

Technical Memorandum

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Project# 27003.011

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Project: City of Reedsport Rail Crossing Study and Refinement Plan

Subject: Tech Memo #5: Future Land Use and Transportation Conditions

TABLE OF CONTENTS

Table of Contents 1

Introduction 1

Planned Improvements 1

Future Traffic Volumes 3

Motor Vehicle Transportation Analysis 3

Rail 7

Future Deficiencies and Needs 9

Attachments 9

INTRODUCTION

This memorandum summarizes future (no-build) transportation system conditions within the study area for the Reedsport Rail Crossing Study and Refinement Plan, including future gaps, deficiencies, and needs to accommodate future growth. The information provided in this memorandum reflects planned improvements identified in State and local planning documents as well as forecast traffic volumes developed for the study area. The future gaps, deficiencies, and needs identified in this memorandum will serve as the basis for developing transportation system alternatives and improvement projects for the Reedsport Rail Crossing Study and Refinement Plan.

PLANNED IMPROVEMENTS

This section summarizes planned improvements identified in the Oregon Department of Transportation (ODOT) Statewide Transportation Improvement Program (STIP) and City of Reedsport (City) Capital Improvement Program (CIP). One expected outcome of the Reedsport Rail Crossing Study and Refinement Plan is the identification of projects for inclusion in updated versions of the ODOT STIP and City CIP.

Statewide Transportation Improvement Program

The Statewide Transportation Improvement Program (STIP) is the ODOT's 4-year capital improvement program for State and federally funded projects. The Oregon Transportation Commission (OTC) and ODOT develop the STIP in coordination with a wide range of stakeholders, including local jurisdictions and the public. The OTC allocates funding among the following categories:

- **Fix-it** programs fund projects that fix or preserve the state's transportation system, including bridges, pavement, culverts, traffic signals, and others.
- **Enhance-it** programs fund projects that enhance or expand the transportation system. These are typically high-priority projects from State and local transportation plans, such as the Reedsport TSP.
- **Safety** programs reduce fatalities and injuries on Oregon roads. This includes the All Roads Transportation Safety (ARTS) program, which includes projects on State highways and local roads.
- **Non-highway** programs fund bicycle and pedestrian projects and public transportation.
- **Local government** programs direct funding to local governments so they can fund projects.

The current STIP (2021–2024) includes two projects in the Reedsport area and the draft STIP (2024–2027) includes one project. Table 1 summarizes projects from the current and draft STIP.

Table 1. ODOT 2021-2024 and Draft 2024-2027 STIP Projects for Reedsport

Key	Project Name	Projects	Work Type	Status	Project Total
Current STIP (2021–2024)					
20153	US 101/OR 38: Variable Message Signs	Replace existing hazard warning system with LID-based variable message (VMS) system to increase visibility to the traveling public	OP-ITS	Construction contract complete	\$2,022,870.51
22387	US 101/OR 38 Curb Ramps	Construct curb ramps to meet compliance with American with Disabilities Act (ADA) standards	ADAP	Project under construction	\$6,192,472.36
Draft STIP (2024–2027)					
22977	US 101: Washington State Line to California State Line	Install National Electric Vehicle Infrastructure (NEVI) fast-charging stations at 50-mile intervals along US 101	Electric	Project scheduled for construction	\$6,281,000

The project(s) shown in Table 1 will be considered in the future (no-build) traffic conditions analysis; however, they are not expected to directly impact study intersection operations.

Reedsport Capital Improvement Plan

The City CIP is a short-range plan for capital improvement projects and funding sources in the City. Table 2 lists relevant project from the 2023-2027 CIP in the study area.

Table 2. City of Reedsport 2023–2027 Capital Improvement Projects

Fiscal Year	Fund	Projects	Estimated Cost	Funding Source
2023	150	Greenwood & East Railroad Realignment	\$65,000	None listed
2023–2027	002	Americans with Disabilities Act Upgrades	\$50,000	None listed

2026	002	Winchester Ave. 2nd Phase Paving	\$150,000	Pending SCA Grant
2024	005/150	Levee Repairs and Upgrades	\$5,600,000	Pending grant

The project(s) shown in Table 2 were considered in the future (no-build) traffic conditions analysis summarized below and will be further evaluated in the alternatives analysis.

FUTURE TRAFFIC VOLUMES

Forecast traffic volumes were developed for the study intersections based on the existing traffic counts and an assessment of data from the Statewide Integrated Model (SWIM), ODOT's Future Volume Tables, and Automatic Traffic Recorders (ATRs) located along US 101 and OR 38 as indicated below.

- The SWIM provides base and forecast year traffic volume projections for the study area that reflect anticipated land use changes and planned transportation improvements. The model is up-to-date and readily available with base year 2019 and future year 2045 traffic volume projections. Based on the data, traffic volumes along US 101 and OR 38 are expected to grow by approximately 1.0% per year through the planning horizon.
- ODOT's Future Volume Tables also provide base and forecast year traffic volume projections for the study area. The model provides base year 2021 and future year 2041 traffic volume projections. Based on the data, traffic volumes are expected to grow by approximately 0.05% per year along US 101 and 0.10% per year along OR 38 through the planning horizon.
- ATRs are located in select locations throughout the State highway system and collect traffic data 24-hours a day, 365 days a year. Data from two ATRs located near the study area were analyzed to determine potential growth rates for the study area. The Scottsburg ATR (#10-003) located on OR 38 approximately 7.08 miles east of Scottsburg West Roads shows traffic volume growth of approximately 1.02% per year over the last 10 years, excluding year 2020 volumes. The Lakeside ATR (#06-001) located on US 101 approximately 1.09 miles south of the Douglas and Coos County line shows traffic volume growth of approximately 0.50% per year over the last 10 years, excluding year 2020 volumes.

Based on an assessment of the growth rates described above, the growth rates from the SWIM were applied to existing traffic volumes along US 101 and OR 38 to estimate growth in regional traffic volumes. The SWIM annual growth rate was also applied to the local side street movements in the study area to yield a more conservative future traffic analysis.

MOTOR VEHICLE TRANSPORTATION ANALYSIS

Intersection Operations Analysis

The intersection operations analysis was conducted using PTV Vistro 2022, which is a software tool designed to assist with operations analyses in accordance with Highway Capacity Manual (HCM) methodologies. The analysis results include level-of-service (LOS), delay (del), and volume-to-capacity (v/c) ratios at all intersections, regardless of jurisdiction. The LOS, del, and v/c ratios are reported for the overall intersection at signalized intersections and the critical movement at unsignalized intersections in accordance with the methodologies outlined in ODOT's Analysis Procedures Manual (APM).p

Table 3 and Figure 1 summarize the results of the intersection operations analysis and compares the results to the applicable mobility standards and targets, which were presented in *Technical Memorandum #3: Analysis Methodology and Assumptions*. Values shown in **bold** exceed their applicable mobility standard/target. Attachment A to this memorandum contains the year 2045 traffic conditions worksheets.

Table 3. Year 2045 Intersection Operations, Weekday PM Peak Hour

Map ID	Intersection	Control Type	Mobility Standard/Target ¹	Intersection Operations			
				CM	LOS ²	Del ³	v/c ⁴
1	US 101/OR 38 ¹	Signal	v/c = 0.85	WB/L	C	31.8	1.0
2	W. Railroad Avenue/OR 38	TWSC	v/c = 0.85 / 0.95	NB/L	C	16.1	0.02
3	E. Railroad Avenue/OR 38	TWSC	v/c = 0.85 / 0.95	NB/T	C	15.8	0.01
4	N. 6th Street/OR 38	TWSC	v/c = 0.85 / 0.95	NB/L	C	15.4	0.04
5	OR 38/Riverfront Way-Winchester Avenue	TWSC	V/C = 0.85 / 0.95	NB/L	C	19.5	0.14
6	US 101/Winchester Avenue	Signal	v/c = 0.85	WB/L	B	11.0	0.55
7	W. Railroad Avenue/Winchester Avenue	TWSC	LOS D	NB/L	B	10.5	0.03
8	Elm Avenue/Winchester Avenue	TWSC	LOS D	NB/L	B	10.2	0.02
9	E. Railroad Avenue/Winchester Avenue	TWSC	LOS D	NB/L	B	11.0	0.02
10	South 6th Street/Winchester Avenue	TWSC	LOS D	SB/T	B	10.5	0.01

¹ State highway v/c ratio/side-street v/c ratio.

² LOS = Intersection LOS (signal); CM LOS (TWSC).

³ Delay = Intersection average vehicle delay (signal); CM vehicle delay (TWSC).

⁴ v/c = Intersection v/c (signal); CM v/c (TWSC).

CM = critical movement; Del = delay; L = left; T = through; LOS = level of service; NB = northbound; TWSC = two-way stop-control; SB = southbound; WB = westbound; v/c = volume-to-capacity.

As shown in Table 3 and Figure 1, all study intersections are forecast to meet their applicable mobility standards and targets except the US 101/OR 38 intersection, which is forecast to operate at an intersection v/c of 1.0 in the year 2045. The westbound left-through movement is expected to be the critical movement and is forecast to operate at a v/c of 0.95.

The Reedsport Transportation System Plan (TSP) projects the US 101/OR 38 intersection to meet mobility targets in the planning horizon year of 2025. The Reedsport Waterfront and Downtown Plan forecasted the US 101/OR 38 intersection to meet mobility targets and operate at a v/c of 0.84 in 2033. The additional 12 years of growth at the intersections to 2045 is forecasted to bring the intersection to capacity at a v/c of 1.0.

Queueing Analysis

A queuing analysis during non-train events was conducted at the signalized study intersections using PTV Vistro 2022. Table 4 summarizes the year 2045 95th percentile queues during the weekday PM peak hour and indicates if existing storage can accommodate the queues. The vehicle queues and storage lengths were rounded up to the nearest 25 feet. The storage lengths reflect the striped storage for each movement at the intersections or the distance to the upstream intersection. Values shown in **bold** exceed their available storage. Unsignalized intersection queues were also analyzed and were found to be less than one vehicle length during the peak hour. Attachment A contains the queuing analysis worksheets.

¹ The intersection was projected to meet mobility standards during the Reedsport TSP horizon year (2025). The intersection was analyzed using HCM 2000 methodologies. The future conditions analysis utilizes HCM 6th edition.

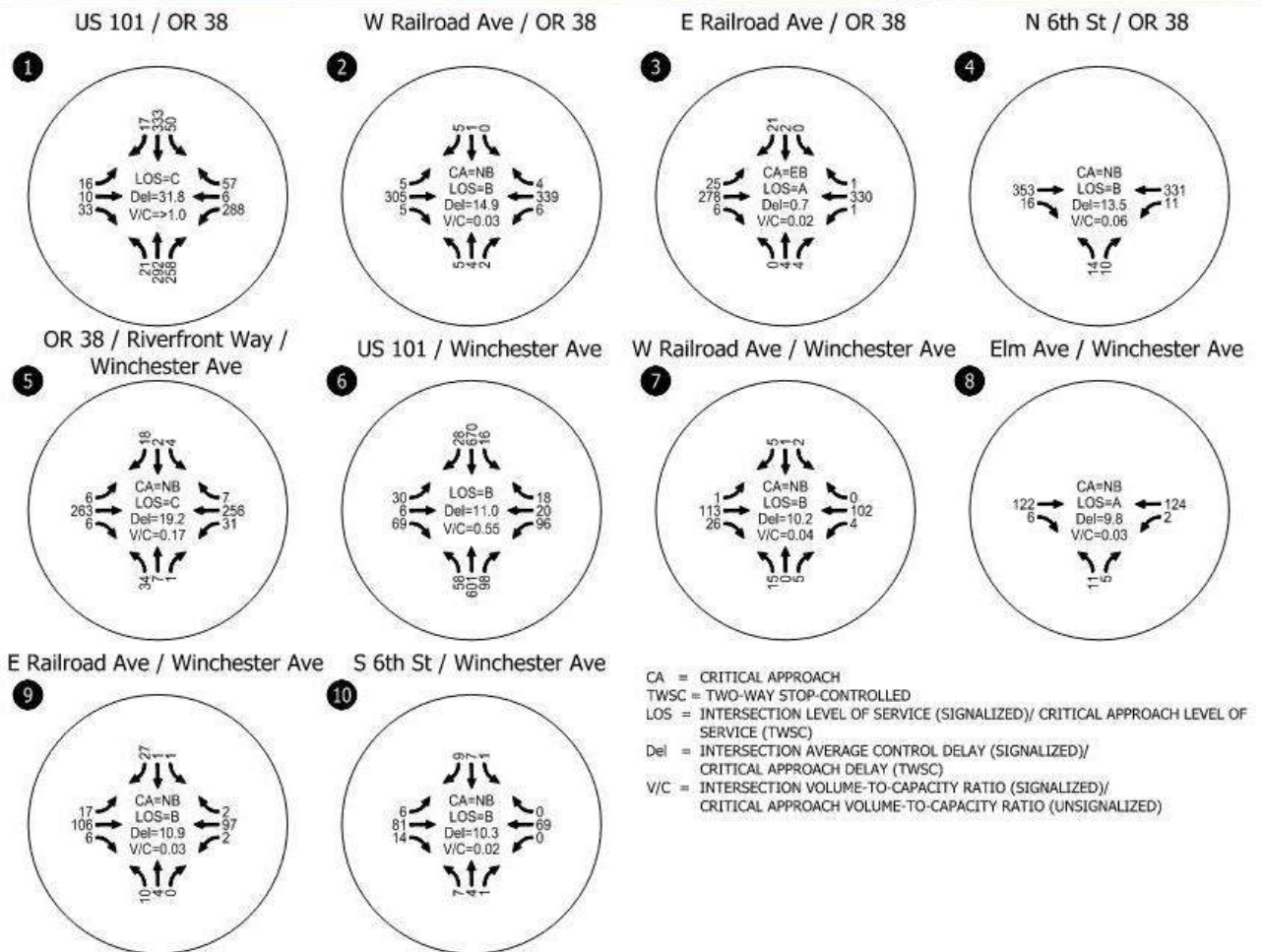
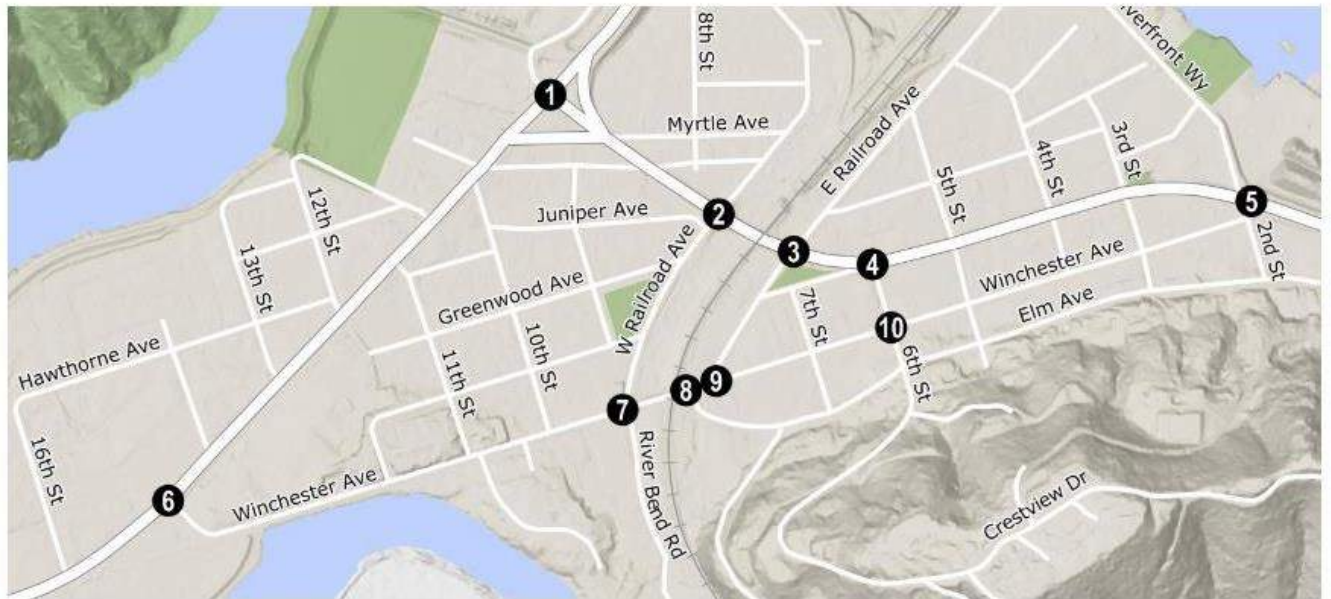
Table 4. Queueing Summary, Year 2045 Weekday PM Peak Hour

Map ID	Intersection	Movement	Storage Length (feet)	95th Percentile Queue (feet)	Adequate?
1	US 101/ OR 38	EBTL	200	50	Yes
		WBTL	250	350	No
		NBL	150	<25	Yes
		SBL	225	25	Yes
6	US 101/ Winchester Ave.	EBTL	70	<25	Yes
		WBTLR	175	50	Yes
		NBL	115	<25	Yes
		SBL	80	<25	Yes

EB = eastbound; L = left; NB = northbound; SB = southbound; R = right; T = through; WB = westbound.

As shown in Table 4., the striped storage lengths at the signalized study intersections are currently adequate to accommodate the 95th percentile queues, except the westbound through-left movement, which is forecast to have a queue extend south of Myrtle Avenue during the weekday PM peak hour.

Figure 1. Year 2045 Traffic Conditions, Weekday PM Peak Hour



RAIL

The CBRL provides freight service to industrial customers in and around Coos Bay and Coquille via interchange connections with the Union Pacific Railroad in Eugene, approximately 120 railroad miles to the north and east.

Future Operations

Future operations on the CBRL would increase rail traffic through Reedsport by way of containerized rail traffic moving to/from an international container port being planned within Coos Bay. The proposed container facility will be designed to accommodate 1.2 million Twenty-foot Equivalent Unit (TEU) containers per year, which equates to approximately 600,000 containers per year. Depending upon the operational length of trains on the CBRL, as well as several other factors documented in *Tech Memo #3: Analysis Methodology and Assumptions*, the number of trains could vary from 10 to 12 intermodal trains per day (4,000 to 5,000 feet per train, respectively). The operational length of the trains will be limited largely by the grades and curvature along the rail line after improvements, all of which have yet to be finalized.

Based on CBRL train characteristics and potential operational speed restrictions within Reedsport, the following train analysis assumptions were used for analysis and are summarized in Table 5.

Table 5. Train Characteristics Assumptions

Train	Length (ft)	Speed (mph)	Crossing Time (min)
Intermodal	4,000	25	3
Intermodal (current speed restrictions)	4,000	10	5
Mixed Freight Traffic	1,500	25	2

The goal for operational speeds for the improved rail line was stated by CBRL as 40 mph; however, it is possible that the swing span bridge across the Umpqua River could still present an operational speed restriction within Reedsport even after capital improvements. Based upon this, the crossings were analyzed under an operational speed of 25 mph within Reedsport and existing 10 mph speed restrictions for a conservative approach with respect to grade crossing blockages by passing trains.

Rail Crossing Controls and Configurations

Future rail crossing controls and configurations have not been identified. The two at-grade rail crossings in the City of Reedsport on OR 38 and Winchester Avenue are anticipated to remain under this no-build analysis documented herein.

Train Event Considerations

Impacts of train events at the railroad crossings on OR 38 and Winchester Avenue were evaluated for the future operations on the Coos Bay Rail Line (CBRL) conditions. Projected queueing outcomes during intermodal and mixed freight train events were used to estimate queueing. Queues were calculated using the crossing volumes and heavy vehicle percentages, including the total eastbound and total westbound approaches. For the analysis it was assumed a heavy vehicle is 75 feet and a passenger car is 25 feet. Train

event assumptions are detailed above and in *Technical Memorandum #3: Analysis Methodology and Assumptions*.

The 95th percentile queue lengths shown quantify those lengths that have a 5 percent probability of being exceeded during a train crossing. These were calculated by applying a Poisson distribution to the expected number of vehicle arrivals during each train crossing time and summing the associated probability for each number of arrivals, starting at zero vehicles, until a total probability of 95% was attained. The 95th percentile queue lengths are shown in Table 6 and Figure 2. Values shown in **bold** exceed their available storage.

Table 6. Train Event Year 2045 95th Percentile Queueing

Crossing	Approach	Storage Length (feet)	95th Percentile Queues (feet)		
			Existing	Intermodal at 25 mph / Intermodal at 10 mph / Mixed Freight at 25 mph	Exceeds Storage?
OR 38	Eastbound	140 ¹	525	625/975/450	Yes
	Westbound	150 ²	600	700/1100/500	Yes
Winchester Avenue	Eastbound	130 ¹	225	275/425/200	Yes
	Westbound	100 ²	250	300/450/200	Yes

¹ Distance to W. Railroad Avenue.

² Distance to E. Railroad Avenue.

The 95th percentile queue lengths are anticipated to still exceed storage for eastbound and westbound movements on OR 38 and Winchester Avenue. During a future train event, OR 38 eastbound traffic is expected to queue west of Laurel Avenue, and westbound traffic is expected to queue east of N. 6th Street during an intermodal train event. On Winchester Avenue, the eastbound traffic is expected to queue west of W. Railroad Avenue, and westbound traffic is expected to queue east of E. Railroad Avenue during an intermodal train event. During a future mixed freight train event, queues are expected to be less than the existing train event as future trains are anticipated to operate at 25 mph, 15 mph more than existing conditions.

During a future intermodal train event with existing speed restrictions in place, OR 38 eastbound traffic is expected to queue west of Myrtle Avenue, and westbound traffic is expected to queue east of N. 5th Street. On Winchester Avenue, the eastbound traffic is expected to queue west of W. Railroad Avenue, and westbound traffic is expected to queue east of E. Railroad Avenue during an intermodal train event with existing speed restrictions in place. **In an event with a train length exceeding 4,100 feet at 10 mph, the OR 38 eastbound traffic is expected to queue to US 101.** Attachment B contains the train event queuing calculations.

Figure 2. Train Event Queue Lengths



FUTURE DEFICIENCIES AND NEEDS

This memorandum identified the following future deficiencies and needs:

- Capacity - Under future year 2045 conditions, the US 101/OR 38 intersection is expected to exceed mobility targets and operate at capacity ($v/c = 1.0$) in the weekday PM peak hour.
- Queue storage – Under future year 2045 conditions, westbound through-left queueing at the US 101/OR 38 intersection is expected to exceed striped storage in the weekday PM peak hour.
- Train event queue storage – Train events are likely to cause queues on OR 38 and Winchester Avenue that exceed the eastbound and westbound approach storage length today and in the future. During a 4,100-foot or greater train event at 10 mph with current Umpqua swing span speed restrictions, eastbound OR 38 queues would be expected to extend to US 101.

ATTACHMENTS

- A. Future Traffic Conditions Worksheets
- B. Future Train Event Queueing Calculations

Attachment A: Future Traffic Conditions
Worksheets

Intersection Level Of Service Report
Intersection 1: US 101 / OR 38

Control Type:	Signalized	Delay (sec / veh):	31.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.004

Intersection Setup

Name	US 101			US 101			Port Dock Rd			OR 38		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	150.00	100.00	100.00	225.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	320.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			No			Yes			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	US 101			US 101			Port Dock Rd			OR 38		
Base Volume Input [veh/h]	21	292	258	50	333	17	16	10	33	288	6	57
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	18.00	9.00	5.00	2.00	6.00	0.00	0.00	50.00	11.00	9.00	20.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	292	258	50	333	17	16	10	33	288	6	57
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	79	70	14	90	5	4	3	9	78	2	15
Total Analysis Volume [veh/h]	23	317	280	54	362	18	17	11	36	313	7	62
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			1			0		
v_di, Inbound Pedestrian Volume crossing in	1			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			1			1			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	3	10	0	3	10	0	0	5	0	0	7	0
Maximum Green [s]	15	45	0	15	45	0	0	35	0	0	35	0
Amber [s]	3.5	3.8	0.0	3.5	3.8	0.0	0.0	3.5	0.0	0.0	3.8	0.0
All red [s]	1.8	1.0	0.0	1.8	1.5	0.0	0.0	1.8	0.0	0.0	2.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	2.5	4.5	0.0	2.5	4.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	19	0	0	20	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.3	2.8	0.0	3.3	3.3	0.0	0.0	3.3	0.0	0.0	3.8	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	R	L	C	C	C	C	R
C, Cycle Length [s]	69	69	69	69	69	69	69	69	69	69
L, Total Lost Time per Cycle [s]	5.05	4.80	4.80	4.80	5.30	5.30	5.30	5.30	5.80	5.80
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.80	2.80	2.80	0.00	3.30	3.30	0.00	3.80	3.80
g_i, Effective Green Time [s]	23	16	16	16	23	17	17	35	35	35
g / C, Green / Cycle	0.33	0.23	0.23	0.23	0.33	0.24	0.24	0.51	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.02	0.12	0.12	0.12	0.04	0.11	0.11	0.27	0.70	0.04
s, saturation flow rate [veh/h]	1120	1765	1614	1518	1209	1810	1776	233	456	1615
c, Capacity [veh/h]	325	402	368	346	344	438	430	87	333	816
d1, Uniform Delay [s]	22.17	23.44	23.50	23.50	23.93	22.24	22.26	14.22	21.98	8.81
k, delay calibration	0.19	0.19	0.19	0.19	0.19	0.08	0.19	0.08	0.50	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.16	1.81	2.07	2.30	0.36	0.51	1.21	8.62	40.07	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.07	0.52	0.54	0.55	0.16	0.44	0.44	0.74	0.96	0.08
d, Delay for Lane Group [s/veh]	22.33	25.25	25.57	25.80	24.29	22.75	23.47	22.84	62.05	8.83
Lane Group LOS	C	C	C	C	C	C	C	C	E	A
Critical Lane Group	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.25	3.07	2.90	2.80	0.59	2.56	2.62	0.67	9.02	0.45
50th-Percentile Queue Length [ft/ln]	6.14	76.87	72.55	70.09	14.68	64.01	65.41	16.69	225.52	11.24
95th-Percentile Queue Length [veh/ln]	0.44	5.53	5.22	5.05	1.06	4.61	4.71	1.20	13.95	0.81
95th-Percentile Queue Length [ft/ln]	11.06	138.3	130.5	126.1	26.42	115.21	117.74	30.03	348.67	20.23

Movement, Approach, & Intersection Results

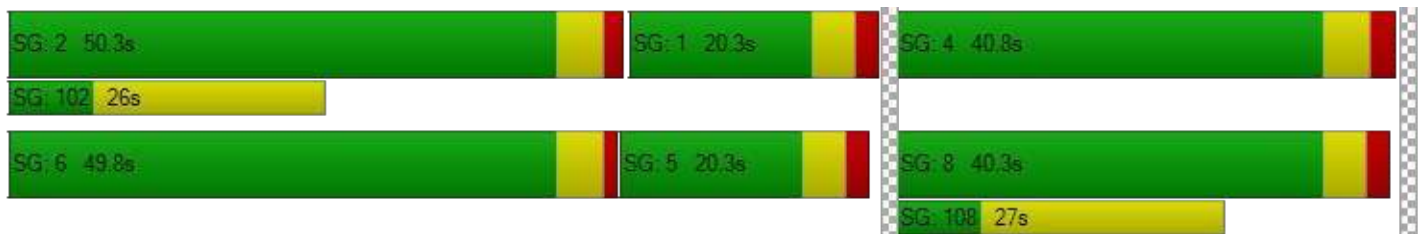
d_M, Delay for Movement [s/veh]	22.33	25.36	25.73	24.29	23.09	23.47	22.84	22.84	22.84	62.05	62.05	8.83
Movement LOS	C	C	C	C	C	C	C	C	C	E	E	A
d_A, Approach Delay [s/veh]	25.41			23.25			22.84			53.42		
Approach LOS	C			C			C			D		
d_I, Intersection Delay [s/veh]	31.81											
Intersection LOS	C											
Intersection V/C	1.004											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	-5.8	11.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	7991.55	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	24.52	40.69	24.52	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.100	2.555	1.775	0.000
Crosswalk LOS	C	B	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1299	1299	1010	1010
d_b, Bicycle Delay [s]	4.26	4.26	8.49	8.49
I_b,int, Bicycle LOS Score for Intersection	2.071	1.918	1.665	2.190
Bicycle LOS	B	A	A	B

Sequence

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



Intersection Level Of Service Report
Intersection 2: OR 38 / W Railroad Ave

Control Type: Two-way stop
Analysis Method: HCM 6th Edition
Analysis Period: 15 minutes

Delay (sec / veh): 16.1
Level Of Service: C
Volume to Capacity (v/c): 0.015

Intersection Setup

Name	W Railroad Ave			W Railroad Ave			OR 38			OR 38		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	W Railroad Ave			W Railroad Ave			OR 38			OR 38		
Base Volume Input [veh/h]	5	4	2	0	1	5	5	305	5	6	339	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.00	0.00	0.00	9.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	4	2	0	1	5	5	305	5	6	339	4
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	1	0	0	1	1	83	1	2	92	1
Total Analysis Volume [veh/h]	5	4	2	0	1	5	5	332	5	7	368	4
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	16.09	15.66	10.35	15.89	15.44	10.36	8.02	0.00	0.00	7.94	0.00	0.00
Movement LOS	C	C	B	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.09	0.09	0.09	0.03	0.03	0.03	0.01	0.01	0.01	0.02	0.02	0.02
95th-Percentile Queue Length [ft/ln]	2.26	2.26	2.26	0.78	0.78	0.78	0.31	0.31	0.31	0.43	0.43	0.43
d_A, Approach Delay [s/veh]	14.89			11.20			0.12			0.15		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	0.44											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 3: OR 38 / E Railroad Ave

Control Type: Two-way stop
Analysis Method: HCM 6th Edition
Analysis Period: 15 minutes

Delay (sec / veh): 15.9
Level Of Service: C
Volume to Capacity (v/c): 0.006

Intersection Setup

Name	E Railroad Ave			E Railroad Ave			OR 38			OR 38		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	E Railroad Ave			E Railroad Ave			OR 38			OR 38		
Base Volume Input [veh/h]	0	4	4	0	2	21	25	278	6	1	330	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	8.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	4	4	0	2	21	25	278	6	1	330	1
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	1	0	1	6	7	77	2	0	92	0
Total Analysis Volume [veh/h]	0	4	4	0	2	23	28	309	7	1	367	1
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.01	0.03	0.02	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	16.74	15.80	10.05	16.42	15.94	10.51	8.07	0.00	0.00	7.87	0.00	0.00
Movement LOS	C	C	B	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.05	0.05	0.05	0.12	0.12	0.12	0.07	0.07	0.07	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.32	1.32	1.32	3.09	3.09	3.09	1.79	1.79	1.79	0.06	0.06	0.06
d_A, Approach Delay [s/veh]	12.93			10.95			0.66			0.02		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	0.82											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 4: OR 38 / N 6th St

Control Type: Two-way stop
Analysis Method: HCM 6th Edition
Analysis Period: 15 minutes

Delay (sec / veh): 15.4
Level Of Service: C
Volume to Capacity (v/c): 0.041

Intersection Setup

Name	S 6th St		OR 38		OR 38	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	S 6th St		OR 38		OR 38	
Base Volume Input [veh/h]	14	10	353	16	11	331
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	8.00	38.00	0.00	7.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	10	353	16	11	331
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	3	96	4	3	90
Total Analysis Volume [veh/h]	15	11	384	17	12	360
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.02	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	15.39	10.94	0.00	0.00	8.11	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.18	0.18	0.00	0.00	0.03	0.03
95th-Percentile Queue Length [ft/ln]	4.59	4.59	0.00	0.00	0.78	0.78
d_A, Approach Delay [s/veh]	13.51		0.00		0.26	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.56					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 5: OR 38 / Riverfront Way / Winchester

Control Type:	Two-way stop	Delay (sec / veh):	19.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.144

Intersection Setup

Name	Winchester Ave			Riverfront Way			OR 38			OR 38		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← →			↑			← →			← →		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	50.00	100.00	100.00	100.00	100.00	100.00	450.00	250.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Winchester Ave			Riverfront Way			OR 38			OR 38		
Base Volume Input [veh/h]	34	7	1	4	2	18	6	263	6	31	256	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	20.00	4.00	12.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	34	7	1	4	2	18	6	263	6	31	256	7
Peak Hour Factor	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	2	0	1	1	6	2	83	2	10	81	2
Total Analysis Volume [veh/h]	43	9	1	5	3	23	8	333	8	39	324	9
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.03	0.00	0.02	0.01	0.03	0.01	0.00	0.00	0.03	0.00	0.00
d_M, Delay for Movement [s/veh]	19.49	18.54	10.05	17.18	16.56	10.43	7.93	0.00	0.00	8.08	0.00	0.00
Movement LOS	C	C	B	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.61	0.61	0.00	0.18	0.18	0.18	0.02	0.02	0.00	0.10	0.00	0.00
95th-Percentile Queue Length [ft/ln]	15.24	15.24	0.11	4.58	4.58	4.58	0.49	0.49	0.00	2.50	0.00	0.00
d_A, Approach Delay [s/veh]	19.15			12.11			0.18			0.85		
Approach LOS	C			B			A			A		
d_I, Intersection Delay [s/veh]	2.20											
Intersection LOS	C											

**Intersection Level Of Service Report
Intersection 6: US 101 / Winchester Ave**

Control Type:	Signalized	Delay (sec / veh):	11.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.546

Intersection Setup

Name	US 101			US 101			Winchester Ave			Winchester Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	125.00	100.00	100.00	75.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	US 101			US 101			Winchester Ave			Winchester Ave		
Base Volume Input [veh/h]	58	601	98	16	670	28	30	6	69	96	20	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	6.00	2.00	8.00	7.00	4.00	8.00	0.00	2.00	1.00	0.00	13.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	601	98	16	670	28	30	6	69	96	20	18
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	162	26	4	180	8	8	2	19	26	5	5
Total Analysis Volume [veh/h]	62	646	105	17	720	30	32	6	74	103	22	19
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			1			0			1		
v_di, Inbound Pedestrian Volume crossing in	0			1			2			1		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			7			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	10	0	3	10	0	0	5	0	0	5	0
Maximum Green [s]	20	45	0	20	45	0	0	30	0	0	30	0
Amber [s]	3.5	3.8	0.0	3.5	3.8	0.0	0.0	3.5	0.0	0.0	3.5	0.0
All red [s]	1.6	1.3	0.0	1.6	1.6	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	2.5	4.5	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	16	0	0	18	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.1	3.1	0.0	3.1	3.4	0.0	0.0	3.5	0.0	0.0	3.5	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	C
C, Cycle Length [s]	38	38	38	38	38	38	38	38	38
L, Total Lost Time per Cycle [s]	5.10	5.10	5.10	5.40	5.40	5.40	5.50	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	3.10	3.10	0.00	3.40	3.40	3.50	3.50	3.50
g_i, Effective Green Time [s]	21	15	15	21	13	13	7	7	7
g / C, Green / Cycle	0.55	0.40	0.40	0.54	0.35	0.35	0.17	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.03	0.21	0.21	0.02	0.21	0.21	0.02	0.05	0.14
s, saturation flow rate [veh/h]	1781	1810	1723	854	1795	1765	1613	1584	996
c, Capacity [veh/h]	975	736	700	642	624	614	445	267	329
d1, Uniform Delay [s]	4.50	8.53	8.54	4.41	10.28	10.29	13.48	13.84	16.14
k, delay calibration	0.11	0.11	0.11	0.08	0.19	0.19	0.08	0.08	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.03	0.58	0.61	0.01	1.62	1.66	0.06	0.42	0.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.52	0.52	0.03	0.60	0.61	0.09	0.28	0.44
d, Delay for Lane Group [s/veh]	4.53	9.11	9.14	4.42	11.90	11.95	13.54	14.26	17.05
Lane Group LOS	A	A	A	A	B	B	B	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.13	1.79	1.71	0.04	2.22	2.19	0.25	0.51	1.15
50th-Percentile Queue Length [ft/ln]	3.19	44.79	42.85	0.89	55.40	54.85	6.14	12.67	28.83
95th-Percentile Queue Length [veh/ln]	0.23	3.23	3.09	0.06	3.99	3.95	0.44	0.91	2.08
95th-Percentile Queue Length [ft/ln]	5.73	80.63	77.14	1.61	99.72	98.73	11.05	22.81	51.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	4.53	9.12	9.14	4.42	11.92	11.95	13.54	13.54	14.26	17.05	17.05	17.05
Movement LOS	A	A	A	A	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	8.78			11.76			14.01			17.05		
Approach LOS	A			B			B			B		
d_I, Intersection Delay [s/veh]	10.99											
Intersection LOS	B											
Intersection V/C	0.546											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	9.67			9.67			9.67			9.67		
I_p,int, Pedestrian LOS Score for Intersection	2.728			2.685			1.990			1.785		
Crosswalk LOS	B			B			A			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	2358			2358			1572			1572		
d_b, Bicycle Delay [s]	0.61			0.61			0.87			0.87		
I_b,int, Bicycle LOS Score for Intersection	2.230			2.192			1.744			1.797		
Bicycle LOS	B			B			A			A		

Sequence

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



**Intersection Level Of Service Report
Intersection 7: Winchester Ave / W Railroad Ave**

Control Type:	Two-way stop	Delay (sec / veh):	10.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.002

Intersection Setup

Name	River Bend Rd			W Railroad Ave			Winchester Ave			Winchester Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	River Bend Rd			W Railroad Ave			Winchester Ave			Winchester Ave		
Base Volume Input [veh/h]	15	0	5	2	1	5	1	113	26	4	102	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	0	5	2	1	5	1	113	26	4	102	0
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	0	1	1	0	1	0	32	7	1	29	0
Total Analysis Volume [veh/h]	17	0	6	2	1	6	1	130	30	5	117	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.53	10.85	9.13	10.40	10.84	8.88	7.43	0.00	0.00	7.52	0.00	0.00
Movement LOS	B	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.10	0.10	0.10	0.03	0.03	0.03	0.00	0.00	0.00	0.01	0.01	0.01
95th-Percentile Queue Length [ft/ln]	2.47	2.47	2.47	0.83	0.83	0.83	0.05	0.05	0.05	0.26	0.26	0.26
d_A, Approach Delay [s/veh]	10.16			9.43			0.05			0.31		
Approach LOS	B			A			A			A		
d_I, Intersection Delay [s/veh]	1.15											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 8: Winchester Ave / Elm Ave

Control Type:	Two-way stop	Delay (sec / veh):	10.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.017

Intersection Setup

Name	Elm Ave		Winchester Ave		Winchester Ave	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	11.00	11.00	11.00	11.00	11.00	11.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Elm Ave		Winchester Ave		Winchester Ave	
Base Volume Input [veh/h]	11	5	122	6	2	124
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	3.00	0.00	0.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	5	122	6	2	124
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	34	2	1	34
Total Analysis Volume [veh/h]	12	6	136	7	2	138
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.17	9.05	0.00	0.00	7.48	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.07	0.07	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.80	1.80	0.00	0.00	0.10	0.10
d_A, Approach Delay [s/veh]	9.80		0.00		0.11	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.64					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 9: Winchester Ave / E Railroad Ave

Control Type:	Two-way stop	Delay (sec / veh):	10.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.018

Intersection Setup

Name	Private Dwy			E Railroad Ave			Winchester Ave			Winchester Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Right	Right2	Left2	Left	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Private Dwy			E Railroad Ave			Winchester Ave			Winchester Ave		
Base Volume Input [veh/h]	10	4	0	1	1	27	17	106	6	2	97	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00	7.00	0.00	0.00	0.00	1.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	4	0	1	1	27	17	106	6	2	97	2
Peak Hour Factor	0.8800	0.8800	1.0000	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	0	0	0	8	5	30	2	1	28	1
Total Analysis Volume [veh/h]	11	5	0	1	1	31	19	120	7	2	110	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.00	0.00	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.95	9.04	9.01	10.53	10.52	8.94	7.52	0.00	0.00	7.45	0.00	0.00
Movement LOS	B	A	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.07	0.07	0.07	0.11	0.11	0.11	0.04	0.04	0.04	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.78	1.78	1.78	2.77	2.77	2.77	1.00	1.00	1.00	0.10	0.10	0.10
d_A, Approach Delay [s/veh]	10.35			9.04			0.98			0.13		
Approach LOS	B			A			A			A		
d_I, Intersection Delay [s/veh]	2.01											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 10: Winchester Ave / S 6th St

Control Type:	Two-way stop	Delay (sec / veh):	10.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.013

Intersection Setup

Name	S 6th St			S 6th St			Winchester Ave			Winchester Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			25.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	S 6th St			S 6th St			Winchester Ave			Winchester Ave		
Base Volume Input [veh/h]	7	4	1	1	7	9	6	81	14	0	69	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	17.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	4	1	1	7	9	6	81	14	0	69	0
Peak Hour Factor	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800	0.7800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	1	0	0	2	3	2	26	4	0	22	0
Total Analysis Volume [veh/h]	9	5	1	1	9	12	8	104	18	0	88	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.42	10.40	8.92	10.04	10.47	8.81	7.38	0.00	0.00	7.44	0.00	0.00
Movement LOS	B	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.07	0.07	0.07	0.08	0.08	0.08	0.02	0.02	0.02	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.66	1.66	1.66	2.08	2.08	2.08	0.40	0.40	0.40	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.32			9.55			0.45			0.00		
Approach LOS	B			A			A			A		
d_I, Intersection Delay [s/veh]	1.66											
Intersection LOS	B											

Attachment B: Future Train Event Queueing Calculations

2045 Winchester - Mixed Freight

PM	EB	Existing	
		2 minutes/train	
	127	vehicles/hour	
		4 vehicles/train	
	200	95% queue length	
k	P	Cumulative	
0		1.5%	1.5%
1		6.1%	7.6%
2		13.0%	20.6%
3		18.3%	38.9%
4		19.4%	58.3%
5		16.4%	74.8%
6		11.6%	86.4%
7		7.0%	93.4%
8		3.7%	97.1%
9		1.7%	98.8%
10		0.7%	99.6%
11		0.3%	99.9%
12		0.1%	100.0%
13		0.0%	100.0%
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PM	WB	Existing	
		2 minutes/train	
	134	vehicles/hour	
		4 vehicles/train	
	200	95% queue length	
k	P	Cumulative	
0		1.1%	1.1%
1		5.1%	6.3%
2		11.5%	17.7%
3		17.1%	34.8%
4		19.0%	53.8%
5		17.0%	70.9%
6		12.7%	83.5%
7		8.1%	91.6%
8		4.5%	96.1%
9		2.2%	98.4%
10		1.0%	99.4%
11		0.4%	99.8%
12		0.2%	99.9%
13		0.1%	100.0%
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2045 Winchester - Non- Mixed Freight

PM	EB	Existing	
		3 minutes/train	
	127	vehicles/hour	
		6 vehicles/train	
	275	95% queue length	
k	P	Cumulative	
0		0.2%	0.2%
1		1.1%	1.3%
2		3.5%	4.8%
3		7.5%	12.3%
4		11.8%	24.1%
5		15.0%	39.1%
6		15.9%	55.0%
7		14.4%	69.5%
8		11.5%	80.9%
9		8.1%	89.0%
10		5.1%	94.1%
11		3.0%	97.1%
12		1.6%	98.6%
13		0.8%	99.4%
14		0.3%	99.8%
15		0.1%	99.9%
16		0.1%	100.0%
17		0.0%	100.0%
18		0.0%	100.0%
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37		0.0%	100.0%
38		0.0%	100.0%
39		0.0%	100.0%

PM	WB	Existing	
		3 minutes/train	
	134	vehicles/hour	
		7 vehicles/train	
	275	95% queue length	
k	P	Cumulative	
0		0.1%	0.1%
1		0.8%	0.9%
2		2.8%	3.7%
3		6.2%	9.9%
4		10.3%	20.2%
5		13.8%	34.1%
6		15.5%	49.5%
7		14.8%	64.3%
8		12.4%	76.7%
9		9.2%	86.0%
10		6.2%	92.1%
11		3.8%	95.9%
12		2.1%	98.0%
13		1.1%	99.1%
14		0.5%	99.6%
15		0.2%	99.8%
16		0.1%	99.9%
17		0.0%	100.0%
18		0.0%	100.0%
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148	0.0%	100.0%
149	0.0%	100.0%
150	0.0%	100.0%

2045 Winchester - Non- Mixed Freight @ 10 mph

PM	EB	2045 @ 10 mph	
		5 minutes/train	
		127 vehicles/hour	
		11 vehicles/train	
		400 95% queue length	
k	P	Cumulative	
0		0.0%	0.0%
1		0.0%	0.0%
2		0.1%	0.2%
3		0.5%	0.7%
4		1.3%	2.0%
5		2.8%	4.8%
6		4.9%	9.7%
7		7.5%	17.2%
8		9.9%	27.1%
9		11.6%	38.7%
10		12.3%	51.0%
11		11.8%	62.9%
12		10.4%	73.3%
13		8.5%	81.8%
14		6.4%	88.3%
15		4.5%	92.8%
16		3.0%	95.8%
17		1.9%	97.7%
18		1.1%	98.8%
19		0.6%	99.4%
20		0.3%	99.7%
21		0.2%	99.9%
22		0.1%	99.9%
23		0.0%	100.0%
24		0.0%	100.0%
25		0.0%	100.0%
26		0.0%	100.0%

PM	WB	2045 @ 10 mph	
		5 minutes/train	
		134 vehicles/hour	
		11 vehicles/train	
		425 95% queue length	
k	P	Cumulative	
0		0.0%	0.0%
1		0.0%	0.0%
2		0.1%	0.1%
3		0.3%	0.4%
4		0.9%	1.3%
5		2.0%	3.4%
6		3.8%	7.2%
7		6.1%	13.3%
8		8.5%	21.8%
9		10.5%	32.3%
10		11.7%	44.0%
11		11.9%	55.9%
12		11.1%	67.0%
13		9.5%	76.6%
14		7.6%	84.2%
15		5.7%	89.8%
16		3.9%	93.8%
17		2.6%	96.4%
18		1.6%	98.0%
19		0.9%	98.9%
20		0.5%	99.5%
21		0.3%	99.7%
22		0.1%	99.9%
23		0.1%	99.9%
24		0.0%	100.0%
25		0.0%	100.0%
26		0.0%	100.0%

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127	0.0%	100.0%
128	0.0%	100.0%

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142	0.0%	100.0%
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144	0.0%	100.0%
145	0.0%	100.0%
146	0.0%	100.0%
147	0.0%	100.0%
148	0.0%	100.0%
149	0.0%	100.0%
150	0.0%	100.0%

2045 OR38 - Non- Mixed Freight

PM	EB	Existing	
		3 minutes/train	
	307	vehicles/hour	
		15 vehicles/train	
	550	95% queue length	
k	P	Cumulative	
0		0.0%	0.0%
1		0.0%	0.0%
2		0.0%	0.0%
3		0.0%	0.0%
4		0.0%	0.1%
5		0.2%	0.2%
6		0.4%	0.6%
7		0.9%	1.5%
8		1.6%	3.1%
9		2.8%	5.9%
10		4.3%	10.2%
11		6.0%	16.3%
12		7.7%	24.0%
13		9.1%	33.1%
14		10.0%	43.0%
15		10.2%	53.2%
16		9.8%	63.0%
17		8.8%	71.9%
18		7.5%	79.4%
19		6.1%	85.5%
20		4.7%	90.2%
21		3.4%	93.6%
22		2.4%	96.0%
23		1.6%	97.5%
24		1.0%	98.6%
25		0.6%	99.2%
26		0.4%	99.6%
27		0.2%	99.8%
28		0.1%	99.9%
29		0.1%	99.9%
30		0.0%	100.0%
31		0.0%	100.0%
32		0.0%	100.0%
33		0.0%	100.0%
34		0.0%	100.0%
35		0.0%	100.0%
36		0.0%	100.0%
37		0.0%	100.0%
38		0.0%	100.0%
39		0.0%	100.0%

PM	WB	Existing	
		3 minutes/train	
	351	vehicles/hour	
		18 vehicles/train	
	625	95% queue length	
k	P	Cumulative	
0		0.0%	0.0%
1		0.0%	0.0%
2		0.0%	0.0%
3		0.0%	0.0%
4		0.0%	0.0%
5		0.0%	0.0%
6		0.1%	0.1%
7		0.2%	0.4%
8		0.5%	0.9%
9		1.0%	2.0%
10		1.8%	3.8%
11		2.9%	6.7%
12		4.3%	11.0%
13		5.7%	16.7%
14		7.2%	23.9%
15		8.4%	32.3%
16		9.2%	41.6%
17		9.5%	51.1%
18		9.3%	60.4%
19		8.6%	69.0%
20		7.5%	76.6%
21		6.3%	82.9%
22		5.0%	87.9%
23		3.8%	91.7%
24		2.8%	94.5%
25		2.0%	96.5%
26		1.3%	97.8%
27		0.9%	98.7%
28		0.5%	99.2%
29		0.3%	99.6%
30		0.2%	99.8%
31		0.1%	99.9%
32		0.1%	99.9%
33		0.0%	100.0%
34		0.0%	100.0%
35		0.0%	100.0%
36		0.0%	100.0%
37		0.0%	100.0%
38		0.0%	100.0%
39		0.0%	100.0%

40	0.0%	100.0%
41	0.0%	100.0%
42	0.0%	100.0%
43	0.0%	100.0%
44	0.0%	100.0%
45	0.0%	100.0%
46	0.0%	100.0%
47	0.0%	100.0%
48	0.0%	100.0%
49	0.0%	100.0%
50	0.0%	100.0%
51	0.0%	100.0%
52	0.0%	100.0%
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66	0.0%	100.0%
67	0.0%	100.0%
68	0.0%	100.0%
69	0.0%	100.0%
70	0.0%	100.0%
71	0.0%	100.0%
72	0.0%	100.0%
73	0.0%	100.0%
74	0.0%	100.0%
75	0.0%	100.0%
76	0.0%	100.0%
77	0.0%	100.0%
78	0.0%	100.0%
79	0.0%	100.0%
80	0.0%	100.0%
81	0.0%	100.0%
82	0.0%	100.0%
83	0.0%	100.0%
84	0.0%	100.0%
85	0.0%	100.0%
86	0.0%	100.0%

40	0.0%	100.0%
41	0.0%	100.0%
42	0.0%	100.0%
43	0.0%	100.0%
44	0.0%	100.0%
45	0.0%	100.0%
46	0.0%	100.0%
47	0.0%	100.0%
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51	0.0%	100.0%
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73	0.0%	100.0%
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76	0.0%	100.0%
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132	0.0%	100.0%
133	0.0%	100.0%

87	0.0%	100.0%
88	0.0%	100.0%
89	0.0%	100.0%
90	0.0%	100.0%
91	0.0%	100.0%
92	0.0%	100.0%
93	0.0%	100.0%
94	0.0%	100.0%
95	0.0%	100.0%
96	0.0%	100.0%
97	0.0%	100.0%
98	0.0%	100.0%
99	0.0%	100.0%
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102	0.0%	100.0%
103	0.0%	100.0%
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105	0.0%	100.0%
106	0.0%	100.0%
107	0.0%	100.0%
108	0.0%	100.0%
109	0.0%	100.0%
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111	0.0%	100.0%
112	0.0%	100.0%
113	0.0%	100.0%
114	0.0%	100.0%
115	0.0%	100.0%
116	0.0%	100.0%
117	0.0%	100.0%
118	0.0%	100.0%
119	0.0%	100.0%
120	0.0%	100.0%
121	0.0%	100.0%
122	0.0%	100.0%
123	0.0%	100.0%
124	0.0%	100.0%
125	0.0%	100.0%
126	0.0%	100.0%
127	0.0%	100.0%
128	0.0%	100.0%
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130	0.0%	100.0%
131	0.0%	100.0%
132	0.0%	100.0%
133	0.0%	100.0%

134	0.0%	100.0%
135	0.0%	100.0%
136	0.0%	100.0%
137	0.0%	100.0%
138	0.0%	100.0%
139	0.0%	100.0%
140	0.0%	100.0%
141	0.0%	100.0%
142	0.0%	100.0%
143	0.0%	100.0%
144	0.0%	100.0%
145	0.0%	100.0%
146	0.0%	100.0%
147	0.0%	100.0%
148	0.0%	100.0%
149	0.0%	100.0%
150	0.0%	100.0%

134	0.0%	100.0%
135	0.0%	100.0%
136	0.0%	100.0%
137	0.0%	100.0%
138	0.0%	100.0%
139	0.0%	100.0%
140	0.0%	100.0%
141	0.0%	100.0%
142	0.0%	100.0%
143	0.0%	100.0%
144	0.0%	100.0%
145	0.0%	100.0%
146	0.0%	100.0%
147	0.0%	100.0%
148	0.0%	100.0%
149	0.0%	100.0%
150	0.0%	100.0%

2045 OR38 - Mixed Freight

PM	EB	Existing	
		2 minutes/train	
	307	vehicles/hour	
		10 vehicles/train	
	400	95% queue length	
k	P	Cumulative	
0		0.0%	0.0%
1		0.0%	0.0%
2		0.2%	0.2%
3		0.6%	0.9%
4		1.6%	2.5%
5		3.4%	5.9%
6		5.7%	11.6%
7		8.4%	20.0%
8		10.7%	30.7%
9		12.2%	42.9%
10		12.5%	55.4%
11		11.6%	67.0%
12		9.9%	76.9%
13		7.8%	84.7%
14		5.7%	90.4%
15		3.9%	94.3%
16		2.5%	96.8%
17		1.5%	98.2%
18		0.9%	99.1%
19		0.5%	99.6%
20		0.2%	99.8%
21		0.1%	99.9%
22		0.1%	100.0%
23		0.0%	100.0%
24		0.0%	100.0%
25		0.0%	100.0%
26		0.0%	100.0%
27		0.0%	100.0%
28		0.0%	100.0%
29		0.0%	100.0%
30		0.0%	100.0%
31		0.0%	100.0%
32		0.0%	100.0%
33		0.0%	100.0%
34		0.0%	100.0%
35		0.0%	100.0%
36		0.0%	100.0%
37		0.0%	100.0%
38		0.0%	100.0%
39		0.0%	100.0%

PM	WB	Existing	
		2 minutes/train	
	351	vehicles/hour	
		12 vehicles/train	
	450	95% queue length	
k	P	Cumulative	
0		0.0%	0.0%
1		0.0%	0.0%
2		0.1%	0.1%
3		0.2%	0.3%
4		0.6%	0.9%
5		1.5%	2.5%
6		3.0%	5.4%
7		4.9%	10.3%
8		7.2%	17.6%
9		9.4%	27.0%
10		11.0%	37.9%
11		11.7%	49.6%
12		11.4%	61.0%
13		10.3%	71.3%
14		8.6%	79.8%
15		6.7%	86.5%
16		4.9%	91.4%
17		3.4%	94.8%
18		2.2%	97.0%
19		1.3%	98.3%
20		0.8%	99.1%
21		0.4%	99.5%
22		0.2%	99.8%
23		0.1%	99.9%
24		0.1%	100.0%
25		0.0%	100.0%
26		0.0%	100.0%
27		0.0%	100.0%
28		0.0%	100.0%
29		0.0%	100.0%
30		0.0%	100.0%
31		0.0%	100.0%
32		0.0%	100.0%
33		0.0%	100.0%
34		0.0%	100.0%
35		0.0%	100.0%
36		0.0%	100.0%
37		0.0%	100.0%
38		0.0%	100.0%
39		0.0%	100.0%

40	0.0%	100.0%
41	0.0%	100.0%
42	0.0%	100.0%
43	0.0%	100.0%
44	0.0%	100.0%
45	0.0%	100.0%
46	0.0%	100.0%
47	0.0%	100.0%
48	0.0%	100.0%
49	0.0%	100.0%
50	0.0%	100.0%
51	0.0%	100.0%
52	0.0%	100.0%
53	0.0%	100.0%
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67	0.0%	100.0%
68	0.0%	100.0%
69	0.0%	100.0%
70	0.0%	100.0%
71	0.0%	100.0%
72	0.0%	100.0%
73	0.0%	100.0%
74	0.0%	100.0%
75	0.0%	100.0%
76	0.0%	100.0%
77	0.0%	100.0%
78	0.0%	100.0%
79	0.0%	100.0%
80	0.0%	100.0%
81	0.0%	100.0%
82	0.0%	100.0%
83	0.0%	100.0%
84	0.0%	100.0%
85	0.0%	100.0%
86	0.0%	100.0%

40	0.0%	100.0%
41	0.0%	100.0%
42	0.0%	100.0%
43	0.0%	100.0%
44	0.0%	100.0%
45	0.0%	100.0%
46	0.0%	100.0%
47	0.0%	100.0%
48	0.0%	100.0%
49	0.0%	100.0%
50	0.0%	100.0%
51	0.0%	100.0%
52	0.0%	100.0%
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57	0.0%	100.0%
58	0.0%	100.0%
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60	0.0%	100.0%
61	0.0%	100.0%
62	0.0%	100.0%
63	0.0%	100.0%
64	0.0%	100.0%
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66	0.0%	100.0%
67	0.0%	100.0%
68	0.0%	100.0%
69	0.0%	100.0%
70	0.0%	100.0%
71	0.0%	100.0%
72	0.0%	100.0%
73	0.0%	100.0%
74	0.0%	100.0%
75	0.0%	100.0%
76	0.0%	100.0%
77	0.0%	100.0%
78	0.0%	100.0%
79	0.0%	100.0%
80	0.0%	100.0%
81	0.0%	100.0%
82	0.0%	100.0%
83	0.0%	100.0%
84	0.0%	100.0%
85	0.0%	100.0%
86	0.0%	100.0%

87	0.0%	100.0%
88	0.0%	100.0%
89	0.0%	100.0%
90	0.0%	100.0%
91	0.0%	100.0%
92	0.0%	100.0%
93	0.0%	100.0%
94	0.0%	100.0%
95	0.0%	100.0%
96	0.0%	100.0%
97	0.0%	100.0%
98	0.0%	100.0%
99	0.0%	100.0%
100	0.0%	100.0%
101	0.0%	100.0%
102	0.0%	100.0%
103	0.0%	100.0%
104	0.0%	100.0%
105	0.0%	100.0%
106	0.0%	100.0%
107	0.0%	100.0%
108	0.0%	100.0%
109	0.0%	100.0%
110	0.0%	100.0%
111	0.0%	100.0%
112	0.0%	100.0%
113	0.0%	100.0%
114	0.0%	100.0%
115	0.0%	100.0%
116	0.0%	100.0%
117	0.0%	100.0%
118	0.0%	100.0%
119	0.0%	100.0%
120	0.0%	100.0%
121	0.0%	100.0%
122	0.0%	100.0%
123	0.0%	100.0%
124	0.0%	100.0%
125	0.0%	100.0%
126	0.0%	100.0%
127	0.0%	100.0%
128	0.0%	100.0%
129	0.0%	100.0%
130	0.0%	100.0%
131	0.0%	100.0%
132	0.0%	100.0%
133	0.0%	100.0%

87	0.0%	100.0%
88	0.0%	100.0%
89	0.0%	100.0%
90	0.0%	100.0%
91	0.0%	100.0%
92	0.0%	100.0%
93	0.0%	100.0%
94	0.0%	100.0%
95	0.0%	100.0%
96	0.0%	100.0%
97	0.0%	100.0%
98	0.0%	100.0%
99	0.0%	100.0%
100	0.0%	100.0%
101	0.0%	100.0%
102	0.0%	100.0%
103	0.0%	100.0%
104	0.0%	100.0%
105	0.0%	100.0%
106	0.0%	100.0%
107	0.0%	100.0%
108	0.0%	100.0%
109	0.0%	100.0%
110	0.0%	100.0%
111	0.0%	100.0%
112	0.0%	100.0%
113	0.0%	100.0%
114	0.0%	100.0%
115	0.0%	100.0%
116	0.0%	100.0%
117	0.0%	100.0%
118	0.0%	100.0%
119	0.0%	100.0%
120	0.0%	100.0%
121	0.0%	100.0%
122	0.0%	100.0%
123	0.0%	100.0%
124	0.0%	100.0%
125	0.0%	100.0%
126	0.0%	100.0%
127	0.0%	100.0%
128	0.0%	100.0%
129	0.0%	100.0%
130	0.0%	100.0%
131	0.0%	100.0%
132	0.0%	100.0%
133	0.0%	100.0%

134	0.0%	100.0%
135	0.0%	100.0%
136	0.0%	100.0%
137	0.0%	100.0%
138	0.0%	100.0%
139	0.0%	100.0%
140	0.0%	100.0%
141	0.0%	100.0%
142	0.0%	100.0%
143	0.0%	100.0%
144	0.0%	100.0%
145	0.0%	100.0%
146	0.0%	100.0%
147	0.0%	100.0%
148	0.0%	100.0%
149	0.0%	100.0%
150	0.0%	100.0%

134	0.0%	100.0%
135	0.0%	100.0%
136	0.0%	100.0%
137	0.0%	100.0%
138	0.0%	100.0%
139	0.0%	100.0%
140	0.0%	100.0%
141	0.0%	100.0%
142	0.0%	100.0%
143	0.0%	100.0%
144	0.0%	100.0%
145	0.0%	100.0%
146	0.0%	100.0%
147	0.0%	100.0%
148	0.0%	100.0%
149	0.0%	100.0%
150	0.0%	100.0%

2045 OR38 - Non- Mixed Freight @ 10 mph

PM	EB	2045 @ 10 mph	
		5 minutes/train	
		307 vehicles/hour	
		26 vehicles/train	
		850 95% queue length	
k	P	Cumulative	
0		0.0%	0.0%
1		0.0%	0.0%
2		0.0%	0.0%
3		0.0%	0.0%
4		0.0%	0.0%
5		0.0%	0.0%
6		0.0%	0.0%
7		0.0%	0.0%
8		0.0%	0.0%
9		0.0%	0.0%
10		0.0%	0.0%
11		0.1%	0.1%
12		0.1%	0.2%
13		0.3%	0.5%
14		0.5%	0.9%
15		0.8%	1.7%
16		1.2%	3.0%
17		1.9%	4.8%
18		2.7%	7.5%
19		3.6%	11.1%
20		4.6%	15.7%
21		5.6%	21.3%
22		6.5%	27.8%
23		7.2%	35.0%
24		7.7%	42.8%
25		7.9%	50.7%
26		7.8%	58.4%

PM	WB	2045 @ 10 mph	
		5 minutes/train	
		351 vehicles/hour	
		29 vehicles/train	
		950 95% queue length	
k	P	Cumulative	
0		0.0%	0.0%
1		0.0%	0.0%
2		0.0%	0.0%
3		0.0%	0.0%
4		0.0%	0.0%
5		0.0%	0.0%
6		0.0%	0.0%
7		0.0%	0.0%
8		0.0%	0.0%
9		0.0%	0.0%
10		0.0%	0.0%
11		0.0%	0.0%
12		0.0%	0.0%
13		0.0%	0.1%
14		0.1%	0.1%
15		0.1%	0.3%
16		0.3%	0.6%
17		0.5%	1.0%
18		0.8%	1.8%
19		1.2%	3.0%
20		1.7%	4.7%
21		2.4%	7.1%
22		3.2%	10.2%
23		4.0%	14.3%
24		4.9%	19.2%
25		5.7%	24.9%
26		6.5%	31.4%

27	7.4%	65.8%
28	6.7%	72.5%
29	5.9%	78.5%
30	5.1%	83.5%
31	4.2%	87.7%
32	3.3%	91.0%
33	2.6%	93.6%
34	1.9%	95.6%
35	1.4%	97.0%
36	1.0%	98.0%
37	0.7%	98.7%
38	0.5%	99.2%
39	0.3%	99.5%
40	0.2%	99.7%
41	0.1%	99.8%
42	0.1%	99.9%
43	0.0%	99.9%
44	0.0%	100.0%
45	0.0%	100.0%
46	0.0%	100.0%
47	0.0%	100.0%
48	0.0%	100.0%
49	0.0%	100.0%
50	0.0%	100.0%
51	0.0%	100.0%
52	0.0%	100.0%
53	0.0%	100.0%
54	0.0%	100.0%
55	0.0%	100.0%
56	0.0%	100.0%
57	0.0%	100.0%
58	0.0%	100.0%
59	0.0%	100.0%
60	0.0%	100.0%

27	7.0%	38.4%
28	7.3%	45.7%
29	7.4%	53.1%
30	7.2%	60.3%
31	6.8%	67.1%
32	6.2%	73.3%
33	5.5%	78.8%
34	4.7%	83.5%
35	4.0%	87.4%
36	3.2%	90.7%
37	2.5%	93.2%
38	2.0%	95.2%
39	1.5%	96.6%
40	1.1%	97.7%
41	0.8%	98.5%
42	0.5%	99.0%
43	0.4%	99.4%
44	0.2%	99.6%
45	0.2%	99.7%
46	0.1%	99.8%
47	0.1%	99.9%
48	0.0%	99.9%
49	0.0%	100.0%
50	0.0%	100.0%
51	0.0%	100.0%
52	0.0%	100.0%
53	0.0%	100.0%
54	0.0%	100.0%
55	0.0%	100.0%
56	0.0%	100.0%
57	0.0%	100.0%
58	0.0%	100.0%
59	0.0%	100.0%
60	0.0%	100.0%

61	0.0%	100.0%
62	0.0%	100.0%
63	0.0%	100.0%
64	0.0%	100.0%
65	0.0%	100.0%
66	0.0%	100.0%
67	0.0%	100.0%
68	0.0%	100.0%
69	0.0%	100.0%
70	0.0%	100.0%
71	0.0%	100.0%
72	0.0%	100.0%
73	0.0%	100.0%
74	0.0%	100.0%
75	0.0%	100.0%
76	0.0%	100.0%
77	0.0%	100.0%
78	0.0%	100.0%
79	0.0%	100.0%
80	0.0%	100.0%
81	0.0%	100.0%
82	0.0%	100.0%
83	0.0%	100.0%
84	0.0%	100.0%
85	0.0%	100.0%
86	0.0%	100.0%
87	0.0%	100.0%
88	0.0%	100.0%
89	0.0%	100.0%
90	0.0%	100.0%
91	0.0%	100.0%
92	0.0%	100.0%
93	0.0%	100.0%
94	0.0%	100.0%

61	0.0%	100.0%
62	0.0%	100.0%
63	0.0%	100.0%
64	0.0%	100.0%
65	0.0%	100.0%
66	0.0%	100.0%
67	0.0%	100.0%
68	0.0%	100.0%
69	0.0%	100.0%
70	0.0%	100.0%
71	0.0%	100.0%
72	0.0%	100.0%
73	0.0%	100.0%
74	0.0%	100.0%
75	0.0%	100.0%
76	0.0%	100.0%
77	0.0%	100.0%
78	0.0%	100.0%
79	0.0%	100.0%
80	0.0%	100.0%
81	0.0%	100.0%
82	0.0%	100.0%
83	0.0%	100.0%
84	0.0%	100.0%
85	0.0%	100.0%
86	0.0%	100.0%
87	0.0%	100.0%
88	0.0%	100.0%
89	0.0%	100.0%
90	0.0%	100.0%
91	0.0%	100.0%
92	0.0%	100.0%
93	0.0%	100.0%
94	0.0%	100.0%

95	0.0%	100.0%
96	0.0%	100.0%
97	0.0%	100.0%
98	0.0%	100.0%
99	0.0%	100.0%
100	0.0%	100.0%
101	0.0%	100.0%
102	0.0%	100.0%
103	0.0%	100.0%
104	0.0%	100.0%
105	0.0%	100.0%
106	0.0%	100.0%
107	0.0%	100.0%
108	0.0%	100.0%
109	0.0%	100.0%
110	0.0%	100.0%
111	0.0%	100.0%
112	0.0%	100.0%
113	0.0%	100.0%
114	0.0%	100.0%
115	0.0%	100.0%
116	0.0%	100.0%
117	0.0%	100.0%
118	0.0%	100.0%
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148	0.0%	100.0%
149	0.0%	100.0%
150	0.0%	100.0%

2045 OR38 - Non- Mixed Freight @ 10 mph
with a 4300 ft train length

PM	EB	2045 @ 10 mph	
	5.72 minutes/train		
	307 vehicles/hour		
	29 vehicles/train		
	950 95% queue length		
k	P	Cumulative	
0	0.0%	0.0%	0.0%
1	0.0%	0.0%	0.0%
2	0.0%	0.0%	0.0%
3	0.0%	0.0%	0.0%
4	0.0%	0.0%	0.0%
5	0.0%	0.0%	0.0%
6	0.0%	0.0%	0.0%
7	0.0%	0.0%	0.0%
8	0.0%	0.0%	0.0%
9	0.0%	0.0%	0.0%
10	0.0%	0.0%	0.0%
11	0.0%	0.0%	0.0%
12	0.0%	0.0%	0.0%
13	0.0%	0.0%	0.1%
14	0.1%	0.1%	0.1%
15	0.1%	0.3%	0.3%
16	0.3%	0.6%	0.6%
17	0.5%	1.0%	1.0%
18	0.8%	1.8%	1.8%
19	1.2%	2.9%	2.9%
20	1.7%	4.6%	4.6%
21	2.4%	7.0%	7.0%
22	3.2%	10.2%	10.2%
23	4.0%	14.2%	14.2%
24	4.9%	19.1%	19.1%
25	5.7%	24.8%	24.8%
26	6.5%	31.3%	31.3%

PM	WB	2045 @ 10 mph	
	5.72 minutes/train		
	351 vehicles/hour		
	33 vehicles/train		
	1075 95% queue length		
k	P	Cumulative	
0	0.0%	0.0%	0.0%
1	0.0%	0.0%	0.0%
2	0.0%	0.0%	0.0%
3	0.0%	0.0%	0.0%
4	0.0%	0.0%	0.0%
5	0.0%	0.0%	0.0%
6	0.0%	0.0%	0.0%
7	0.0%	0.0%	0.0%
8	0.0%	0.0%	0.0%
9	0.0%	0.0%	0.0%
10	0.0%	0.0%	0.0%
11	0.0%	0.0%	0.0%
12	0.0%	0.0%	0.0%
13	0.0%	0.0%	0.0%
14	0.0%	0.0%	0.0%
15	0.0%	0.0%	0.0%
16	0.0%	0.0%	0.1%
17	0.1%	0.1%	0.1%
18	0.1%	0.3%	0.3%
19	0.2%	0.5%	0.5%
20	0.4%	0.9%	0.9%
21	0.6%	1.5%	1.5%
22	0.9%	2.4%	2.4%
23	1.3%	3.7%	3.7%
24	1.8%	5.5%	5.5%
25	2.5%	8.0%	8.0%
26	3.2%	11.1%	11.1%

27	7.0%	38.3%
28	7.3%	45.6%
29	7.4%	53.0%
30	7.2%	60.2%
31	6.8%	66.9%
32	6.2%	73.2%
33	5.5%	78.7%
34	4.7%	83.4%
35	4.0%	87.4%
36	3.2%	90.6%
37	2.6%	93.2%
38	2.0%	95.1%
39	1.5%	96.6%
40	1.1%	97.7%
41	0.8%	98.4%
42	0.5%	99.0%
43	0.4%	99.3%
44	0.2%	99.6%
45	0.2%	99.7%
46	0.1%	99.8%
47	0.1%	99.9%
48	0.0%	99.9%
49	0.0%	100.0%
50	0.0%	100.0%
51	0.0%	100.0%
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59	0.0%	100.0%
60	0.0%	100.0%

27	3.9%	15.1%
28	4.7%	19.8%
29	5.4%	25.2%
30	6.0%	31.2%
31	6.5%	37.7%
32	6.8%	44.5%
33	6.9%	51.4%
34	6.8%	58.2%
35	6.5%	64.7%
36	6.0%	70.8%
37	5.5%	76.2%
38	4.8%	81.0%
39	4.1%	85.2%
40	3.5%	88.6%
41	2.8%	91.4%
42	2.2%	93.7%
43	1.7%	95.4%
44	1.3%	96.7%
45	1.0%	97.7%
46	0.7%	98.4%
47	0.5%	99.0%
48	0.4%	99.3%
49	0.2%	99.6%
50	0.2%	99.7%
51	0.1%	99.8%
52	0.1%	99.9%
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