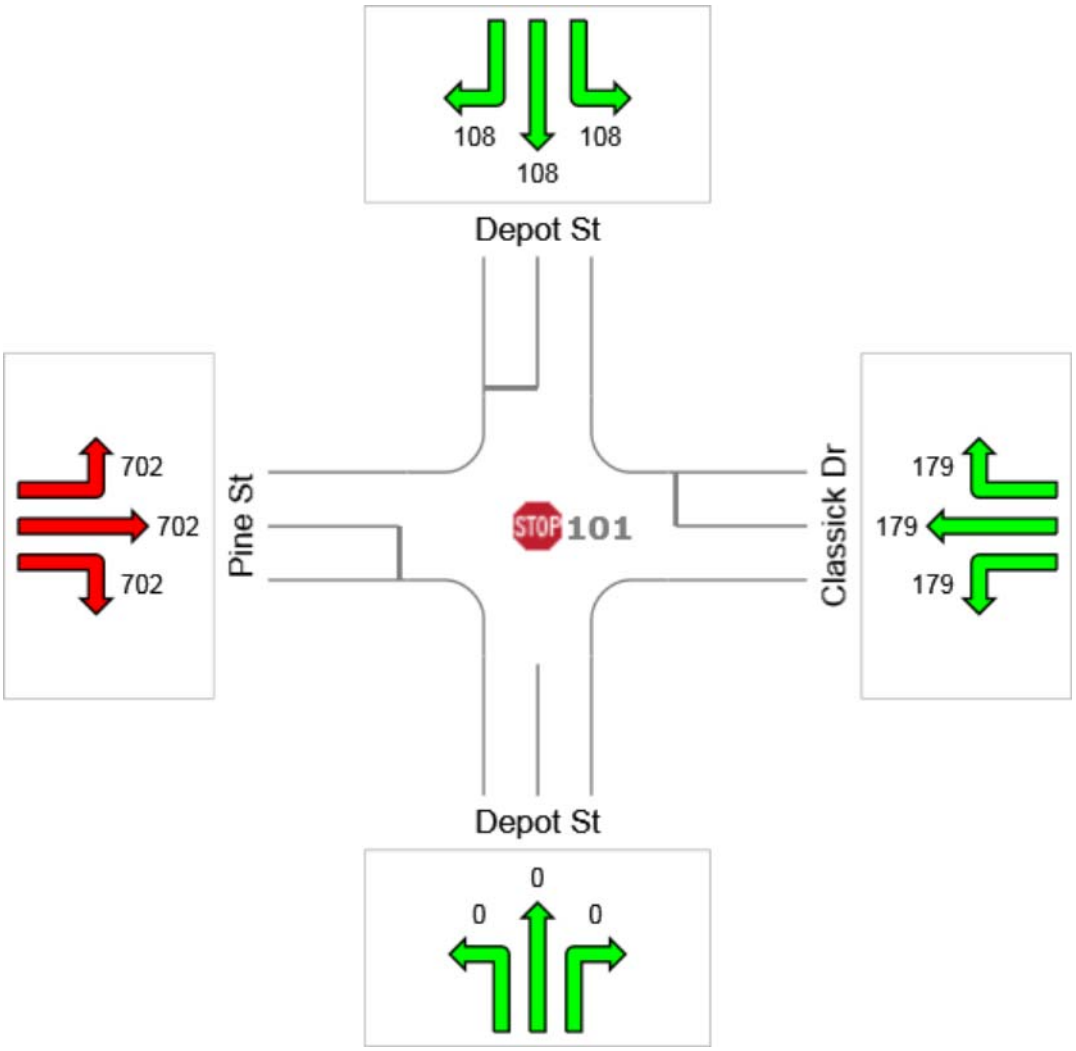
Network: N101 [Existing]

Site: 101 [DepotStPineSt]

Depot at Pine St
Stop (Two-Way)

All Movement Classes

	South	East	North	West	Intersection
Vehicle Queue (%ile)	0	179	108	702	702



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

INPUT VOLUMES

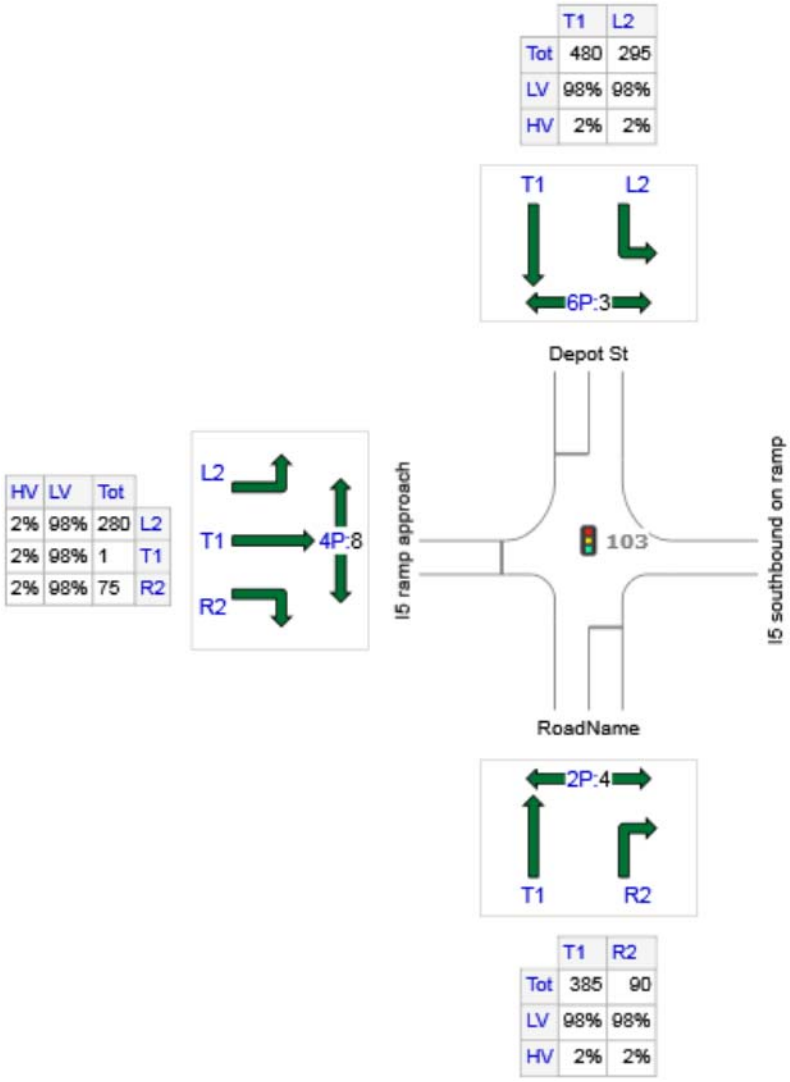
Vehicles and pedestrians per 60 minutes

Site: 103 [DepotStSBi5]

Depot St at I5 SB exit

Signals - Actuated Isolated

Volume Display Method: Total and %



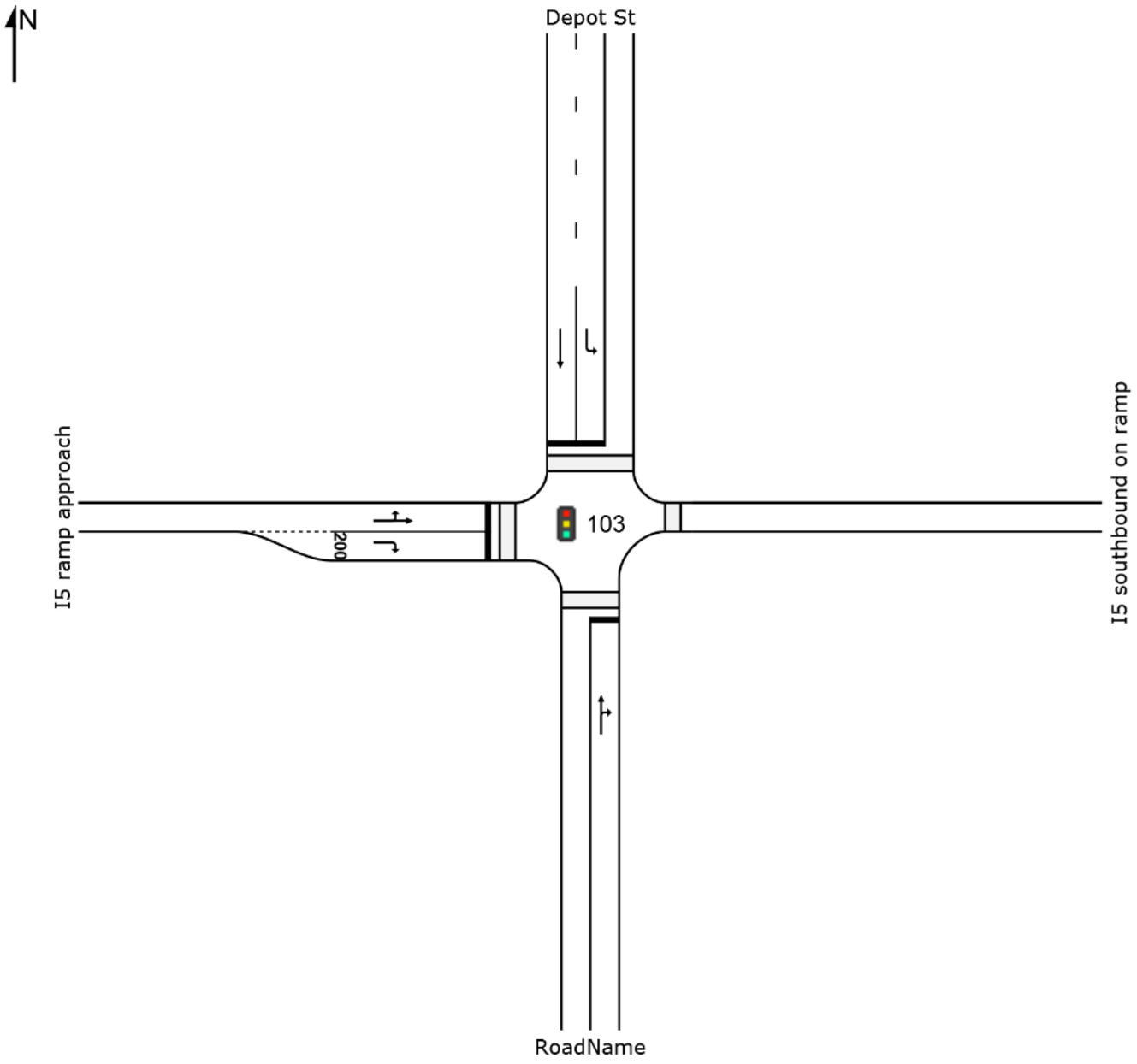
	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: RoadName	475	466	10
N: Depot St	775	760	16
W: I5 ramp approach	356	349	7
Total	1606	1574	32

SITE LAYOUT

Site: 103 [DepotStSBi5]

Depot St at I5 SB exit

Signals - Actuated Isolated



MOVEMENT SUMMARY

Site: 103 [DepotStSBi5]

Network: N101 [Existing]

Depot St at I5 SB exit

Signals - Actuated Coordinated Cycle Time = 100 seconds (Network Cycle Time - Program)
Common Control Group: CCG1 [CCGName]

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: RoadName													
8	T1	385	2.0	385	2.0	1.026	73.8	LOS F	32.5	825.0	1.00	1.19	4.3
18	R2	90	2.0	90	2.0	1.026	73.8	LOS F	32.5	825.0	1.00	1.19	10.2
Approach		475	2.0	475	2.0	1.026	73.8	LOS E	32.5	825.0	1.00	1.19	5.9
North: Depot St													
7	L2	295	2.0	294	2.0	4.117	1449.8	LOS F	19.3	489.6	1.00	2.61	0.8
4	T1	480	2.0	478	2.0	0.557	17.6	LOS B	13.7	349.2	0.56	0.50	8.6
Approach		775	2.0	771 N1	2.0	4.117	562.8	LOS F	19.3	489.6	0.73	1.30	1.1
West: I5 ramp approach													
5	L2	280	2.0	280	2.0	0.817	48.8	LOS D	14.9	379.5	0.93	0.82	10.5
2	T1	1	2.0	1	2.0	0.817	48.8	LOS D	14.9	379.5	0.93	0.82	15.4
12	R2	75	2.0	75	2.0	0.085	2.4	LOS A	0.9	21.9	0.25	0.20	18.5
Approach		356	2.0	356	2.0	0.817	39.0	LOS D	14.9	379.5	0.79	0.69	11.5
All Vehicles		1606	2.0	1602 N1	2.0	4.117	301.4	LOS F	32.5	825.0	0.82	1.13	2.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Network Data dialog (Network 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).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Largest change in Average Back of Queue or Degree of Saturation for any lane during the last three iterations: 21.1 %
Number of Iterations: 10 (maximum specified: 10)

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance ft	Prop. Queued	Effective Stop Rate per ped
2P	South Full Crossing	4	18.6	LOS B	0.0	0.0	0.61	0.61
8P	East Full Crossing	7	12.5	LOS B	0.0	0.0	0.50	0.50
6P	North Full Crossing	3	20.5	LOS C	0.0	0.0	0.64	0.64
4P	West Full Crossing	9	14.1	LOS B	0.0	0.0	0.53	0.53
All Pedestrians		23	15.4	LOS B			0.55	0.55

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 103 [DepotStSBi5]

Network: N101 [Existing]

Depot St at I5 SB exit

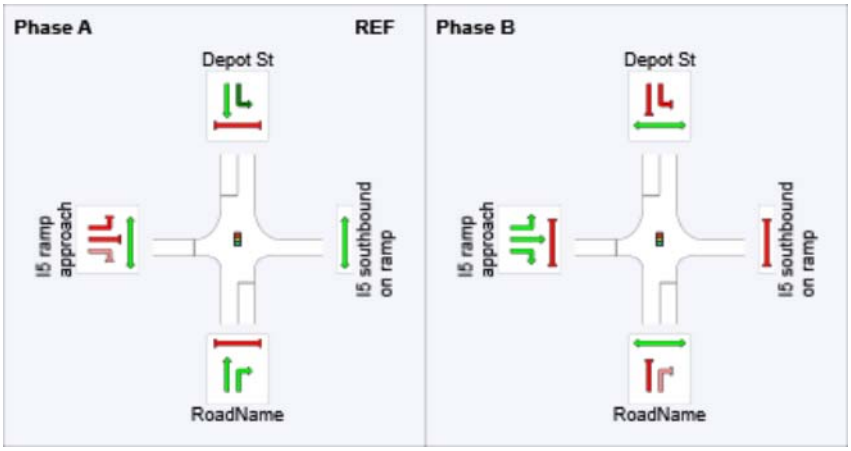
Signals - Actuated Coordinated Cycle Time = 100 seconds (Network Cycle Time - Program)
Common Control Group: CCG1 [CCGName]

Phase Times determined by the program
Phase Sequence: CCG Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Phase Timing Results

Phase	A	B
Phase Change Time (sec)	0	54
Green Time (sec)	50	42
Phase Time (sec)	54	46
Phase Split	54 %	46 %

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

TIMING ANALYSIS

Site: 103 [DepotStSBi5] — Network: N101 [Existing]

Depot St at I5 SB exit

Signals - Actuated Coordinated Cycle Time = 100 seconds (Network Cycle Time - Program)
Common Control Group: CCG1 [CCGName]

Phase Times determined by the program
Phase Sequence: CCG Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Movement Timing Information

Mov ID	Mov Class	Mov Type	PHASE MATRIX First Green [From	To	Oppd	Priority	Und]	PHASE MATRIX Second Green [From	To	Oppd	Priority	Und]	Lost Time 1st Grn sec	Lost Time 2nd Grn sec	ReqMovTime 1st Grn sec	ReqMovTime 2nd Grn sec	Eff Green 1st Grn sec	Eff Green 2nd Grn sec
South		RoadName																
8	#		A	B		High							4		54.0 Max		50	
18	#		A	B		High		B	A	Yes	High		4	4	54.0 Max	10.0 Min	50	42
North		Depot St																
7	#		A	B	Yes	High							52		54.0 Max		2	
4	#		A	B		High							4		41.4		50	
4	HV		A	B		High							4		41.8		50	
West		I5 ramp approach																
5	#		B	A									4		45.1		42	
5	HV		B	A									4		45.8		42	
2	#		B	A									4		44.4		42	
2	HV		B	A									4		44.8		42	
12	#		A	B	Yes	High		B	A		High		18	4	10.0 Min	16.9	36	42
Pedestrian Movements																		
2P		Ped	B	A									1		10.0^Min		39	
8P		Ped	A	B									2		10.0^Min		50	
6P		Ped	B	A									1		10.0^Min		36	
4P		Ped	A	B									2		10.0^Min		47	

\# Combined timing results are shown for all Movement Classes except any listed separately.
^ Pedestrian Actuation / Phase Actuation for probability of no arrivals in an average signal cycle:
For Pedestrian / Vehicle Movements, the Minimum Required Time, Lost Time and Effective Green Time have been reduced.

Critical Movements and Cycle Time

Critical Mov ID	Appr & Dest	Green Period	Phases [From	To]	Adjusted Lost Time sec	Adjusted Flow Ratio	Req Green Time Ratio	Required Mov Time sec

Phase Information

Phase	Ref. Phase	Change Time sec	Starting Intergreen sec	Green Start sec	Displayed Green sec	Green End sec	Terminating Intergreen sec	Phase Time sec	Phase Split %
A	Yes	0	4	4	50	54	4	54	54
B	No	54	4	58	42	100	4	46	46

This table gives adjusted values of Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%. See the Phase Information section in the Detailed Output report for input values of Yellow Time, All-Red Time and the unadjusted Intergreen Times.

MOVEMENT TIMING

Site: 103 [DepotStSBi5]

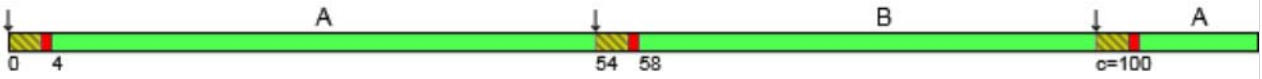
Network: N101 [Existing]

Depot St at I5 SB exit

Signals - Actuated Coordinated Cycle Time = 100 seconds (Network Cycle Time - Program)
Common Control Group: CCG1 [CCGName]

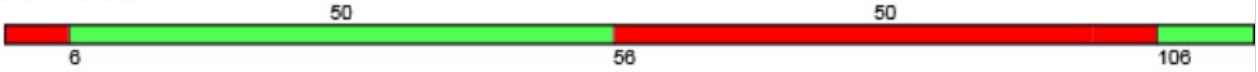
Phase Times determined by the program
Phase Sequence: CCG Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

DISPLAYED SIGNAL TIMING - PHASES

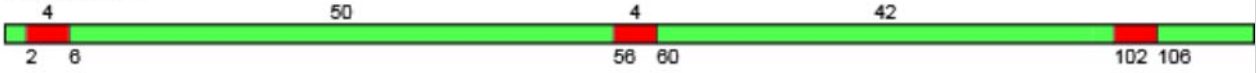


EFFECTIVE SIGNAL TIMING - MOVEMENTS

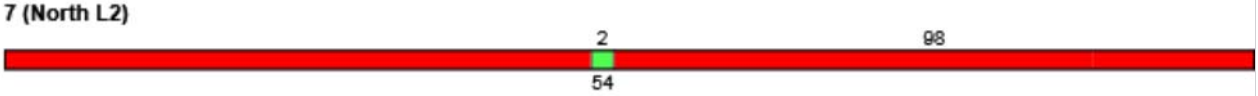
8 (South T1)



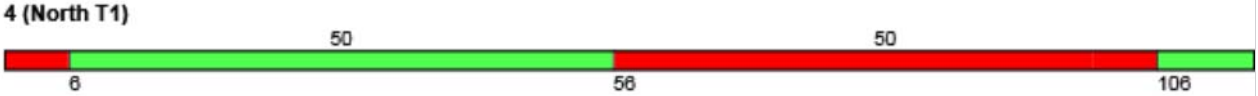
18 (South R2)



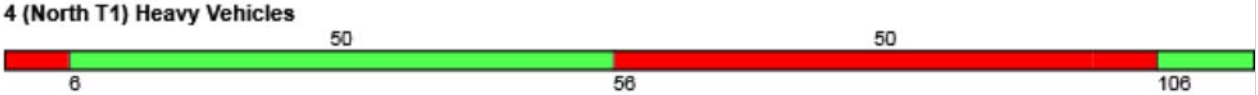
7 (North L2)



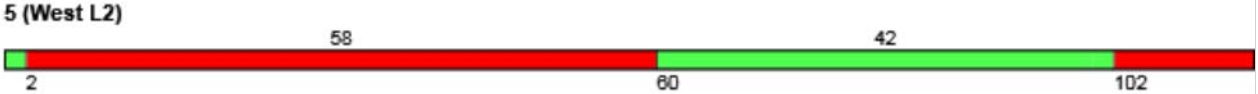
4 (North T1)



4 (North T1) Heavy Vehicles



5 (West L2)

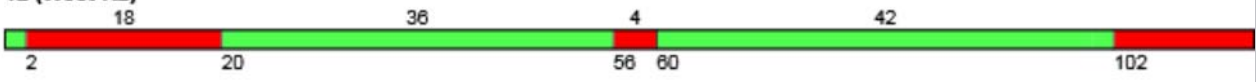


5 (West L2) Heavy Vehicles

2 (West T1)

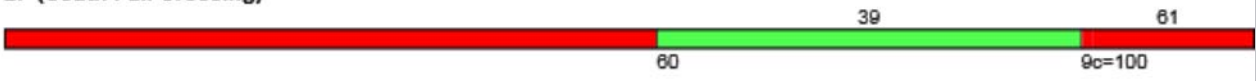
2 (West T1) Heavy Vehicles

12 (West R2)

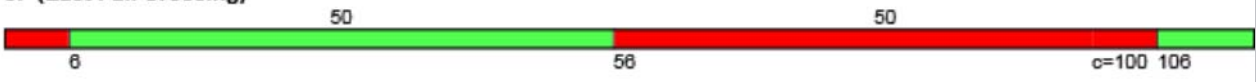


PEDESTRIAN SIGNAL TIMING

2P (South Full Crossing)



8P (East Full Crossing)



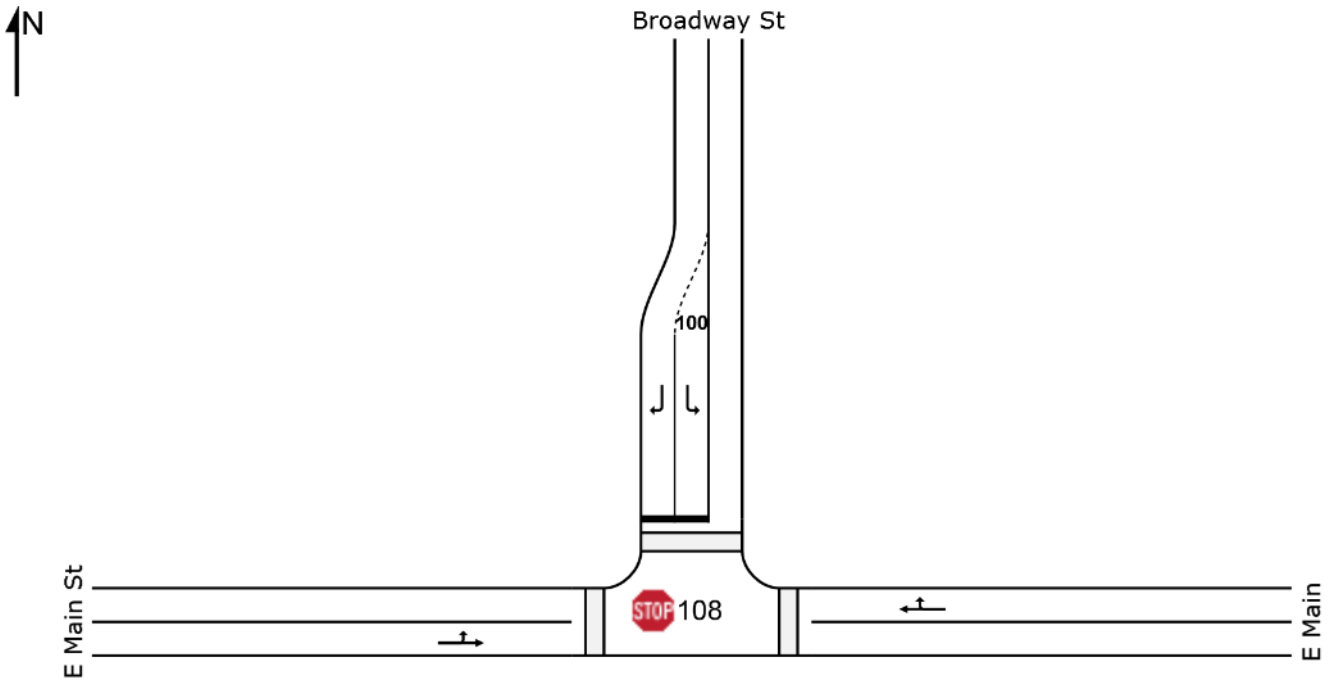
6P (North Full Crossing)

4P (West Full Crossing)

SITE LAYOUT

Site: 108 [EMainStBroadway]

E Main St at Cedar St (Stop control)
Stop (Two-Way)



Organisation: OREGON DEPARTMENT OF TRANSPORTATION | Created: Thursday, October 05, 2017 3:42:32 PM
Project: Z:\County\Jackson\RogueRiver\TSP_Update_Analysis\08_Future_NoBuild_Analysis\20170926existing2040_AnalysisIntersections.sip7

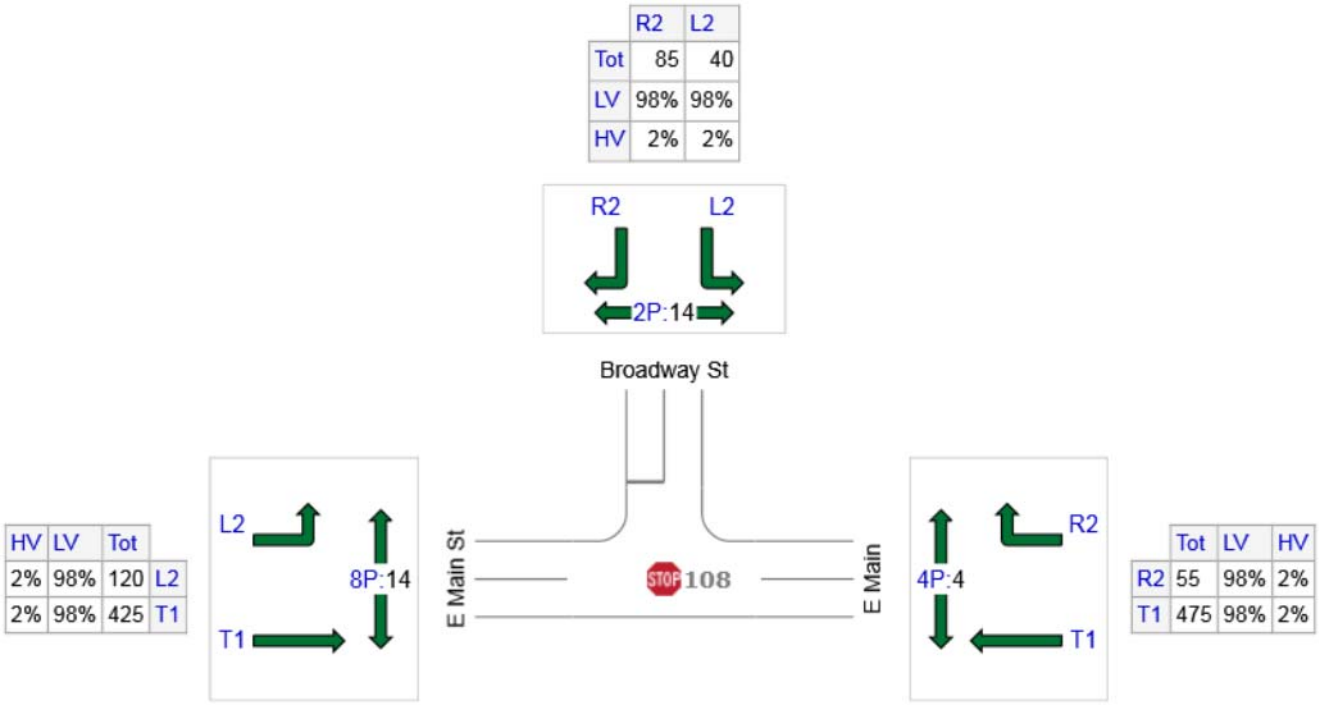
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: 108 [EMainStBroadway]

E Main St at Cedar St (Stop control)
Stop (Two-Way)

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
E: E Main	530	519	11
N: Broadway St	125	123	3
W: E Main St	545	534	11
Total	1200	1176	24

LANE SUMMARY

Site: 108 [EMainStBroadway]

E Main St at Cedar St (Stop control)
Stop (Two-Way)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: E Main													
Lane 1	530	2.0	1829	0.290	100	0.0	LOS A	0.0	0.0	Full	350	0.0	0.0
Approach	530	2.0		0.290		0.0	NA	0.0	0.0				
North: Broadway St													
Lane 1	40	2.0	231	0.173	100	23.8	LOS C	0.6	14.8	Short	100	0.0	NA
Lane 2	85	2.0	557	0.153	100	12.6	LOS B	0.6	15.6	Full	1600	0.0	0.0
Approach	125	2.0		0.173		16.2	LOS C	0.6	15.6				
West: E Main St													
Lane 1	545	2.0	1548	0.352	100	5.3	LOS A	1.8	45.1	Full	250	0.0	0.0
Approach	545	2.0		0.352		5.3	NA	1.8	45.1				
Intersection	1200	2.0		0.352		4.1	NA	1.8	45.1				

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 108 [EMainStBroadway]

E Main St at Cedar St (Stop control)
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
East: E Main											
2	T1	475	2.0	0.290	0.0	LOS A	0.0	0.0	0.00	0.00	37.8
12	R2	55	2.0	0.290	0.0	LOS A	0.0	0.0	0.00	0.00	36.9
Approach		530	2.0	0.290	0.0	NA	0.0	0.0	0.00	0.00	37.6
North: Broadway St											
3	L2	40	2.0	0.173	23.8	LOS C	0.6	14.8	0.80	0.80	20.1
18	R2	85	2.0	0.153	12.6	LOS B	0.6	15.6	0.57	0.52	23.6
Approach		125	2.0	0.173	16.2	LOS C	0.6	15.6	0.64	0.61	22.3
West: E Main St											
1	L2	120	2.0	0.352	9.1	LOS A	1.8	45.1	0.34	0.07	31.4
6	T1	425	2.0	0.352	4.3	LOS A	1.8	45.1	0.34	0.07	25.3
Approach		545	2.0	0.352	5.3	NA	1.8	45.1	0.34	0.07	27.7
All Vehicles		1200	2.0	0.352	4.1	NA	1.8	45.1	0.22	0.10	29.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site 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 2010).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

QUEUE DISTANCE (%ILE)

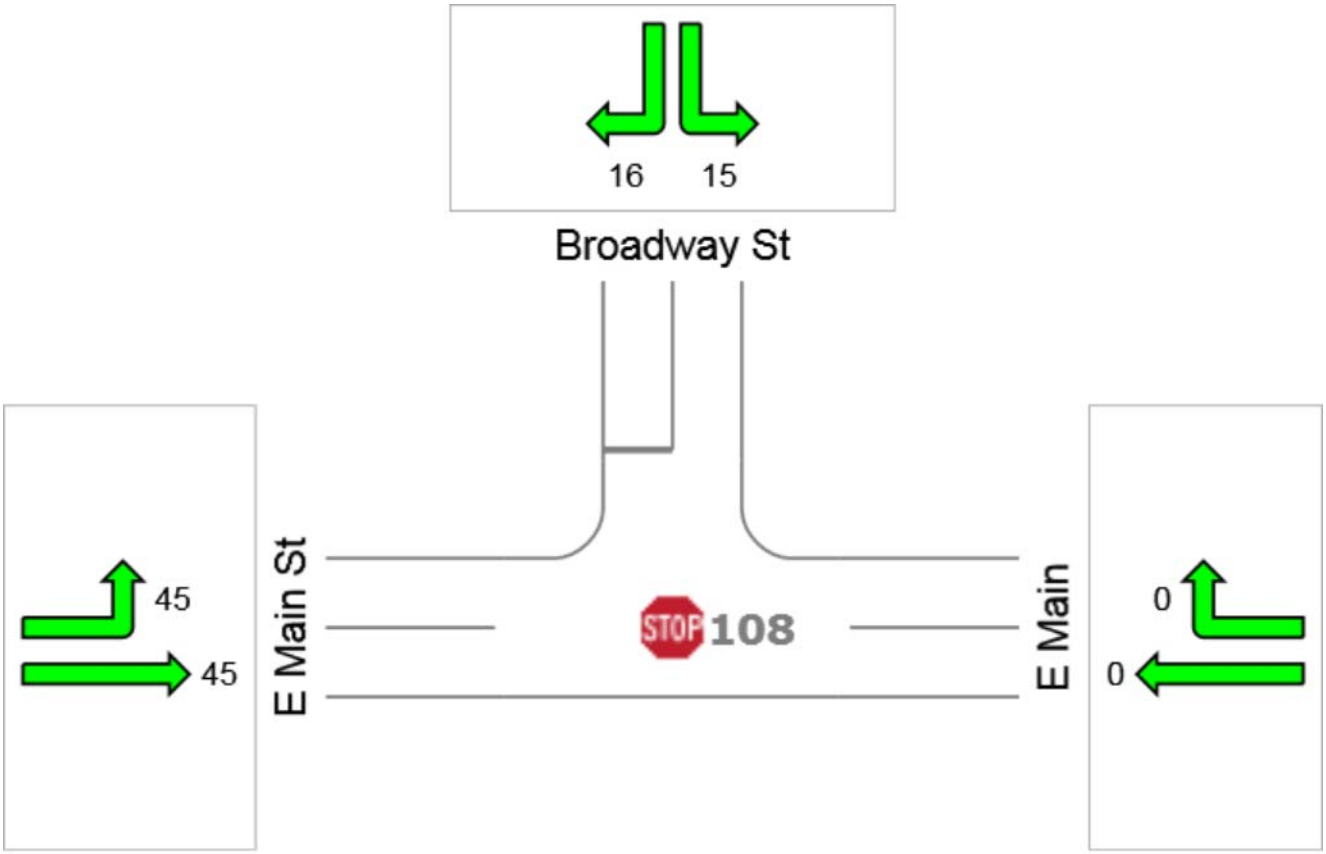
Largest 95% Back of Queue Distance for any lane used by vehicle movement (feet)

Site: 108 [EMainStBroadway]

E Main St at Cedar St (Stop control)
Stop (Two-Way)

All Movement Classes

	East	North	West	Intersection
Vehicle Queue (%ile)	0	16	45	45



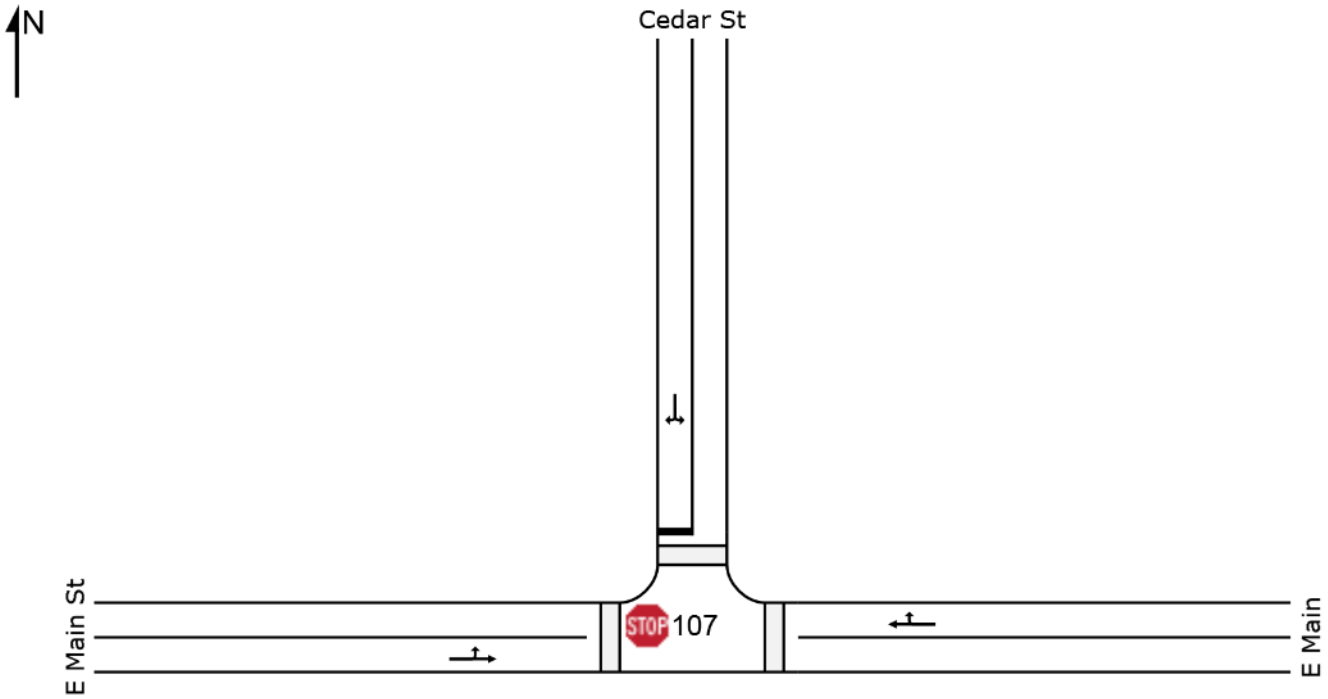
Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

SITE LAYOUT

Site: 107 [EMainStCedarSt]

E Main St at Cedar St (Stop control)
Stop (Two-Way)



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Project: Z:\County\Jackson\RogueRiver\TSP_Update_Analysis\08_Future_NoBuild_Analysis\20170926existing2040_AnalysisIntersections.sip7

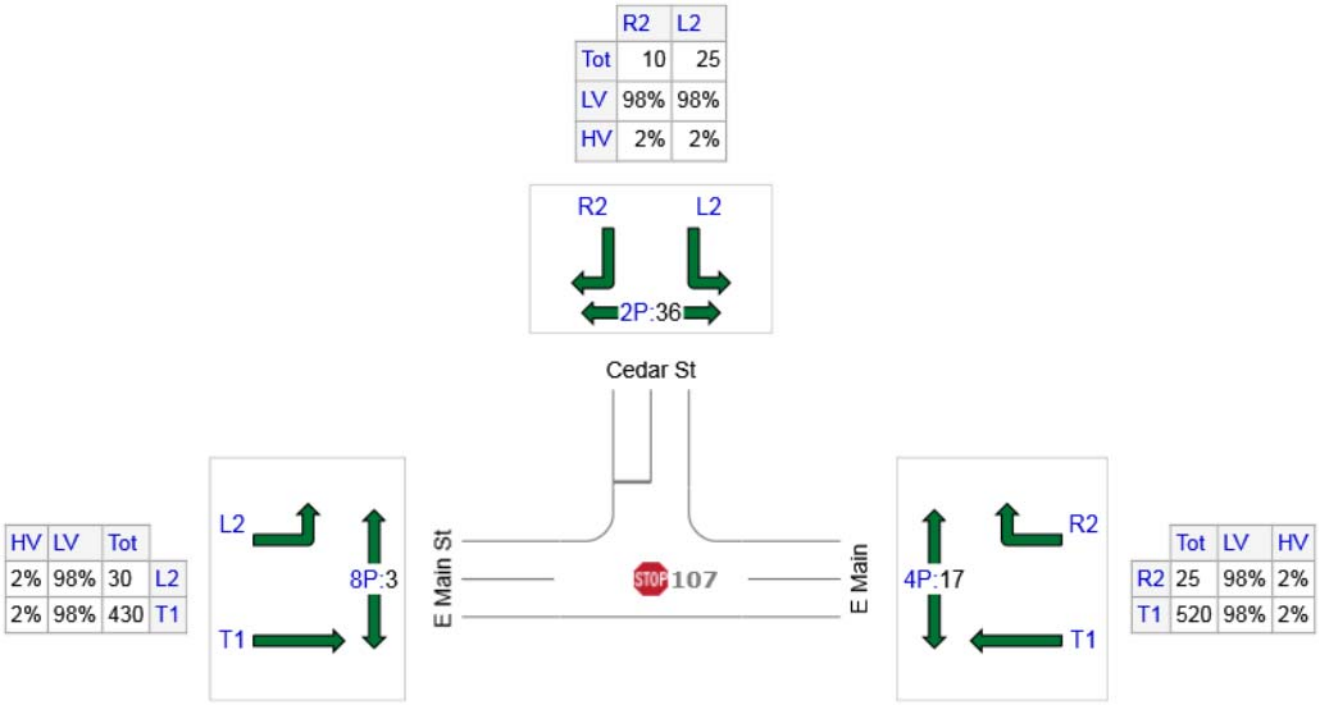
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: 107 [EMainStCedarSt]

E Main St at Cedar St (Stop control)
Stop (Two-Way)

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
E: E Main	545	534	11
N: Cedar St	35	34	1
W: E Main St	460	451	9
Total	1040	1019	21

LANE SUMMARY

Site: 107 [EMainStCedarSt]

E Main St at Cedar St (Stop control)
Stop (Two-Way)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: E Main													
Lane 1	545	2.0	1847	0.295	100	0.0	LOS A	0.0	0.0	Full	1000	0.0	0.0
Approach	545	2.0		0.295		0.0	NA	0.0	0.0				
North: Cedar St													
Lane 1	35	2.0	294	0.119	100	18.9	LOS C	0.4	10.4	Full	1600	0.0	0.0
Approach	35	2.0		0.119		18.9	LOS C	0.4	10.4				
West: E Main St													
Lane 1	460	2.0	1753	0.262	100	4.1	LOS A	0.4	10.2	Full	350	0.0	0.0
Approach	460	2.0		0.262		4.1	NA	0.4	10.2				
Intersection	1040	2.0		0.295		2.5	NA	0.4	10.4				

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 107 [EMainStCedarSt]

E Main St at Cedar St (Stop control)
Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
East: E Main											
2	T1	520	2.0	0.295	0.0	LOS A	0.0	0.0	0.00	0.00	39.5
12	R2	25	2.0	0.295	0.0	LOS A	0.0	0.0	0.00	0.00	37.8
Approach		545	2.0	0.295	0.0	NA	0.0	0.0	0.00	0.00	39.4
North: Cedar St											
3	L2	25	2.0	0.119	22.9	LOS C	0.4	10.4	0.71	0.70	24.5
18	R2	10	2.0	0.119	9.0	LOS A	0.4	10.4	0.71	0.70	18.6
Approach		35	2.0	0.119	18.9	LOS C	0.4	10.4	0.71	0.70	22.8
West: E Main St											
1	L2	30	2.0	0.262	20.5	LOS C	0.4	10.2	0.11	0.01	32.9
6	T1	430	2.0	0.262	3.0	LOS A	0.4	10.2	0.11	0.01	33.6
Approach		460	2.0	0.262	4.1	NA	0.4	10.2	0.11	0.01	33.6
All Vehicles		1040	2.0	0.295	2.5	NA	0.4	10.4	0.07	0.03	35.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site 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 2010).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

QUEUE DISTANCE (%ILE)

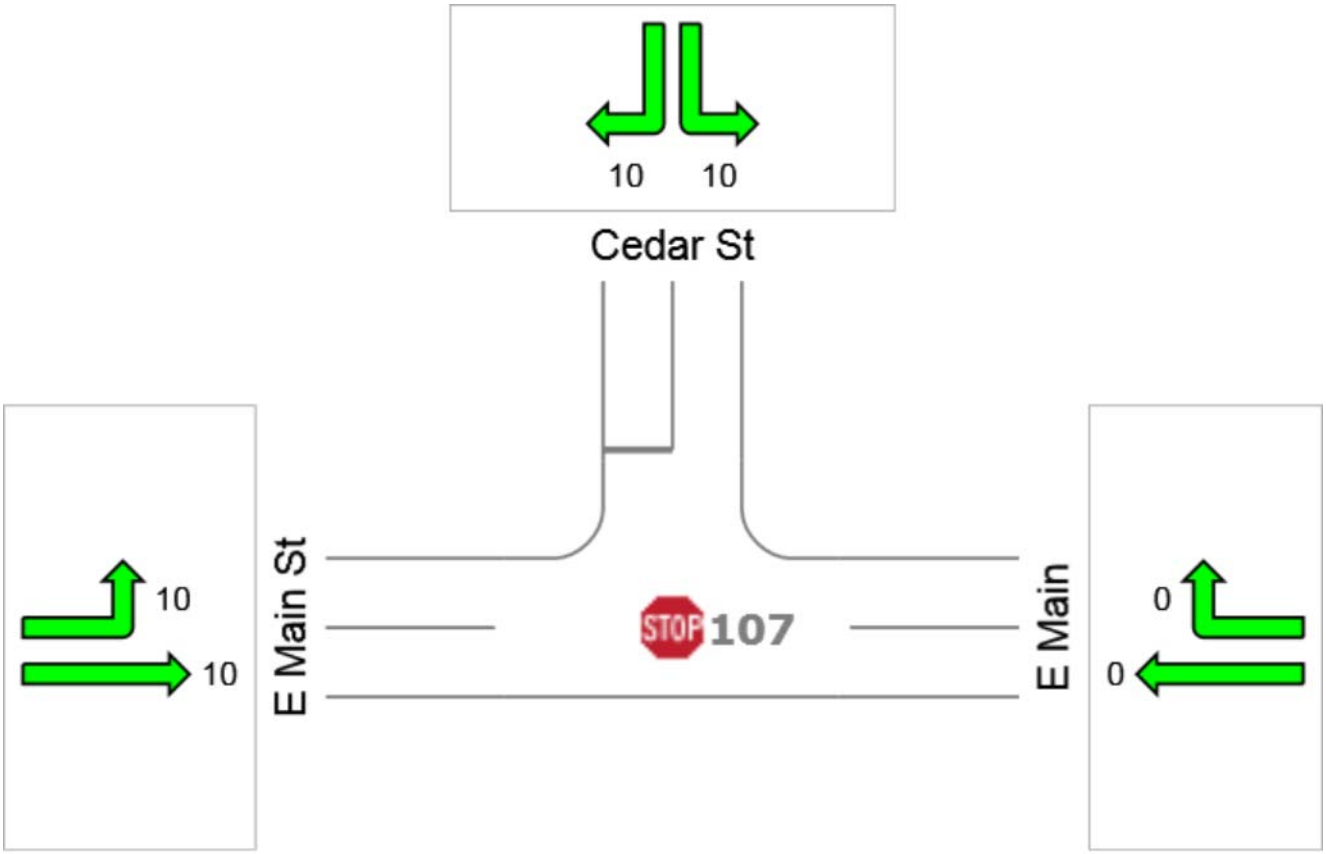
Largest 95% Back of Queue Distance for any lane used by vehicle movement (feet)

Site: 107 [EMainStCedarSt]

E Main St at Cedar St (Stop control)
Stop (Two-Way)

All Movement Classes

	East	North	West	Intersection
Vehicle Queue (%ile)	0	10	10	10



Colour code based on Queue Storage Ratio

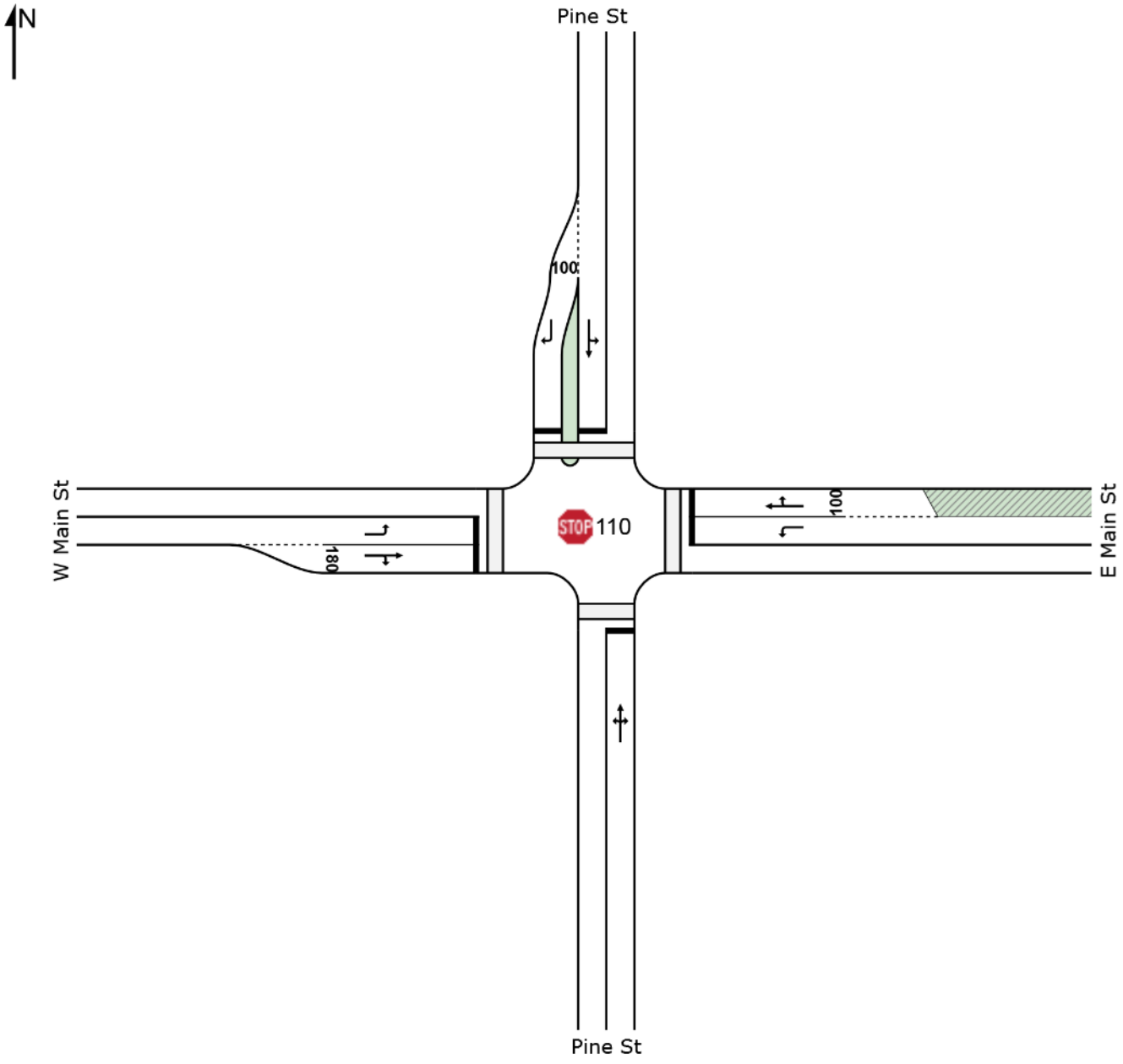
[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

SITE LAYOUT

Site: 110 [EMainStPineSt]

E Main St at Pine St (All-Way Stop Control)

Stop (All-Way)



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INPUT VOLUMES

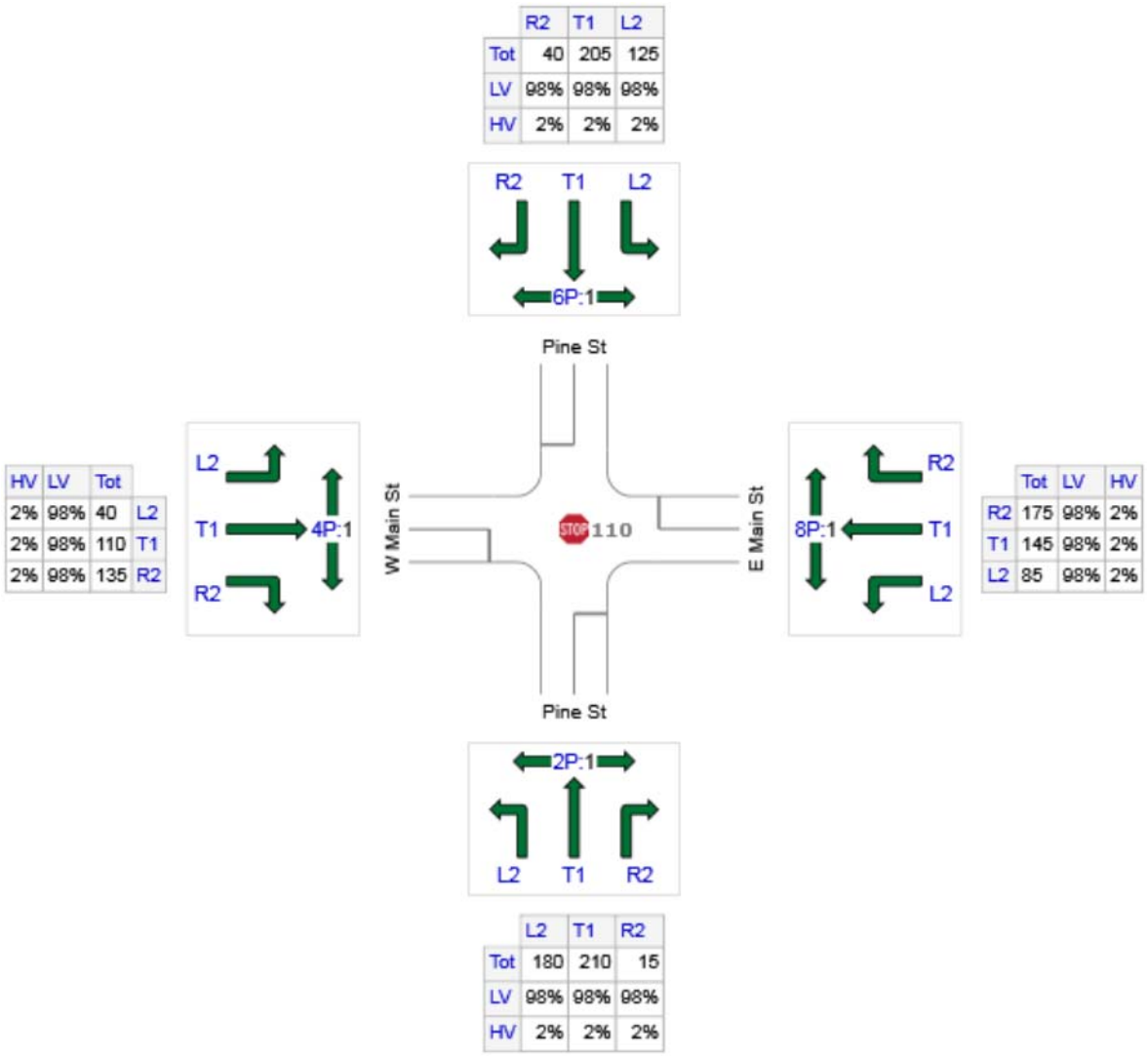
Vehicles and pedestrians per 60 minutes

Site: 110 [EMainStPineSt]

E Main St at Pine St (All-Way Stop Control)

Stop (All-Way)

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Pine St	405	397	8
E: E Main St	405	397	8
N: Pine St	370	363	7
W: W Main St	285	279	6
Total	1465	1436	29

LANE SUMMARY

Site: 110 [EMainStPineSt]

E Main St at Pine St (All-Way Stop Control)

Stop (All-Way)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Pine St													
Lane 1	405	2.0	449	0.901	100	49.9	LOS E	9.7	247.2	Full	400	0.0	0.0
Approach	405	2.0		0.901		49.9	LOS E	9.7	247.2				
East: E Main St													
Lane 1	85	2.0	265	0.320	100	15.7	LOS C	1.3	33.0	Full	400	0.0	1.6[8]
Lane 2	320	2.0	298	1.075	100	104.7	LOS F	15.2	384.9	Short (P)	100	0.0	NA
Approach	405	2.0		1.075		86.0	LOS F	15.2	384.9				
North: Pine St													
Lane 1	330	2.0	367	0.898	100	52.2	LOS F	9.1	231.8	Full	1600	0.0	0.0
Lane 2	40	2.0	326	0.123	100	9.7	LOS A	0.4	10.7	Short	100	0.0	NA
Approach	370	2.0		0.898		47.6	LOS E	9.1	231.8				
West: W Main St													
Lane 1	40	2.0	523	0.076	100	6.5	LOS A	0.2	6.1	Full	1600	0.0	0.0
Lane 2	245	2.0	720	0.340	100	8.5	LOS A	1.3	32.8	Short	180	0.0	NA
Approach	285	2.0		0.340		8.2	LOS A	1.3	32.8				
Intersection	1465	2.0		1.075		51.2	LOS F	15.2	384.9				

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

8 Probability of Blockage has been set on the basis of a queue that overflows from a short lane.

MOVEMENT SUMMARY

Site: 110 [EMainStPineSt]

E Main St at Pine St (All-Way Stop Control)

Stop (All-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Pine St											
3	L2	180	2.0	0.901	49.9	LOS E	9.7	247.2	1.00	2.21	15.0
8	T1	210	2.0	0.901	49.9	LOS E	9.7	247.2	1.00	2.21	15.0
18	R2	15	2.0	0.901	49.9	LOS E	9.7	247.2	1.00	2.21	8.0
Approach		405	2.0	0.901	49.9	LOS E	9.7	247.2	1.00	2.21	14.8
East: E Main St											
1	L2	85	2.0	0.320	15.7	LOS C	1.3	33.0	0.98	1.31	14.8
6	T1	145	2.0	1.075	104.7	LOS F	15.2	384.9	1.00	2.64	9.4
16	R2	175	2.0	1.075	104.7	LOS F	15.2	384.9	1.00	2.64	9.4
Approach		405	2.0	1.075	86.0	LOS F	15.2	384.9	1.00	2.36	9.8
North: Pine St											
7	L2	125	2.0	0.898	52.2	LOS F	9.1	231.8	1.00	2.12	14.6
4	T1	205	2.0	0.898	52.2	LOS F	9.1	231.8	1.00	2.12	14.6
14	R2	40	2.0	0.123	9.7	LOS A	0.4	10.7	0.92	1.18	30.1
Approach		370	2.0	0.898	47.6	LOS E	9.1	231.8	0.99	2.02	15.9
West: W Main St											
5	L2	40	2.0	0.076	6.5	LOS A	0.2	6.1	0.80	1.04	31.3
2	T1	110	2.0	0.340	8.5	LOS A	1.3	32.8	0.76	1.10	26.7
12	R2	135	2.0	0.340	8.5	LOS A	1.3	32.8	0.76	1.10	26.8
Approach		285	2.0	0.340	8.2	LOS A	1.3	32.8	0.77	1.09	27.6
All Vehicles		1465	2.0	1.075	51.2	LOS F	15.2	384.9	0.95	1.99	14.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site 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).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

QUEUE DISTANCE (%ILE)

Largest 95% Back of Queue Distance for any lane used by vehicle movement (feet)

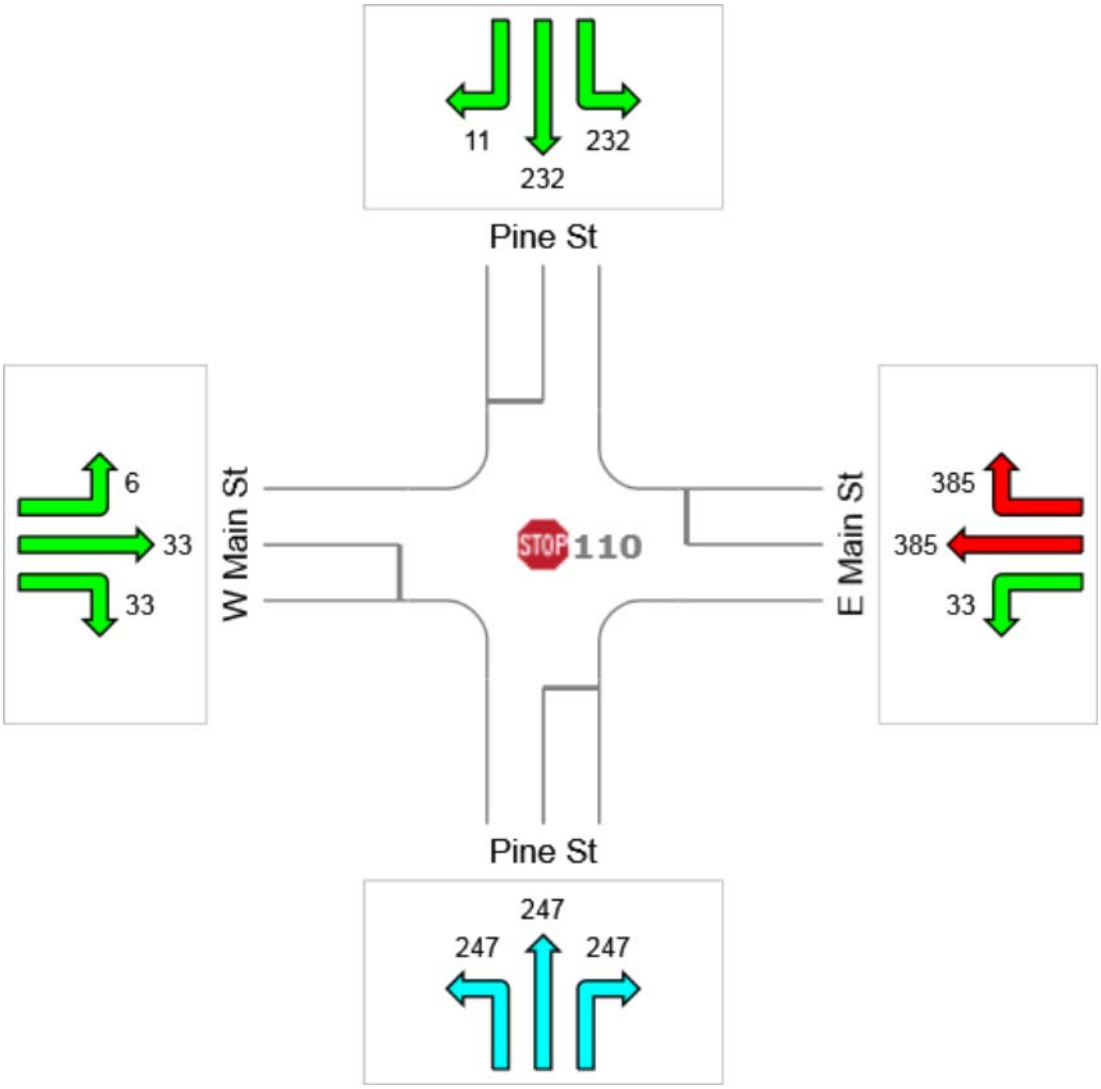
Site: 110 [EMainStPineSt]

E Main St at Pine St (All-Way Stop Control)

Stop (All-Way)

All Movement Classes

	South	East	North	West	Intersection
Vehicle Queue (%ile)	247	385	232	33	385



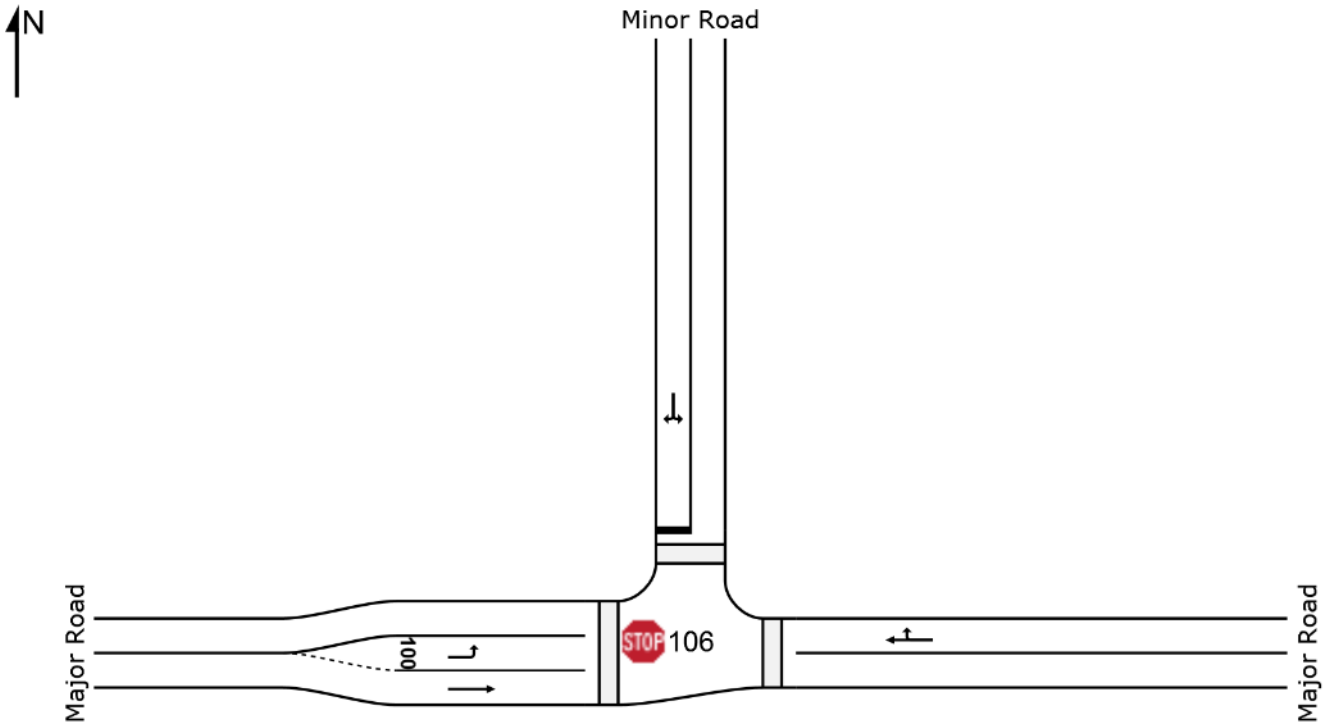
Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

SITE LAYOUT

Site: 106 [EMainStWardCkRd]

Three-way intersection with 2-lane major road (Stop control)
Stop (Two-Way)



Organisation: OREGON DEPARTMENT OF TRANSPORTATION | Created: Thursday, October 05, 2017 3:37:20 PM
Project: Z:\County\Jackson\RogueRiver\TSP_Update_Analysis\08_Future_NoBuild_Analysis\20170926existing2040_AnalysisIntersections.sip7

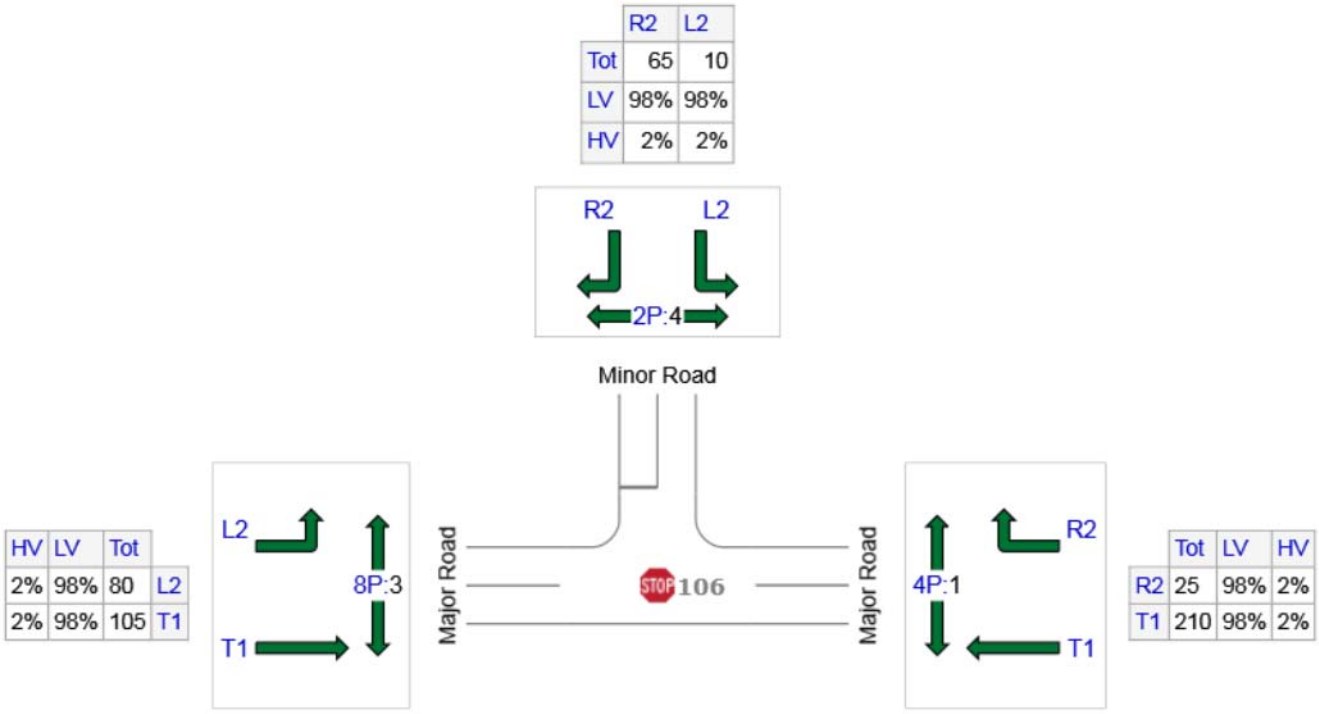
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: 106 [EMainStWardCkRd]

Three-way intersection with 2-lane major road (Stop control)
Stop (Two-Way)

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
E: Major Road	235	230	5
N: Minor Road	75	74	2
W: Major Road	185	181	4
Total	495	485	10

LANE SUMMARY

Site: 106 [EMainStWardCkRd]

Three-way intersection with 2-lane major road (Stop control)
Stop (Two-Way)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: Major Road													
Lane 1	235	2.0	1828	0.129	100	0.0	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	235	2.0		0.129		0.0	NA	0.0	0.0				
North: Minor Road													
Lane 1	75	2.0	751	0.100	100	10.3	LOS B	0.4	10.6	Full	600	0.0	0.0
Approach	75	2.0		0.100		10.3	LOS B	0.4	10.6				
West: Major Road													
Lane 1	80	2.0	1282	0.062	100	3.3	LOS A	0.3	6.5	Short	100	0.0	NA
Lane 2	105	2.0	1863	0.056	100	0.0	LOS A	0.0	0.0	Full	1000	0.0	0.0
Approach	185	2.0		0.062		1.4	NA	0.3	6.5				
Intersection	495	2.0		0.129		2.1	NA	0.4	10.6				

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 106 [EMainStWardCkRd]

Three-way intersection with 2-lane major road (Stop control)
Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
East: Major Road											
2	T1	210	2.0	0.129	0.0	LOS A	0.0	0.0	0.00	0.00	39.4
12	R2	25	2.0	0.129	0.0	LOS A	0.0	0.0	0.00	0.00	37.1
Approach		235	2.0	0.129	0.0	NA	0.0	0.0	0.00	0.00	39.2
North: Minor Road											
3	L2	10	2.0	0.100	21.1	LOS C	0.4	10.6	0.40	0.28	26.1
18	R2	65	2.0	0.100	8.7	LOS A	0.4	10.6	0.40	0.28	23.3
Approach		75	2.0	0.100	10.3	LOS B	0.4	10.6	0.40	0.28	23.7
West: Major Road											
1	L2	80	2.0	0.062	3.3	LOS A	0.3	6.5	0.32	0.18	28.0
6	T1	105	2.0	0.056	0.0	LOS A	0.0	0.0	0.00	0.00	40.0
Approach		185	2.0	0.062	1.4	NA	0.3	6.5	0.14	0.08	35.2
All Vehicles		495	2.0	0.129	2.1	NA	0.4	10.6	0.11	0.07	35.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site 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 2010).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

QUEUE DISTANCE (%ILE)

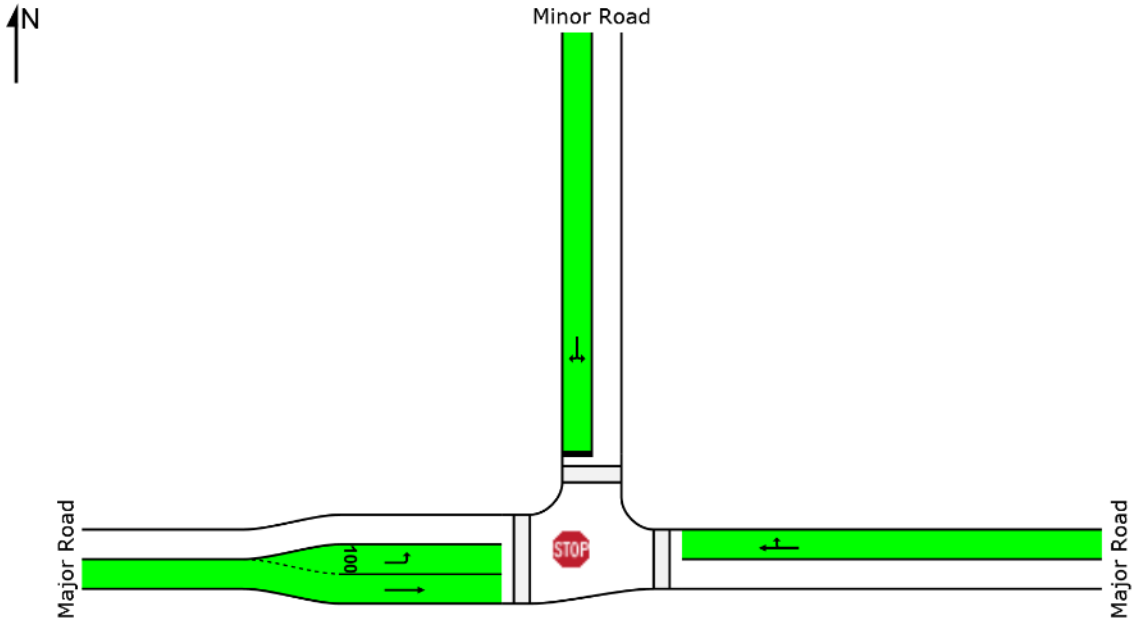
95% Back of Queue Distance per lane (feet)

Site: 106 [EMainStWardCkRd]

Three-way intersection with 2-lane major road (Stop control)
Stop (Two-Way)

All Movement Classes

	East	North	West	Intersection
Vehicle Queue (%ile)	0	11	6	11



Colour code based on Queue Storage Ratio

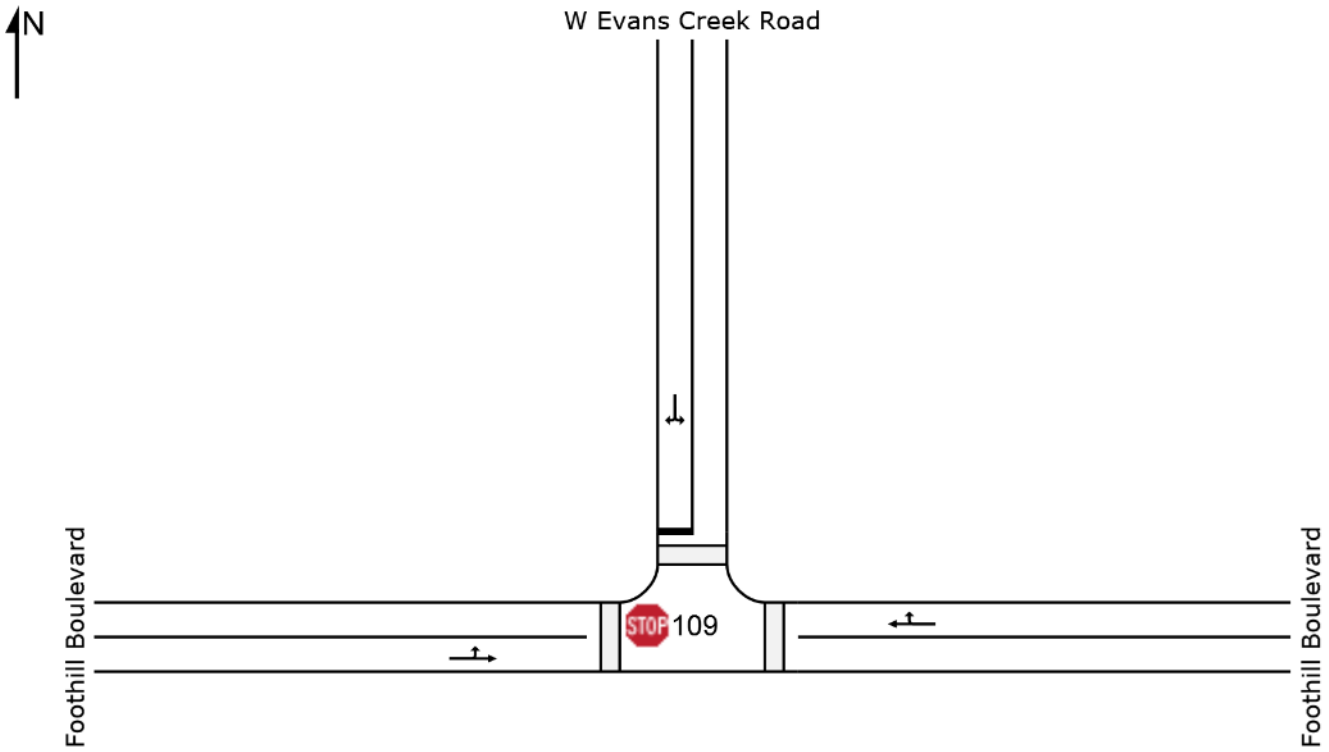
[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Organisation: OREGON DEPARTMENT OF TRANSPORTATION | Processed: Thursday, October 05, 2017 1:58:26 PM
Project: Z:\County\Jackson\RogueRiver\TSP_Update_Analysis\08_Future_NoBuild_Analysis\20170926existing2040_AnalysisIntersections.sip7

SITE LAYOUT

Site: 109 [FoothillBlvdWEvansCreek]

Foothill Boulevard at W Evans Creek Road (Stop control)
Stop (Two-Way)



Organisation: OREGON DEPARTMENT OF TRANSPORTATION | Created: Thursday, October 05, 2017 3:44:35 PM
Project: Z:\County\Jackson\RogueRiver\TSP_Update_Analysis\08_Future_NoBuild_Analysis\20170926existing2040_AnalysisIntersections.sip7

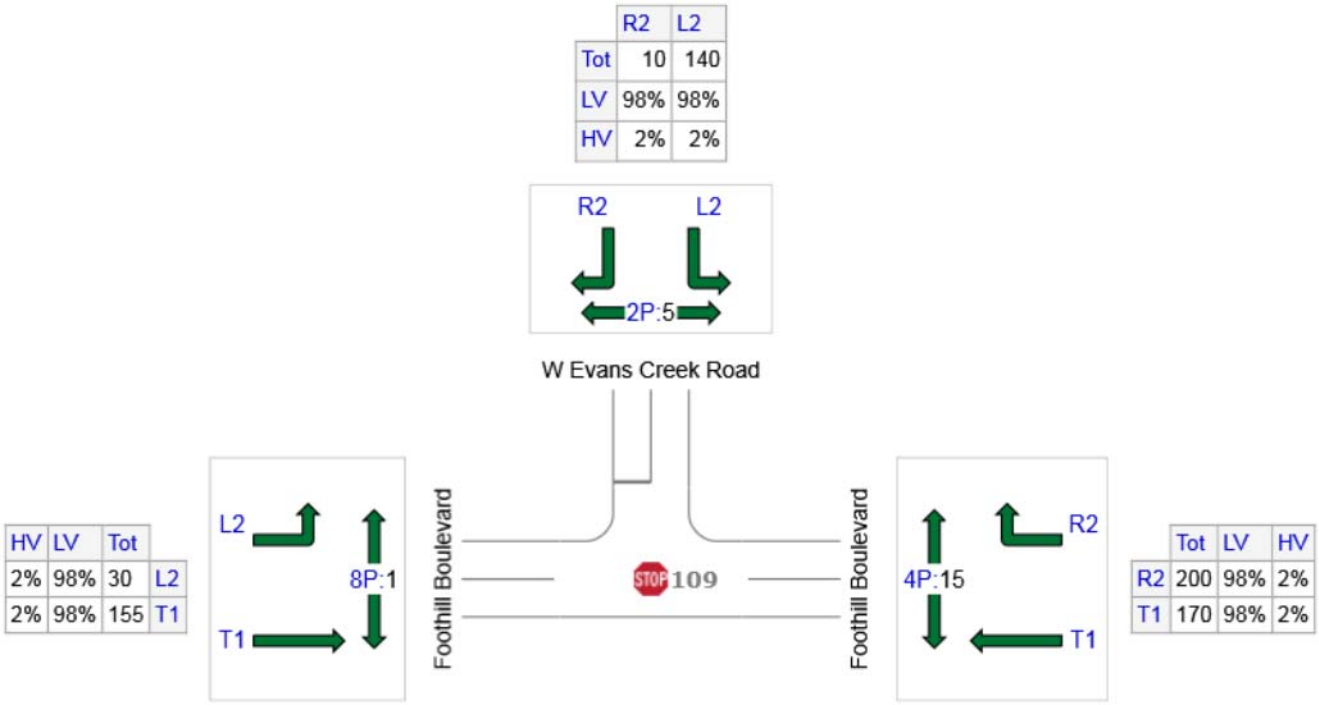
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: 109 [FoothillBlvdWEvansCreek]

Foothill Boulevard at W Evans Creek Road (Stop control)
Stop (Two-Way)

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
E: Foothill Boulevard	370	363	7
N: W Evans Creek Road	150	147	3
W: Foothill Boulevard	185	181	4
Total	705	691	14

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Project: Z:\County\Jackson\RogueRiver\TSP_Update_Analysis\08_Future_NoBuild_Analysis\20170926existing2040_AnalysisIntersections.sip7

LANE SUMMARY

Site: 109 [FoothillBlvdWEvansCreek]

Foothill Boulevard at W Evans Creek Road (Stop control)
Stop (Two-Way)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: Foothill Boulevard													
Lane 1	370	2.0	1698	0.218	100	0.0	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	370	2.0		0.218		0.0	NA	0.0	0.0				
North: W Evans Creek Road													
Lane 1	150	2.0	545	0.275	100	14.1	LOS B	1.2	31.3	Full	1600	0.0	0.0
Approach	150	2.0		0.275		14.1	LOS B	1.2	31.3				
West: Foothill Boulevard													
Lane 1	185	2.0	1678	0.110	100	3.0	LOS A	0.3	6.7	Full	1600	0.0	0.0
Approach	185	2.0		0.110		3.0	NA	0.3	6.7				
Intersection	705	2.0		0.275		3.8	NA	1.2	31.3				

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 109 [FoothillBlvdWEvansCreek]

Foothill Boulevard at W Evans Creek Road (Stop control)
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
East: Foothill Boulevard											
2	T1	170	2.0	0.218	0.0	LOS A	0.0	0.0	0.00	0.00	37.8
12	R2	200	2.0	0.218	0.0	LOS A	0.0	0.0	0.00	0.00	36.4
Approach		370	2.0	0.218	0.0	NA	0.0	0.0	0.00	0.00	37.0
North: W Evans Creek Road											
3	L2	140	2.0	0.275	14.7	LOS B	1.2	31.3	0.58	0.57	28.0
18	R2	10	2.0	0.275	6.1	LOS A	1.2	31.3	0.58	0.57	28.2
Approach		150	2.0	0.275	14.1	LOS B	1.2	31.3	0.58	0.57	28.0
West: Foothill Boulevard											
1	L2	30	2.0	0.110	7.3	LOS A	0.3	6.7	0.16	0.02	35.7
6	T1	155	2.0	0.110	2.1	LOS A	0.3	6.7	0.16	0.02	37.4
Approach		185	2.0	0.110	3.0	NA	0.3	6.7	0.16	0.02	37.1
All Vehicles		705	2.0	0.275	3.8	NA	1.2	31.3	0.17	0.13	34.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site 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 2010).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

QUEUE DISTANCE (%ILE)

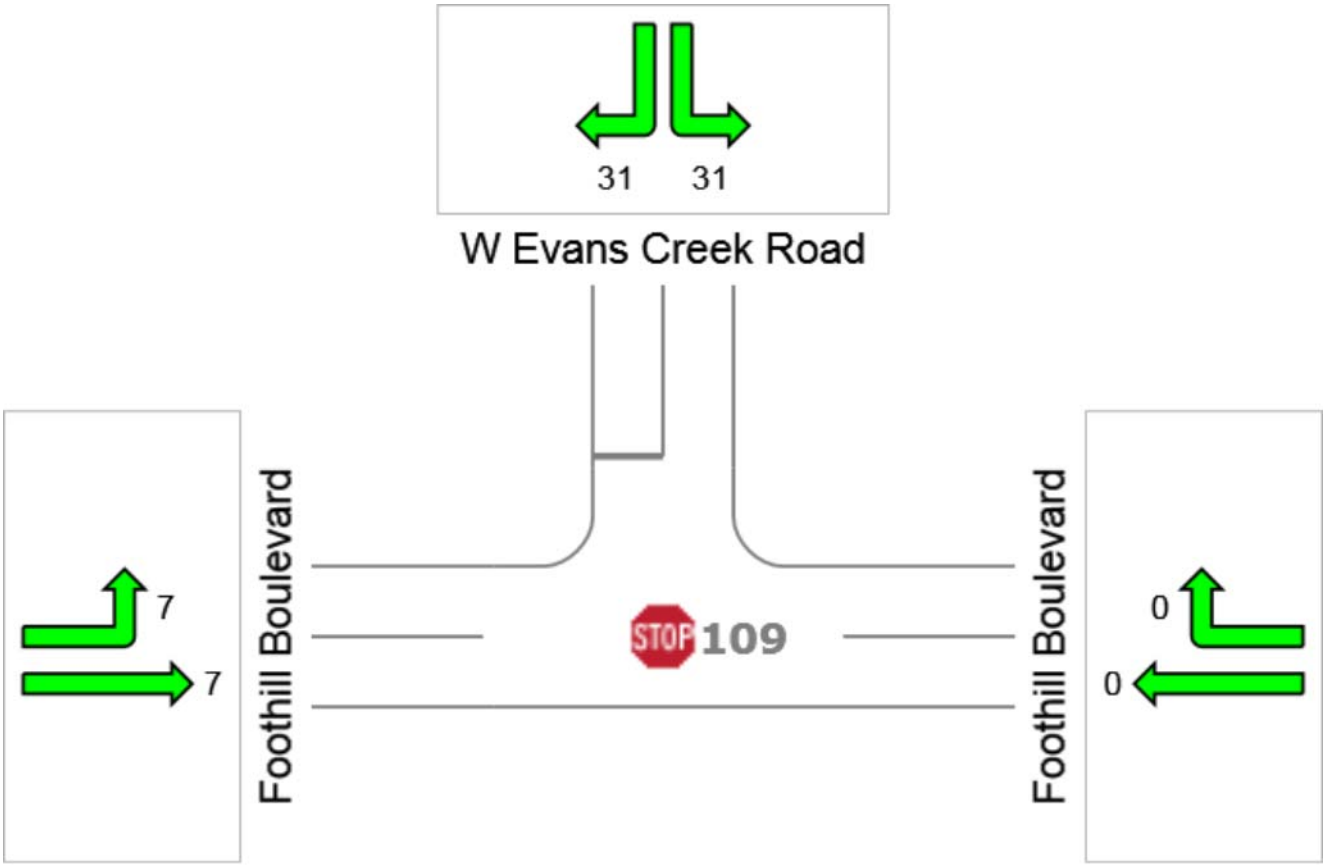
Largest 95% Back of Queue Distance for any lane used by vehicle movement (feet)

Site: 109 [FoothillBlvdWEvansCreek]

Foothill Boulevard at W Evans Creek Road (Stop control)
Stop (Two-Way)

All Movement Classes

	East	North	West	Intersection
Vehicle Queue (%ile)	0	31	7	31



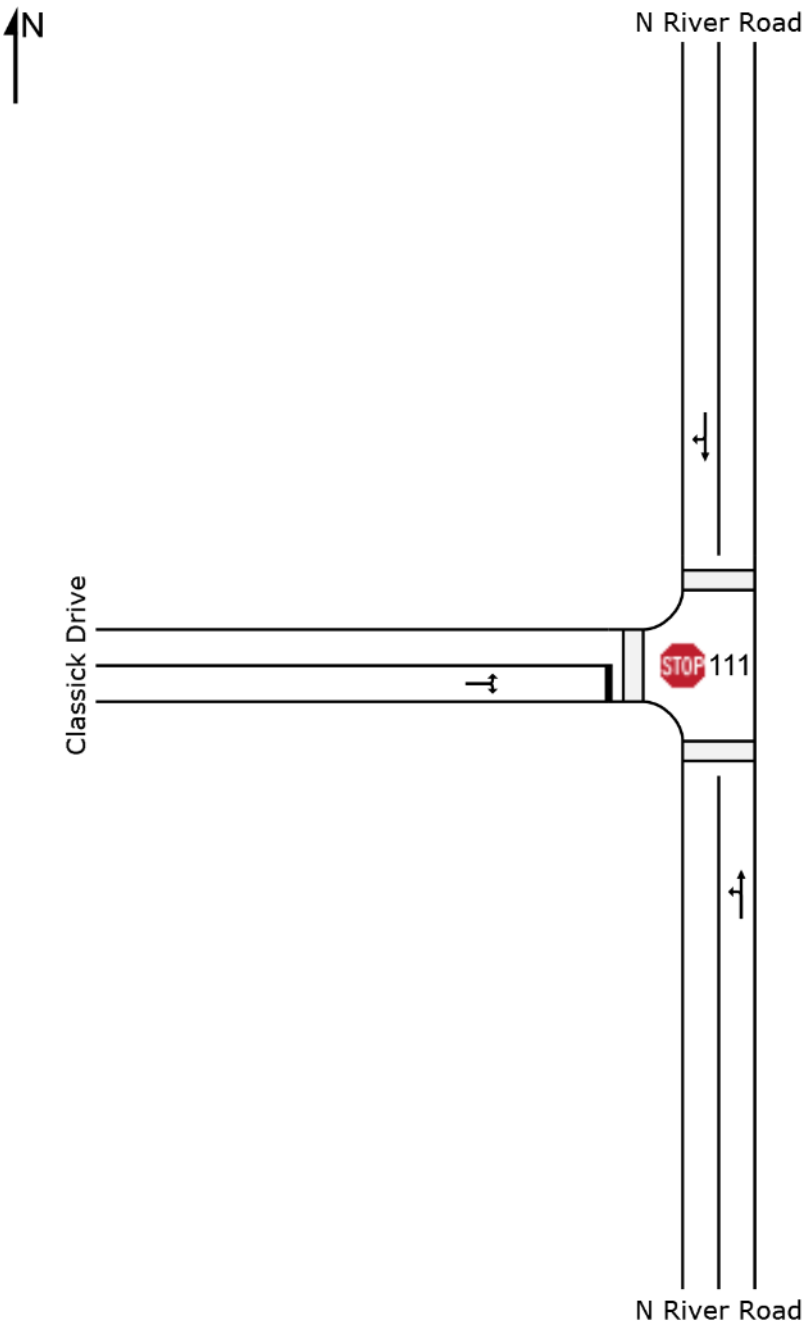
Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

SITE LAYOUT

Site: 111 [NRiverRdClassickDr]

N River Road at Classick Drive (Stop control)
Stop (Two-Way)



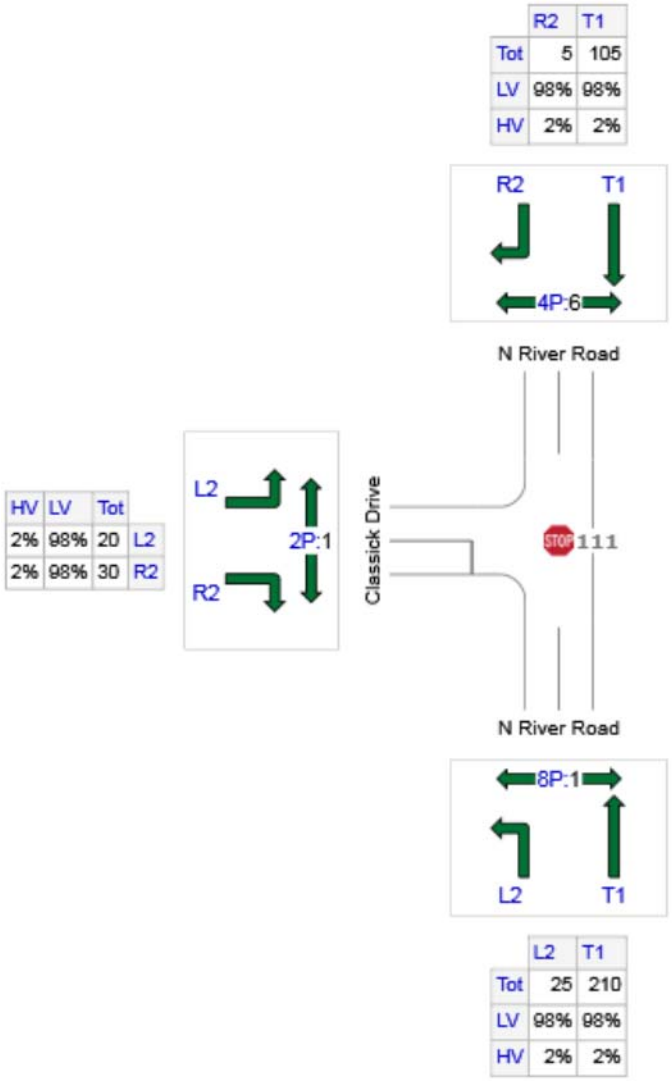
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: 111 [NRiverRdClassickDr]

N River Road at Classick Drive (Stop control)
Stop (Two-Way)

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: N River Road	235	230	5
N: N River Road	110	108	2
W: Classick Drive	50	49	1
Total	395	387	8

LANE SUMMARY

Site: 111 [NRiverRdClassickDr]

N River Road at Classick Drive (Stop control)
Stop (Two-Way)

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: N River Road													
Lane 1	235	2.0	1796	0.131	100	3.0	LOS A	0.2	4.6	Full	1600	0.0	0.0
Approach	235	2.0		0.131		3.0	NA	0.2	4.6				
North: N River Road													
Lane 1	110	2.0	1848	0.060	100	0.0	LOS A	0.0	0.0	Full	600	0.0	0.0
Approach	110	2.0		0.060		0.0	NA	0.0	0.0				
West: Classick Drive													
Lane 1	50	2.0	768	0.065	100	10.0	LOS B	0.3	6.6	Full	1600	0.0	0.0
Approach	50	2.0		0.065		10.0	LOS B	0.3	6.6				
Intersection	395	2.0		0.131		3.0	NA	0.3	6.6				

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 111 [NRiverRdClassickDr]

N River Road at Classick Drive (Stop control)
Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: N River Road											
1	L2	25	2.0	0.131	11.3	LOS B	0.2	4.6	0.06	0.00	35.9
6	T1	210	2.0	0.131	2.0	LOS A	0.2	4.6	0.06	0.00	36.6
Approach		235	2.0	0.131	3.0	NA	0.2	4.6	0.06	0.00	36.5
North: N River Road											
2	T1	105	2.0	0.060	0.0	LOS A	0.0	0.0	0.00	0.00	39.7
12	R2	5	2.0	0.060	0.0	LOS A	0.0	0.0	0.00	0.00	37.5
Approach		110	2.0	0.060	0.0	NA	0.0	0.0	0.00	0.00	39.6
West: Classick Drive											
3	L2	20	2.0	0.065	18.0	LOS C	0.3	6.6	0.30	0.18	26.1
18	R2	30	2.0	0.065	4.7	LOS A	0.3	6.6	0.30	0.18	29.5
Approach		50	2.0	0.065	10.0	LOS B	0.3	6.6	0.30	0.18	28.3
All Vehicles		395	2.0	0.131	3.0	NA	0.3	6.6	0.07	0.02	35.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site 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 2010).
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

QUEUE DISTANCE (%ILE)

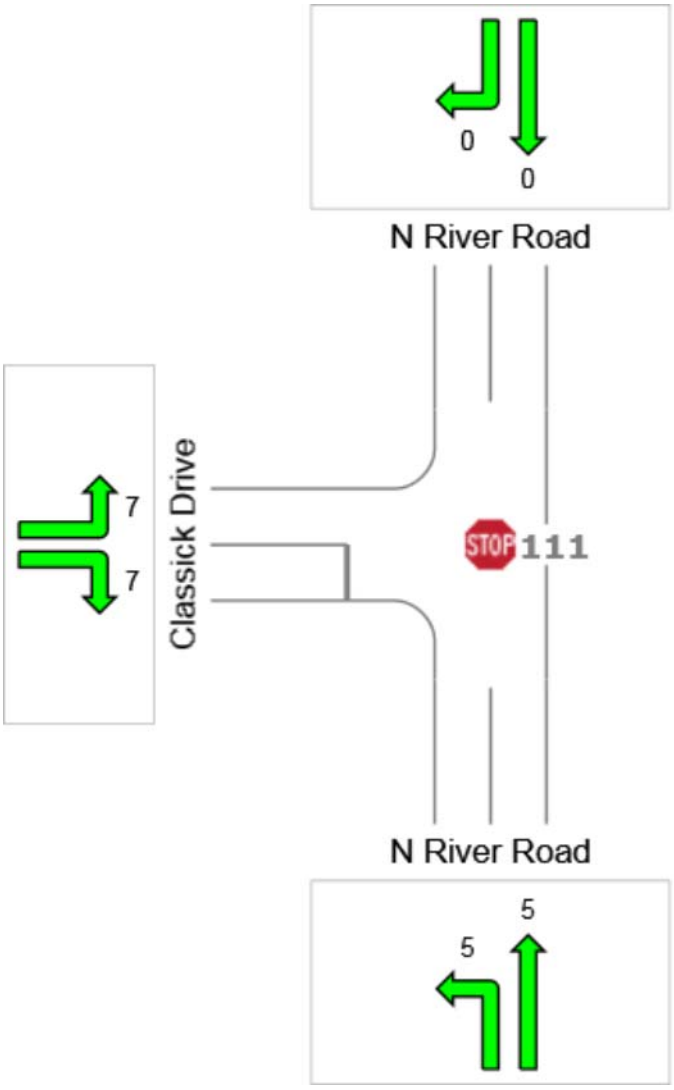
Largest 95% Back of Queue Distance for any lane used by vehicle movement (feet)

Site: 111 [NRiverRdClassickDr]

N River Road at Classick Drive (Stop control)
Stop (Two-Way)

All Movement Classes

	South	North	West	Intersection
Vehicle Queue (%ile)	5	0	7	7



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

HCS2010 I5 Mainline & Merge Diverge

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	Joseph Meek
Agency/Co.:	ODOT
Date performed:	10/2/2017
Analysis time period:	
Freeway/Dir of Travel:	NB
Junction:	Depot
Jurisdiction:	ODOT
Analysis Year:	2040
Description:	Rogue River TSP

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	70.0	mph
Volume on freeway	2416	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	45.0	mph
Volume on ramp	460	vph
Length of first accel/decel lane	0	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2416	460		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	636	121		v
Trucks and buses	3	3		%
Recreational vehicles	0	0		%
Terrain type:	Level	Grade		
Grade	0.00 %	-2.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.985	0.985	
Driver population factor, fP	0.95	0.95	
Flow rate, vp	2717	517	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 Using Equation 0

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2717 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	2717	4800	No
$v_{FO} = v_F - v_R$	2200	4800	No
v_R	517	2100	No
v_3 or v_{av34}	0 pc/h	(Equation 13-14 or 13-17)	

Is v_3 or v_{av34} > 2700 pc/h? No

Is v_3 or v_{av34} > 1.5 v_{12} /2 No

If yes, v_{12A} = 2717 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2717	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086 v_R - 0.009 L_D$ = 27.6 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, D_S = 0.345

Space mean speed in ramp influence area, S_R = 60.4 mph

Space mean speed in outer lanes, S_0 = N/A mph

Space mean speed for all vehicles, S = 60.4 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	Joseph Meek
Agency/Co.:	ODOT
Date performed:	10/3/2017
Analysis time period:	3:30 - 4:30 pm
Freeway/Dir of Travel:	I5 NB
Junction:	Depot
Jurisdiction:	ODOT
Analysis Year:	2040
Description:	Rogue River TSP

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	70.0	mph
Volume on freeway	2408	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45.0	mph
Volume on ramp	365	vph
Length of first accel/decel lane	0	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	2408		365			vph
Peak-hour factor, PHF	0.95		0.95			
Peak 15-min volume, v15	634		96			v
Trucks and buses	3		3			%
Recreational vehicles	0		0			%
Terrain type:	Level		Grade			
Grade		%	2.00	%		%
Length		mi	0.00	mi		mi
Trucks and buses PCE, ET	1.5		1.5			
Recreational vehicle PCE, ER	1.2		1.2			

Heavy vehicle adjustment, fHV	0.985	0.985	
Driver population factor, fP	0.95		
Flow rate, vp	2708	390	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 1.000 Using Equation 0

$v_{12} = v_F (P_{FM})$ = 2708 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3098	4800	No

v_3 or v_{av34} = 0 pc/h (Equation 13-14 or 13-17)

Is v_3 or v_{av34} > 2700 pc/h? No

Is v_3 or v_{av34} > 1.5 v_{12} /2 No

If yes, v_{12A} = 2708 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3098	4600	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, v_{12} - 0.00627\, L_A$ = 29.5 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.407	
Space mean speed in ramp influence area,	S_R = 58.6	mph
Space mean speed in outer lanes,	S_0 = N/A	mph
Space mean speed for all vehicles,	S = 58.6	mph

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	Joseph Meek
Agency/Co.:	ODOT
Date performed:	10/3/2017
Analysis time period:	3:30 - 4:30 pm
Freeway/Dir of Travel:	I5 SB
Junction:	Depot
Jurisdiction:	ODOT
Analysis Year:	2040
Description:	Rogue River TSP

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	70.0	mph
Volume on freeway	2368	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	45.0	mph
Volume on ramp	355	vph
Length of first accel/decel lane	0	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2368	355		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	623	93		v
Trucks and buses	3	3		%
Recreational vehicles	0	0		%
Terrain type:	Level	Grade		
Grade	0.00 %	-2.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.985	0.985	
Driver population factor, fP	0.95	0.95	
Flow rate, vp	2663	399	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 Using Equation 0

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2663 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	2663	4800	No
$v_{FO} = v_F - v_R$	2264	4800	No
v_R	399	2100	No
v_3 or v_{av34}	0 pc/h	(Equation 13-14 or 13-17)	

Is v_3 or v_{av34} > 2700 pc/h? No

Is v_3 or v_{av34} > 1.5 v_{12}/2 No

If yes, v_{12A} = 2663 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2663	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_R - 0.009\, L_{12}$ = 27.2 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, D_S = 0.334

Space mean speed in ramp influence area, S_R = 60.7 mph

Space mean speed in outer lanes, S_0 = N/A mph

Space mean speed for all vehicles, S = 60.7 mph

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	Joseph Meek
Agency/Co.:	ODOT
Date performed:	10/3/2017
Analysis time period:	3:30 - 4:30 pm
Freeway/Dir of Travel:	I5 SB
Junction:	Depot
Jurisdiction:	ODOT
Analysis Year:	2040
Description:	Rogue River TSP

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	70.0	mph
Volume on freeway	2359	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45.0	mph
Volume on ramp	305	vph
Length of first accel/decel lane	0	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2359	305		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	621	80		v
Trucks and buses	3	3		%
Recreational vehicles	0	0		%
Terrain type:	Level	Grade		
Grade	%	2.00 %		%
Length	mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.985	0.985	
Driver population factor, fP	0.95		
Flow rate, vp	2653	326	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 1.000 Using Equation 0

$v_{12} = v_F (P_{FM}) =$ 2653 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	2979	4800	No

v_3 or v_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is v_3 or v_{av34} > 2700 pc/h? No

Is v_3 or v_{av34} > 1.5 v_{12} /2 No

If yes, v_{12A} = 2653 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2979	4600	No

Level of Service Determination (if not F)

$$D_R = 5.475 + 0.00734\, v_R + 0.0078\, v_{12} - 0.00627\, L_A = 28.6 \text{ pc/mi/ln}$$

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	M_S = 0.398	
Space mean speed in ramp influence area,	S_R = 58.9	mph
Space mean speed in outer lanes,	S_0 = N/A	mph
Space mean speed for all vehicles,	S = 58.9	mph

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	Joseph Meek
Agency or Company:	ODOT
Date Performed:	10/4/2017
Analysis Time Period:	3:30 - 4:30pm
Freeway/Direction:	I5 NB
From/To:	north of interchange
Jurisdiction:	ODOT
Analysis Year:	2040
Description:	Rogue River TSP

Flow Inputs and Adjustments

Volume, V	2359	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	621	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	0.95	
Flow rate, vp	1327	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	0.66	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	2.3	mi/h
Free-flow speed, FFS	73.1	mi/h

LOS and Performance Measures

Flow rate, vp	1327	pc/h/ln
Free-flow speed, FFS	73.1	mi/h
Average passenger-car speed, S	73.8	mi/h
Number of lanes, N	2	
Density, D	18.0-	pc/mi/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	Joseph Meek
Agency or Company:	ODOT
Date Performed:	10/3/2017
Analysis Time Period:	3:30 - 4:30 pm
Freeway/Direction:	
From/To:	between interchange ramps
Jurisdiction:	ODOT
Analysis Year:	2040
Description:	Rogue River TSP

Flow Inputs and Adjustments

Volume, V	1994	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	525	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	0.95	
Flow rate, vp	1121	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	0.50	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	1.8	mi/h
Free-flow speed, FFS	73.6	mi/h

LOS and Performance Measures

Flow rate, vp	1121	pc/h/ln
Free-flow speed, FFS	73.6	mi/h
Average passenger-car speed, S	74.8	mi/h
Number of lanes, N	2	
Density, D	15.0	pc/mi/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	Joseph Meek
Agency or Company:	ODOT
Date Performed:	10/4/2017
Analysis Time Period:	3:30 - 4:30pm
Freeway/Direction:	I5 NB
From/To:	south of interchange
Jurisdiction:	ODOT
Analysis Year:	2040
Description:	Rogue River TSP

Flow Inputs and Adjustments

Volume, V	1979	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	521	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	0.95	
Flow rate, vp	1113	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	0.66	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	2.3	mi/h
Free-flow speed, FFS	73.1	mi/h

LOS and Performance Measures

Flow rate, vp	1113	pc/h/ln
Free-flow speed, FFS	73.1	mi/h
Average passenger-car speed, S	74.9	mi/h
Number of lanes, N	2	
Density, D	14.9	pc/mi/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	Joseph Meek
Agency or Company:	ODOT
Date Performed:	10/4/2017
Analysis Time Period:	3:30 - 4:30pm
Freeway/Direction:	I5 SB
From/To:	north of interchange
Jurisdiction:	ODOT
Analysis Year:	2040
Description:	Rogue River TSP

Flow Inputs and Adjustments

Volume, V	2416	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	636	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	0.95	
Flow rate, vp	1359	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	0.66	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	2.3	mi/h
Free-flow speed, FFS	73.1	mi/h

LOS and Performance Measures

Flow rate, vp	1359	pc/h/ln
Free-flow speed, FFS	73.1	mi/h
Average passenger-car speed, S	73.6	mi/h
Number of lanes, N	2	
Density, D	18.5	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	Joseph Meek
Agency or Company:	ODOT
Date Performed:	10/4/2017
Analysis Time Period:	3:30 - 4:30pm
Freeway/Direction:	I5 SB
From/To:	south of interchange
Jurisdiction:	ODOT
Analysis Year:	2040
Description:	Rogue River TSP

Flow Inputs and Adjustments

Volume, V	2408	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	634	v
Trucks and buses	3	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.985	
Driver population factor, fp	0.95	
Flow rate, vp	1354	pc/h/ln

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	0.66	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Base	
FFS or BFFS	75.4	mi/h
Lane width adjustment, fLW	0.0	mi/h
Lateral clearance adjustment, fLC	0.0	mi/h
TRD adjustment	2.3	mi/h
Free-flow speed, FFS	73.1	mi/h

LOS and Performance Measures

Flow rate, vp	1354	pc/h/ln
Free-flow speed, FFS	73.1	mi/h
Average passenger-car speed, S	73.6	mi/h
Number of lanes, N	2	
Density, D	18.4	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

Preliminary Signal Warrants

Major Street:	99
Minor Street:	Depot
Project Name:	Rogue River TSP
City/County:	Jackson
Analysis Year:	2040
Alternative:	existing
Meet 70% Warrants?:	No
	100%
Major	
Approach Lanes:	1
Minor	
Approach Lanes:	1
Major	
Approach Volumes (vph):	590
Minor	
Approach Volume (vph):	530
Right Turn Volume (vph):	355
Capacity of Shared/Exclusive Right Turn Lane[1]:	563
Right Turn Discount:	479
Right Turn Volume included in Warrant:	0
Minor Approach Volume in Warrant:	175
Major Approach K factor:	10
Minor Approach K factor:	10

[1] Capacity obtained from unsignalized intersection analysis

For guidance on preliminary signal warrant analysis, refer to the Analysis Procedures Manual.

Last Updated: February 2009

Oregon Department of Transportation

Transportation Development Branch

Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis[1]

Major Street:	99	**Minor Street:**	Depot
Project:	Rogue River TSP	**City/County:**	Jackson
Year:	2040	**Alternative:**	existing

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100	70	Percent of standard warrants 100	70
Case A: Minimum Vehicular Traffic					
1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500
Case B: Interruption of Continuous Traffic					
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250

X	100 percent of standard warrants
	70 percent of standard warrants[2]

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	8850	5900	N
	Minor	1	2650	1750	
Case B	Major	1	13300	5900	N
	Minor	1	1350	1750	

Analyst and Date:	Reviewer and Date:

[1] Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. When preliminary signal warrants are met, project analysts need to coordinate with Region Traffic to initiate the traffic signal engineering investigation as outlined in the Traffic Manual. Before a signal can be installed, the engineering investigation must be conducted or reviewed by the Region Traffic Manager who will forward signal recommendations to headquarters. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

[2] Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

Major Street:	Depot St
Minor Street:	Pine St
Project Name:	Rogue River TSP
City/County:	Jackson
Analysis Year:	2040
Alternative:	existing
Meet 70% Warrants?:	No
	100%

Major	
Approach Lanes:	1
Minor	
Approach Lanes:	1
Major	
Approach Volumes (vph):	1105
Minor	
Approach Volume (vph):	110
Right Turn Volume (vph):	5
Capacity of Shared/Exclusive Right Turn Lane[1]:	612
Right Turn Discount:	520
Right Turn Volume included in Warrant:	0
Minor Approach Volume in Warrant:	105
Major Approach K factor:	10
Minor Approach K factor:	10

[1] Capacity obtained from unsignalized intersection analysis
For guidance on preliminary signal warrant analysis, refer to the Analysis Procedures Manual.

Last Updated: February 2009

Oregon Department of Transportation

Transportation Development Branch

Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis[1]

Major Street:	Depot St	**Minor Street:**	Pine St
Project:	Rogue River TSP	**City/County:**	Jackson
Year:	2040	**Alternative:**	existing

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100	70	Percent of standard warrants 100	70
Case A: Minimum Vehicular Traffic					
1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500
Case B: Interruption of Continuous Traffic					
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250

X	100 percent of standard warrants
	70 percent of standard warrants[2]

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	8850	11050	N
	Minor	1	2650	1050	
Case B	Major	1	13300	11050	N
	Minor	1	1350	1050	

Analyst and Date:	Reviewer and Date:

[1] Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. When preliminary signal warrants are met, project analysts need to coordinate with Region Traffic to initiate the traffic signal engineering investigation as outlined in the Traffic Manual. Before a signal can be installed, the engineering investigation must be conducted or reviewed by the Region Traffic Manager who will forward signal recommendations to headquarters. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

[2] Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

Major Street:	Main
Minor Street:	Broadway
Project Name:	Rogue River TSP
City/County:	Jackson
Analysis Year:	2040
Alternative:	existing
Meet 70% Warrants?:	No
	100%
Major	
Approach Lanes:	1
Minor	
Approach Lanes:	1
Major	
Approach Volumes (vph):	1075
Minor	
Approach Volume (vph):	125
Right Turn Volume (vph):	85
Capacity of Shared/Exclusive Right Turn Lane[1]:	285
Right Turn Discount:	242
Right Turn Volume included in Warrant:	0
Minor Approach Volume in Warrant:	40
Major Approach K factor:	10
Minor Approach K factor:	10

[1] Capacity obtained from unsignalized intersection analysis

For guidance on preliminary signal warrant analysis, refer to the Analysis Procedures Manual.

Last Updated: February 2009

Oregon Department of Transportation

Transportation Development Branch

Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis[1]

Major Street:	Main	**Minor Street:**	Broadway
Project:	Rogue River TSP	**City/County:**	Jackson
Year:	2040	**Alternative:**	existing

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100	70	Percent of standard warrants 100	70
Case A: Minimum Vehicular Traffic					
1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500
Case B: Interruption of Continuous Traffic					
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250

X	100 percent of standard warrants
	70 percent of standard warrants[2]

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	8850	10750	N
	Minor	1	2650	400	
Case B	Major	1	13300	10750	N
	Minor	1	1350	400	

Analyst and Date:	Reviewer and Date:

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[2] Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

Major Street:	Main
Minor Street:	Cedar
Project Name:	Rogue River TSP
City/County:	Jackson
Analysis Year:	2040
Alternative:	existing
Meet 70% Warrants?:	No
	100%
Major	
Approach Lanes:	1
Minor	
Approach Lanes:	1
Major	
Approach Volumes (vph):	1005
Minor	
Approach Volume (vph):	35
Right Turn Volume (vph):	10
Capacity of Shared/Exclusive Right Turn Lane[1]:	125
Right Turn Discount:	106
Right Turn Volume included in Warrant:	0
Minor Approach Volume in Warrant:	25
Major Approach K factor:	10
Minor Approach K factor:	10

[1] Capacity obtained from unsignalized intersection analysis

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Last Updated: February 2009

Oregon Department of Transportation

Transportation Development Branch

Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis[1]

Major Street:	Main	**Minor Street:**	Cedar
Project:	Rogue River TSP	**City/County:**	Jackson
Year:	2040	**Alternative:**	existing

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100	70	Percent of standard warrants 100	70
Case A: Minimum Vehicular Traffic					
1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500
Case B: Interruption of Continuous Traffic					
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250

X	100 percent of standard warrants
	70 percent of standard warrants[2]

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	8850	10050	N
	Minor	1	2650	250	
Case B	Major	1	13300	10050	N
	Minor	1	1350	250	

Analyst and Date:	Reviewer and Date:

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[2] Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

Major Street:	N River
Minor Street:	Classick
Project Name:	Rogue River TSP
City/County:	Jackson
Analysis Year:	2040
Alternative:	existing
Meet 70% Warrants?:	No
	100%
Major	
Approach Lanes:	1
Minor	
Approach Lanes:	1
Major	
Approach Volumes (vph):	345
Minor	
Approach Volume (vph):	50
Right Turn Volume (vph):	30
Capacity of Shared/Exclusive Right Turn Lane[1]:	710
Right Turn Discount:	604
Right Turn Volume included in Warrant:	0
Minor Approach Volume in Warrant:	20
Major Approach K factor:	10
Minor Approach K factor:	10

[1] Capacity obtained from unsignalized intersection analysis

For guidance on preliminary signal warrant analysis, refer to the Analysis Procedures Manual.

Last Updated: February 2009

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Preliminary Traffic Signal Warrant Analysis[1]

Major Street:	N River	**Minor Street:**	Classick
Project:	Rogue River TSP	**City/County:**	Jackson
Year:	2040	**Alternative:**	existing

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100	70	Percent of standard warrants 100	70
Case A: Minimum Vehicular Traffic					
1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500
Case B: Interruption of Continuous Traffic					
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250

X	100 percent of standard warrants
	70 percent of standard warrants[2]

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	8850	3450	N
	Minor	1	2650	200	
Case B	Major	1	13300	3450	N
	Minor	1	1350	200	

Analyst and Date:	Reviewer and Date:

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[2] Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

Major Street:	Main
Minor Street:	Depot
Project Name:	Rogue River TSP
City/County:	Jackson
Analysis Year:	2040
Alternative:	existing
Meet 70% Warrants?:	No
	100%
Major	
Approach Lanes:	1
Minor	
Approach Lanes:	1
Major	
Approach Volumes (vph):	805
Minor	
Approach Volume (vph):	365
Right Turn Volume (vph):	280
Capacity of Shared/Exclusive Right Turn Lane[1]:	294
Right Turn Discount:	250
Right Turn Volume included in Warrant:	30
Minor Approach Volume in Warrant:	115
Major Approach K factor:	10
Minor Approach K factor:	10

[1] Capacity obtained from unsignalized intersection analysis

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Last Updated: February 2009

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Preliminary Traffic Signal Warrant Analysis[1]

Major Street:	Main	**Minor Street:**	Depot
Project:	Rogue River TSP	**City/County:**	Jackson
Year:	2040	**Alternative:**	existing

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100	70	Percent of standard warrants 100	70
Case A: Minimum Vehicular Traffic					
1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500
Case B: Interruption of Continuous Traffic					
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250

X	100 percent of standard warrants
	70 percent of standard warrants[2]

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	8850	8050	N
	Minor	1	2650	1151	
Case B	Major	1	13300	8050	N
	Minor	1	1350	1151	

Analyst and Date:	Reviewer and Date:

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[2] Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

Major Street:	Main
Minor Street:	Pine St
Project Name:	Rogue River TSP
City/County:	Jackson
Analysis Year:	2040
Alternative:	existing
Meet 70% Warrants?:	No
	100%

Major	
Approach Lanes:	1
Minor	
Approach Lanes:	1

Major	
Approach Volumes (vph):	690

Minor	
Approach Volume (vph):	405
Right Turn Volume (vph):	15
Capacity of Shared/Exclusive Right Turn Lane[1]:	20
Right Turn Discount:	17
Right Turn Volume included in Warrant:	0
Minor Approach Volume in Warrant:	390

Major Approach K factor:	10

Minor Approach K factor:	10

[1] Capacity obtained from unsignalized intersection analysis
For guidance on preliminary signal warrant analysis, refer to the Analysis Procedures Manual.

Last Updated: February 2009

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Preliminary Traffic Signal Warrant Analysis[1]

Major Street:	Main	**Minor Street:**	Pine St
Project:	Rogue River TSP	**City/County:**	Jackson
Year:	2040	**Alternative:**	existing

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100	70	Percent of standard warrants 100	70
Case A: Minimum Vehicular Traffic					
1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500
Case B: Interruption of Continuous Traffic					
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250

X	100 percent of standard warrants
	70 percent of standard warrants[2]

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	8850	6900	N
	Minor	1	2650	3900	
Case B	Major	1	13300	6900	N
	Minor	1	1350	3900	

Analyst and Date:	Reviewer and Date:

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[2] Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

Major Street:	Main
Minor Street:	Ward
Project Name:	Rogue River TSP
City/County:	Jackson
Analysis Year:	2040
Alternative:	existing
Meet 70% Warrants?:	No
	100%
Major	
Approach Lanes:	1
Minor	
Approach Lanes:	1
Major	
Approach Volumes (vph):	420
Minor	
Approach Volume (vph):	75
Right Turn Volume (vph):	65
Capacity of Shared/Exclusive Right Turn Lane[1]:	641
Right Turn Discount:	545
Right Turn Volume included in Warrant:	0
Minor Approach Volume in Warrant:	10
Major Approach K factor:	10
Minor Approach K factor:	10

[1] Capacity obtained from unsignalized intersection analysis

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Last Updated: February 2009

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Preliminary Traffic Signal Warrant Analysis[1]

Major Street:	Main	**Minor Street:**	Ward
Project:	Rogue River TSP	**City/County:**	Jackson
Year:	2040	**Alternative:**	existing

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100	70	Percent of standard warrants 100	70
Case A: Minimum Vehicular Traffic					
1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500
Case B: Interruption of Continuous Traffic					
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250

X	100 percent of standard warrants
	70 percent of standard warrants[2]

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	8850	4200	N
	Minor	1	2650	100	
Case B	Major	1	13300	4200	N
	Minor	1	1350	100	

Analyst and Date: Reviewer and Date:

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[2] Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

Major Street:	Pine St
Minor Street:	Main St
Project Name:	Rogue River TSP
City/County:	Jackson
Analysis Year:	2040
Alternative:	existing
Meet 70% Warrants?:	No
	100%

Major

Approach Lanes:	1

Minor

Approach Lanes:	1

Major

Approach Volumes (vph):	775

Minor

Approach Volume (vph):	405
Right Turn Volume (vph):	175
Capacity of Shared/Exclusive Right Turn Lane[1]:	298
Right Turn Discount:	253
Right Turn Volume included in Warrant:	0
Minor Approach Volume in Warrant:	230

Major Approach K factor:	10
Minor Approach K factor:	10

[1] Capacity obtained from unsignalized intersection analysis

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Last Updated: February 2009

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Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis[1]

Major Street:	Pine St	**Minor Street:**	Main St
Project:	Rogue River TSP	**City/County:**	Jackson
Year:	2040	**Alternative:**	existing

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100	70	Percent of standard warrants 100	70
Case A: Minimum Vehicular Traffic					
1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500
Case B: Interruption of Continuous Traffic					
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250
X	100 percent of standard warrants				
	70 percent of standard warrants[2]				

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	1	8850	7750	N
	Minor	1	2650	2300	
Case B	Major	1	13300	7750	N
	Minor	1	1350	2300	

Analyst and Date: Reviewer and Date:

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[2] Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.