KITTELSON & ASSOCIATES
851 SW 6th AVENUE, SUITE 600
PORTLAND, OR 97204
P 503.228.5230 F 503.273.8169

May 26, 2021 Project #: 26306

Eric Liljequist and Chris Kerr
City of Woodburn
270 Montgomery Street
Woodburn, OR 97071

RE: Project Basie Transportation Impact Analysis

Dear Eric and Chris,

This Transportation Impact Analysis has been prepared to support development of a proposed fulfillment/distribution center (herein referred to as Project Basie) in Woodburn. As discussed herein, the following changes to the transportation system are identified for implementation in conjunction with site development, subject to City of Woodburn, Oregon Department of Transportation (ODOT), and Marion County approval:

- Reconstruct and widen the southern segment of Butteville Road abutting the development site consistent with the special design section agreed upon by the City of Woodburn and Marion County, with three twelve-foot travel lanes (one NB lane, one center turn lane, and one SB lane), a rural shoulder on the west side, six-foot bike lanes, and curb, landscape strip and a six-foot sidewalk on the east side.
- Realign Butteville Road to the east of Senecal Creek and its affiliated wetlands. This new alignment would be constructed to a symmetrical City of Woodburn Collector design section on both sides where it would be widened as necessary to fit the geometric design needs of a proposed roundabout at OR 219 (see next bullet).
- Construct a new double lane roundabout at the realigned Butteville Road intersection with OR 219 that is sized and designed to accommodate long-term projected traffic and heavy vehicle demands. West of the new roundabout, OR 219 would be widened to be consistent with the full improved section that currently ends near the Willow Avenue intersection.
- Close or access restrict the existing OR 219/Butteville Road intersection based on future conversations with ODOT, City, and County staff.
- Following the results of a more detailed microsimulation analysis, work with ODOT to identify potential modifications to the southbound I-5 offramp that would maximize the amount of southbound right-turn lane storage and lengthen the overall offramp.
- Install STOP (R1-1) signs at each of the four proposed site access driveway approaches to Butteville Road in accordance with County standards and the *Manual on Uniform Traffic Control Devices* (MUTCD).

Additional details of the methodology, findings and recommendations are provided herein.

INTRODUCTION

Trammell Crow Company is proposing to construct a five-story industrial building on approximately 88 acres of land[1] located southeast of the OR 219/Butteville Road intersection and west of the existing WinCo Foods distribution center. The site location and vicinity are shown in Figure 1. When complete, the building will contain approximately 3.849 million square feet of floor area accommodating package fulfillment activities supported by on-site access and circulation roadways, vehicle parking and fleet vehicle/trailer storage, landscaping, and stormwater management facilities. Multiple site access driveways are proposed along the site's Butteville Road frontage as shown in Figure 2. This figure also illustrates changes to the transportation system near the site frontage recommended as part of site development, including a proposed realignment of the north end of Butteville Road and a new roundabout intersection with OR 219. Additional details regarding these changes are documented later in this report. For the purposes of this analysis, it has been assumed that occupancy of the building will occur in the year 2023.

SCOPE OF THE REPORT

This report identifies the transportation-related impacts associated with the proposed Project Basie development. The study intersections and scope were selected to assess the anticipated local and regional transportation impacts and were identified in consultation with City, ODOT, and County staff (see *Appendix A* for a copy of the scoping memorandum and jurisdictional responses)[2]. Per the scoping direction, operational analyses were performed at the following study intersections:

- OR 219/Butteville Road
- OR 219/Willow Avenue
- OR 219/Woodland Avenue
- OR 219/I-5 Southbound (SB) Ramp Terminal
- OR 219/I-5 Northbound (NB) Ramp Terminal

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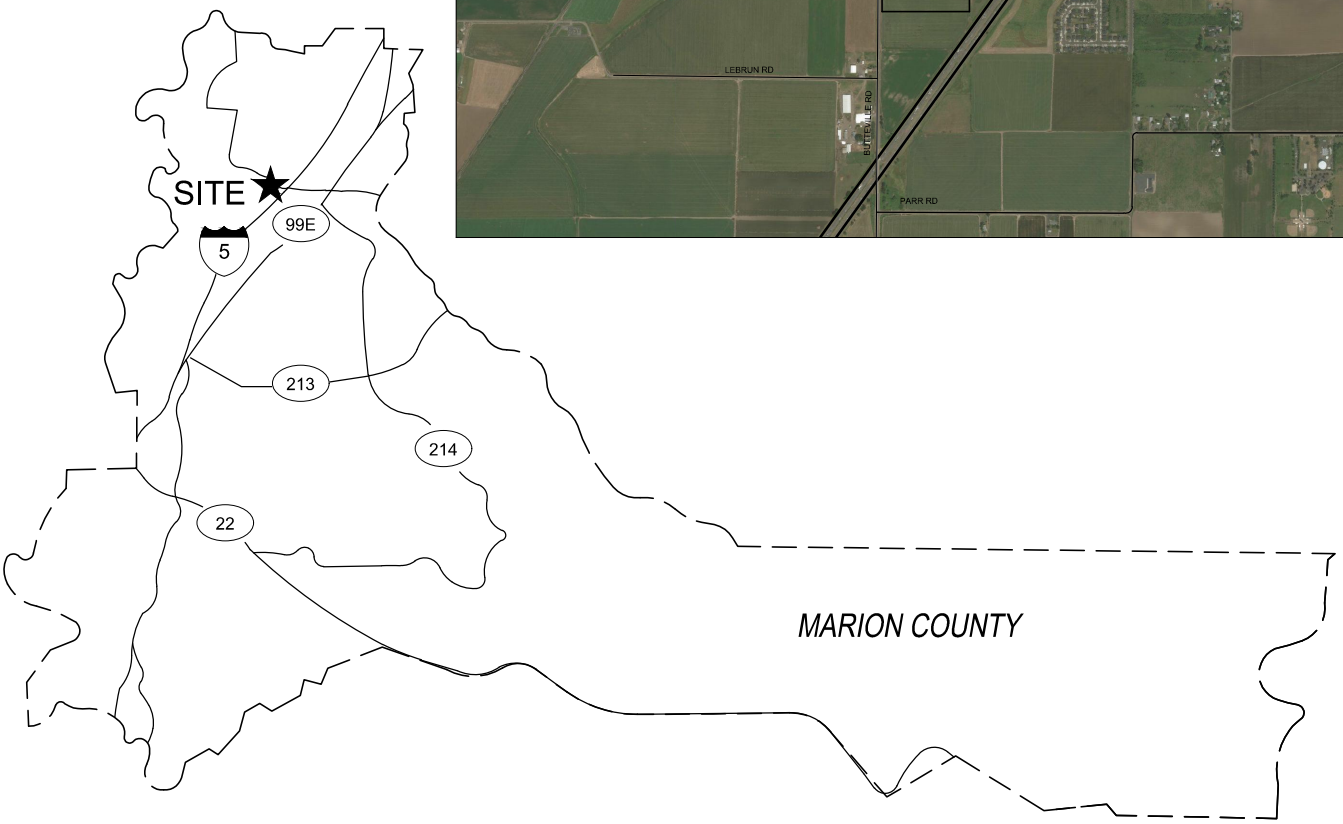
[1] The land use application package includes consolidation of lots and a land partition to reconfigure the 130-acre property to form the proposed development site (Parcel 2), dedicate right-of-way for the proposed realignment of Butteville Road, and create two remainder parcels (Parcels 1 and 3).

[2] As noted in the jurisdictional responses to the scoping memorandum, additional study intersections and microsimulation of the OR 219 study corridor was requested. In order to meet the project's land use submittal timelines, this TIA addresses the originally proposed study intersections. A supplemental report is being prepared to address the additional intersections, microsimulation, and other subsequently requested analysis. This supplemental report will be submitted at a later date as an addendum to this report.

- Parr Road NE/Butteville Road
- Butteville Road/proposed site driveways

This report evaluates the following transportation issues:

- Existing land use and transportation system conditions within the site vicinity during the following weekday AM and PM peak periods:
  - 6:30 – 7:30 AM: captures the anticipated peak arrival period for the proposed Project Basie dayshift
  - 7:00 - 8:00 AM: approximate existing system peak hour along the OR 219 study corridor from Butteville Road to the I-5 ramp terminals
  - 4:30 – 5:30 PM: approximate existing system peak hour along the OR 219 study corridor from Butteville Road to the I-5 ramp terminals
  - 5:30 – 6:30 PM: captures the anticipated peak dayshift departure and the peak nightshift arrival period for Project Basie
- Forecast year 2023 and 2040 background traffic conditions (without the proposed Project Basie development, but still considering other planned developments and local/regional growth) during the four identified weekday AM and PM peak periods;
- Development of a use-specific trip generation and traffic distribution pattern;
- Forecast year 2023 and 2040 total traffic conditions (with full buildout and occupancy of the proposed Project Basie development) during the four identified weekday AM and PM peak periods; and,
- Recommended changes to the transportation system.



Site Vicinity Map
Woodburn, Oregon

Figure
1

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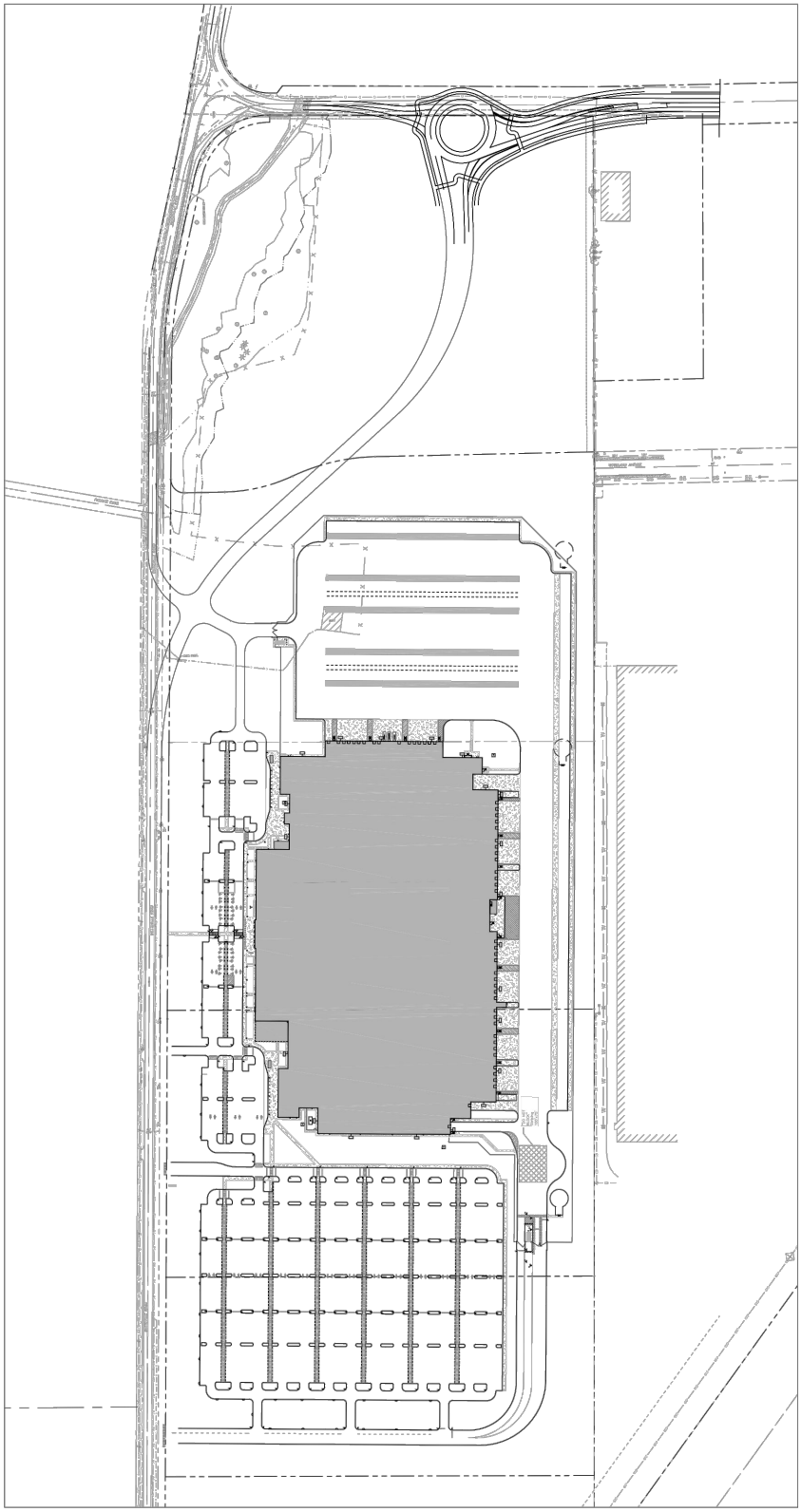

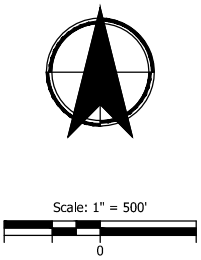

SITE PLAN PROVIDED BY MACKENZIE

Concept Site Plan
Woodburn, Oregon

Figure
2

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Analysis Methodology

The signalized and stop-controlled intersection operational analyses presented in this report were prepared following *Highway Capacity Manual* (HCM) 6th Edition analysis procedures using Synchro 10 software in accordance with the *ODOT Analysis Procedures Manual (APM)*. HCS 7 (incorporating HCM 6th Edition procedures) was used for all roundabout analyses. The observed peak hour factor was used for the existing and year 2023 background traffic analyses. For year 2040 conditions analyses, as well as the analyses of the peak period associated with the fulfillment center, a minimum peak hour factor of 0.95 was applied to reflect peak hour spreading as traffic volumes increase. Right turns on red at signalized intersections were estimated based on field observations and projected growth in traffic volumes.

Performance Measures and Operating Standards

Intersection performance measures reported in this study include, but are not limited to, level of service (LOS), volume-to-capacity ratio (v/c), and delay. Intersection operating targets adopted by ODOT, City of Woodburn, and Marion County are summarized below.

ODOT Mobility Targets

ODOT uses volume-to-capacity (v/c) ratios to assess intersection operations. Table 6 of the Oregon Highway Plan (OHP) provides volume-to-capacity ratio targets for all signalized/roundabout and unsignalized intersections located outside the Portland metropolitan area. Based on the OHP, Table 1 summarizes the mobility target that will be used to assess intersection operations along the OR 219 study corridor. In addition, the *Oregon Highway Design Manual* standards (from Table 10-2) are identified for any intersections that are proposed to be substantially rebuilt or relocated as part of site development.

Table 1 – ODOT Mobility Targets

Intersection	OHP Mobility Target	Highway Design Manual 20-Year Design Mobility Standards
OR 219/Butteville Road	V/C: 0.90 major approach/0.90 minor approach	0.75
OR 219/Willow Avenue	V/C: 0.95 major approach/0.95 minor approach	0.80
OR 219/Woodland Avenue	V/C: 0.95	0.80
OR 219/I-5 SB Ramp Terminal	V/C: 0.80	0.70
OR 21/I-5 NB Ramp Terminal	V/C: 0.80	0.70

Note: OR 219 is a District Highway with a posted speed of 35 mph from Willow Avenue through the I-5 interchange ramps. The posted speed increases to 55 mph west of Willow Avenue including the Butteville Road intersection.

ODOT's APM provides a methodology for estimating v/c at signalized intersections using Synchro HCM 6th Edition outputs based on the sum of the critical movements at the intersection.

City of Woodburn Operating Standards

The City of Woodburn's Transportation System Plan (TSP) has adopted the following mobility targets for intersections within the City. Although the City of Woodburn has no ownership or maintenance responsibility at any of the identified study intersections, the traffic impact study will account for these standards in the analysis.

- LOS E for signalized intersections
- 1.0 v/c for signalized intersections
- 0.90 v/c for the critical movements at unsignalized intersections

Marion County Mobility Standards

The County's policy and procedure for traffic impact analysis requirements specify the following mobility standards. For the purposes of this study, these standards will apply when evaluating traffic conditions along the Marion County owned and maintained Butteville Road.

- Signalized, All Way Stop Controlled (AWSC), or Roundabout intersections
  - LOS D (with all individual movements operating at LOS E or better) and a volume/capacity ratio of 0.85 or less.
- Unsignalized intersections
  - LOS E and a volume/capacity ratio of 0.90 for critical movements

EXISTING CONDITIONS

This section summarizes the existing characteristics of the transportation system and adjacent land uses in the vicinity of the proposed development, including an inventory of the existing multimodal transportation facilities and options, a summary of recent crash history, and an evaluation of existing intersection operations for motor vehicles at the study intersections.

Site Conditions and Adjacent Land Uses

The project site consists of approximately 88 acres located southeast of the OR 219/Butteville Road intersection. The site has historically been in agricultural use but is currently zoned for industrial use in Woodburn's Southwest Industrial Reserve (SWIR) overlay. Senecal Creek runs through the northwest corner of the site, flowing to the northeast under bridge crossings in Butteville Road and OR 219.

Like the subject property, land parcels to the south are currently used for agricultural use purposes but anticipated for future industrial development under Woodburn SWIR regulations. The WinCo Foods distribution center is on the adjacent property to the east, in a Light Industrial (IL) zone. Lands to the west, across Butteville Road, are outside the Woodburn Urban Growth Boundary (UGB) and include a mix of farm, agriculture, and rural residential uses.

Transportation Facilities

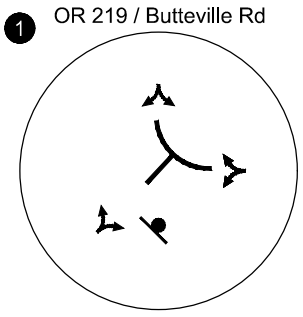
Table 2 provides a summary of transportation facilities in the site vicinity. Figure 3 illustrates the existing lane configurations and traffic control devices at the study intersections.

Table 2 - Existing Transportation Facilities and Roadway Designations

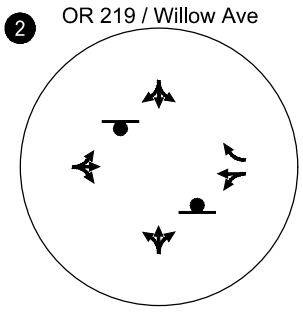
Roadway	Classification (bold indicates jurisdictional ownership)	Cross Section	Posted Speed	Sidewalks Present?	Bike Lanes Present?	On-Street Parking Allowed?
I-5	**Interstate Highway - ODOT**	4 lanes	65	No	No	No
OR 219 (Hillsboro-Silverton Highway No. 140)	**District/Local Interest Road – ODOT** Major Arterial – City of Woodburn	2-5 lanes	35/55[1]	Yes[2]	Yes	No
Woodland Avenue	**Access Street – City of Woodburn**	2 lanes	25	Yes	No	No
Willow Avenue	**Local Street – City of Woodburn**	2 lanes	25	No	No	Yes
Butteville Road	**Major Collector – Marion County** Minor Arterial – City of Woodburn	2 lanes	Not posted	No	Narrow striped shoulder	No
Parr Road	**Minor Collector – Marion County**	2 lanes	Not posted	No	No	No

[1] The posted speed on OR 219 is 35 mph from Willow Avenue to the I-5 ramp terminals. West of Willow Avenue, the posted speed is 55 mph.
[2] Sidewalks are present along both sides of OR 219 east of Willow Avenue. There are no sidewalks west of Willow Avenue.

1 OR 219 / Butteville Rd

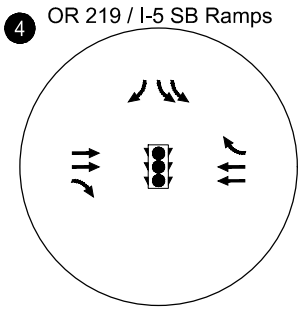


2 OR 219 / Willow Ave

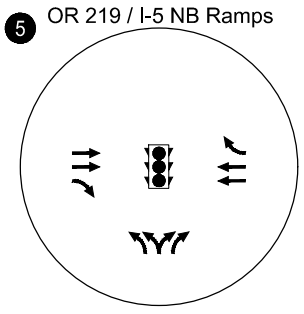


3 OR 219 / Woodland Ave

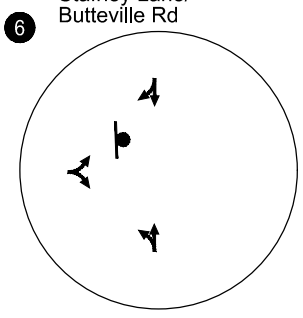
4 OR 219 / I-5 SB Ramps



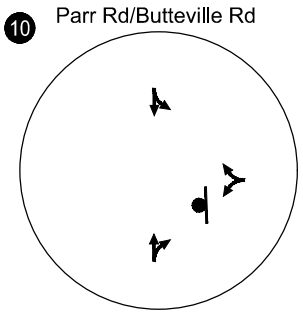
5 OR 219 / I-5 NB Ramps



6 Stafney Lane/ Butteville Rd



10 Parr Rd/Butteville Rd



- STOP SIGN
- TRAFFIC SIGNAL

Existing Lane Configurations And Traffic Control Devices Woodburn, OR

Figure **03**

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Traffic Volumes and Peak Hour Operations

Manual turning movement volumes were collected at the study intersections during the weekday morning (6:00 – 10:00 AM) and afternoon (3:00 – 7:00 PM) peak periods on April 14, 2021. The following sections summarize how the volumes were adjusted to account for seasonality and the ongoing effects of COVID-19 on "typical traffic patterns."

Seasonal Adjustments

Per ODOT requirements, a seasonal factor was applied to the study intersections along the OR 219 corridor. To determine an appropriate seasonal factor, three methodologies were investigated per ODOT's APM: On-Site ATR Method, ATR Characteristic Table Method, and ATR Seasonal Trend Method.

On-Site ATR Method

The On-Site ATR Method is used when an Automatic Traffic Recorder (ATR) is within or near the project area. ATR #24-020 is the closest ATR station to Woodburn, located approximately 4.25 miles to the west on OR 219. However, the average annual daily traffic at this ATR site is not within ten percent of recent traffic volumes collected along OR 219 in the vicinity of the I-5 interchange (10 percent is the criteria cited by the ATM). As such and per the APM guidance, the On-Site ATR method was not utilized.

ATR Characteristics Table

The ATR Characteristic Table provides general characteristics for each ATR in Oregon and is typically used when there is not a nearby ATR within the immediate study area. A review of the Characteristic Table did not find an ATR that closely matches the conditions along OR 219 within the vicinity of the study site. As such and per the APM guidance, this methodology was not used.

ATR Seasonal Trend Method

The seasonal trend table is used when there is not an ATR nearby or in a representative area. This method averages seasonal trend groupings from the ATR Characteristics Table. For movements at intersections along OR 219, an average of the "commuter" and "summer" trends was deemed appropriate as it has been used and approved in other recent planning studies in the project vicinity. Table 3 identifies the seasonal trend adjustments.

Table 3 – ATR Seasonal Trend Method for Commuter and Summer Trends

	April Count Month (April 15)	Seasonal Trend Peak Period Factor
Commuter	0.9759	0.9355
Summer	1.0100	0.8299

- Based on Table 3, the Commuter seasonal adjustment is 1.04 (i.e., 0.9759/0.9355) and the Summer seasonal adjustment is 1.22 (i.e., 1.0100/0.8299). As such, an average of the Commuter and Summer season adjustments is 1.13.

Per the APM, the average adjustment calculation of 1.13 was applied to existing traffic volumes.

COVID-19 Volume Assessment

Considering the ongoing effect of the COVID-19 pandemic on area traffic volumes, the count data were compared with peak hour volumes collected in January 2016 and November 2020. Table 4 provides a comparison of the total entering volume (vehicles per hour) counted at study intersections in 2016, 2020, and 2021. The "System Peak Hour" identified in the table reflects the peak hour for the section of OR 219 extending from Butteville Road to the Interstate 5 (I-5) interchange.

Table 4 –Turning Movement Volume Comparison

Intersection	Volume Scenario	2016		2020		2021	
		7:05 to 8:05 AM	4:20 to 5:20 PM	7:10 to 8:10 AM	4:10 to 5:10 PM	7:00 to 8:00 AM	4:30 to 5:30 PM
OR 219/ Butteville Road	Total Entering Volume (vehicles per hour)	523	700	519	832	583	993
	Total Entering Volume (vehicles per hour) – Seasonally Adjusted[1]	607	812	607	973	659	1,122
OR 219/ Woodland Avenue	Total Entering Volume (vehicles per hour)	722	1,210	773	1,406	791	1,555
	Total Entering Volume (vehicles per hour) – Seasonally Adjusted[1]	838	1,404	904	1,645	894	1,757
OR 219/ I-5 SB Ramp Terminal	Total Entering Volume (vehicles per hour)	1,335	2,283	N/A	N/A	1,401	2,789
	Total Entering Volume (vehicles per hour) – Seasonally Adjusted[1]	1,549	2,648	N/A	N/A	1,583	3,152
OR 219/ I-5 NB Ramp Terminal	Total Entering Volume (vehicles per hour)	1,879	2,503	N/A	N/A	2,117	2,934
	Total Entering Volume (vehicles per hour) – Seasonally Adjusted[1]	2,180	2,903	N/A	N/A	2,392	3,315

[1] A seasonal adjustment factor of 1.16 was applied to the January 2016 counts, per the "Mahan Property Transportation Master Plan" dated December 22, 2016. A seasonal adjustment factor of 1.17 was applied to the November 2020 counts, per the "I5 Logistics Center Phase 1" Transportation Impact Analysis dated March 12, 2021. Seasonal traffic adjustments for the 2021 turning movement counts were developed and documented in the "Project Basie Traffic Impact Study Scoping" letter submitted to ODOT on April 16, 2021 (Attachment A). The seasonal adjustment factor for the April 2021 counts was calculated as 1.13.

ODOT's APM, *Appendix 3E*, provides traffic volume adjustments for disruptive events such as the COVID-19 pandemic (Reference 1). As shown in Table 4, the total entering volume at each intersection has increased considerably since 2016, even accounting for seasonal differences in the count dates. Furthermore, traffic volumes at some of the intersections have increased considerably since November 2020. Given that the 2021 counts are higher than 2020 volumes recorded during COVID-19 (and these volumes were approved for use by ODOT in the *I-5 Logistics Center Phase 1 TIA*), the 2021 count data were used for purposes of traffic volume development with no disruptive event adjustment. *Appendix B provides the traffic count worksheets used in this study*.

Existing Intersection Operations

As will be described later in this report, Project Basie is proposed to be a fulfillment center operating 24-hours a day with employees working on day and night shifts. The transition times between these shift times and the peak hour of the adjacent transportation system overlaps in the weekday AM peak period but occurs during separate time periods in the weekday PM peak period. To identify potential changes to the transportation system associated with site development, the intersection operations analysis was evaluated during the following four weekday AM and PM time periods:

- 6:30 – 7:30 AM: captures the anticipated peak arrival period for the proposed dayshift for Project Basie
- 7:00 - 8:00 AM: approximate existing system peak hour along the OR 219 study corridor from Butteville Road to the I-5 ramp terminals
- 4:30 – 5:30 PM: approximate existing system peak hour along the OR 219 study corridor from Butteville Road to the I-5 ramp terminals
- 5:30 – 6:30 PM: captures the anticipated peak dayshift departure and the peak nightshift arrival period of Project Basie

Figures 4-7 illustrate the resulting 2021 existing traffic volumes at the study intersection under all four AM and PM study hours while Table 5 summarizes the corresponding traffic operations. As shown in Table 5 and detailed in *Appendix C* (which includes the existing conditions operations analysis worksheets), the study intersection operations meet ODOT mobility targets and City and County operating standards during the four AM and PM study hours.

Table 5 – Existing Traffic Conditions

Intersection	Maximum Operating Standard/Target	Weekday 6:30-7:30 AM Peak Hour				Weekday 5:30-6:30 PM Peak Hour			
		Critical Approach/ Lane	LOS	Delay (sec)	V/C	Critical Approach/ Lane	LOS	Delay (sec)	V/C
OR 219/ Butteville Road	V/C: 0.90 major approach/0.90 minor approach	NB	C	15.6	0.43	NB	C	19.5	0.47
OR 219/ Willow Avenue	V/C: 0.95 major approach/0.95 minor approach	SB	B	14.7	0.14	SB	C	18.0	0.20
OR 219/ Woodland Avenue	V/C: 0.95	-	B	19.6	0.34	-	B	16.4	0.50
OR 219/ I-5 SB Ramp Terminal	V/C: 0.80	-	B	12.2	0.26	-	B	15.8	0.45
OR 219/ I-5 NB Ramp Terminal	V/C: 0.80	-	B	16.5	0.36	-	B	10.6	0.44
Butteville Road/ Parr Road	LOS E and V/C: 0.90	WB	B	10.7	0.10	WB	B	11.2	0.13
Intersection	**Maximum Operating Standard/Target**	**Weekday 7:00-8:00 AM Peak Hour**				**Weekday 4:30-5:30 PM Peak Hour**			
		Critical Approach/ Lane	**LOS**	**Delay (sec)**	**V/C**	**Critical Approach/ Lane**	**LOS**	**Delay (sec)**	**V/C**
OR 219/ Butteville Road	V/C: 0.90 major approach/0.90 minor approach	NB	B	13.7	0.33	NB	D	31.7	0.57
OR 219/ Willow Avenue	V/C: 0.95 major approach/0.95 minor approach	SB	B	12.5	0.13	SB	C	19.4	0.19
OR 219/ Woodland Avenue	V/C: 0.95	-	B	13.6	0.37	-	B	17.2	0.54
OR 219/ I-5 SB Ramp Terminal	V/C: 0.80	-	B	14.8	0.26	-	B	15.7	0.43
OR 219/ I-5 NB Ramp Terminal	V/C: 0.80	-	B	14.3	0.33	-	B	10.9	0.50
Butteville Road/ Parr Road	LOS E and V/C: 0.90	WB	B	10.4	0.07	WB	B	11.8	0.15

Existing Traffic Volumes
System Peak Hour (7:00 AM to 8:00 AM)
Woodburn, OR

Figure
4

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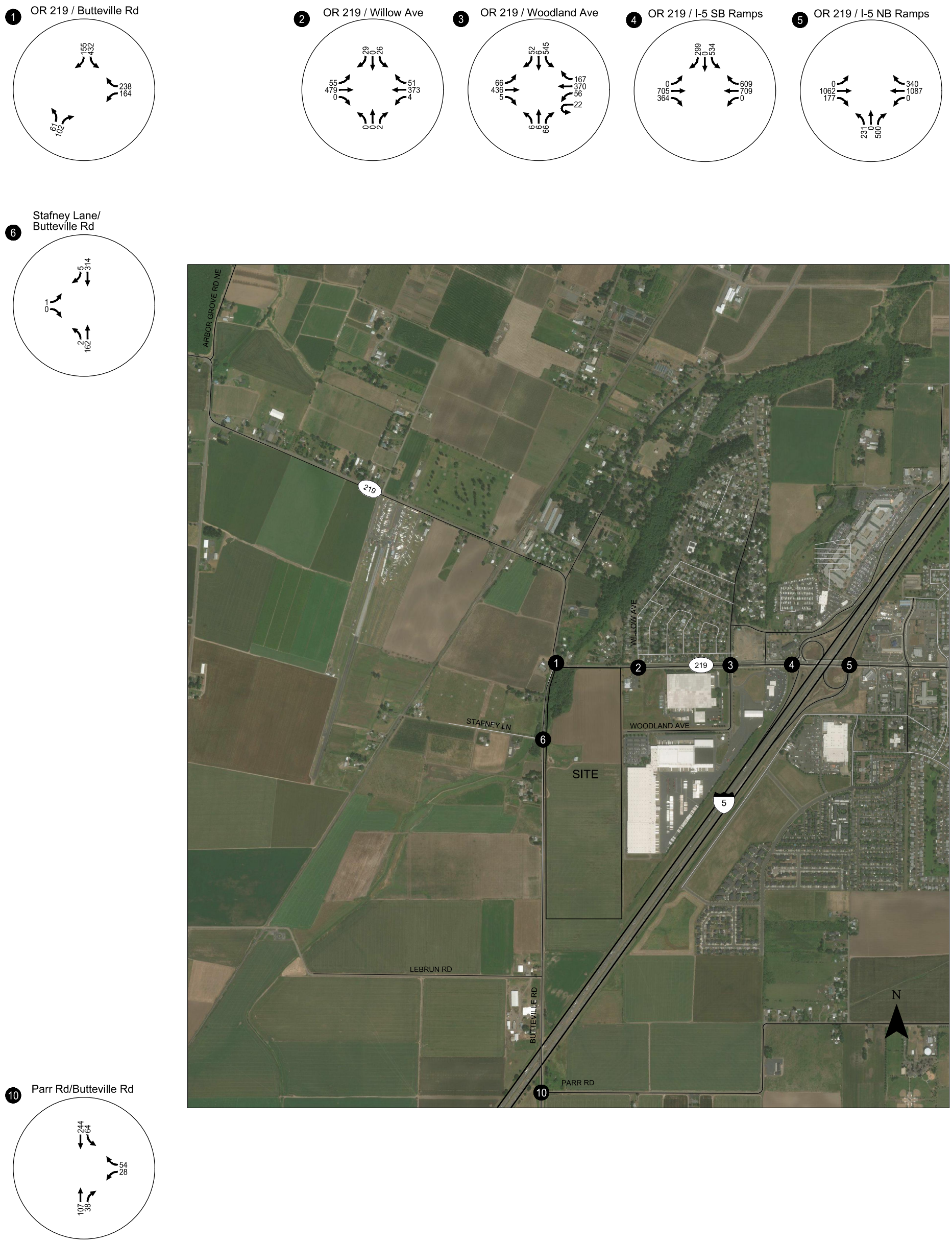

Existing Traffic Volumes
System Peak Hour (4:30 PM to 5:30 PM)
Woodburn, OR

Figure
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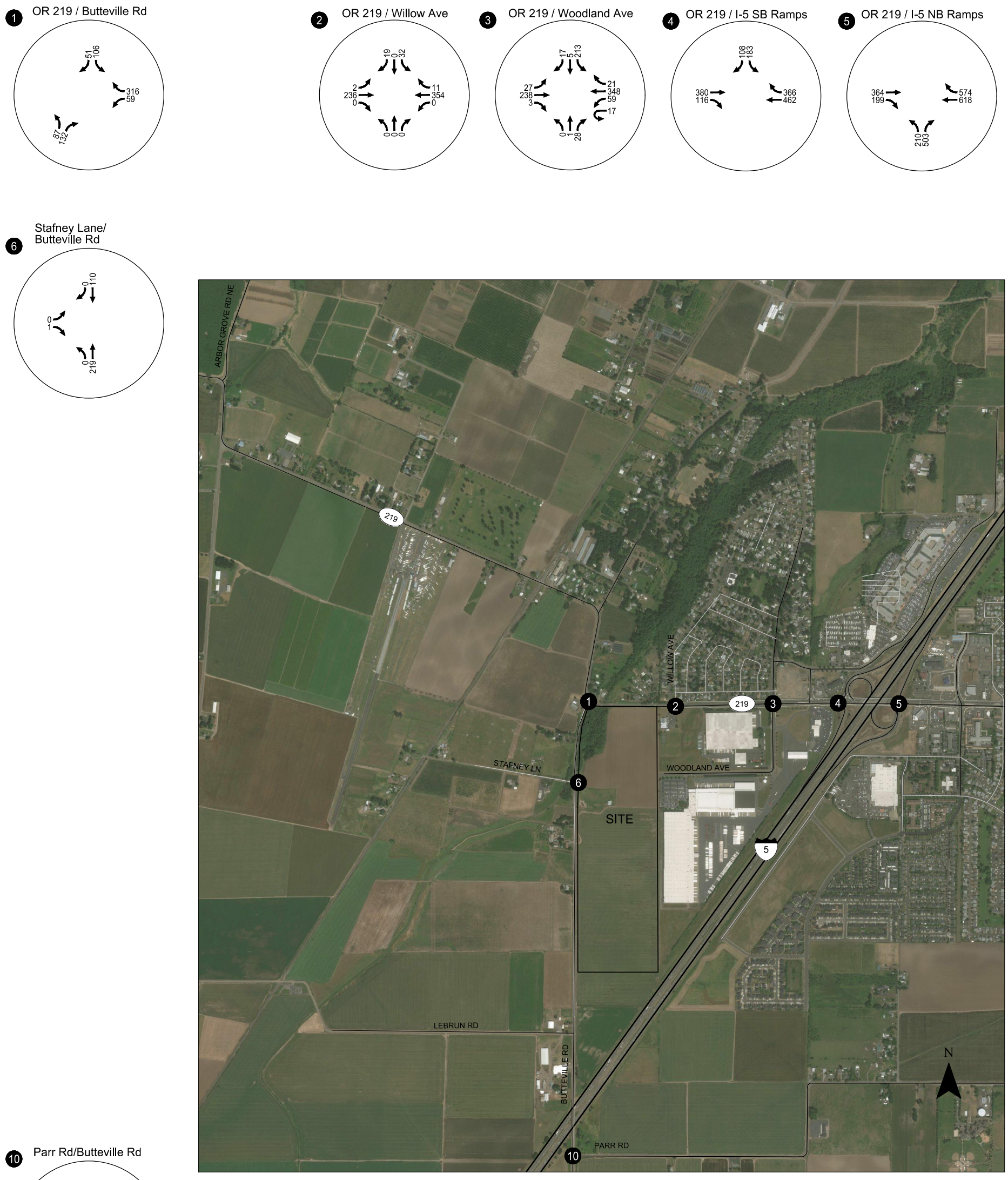

Existing Traffic Volumes
Peak Hour of Generator (6:30 AM to 7:30 AM)
Woodburn, OR

Figure
6

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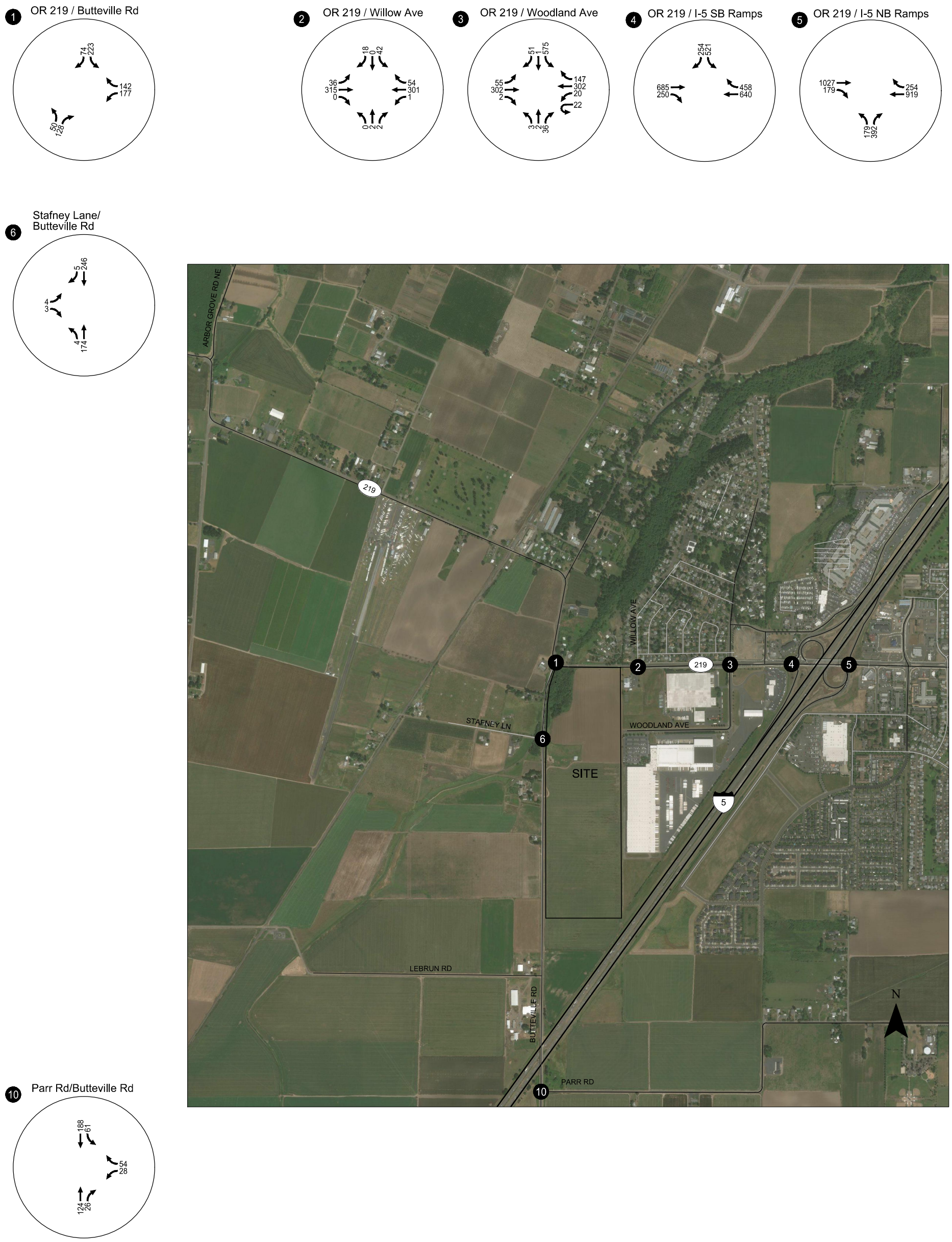

Existing Traffic Volumes
Peak Hour of Generator (5:30 PM to 6:30 PM)
Woodburn, OR

Figure
7

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Intersection Crash History

ODOT provided crash records at the study intersections for the period from January 1, 2014 through December 31, 2018. The crash type classifications at each intersection were reviewed to assess whether crash patterns might be identifiable. *Appendix D provides the ODOT crash report which provides more details on the reported crashes*. Table 6 summarizes the ODOT crash data.

Table 6 - Reported Crash History (January 1, 2014 – December 31, 2018)

Study Intersection	Crash Type								Severity			Total
	Angle	Turn	Rear-End	Side Swipe	Fixed Object	Ped/ Bike	Head-On	Other	PDO[1]	Injury	Fatal	
OR 219/ Butteville Road	0	1	5	3	5	0	0	0	8	6	0	14
OR 219/ Willow Avenue	0	3	1	0	0	0	0	0	1	3	0	4
OR 219/ Woodland Avenue	2	2	3	1	0	0	0	0	4	4	0	8
OR 219/ I-5 SB Ramp Terminal	0	0	18	0	0	0	0	3	11	10	0	21
OR 219/ I-5 NB Ramp Terminal	0	4	3	0	0	0	0	2	3	6	0	9
Butteville Road/ Parr Road	2		1	0	3	0	0	0	2	4	0	6

[1]PDO = Property damage only

In addition to the crash types, intersection crash rates were calculated and compared to statewide crash rate performance thresholds. For this analysis, the observed crash rate was calculated and compared with the 90th percentile crash rates for urban intersections by traffic control and 3 versus 4-legged configurations (as appropriate).

The intersection crash rate assessment for the study intersections is summarized in Table 7.

Table 7 - Intersection Crash Rate Assessment

Study Intersection Location	Crash Rate by Intersection Type	Crash Rate by Volume	Observed Crash Rate	Observed Crash Rate > Mean Crash Rate by Intersection	Observed Crash Rate > 90th Percentile Rate
OR 219/ Butteville Road	0.38	0.45	0.67	Yes	Yes
OR 219/ Willow Avenue	0.39	0.40	0.21	No	No
OR 219/ Woodland Avenue	0.69	0.45	0.24	No	No
OR 219/ I-5 SB Ramp Terminal	0.65	0.56	0.41	No	No
OR 219/ I-5 NB Ramp Terminal	0.64	0.55	0.17	No	No
Butteville Road/ Parr Road	0.48	0.62	0.61	No	No

As shown in Table 7, the observed crash rate at the OR 219/Butteville Road intersection exceeds the 90th percentile crash rate. Many of the recorded crashes were associated with rear-end crashes on the

northbound Butteville Road approach, sideswipe style crashes, and one westbound to southbound turn crash. All types of noted crashes may be attributed in part due to the tight geometry and curvature of the intersection and the limited intersection sight distance associated with the westbound to southbound left-turn movement. These findings are consistent with previous assessments of the intersection. As noted later in this report, a relocated OR 219/Butteville Road intersection is being proposed as part of the development application that is intended to address the noted geometric and sight distance limitations. No other safety-based mitigation measures were identified for implementation with the proposed development based on review of the study intersection crash history.

TRANSPORTATION IMPACT ANALYSIS

The traffic impact analysis identifies how the study area's transportation system will operate in the year 2023 upon buildout of Project Basie as well as in the year 2040, consistent with the City's TSP.

2023 Background Traffic Conditions

The year 2023 background traffic operations analysis identifies how the study area's transportation system will operate if Project Basie is not developed. This analysis includes local and regional traffic but does not include traffic from the proposed fulfillment center.

A two percent linear annual growth rate was applied to the seasonally-adjusted 2021 traffic volumes to account for general local and regional traffic growth. This rate is consistent with historical growth rates and rates used in other recent traffic impact studies in the local vicinity.

In addition to the local/regional growth, three in-process developments were identified that would directly impact the study intersections. The site trips associated with the following projects were incorporated in the 2023 background traffic volumes:

- Woodland Crossing Apartments
- Woodburn Senior Living Apartments
- Port of Willamette[3]

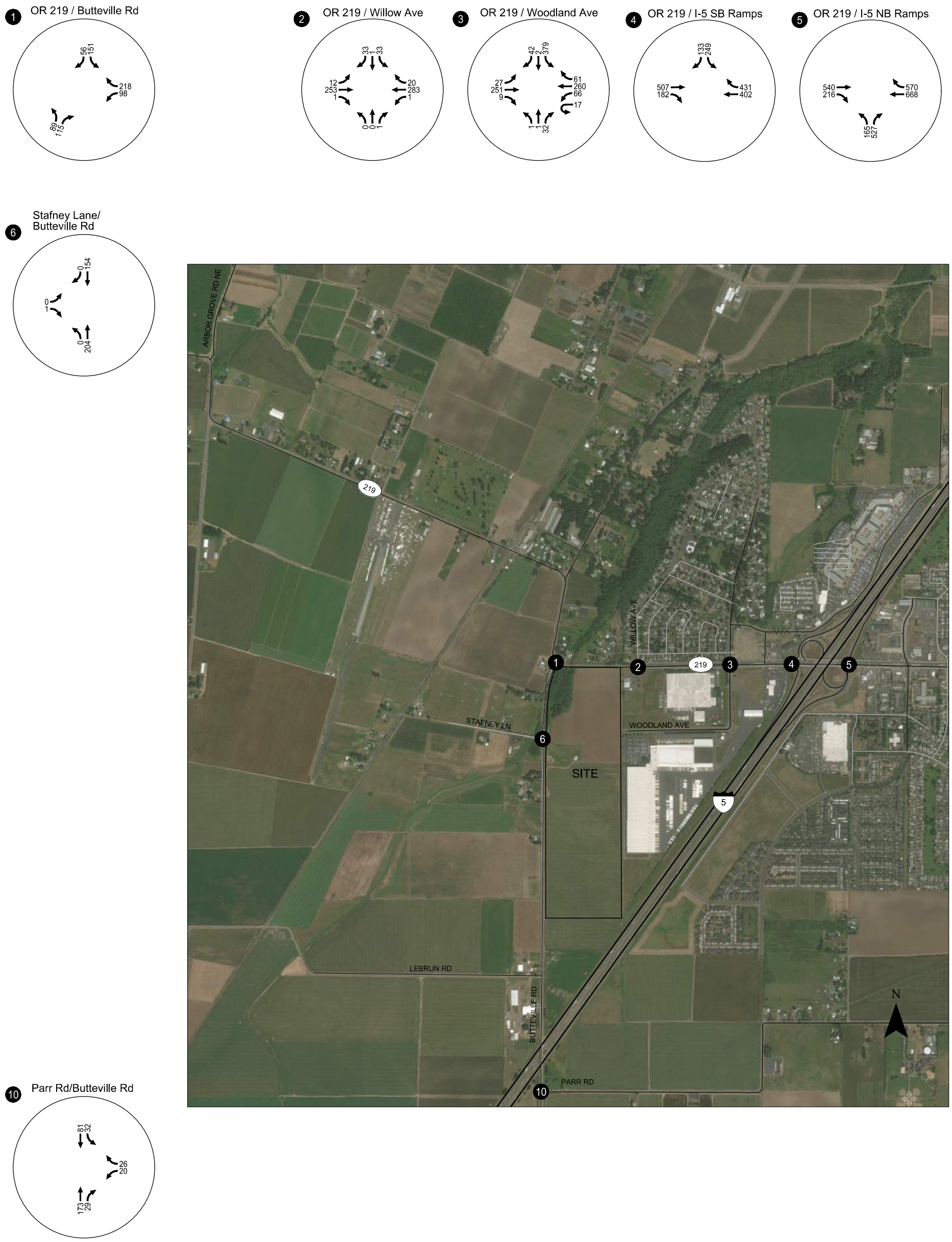
Background Intersection Operations

Figures 8-11 summarize the resulting 2023 background traffic volumes at the study intersection under all four AM and PM study periods, while Table 8 summarizes the corresponding traffic operations. As shown in Table 8, the study intersections are forecast to continue to satisfy applicable ODOT mobility targets and City and County operating standards during the four AM and PM study periods. Note that while all turning movement volumes and v/c ratios are projected to increase from 2021 to 2023, some intersections are projected to experience a small decrease in overall delay due to the actuated signal timing as modeled in Synchro. *Appendix E contains the year 2023 Background conditions operations worksheets*.

[3] At the time of this report submittal, the traffic study for the Port of Willamette study was not made available. It will be incorporated in the previously noted update when provided by the Port of Willamette project team.

Table 8 – 2023 Background Traffic Conditions

Intersection	Maximum Operating Standard/Target	Weekday 6:30-7:30 AM Peak Hour				Weekday 5:30-6:30 PM Peak Hour			
		Critical Approach/ Lane	LOS	Delay (sec)	V/C	Critical Approach/ Lane	LOS	Delay (sec)	V/C
OR 219/ Butteville Road	V/C: 0.90 major approach/0.90 minor approach	NB	C	17.4	0.49	NB	C	22.6	0.53
OR 219/ Willow Avenue	V/C: 0.95 major approach/0.95 minor approach	SB	C	16.0	0.16	SB	C	19.8	0.24
OR 219/ Woodland Avenue	V/C: 0.95	-	B	19.4	0.40	-	B	17.8	0.53
OR 219/ I-5 SB Ramp Terminal	V/C: 0.80	-	B	11.6	0.29	-	B	15.8	0.48
OR 219/ I-5 NB Ramp Terminal	V/C: 0.80	-	B	16.2	0.40	-	A	9.4	0.48
Butteville Road/ Parr Road	LOS E and V/C: 0.90	WB	B	10.9	0.10	WB	B	11.3	0.14
Intersection	**Maximum Operating Standard/Target**	**Weekday 7:00-8:00 AM Peak Hour**				**Weekday 4:30-5:30 PM Peak Hour**			
		Critical Approach/ Lane	**LOS**	**Delay (sec)**	**V/C**	**Critical Approach/ Lane**	**LOS**	**Delay (sec)**	**V/C**
OR 219/ Butteville Road	V/C: 0.90 major approach/0.90 minor approach	NB	B	14.6	0.36	NB	E	40.5	0.66
OR 219/ Willow Avenue	V/C: 0.95 major approach/0.95 minor approach	SB	B	13.1	0.14	SB	C	21.7	0.22
OR 219/ Woodland Avenue	V/C: 0.95	-	B	14.5	0.38	-	B	18.7	0.58
OR 219/ I-5 SB Ramp Terminal	V/C: 0.80	-	B	14.0	0.28	-	B	15.8	0.47
OR 219/ I-5 NB Ramp Terminal	V/C: 0.80	-	B	14.2	0.36	-	B	11.5	0.55
Butteville Road/ Parr Road	LOS E and V/C: 0.90	WB	B	10.5	0.07	WB	B	12.1	0.16



2023 Background Traffic Volumes
System Peak Hour (7:00 AM to 8:00 AM)
Woodburn, OR

Figure
8

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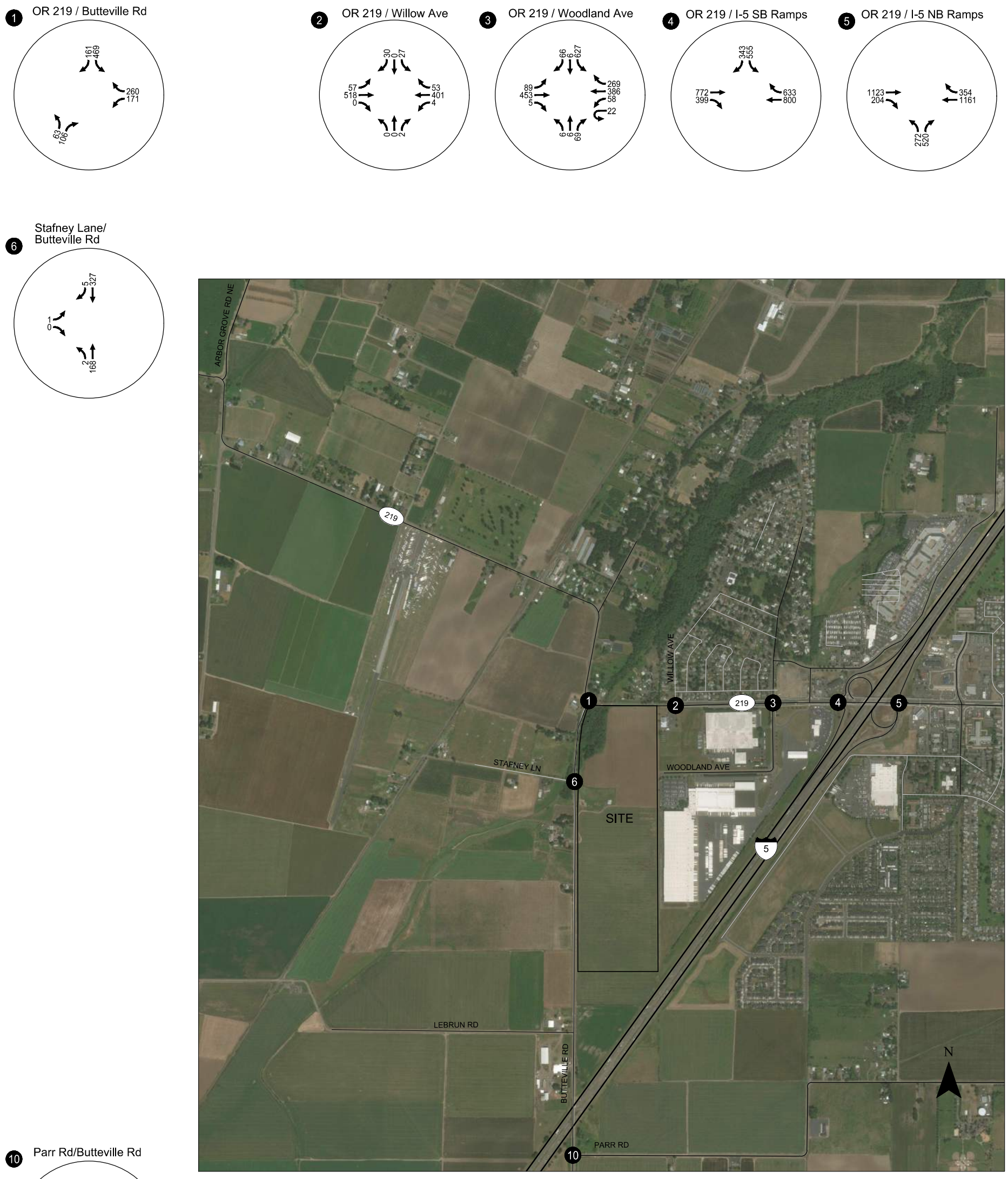

2023 Background Traffic Volumes
System Peak Hour (4:30 PM to 5:30 PM)
Woodburn, OR

Figure
9

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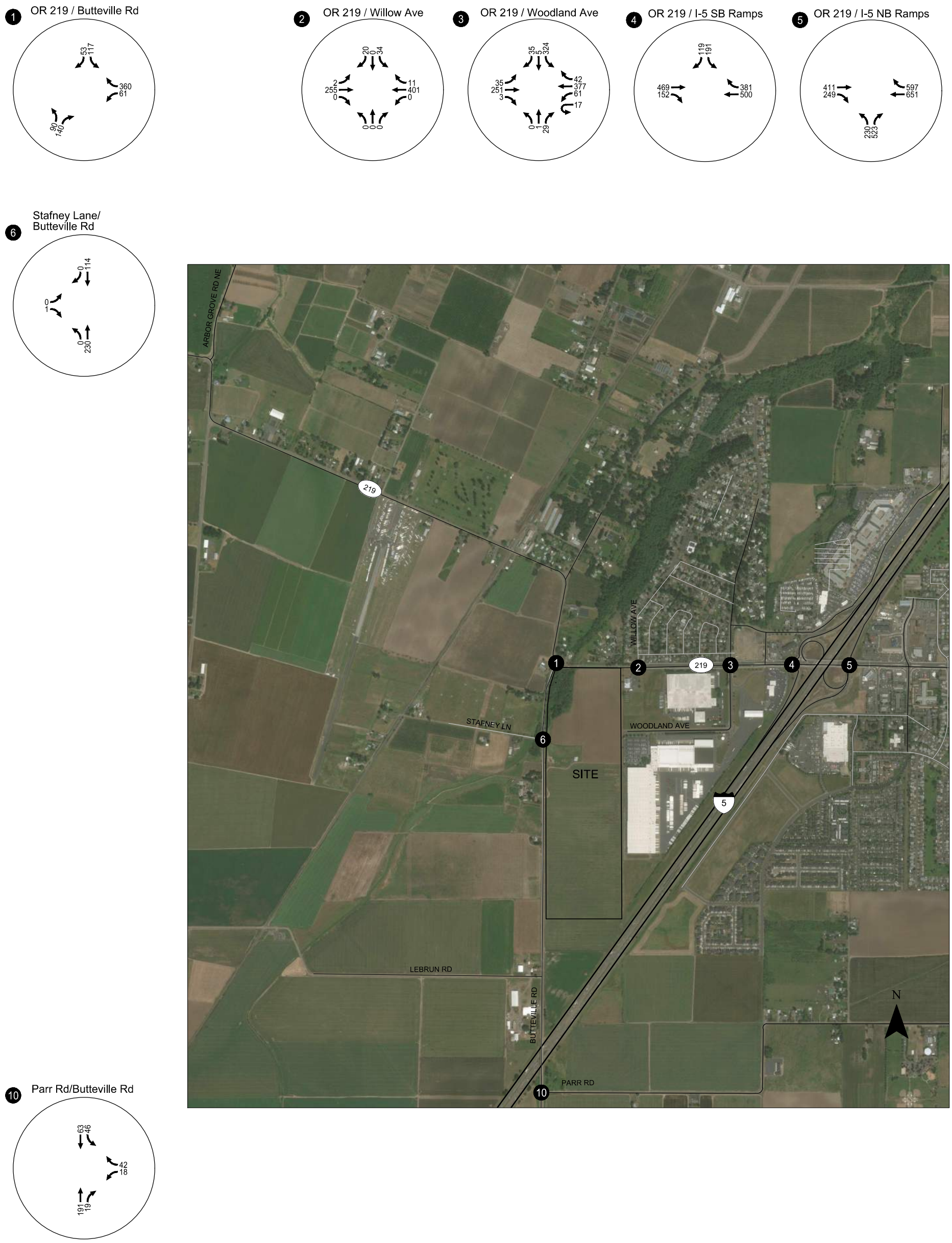

2023 Background Traffic Volumes
Peak Hour of Generator (6:30 AM to 7:30 AM)
Woodburn, OR

Figure
10

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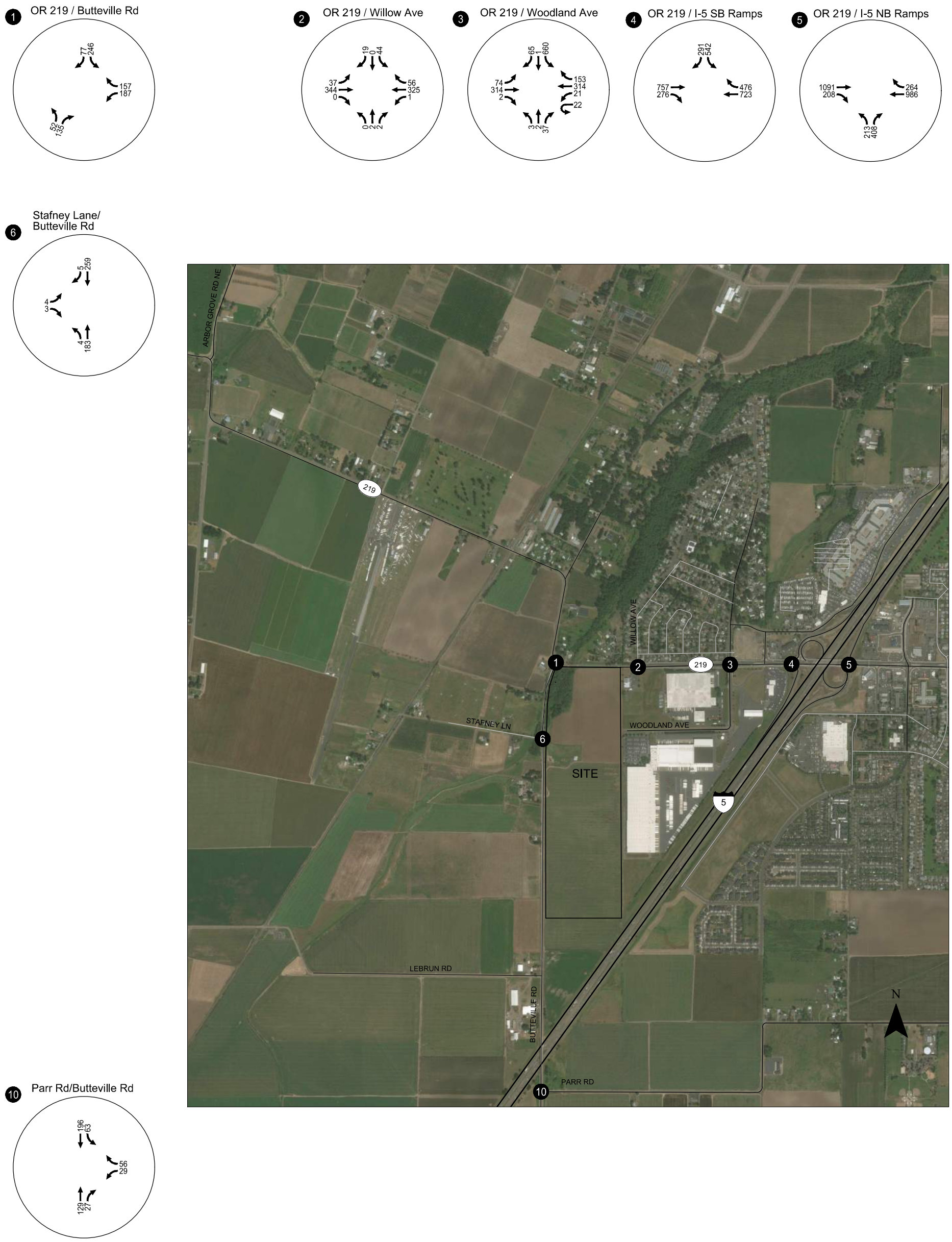

2023 Background Traffic Volumes
Peak Hour of Generator (5:30 PM to 6:30 PM)
Woodburn, OR

Figure
11

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Proposed Fulfillment Center

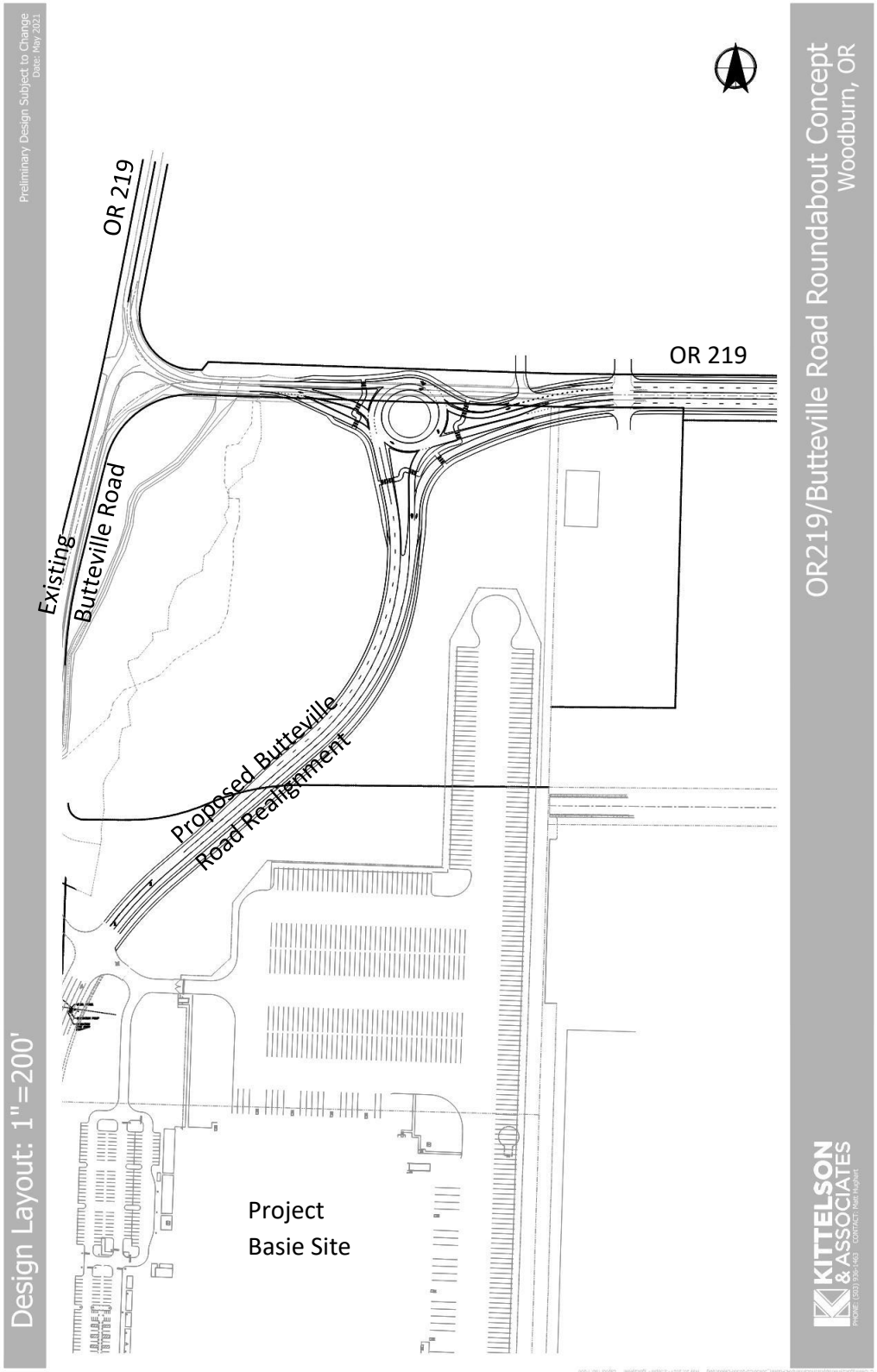
Project Basie will consist of a five-story building housing approximately 3.849 million square feet for sortable parcel fulfillment and distribution. As shown in Figure 2, four site access driveways are proposed along the site's Butteville Road frontage. Of these driveways, the three northern driveways will primarily be used by employees accessing the site's parking areas and drop-off/pick-up zones. The southernmost driveway is the site's primary truck ingress and egress access.

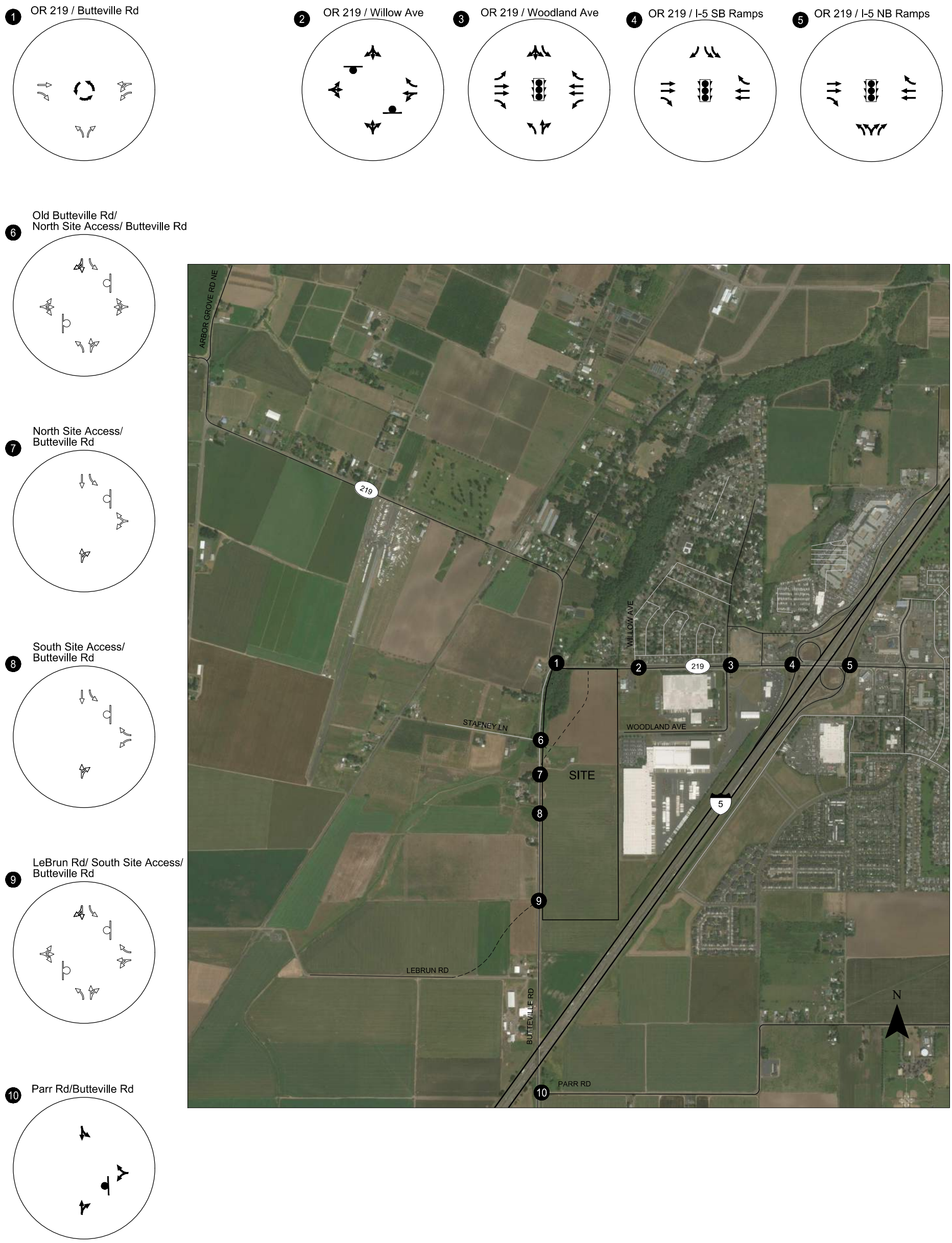
To support the development, the following changes to the transportation system have been determined to be needed and are proposed to be constructed as part of the development:

- The southern segment of Butteville Road abutting the development site will be widened consistent with the special design section agreed upon by the City of Woodburn and Marion County, with three twelve-foot travel lanes (one NB lane, one center turn lane, and one SB lane), a rural shoulder on the west side, six-foot bike lanes, and curb, landscape strip and a six-foot sidewalk on the east side.
- In order to accommodate future industrial development in the SWIR, the City of Woodburn's TSP has identified the need for geometric and traffic control changes at the OR 219/Butteville Road intersection. However, a preliminary investigation of the intersection determined that widening/enhancement is constrained by the City's UGB on the west side, private property on the northeast side, wetlands on the southeast side, and a likely need to widen or replace the Senecal Creek bridge on the approaching east leg of OR 219. To avoid potential design and permitting challenges associated with the current location, Project Basie is proposing the following changes:
    - Realign the northern section of Butteville Road to the east of Senecal Creek and its affiliated wetlands. This new alignment would be constructed to a symmetrical City of Woodburn Collector facility where it would be widened as necessary to fit the geometric design needs of a proposed roundabout at OR 219 (see next bullet).
    - Construct a double lane roundabout at the new Butteville Rd/OR 219 intersection. West of the new roundabout, OR 219 would be widened to be consistent with the full improved section that currently ends near the Willow Avenue intersection.
    - Close or access restrict the existing OR 219/Butteville Road intersection. For the purposes of this study, the intersection was assumed to be closed and all traffic volumes using the intersection rerouted to the proposed roundabout.
    - Provide a connection to the old Butteville Road and the realigned Butteville Road.

Exhibit 1 illustrates a conceptual layout of the proposed Butteville Road realignment and OR 219 roundabout sized and designed to accommodate long-term projected traffic and heavy vehicle demands. Additional conceptual design details for the proposed roundabout are provided in *Appendix F*. Figure 12 illustrates the proposed intersection and traffic control changes at the study intersections and site driveways.

Exhibit 1 - OR 219/Realigned Butteville Road Conceptual Layout





- STOP SIGN
- TRAFFIC SIGNAL
- PROPOSED ROUNDABOUT
- PROPOSED STOP SIGN
- PROPOSED LANE CONFIGURATION

Proposed Lane Configurations And Traffic Control Devices Woodburn, OR

Figure **12**

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Trip Generation Estimate

Trip generation estimates are typically based on data derived from *Trip Generation, 10th Edition*, published by the Institute of Transportation Engineers (ITE). The proposed fulfillment/distribution center will be used for storage and consolidation of products prior to their larger regional distribution and would be considered a "sortable" facility. The ITE land use that most closely matches this function is "High-Cube Fulfillment Center Warehouse" (Land Use 155). Table 9 provides the estimated trip generation using ITE data.

Table 9 - Estimated Trip Generation (ITE) – High Cube Fulfillment Center (Sortable)

Land Use	ITE Code	Size	Weekday Trips	Weekday AM Peak Hour Trips			Weekday PM Peak Hour Trips		
				Total	In	Out	Total	In	Out
High-Cube Fulfillment Center Warehouse	155	3,849,000 sq. ft.	23,640	1,705	853	852	3,959	1,980	1,979

In reviewing Table 9, it is important to note that the ITE rates are based on one or two study sites (depending on the analysis period) with a facility size that was much less than what is being proposed. In these cases, the ITE manual encourages caution and suggests local or other data be applied instead. For these reasons, information was obtained from the Project Basie tenant including detailed employee and truck arrival/departure profiles specific to this site that take into consideration the size of the building, its specific purpose, anticipated employment levels, and site-specific work schedules. A detailed summary of this profile is included in *Appendix G.* As shown, the proposed site is anticipated to be a 24-hour facility with multiple shift change patterns. In particular, there are two key shift change periods that are anticipated to occur near the typical weekday AM and PM peak periods:

- 6:30-7:30 AM which accounts for the peak arrival period for the dayshift.
- 5:30-6:30 PM which accounts for peak dayshift departure period and the peak nightshift arrival period.

These shift change periods represent what ITE defines as "the Peak Hour of the Generator". The resulting trip profile is summarized in Table 10 below.

Table 10 - Project Basie - Peak Hour of the Generator Trip Generation Estimate

Land Use	Size	Trip Type	Weekday Daily Trips	Weekday AM Peak Hour of Generator Trips (6:30-7:30 AM)			Weekday PM Peak Hour of Generator Trips (5:30-6:30 PM)		
				Total	In	Out	Total	In	Out
Project Basie	937 employees per shift	Employees	3,558	676	648	28	1,152	571	581
		Trucks	612	26	13	13	24	12	12
		Total	**4,170**	**702**	**661**	**41**	**1,176**	**583**	**593**

Source: Tenet supplied employee and freight arrival/departure schedule. See *Appendix F.*

In addition to the Peak Hour of the Generator, the traffic counts along the OR 219 study corridor revealed that Woodburn's street system has different peak time periods than reflected in Table 10. In particular, the weekday AM peak hour in Woodburn has been found to occur from 7:00-8:00 AM while the weekday PM system peak hour has been found to occur from 4:30-5:30 PM. The resulting trip profile for the proposed building during these times is shown in Table 11.

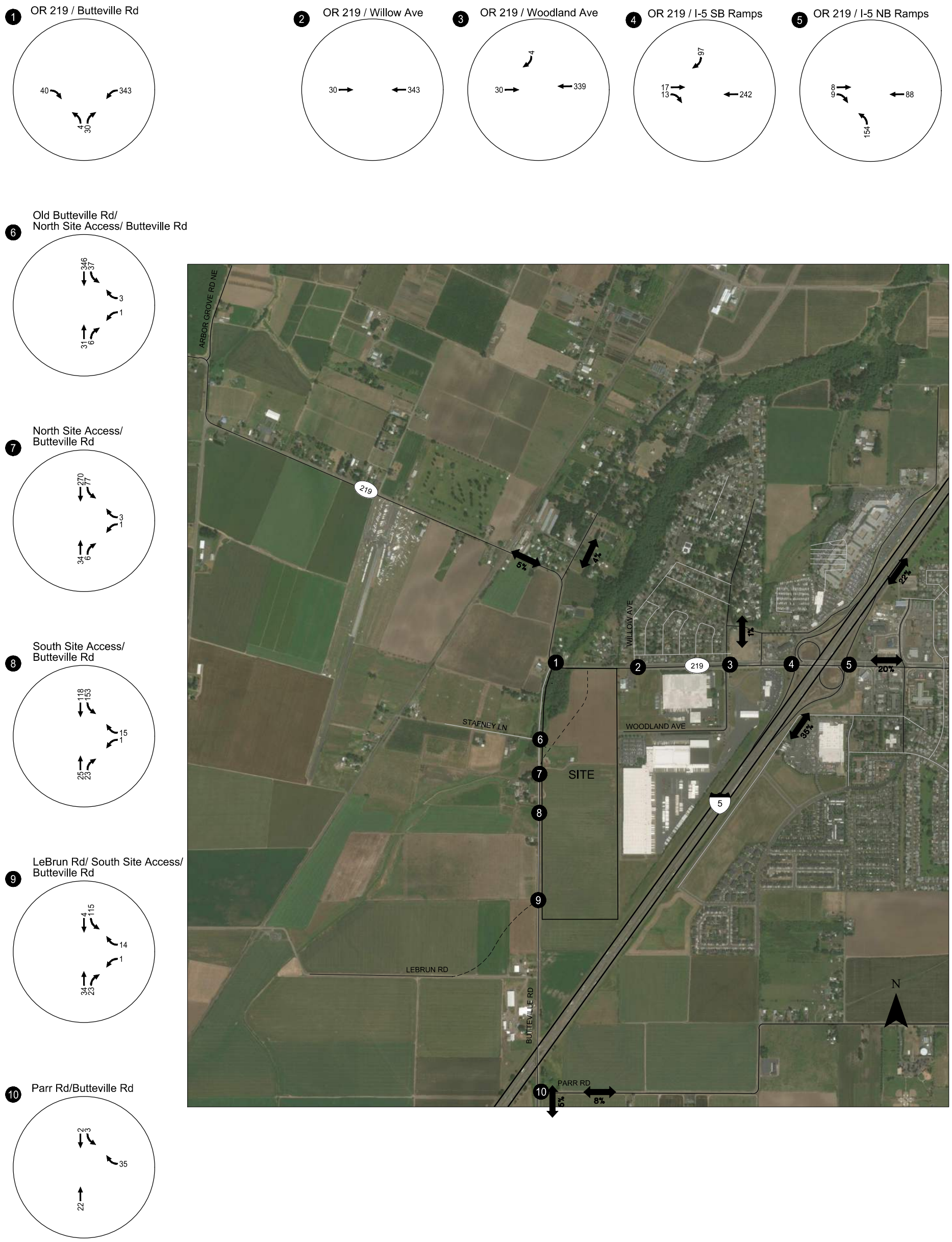
Table 11 - Project Basie - Peak Hour of the System Trip Generation Estimate

Land Use	Size	Trip Type	Weekday Daily Trips	Weekday AM Peak Hour of Generator Trips (7:00-8:00 AM)			Weekday PM Peak Hour of Generator Trips (4:30-5:30 PM)		
				Total	In	Out	Total	In	Out
Project Basie	937 employees per shift	Employees	3,558	425	403	22	162	98	64
		Trucks	612	32	16	16	22	11	11
		Total	**4,170**	**457**	**419**	**38**	**184**	**109**	**75**

Source: Tenet supplied employee and freight arrival/departure schedule. See *Appendix F.*

Site Trip Distribution/Trip Assignment

A trip distribution pattern was identified for the proposed fulfillment center taking into consideration the number of anticipated jobs that will be provided by the development, the site's location with respect to both the city and other population centers in the Willamette Valley. In addition to these factors, US Census OnTheMap (https://onthemap.ces.census.gov/) data was consulted which identifies statistics about the origins of workers who are employed in the Woodburn area (see *Appendix H* for a more detailed summary of the census employee origin data for Woodburn). Using a combination of these factors and based on preliminary scoping feedback from City, County, and ODOT staff, a refined trip distribution pattern was developed for the site. The trip distribution pattern and resulting assignment of weekday AM and PM peak period site-generated trips to the study intersections and site driveways is illustrated in Figures 13-16.



Site-Generated Trips
System Peak Hour (7:00 AM to 8:00 AM)
Woodburn, OR

Figure
13

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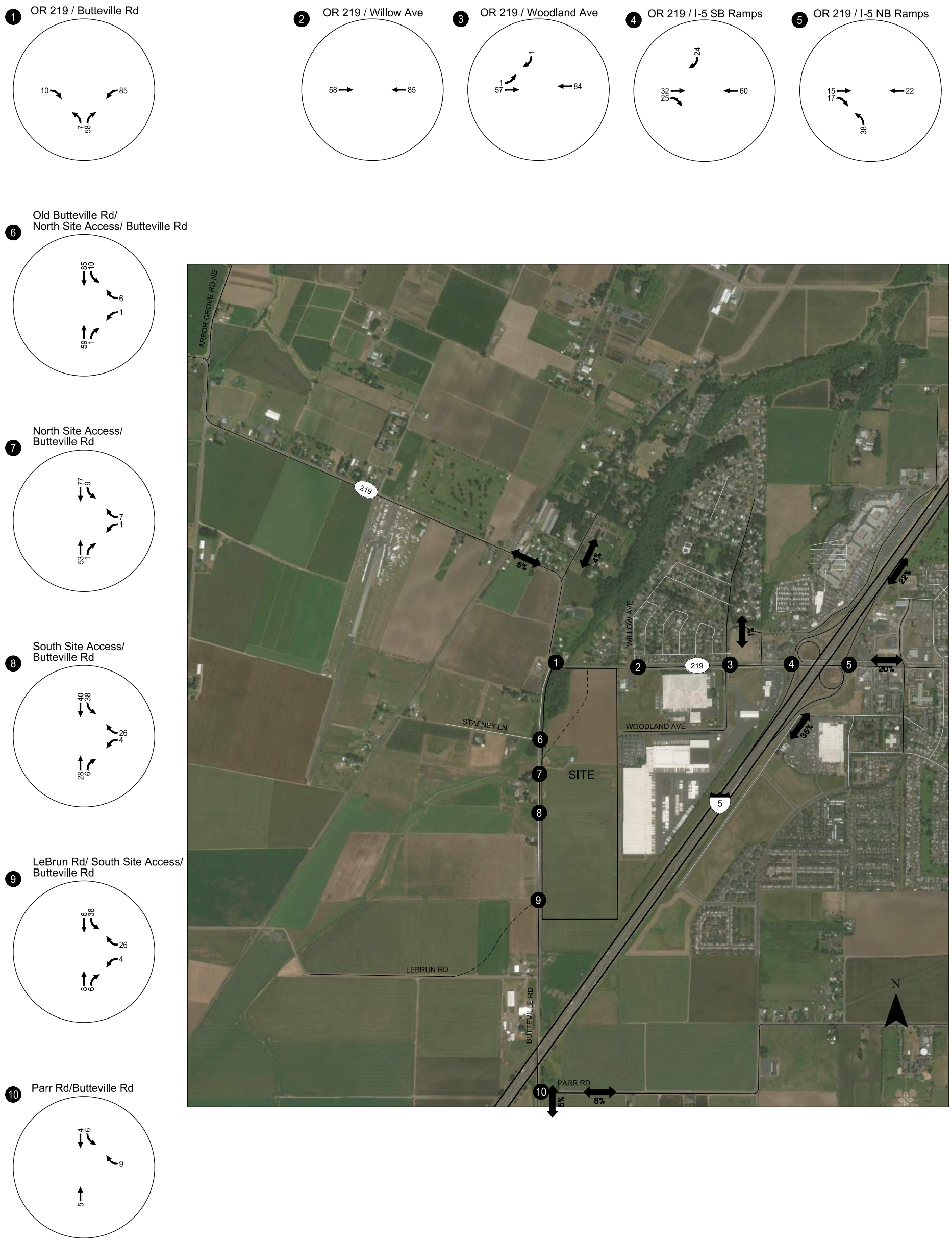

Site-Generated Trips
System Peak Hour (4:30 PM to 5:30 PM)
Woodburn, OR

Figure
14

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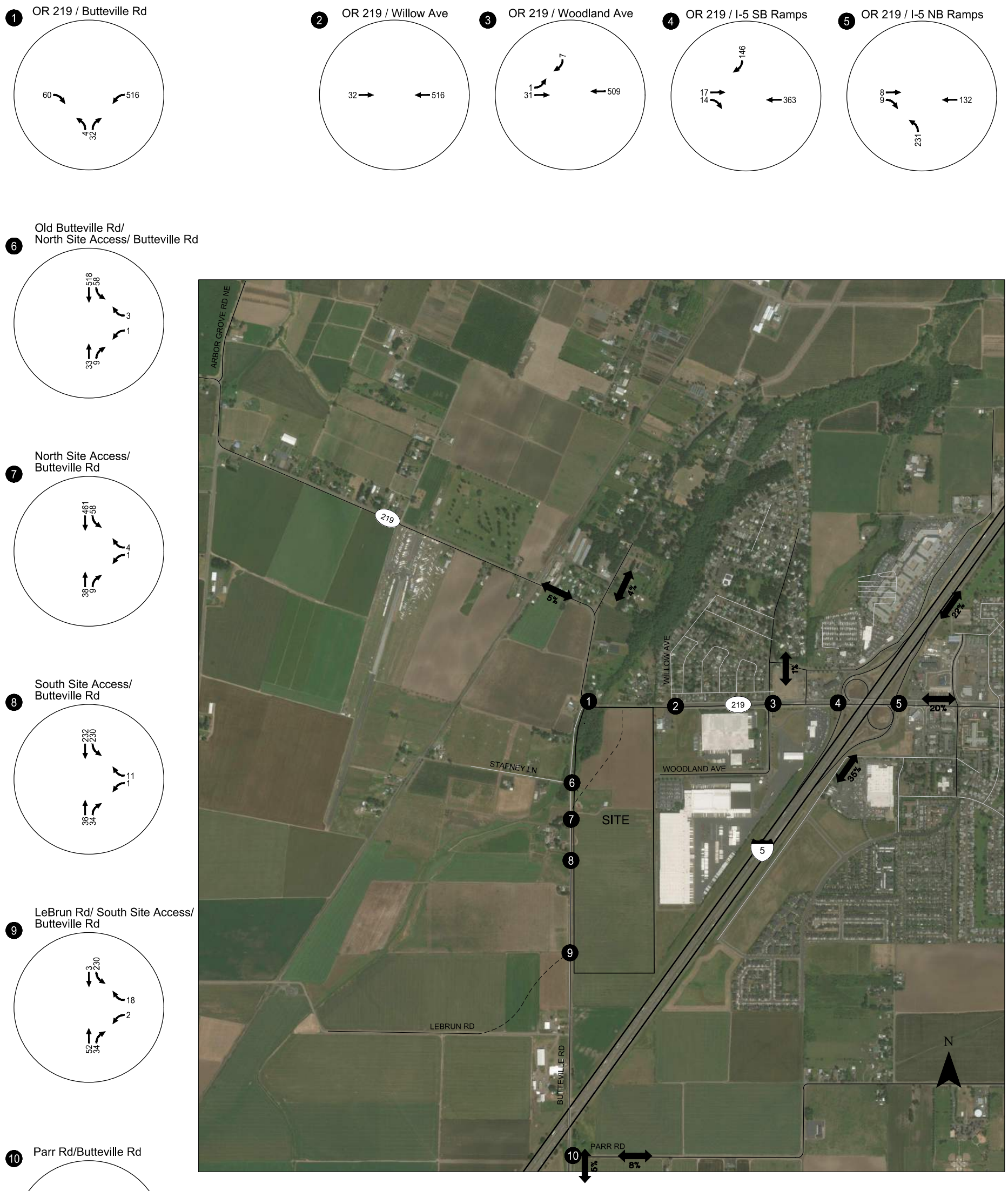

Site-Generated Trips
Peak Hour of Generator (6:30 AM to 7:30 AM)
Woodburn, OR

Figure
15

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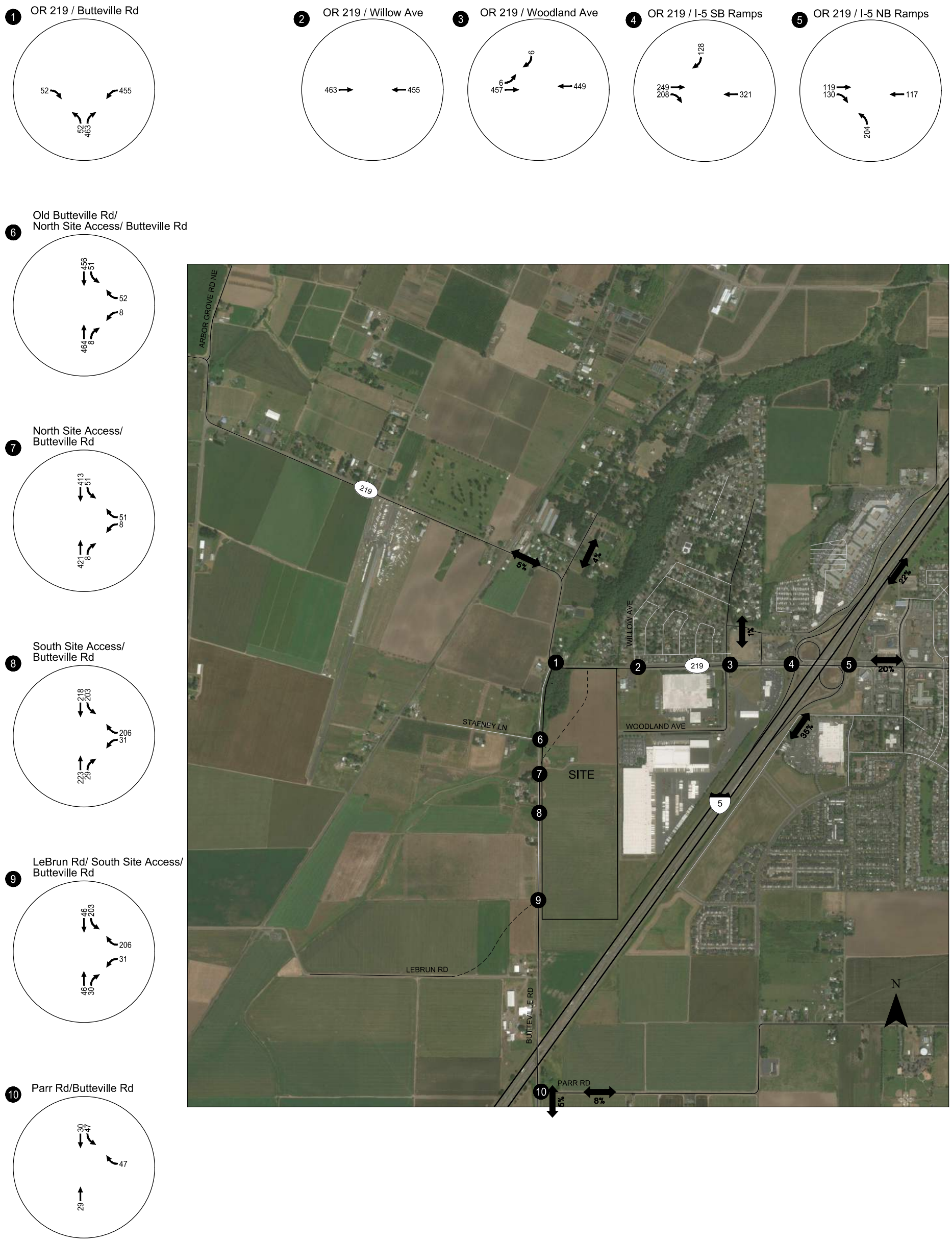

Site-Generated Trips
Peak Hour of Generator (5:30 PM to 6:30 PM)
Woodburn, OR

Figure
16

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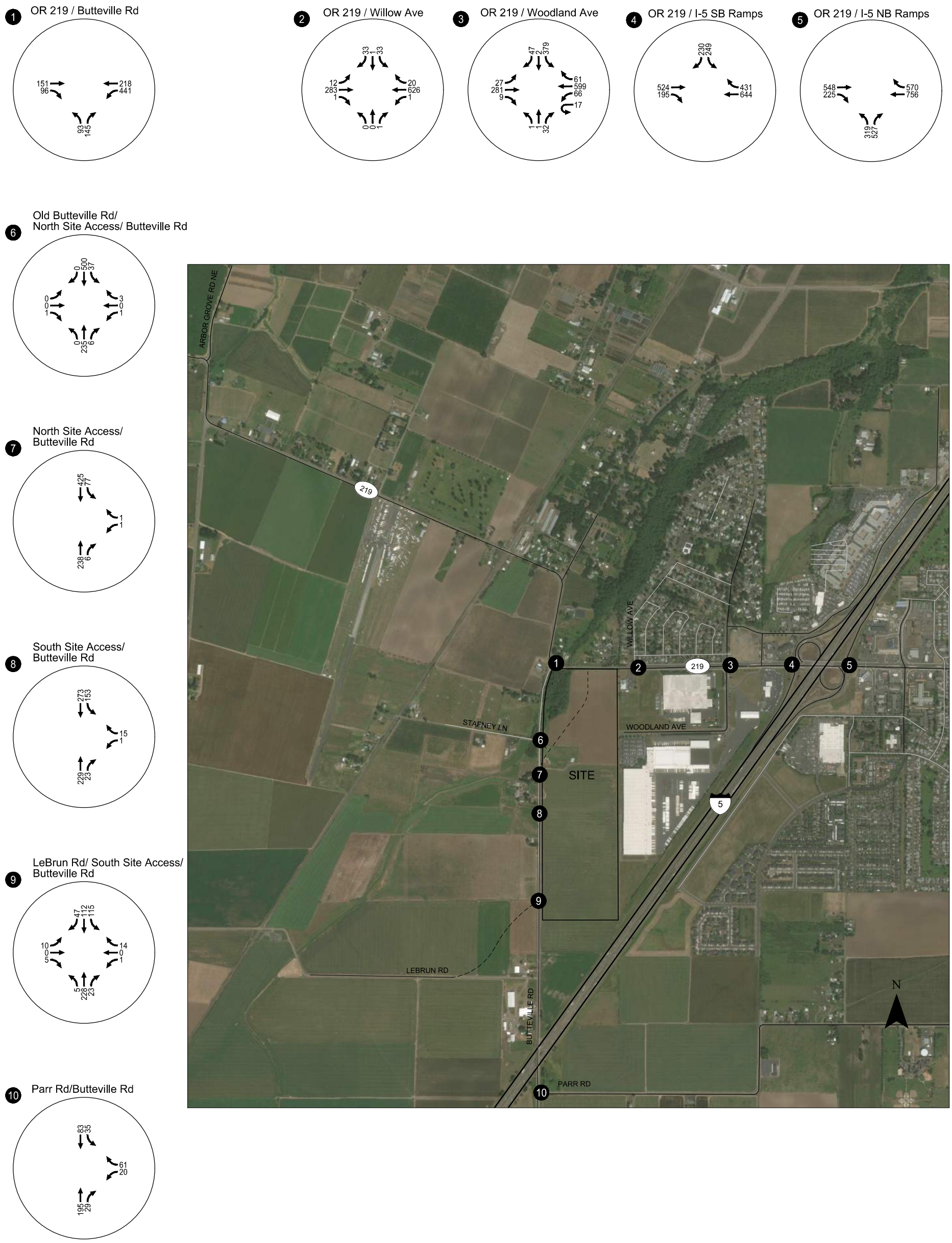
Year 2023 Total Traffic Conditions

The total traffic conditions analysis forecasts the operation of the study intersections with the inclusion of traffic generated by Project Basie. Total traffic conditions were determined by adding the estimated site-generated trips to the year 2023 background volumes.

Figures 17-20 illustrate the 2023 total traffic volumes while Table 12 and Table 13 (OR 219/Realigned Butteville Road roundabout) summarize the corresponding operational analysis for the weekday AM and PM peak periods. Note that while most turning movement volumes and v/c ratios are projected to increase from background to total conditions, some intersections are projected to experience a small decrease in overall delay due to the actuated signal timing as modeled in Synchro. The study intersection operations are projected to continue to satisfy the applicable ODOT mobility targets and City/County standards. Accordingly, no additional capacity-based changes to the transportation system are needed to accommodate the fulfillment center beyond the previously noted Butteville Road widening/realignment and roundabout intersection improvements. *Appendix H includes the 2023 total conditions operations analysis worksheets.*

OR 219/Willow Avenue

Although the southbound movement at the OR 219/Willow Avenue is forecast to meet the applicable mobility target, this movement is forecast to operate with delays associated with LOS F conditions during the 5:30-6:30 PM peak generator hour. Given that motorists have the ability to utilize the signalized OR 219/Woodland Avenue intersection (by way of Myrtle Street) as an alternative access to OR 219, no traffic control mitigation is recommended at this intersection.



2023 Total Traffic Volumes
System Peak Hour (7:00 AM to 8:00 AM)
Woodburn, OR

Figure
17

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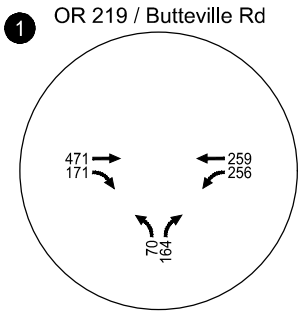
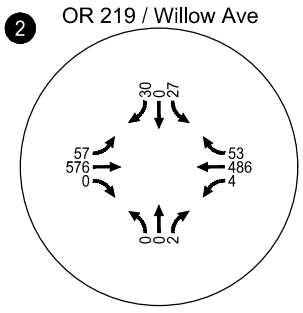
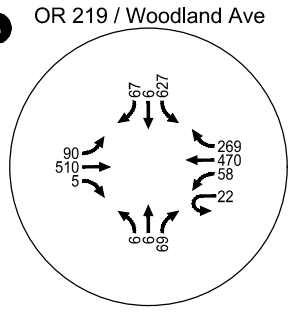
1 OR 219 / Butteville Rd



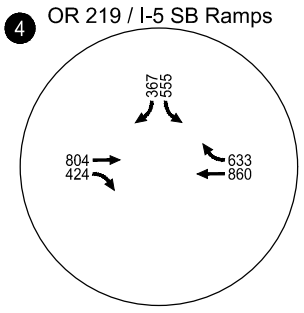
2 OR 219 / Willow Ave



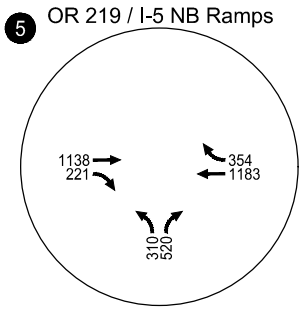
3 OR 219 / Woodland Ave



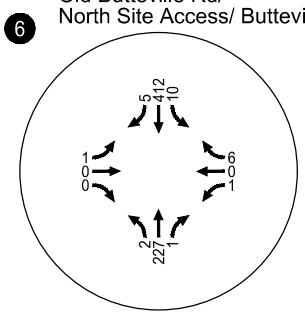
4 OR 219 / I-5 SB Ramps



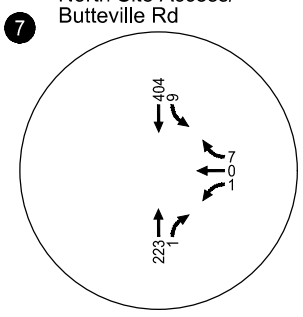
5 OR 219 / I-5 NB Ramps



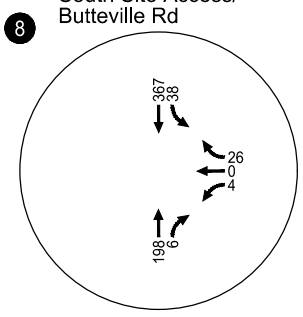
6 Old Butteville Rd/ North Site Access/ Butteville Rd



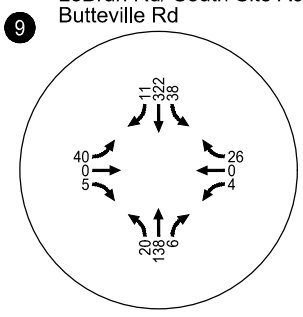
7 North Site Access/ Butteville Rd



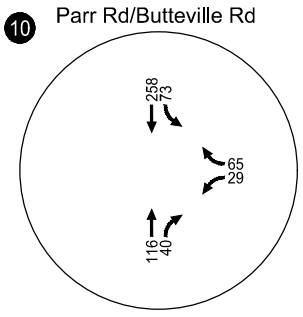
8 South Site Access/ Butteville Rd



9 LeBrun Rd/ South Site Access/ Butteville Rd



10 Parr Rd/Butteville Rd



2023 Total Traffic Volumes
System Peak Hour (4:30 PM to 5:30 PM)
Woodburn, OR

Figure
18

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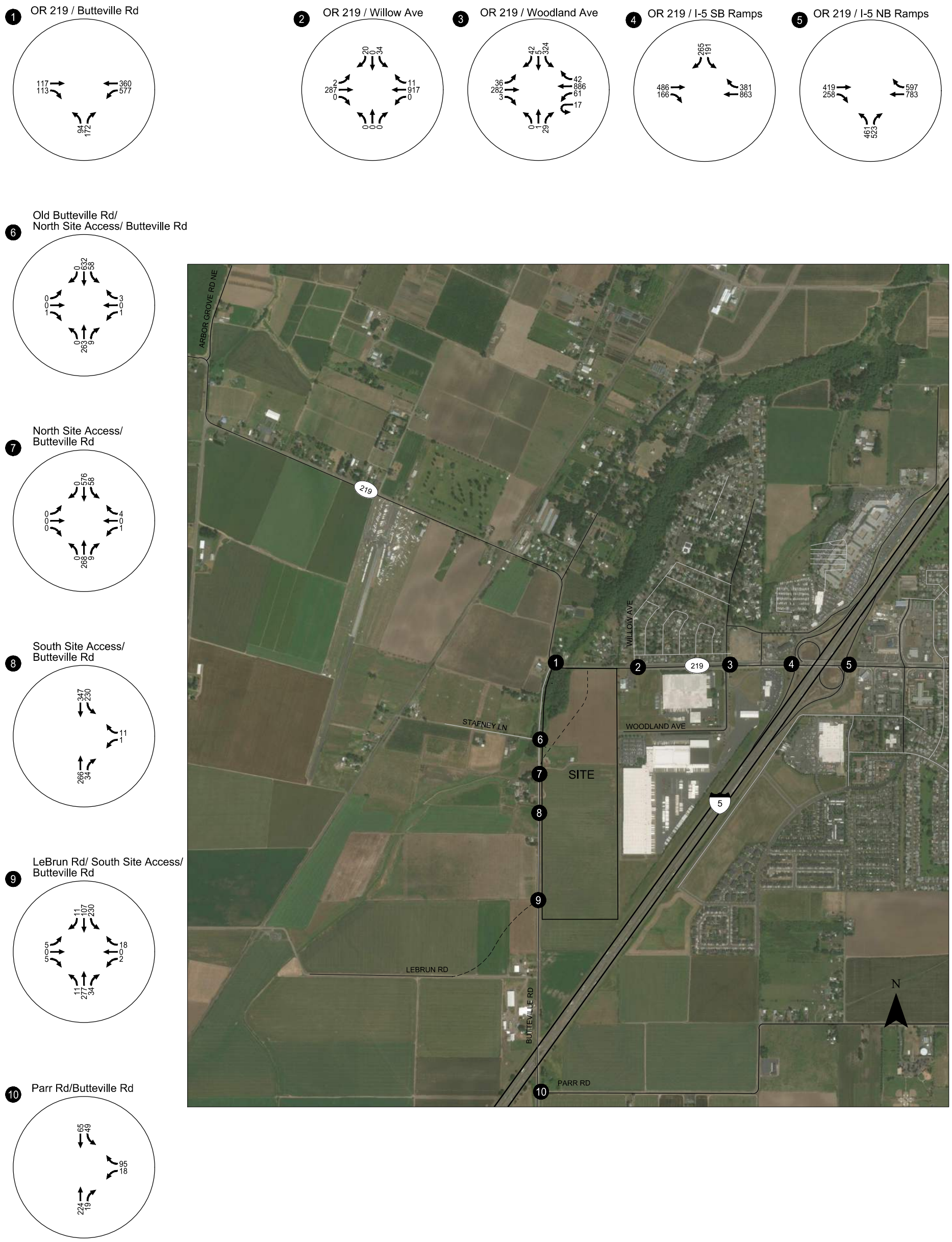

2023 Total Traffic Volumes
Peak Hour of Generator (6:30 AM to 7:30 AM)
Woodburn, OR

Figure
19

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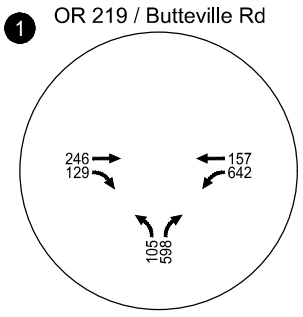
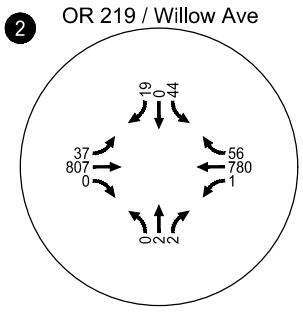
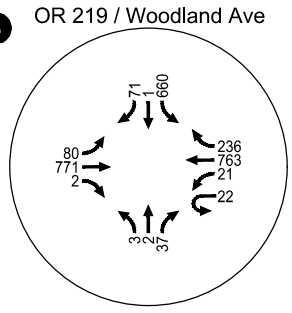
1 OR 219 / Butteville Rd



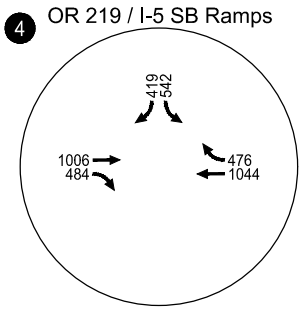
2 OR 219 / Willow Ave



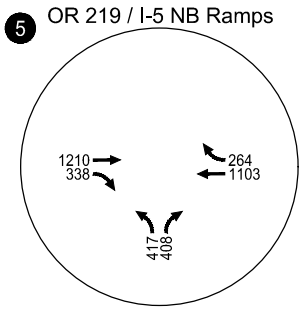
3 OR 219 / Woodland Ave



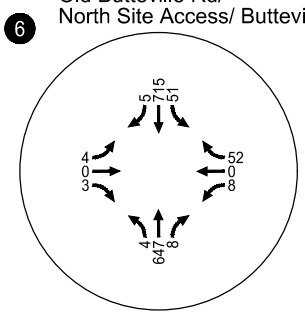
4 OR 219 / I-5 SB Ramps



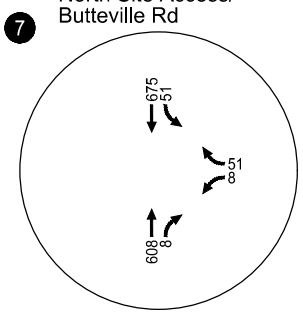
5 OR 219 / I-5 NB Ramps



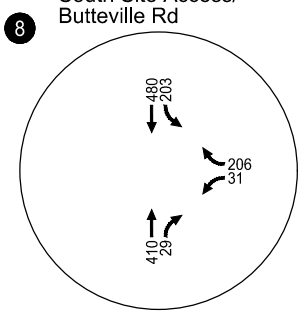
6 Old Butteville Rd/
North Site Access/ Butteville Rd



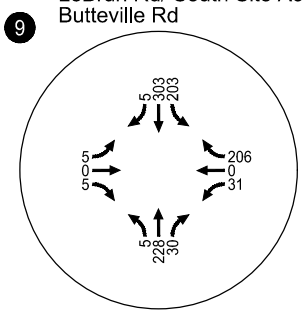
7 North Site Access/
Butteville Rd



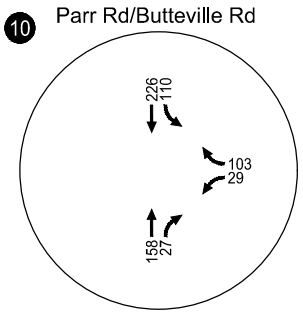
8 South Site Access/
Butteville Rd



9 LeBrun Rd/ South Site Access/
Butteville Rd



10 Parr Rd/Butteville Rd



2023 Total Traffic Volumes
Peak Hour of Generator (5:30 PM to 6:30 PM)
Woodburn, OR

Figure
20

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Table 12 – 2023 Total Traffic Conditions

Intersection	Maximum Operating Standard/Target	Weekday 6:30-7:30 AM Peak Generator Hour				Weekday 5:30-6:30 PM Peak Generator Hour			
		Critical Approach/ Lane	LOS	Delay (sec)	V/C	Critical Approach/ Lane	LOS	Delay (sec)	V/C
Relocated OR 219/ Butteville Road	V/C: 0.75 (per HDM)	See Table 13							
OR 219/ Willow Avenue	V/C: 0.95 major approach/0.95 minor approach	SB	D	28.1	0.27	SB	F	>50.0	0.48
OR 219/ Woodland Avenue	V/C: 0.95	-	B	17.8	0.40	-	C	21.5	0.63
OR 219/ I-5 SB Ramp Terminal	V/C: 0.80	-	A	9.8	0.45	-	B	15.2	0.62
OR 219/ I-5 NB Ramp Terminal	V/C: 0.80	-	B	19.1	0.53	-	B	11.7	0.59
Butteville Road/ Parr Road	LOS E and V/C: 0.90	WB	B	10.9	0.16	WB	B	12.1	0.22
Butteville Road/ North Site Access	LOS E and V/C: 0.90	WB	B	13.3	0.01	EB	E	38.8	0.07
Butteville Road/ North Middle Site Access	LOS E and V/C: 0.90	WB	B	11.7	0.01	WB	C	17.3	0.18
Butteville Road/ South Middle Site Access	LOS E and V/C: 0.90	WBL	D	25.2	0.01	WBL	E	42.5	0.26
Butteville Road/LeBrun Road/South Site Access	LOS E and V/C: 0.90	WBLT	C	22.7	0.01	WBLT	D	28.3	0.18
Intersection	Maximum Operating Standard/Target	Weekday 7:00-8:00 AM System Peak Hour				Weekday 4:30-5:30 System PM Peak Hour			
		Critical Approach/ Lane	LOS	Delay (sec)	V/C	Critical Approach/ Lane	LOS	Delay (sec)	V/C
Relocated OR 219/ Butteville Road	V/C: 0.75 (per HDM)	See Table 13							
OR 219/ Willow Avenue	V/C: 0.95 major approach/0.95 minor approach	SB	C	18.1	0.21	SB	C	19.6	0.20
OR 219/ Woodland Avenue	V/C: 0.95	-	B	16.4	0.43	-	B	19.6	0.60
OR 219/ I-5 SB Ramp Terminal	V/C: 0.80	-	B	11.9	0.37	-	B	16.0	0.50
OR 219/ I-5 NB Ramp Terminal	V/C: 0.80	-	B	16.1	0.48	-	B	11.9	0.56
Butteville Road/ Parr Road	LOS E and V/C: 0.90	WB	B	10.6	0.12	WB	B	12.2	0.18
Butteville Road/ North Site Access	LOS E and V/C: 0.90	WB	B	13.7	0.01	EB	C	16.8	<0.01
Butteville Road/ North Middle Site Access	LOS E and V/C: 0.90	WB	C	16.0	0.01	WB	B	10.3	0.01
Butteville Road/ South Middle Site Access	LOS E and V/C: 0.90	WBL	C	23.6	0.01	WBL	B	15.1	0.01
Butteville Road/LeBrun Road/South Site Access	LOS E and V/C: 0.90	WBLT	C	19.1	0.01	EB	C	17.2	0.15

Table 13 – 2023 Total Traffic Operations (Proposed OR 219/Realigned Butteville Road Roundabout)

	Weekday 6:30-7:30 AM Peak Generator Hour						Weekday 5:30-6:30 PM Peak Generator Hour					
Movement	EB T	EB R	WB L/T	NB L	NB R	Overall	EB T	EB R	WB L/T	NB L	NB R	Overall
Delay (s)	7.7	7.0	7.0	3.8	0.0	6.0	9.9	6.5	6.0	4.8	0.0	4.6
LOS	A	A	A	A	A	A	A	A	A	A	A	A
v/c	0.18	0.17	0.43	0.08	0.00	-	0.37	0.17	0.36	0.11	0.00	-
Queue 95th % (ft)	25	25	75	25	0	-	50	25	50	25	0	-
	Weekday 7:00-8:00 AM System Peak Hour						**Weekday 4:30-5:30 System PM Peak Hour**					
Movement	EB T	EB R	WB L/T	NB L	NB R	Overall	EB T	EB R	WB L/T	NB L	NB R	Overall
Delay (s)	7.8	6.0	6.1	4.2	0.0	5.4	9.4	4.8	4.6	5.7	0.0	5.7
LOS	A	A	A	A	A	A	A	A	A	A	A	A
v/c	0.25	0.14	0.34	0.10	0.00	-	0.49	0.16	0.22	0.10	0.00	-
Queue 95th % (ft)	25	25	50	25	0	-	75	25	25	25	0	-

As shown in Table 13, each lane group at the proposed OR 219/Butteville roundabout is projected to meet ODOT's design mobility standards under year 2023 total traffic conditions. In addition, the placement of the roundabout is projected to provide adequate queue storage on the westbound OR 219 approach downstream of the intersection with Willow Avenue, as well as adequate queue storage on the eastbound OR 219 approach downstream of the Senecal Creek bridge.

Year 2023 Queuing Analysis

A preliminary 95th percentile vehicle queuing analysis was performed at the study intersections using the Synchro-based output. Summary tables documenting this output are included in *Appendix H*. As requested in the jurisdictional response to the TIA scoping letter, a more detailed microsimulation analysis is being prepared for the OR 219 study corridor including the proposed roundabout and the I-5 interchange ramp terminals. The results of this analysis (including simulation-based queuing results) will be summarized and presented in a subsequent addendum to this report. However, as shown in *Appendix H*, the preliminary 95th percentile queuing analysis is pointing out a potential queue storage limitation on the existing I-5 southbound offramp associated with the southbound right-turn lane. Specifically, the southbound right turn 95th-percentile queue on the I-5 southbound off-ramp at OR 219 is projected to exceed the available storage length under 2023 background and total conditions during the weekday 4:30 to 5:30 PM and 5:30 to 6:30 PM study hours.

A review of the offramp indicates there is the potential to extend the southbound right-turn storage length to meet the projected long-term queuing needs. In addition, there is also the potential to extend the overall length of the offramp to maximize the queue storage on the offramp during peak shopping events and Project Basie shift change hours. Given the significance and complexities of such an endeavor, ODOT planning/operations/design staff will be formally engaged following the results of the microsimulation effort.

Year 2040 Background Traffic Conditions

The year 2040 background traffic operations analysis identifies how the study area's transportation system will operate during the local planning horizon year (2040). This horizon year is consistent with ODOT long-term study year requirements for development projects with greater than 500 peak hour trips. This analysis includes traffic growth due to continued local and regional growth but does not include traffic from the proposed fulfillment center. Year 2040 background traffic volumes were derived from a review of existing measured traffic volumes and projected traffic demands forecast for the study area from the recent Woodburn TSP update. Figures 21-24 illustrate the resulting 2040 background traffic volumes at the study intersection under all four AM and PM study periods, while Table 14 summarizes the corresponding traffic operations. As shown in Table 14, the study intersections are forecast to continue to satisfy applicable ODOT performance targets and City and County operating standards during the four AM and PM study periods with the exception of the OR 219/Butteville Road intersection, assuming the intersection is not realigned and a roundabout is not constructed at this location. *Appendix I* contains the year 2040 Background conditions operations worksheets.

Table 14 – 2040 Background Traffic Conditions

Intersection	Maximum Operating Standard/Target	Weekday 6:30-7:30 AM Peak Generator Hour				Weekday 5:30-6:30 PM Peak Generator Hour			
		Critical Approach/ Lane	LOS	Delay (sec)	V/C	Critical Approach/ Lane	LOS	Delay (sec)	V/C
OR 219/ Butteville Road	V/C: 0.90 major approach/0.90 minor approach	NB	F	>50.0	>1.00	NB	F	>50.0	>1.00
OR 219/ Willow Avenue	V/C: 0.95 major approach/0.95 minor approach	SB	D	29.6	0.34	SB	D	29.9	0.38
OR 219/ Woodland Avenue	V/C: 0.95	-	C	22.8	0.54	-	C	20.5	0.58
OR 219/ I-5 SB Ramp Terminal	V/C: 0.80	-	B	14.2	0.44	-	B	18.0	0.61
OR 219/ I-5 NB Ramp Terminal	V/C: 0.80	-	C	23.0	0.63	-	B	11.3	0.62
Butteville Road/ Parr Road	LOS E and V/C: 0.90	WB	B	14.9	0.19	WB	C	15.0	0.25
Intersection	**Maximum Operating Standard/Target**	**Weekday 7:00-8:00 AM System Peak Hour**				**Weekday 4:30-5:30 PM System Peak Hour**			
		Critical Approach/ Lane	**LOS**	**Delay (sec)**	**V/C**	**Critical Approach/ Lane**	**LOS**	**Delay (sec)**	**V/C**
OR 219/ Butteville Road	V/C: 0.90 major approach/0.90 minor approach	NB	F	>50.0	0.96	NB	F	>50.0	>1.00
OR 219/ Willow Avenue	V/C: 0.95 major approach/0.95 minor approach	SB	C	21.9	0.31	SB	F	>50.0	0.52
OR 219/ Woodland Avenue	V/C: 0.95	-	B	17.9	0.56	-	C	25.0	0.69
OR 219/ I-5 SB Ramp Terminal	V/C: 0.80	-	B	16.4	0.41	-	B	17.3	0.63
OR 219/ I-5 NB Ramp Terminal	V/C: 0.80	-	B	19.1	0.55	-	B	15.6	0.73
Butteville Road/ Parr Road	LOS E and V/C: 0.90	WB	B	14.1	0.14	WB	C	15.3	0.26

2040 Background Traffic Volumes
System Peak Hour (7:00 AM to 8:00 AM)
Woodburn, OR

Figure
21

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2040 Background Traffic Volumes
System Peak Hour (4:30 PM to 5:30 PM)
Woodburn, OR

Figure
22

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2040 Background Traffic Volumes
Peak Hour of Generator (6:30 AM to 7:30 AM)
Woodburn, OR

Figure
23

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2040 Background Traffic Volumes
Peak Hour of Generator (5:30 PM to 6:30 PM)
Woodburn, OR

Figure
24

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Year 2040 Total Traffic Conditions

The year 2040 total traffic conditions analysis forecasts the operation of the study intersections with the inclusion of traffic generated by Project Basie over the duration of the long-term planning horizon. Total traffic conditions were determined by adding the estimated site-generated trips to the year 2040 background volumes.

Figures 25-28 illustrate the 2040 total traffic volumes while Table 15 and Table 16 (OR 219/Realigned Butteville Road roundabout) summarize the corresponding operational analysis for the weekday AM and PM peak periods. As shown, all study intersections are forecast to continue meeting ODOT, City, and County standards, with the exception of the OR 219/Willow Avenue, Butteville Road/North Site Access/Old Butteville Road, and Butteville Road/South Middle Site Access intersections. *Appendix J* includes the 2040 total conditions operations analysis worksheets.

OR 219/Willow Avenue

The southbound stop-controlled Willow Avenue approach to OR 219 is forecast to operate over capacity during the 5:30-6:30 PM peak generator hour. Given that motorists have the ability to easily access and utilize the signalized OR 219/Woodland Avenue intersection (by way of Myrtle Street) as an alternative access to OR 219 during this one study period, no traffic control mitigation is recommended at this intersection.

Butteville Road/North Site Access/Old Butteville Road

The eastbound approach at the Butteville Road / North Site Access / Old Butteville Road intersection is forecast to operate at LOS F conditions during the 5:30-6:30 PM peak generator hour. However, some of this demand could shift to the existing OR 219/Butteville Road intersection pending whether that intersection is potentially converted to a limited access such as right-in/right-out. If the existing OR 219/Butteville Road intersection is fully closed, the new eastbound approach at the Butteville Road/North Site Access/Old Butteville Road intersection is forecast to still have capacity and therefore no off-site mitigation is proposed in conjunction with site development.

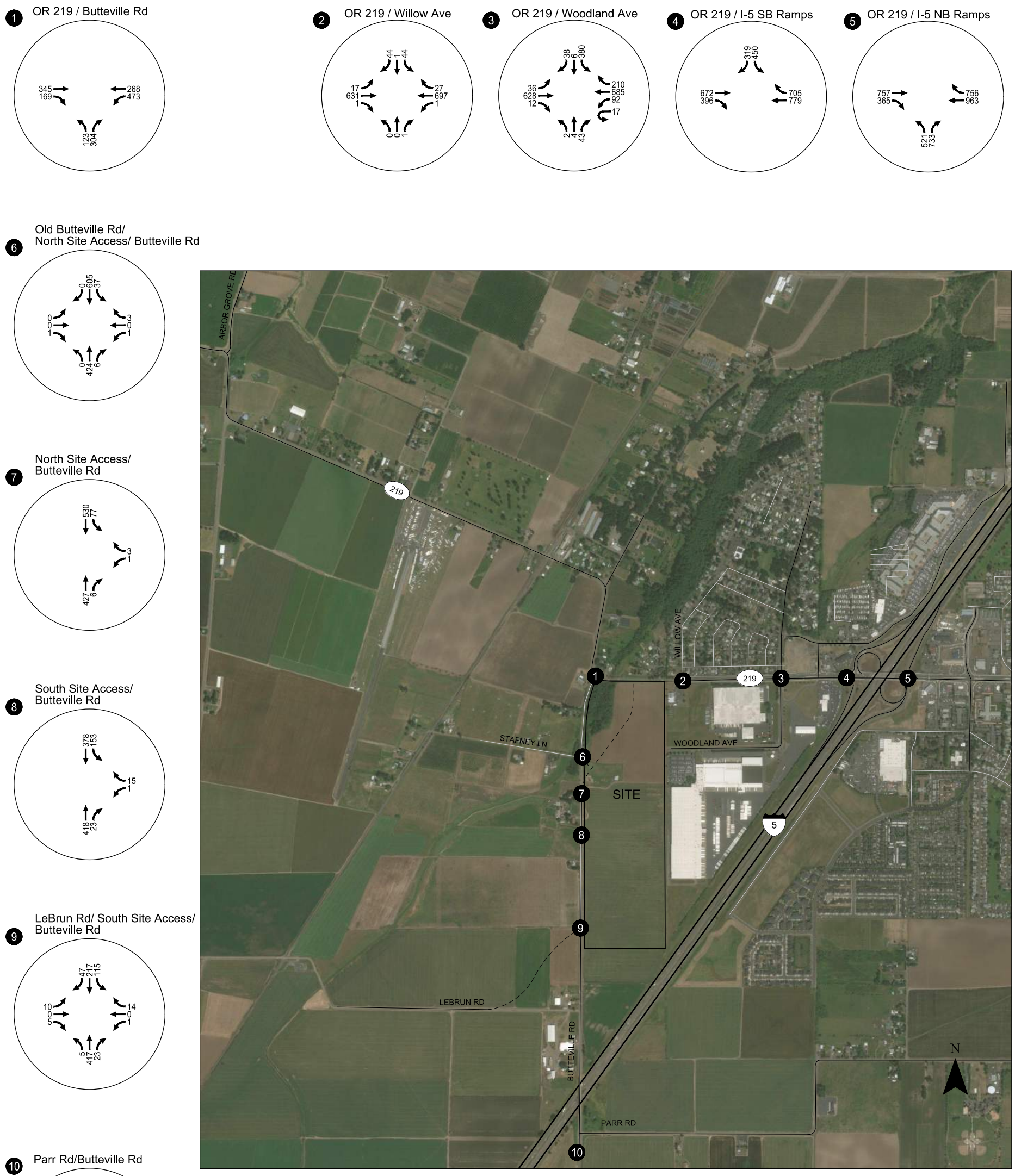
Table 15 – 2040 Total Traffic Conditions

Intersection	Maximum Operating Standard/Target	Weekday 6:30-7:30 AM Peak Hour				Weekday 5:30-6:30 PM Peak Hour			
		Critical Approach/ Lane	LOS	Delay (sec)	V/C	Critical Approach/ Lane	LOS	Delay (sec)	V/C
Relocated OR 219/ Butteville Road	V/C: 0.75 (per HDM)	See Table 16							
OR 219/ Willow Avenue	V/C: 0.95 major approach/0.95 minor approach	SB	F	>50.0	0.58	SB	F	>50.0	>1.00
OR 219/ Woodland Avenue	V/C: 0.95	-	B	19.8	0.58	-	C	29.5	0.73
OR 219/ I-5 SB Ramp Terminal	V/C: 0.80	-	B	12.5	0.61	-	B	19.0	0.75
OR 219/ I-5 NB Ramp Terminal	V/C: 0.80	-	C	32.8	0.78	-	B	14.0	0.74
Butteville Road/ Parr Road	LOS E and V/C: 0.90	WB	C	16.1	0.30	WB	C	17.7	0.38
Butteville Road/ North Site Access	LOS E and V/C: 0.90	WB	C	18.4	0.02	EB	F	>50.0	0.14
Butteville Road/ North Middle Site Access	LOS E and V/C: 0.90	WB	C	15.2	0.02	WB	C	21.0	0.22
Butteville Road/ South Middle Site Access	LOS E and V/C: 0.90	WBL	E	40.3	0.01	WBL	F	>50.0	0.37
Butteville Road/ South Site Access	LOS E and V/C: 0.90	WBLT	E	38.7	0.02	WBLT	E	44.1	0.26
Intersection	Maximum Operating Standard/Target	Weekday 7:00-8:00 AM Peak Hour				Weekday 4:30-5:30 PM Peak Hour			
		Critical Approach/ Lane	LOS	Delay (sec)	V/C	Critical Approach/ Lane	LOS	Delay (sec)	V/C
Relocated OR 219/ Butteville Road	V/C: 0.75 (per HDM)	See Table 16							
OR 219/ Willow Avenue	V/C: 0.95 major approach/0.95 minor approach	SB	D	28.5	0.38	SB	E	37.9	0.43
OR 219/ Woodland Avenue	V/C: 0.95	-	B	16.8	0.57	-	C	26.7	0.71
OR 219/ I-5 SB Ramp Terminal	V/C: 0.80	-	B	14.8	0.49	-	B	18.1	0.65
OR 219/ I-5 NB Ramp Terminal	V/C: 0.80	-	C	21.4	0.67	-	B	16.1	0.75
Butteville Road/ Parr Road	LOS E and V/C: 0.90	WB	B	14.3	0.21	WB	C	15.5	0.28
Butteville Road/ North Site Access	LOS E and V/C: 0.90	WB	B	14.9	0.01	EB	C	17.4	0.03
Butteville Road/ North Middle Site Access	LOS E and V/C: 0.90	WB	C	17.1	0.01	WB	B	11.1	0.01
Butteville Road/ South Middle Site Access	LOS E and V/C: 0.90	WBL	C	24.7	0.01	WBL	C	18.1	0.02
Butteville Road/ South Site Access	LOS E and V/C: 0.90	WBLT	C	21.8	0.01	EB	C	21.1	0.19

Table 16 – 2040 Total Traffic Operations (Proposed OR 219/Realigned Butteville Road Roundabout)

	Weekday 6:30-7:30 AM Peak Generator Hour						Weekday 5:30-6:30 PM Peak Generator Hour					
Movement	EB T	EB R	WB L/T	NB L	NB R	Overall	EB T	EB R	WB L/T	NB L	NB R	Overall
Delay (s)	11.8	8.6	8.0	4.9	0.0	6.8	14.4	7.8	7.4	5.8	0	6.2
LOS	B	A	A	A	A	A	B	A	A	A	A	A
v/c	0.42	0.28	0.49	0.13	0.00	-	0.52	0.23	0.45	0.18	0.00	-
Queue 95th % (ft)	75	50	75	25	0	-	75	25	75	25	0	-
	Weekday 7:00-8:00 AM System Peak Hour						**Weekday 4:30-5:30 System PM Peak Hour**					
Movement	EB T	EB R	WB L/T	NB L	NB R	Overall	EB T	EB R	WB L/T	NB L	NB R	Overall
Delay (s)	12	6.7	6.2	5.5	0.0	6.3	15.5	5.9	5.9	7.9	0.0	8.5
LOS	B	A	A	A	A	A	C	A	A	A	A	A
v/c	0.49	0.22	0.35	0.15	0.00	-	0.69	0.24	0.33	0.21	0.00	-
Queue 95th % (ft)	75	25	50	25	0	-	150	25	50	25	0	-

As shown in Table 16, each lane group at the proposed OR 219/Butteville roundabout is projected to meet ODOT's design mobility standards under year 2040 total traffic conditions. In addition, the placement of the roundabout is projected to provide adequate queue storage on the westbound OR 219 approach downstream of the intersection with Willow Avenue, as well as adequate queue storage on the eastbound OR 219 approach downstream of the Senecal Creek bridge.



2040 Total Traffic Volumes
System Peak Hour (7:00 AM to 8:00 AM)
Woodburn, OR

Figure
25

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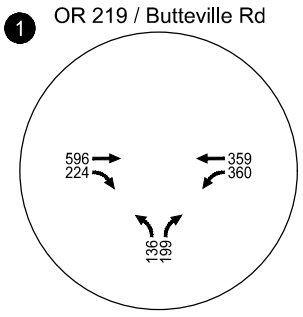
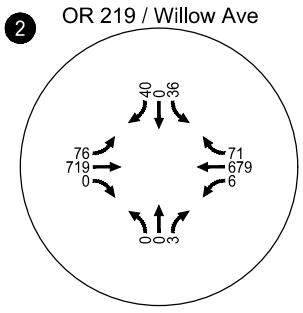
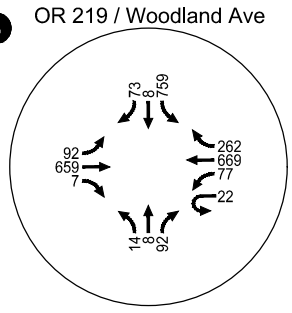
1 OR 219 / Butteville Rd



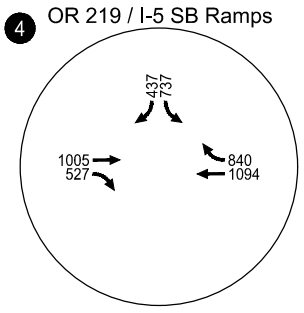
2 OR 219 / Willow Ave



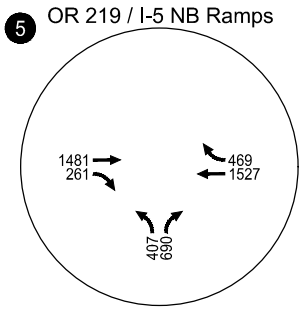
3 OR 219 / Woodland Ave



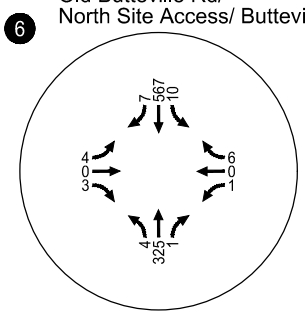
4 OR 219 / I-5 SB Ramps



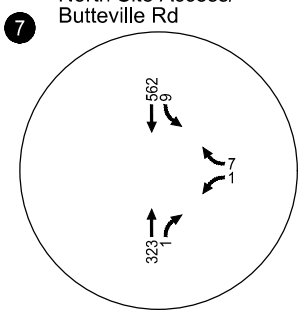
5 OR 219 / I-5 NB Ramps



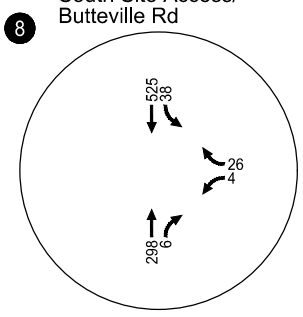
6 Old Butteville Rd/ North Site Access/ Butteville Rd



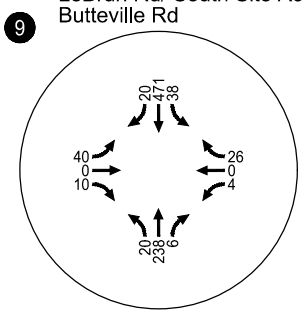
7 North Site Access/ Butteville Rd



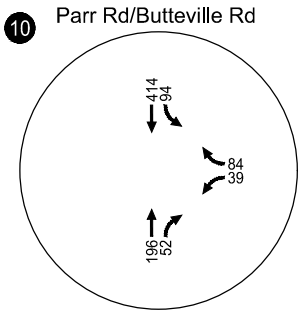
8 South Site Access/ Butteville Rd



9 LeBrun Rd/ South Site Access/ Butteville Rd



10 Parr Rd/Butteville Rd



2040 Total Traffic Volumes
System Peak Hour (4:30 PM to 5:30 PM)
Woodburn, OR

Figure
26

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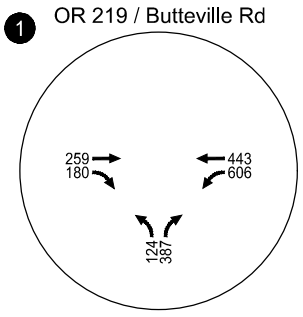
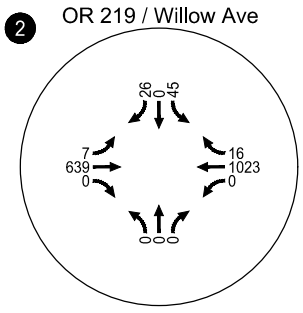
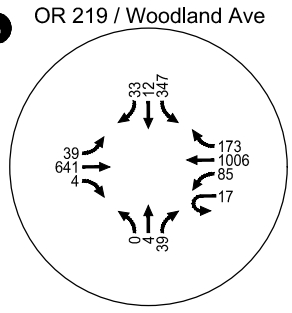
1 OR 219 / Butteville Rd



2 OR 219 / Willow Ave



3 OR 219 / Woodland Ave



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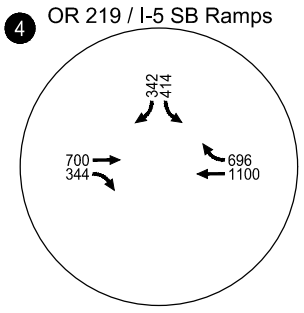

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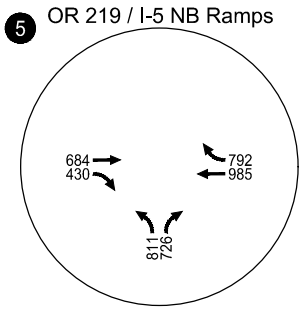

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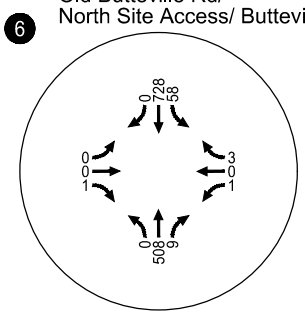

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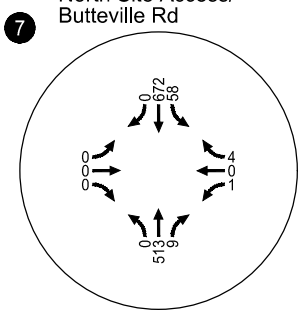
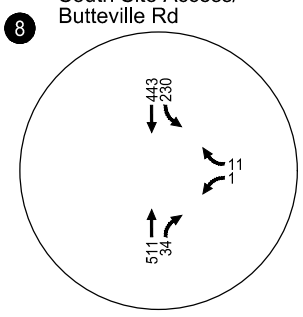


8 South Site Access/ Butteville Rd



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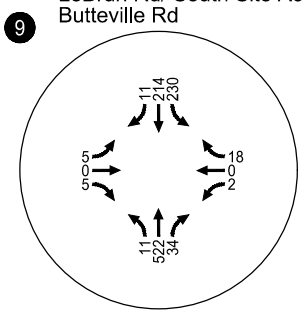
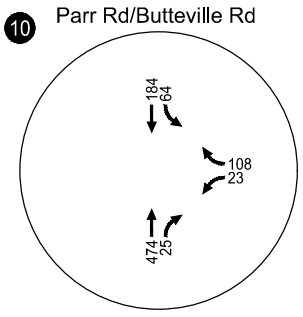


10 Parr Rd/Butteville Rd



2040 Total Traffic Volumes
Peak Hour of Generator (6:30 AM to 7:30 AM)
Woodburn, OR

Figure
27

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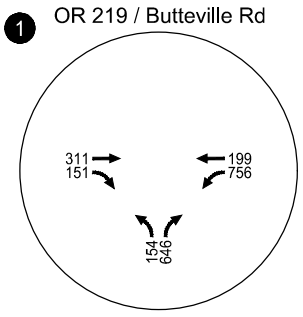
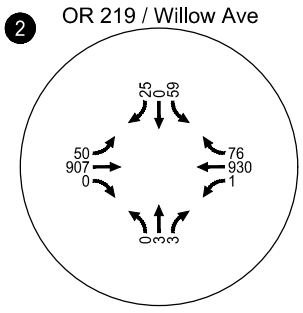
KITTELSON & ASSOCIATES

1 OR 219 / Butteville Rd



2 OR 219 / Willow Ave



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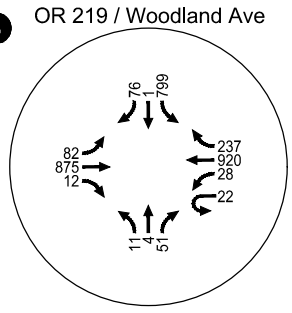
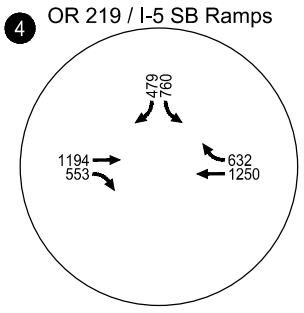


4 OR 219 / I-5 SB Ramps



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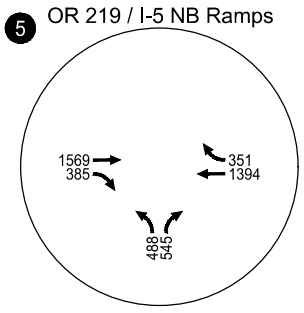

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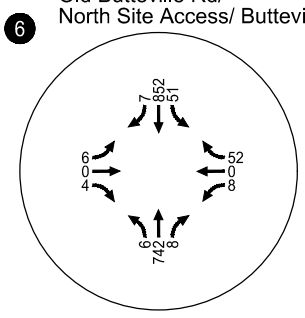

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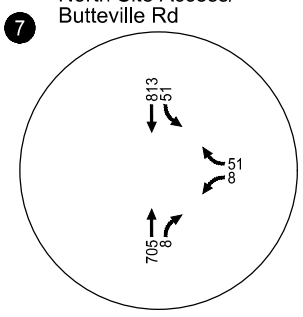

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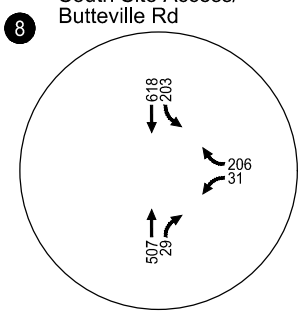

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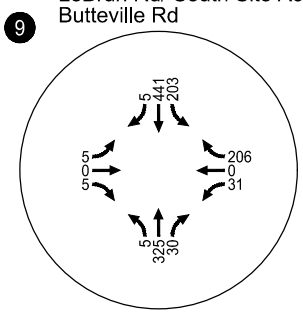

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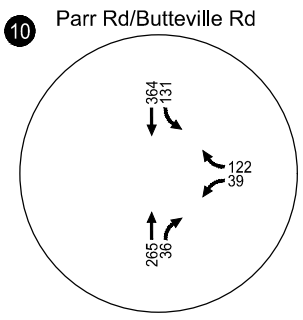

2040 Total Traffic Volumes
Peak Hour of Generator (5:30 PM to 6:30 PM)
Woodburn, OR

Figure
28

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Year 2040 Queuing Analysis

A preliminary 95th percentile vehicle queuing analysis was performed at the study intersections using the Synchro-based output. Summary tables documenting this output are included in *Appendix J*. As requested in the jurisdictional response to the TIA scoping letter, a more detailed microsimulation analysis is being prepared for the OR 219 study corridor including the proposed roundabout and the I-5 interchange ramp terminals. The results of this analysis (including simulation-based queuing results) will be summarized and presented in a subsequent addendum to this report. However, as shown in *Appendix J*, the preliminary 95th percentile queuing analysis is continuing to point out a potential queue storage limitation on the existing I-5 southbound offramp associated with the southbound right-turn lane. Specifically, the southbound right turn 95th-percentile queue on the I-5 southbound off-ramp at OR 219 is projected to exceed the available storage length under 2040 background and total conditions during the weekday 4:30 to 5:30 PM and 5:30 to 6:30 PM study hours.

A review of the offramp indicates there is the potential to extend the southbound right-turn storage length to meet the projected long-term queuing needs. In addition, there is also the potential to extend the overall length of the offramp to maximize the queue storage on the offramp during peak shopping events and Project Basie shift change hours. Given the significance and complexities of such an endeavor, ODOT planning/operations/design staff will be formally engaged following the results of the microsimulation effort.

Proposed Site Driveway Sight Distance Review

Intersection sight distance was preliminarily evaluated at the proposed site driveways on Butteville Road. For this assessment, sight distance measurements were evaluated based on an eye height of 3.5 feet, and an observation point located 14.5 feet from the edge of the cross-street travel lane.

The speeds along Butteville Road were assumed to be 55 mph in a post development setting. As noted in *A Policy on Geometric Design of Highways and Streets* (published by the American Association of State Highway and Transportation Officials, AASHTO in 2018), the minimum intersection sight distance requirement for passenger cars on a 55 mph cross street is 650 feet (left-turn from stop crossing the equivalent of two lanes) and 530 feet (right-turn from stop). The minimum intersection sight distance requirement for combination trucks on a 55 mph cross street is 990 feet (left-turn from stop crossing the equivalent of two lanes) and 850 feet (right-turn from stop).

Considering the lack of any significant vertical curvature on Butteville Road, each of the four proposed site access driveways are preliminarily estimated to have in excess of 1,000 feet of intersection sight distance which would meet the minimum requirements under all turn and vehicle-type scenarios. A final sight distance evaluation should be performed post construction and prior to site occupancy to ensure that adequate intersection sight distance is provided at each of the proposed site driveways.

WOODLAND AVENUE EXTENSION

The Woodburn TSP shows a planned extension of Woodland Avenue from its current western terminus to Butteville Road. This extension is identified to follow the parcel line between Tax Lots 400 and 500 (Lots 1 and 2 of I5 Logistics Center subdivision) and connect to Butteville Road across from the existing Stafney Lane intersection. This extension is intended to: 1) to increase overall east-west connectivity south of OR 219 and serve future development in the SWIR, and 2) ensure that future potential development of Tax Lot 400 (I5LC Lot 1) would have reasonable site access, something that would be difficult to achieve considering ODOT's access management requirements along the limited OR 219 frontage to the north, the lack of direct frontage to Butteville Road created by the Senecal Creek/wetland barrier to the west, and established private property to the east.

As shown in Figure 2, this planned extension of Woodland Avenue is not being incorporated into the proposed site plan, which represents a major deviation from the TSP. The proposed modification of the planned transportation network is warranted for the following reasons:

- Project Basie spans Tax Lots 400 and 500, so there is no longer a need to provide an individual access opportunity to Tax Lot 400. Furthermore, the full incorporation of Tax Lot 400 into the proposed site layout will ensure that it will not need future individual site access.
- The proposed realignment of Butteville Road and a new roundabout intersection at OR 219 represents a major circulation and capacity enhancing change that was not envisioned when the Woodburn TSP was developed. In particular, the proposed OR 219/Butteville

Road roundabout is being designed and sized to meet not only the needs of Project Basie but also future development in the larger SWIR. The proposed realignment offers further benefits in the form of reduced impacts on the Senecal Creek drainageway and wetlands, which would have been significantly impacted by expansion and reconstruction of the OR 219/Butteville intersection at its current location.

- All of the Project Basie site access driveways are proposed along Butteville Road. These driveways, as well as projected future background traffic growth, can be fully accommodated by the proposed infrastructure improvements; neither the site nor the street system are reliant on a Woodland Avenue extension to support use and functionality.
- As a result of the observations above and in the context of the proposed roundabout traffic solution, the extension of Woodland Avenue is no longer needed from a capacity and circulation enhancing perspective.

INTERCHANGE MANAGEMENT AREA OVERLAY DISTRICT

Section 2.05.02 of the Woodburn Development Ordinance (WDO) applies a trip budget for select parcels located within the Interchange Management Area Overlay District. This budget is allocated to specific parcels identified in Table 2.05A of the WDO on a first-developed basis.

Ownership of Project Basie includes Subareas A and B in the SWIR as shown in Exhibit 2. Subarea A has 968 trips and Subarea B has 242 trips for a total of 1,210 trips. Per Table 10, Project Basie will generate approximately 1,176 trips during the weekday PM peak hour, which is within the combined Subarea A/B trip budget.

Exhibit 2 – SWIR Interchange Management Area Boundary and Subareas

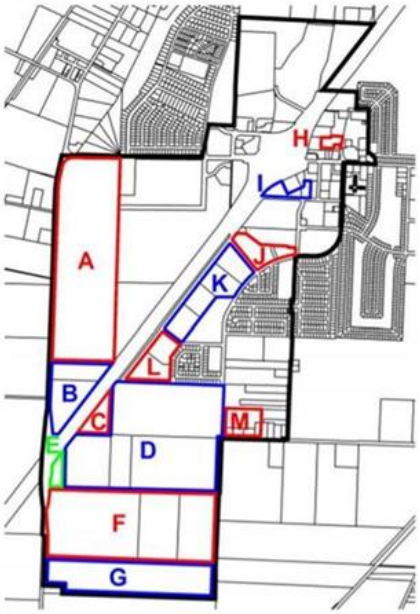


Figure 2.05B – Interchange Management Area Boundary and Subareas

FINDINGS AND RECOMMENDATIONS

The primary findings and recommendations of this study are summarized below.

- All study intersections and future study intersections are forecast to meet the ODOT, City, and County mobility standards during the weekday AM and PM peak periods under 2023 and 2040 traffic conditions with the inclusion of Butteville Road realignment and OR 219 roundabout intersection. No other capacity-based mitigation needs were identified at the other study intersections.

Subject to City of Woodburn, Oregon Department of Transportation (ODOT), and Marion County approval, Project Basie should:

- Reconstruct and widen the southern segment of Butteville Road abutting the development site consistent with the special design section agreed upon by the City of Woodburn and Marion County, with three twelve-foot travel lanes (one NB lane, one center turn lane, and one SB lane), six-foot bike lanes, a rural shoulder on the west, and curb, landscape strip and a six-foot sidewalk on the east side.
- Realign Butteville Road to the east of Senecal Creek and its affiliated wetlands. This new alignment would be constructed to a symmetrical City of Woodburn Collector design section on both sides where it would be widened as necessary to fit the geometric design needs of a proposed roundabout at OR 219 (see next bullet).
- Construct a new double lane roundabout at the realigned Butteville Road intersection with OR 219 that is sized and designed to accommodate long-term projected traffic and heavy vehicle demands. West of the new roundabout, OR 219 should be widened to be consistent with the full improved section that currently ends near the Willow Avenue intersection.
- Close or access restrict the existing OR 219/Butteville Road intersection based on future conversations with ODOT, City, and County staff.
- Following the results of a more detailed microsimulation analysis, work with ODOT to identify potential modifications to the southbound I-5 offramp that would maximize the amount of southbound right-turn lane storage and lengthen the overall offramp.
- Install STOP (R1-1) signs at each of the four proposed site access driveway approaches to Butteville Road in accordance with County standards and the *Manual on Uniform Traffic Control Devices* (MUTCD).

We trust that this letter adequately addresses the traffic and circulation impacts associated with the proposed Project Basie development. Please let us know if you have any questions regarding our analyses or need additional information.

Sincerely,
KITTELSON & ASSOCIATES, INC.

Matt Hughart, AICP	Zachary Bugg, Ph.D	Julia Kuhn, P.E.
Principal Planner	Senior Engineer	Senior Principal Engineer

Appendix A TIA Scoping Memorandum and Jurisdictional Responses

KITTELSON & ASSOCIATES
851 SW 6th AVENUE, SUITE 600
PORTLAND, OR 97204
P 503.228.5230 F 503.273.8169

April 16, 2021 Project #: 26306

Eric Liljequist and Dago Garcia, City of Woodburn
Casey Knecht and Arielle Ferber, Oregon Department of Transportation
Jenelle Shanahan, Marion County

Cc: Tom Nieswander, Trammell Crow Company

RE: Project Basie Traffic Impact Study Scoping Letter

Dear Eric, Dago, Casey, Arielle, and Jenelle:

Kittelson & Associates, Inc. has prepared the following Traffic Impact Study scoping memorandum for the proposed Project Basie development in Woodburn, Oregon. This document outlines a proposed scope of work, study intersections, analysis time periods, and assumptions for your review and consideration.

PROJECT AND SITE OVERVIEW

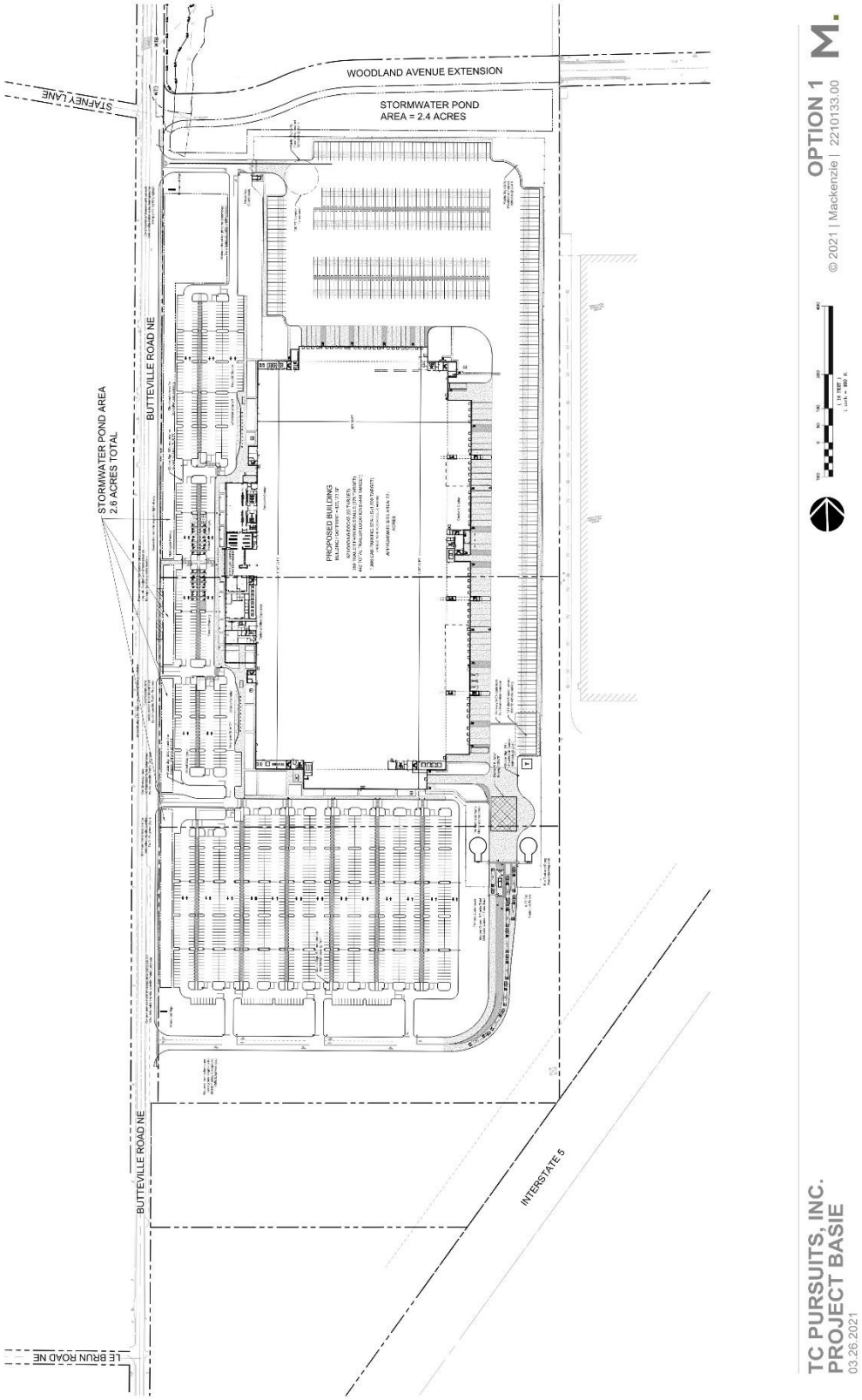
Project Basie is a single five story industrial building that will contain approximately 2.89 million square feet of floor area. The building is anticipated to house package distribution and fulfillment center activities and will be supported by on-site access and circulation, vehicle parking and fleet vehicle/trailer storage, landscaping, stormwater management facilities, and lighting.

The project site consists of approximately 106 acres located southeast of the OR 219/Butteville Road intersection. The site has historically been in agricultural use but is currently zoned for industrial use in Woodburn's Southwest Industrial Reserve Area overlay. Senecal Creek runs through the northwest corner of the site, flowing to the northeast under bridge crossings in Butteville Road and OR 219. A preliminary site layout (subject to further refinement) is included in Figure 1.

Like the subject property, land parcels to the south are in agricultural use pending industrial development under Woodburn SWIR regulations. Lands to the west, across Butteville Road, are outside the Woodburn Urban Growth Boundary (UGB) and support a mix of agricultural and rural residential uses. The WinCo Foods distribution center is on the adjacent property to the east, in the Light Industrial (IL) zone.

In order to support the development application, a formal Traffic Impact Study (TIS) will be prepared and submitted for review to the City of Woodburn, ODOT, and Marion County. The proposed scope of work and study assumptions are outlined in the following sections.

Figure 1 – Preliminary Site Plan (Subject to further refinement)

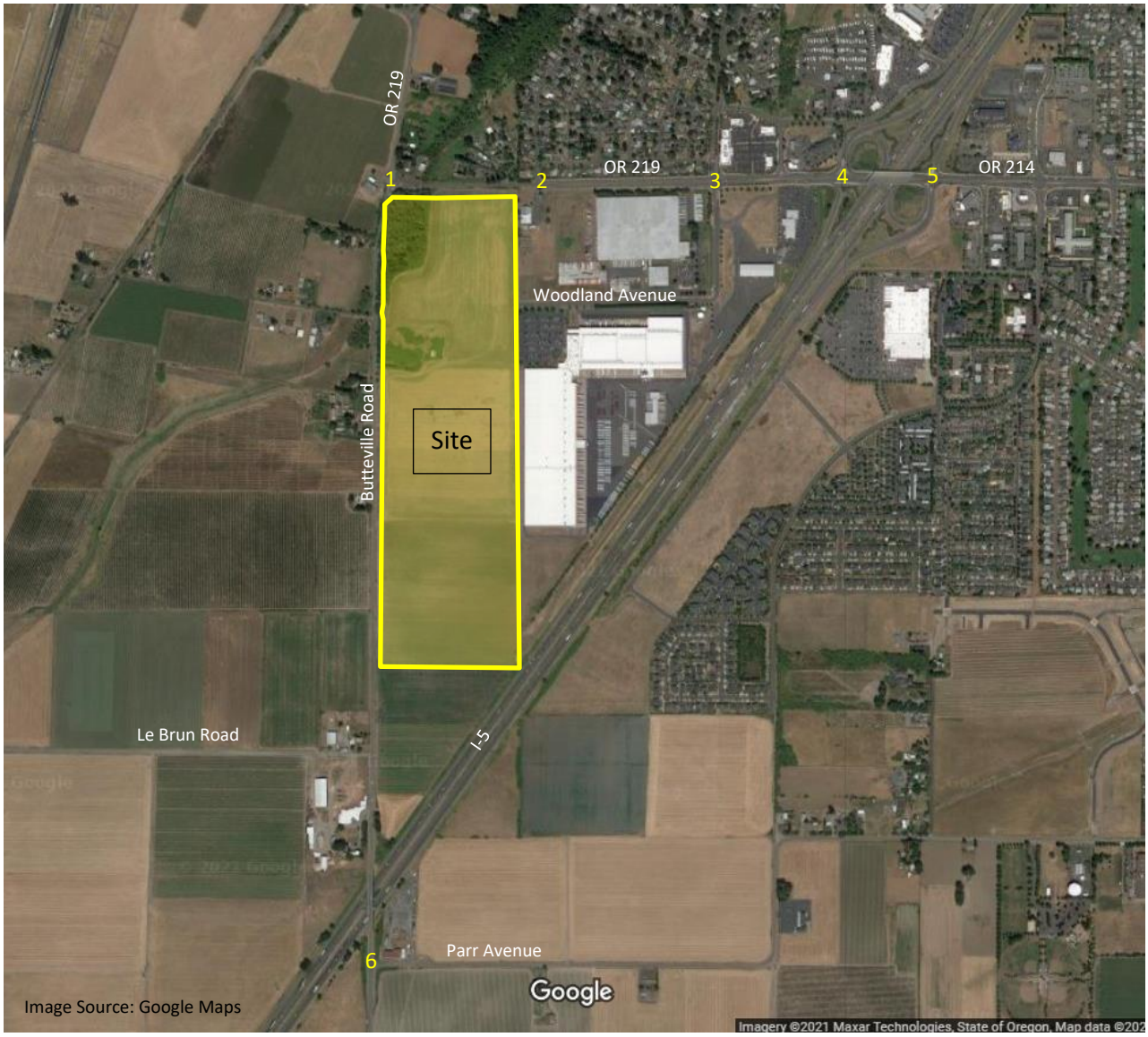


PROPOSED STUDY AREA

Based on the size and the anticipated trip generation profile of the proposed development, the study area is illustrated in Exhibit 1 below. As shown, the affected intersections are proposed to include:

1. OR 219/Butteville Road
2. OR 219/Willow Avenue
3. OR 219/Woodland Avenue
4. OR 219/I-5 SB Ramps
5. OR 219/I-5 NB Ramps
6. Parr Road NE/Butteville Road

Exhibit 1 – Study Area Map



TRIP GENERATION

Trip generation estimates are typically based on data derived from *Trip Generation, 10th Edition*, published by the Institute of Transportation Engineers (ITE). The proposed warehouse/distribution center will be used for storage and consolidation of products prior to their larger regional distribution and would be considered a "sortable" facility. The ITE land use that most closely matches this function is "High-Cube Fulfillment Center Warehouse" (Land Use 155). Table 1 provides the estimated trip generation using this ITE land use.

Table 1. Estimated Trip Generation (ITE) – High Cube Fulfillment Center (Sortable)

Land Use	ITE Code	Size	Weekday Trips	Weekday AM Peak Hour Trips			Weekday PM Peak Hour Trips		
				Total	In	Out	Total	In	Out
High-Cube Fulfillment Center Warehouse	155	2,890,000 sq. ft.	18,612	2,514	2,036	478	3,468	1,353	2,115

In reviewing Table 1, it is important to note that the ITE rates are based on one or two study sites (depending on the analysis period) with a facility size that was much less than what is being proposed. In these cases, the ITE manual encourages caution and suggests local or other data be applied instead. For these reasons, we obtained information from the potential Project Basie tenant including detailed employee and truck arrival/departure profiles specific to this site that take into consideration the size of the building, its specific purpose, anticipated employment levels, and work schedules modeled after other similar facilities. A detailed summary of this profile is included in *Attachment A*. As shown, the proposed site is anticipated to be a 24-hour facility with multiple shift change patterns. In particular, there are two key shift change periods that are anticipated to occur near the typical weekday AM and PM peak periods:

- 6:30-7:30 AM which accounts for the peak arrival period for the dayshift.
- 5:30-6:30 PM which accounts for peak dayshift departure period and the peak nightshift arrival period.

These shift change periods represent what ITE defines as "the Peak Hour of the Generator". The resulting trip profile is summarized in Table 2 below.

Table 2: Project Basie - Peak Hour of the Generator Trip Generation Estimate

Land Use	Size	Weekday Daily Trips	Weekday AM Peak Hour of Generator Trips (6:30-7:30 AM)			Weekday PM Peak Hour of Generator Trips (5:30-6:30 PM)		
			Total	In	Out	Total	In	Out
Project Basie	937 employees per shift	4,170	703	661	41	1,176	583	593

Source: Tenet supplied employee and freight arrival/departure schedule. See Appendix A.

In addition to the Peak Hour of the Generator, previously collected traffic counts at many of the major intersections within the study area have revealed that Woodburn's street system has different peak time periods than reflected in Table 2. In particular, the weekday AM peak hour in Woodburn has been found to occur from 7:00-8:00 AM while the weekday PM system peak hour has been found to occur from 4:00-5:00 PM. The resulting trip profile for the proposed building during these times is shown in Table 3.

Table 3: Project Basie - Peak Hour of the System Trip Generation Estimate

Land Use	Size	Weekday Daily Trips	Weekday AM System Peak Hour Trips (6:30-7:30 AM)			Weekday PM System Peak Hour Trips (5:30-6:30 PM)		
			Total	In	Out	Total	In	Out
Project Basie	937 employees per shift	4,170	457	419	38	96	54	42

Source: Tenet supplied employee and freight arrival/departure schedule. See Appendix A.

Given the significance of the trip generation profiles reflected in both Tables 2 and 3, we propose to evaluate the transportation impacts during the Peak Hours of the Generator and during the Peak Hours of the System.

ANALYSIS TIME PERIODS

To address the impacts of Project Basie and meet the various study requirements of the reviewing agencies, the Traffic Impact Study will assess the following analysis years during the weekday AM (generator and system peak hour) and PM (generator and system peak hour) time periods:

- Existing (year 2021) traffic conditions.
- Year 2022 background traffic conditions (one year of area growth projections and approved in-process developments, but not including any traffic from Project Basie).
- Year 2022 total traffic conditions (one year of area growth projections, approved in-process developments, and traffic estimates from Project Basie).
- Year 2040 Planning Horizon background traffic conditions.
- Year 2040 Planning Horizon total traffic conditions

TRIP DISTRIBUTION

Based on the anticipated number of jobs at the site, the site's location with respect to Woodburn, and Woodburn's location with respect to the larger population centers in the Willamette Valley, the following preliminary trip distribution pattern was developed:

- I-5 to/from the north: 40%
- I-5 to/from the south: 35%

- OR 219/OR 214 to/from the east of I-5: 15%
- OR 219 to/from the west: 5%
- Butteville Road to/from the south: 5%

These preliminary distribution patterns will be confirmed through a select zone assignment using Woodburn's Travel Demand Model and additional jurisdictional feedback.

EXISTING TRAFFIC VOLUMES

Existing traffic volumes will be determined from manual turn movement counts collected at the study intersections on a typical weekday during the morning and evening peak periods in April 2021. As previously discussed in the Trip Generation section, intersection turning movement counts will be collected from 6:00 AM – 10:00 AM and from 3:00 PM – 7:00 PM in order to fully capture the larger array of peak time period site-generated traffic volumes.

COVID-19 Adjustments

In recognition of the fact that traffic volumes on many Oregon streets and highways are still being affected by reduced work-based commuting travel, various degrees of virtual learning, and reduced in-door dining capacity at restaurants, previously collected traffic counts available at many of the proposed study intersections will be reviewed and appropriate factors will be developed and applied as necessary. This factoring method and results (if necessary) will be shared with City of Woodburn, ODOT, and Marion County staff for review and approval prior to finalizing any intersection analyses.

Seasonal Adjustments

Per ODOT requirements, a seasonal factor will be applied to the study intersections along the OR 219 corridor. To determine an appropriate seasonal factor, three methodologies were investigated as outlined in ODOT's Analysis Procedures Manual (APM): On-Site ATR Method, ATR Characteristic Table Method, ATR Seasonal Trend Method.

On-Site ATR Method

The On-Site ATR Method is used when an Automatic Traffic Recorder (ATR) is within or near the project area. ATR #24-020 is the closest ATR station to Woodburn, located approximately 4.25 miles to the west on OR 219. However, the average annual daily traffic at this ATR site is not within ten percent of recent historical traffic volumes found along OR 219 in the vicinity of the I-5 interchange (10 percent is the criteria cited by the ATM). As such, the On-Site ATR method was not utilized.

ATR Characteristics Table

The ATR Characteristic Table provides general characteristics for each ATR in Oregon and is typically used when there is not a nearby ATR within the immediate study area. A review of the Characteristic Table did not find an ATR that closely matches the conditions along OR 219 within the vicinity of the study site. As such, the ATR Seasonal Trend Method was evaluated as described in the following section.

ATR Seasonal Trend Method

The seasonal trend table is used when there is not an ATR nearby or in a representative area. This method averages seasonal trend groupings from the ATR Characteristics Table. For movements at intersections along OR 219, an average of the "commuter" and "summer" trends was deemed appropriate as it has been used and approved in other recent planning studies in the project vicinity.

Table 4 – ATR Seasonal Trend Method for Commuter and Summer Trends

	April Count Month (April 15)	Seasonal Trend Peak Period Factor
Commuter	0.9759	0.9355
Summer	1.0100	0.8299

- Based on Table 4, the Commuter seasonal adjustment is 1.04 (i.e., 0.9759/0.9355) and the Summer seasonal adjustment is 1.22 (i.e., 1.0100/0.8299). As such, an average of the Commuter and Summer season adjustments is **1.13**.

For the purposes of this analysis, a seasonal factor of 1.13 will be applied to existing traffic volumes.

PERFORMANCE MEASURES & OPERATING STANDARDS

Intersection operating targets adopted by the City of Woodburn, ODOT, and Marion County are summarized below.

ODOT Mobility Targets

ODOT uses volume-to-capacity (v/c) ratios to assess intersection operations. Table 6 of the Oregon Highway Plan (OHP) provides volume-to-capacity ratio targets for all signalized/roundabout and unsignalized intersections located outside the Portland metropolitan area. Based on the OHP, Table 5 summarizes the v/c ratio that will be used to identify the existing/future operational issues at all study intersections along the OR 219 study corridor. In addition, the Oregon Highway Design Manual standards (from Table 10-2) are identified for any intersections that may require mitigation.

Table 5 – ODOT Mobility Targets

Intersection	OHP Mobility Target	Highway Design Manual 20-Year Design Mobility Standards
OR 219/Butteville Road	V/C: 0.95 major approach/0.95 minor approach	0.80
OR 219/Willow Avenue	V/C: 0.95 major approach/0.95 minor approach	0.80

OR 219/Woodland Avenue	V/C: 0.95	0.80
OR 219/I-5 SB Ramp Terminal	V/C: 0.85	0.80
OR 21/I-5 NB Ramp Terminal	V/C: 0.85	0.80

Note: OR 219 is a District Highway with a posted speed of 35 mph through the study intersections.

City of Woodburn Operating Standards

The City of Woodburn's Transportation System Plan (TSP) has adopted the following mobility targets for intersections within the City. While the City of Woodburn has no ownership or maintenance control at any of the identified study intersections, the traffic impact study will account for these standards in the analysis.

- LOS E for signalized intersections
- 1.0 v/c for signalized intersections
- 0.90 v/c for the critical movements at unsignalized intersections

Marion County Mobility Standards

The County's policy and Procedure for traffic impact study requirements specify the following mobility standards. For the purposes of this study, these standards will apply when evaluating traffic conditions along the Marion County owned and maintained Butteville Road.

- LOS D for signalized and all-way stop-control (AWSC) intersections
- LOS E for all individual movements
- 0.85 v/c for all individual movements
- LOS E for unsignalized intersections (LOS F is acceptable for relatively low volumes)

NEXT STEPS

Please review the project scope at your earliest convenience. If you have any questions or comments, please contact us at 503.535.7425.

Sincerely,
KITTELSON & ASSOCIATES, INC.

Matt Hughart, AICP
Principal Planner

Julia Kuhn, P.E.
Senior Principal Engineer

AR Sortable 640K FC - Non-Peak Season

Headcount

	Total
Headcount - Day Shift	937
Headcount - Night Shift	937

Shift Structure

	Start	End
Day Shift - Inbound Employees	7:00:00 AM	5:30:00 PM
Day Shift - Outbound Employees	7:30:00 AM	6:00:00 PM
Night Shift - Inbound Employees	6:00:00 PM	4:30:00 AM
Night Shift - Outbound Employees	6:30:00 PM	5:00:00 AM

Net Cars Factor 95%

Traffic Schedule

Cars
Average Weekday

Time	In	Out	Total
00:00	3	6	9
01:00	1	4	5
02:00	5	14	19
03:00	8	14	22
04:00	17	179	196
05:00	37	475	512
06:00	28	16	44
06:15	73	17	90
06:30	127	10	137
06:45	170	7	177
07:00	168	9	177
07:15	218	4	222
07:30	32	6	38
07:45	7	5	12
08:00	25	18	43
09:00	16	10	26
10:00	20	17	37
11:00	38	41	79
12:00	11	17	28
13:00	13	14	27
14:00	11	25	36
15:00	29	37	66
16:00	45	32	77
17:00	26	33	59
17:15	50	15	65
17:30	110	128	238
17:45	143	74	217
18:00	178	246	424
18:15	172	166	338
18:30	23	111	134
18:45	5	41	46
19:00	18	35	53
20:00	8	8	16
21:00	15	15	30
22:00	17	21	38
23:00	3	5	8
	1,874	1,874	3,745

Trucks
Average Weekday

Time	In	Out	Total
00:00	11	11	23
01:00	19	19	38
02:00	8	8	15
03:00	15	15	30
04:00	8	8	15
05:00	11	11	23
06:00	3	3	5
06:15	3	3	5
06:30	3	3	5
06:45	3	3	5
07:00	4	4	8
07:15	4	4	8
07:30	4	4	8
07:45	4	4	8
08:00	15	15	30
09:00	27	27	53
10:00	15	15	30
11:00	16	16	33
12:00	16	16	33
13:00	10	10	20
14:00	10	10	20
15:00	10	10	20
16:00	11	11	23
17:00	3	3	5
17:15	3	3	5
17:30	3	3	5
17:45	3	3	5
18:00	3	3	5
18:15	3	3	5
18:30	3	3	5
18:45	3	3	5
19:00	9	9	18
20:00	14	14	28
21:00	10	10	20
22:00	14	14	28
23:00	10	10	20
	306	306	611

Total Vehicles
Cars + Trucks Average Weekday

	In	Out	Total
00:00	14	17	31
01:00	20	23	43
02:00	12	21	33
03:00	23	28	51
04:00	24	178	201
05:00	47	463	509
06:00	29	18	47
06:15	72	19	91
06:30	123	12	135
06:45	164	9	173
07:00	163	12	176
07:15	211	8	218
07:30	34	9	44
07:45	10	9	19
08:00	39	32	71
09:00	42	36	78
10:00	34	31	65
11:00	53	55	108
12:00	27	33	59
13:00	22	23	46
14:00	21	34	54
15:00	38	45	83
16:00	54	42	96
17:00	27	34	61
17:15	50	17	67
17:30	107	124	231
17:45	138	73	211
18:00	172	236	408
18:15	166	160	326
18:30	24	108	132
18:45	7	41	49
19:00	26	42	68
20:00	21	21	43
21:00	24	24	49
22:00	30	34	64
23:00	13	15	28
	2,082	2,087	4,169

Morning Peak Hour of Generator

	Enter	Exit	Total
06:30-07:30	661	41	703

Evening Peak Hour of Generator

	Enter	Exit	Total
17:30-18:30	583	593	1,176

City of Woodburn

Community Development Dept.

Memorandum

270 Montgomery Street *Woodburn, Oregon 97071* *Phone (503) 982-5246* *Fax (503) 982-5244*

Date: April 30, 2021

To: Matt Hughart, Principal Planner, Kittelson & Associates, Inc.

From: Chris Kerr, Community Development Director

Cc: Eric Liljequist, Public Works, City of Woodburn
Chuck Green, OTAK
Casey Knecht, ODOT
Arielle Ferber, ODOT
Tom Nieswander, Trammel Crow

Subject: Project Basie transportation scoping letter response

Please find below and attached comments in response to the April 16, 2021 memorandum from Matt Hughart of Kittelson and Associates entitled "Project Basie Traffic Impact Study Scoping Letter". Included below are comments, findings and recommendations from City staff, prepared by Chuck Green, consultant for the City. Oregon Department of Transportation Region 2 Traffic staff (Arielle Ferber and Casey Knecht) provided a separate review memo on April 29, 2021, which is attached. Marion County Transportation Planning Staff (Janelle Shanahan) provided Marion County's comments, embedded in the Kittelson document, directly to Matt Hughart under a separate email.

The TIA scoping memo was reviewed with input from the following documents:

- Oregon Department of Transportation (ODOT) Analysis Procedures Manual (APM), Version 2 as Revised, November 2020 with new Appendix 3E, "Traffic Volume Development During Disruptive Events" including the effects of the COVID-19 Pandemic
- City of Woodburn's Comprehensive Plan (September 2019)
- City of Woodburn's Transportation System Plan (September 2019)
- City of Woodburn's Transit Plan Update (November 2010)
- Woodburn Development Ordinance, update version June 2019
- Recent development traffic impact analyses in the site vicinity.

Summary of Findings

The review of the developer's proposed Traffic Impact Analysis scope has the following findings and recommendations:

- Site plan concept and Butteville Road and Oregon 219 alignments: the adopted Transportation Systems Plan contains an extension of Woodland Avenue west from its current stub over to Butteville Road as a "Future Access Street". The current site plan narrative (MacKenzie Engineering, also dated April 16, 2021) indicates the Applicant plans to not build this extension of Woodland Avenue; that site plan pushes the site to the north to be contiguous with OR 219. The TIA scoping memo includes a map showing "Option 1" which pushes the site to the south, and includes the Woodland Avenue extension on the north side of the site proposal. A new road option was emailed to Jamie Johnk, Woodburn's Economic Development Director on Friday, April 23 which shows Option 1 with a new, realigned Butteville Road and a new roundabout to be built along OR 219 east of the current Butteville/OR 219 intersection. We are unclear as to which site plan option and which roadway system option will be incorporated into the TIA; this should be clarified before starting the TIA work.

- Additionally, the site will have an impact on the Butteville Road/OR 219 intersection which likely impacts the intersection type of control (signal vs. roundabout). The new alignment concept shared on April 23 indicates a roundabout as the preferred intersection traffic control. Due to the nature of traffic interactions and operations, especially approaching and within the roundabout and queuing in both directions along OR 219, the traffic impact study should assess both AM and PM peaks, and should include both AM and PM traffic simulations of an appropriate platform such as VISSIM (instead of Synchro/SimTraffic).

- Kittelson proposes to use ODOT's Seasonal Adjustment factors, but they are proposing to use an ATR (Automated Traffic Recording) station several miles to the west of the site along OR 219. OR 219 and the I-5 interchange vicinity have a very high Holiday peak in November or December, which this ATR may not capture. Kittelson should provide a methodology showing the proposed seasonal adjustment factor more relevant to the vicinity of this site, including proximity to I-5. Our meeting with ODOT raised this seasonal adjustment question and subsequent to that meeting, ODOT provided the following comment: "The City had a review comment regarding the seasonal factor and how the chosen ATR would not reflect the Holiday peak experienced in the study area. There is no existing ATR within the area that would capture this Holiday peak, so I did a review of ATRs across the state to try and identify any which would give a good representation. Unfortunately I wasn't able to find a perfect fit with ATRs #34-008 (Tigard) and #26-018 (Yamhill) being the best as they are located on either I-5 or I-205 very close to retail centers. Both of these ATRs experience their peak months during summer. I believe the method chosen by the applicant (which averages the commuter and summer seasonal trends) will give an appropriate seasonal factor with the data available to us at this time." If Kittelson cannot locate traffic data that would provide a more appropriate seasonal adjustment factor, the method proposed in the scoping memo appears to be acceptable to ODOT.

- Based on a review of the current situation and the proposed use, the trip distribution assumptions need some modification, as shown below. ODOT's and Marion County's review concurs with this request to adjust the percentages. ODOT suggested using a select zone analysis in the area travel demand model. If that is not available or applicable to this specific analysis, the proposed modifications are:
    - Increase the trip percentage to the west on OR 219 from the proposed 5% to 10%
    - Increase the trip percentage on OR 214/219 east of I-5 from the proposed 15% to 20%
    - Reduce the trip distribution rates on I-5 both north and south accordingly to balance to 100% of the trips.

- The Study Area proposed is limited to the immediate vicinity of the site. It does not go west toward Newberg along OR 219, nor does it go east of I-5. The study area should be expanded based on the traffic impacts of intersections and roadway segments both east and west along OR 219 and OR 214. ODOT provided some feedback as well about the extent of the study area and I concur with their approach.

- The site has different peaking characteristics (peak hour of generator) compared to the surrounding system (peak hour of system). Kittelson is proposing a modified trip generation based on a trip profile pattern attached at the end of the scoping memo which accounts for the overlap between the site's peak and the system's peak. While the approach seems reasonable, looking at the car vs. truck trip generation, it appears the truck trip generation rates may be low. However, we have no information on the distribution patterns of the shipped goods to and from the Fulfillment center. Kittelson should provide more details on the trip distribution patterns – types of trucks (van, single-unit, multi-unit) and inbound vs. outbound trucks and profile.

- Kittelson is proposing to incorporate a COVID-19 adjustment to "existing conditions" counts for the analysis. However, there are no details shared on the methodology nor how this will be consistent with the ODOT APM Appendix 3E methodology with this regard.

- Future planning year for the analysis is 2040, which will be approximately 19 years after site buildout. At the meeting with ODOT, they agreed this seemed reasonable but would provide final comments after their completed review of the scoping memo.

- Kittelson should confirm the current mobility standards to be applied for all agencies. Besides the Woodburn and ODOT standards or targets referenced in the scoping memo, Marion County's Mobility Standards are LOS E and v/c ratio below 0.85 for signalized and all-way stop controlled intersections, and LOS D and 0.90 for other unsignalized intersections. ODOT also commented about correcting the mobility thresholds for the TIA. The mobility standard for a roundabout should also be confirmed.

- In-process development trips, including the Port of Willamette, will need to be incorporated into the existing plus background growth plus in-process trips for the without-site scenario.

Attachment: ODOT *TIA Scoping Review Comments* prepared April 29, 2021

Oregon
Kate Brown, Governor

Department of Transportation
Region 2 Tech Center
455 Airport Road SE, Building A
Salem, Oregon 97301-5397
Telephone (503) 986-2990
Fax (503) 986-2839

DATE: April 29, 2021

TO: Casey Knecht, PE
Development Review Coordinator

FROM: Arielle Ferber, PE
Traffic Analysis Engineer

SUBJECT: Project Basie (Woodburn) – Outright Use
TIA Scoping Review Comments

ODOT Region 2 Traffic has completed our review of the submitted traffic impact analysis scoping memorandum (dated April 2021) to address traffic impacts due to development on the southeast quadrant of Butteville Road and Stafney Lane in the city of Woodburn, with respect to consistency and compliance with ODOT's Analysis Procedures Manual, Version 2 (APM). The APM was most recently updated in October 2020. The current version is published online at: http://www.oregon.gov/ODOT/TD/TP/Pages/APM.aspx. As a result, we submit the following comments for the City's consideration:

Recommended analysis items to be addressed:

1. ODOT recommends (or requires when we have the authority) the applicant study all state highway intersections that may be anticipated to see an increase in either 50 peak hour trips and/or 300 ADT. Therefore, using the provided trip distribution ODOT recommends the applicant study the following intersections, in addition to the proposed study area intersections:
    - Both OR 219 at Butteville Road intersections
    - OR 214 at Evergreen Road
    - OR 214 at N Boones Ferry Road/N Settlemiere Avenue
    - OR 214 at OR 99E
2. Our review identified multiple trip generation errors.
    - Table 1, which estimated trip generation using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition, does not correspond to Land Use Code 155 (High-Cube Fulfillment Center Warehouse) trips using 2.89 million sf.
    - Table 2 and Table 3 show trip generation estimates using developer provided data contained in Appendix A. However, Appendix A appears to contain some errors as follows:
        - The Trucks columns have several intervals where trips In and Out of the site do not add to the Total (ex 6:30 AM should have 6 total trips, not 5 total trips)

- The Cars and Trucks columns do not add to the Total Vehicles columns. This would increase trip generation to a total of 741 trips in the AM peak hour and 1,241 trips in the PM peak hour.

3. As the majority of trips during the AM and PM peak hours are projected to be employees of the development the trip distribution values for the OR 219 to/from the west and Butteville Road to/from the south appear low and may need to be increased. ODOT recommends that the applicant refine their trip distribution using a select zone assignment, as noted in the scoping memo. In addition, should the trip distribution change the applicant should review for intersections which may meet the ODOT recommended thresholds as noted in comment #1.
4. ODOT concurs with the applicant determining if a COVID-19 adjustment factor may be needed. Please see APM, Appendix 3E for recommended methodology.
5. The *Oregon Highway Plan* (*OHP*) v/c mobility target for the OR 219 at Butteville intersection (district highway, within UGB, non-MPO, 55 MPH) is 0.90, not 0.95. The OR 219 at I-5 SB Ramp Terminal and OR 219 at I-5 NB Ramp Terminal intersections (interstate, within UGB, non-MPO) have an *OPH* v/c mobility target of 0.80, not 0.85. In addition, *Highway Design Manual* (*HDM*) mobility targets are not typically used for development review and *OHP* v/c mobility targets should be used for comparing operation results in the build conditions, even with mitigation.
6. ODOT recommends a simulation-based queueing analysis be conducted in accordance with Chapter 15 of the APM for all study area intersections for all time periods analyzed.
7. ODOT recommends a crash analysis be conducted in accordance with Chapter 4 of ODOT's APM.

Thank you for the opportunity to review this traffic impact analysis scoping memo. Should the City determine any of the above comments merit the need for an update scoping memo, we would be willing and able to assist with a second round of review. If there are any questions regarding these comments, please contact me at (503) 986-2857 or Arielle.Ferber@ODOT.state.or.us

KITTELSON & ASSOCIATES
851 SW 6th AVENUE, SUITE 600
PORTLAND, OR 97204
P 503.228.5230 F 503.273.8169

April 16, 2021 Project #: 26306

Eric Liljequist and Dago Garcia, City of Woodburn
Casey Knecht and Arielle Ferber, Oregon Department of Transportation
Jenelle Shanahan, Marion County

Cc: Tom Nieswander, Trammell Crow Company

RE: Project Basie Traffic Impact Study Scoping Letter

Dear Eric, Dago, Casey, Arielle, and Jenelle:

Kittelson & Associates, Inc. has prepared the following Traffic Impact Study scoping memorandum for the proposed Project Basie development in Woodburn, Oregon. This document outlines a proposed scope of work, study intersections, analysis time periods, and assumptions for your review and consideration.

PROJECT AND SITE OVERVIEW

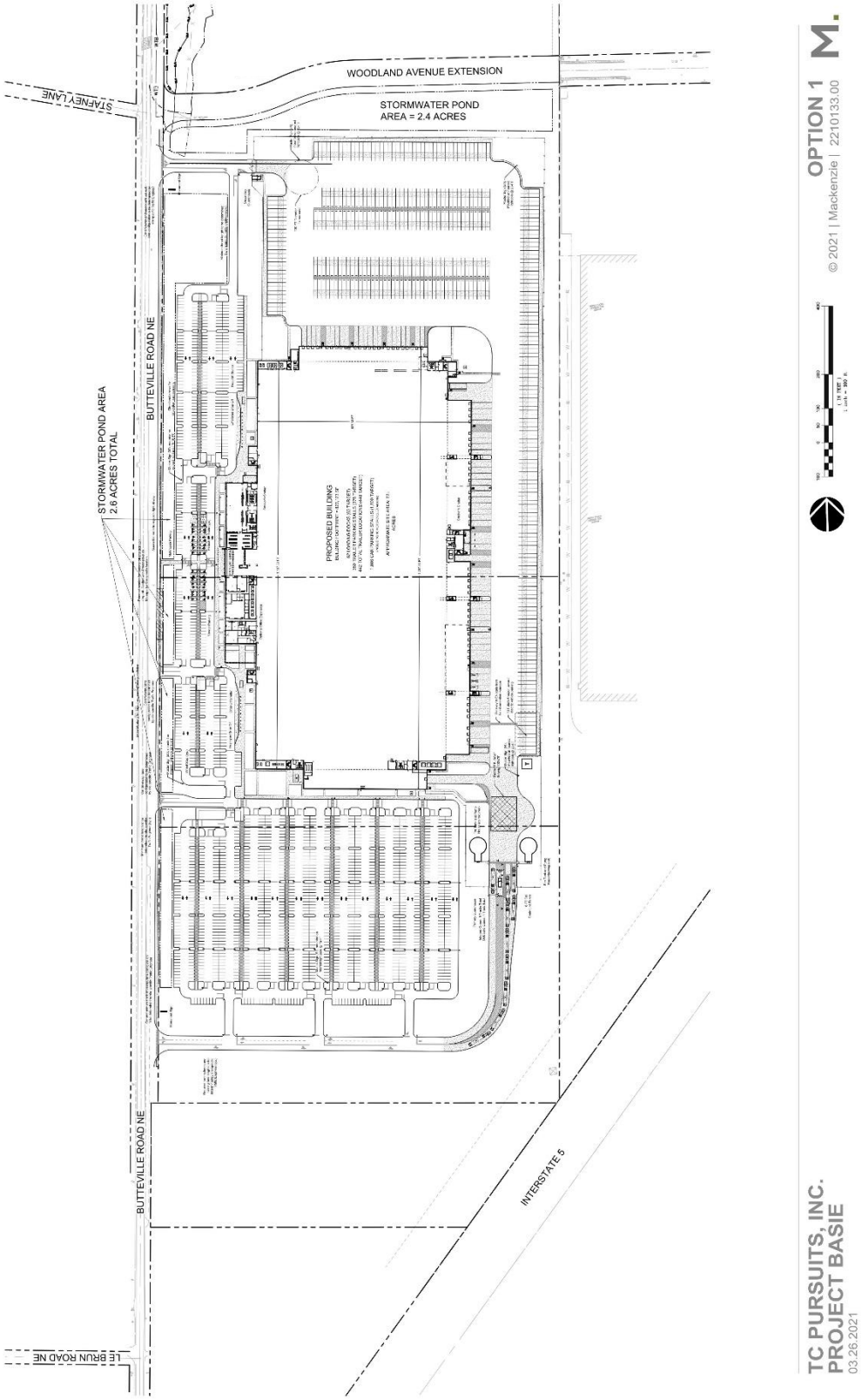
Project Basie is a single five story industrial building that will contain approximately 2.89 million square feet of floor area. The building is anticipated to house package distribution and fulfillment center activities and will be supported by on-site access and circulation, vehicle parking and fleet vehicle/trailer storage, landscaping, stormwater management facilities, and lighting.

The project site consists of approximately 106 acres located southeast of the OR 219/Butteville Road intersection. The site has historically been in agricultural use but is currently zoned for industrial use in Woodburn's Southwest Industrial Reserve Area overlay. Senecal Creek runs through the northwest corner of the site, flowing to the northeast under bridge crossings in Butteville Road and OR 219. A preliminary site layout (subject to further refinement) is included in Figure 1.

Like the subject property, land parcels to the south are in agricultural use pending industrial development under Woodburn SWIR regulations. Lands to the west, across Butteville Road, are outside the Woodburn Urban Growth Boundary (UGB) and support a mix of agricultural and rural residential uses. The WinCo Foods distribution center is on the adjacent property to the east, in the Light Industrial (IL) zone.

In order to support the development application, a formal Traffic Impact Study (TIS) will be prepared and submitted for review to the City of Woodburn, ODOT, and Marion County. The proposed scope of work and study assumptions are outlined in the following sections.

Figure 1 – Preliminary Site Plan (Subject to further refinement)

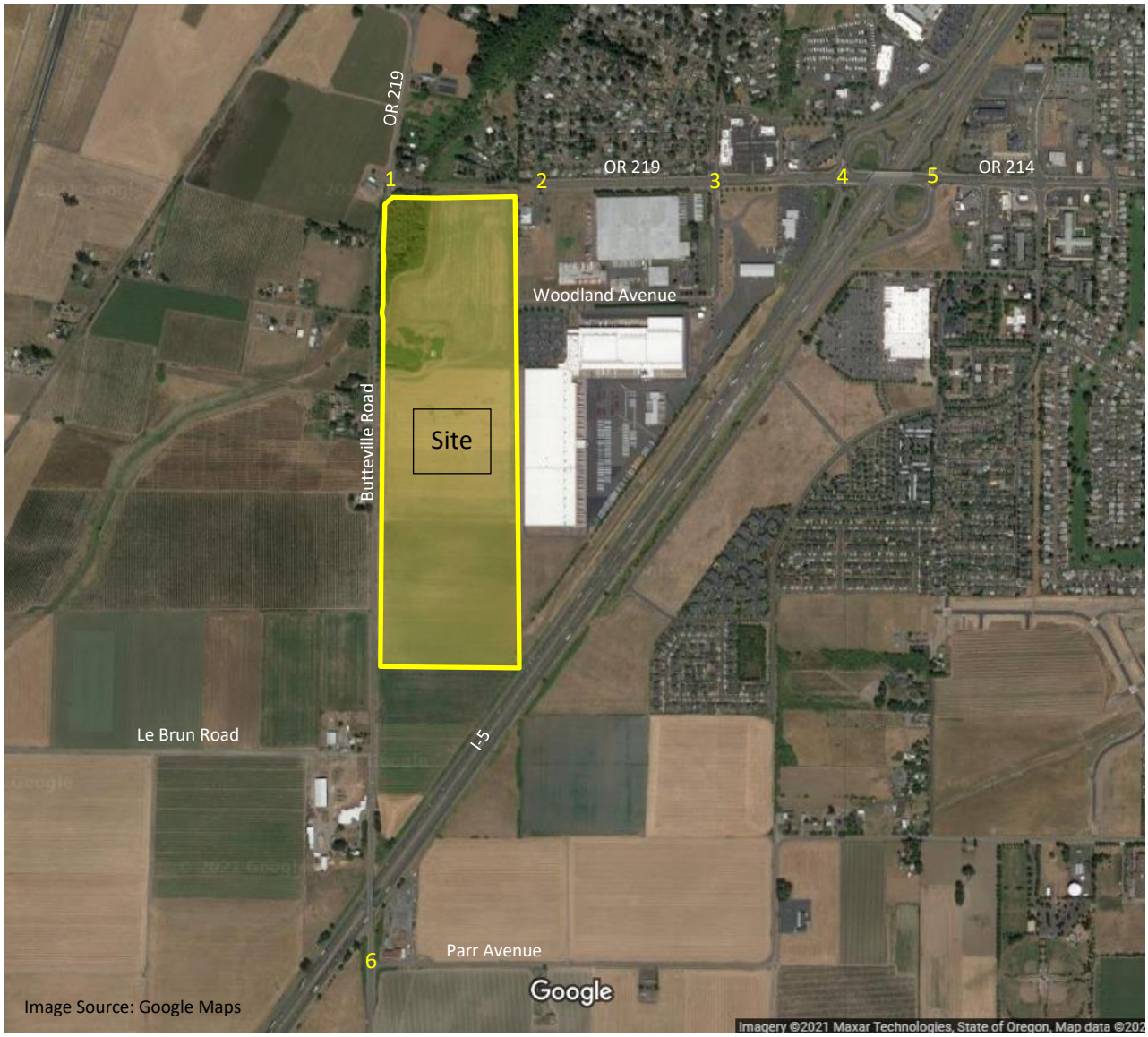


PROPOSED STUDY AREA

Based on the size and the anticipated trip generation profile of the proposed development, the study area is illustrated in Exhibit 1 below. As shown, the affected intersections are proposed to include:

1. OR 219/Butteville Road
2. OR 219/Willow Avenue
3. OR 219/Woodland Avenue
4. OR 219/I-5 SB Ramps
5. OR 219/I-5 NB Ramps
6. Parr Road NE/Butteville Road

Exhibit 1 – Study Area Map



TRIP GENERATION

Trip generation estimates are typically based on data derived from *Trip Generation, 10th Edition*, published by the Institute of Transportation Engineers (ITE). The proposed warehouse/distribution center will be used for storage and consolidation of products prior to their larger regional distribution and would be considered a "sortable" facility. The ITE land use that most closely matches this function is "High-Cube Fulfillment Center Warehouse" (Land Use 155). Table 1 provides the estimated trip generation using this ITE land use.

Table 1. Estimated Trip Generation (ITE) – High Cube Fulfillment Center (Sortable)

Land Use	ITE Code	Size	Weekday Trips	Weekday AM Peak Hour Trips			Weekday PM Peak Hour Trips		
				Total	In	Out	Total	In	Out
High-Cube Fulfillment Center Warehouse	155	2,890,000 sq. ft.	18,612	2,514	2,036	478	3,468	1,353	2,115

In reviewing Table 1, it is important to note that the ITE rates are based on one or two study sites (depending on the analysis period) with a facility size that was much less than what is being proposed. In these cases, the ITE manual encourages caution and suggests local or other data be applied instead. For these reasons, we obtained information from the potential Project Basie tenant including detailed employee and truck arrival/departure profiles specific to this site that take into consideration the size of the building, its specific purpose, anticipated employment levels, and work schedules modeled after other similar facilities. A detailed summary of this profile is included in *Attachment A*. As shown, the proposed site is anticipated to be a 24-hour facility with multiple shift change patterns. In particular, there are two key shift change periods that are anticipated to occur near the typical weekday AM and PM peak periods:

- 6:30-7:30 AM which accounts for the peak arrival period for the dayshift.
- 5:30-6:30 PM which accounts for peak dayshift departure period and the peak nightshift arrival period.

These shift change periods represent what ITE defines as "the Peak Hour of the Generator". The resulting trip profile is summarized in Table 2 below.

Table 2: Project Basie - Peak Hour of the Generator Trip Generation Estimate

Land Use	Size	Weekday Daily Trips	Weekday AM Peak Hour of Generator Trips (6:30-7:30 AM)			Weekday PM Peak Hour of Generator Trips (5:30-6:30 PM)		
			Total	In	Out	Total	In	Out
Project Basie	937 employees per shift	4,170	703	661	41	1,176	583	593

Source: Tenet supplied employee and freight arrival/departure schedule. See Appendix A.

In addition to the Peak Hour of the Generator, previously collected traffic counts at many of the major intersections within the study area have revealed that Woodburn's street system has different peak time periods than reflected in Table 2. In particular, the weekday AM peak hour in Woodburn has been found to occur from 7:00-8:00 AM while the weekday PM system peak hour has been found to occur from 4:00-5:00 PM. The resulting trip profile for the proposed building during these times is shown in Table 3.

Table 3: Project Basie - Peak Hour of the System Trip Generation Estimate

Land Use	Size	Weekday Daily Trips	Weekday AM System Peak Hour Trips (6:30-7:30 AM)			Weekday PM System Peak Hour Trips (5:30-6:30 PM)		
			Total	In	Out	Total	In	Out
Project Basie	937 employees per shift	4,170	457	419	38	96	54	42

Source: Tenet supplied employee and freight arrival/departure schedule. See Appendix A.

Given the significance of the trip generation profiles reflected in both Tables 2 and 3, we propose to evaluate the transportation impacts during the Peak Hours of the Generator and during the Peak Hours of the System.

ANALYSIS TIME PERIODS

To address the impacts of Project Basie and meet the various study requirements of the reviewing agencies, the Traffic Impact Study will assess the following analysis years during the weekday AM (generator and system peak hour) and PM (generator and system peak hour) time periods:

- Existing (year 2021) traffic conditions.
- Year 2022 background traffic conditions (one year of area growth projections and approved in-process developments, but not including any traffic from Project Basie).
- Year 2022 total traffic conditions (one year of area growth projections, approved in-process developments, and traffic estimates from Project Basie).
- Year 2040 Planning Horizon background traffic conditions.
- Year 2040 Planning Horizon total traffic conditions

TRIP DISTRIBUTION

Based on the anticipated number of jobs at the site, the site's location with respect to Woodburn, and Woodburn's location with respect to the larger population centers in the Willamette Valley, the following preliminary trip distribution pattern was developed:

- I-5 to/from the north: 40%
- I-5 to/from the south: 35%

- OR 219/OR 214 to/from the east of I-5: 15%
- OR 219 to/from the west: 5%
- Butteville Road to/from the south: 5%

These preliminary distribution patterns will be confirmed through a select zone assignment using Woodburn's Travel Demand Model and additional jurisdictional feedback.

EXISTING TRAFFIC VOLUMES

Existing traffic volumes will be determined from manual turn movement counts collected at the study intersections on a typical weekday during the morning and evening peak periods in April 2021. As previously discussed in the Trip Generation section, intersection turning movement counts will be collected from 6:00 AM – 10:00 AM and from 3:00 PM – 7:00 PM in order to fully capture the larger array of peak time period site-generated traffic volumes.

COVID-19 Adjustments

In recognition of the fact that traffic volumes on many Oregon streets and highways are still being affected by reduced work-based commuting travel, various degrees of virtual learning, and reduced in-door dining capacity at restaurants, previously collected traffic counts available at many of the proposed study intersections will be reviewed and appropriate factors will be developed and applied as necessary. This factoring method and results (if necessary) will be shared with City of Woodburn, ODOT, and Marion County staff for review and approval prior to finalizing any intersection analyses.

Seasonal Adjustments

Per ODOT requirements, a seasonal factor will be applied to the study intersections along the OR 219 corridor. To determine an appropriate seasonal factor, three methodologies were investigated as outlined in ODOT's Analysis Procedures Manual (APM): On-Site ATR Method, ATR Characteristic Table Method, ATR Seasonal Trend Method.

On-Site ATR Method

The On-Site ATR Method is used when an Automatic Traffic Recorder (ATR) is within or near the project area. ATR #24-020 is the closest ATR station to Woodburn, located approximately 4.25 miles to the west on OR 219. However, the average annual daily traffic at this ATR site is not within ten percent of recent historical traffic volumes found along OR 219 in the vicinity of the I-5 interchange (10 percent is the criteria cited by the ATM). As such, the On-Site ATR method was not utilized.

ATR Characteristics Table

The ATR Characteristic Table provides general characteristics for each ATR in Oregon and is typically used when there is not a nearby ATR within the immediate study area. A review of the Characteristic Table did not find an ATR that closely matches the conditions along OR 219 within the vicinity of the study site. As such, the ATR Seasonal Trend Method was evaluated as described in the following section.

ATR Seasonal Trend Method

The seasonal trend table is used when there is not an ATR nearby or in a representative area. This method averages seasonal trend groupings from the ATR Characteristics Table. For movements at intersections along OR 219, an average of the "commuter" and "summer" trends was deemed appropriate as it has been used and approved in other recent planning studies in the project vicinity.

Table 4 – ATR Seasonal Trend Method for Commuter and Summer Trends

	April Count Month (April 15)	Seasonal Trend Peak Period Factor
Commuter	0.9759	0.9355
Summer	1.0100	0.8299

- Based on Table 4, the Commuter seasonal adjustment is 1.04 (i.e., 0.9759/0.9355) and the Summer seasonal adjustment is 1.22 (i.e., 1.0100/0.8299). As such, an average of the Commuter and Summer season adjustments is **1.13**.

For the purposes of this analysis, a seasonal factor of 1.13 will be applied to existing traffic volumes.

PERFORMANCE MEASURES & OPERATING STANDARDS

Intersection operating targets adopted by the City of Woodburn, ODOT, and Marion County are summarized below.

ODOT Mobility Targets

ODOT uses volume-to-capacity (v/c) ratios to assess intersection operations. Table 6 of the Oregon Highway Plan (OHP) provides volume-to-capacity ratio targets for all signalized/roundabout and unsignalized intersections located outside the Portland metropolitan area. Based on the OHP, Table 5 summarizes the v/c ratio that will be used to identify the existing/future operational issues at all study intersections along the OR 219 study corridor. In addition, the Oregon Highway Design Manual standards (from Table 10-2) are identified for any intersections that may require mitigation.

Table 5 – ODOT Mobility Targets

Intersection	OHP Mobility Target	Highway Design Manual 20-Year Design Mobility Standards
OR 219/Butteville Road	V/C: 0.95 major approach/0.95 minor approach	0.80
OR 219/Willow Avenue	V/C: 0.95 major approach/0.95 minor approach	0.80

OR 219/Woodland Avenue	V/C: 0.95	0.80
OR 219/I-5 SB Ramp Terminal	V/C: 0.85	0.80
OR 21/I-5 NB Ramp Terminal	V/C: 0.85	0.80

Note: OR 219 is a District Highway with a posted speed of 35 mph through the study intersections.

City of Woodburn Operating Standards

The City of Woodburn's Transportation System Plan (TSP) has adopted the following mobility targets for intersections within the City. While the City of Woodburn has no ownership or maintenance control at any of the identified study intersections, the traffic impact study will account for these standards in the analysis.

- LOS E for signalized intersections
- 1.0 v/c for signalized intersections
- 0.90 v/c for the critical movements at unsignalized intersections

Marion County Mobility Standards

The County's policy and Procedure for traffic impact study requirements specify the following mobility standards. For the purposes of this study, these standards will apply when evaluating traffic conditions along the Marion County owned and maintained Butteville Road.

- LOS D for signalized and all-way stop-control (AWSC) intersections
- LOS E for all individual movements
- 0.85 v/c for all individual movements
- LOS E for unsignalized intersections (LOS F is acceptable for relatively low volumes)

NEXT STEPS

Please review the project scope at your earliest convenience. If you have any questions or comments, please contact us at 503.535.7425.

Sincerely,
KITTELSON & ASSOCIATES, INC.

Matt Hughart, AICP
Principal Planner

Julia Kuhn, P.E.
Senior Principal Engineer

AR Sortable 640K FC - Non-Peak Season

Headcount

	Total
Headcount - Day Shift	937
Headcount - Night Shift	937

Shift Structure

	Start	End
Day Shift - Inbound Employees	7:00:00 AM	5:30:00 PM
Day Shift - Outbound Employees	7:30:00 AM	6:00:00 PM
Night Shift - Inbound Employees	6:00:00 PM	4:30:00 AM
Night Shift - Outbound Employees	6:30:00 PM	5:00:00 AM

Net Cars Factor 95%

Traffic Schedule

Cars
Average Weekday

Time	In	Out	Total
00:00	3	6	9
01:00	1	4	5
02:00	5	14	19
03:00	8	14	22
04:00	17	179	196
05:00	37	475	512
06:00	28	16	44
06:15	73	17	90
06:30	127	10	137
06:45	170	7	177
07:00	168	9	177
07:15	218	4	222
07:30	32	6	38
07:45	7	5	12
08:00	25	18	43
09:00	16	10	26
10:00	20	17	37
11:00	38	41	79
12:00	11	17	28
13:00	13	14	27
14:00	11	25	36
15:00	29	37	66
16:00	45	32	77
17:00	26	33	59
17:15	50	15	65
17:30	110	128	238
17:45	143	74	217
18:00	178	246	424
18:15	172	166	338
18:30	23	111	134
18:45	5	41	46
19:00	18	35	53
20:00	8	8	16
21:00	15	15	30
22:00	17	21	38
23:00	3	5	8
	1,874	1,874	3,745

Trucks
Average Weekday

Time	In	Out	Total
00:00	11	11	23
01:00	19	19	38
02:00	8	8	15
03:00	15	15	30
04:00	8	8	15
05:00	11	11	23
06:00	3	3	5
06:15	3	3	5
06:30	3	3	5
06:45	3	3	5
07:00	4	4	8
07:15	4	4	8
07:30	4	4	8
07:45	4	4	8
08:00	15	15	30
09:00	27	27	53
10:00	15	15	30
11:00	16	16	33
12:00	16	16	33
13:00	10	10	20
14:00	10	10	20
15:00	10	10	20
16:00	11	11	23
17:00	3	3	5
17:15	3	3	5
17:30	3	3	5
17:45	3	3	5
18:00	3	3	5
18:15	3	3	5
18:30	3	3	5
18:45	3	3	5
19:00	9	9	18
20:00	14	14	28
21:00	10	10	20
22:00	14	14	28
23:00	10	10	20
	306	306	611

Total Vehicles
Cars + Trucks Average Weekday

	In	Out	Total
00:00	14	17	31
01:00	20	23	43
02:00	12	21	33
03:00	23	28	51
04:00	24	178	201
05:00	47	463	509
06:00	29	18	47
06:15	72	19	91
06:30	123	12	135
06:45	164	9	173
07:00	163	12	176
07:15	211	8	218
07:30	34	9	44
07:45	10	9	19
08:00	39	32	71
09:00	42	36	78
10:00	34	31	65
11:00	53	55	108
12:00	27	33	59
13:00	22	23	46
14:00	21	34	54
15:00	38	45	83
16:00	54	42	96
17:00	27	34	61
17:15	50	17	67
17:30	107	124	231
17:45	138	73	211
18:00	172	236	408
18:15	166	160	326
18:30	24	108	132
18:45	7	41	49
19:00	26	42	68
20:00	21	21	43
21:00	24	24	49
22:00	30	34	64
23:00	13	15	28
	2,082	2,087	4,169

Morning Peak Hour of Generator

	Enter	Exit	Total
06:30-07:30	661	41	703

Evening Peak Hour of Generator

	Enter	Exit	Total
17:30-18:30	583	593	1,176

Appendix B Traffic Count Summary Worksheets

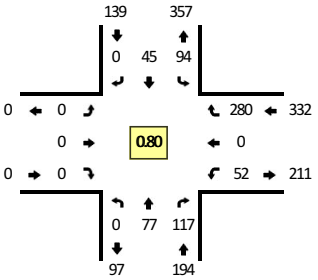
Type of peak hour being reported: User-Defined

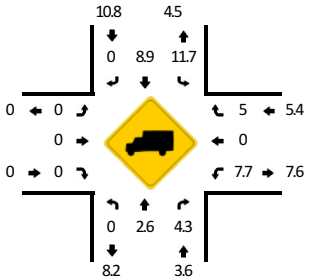
Method for determining peak hour: Total Entering Volume

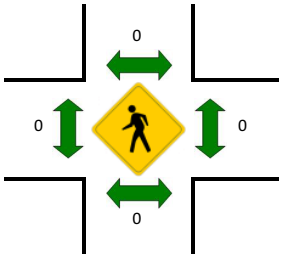
LOCATION: Butteville Rd NE -- OR-219
CITY/STATE: Woodburn, OR

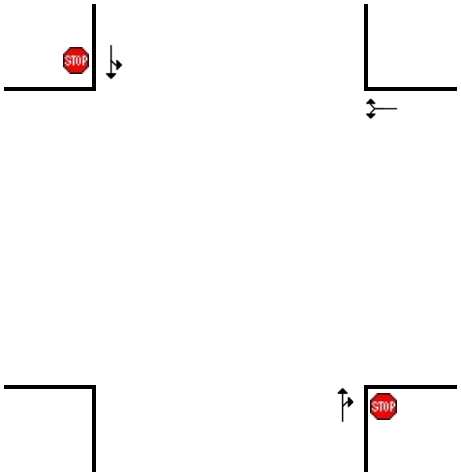
QC JOB #: 15405708
DATE: Wed, Apr 14 2021

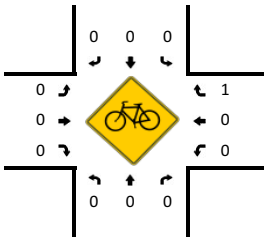
Peak-Hour: 6:30 AM -- 7:30 AM
Peak 15-Min: 6:40 AM -- 6:55 AM

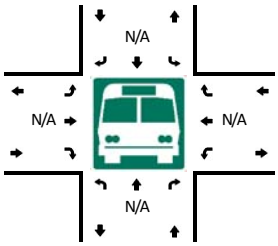


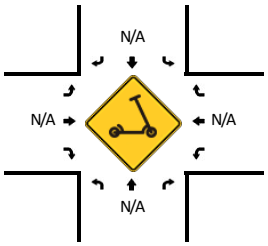












5-Min Count Period Beginning At	Butteville Rd NE (Northbound)				Butteville Rd NE (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	1	12	0	5	1	0	0	0	0	0	0	3	0	7	0	29	
6:05 AM	0	3	10	0	5	1	0	0	0	0	0	0	2	0	15	0	36	
6:10 AM	0	5	8	0	3	2	0	0	0	0	0	0	3	0	20	0	41	
6:15 AM	0	5	9	0	5	1	0	0	0	0	0	0	0	0	21	0	41	
6:20 AM	0	9	5	0	7	4	0	0	0	0	0	0	4	0	17	0	46	
6:25 AM	0	9	8	0	11	2	0	0	0	0	0	0	5	0	17	0	52	
6:30 AM	0	5	16	0	7	7	0	0	0	0	0	0	3	0	23	0	61	
6:35 AM	0	4	9	0	8	4	0	0	0	0	0	0	3	0	29	0	57	
6:40 AM	0	18	10	0	4	2	0	0	0	0	0	0	1	0	42	0	77	
6:45 AM	0	10	11	0	2	2	0	0	0	0	0	0	5	0	40	0	70	
6:50 AM	0	4	9	0	4	3	0	0	0	0	0	0	8	0	34	0	62	
6:55 AM	0	5	11	0	8	3	0	0	0	0	0	0	5	0	22	0	54	626
7:00 AM	0	7	6	0	7	5	0	0	0	0	0	0	2	0	20	0	47	644
7:05 AM	0	7	8	0	10	3	0	0	0	0	0	0	4	0	16	0	48	656
7:10 AM	0	5	9	0	13	2	0	0	0	0	0	0	1	0	11	0	41	656
7:15 AM	0	4	11	0	9	3	0	0	0	0	0	0	7	0	9	0	43	658
7:20 AM	0	5	10	0	5	5	0	0	0	0	0	0	10	0	16	0	51	663
7:25 AM	0	3	7	0	17	6	0	0	0	0	0	0	3	0	18	0	54	665
7:30 AM	0	12	9	0	9	1	0	0	0	0	0	0	6	0	17	0	54	658
7:35 AM	0	6	4	0	9	5	0	0	0	0	0	0	4	0	16	0	44	645
7:40 AM	0	6	7	0	9	5	0	0	0	0	0	0	8	0	15	0	50	618
7:45 AM	0	4	10	0	9	6	0	0	0	0	0	0	1	0	14	0	44	592
7:50 AM	0	11	11	0	15	4	0	0	0	0	0	0	7	0	16	0	64	594
7:55 AM	0	6	4	0	11	3	0	0	0	0	0	0	4	0	15	0	43	583
8:00 AM	0	4	7	0	20	4	0	0	0	0	0	0	4	0	12	0	51	587
8:05 AM	0	4	4	0	8	4	0	0	0	0	0	0	2	0	9	0	31	570
8:10 AM	0	1	9	0	8	2	0	0	0	0	0	0	3	0	7	0	30	559
8:15 AM	0	1	5	0	17	2	0	0	0	0	0	0	3	0	11	0	39	555
8:20 AM	0	4	8	0	8	1	0	0	0	0	0	0	2	0	4	0	27	531
8:25 AM	0	2	6	0	14	7	0	1	0	0	0	0	10	0	8	0	48	525
8:30 AM	0	2	5	0	10	4	0	0	0	0	0	0	9	0	7	0	37	508
8:35 AM	0	1	7	0	17	5	0	0	0	0	0	0	6	0	10	0	46	510
8:40 AM	0	6	12	0	8	3	0	0	0	0	0	0	3	0	18	0	50	510
8:45 AM	0	3	7	0	19	3	0	0	0	0	0	0	4	0	9	0	45	511
8:50 AM	0	5	6	0	16	1	0	0	0	0	0	0	5	0	10	0	43	490
8:55 AM	0	3	6	0	7	2	0	0	0	0	0	0	4	0	7	0	29	476
9:00 AM	0	5	8	0	1	3	0	0	0	0	0	0	6	0	10	0	33	458
9:05 AM	0	1	5	0	10	0	0	0	0	0	0	0	4	0	14	0	34	461

5-Min Count Period Beginning At	Butteville Rd NE (Northbound)				Butteville Rd NE (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
9:10 AM	0	3	4	0	13	0	0	0	0	0	0	0	1	0	11	0	32	463
9:15 AM	0	2	6	0	5	2	0	0	0	0	0	0	3	0	4	0	22	446
9:20 AM	0	3	7	0	7	0	0	0	0	0	0	0	4	0	16	0	37	456
9:25 AM	0	3	10	0	9	2	0	0	0	0	0	0	5	0	8	0	37	445
9:30 AM	0	1	4	0	15	1	0	0	0	0	0	0	2	0	3	0	26	434
9:35 AM	0	1	12	0	10	3	0	0	0	0	0	0	4	0	9	0	39	427
9:40 AM	0	2	6	0	4	1	0	0	0	0	0	0	5	0	4	0	22	399
9:45 AM	0	1	3	0	9	0	0	0	0	0	0	0	7	0	8	0	28	382
9:50 AM	0	6	8	0	7	1	0	0	0	0	0	0	3	0	7	0	32	371
9:55 AM	0	3	3	0	12	5	0	0	0	0	0	0	7	0	16	0	46	388

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	128	120	0	40	28	0	0	0	0	0	0	56	0	464	0	836
Heavy Trucks	0	0	4		4	0	0		0	0	0		8	0	8		24
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	4		4
Scooters																	

Comments:

Report generated on 5/21/2021 10:53 AM

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

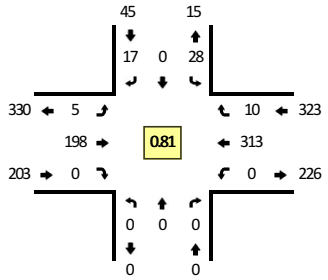
Type of peak hour being reported: User-Defined

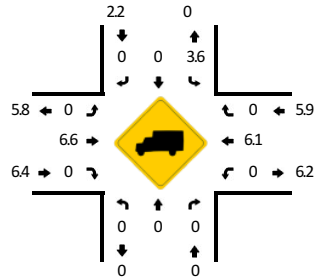
Method for determining peak hour: Total Entering Volume

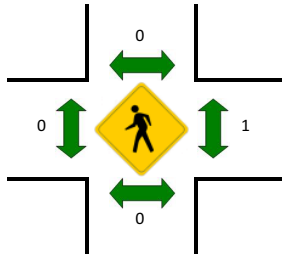
LOCATION: Willow Ave -- OR-219
CITY/STATE: Woodburn, OR

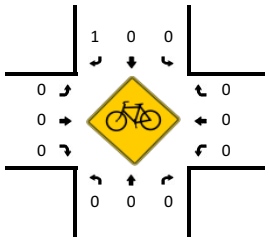
QC JOB #: 15405710
DATE: Wed, Apr 14 2021

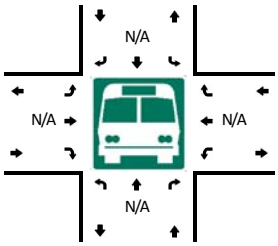
Peak-Hour: 6:30 AM -- 7:30 AM
Peak 15-Min: 6:35 AM -- 6:50 AM

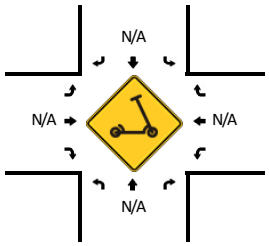












5-Min Count Period Beginning At	Willow Ave (Northbound)				Willow Ave (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	0	0	0	4	0	2	0	0	17	0	0	0	9	1	0	33	
6:05 AM	0	0	0	0	1	0	1	0	0	13	0	0	0	17	0	0	32	
6:10 AM	0	0	0	0	1	0	2	0	1	11	0	0	0	21	1	0	37	
6:15 AM	0	0	0	0	1	0	2	0	0	12	0	0	0	18	0	0	33	
6:20 AM	0	0	0	0	2	0	3	0	0	13	0	0	0	20	0	0	38	
6:25 AM	0	0	0	0	6	0	1	0	0	20	0	0	0	18	1	0	46	
6:30 AM	0	0	0	0	1	0	1	0	1	19	0	0	0	27	1	0	50	
6:35 AM	0	0	0	0	4	0	1	0	0	18	0	0	0	30	0	0	53	
6:40 AM	0	0	0	0	2	0	1	0	0	16	0	0	0	41	2	0	62	
6:45 AM	0	0	0	0	2	0	2	0	0	11	0	0	0	47	0	0	62	
6:50 AM	0	0	0	0	1	0	4	0	0	13	0	0	0	35	0	0	53	
6:55 AM	0	0	0	0	2	0	1	0	2	16	0	0	0	24	2	0	47	546
7:00 AM	0	0	0	0	1	0	1	0	1	13	0	0	0	21	1	0	38	551
7:05 AM	0	0	0	0	5	0	4	0	0	16	0	0	0	16	0	0	41	560
7:10 AM	0	0	0	0	3	0	0	0	0	20	0	0	0	12	0	0	35	558
7:15 AM	0	0	0	0	1	0	1	0	0	16	0	0	0	16	3	0	37	562
7:20 AM	0	0	0	0	5	0	1	0	0	20	0	0	0	25	1	0	52	576
7:25 AM	0	0	0	0	1	0	0	0	1	20	0	0	0	19	0	0	41	571
7:30 AM	0	0	0	0	1	0	3	0	1	18	0	0	0	18	2	0	43	564
7:35 AM	0	0	0	0	1	0	1	0	0	14	0	0	0	21	0	1	38	549
7:40 AM	0	0	0	0	0	0	4	0	0	14	0	0	0	19	0	0	37	524
7:45 AM	0	0	0	0	1	0	2	0	0	20	0	0	0	17	0	0	40	502
7:50 AM	0	0	0	0	0	0	3	0	0	26	0	0	1	20	0	0	50	499
7:55 AM	0	0	1	0	0	0	0	0	0	12	1	0	0	17	0	0	31	483
8:00 AM	0	0	0	0	2	0	0	0	0	29	0	0	0	16	0	0	47	492
8:05 AM	0	0	0	0	0	0	0	0	0	12	0	0	1	10	0	0	23	474
8:10 AM	0	0	0	0	0	0	0	0	0	18	0	0	1	11	0	0	30	469
8:15 AM	0	0	0	0	0	0	0	0	0	22	0	0	1	12	0	0	35	467
8:20 AM	0	0	1	0	1	0	2	0	0	16	0	0	1	6	0	0	27	442
8:25 AM	0	0	0	0	0	0	3	0	1	19	0	0	0	16	0	0	39	440
8:30 AM	0	0	0	0	0	0	4	0	0	14	0	0	0	13	1	0	32	429
8:35 AM	0	0	0	0	1	0	1	0	2	24	0	0	0	15	1	0	44	435
8:40 AM	0	0	0	0	2	1	1	0	1	15	0	0	0	18	3	0	41	439
8:45 AM	0	0	0	0	2	0	1	0	0	29	0	0	0	12	2	0	46	445
8:50 AM	0	0	0	0	0	0	1	0	0	21	0	0	0	11	0	0	33	428
8:55 AM	0	0	0	0	4	0	0	0	2	10	0	0	0	13	1	0	30	427
9:00 AM	0	0	0	0	1	0	0	0	2	9	0	0	0	27	1	0	40	420
9:05 AM	0	0	0	0	2	0	0	0	0	15	0	0	0	15	1	0	33	430

5-Min Count Period Beginning At	Willow Ave (Northbound)				Willow Ave (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
9:10 AM	0	0	0	0	1	0	2	0	2	14	0	0	0	10	1	0	30	430
9:15 AM	0	0	0	0	3	0	0	0	0	13	0	0	0	8	1	0	25	420
9:20 AM	0	0	1	0	1	0	0	0	1	13	0	0	0	22	2	0	40	433
9:25 AM	0	0	0	0	2	0	0	0	0	18	0	0	0	11	2	0	33	427
9:30 AM	0	0	0	0	1	0	0	0	1	17	0	0	0	4	0	0	23	418
9:35 AM	0	0	0	0	1	0	0	0	1	22	0	0	0	15	3	0	42	416
9:40 AM	0	0	0	0	3	0	0	0	2	12	0	0	0	8	4	0	29	404
9:45 AM	0	0	0	0	2	0	0	0	0	13	0	0	0	13	3	1	32	390
9:50 AM	0	0	0	0	1	0	0	0	0	14	0	0	0	14	1	0	30	387
9:55 AM	0	0	0	0	2	0	0	0	1	11	0	0	0	19	1	0	34	391

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	32	0	16	0	0	180	0	0	0	472	8	0	708
Heavy Trucks	0	0	0		0	0	0		0	4	0		0	16	0		20
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	4		0	0	0		0	0	0		4
Scooters																	

Comments:

Report generated on 5/21/2021 10:53 AM

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

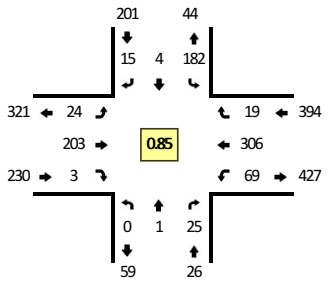
Type of peak hour being reported: User-Defined

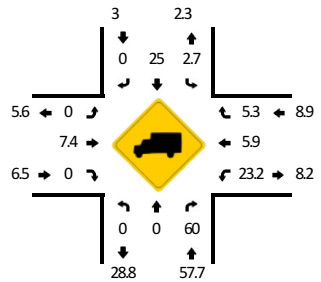
Method for determining peak hour: Total Entering Volume

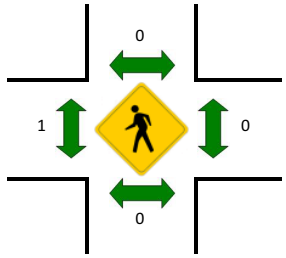
LOCATION: S Woodland Ave -- OR-219
CITY/STATE: Woodburn, OR

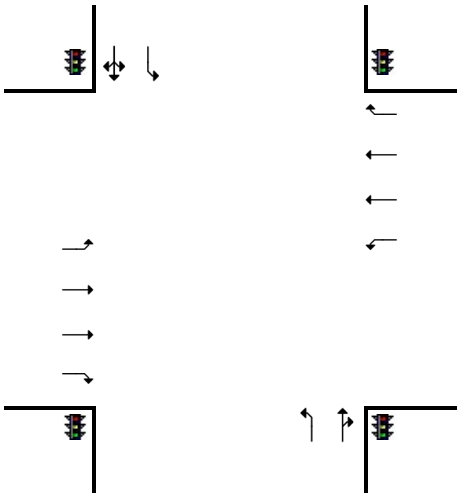
QC JOB #: 15405712
DATE: Wed, Apr 14 2021

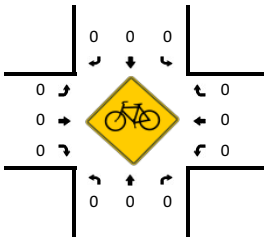
Peak-Hour: 6:30 AM -- 7:30 AM
Peak 15-Min: 6:35 AM -- 6:50 AM

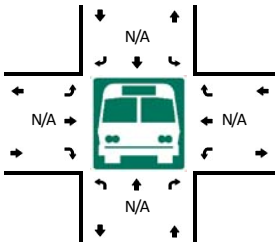


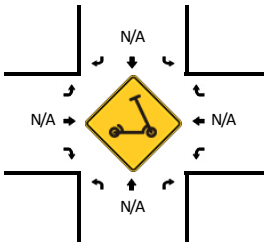












5-Min Count Period Beginning At	S Woodland Ave (Northbound)				S Woodland Ave (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	0	3	0	13	0	0	0	3	18	0	0	3	10	1	0	51	
6:05 AM	0	0	15	0	12	0	1	0	0	13	0	0	4	18	3	0	66	
6:10 AM	2	0	8	0	12	0	1	1	1	13	0	0	4	18	1	0	61	
6:15 AM	0	0	5	0	16	0	0	0	0	13	0	0	4	19	1	1	59	
6:20 AM	0	0	6	0	8	0	2	0	1	12	0	0	3	19	2	2	55	
6:25 AM	0	0	1	0	17	0	0	0	2	22	0	0	2	21	2	0	67	
6:30 AM	0	0	1	0	13	0	1	0	1	22	1	0	2	23	2	0	66	
6:35 AM	0	1	1	0	10	2	1	0	1	20	0	0	3	31	3	3	76	
6:40 AM	0	0	1	0	17	0	2	0	3	16	0	0	6	47	1	2	95	
6:45 AM	0	0	3	0	14	0	0	0	2	11	0	0	2	46	1	1	80	
6:50 AM	0	0	3	0	13	0	2	0	1	13	0	0	5	28	3	1	69	
6:55 AM	0	0	1	0	13	1	1	0	4	16	0	0	7	24	0	0	67	812
7:00 AM	0	0	4	0	15	0	0	0	1	13	0	0	5	20	3	5	66	827
7:05 AM	0	0	1	0	20	0	2	0	0	20	1	0	0	17	1	0	62	823
7:10 AM	0	0	2	0	13	1	1	0	3	22	0	0	3	7	0	1	53	815
7:15 AM	0	0	3	0	12	0	0	0	2	18	0	0	4	25	0	3	67	823
7:20 AM	0	0	3	0	26	0	2	0	3	15	1	0	9	20	1	1	81	849
7:25 AM	0	0	2	0	16	0	3	0	3	17	0	0	6	18	4	0	69	851
7:30 AM	0	0	4	0	23	0	1	1	1	15	1	0	3	18	2	2	71	856
7:35 AM	0	0	1	0	16	0	4	0	0	14	0	0	3	20	2	1	61	841
7:40 AM	0	0	2	0	22	0	1	0	3	13	1	0	4	16	1	1	64	810
7:45 AM	0	1	2	0	18	1	1	0	1	21	2	0	5	15	4	0	71	801
7:50 AM	1	0	2	0	10	0	1	0	3	19	1	0	9	18	3	2	69	801
7:55 AM	0	0	1	0	13	0	3	0	2	13	0	0	5	17	2	1	57	791
8:00 AM	1	1	0	0	16	0	2	0	3	27	1	0	3	9	2	2	67	792
8:05 AM	0	0	1	0	15	0	1	0	1	14	0	0	9	10	1	1	53	783
8:10 AM	0	0	1	0	13	0	0	0	3	14	0	0	6	12	1	3	53	783
8:15 AM	0	0	1	0	14	0	0	0	2	20	0	0	1	12	3	1	54	770
8:20 AM	0	1	1	0	19	0	1	0	0	18	0	0	2	9	1	4	56	745
8:25 AM	0	1	2	0	13	0	1	0	2	17	0	0	3	12	3	0	54	730
8:30 AM	0	0	5	0	14	1	1	0	0	13	0	0	3	12	4	4	57	716
8:35 AM	0	0	2	0	12	0	2	0	2	23	0	0	3	15	1	1	61	716
8:40 AM	0	0	4	0	16	0	3	0	2	11	0	0	4	19	7	4	70	722
8:45 AM	1	0	1	0	17	0	1	0	2	31	0	0	1	15	2	1	72	723
8:50 AM	0	0	7	0	13	2	1	0	6	15	2	0	2	10	3	1	62	716
8:55 AM	0	0	4	0	8	0	0	0	2	13	0	0	4	13	4	2	50	709
9:00 AM	2	2	4	0	18	0	2	0	1	10	1	0	1	21	5	1	68	710
9:05 AM	0	0	1	0	16	1	2	0	1	15	0	0	4	15	2	1	58	715

5-Min Count Period Beginning At	S Woodland Ave (Northbound)				S Woodland Ave (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
9:10 AM	0	0	3	0	14	0	2	0	2	10	0	0	0	9	1	2	43	705
9:15 AM	0	0	2	0	16	0	0	0	2	11	0	0	3	8	1	2	45	696
9:20 AM	0	0	4	0	20	1	1	0	0	16	0	0	1	24	1	3	71	711
9:25 AM	0	0	1	0	15	1	0	0	5	14	0	0	3	12	1	0	52	709
9:30 AM	0	0	4	0	16	0	0	0	4	18	0	0	4	4	6	0	56	708
9:35 AM	1	1	3	0	22	1	0	0	2	18	1	0	2	16	4	2	73	720
9:40 AM	0	0	4	0	11	0	3	0	1	13	1	0	5	10	2	0	50	700
9:45 AM	0	0	2	0	15	0	0	0	4	14	0	0	3	18	4	3	63	691
9:50 AM	1	1	4	0	27	1	2	1	1	12	0	0	3	11	2	2	68	697
9:55 AM	0	0	4	0	17	0	0	0	1	12	0	0	7	21	6	0	68	715

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	4	20	0	164	8	12	0	24	188	0	0	44	496	20	24	1004
Heavy Trucks	0	0	8		0	0	0		0	4	0		4	16	0		32
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 5/21/2021 10:53 AM

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

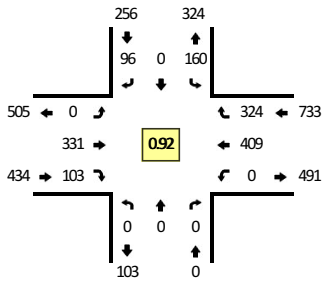
Type of peak hour being reported: User-Defined

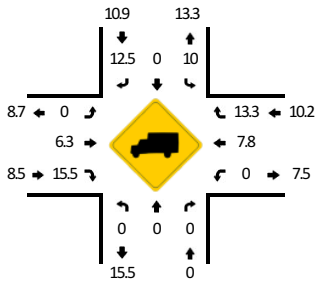
Method for determining peak hour: Total Entering Volume

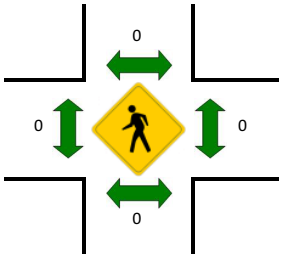
LOCATION: I-5 SB Ramps -- OR-219
CITY/STATE: Woodburn, OR

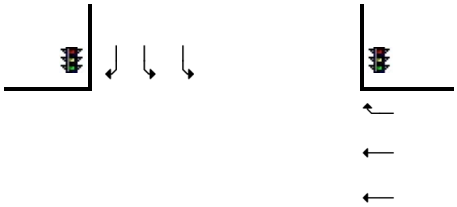
QC JOB #: 15405714
DATE: Wed, Apr 14 2021

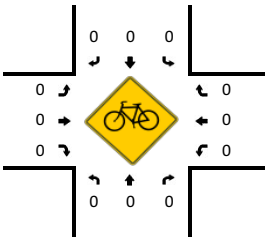
Peak-Hour: 6:30 AM -- 7:30 AM
Peak 15-Min: 6:35 AM -- 6:50 AM

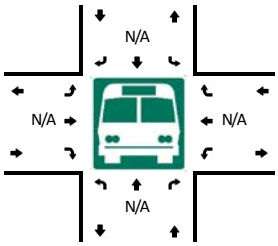


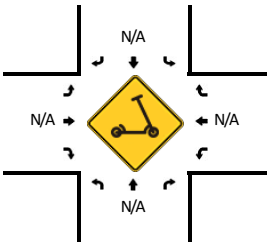












5-Min Count Period Beginning At	I-5 SB Ramps (Northbound)				I-5 SB Ramps (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	0	0	0	7	0	2	0	0	24	5	0	0	15	23	0	76	
6:05 AM	0	0	0	0	5	0	6	0	0	26	14	0	0	24	27	0	102	
6:10 AM	0	0	0	0	12	0	7	0	0	22	11	0	0	25	23	0	100	
6:15 AM	0	0	0	0	5	0	6	0	0	29	6	0	0	24	26	0	96	
6:20 AM	0	0	0	0	8	0	8	0	0	19	8	0	0	19	24	0	86	
6:25 AM	0	0	0	0	8	0	7	0	0	24	11	0	0	27	20	0	97	
6:30 AM	0	0	0	0	15	0	11	0	0	29	11	0	0	32	28	0	126	
6:35 AM	0	0	0	0	9	0	8	0	0	26	5	0	0	41	36	0	125	
6:40 AM	0	0	0	0	15	0	1	0	0	30	8	0	0	50	25	0	129	
6:45 AM	0	0	0	0	19	0	8	0	0	27	6	0	0	55	19	0	134	
6:50 AM	0	0	0	0	12	0	11	0	0	24	4	0	0	41	22	0	114	
6:55 AM	0	0	0	0	19	0	7	0	0	24	8	0	0	35	26	0	119	1304
7:00 AM	0	0	0	0	13	0	7	0	0	24	11	0	0	27	22	0	104	1332
7:05 AM	0	0	0	0	8	0	13	0	0	32	7	0	0	23	33	0	116	1346
7:10 AM	0	0	0	0	15	0	6	0	0	26	14	0	0	13	31	0	105	1351
7:15 AM	0	0	0	0	8	0	9	0	0	26	11	0	0	35	24	0	113	1368
7:20 AM	0	0	0	0	14	0	7	0	0	30	11	0	0	32	29	0	123	1405
7:25 AM	0	0	0	0	13	0	8	0	0	33	7	0	0	25	29	0	115	1423
7:30 AM	0	0	0	0	18	0	10	0	0	34	9	0	0	21	34	0	126	1423
7:35 AM	0	0	0	0	18	0	10	0	0	22	11	0	0	34	50	0	145	1443
7:40 AM	0	0	0	0	11	0	10	0	0	20	15	0	0	25	34	0	115	1429
7:45 AM	0	0	0	0	23	0	7	0	0	31	11	0	0	30	20	0	122	1417
7:50 AM	0	0	0	0	19	0	13	0	0	27	8	0	0	35	15	0	117	1420
7:55 AM	0	0	0	0	15	0	6	0	0	23	6	0	0	25	25	0	100	1401
8:00 AM	0	0	0	0	18	0	8	0	0	31	10	0	0	19	23	0	109	1406
8:05 AM	0	0	0	0	16	0	9	0	0	18	15	0	0	23	26	0	107	1397
8:10 AM	0	0	0	0	20	0	13	0	0	19	11	0	0	20	19	0	102	1394
8:15 AM	0	0	0	0	15	0	7	0	0	28	7	0	0	22	29	0	108	1389
8:20 AM	0	0	0	0	14	0	10	0	0	30	11	0	0	17	23	0	105	1371
8:25 AM	0	0	0	0	20	0	6	0	0	20	11	0	0	17	27	1	102	1358
8:30 AM	0	0	0	0	19	0	7	0	0	22	14	0	0	25	32	0	119	1351
8:35 AM	0	0	0	0	20	0	11	0	0	30	9	0	0	22	29	0	121	1327
8:40 AM	0	0	0	0	18	0	10	0	0	19	15	0	0	32	33	0	127	1339
8:45 AM	0	0	0	0	21	0	9	0	0	36	15	0	0	23	15	0	119	1336
8:50 AM	0	0	0	0	20	0	9	0	0	26	10	0	0	19	25	0	109	1328
8:55 AM	0	0	0	0	14	0	8	0	0	24	6	0	0	38	18	0	108	1336
9:00 AM	0	0	0	0	15	0	10	0	0	22	6	0	0	18	21	0	92	1319
9:05 AM	0	0	0	0	19	0	12	0	0	28	6	0	0	19	18	0	102	1314

5-Min Count Period Beginning At	I-5 SB Ramps (Northbound)				I-5 SB Ramps (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
9:10 AM	0	0	0	0	21	0	7	0	0	21	11	0	0	20	25	0	105	1317
9:15 AM	0	0	0	0	25	0	9	0	0	16	11	0	0	24	23	0	108	1317
9:20 AM	0	0	0	0	20	0	11	0	0	30	13	0	0	26	25	0	125	1337
9:25 AM	0	0	0	0	17	0	4	0	0	21	8	0	0	20	18	0	88	1323
9:30 AM	0	0	0	0	20	0	12	0	0	27	8	0	0	23	19	0	109	1313
9:35 AM	0	0	0	0	17	0	9	0	0	37	8	0	0	36	23	0	130	1322
9:40 AM	0	0	0	0	14	0	16	0	0	25	7	0	0	27	17	0	106	1301
9:45 AM	0	0	0	0	31	0	13	0	0	25	8	0	0	27	19	0	123	1305
9:50 AM	0	0	0	0	26	0	12	0	0	36	7	0	0	26	22	0	129	1325
9:55 AM	0	0	0	0	23	0	15	0	0	27	9	0	0	39	19	0	132	1349

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	172	0	68	0	0	332	76	0	0	584	320	0	1552
Heavy Trucks	0	0	0		16	0	0		0	16	0		0	12	60		104
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 5/21/2021 10:53 AM

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

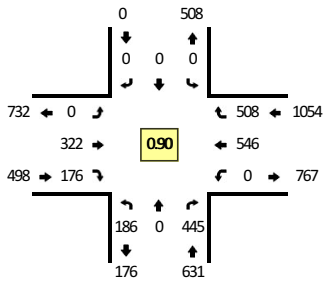
Type of peak hour being reported: User-Defined

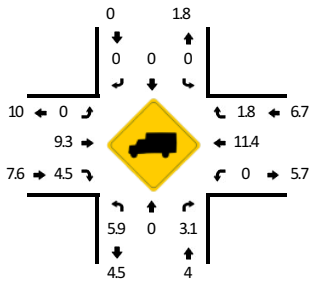
Method for determining peak hour: Total Entering Volume

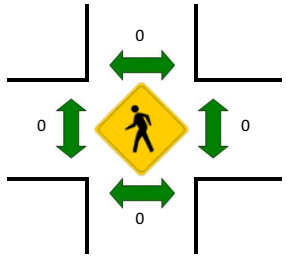
LOCATION: I-5 NB Ramps -- OR-219
CITY/STATE: Woodburn, OR

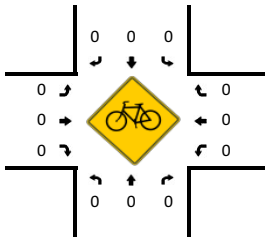
QC JOB #: 15405716
DATE: Wed, Apr 14 2021

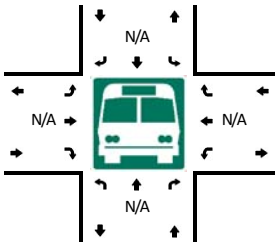
Peak-Hour: 6:30 AM -- 7:30 AM
Peak 15-Min: 6:40 AM -- 6:55 AM

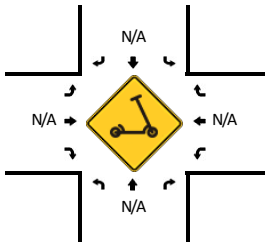












5-Min Count Period Beginning At	I-5 NB Ramps (Northbound)				I-5 NB Ramps (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	7	0	23	0	0	0	0	0	0	19	14	0	0	29	53	1	146	
6:05 AM	4	0	21	0	0	0	0	0	0	15	14	0	0	47	53	0	154	
6:10 AM	11	0	23	0	0	0	0	0	0	14	19	0	0	38	47	0	152	
6:15 AM	12	0	20	0	0	0	0	0	0	15	21	0	0	42	40	0	150	
6:20 AM	8	0	23	0	0	0	0	0	0	14	11	0	0	35	55	0	146	
6:25 AM	15	0	34	0	0	0	0	0	0	14	16	0	0	30	48	0	157	
6:30 AM	14	0	31	0	0	0	0	0	0	30	14	0	0	49	44	0	182	
6:35 AM	19	0	33	0	0	0	0	0	0	24	13	0	0	57	37	0	183	
6:40 AM	25	0	43	0	0	0	0	0	0	27	18	0	0	51	49	0	213	
6:45 AM	32	0	46	0	0	0	0	0	0	23	13	0	0	35	44	0	193	
6:50 AM	20	0	49	0	0	0	0	0	0	33	13	0	0	45	38	0	198	
6:55 AM	22	0	30	0	0	0	0	0	0	30	14	0	0	38	41	0	175	2049
7:00 AM	10	0	36	0	0	0	0	0	0	25	11	0	0	40	50	0	172	2075
7:05 AM	6	0	27	0	0	0	0	0	0	26	14	0	0	51	43	0	167	2088
7:10 AM	9	0	37	0	0	0	0	0	0	23	19	0	0	29	44	0	161	2097
7:15 AM	9	0	25	0	0	0	0	0	0	21	10	0	0	52	38	0	155	2102
7:20 AM	14	0	41	0	0	0	0	0	0	28	18	0	0	49	36	0	186	2142
7:25 AM	6	0	47	0	0	0	0	0	0	32	19	0	0	50	44	0	198	2183
7:30 AM	9	0	34	0	0	0	0	0	0	37	17	0	0	48	42	0	187	2188
7:35 AM	14	0	40	0	0	0	0	0	0	33	8	0	0	68	53	0	216	2221
7:40 AM	11	0	36	0	0	0	0	0	0	23	5	0	0	50	32	0	157	2165
7:45 AM	15	0	54	0	0	0	0	0	0	36	16	0	0	34	38	0	193	2165
7:50 AM	15	0	36	0	0	0	0	0	0	37	9	0	0	38	35	0	170	2137
7:55 AM	8	0	36	0	0	0	0	0	0	35	4	0	0	42	30	0	155	2117
8:00 AM	5	0	31	0	0	0	0	0	0	36	10	0	0	39	32	0	153	2098
8:05 AM	7	0	40	0	0	0	0	0	0	26	6	0	0	37	36	0	152	2083
8:10 AM	7	0	29	0	0	0	0	0	0	36	7	0	0	34	33	0	146	2068
8:15 AM	6	0	29	0	0	0	0	0	0	33	10	0	0	45	34	1	158	2071
8:20 AM	9	0	33	0	0	0	0	0	0	29	15	0	0	34	25	0	145	2030
8:25 AM	4	0	32	0	0	0	0	0	0	35	4	0	0	42	28	0	145	1977
8:30 AM	9	0	33	0	0	0	0	0	0	33	11	0	0	50	15	0	151	1941
8:35 AM	12	0	24	0	0	0	0	0	0	41	10	0	0	38	27	0	152	1877
8:40 AM	5	0	19	0	0	0	0	0	0	31	7	0	0	60	31	0	153	1873
8:45 AM	5	0	31	0	0	0	0	0	0	41	14	0	0	33	26	0	150	1830
8:50 AM	9	0	29	0	0	0	0	0	0	43	5	0	0	37	12	0	135	1795
8:55 AM	11	0	30	0	0	0	0	0	0	32	6	0	0	39	19	0	137	1777
9:00 AM	8	0	27	0	0	0	0	0	0	22	11	0	0	35	21	0	124	1748
9:05 AM	7	0	21	0	0	0	0	0	0	32	14	0	0	30	23	0	127	1723

5-Min Count Period Beginning At	I-5 NB Ramps (Northbound)				I-5 NB Ramps (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
9:10 AM	5	0	21	0	0	0	0	0	0	36	5	0	0	37	25	0	129	1706
9:15 AM	11	0	25	0	0	0	0	0	0	28	8	0	0	36	29	0	137	1685
9:20 AM	10	0	19	0	0	0	0	0	0	39	10	0	0	41	17	0	136	1676
9:25 AM	6	0	28	0	0	0	0	0	0	35	7	0	0	33	28	0	137	1668
9:30 AM	9	0	31	0	0	0	0	0	0	36	13	0	0	32	22	0	143	1660
9:35 AM	15	0	24	0	0	0	0	0	0	39	12	0	0	45	35	0	170	1678
9:40 AM	11	0	32	0	0	0	0	0	0	31	6	0	0	30	25	0	135	1660
9:45 AM	14	0	36	0	0	0	0	0	0	43	12	0	0	40	17	0	162	1672
9:50 AM	10	0	37	0	0	0	0	0	0	47	5	0	0	33	24	0	156	1693
9:55 AM	11	0	24	0	0	0	0	0	0	51	6	0	0	49	24	0	165	1721

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	308	0	552	0	0	0	0	0	0	332	176	0	0	524	524	0	2416
Heavy Trucks	12	0	20		0	0	0		0	24	8		0	64	16		144
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 5/21/2021 10:53 AM

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

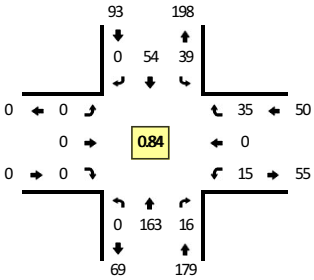
Type of peak hour being reported: User-Defined

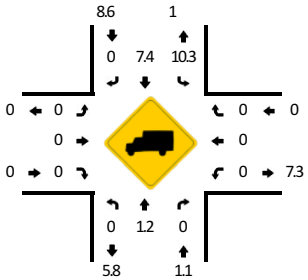
Method for determining peak hour: Total Entering Volume

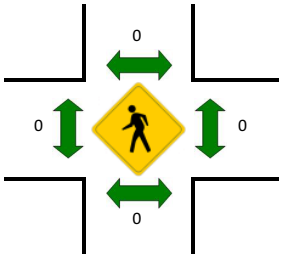
LOCATION: Butteville Rd NE -- Parr Rd NE
CITY/STATE: Woodburn, OR

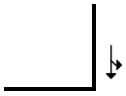
QC JOB #: 15405718
DATE: Wed, Apr 14 2021

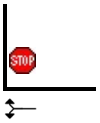
Peak-Hour: 6:30 AM -- 7:30 AM
Peak 15-Min: 6:30 AM -- 6:45 AM

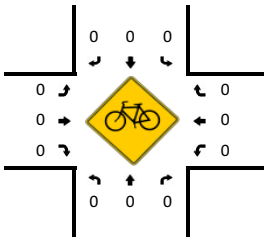


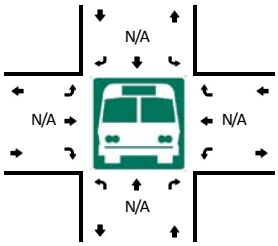


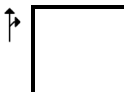


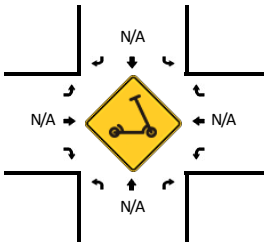












5-Min Count Period Beginning At	Butteville Rd NE (Northbound)				Butteville Rd NE (Southbound)				Parr Rd NE (Eastbound)				Parr Rd NE (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	9	0	0	1	0	0	0	0	0	0	0	0	0	2	0	12	
6:05 AM	0	12	1	0	2	1	0	0	0	0	0	0	1	0	1	0	18	
6:10 AM	0	12	0	0	3	0	0	0	0	0	0	0	1	0	1	0	17	
6:15 AM	0	11	0	0	0	3	0	0	0	0	0	0	3	0	4	0	21	
6:20 AM	0	14	0	0	1	5	0	0	0	0	0	0	3	0	2	0	25	
6:25 AM	0	14	0	0	1	8	0	0	0	0	0	0	0	0	3	0	26	
6:30 AM	0	16	0	0	3	4	0	0	0	0	0	0	1	0	4	0	28	
6:35 AM	0	17	1	0	3	4	0	0	0	0	0	0	2	0	4	0	31	
6:40 AM	0	16	0	0	4	4	0	0	0	0	0	0	2	0	11	0	37	
6:45 AM	0	13	0	0	3	3	0	0	0	0	0	0	0	0	2	0	21	
6:50 AM	0	14	1	0	5	5	0	0	0	0	0	0	1	0	2	0	28	
6:55 AM	0	10	1	0	6	3	0	0	0	0	0	0	1	0	3	0	24	288
7:00 AM	0	8	1	0	1	4	0	0	0	0	0	0	0	0	1	0	15	291
7:05 AM	0	18	4	0	1	4	0	0	0	0	0	0	0	0	3	0	30	303
7:10 AM	0	14	3	0	3	2	0	0	0	0	0	0	4	0	0	0	26	312
7:15 AM	0	11	3	0	5	5	0	0	0	0	0	0	1	0	1	0	26	317
7:20 AM	0	12	2	0	3	9	0	0	0	0	0	0	1	0	2	0	29	321
7:25 AM	0	14	0	0	2	7	0	0	0	0	0	0	2	0	2	0	27	322
7:30 AM	0	11	0	0	2	6	0	0	0	0	0	0	3	0	3	0	25	319
7:35 AM	0	10	2	0	4	1	0	0	0	0	0	0	1	0	0	0	18	306
7:40 AM	0	15	1	0	0	11	0	0	0	0	0	0	1	0	1	0	29	298
7:45 AM	0	15	3	0	2	8	0	0	0	0	0	0	2	0	4	0	34	311
7:50 AM	0	11	2	0	1	4	0	0	0	0	0	0	1	0	3	0	22	305
7:55 AM	0	8	4	0	3	8	0	0	0	0	0	0	1	0	2	0	26	307
8:00 AM	0	8	2	0	1	2	0	0	0	0	0	0	1	0	3	0	17	309
8:05 AM	0	8	1	0	4	5	0	0	0	0	0	0	0	0	2	0	20	299
8:10 AM	0	10	2	0	2	5	0	0	0	0	0	0	2	0	0	0	21	294
8:15 AM	0	3	0	0	0	2	0	0	0	0	0	0	0	0	1	0	6	274
8:20 AM	0	9	3	0	3	3	0	0	0	0	0	0	0	0	1	0	19	264
8:25 AM	0	7	1	0	2	11	0	0	0	0	0	0	0	0	0	0	21	258
8:30 AM	0	8	0	0	7	8	0	0	0	0	0	0	0	0	2	0	25	258
8:35 AM	0	9	3	0	0	9	0	0	0	0	0	0	1	0	1	0	23	263
8:40 AM	0	11	1	0	1	7	0	0	0	0	0	0	1	0	7	0	28	262
8:45 AM	0	9	0	0	1	7	0	0	0	0	0	0	1	0	3	0	21	249
8:50 AM	0	11	3	0	1	4	0	0	0	0	0	0	0	0	2	0	21	248
8:55 AM	0	6	0	0	4	4	0	0	0	0	0	0	3	0	0	0	17	239
9:00 AM	0	10	1	0	3	3	0	0	0	0	0	0	1	0	2	0	20	242
9:05 AM	0	7	3	0	3	4	0	0	0	0	0	0	1	0	0	0	18	240

5-Min Count Period Beginning At	Butteville Rd NE (Northbound)				Butteville Rd NE (Southbound)				Parr Rd NE (Eastbound)				Parr Rd NE (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
9:10 AM	0	6	0	0	0	1	0	0	0	0	0	0	0	0	5	0	12	231
9:15 AM	0	8	5	0	1	4	0	0	0	0	0	0	0	0	1	0	19	244
9:20 AM	0	6	0	0	2	1	0	0	0	0	0	0	3	0	1	0	13	238
9:25 AM	0	5	0	0	3	4	0	0	0	0	0	0	1	0	6	0	19	236
9:30 AM	0	7	2	0	1	3	0	0	0	0	0	0	1	0	3	0	17	228
9:35 AM	0	9	0	0	1	6	0	0	0	0	0	0	1	0	3	0	20	225
9:40 AM	0	5	2	0	1	3	0	0	0	0	0	0	2	0	2	0	15	212
9:45 AM	0	2	1	0	2	7	0	0	0	0	0	0	0	0	1	0	13	204
9:50 AM	0	12	2	0	1	2	0	0	0	0	0	0	1	0	1	0	19	202
9:55 AM	0	8	2	0	0	12	0	0	0	0	0	0	1	0	0	0	23	208

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	196	4	0	40	48	0	0	0	0	0	0	20	0	76	0	384
Heavy Trucks	0	8	0		12	4	0		0	0	0		0	0	0		24
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 5/21/2021 10:53 AM

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

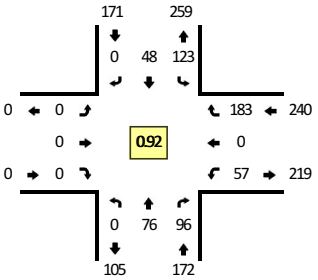
Type of peak hour being reported: User-Defined

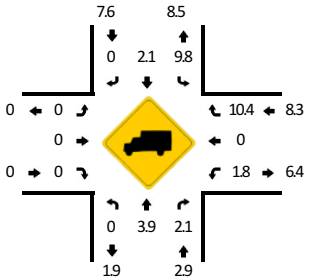
Method for determining peak hour: Total Entering Volume

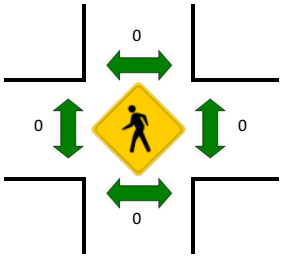
LOCATION: Butteville Rd NE -- OR-219
CITY/STATE: Woodburn, OR

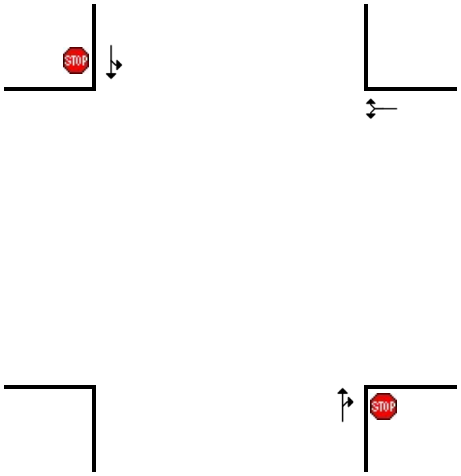
QC JOB #: 15405708
DATE: Wed, Apr 14 2021

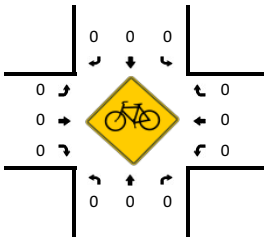
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:20 AM -- 7:35 AM

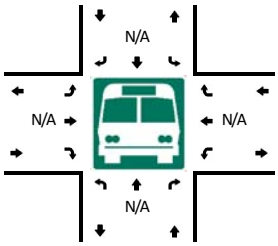


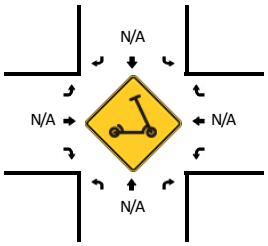












5-Min Count Period Beginning At	Butteville Rd NE (Northbound)				Butteville Rd NE (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	1	12	0	5	1	0	0	0	0	0	0	3	0	7	0	29	
6:05 AM	0	3	10	0	5	1	0	0	0	0	0	0	2	0	15	0	36	
6:10 AM	0	5	8	0	3	2	0	0	0	0	0	0	3	0	20	0	41	
6:15 AM	0	5	9	0	5	1	0	0	0	0	0	0	0	0	21	0	41	
6:20 AM	0	9	5	0	7	4	0	0	0	0	0	0	4	0	17	0	46	
6:25 AM	0	9	8	0	11	2	0	0	0	0	0	0	5	0	17	0	52	
6:30 AM	0	5	16	0	7	7	0	0	0	0	0	0	3	0	23	0	61	
6:35 AM	0	4	9	0	8	4	0	0	0	0	0	0	3	0	29	0	57	
6:40 AM	0	18	10	0	4	2	0	0	0	0	0	0	1	0	42	0	77	
6:45 AM	0	10	11	0	2	2	0	0	0	0	0	0	5	0	40	0	70	
6:50 AM	0	4	9	0	4	3	0	0	0	0	0	0	8	0	34	0	62	
6:55 AM	0	5	11	0	8	3	0	0	0	0	0	0	5	0	22	0	54	626
7:00 AM	0	7	6	0	7	5	0	0	0	0	0	0	2	0	20	0	47	644
7:05 AM	0	7	8	0	10	3	0	0	0	0	0	0	4	0	16	0	48	656
7:10 AM	0	5	9	0	13	2	0	0	0	0	0	0	1	0	11	0	41	656
7:15 AM	0	4	11	0	9	3	0	0	0	0	0	0	7	0	9	0	43	658
7:20 AM	0	5	10	0	5	5	0	0	0	0	0	0	10	0	16	0	51	663
7:25 AM	0	3	7	0	17	6	0	0	0	0	0	0	3	0	18	0	54	665
7:30 AM	0	12	9	0	9	1	0	0	0	0	0	0	6	0	17	0	54	658
7:35 AM	0	6	4	0	9	5	0	0	0	0	0	0	4	0	16	0	44	645
7:40 AM	0	6	7	0	9	5	0	0	0	0	0	0	8	0	15	0	50	618
7:45 AM	0	4	10	0	9	6	0	0	0	0	0	0	1	0	14	0	44	592
7:50 AM	0	11	11	0	15	4	0	0	0	0	0	0	7	0	16	0	64	594
7:55 AM	0	6	4	0	11	3	0	0	0	0	0	0	4	0	15	0	43	583
8:00 AM	0	4	7	0	20	4	0	0	0	0	0	0	4	0	12	0	51	587
8:05 AM	0	4	4	0	8	4	0	0	0	0	0	0	2	0	9	0	31	570
8:10 AM	0	1	9	0	8	2	0	0	0	0	0	0	3	0	7	0	30	559
8:15 AM	0	1	5	0	17	2	0	0	0	0	0	0	3	0	11	0	39	555
8:20 AM	0	4	8	0	8	1	0	0	0	0	0	0	2	0	4	0	27	531
8:25 AM	0	2	6	0	14	7	0	1	0	0	0	0	10	0	8	0	48	525
8:30 AM	0	2	5	0	10	4	0	0	0	0	0	0	9	0	7	0	37	508
8:35 AM	0	1	7	0	17	5	0	0	0	0	0	0	6	0	10	0	46	510
8:40 AM	0	6	12	0	8	3	0	0	0	0	0	0	3	0	18	0	50	510
8:45 AM	0	3	7	0	19	3	0	0	0	0	0	0	4	0	9	0	45	511
8:50 AM	0	5	6	0	16	1	0	0	0	0	0	0	5	0	10	0	43	490
8:55 AM	0	3	6	0	7	2	0	0	0	0	0	0	4	0	7	0	29	476
9:00 AM	0	5	8	0	1	3	0	0	0	0	0	0	6	0	10	0	33	458
9:05 AM	0	1	5	0	10	0	0	0	0	0	0	0	4	0	14	0	34	461

5-Min Count Period Beginning At	Butteville Rd NE (Northbound)				Butteville Rd NE (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
9:10 AM	0	3	4	0	13	0	0	0	0	0	0	0	1	0	11	0	32	463
9:15 AM	0	2	6	0	5	2	0	0	0	0	0	0	3	0	4	0	22	446
9:20 AM	0	3	7	0	7	0	0	0	0	0	0	0	4	0	16	0	37	456
9:25 AM	0	3	10	0	9	2	0	0	0	0	0	0	5	0	8	0	37	445
9:30 AM	0	1	4	0	15	1	0	0	0	0	0	0	2	0	3	0	26	434
9:35 AM	0	1	12	0	10	3	0	0	0	0	0	0	4	0	9	0	39	427
9:40 AM	0	2	6	0	4	1	0	0	0	0	0	0	5	0	4	0	22	399
9:45 AM	0	1	3	0	9	0	0	0	0	0	0	0	7	0	8	0	28	382
9:50 AM	0	6	8	0	7	1	0	0	0	0	0	0	3	0	7	0	32	371
9:55 AM	0	3	3	0	12	5	0	0	0	0	0	0	7	0	16	0	46	388

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	80	104	0	124	48	0	0	0	0	0	0	76	0	204	0	636
Heavy Trucks	0	8	4		8	4	0		0	0	0		0	0	24		48
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 5/21/2021 10:53 AM

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

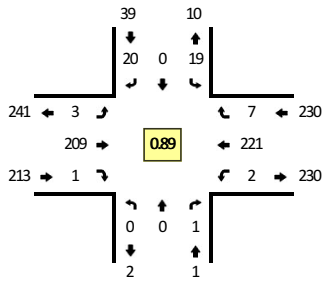
Type of peak hour being reported: User-Defined

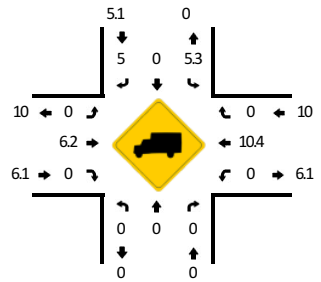
Method for determining peak hour: Total Entering Volume

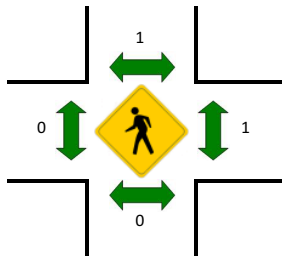
LOCATION: Willow Ave -- OR-219
CITY/STATE: Woodburn, OR

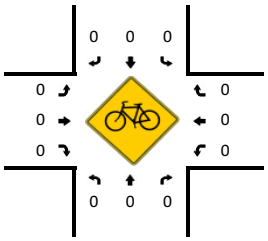
QC JOB #: 15405710
DATE: Wed, Apr 14 2021

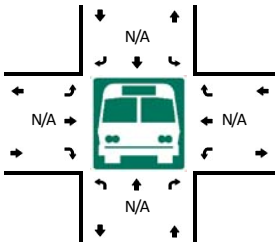
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:20 AM -- 7:35 AM

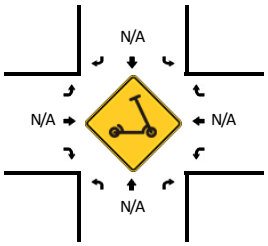












5-Min Count Period Beginning At	Willow Ave (Northbound)				Willow Ave (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	0	0	0	4	0	2	0	0	17	0	0	0	9	1	0	33	
6:05 AM	0	0	0	0	1	0	1	0	0	13	0	0	0	17	0	0	32	
6:10 AM	0	0	0	0	1	0	2	0	1	11	0	0	0	21	1	0	37	
6:15 AM	0	0	0	0	1	0	2	0	0	12	0	0	0	18	0	0	33	
6:20 AM	0	0	0	0	2	0	3	0	0	13	0	0	0	20	0	0	38	
6:25 AM	0	0	0	0	6	0	1	0	0	20	0	0	0	18	1	0	46	
6:30 AM	0	0	0	0	1	0	1	0	1	19	0	0	0	27	1	0	50	
6:35 AM	0	0	0	0	4	0	1	0	0	18	0	0	0	30	0	0	53	
6:40 AM	0	0	0	0	2	0	1	0	0	16	0	0	0	41	2	0	62	
6:45 AM	0	0	0	0	2	0	2	0	0	11	0	0	0	47	0	0	62	
6:50 AM	0	0	0	0	1	0	4	0	0	13	0	0	0	35	0	0	53	
6:55 AM	0	0	0	0	2	0	1	0	2	16	0	0	0	24	2	0	47	546
7:00 AM	0	0	0	0	1	0	1	0	1	13	0	0	0	21	1	0	38	551
7:05 AM	0	0	0	0	5	0	4	0	0	16	0	0	0	16	0	0	41	560
7:10 AM	0	0	0	0	3	0	0	0	0	20	0	0	0	12	0	0	35	558
7:15 AM	0	0	0	0	1	0	1	0	0	16	0	0	0	16	3	0	37	562
7:20 AM	0	0	0	0	5	0	1	0	0	20	0	0	0	25	1	0	52	576
7:25 AM	0	0	0	0	1	0	0	0	1	20	0	0	0	19	0	0	41	571
7:30 AM	0	0	0	0	1	0	3	0	1	18	0	0	0	18	2	0	43	564
7:35 AM	0	0	0	0	1	0	1	0	0	14	0	0	0	21	0	1	38	549
7:40 AM	0	0	0	0	0	0	4	0	0	14	0	0	0	19	0	0	37	524
7:45 AM	0	0	0	0	1	0	2	0	0	20	0	0	0	17	0	0	40	502
7:50 AM	0	0	0	0	0	0	3	0	0	26	0	0	1	20	0	0	50	499
7:55 AM	0	0	1	0	0	0	0	0	0	12	1	0	0	17	0	0	31	483
8:00 AM	0	0	0	0	2	0	0	0	0	29	0	0	0	16	0	0	47	492
8:05 AM	0	0	0	0	0	0	0	0	0	12	0	0	1	10	0	0	23	474
8:10 AM	0	0	0	0	0	0	0	0	0	18	0	0	1	11	0	0	30	469
8:15 AM	0	0	0	0	0	0	0	0	0	22	0	0	1	12	0	0	35	467
8:20 AM	0	0	1	0	1	0	2	0	0	16	0	0	1	6	0	0	27	442
8:25 AM	0	0	0	0	0	0	3	0	1	19	0	0	0	16	0	0	39	440
8:30 AM	0	0	0	0	0	0	4	0	0	14	0	0	0	13	1	0	32	429
8:35 AM	0	0	0	0	1	0	1	0	2	24	0	0	0	15	1	0	44	435
8:40 AM	0	0	0	0	2	1	1	0	1	15	0	0	0	18	3	0	41	439
8:45 AM	0	0	0	0	2	0	1	0	0	29	0	0	0	12	2	0	46	445
8:50 AM	0	0	0	0	0	0	1	0	0	21	0	0	0	11	0	0	33	428
8:55 AM	0	0	0	0	4	0	0	0	2	10	0	0	0	13	1	0	30	427
9:00 AM	0	0	0	0	1	0	0	0	2	9	0	0	0	27	1	0	40	420
9:05 AM	0	0	0	0	2	0	0	0	0	15	0	0	0	15	1	0	33	430

5-Min Count Period Beginning At	Willow Ave (Northbound)				Willow Ave (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
9:10 AM	0	0	0	0	1	0	2	0	2	14	0	0	0	10	1	0	30	430
9:15 AM	0	0	0	0	3	0	0	0	0	13	0	0	0	8	1	0	25	420
9:20 AM	0	0	1	0	1	0	0	0	1	13	0	0	0	22	2	0	40	433
9:25 AM	0	0	0	0	2	0	0	0	0	18	0	0	0	11	2	0	33	427
9:30 AM	0	0	0	0	1	0	0	0	1	17	0	0	0	4	0	0	23	418
9:35 AM	0	0	0	0	1	0	0	0	1	22	0	0	0	15	3	0	42	416
9:40 AM	0	0	0	0	3	0	0	0	2	12	0	0	0	8	4	0	29	404
9:45 AM	0	0	0	0	2	0	0	0	0	13	0	0	0	13	3	1	32	390
9:50 AM	0	0	0	0	1	0	0	0	0	14	0	0	0	14	1	0	30	387
9:55 AM	0	0	0	0	2	0	0	0	1	11	0	0	0	19	1	0	34	391

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	28	0	16	0	8	232	0	0	0	248	12	0	544
Heavy Trucks	0	0	0		0	0	0		0	12	0		0	24	0		36
Buses																	
Pedestrians		0				4				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 5/21/2021 10:53 AM

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

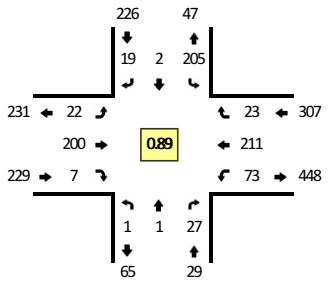
Type of peak hour being reported: User-Defined

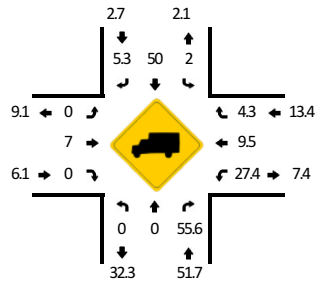
Method for determining peak hour: Total Entering Volume

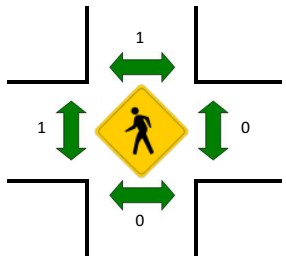
LOCATION: S Woodland Ave -- OR-219
CITY/STATE: Woodburn, OR

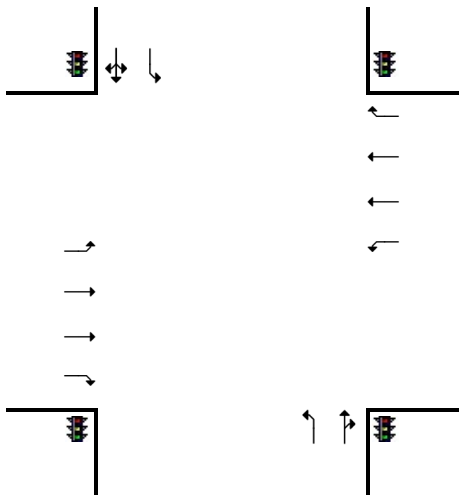
QC JOB #: 15405712
DATE: Wed, Apr 14 2021

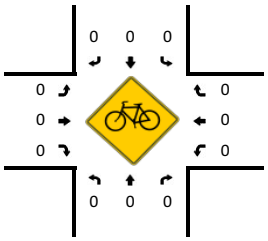
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:20 AM -- 7:35 AM

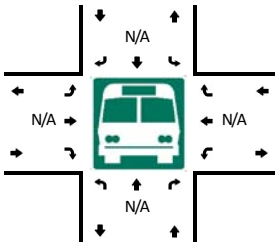


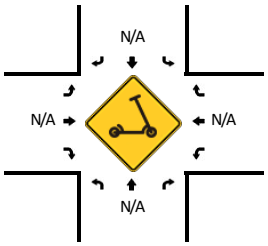












5-Min Count Period Beginning At	S Woodland Ave (Northbound)				S Woodland Ave (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	0	3	0	13	0	0	0	3	18	0	0	3	10	1	0	51	
6:05 AM	0	0	15	0	12	0	1	0	0	13	0	0	4	18	3	0	66	
6:10 AM	2	0	8	0	12	0	1	1	1	13	0	0	4	18	1	0	61	
6:15 AM	0	0	5	0	16	0	0	0	0	13	0	0	4	19	1	1	59	
6:20 AM	0	0	6	0	8	0	2	0	1	12	0	0	3	19	2	2	55	
6:25 AM	0	0	1	0	17	0	0	0	2	22	0	0	2	21	2	0	67	
6:30 AM	0	0	1	0	13	0	1	0	1	22	1	0	2	23	2	0	66	
6:35 AM	0	1	1	0	10	2	1	0	1	20	0	0	3	31	3	3	76	
6:40 AM	0	0	1	0	17	0	2	0	3	16	0	0	6	47	1	2	95	
6:45 AM	0	0	3	0	14	0	0	0	2	11	0	0	2	46	1	1	80	
6:50 AM	0	0	3	0	13	0	2	0	1	13	0	0	5	28	3	1	69	
6:55 AM	0	0	1	0	13	1	1	0	4	16	0	0	7	24	0	0	67	812
7:00 AM	0	0	4	0	15	0	0	0	1	13	0	0	5	20	3	5	66	827
7:05 AM	0	0	1	0	20	0	2	0	0	20	1	0	0	17	1	0	62	823
7:10 AM	0	0	2	0	13	1	1	0	3	22	0	0	3	7	0	1	53	815
7:15 AM	0	0	3	0	12	0	0	0	2	18	0	0	4	25	0	3	67	823
7:20 AM	0	0	3	0	26	0	2	0	3	15	1	0	9	20	1	1	81	849
7:25 AM	0	0	2	0	16	0	3	0	3	17	0	0	6	18	4	0	69	851
7:30 AM	0	0	4	0	23	0	1	1	1	15	1	0	3	18	2	2	71	856
7:35 AM	0	0	1	0	16	0	4	0	0	14	0	0	3	20	2	1	61	841
7:40 AM	0	0	2	0	22	0	1	0	3	13	1	0	4	16	1	1	64	810
7:45 AM	0	1	2	0	18	1	1	0	1	21	2	0	5	15	4	0	71	801
7:50 AM	1	0	2	0	10	0	1	0	3	19	1	0	9	18	3	2	69	801
7:55 AM	0	0	1	0	13	0	3	0	2	13	0	0	5	17	2	1	57	791
8:00 AM	1	1	0	0	16	0	2	0	3	27	1	0	3	9	2	2	67	792
8:05 AM	0	0	1	0	15	0	1	0	1	14	0	0	9	10	1	1	53	783
8:10 AM	0	0	1	0	13	0	0	0	3	14	0	0	6	12	1	3	53	783
8:15 AM	0	0	1	0	14	0	0	0	2	20	0	0	1	12	3	1	54	770
8:20 AM	0	1	1	0	19	0	1	0	0	18	0	0	2	9	1	4	56	745
8:25 AM	0	1	2	0	13	0	1	0	2	17	0	0	3	12	3	0	54	730
8:30 AM	0	0	5	0	14	1	1	0	0	13	0	0	3	12	4	4	57	716
8:35 AM	0	0	2	0	12	0	2	0	2	23	0	0	3	15	1	1	61	716
8:40 AM	0	0	4	0	16	0	3	0	2	11	0	0	4	19	7	4	70	722
8:45 AM	1	0	1	0	17	0	1	0	2	31	0	0	1	15	2	1	72	723
8:50 AM	0	0	7	0	13	2	1	0	6	15	2	0	2	10	3	1	62	716
8:55 AM	0	0	4	0	8	0	0	0	2	13	0	0	4	13	4	2	50	709
9:00 AM	2	2	4	0	18	0	2	0	1	10	1	0	1	21	5	1	68	710
9:05 AM	0	0	1	0	16	1	2	0	1	15	0	0	4	15	2	1	58	715

5-Min Count Period Beginning At	S Woodland Ave (Northbound)				S Woodland Ave (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
9:10 AM	0	0	3	0	14	0	2	0	2	10	0	0	0	9	1	2	43	705
9:15 AM	0	0	2	0	16	0	0	0	2	11	0	0	3	8	1	2	45	696
9:20 AM	0	0	4	0	20	1	1	0	0	16	0	0	1	24	1	3	71	711
9:25 AM	0	0	1	0	15	1	0	0	5	14	0	0	3	12	1	0	52	709
9:30 AM	0	0	4	0	16	0	0	0	4	18	0	0	4	4	6	0	56	708
9:35 AM	1	1	3	0	22	1	0	0	2	18	1	0	2	16	4	2	73	720
9:40 AM	0	0	4	0	11	0	3	0	1	13	1	0	5	10	2	0	50	700
9:45 AM	0	0	2	0	15	0	0	0	4	14	0	0	3	18	4	3	63	691
9:50 AM	1	1	4	0	27	1	2	1	1	12	0	0	3	11	2	2	68	697
9:55 AM	0	0	4	0	17	0	0	0	1	12	0	0	7	21	6	0	68	715

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	36	0	260	0	24	4	28	188	8	0	72	224	28	12	884
Heavy Trucks	0	0	28		12	0	0		0	12	0		24	20	0		96
Buses																	
Pedestrians		0				0				4				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 5/21/2021 10:53 AM

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

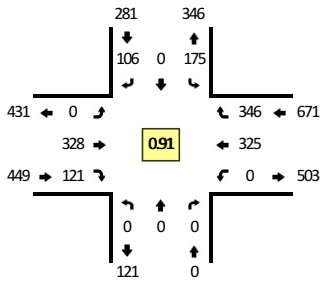
Type of peak hour being reported: User-Defined

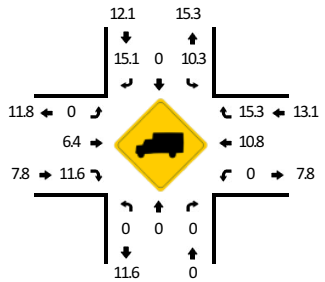
Method for determining peak hour: Total Entering Volume

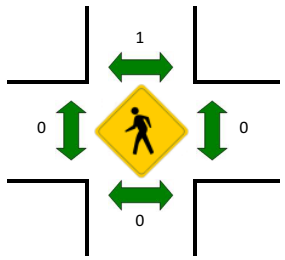
LOCATION: I-5 SB Ramps -- OR-219
CITY/STATE: Woodburn, OR

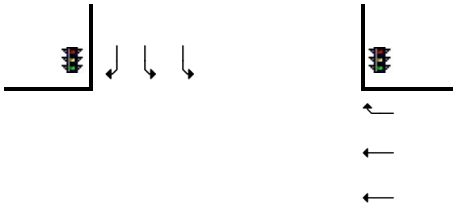
QC JOB #: 15405714
DATE: Wed, Apr 14 2021

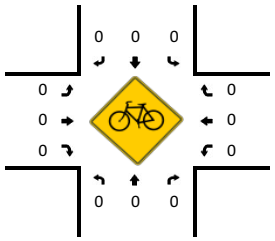
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:25 AM -- 7:40 AM

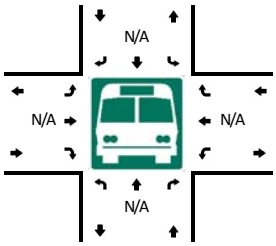


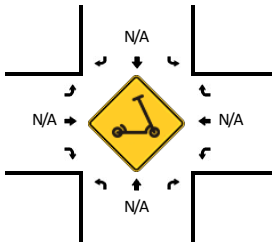












5-Min Count Period Beginning At	I-5 SB Ramps (Northbound)				I-5 SB Ramps (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	0	0	0	7	0	2	0	0	24	5	0	0	15	23	0	76	
6:05 AM	0	0	0	0	5	0	6	0	0	26	14	0	0	24	27	0	102	
6:10 AM	0	0	0	0	12	0	7	0	0	22	11	0	0	25	23	0	100	
6:15 AM	0	0	0	0	5	0	6	0	0	29	6	0	0	24	26	0	96	
6:20 AM	0	0	0	0	8	0	8	0	0	19	8	0	0	19	24	0	86	
6:25 AM	0	0	0	0	8	0	7	0	0	24	11	0	0	27	20	0	97	
6:30 AM	0	0	0	0	15	0	11	0	0	29	11	0	0	32	28	0	126	
6:35 AM	0	0	0	0	9	0	8	0	0	26	5	0	0	41	36	0	125	
6:40 AM	0	0	0	0	15	0	1	0	0	30	8	0	0	50	25	0	129	
6:45 AM	0	0	0	0	19	0	8	0	0	27	6	0	0	55	19	0	134	
6:50 AM	0	0	0	0	12	0	11	0	0	24	4	0	0	41	22	0	114	
6:55 AM	0	0	0	0	19	0	7	0	0	24	8	0	0	35	26	0	119	1304
7:00 AM	0	0	0	0	13	0	7	0	0	24	11	0	0	27	22	0	104	1332
7:05 AM	0	0	0	0	8	0	13	0	0	32	7	0	0	23	33	0	116	1346
7:10 AM	0	0	0	0	15	0	6	0	0	26	14	0	0	13	31	0	105	1351
7:15 AM	0	0	0	0	8	0	9	0	0	26	11	0	0	35	24	0	113	1368
7:20 AM	0	0	0	0	14	0	7	0	0	30	11	0	0	32	29	0	123	1405
7:25 AM	0	0	0	0	13	0	8	0	0	33	7	0	0	25	29	0	115	1423
7:30 AM	0	0	0	0	18	0	10	0	0	34	9	0	0	21	34	0	126	1423
7:35 AM	0	0	0	0	18	0	10	0	0	22	11	0	0	34	50	0	145	1443
7:40 AM	0	0	0	0	11	0	10	0	0	20	15	0	0	25	34	0	115	1429
7:45 AM	0	0	0	0	23	0	7	0	0	31	11	0	0	30	20	0	122	1417
7:50 AM	0	0	0	0	19	0	13	0	0	27	8	0	0	35	15	0	117	1420
7:55 AM	0	0	0	0	15	0	6	0	0	23	6	0	0	25	25	0	100	1401
8:00 AM	0	0	0	0	18	0	8	0	0	31	10	0	0	19	23	0	109	1406
8:05 AM	0	0	0	0	16	0	9	0	0	18	15	0	0	23	26	0	107	1397
8:10 AM	0	0	0	0	20	0	13	0	0	19	11	0	0	20	19	0	102	1394
8:15 AM	0	0	0	0	15	0	7	0	0	28	7	0	0	22	29	0	108	1389
8:20 AM	0	0	0	0	14	0	10	0	0	30	11	0	0	17	23	0	105	1371
8:25 AM	0	0	0	0	20	0	6	0	0	20	11	0	0	17	27	1	102	1358
8:30 AM	0	0	0	0	19	0	7	0	0	22	14	0	0	25	32	0	119	1351
8:35 AM	0	0	0	0	20	0	11	0	0	30	9	0	0	22	29	0	121	1327
8:40 AM	0	0	0	0	18	0	10	0	0	19	15	0	0	32	33	0	127	1339
8:45 AM	0	0	0	0	21	0	9	0	0	36	15	0	0	23	15	0	119	1336
8:50 AM	0	0	0	0	20	0	9	0	0	26	10	0	0	19	25	0	109	1328
8:55 AM	0	0	0	0	14	0	8	0	0	24	6	0	0	38	18	0	108	1336
9:00 AM	0	0	0	0	15	0	10	0	0	22	6	0	0	18	21	0	92	1319
9:05 AM	0	0	0	0	19	0	12	0	0	28	6	0	0	19	18	0	102	1314

5-Min Count Period Beginning At	I-5 SB Ramps (Northbound)				I-5 SB Ramps (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
9:10 AM	0	0	0	0	21	0	7	0	0	21	11	0	0	20	25	0	105	1317
9:15 AM	0	0	0	0	25	0	9	0	0	16	11	0	0	24	23	0	108	1317
9:20 AM	0	0	0	0	20	0	11	0	0	30	13	0	0	26	25	0	125	1337
9:25 AM	0	0	0	0	17	0	4	0	0	21	8	0	0	20	18	0	88	1323
9:30 AM	0	0	0	0	20	0	12	0	0	27	8	0	0	23	19	0	109	1313
9:35 AM	0	0	0	0	17	0	9	0	0	37	8	0	0	36	23	0	130	1322
9:40 AM	0	0	0	0	14	0	16	0	0	25	7	0	0	27	17	0	106	1301
9:45 AM	0	0	0	0	31	0	13	0	0	25	8	0	0	27	19	0	123	1305
9:50 AM	0	0	0	0	26	0	12	0	0	36	7	0	0	26	22	0	129	1325
9:55 AM	0	0	0	0	23	0	15	0	0	27	9	0	0	39	19	0	132	1349

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	196	0	112	0	0	356	108	0	0	320	452	0	1544
Heavy Trucks	0	0	0		24	0	12		0	24	16		0	36	56		168
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 5/21/2021 10:53 AM

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

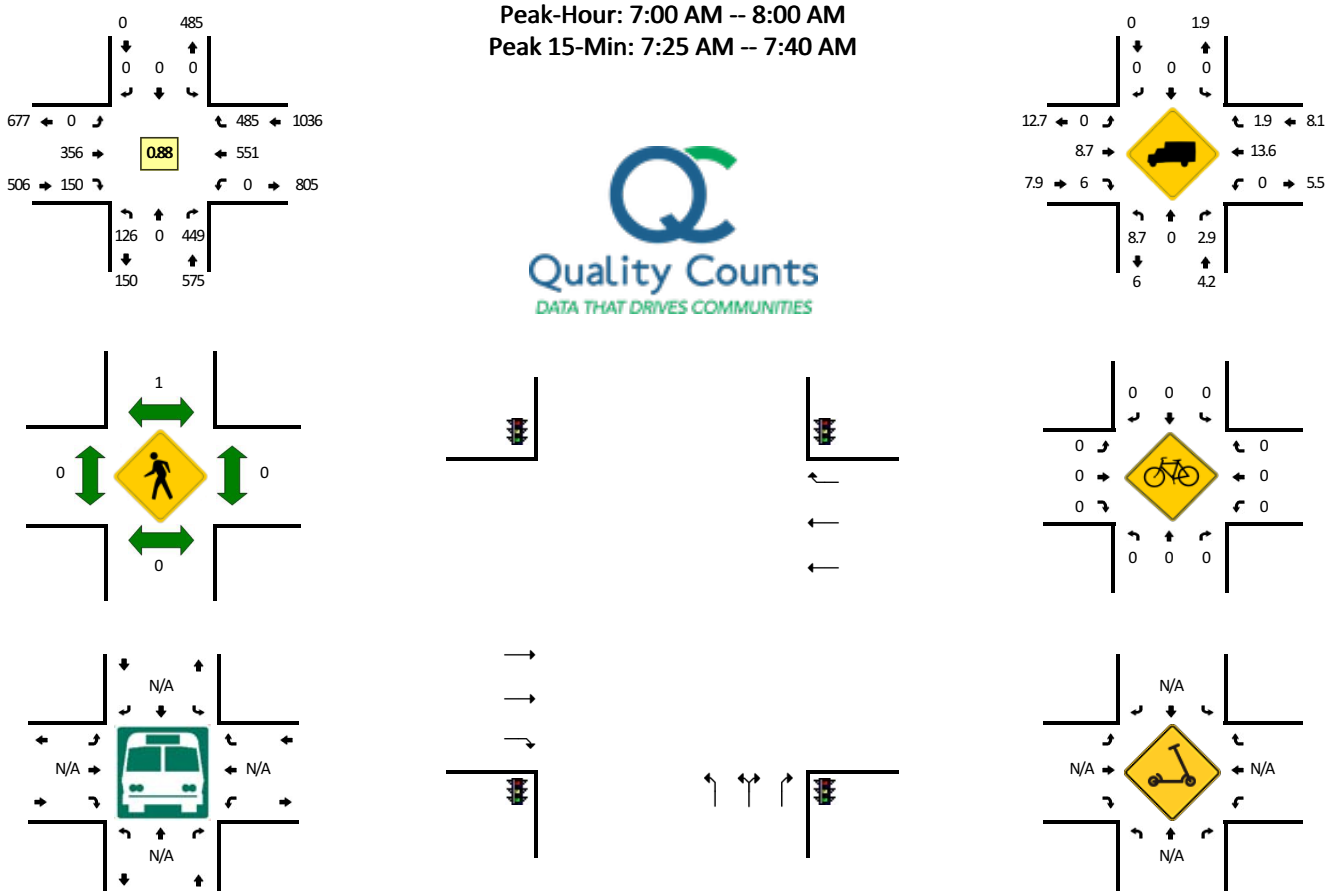
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

LOCATION: I-5 NB Ramps -- OR-219
CITY/STATE: Woodburn, OR

QC JOB #: 15405716
DATE: Wed, Apr 14 2021

Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:25 AM -- 7:40 AM



5-Min Count Period Beginning At	I-5 NB Ramps (Northbound)				I-5 NB Ramps (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	7	0	23	0	0	0	0	0	0	19	14	0	0	29	53	1	146	
6:05 AM	4	0	21	0	0	0	0	0	0	15	14	0	0	47	53	0	154	
6:10 AM	11	0	23	0	0	0	0	0	0	14	19	0	0	38	47	0	152	
6:15 AM	12	0	20	0	0	0	0	0	0	15	21	0	0	42	40	0	150	
6:20 AM	8	0	23	0	0	0	0	0	0	14	11	0	0	35	55	0	146	
6:25 AM	15	0	34	0	0	0	0	0	0	14	16	0	0	30	48	0	157	
6:30 AM	14	0	31	0	0	0	0	0	0	30	14	0	0	49	44	0	182	
6:35 AM	19	0	33	0	0	0	0	0	0	24	13	0	0	57	37	0	183	
6:40 AM	25	0	43	0	0	0	0	0	0	27	18	0	0	51	49	0	213	
6:45 AM	32	0	46	0	0	0	0	0	0	23	13	0	0	35	44	0	193	
6:50 AM	20	0	49	0	0	0	0	0	0	33	13	0	0	45	38	0	198	
6:55 AM	22	0	30	0	0	0	0	0	0	30	14	0	0	38	41	0	175	2049
7:00 AM	10	0	36	0	0	0	0	0	0	25	11	0	0	40	50	0	172	2075
7:05 AM	6	0	27	0	0	0	0	0	0	26	14	0	0	51	43	0	167	2088
7:10 AM	9	0	37	0	0	0	0	0	0	23	19	0	0	29	44	0	161	2097
7:15 AM	9	0	25	0	0	0	0	0	0	21	10	0	0	52	38	0	155	2102
7:20 AM	14	0	41	0	0	0	0	0	0	28	18	0	0	49	36	0	186	2142
7:25 AM	6	0	47	0	0	0	0	0	0	32	19	0	0	50	44	0	198	2183
7:30 AM	9	0	34	0	0	0	0	0	0	37	17	0	0	48	42	0	187	2188
7:35 AM	14	0	40	0	0	0	0	0	0	33	8	0	0	68	53	0	216	2221
7:40 AM	11	0	36	0	0	0	0	0	0	23	5	0	0	50	32	0	157	2165
7:45 AM	15	0	54	0	0	0	0	0	0	36	16	0	0	34	38	0	193	2165
7:50 AM	15	0	36	0	0	0	0	0	0	37	9	0	0	38	35	0	170	2137
7:55 AM	8	0	36	0	0	0	0	0	0	35	4	0	0	42	30	0	155	2117
8:00 AM	5	0	31	0	0	0	0	0	0	36	10	0	0	39	32	0	153	2098
8:05 AM	7	0	40	0	0	0	0	0	0	26	6	0	0	37	36	0	152	2083
8:10 AM	7	0	29	0	0	0	0	0	0	36	7	0	0	34	33	0	146	2068
8:15 AM	6	0	29	0	0	0	0	0	0	33	10	0	0	45	34	1	158	2071
8:20 AM	9	0	33	0	0	0	0	0	0	29	15	0	0	34	25	0	145	2030
8:25 AM	4	0	32	0	0	0	0	0	0	35	4	0	0	42	28	0	145	1977
8:30 AM	9	0	33	0	0	0	0	0	0	33	11	0	0	50	15	0	151	1941
8:35 AM	12	0	24	0	0	0	0	0	0	41	10	0	0	38	27	0	152	1877
8:40 AM	5	0	19	0	0	0	0	0	0	31	7	0	0	60	31	0	153	1873
8:45 AM	5	0	31	0	0	0	0	0	0	41	14	0	0	33	26	0	150	1830
8:50 AM	9	0	29	0	0	0	0	0	0	43	5	0	0	37	12	0	135	1795
8:55 AM	11	0	30	0	0	0	0	0	0	32	6	0	0	39	19	0	137	1777
9:00 AM	8	0	27	0	0	0	0	0	0	22	11	0	0	35	21	0	124	1748
9:05 AM	7	0	21	0	0	0	0	0	0	32	14	0	0	30	23	0	127	1723

5-Min Count Period Beginning At	I-5 NB Ramps (Northbound)				I-5 NB Ramps (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
9:10 AM	5	0	21	0	0	0	0	0	0	36	5	0	0	37	25	0	129	1706
9:15 AM	11	0	25	0	0	0	0	0	0	28	8	0	0	36	29	0	137	1685
9:20 AM	10	0	19	0	0	0	0	0	0	39	10	0	0	41	17	0	136	1676
9:25 AM	6	0	28	0	0	0	0	0	0	35	7	0	0	33	28	0	137	1668
9:30 AM	9	0	31	0	0	0	0	0	0	36	13	0	0	32	22	0	143	1660
9:35 AM	15	0	24	0	0	0	0	0	0	39	12	0	0	45	35	0	170	1678
9:40 AM	11	0	32	0	0	0	0	0	0	31	6	0	0	30	25	0	135	1660
9:45 AM	14	0	36	0	0	0	0	0	0	43	12	0	0	40	17	0	162	1672
9:50 AM	10	0	37	0	0	0	0	0	0	47	5	0	0	33	24	0	156	1693
9:55 AM	11	0	24	0	0	0	0	0	0	51	6	0	0	49	24	0	165	1721

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	116	0	484	0	0	0	0	0	0	408	176	0	0	664	556	0	2404
Heavy Trucks	12	0	12		0	0	0		0	40	12		0	80	4		160
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 5/21/2021 10:53 AM

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

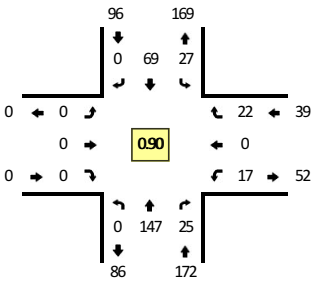
Type of peak hour being reported: User-Defined

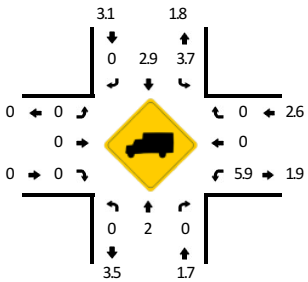
Method for determining peak hour: Total Entering Volume

LOCATION: Butteville Rd NE -- Parr Rd NE
CITY/STATE: Woodburn, OR

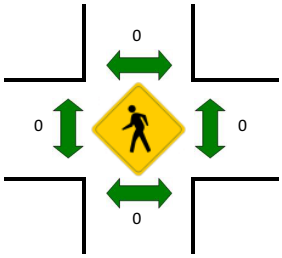
QC JOB #: 15405718
DATE: Wed, Apr 14 2021

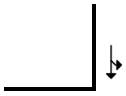
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:40 AM -- 7:55 AM

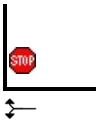


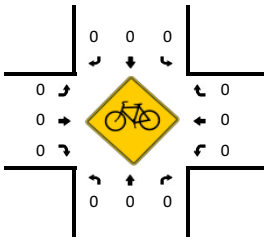


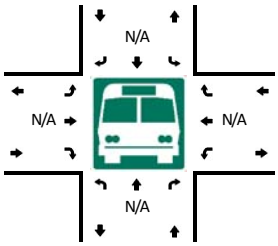
Quality Counts
DATA THAT DRIVES COMMUNITIES

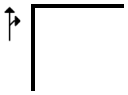


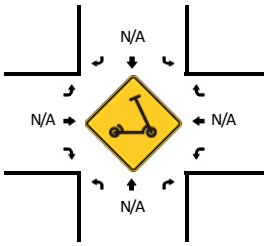












5-Min Count Period Beginning At	Butteville Rd NE (Northbound)				Butteville Rd NE (Southbound)				Parr Rd NE (Eastbound)				Parr Rd NE (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	9	0	0	1	0	0	0	0	0	0	0	0	0	2	0	12	
6:05 AM	0	12	1	0	2	1	0	0	0	0	0	0	1	0	1	0	18	
6:10 AM	0	12	0	0	3	0	0	0	0	0	0	0	1	0	1	0	17	
6:15 AM	0	11	0	0	0	3	0	0	0	0	0	0	3	0	4	0	21	
6:20 AM	0	14	0	0	1	5	0	0	0	0	0	0	3	0	2	0	25	
6:25 AM	0	14	0	0	1	8	0	0	0	0	0	0	0	0	3	0	26	
6:30 AM	0	16	0	0	3	4	0	0	0	0	0	0	1	0	4	0	28	
6:35 AM	0	17	1	0	3	4	0	0	0	0	0	0	2	0	4	0	31	
6:40 AM	0	16	0	0	4	4	0	0	0	0	0	0	2	0	11	0	37	
6:45 AM	0	13	0	0	3	3	0	0	0	0	0	0	0	0	2	0	21	
6:50 AM	0	14	1	0	5	5	0	0	0	0	0	0	1	0	2	0	28	
6:55 AM	0	10	1	0	6	3	0	0	0	0	0	0	1	0	3	0	24	288
7:00 AM	0	8	1	0	1	4	0	0	0	0	0	0	0	0	1	0	15	291
7:05 AM	0	18	4	0	1	4	0	0	0	0	0	0	0	0	3	0	30	303
7:10 AM	0	14	3	0	3	2	0	0	0	0	0	0	4	0	0	0	26	312
7:15 AM	0	11	3	0	5	5	0	0	0	0	0	0	1	0	1	0	26	317
7:20 AM	0	12	2	0	3	9	0	0	0	0	0	0	1	0	2	0	29	321
7:25 AM	0	14	0	0	2	7	0	0	0	0	0	0	2	0	2	0	27	322
7:30 AM	0	11	0	0	2	6	0	0	0	0	0	0	3	0	3	0	25	319
7:35 AM	0	10	2	0	4	1	0	0	0	0	0	0	1	0	0	0	18	306
7:40 AM	0	15	1	0	0	11	0	0	0	0	0	0	1	0	1	0	29	298
7:45 AM	0	15	3	0	2	8	0	0	0	0	0	0	2	0	4	0	34	311
7:50 AM	0	11	2	0	1	4	0	0	0	0	0	0	1	0	3	0	22	305
7:55 AM	0	8	4	0	3	8	0	0	0	0	0	0	1	0	2	0	26	307
8:00 AM	0	8	2	0	1	2	0	0	0	0	0	0	1	0	3	0	17	309
8:05 AM	0	8	1	0	4	5	0	0	0	0	0	0	0	0	2	0	20	299
8:10 AM	0	10	2	0	2	5	0	0	0	0	0	0	2	0	0	0	21	294
8:15 AM	0	3	0	0	0	2	0	0	0	0	0	0	0	0	1	0	6	274
8:20 AM	0	9	3	0	3	3	0	0	0	0	0	0	0	0	1	0	19	264
8:25 AM	0	7	1	0	2	11	0	0	0	0	0	0	0	0	0	0	21	258
8:30 AM	0	8	0	0	7	8	0	0	0	0	0	0	0	0	2	0	25	258
8:35 AM	0	9	3	0	0	9	0	0	0	0	0	0	1	0	1	0	23	263
8:40 AM	0	11	1	0	1	7	0	0	0	0	0	0	1	0	7	0	28	262
8:45 AM	0	9	0	0	1	7	0	0	0	0	0	0	1	0	3	0	21	249
8:50 AM	0	11	3	0	1	4	0	0	0	0	0	0	0	0	2	0	21	248
8:55 AM	0	6	0	0	4	4	0	0	0	0	0	0	3	0	0	0	17	239
9:00 AM	0	10	1	0	3	3	0	0	0	0	0	0	1	0	2	0	20	242
9:05 AM	0	7	3	0	3	4	0	0	0	0	0	0	1	0	0	0	18	240

5-Min Count Period Beginning At	Butteville Rd NE (Northbound)				Butteville Rd NE (Southbound)				Parr Rd NE (Eastbound)				Parr Rd NE (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
9:10 AM	0	6	0	0	0	1	0	0	0	0	0	0	0	0	5	0	12	231
9:15 AM	0	8	5	0	1	4	0	0	0	0	0	0	0	0	1	0	19	244
9:20 AM	0	6	0	0	2	1	0	0	0	0	0	0	3	0	1	0	13	238
9:25 AM	0	5	0	0	3	4	0	0	0	0	0	0	1	0	6	0	19	236
9:30 AM	0	7	2	0	1	3	0	0	0	0	0	0	1	0	3	0	17	228
9:35 AM	0	9	0	0	1	6	0	0	0	0	0	0	1	0	3	0	20	225
9:40 AM	0	5	2	0	1	3	0	0	0	0	0	0	2	0	2	0	15	212
9:45 AM	0	2	1	0	2	7	0	0	0	0	0	0	0	0	1	0	13	204
9:50 AM	0	12	2	0	1	2	0	0	0	0	0	0	1	0	1	0	19	202
9:55 AM	0	8	2	0	0	12	0	0	0	0	0	0	1	0	0	0	23	208

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	164	24	0	12	92	0	0	0	0	0	0	16	0	32	0	340
Heavy Trucks	0	4	0		0	0	0		0	0	0		0	0	0		4
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 5/21/2021 10:53 AM

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

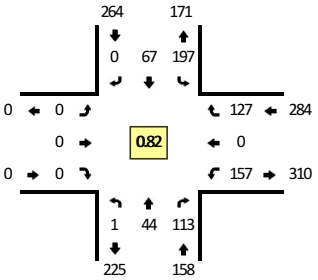
Type of peak hour being reported: User-Defined

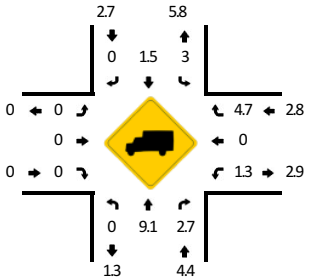
Method for determining peak hour: Total Entering Volume

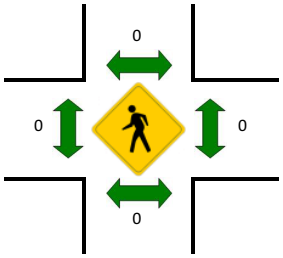
LOCATION: Butteville Rd NE -- OR-219
CITY/STATE: Woodburn, OR

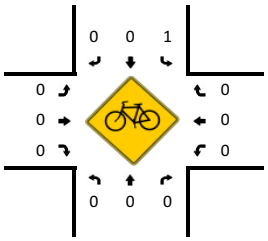
QC JOB #: 15405709
DATE: Wed, Apr 14 2021

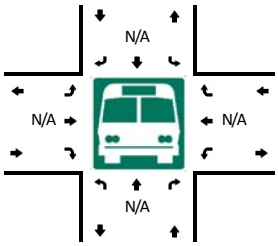
Peak-Hour: 5:30 PM -- 6:30 PM
Peak 15-Min: 5:35 PM -- 5:50 PM

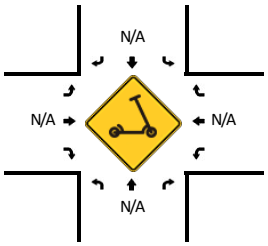












5-Min Count Period Beginning At	Butteville Rd NE (Northbound)				Butteville Rd NE (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	0	2	0	9	3	0	0	0	0	0	0	9	0	16	0	39	
3:05 PM	0	1	12	0	15	4	0	0	0	0	0	0	8	0	19	0	59	
3:10 PM	0	5	8	0	18	4	0	0	0	0	0	0	9	0	10	0	54	
3:15 PM	0	3	5	0	20	4	0	0	0	0	0	0	17	0	21	0	70	
3:20 PM	0	6	5	0	15	5	0	0	0	0	0	0	10	0	6	0	47	
3:25 PM	0	2	10	0	13	7	0	0	0	0	0	0	20	0	21	0	73	
3:30 PM	0	4	10	0	14	3	0	0	0	0	0	0	13	0	15	0	59	
3:35 PM	0	4	8	0	23	5	0	0	0	0	0	0	11	0	14	0	65	
3:40 PM	0	1	14	0	28	6	0	0	0	0	0	0	11	0	15	0	75	
3:45 PM	0	4	11	0	19	6	0	0	0	0	0	0	12	0	18	0	70	
3:50 PM	0	1	5	0	29	6	0	0	0	0	0	0	14	0	23	0	78	
3:55 PM	0	4	9	0	22	5	0	1	0	0	0	0	13	0	6	0	60	749
4:00 PM	0	5	6	1	18	5	0	0	0	0	0	0	12	0	18	0	65	775
4:05 PM	0	7	6	0	16	5	0	0	0	0	0	0	6	0	17	0	57	773
4:10 PM	0	3	11	0	31	5	0	0	0	0	0	0	14	0	16	0	80	799
4:15 PM	0	3	8	0	21	10	0	0	0	0	0	0	11	0	16	0	69	798
4:20 PM	0	10	8	0	24	6	0	0	0	0	0	0	15	0	16	0	79	830
4:25 PM	0	4	4	0	19	7	0	0	0	0	0	0	16	0	12	0	62	819
4:30 PM	0	7	12	0	19	11	0	0	0	0	0	0	19	0	18	0	86	846
4:35 PM	0	8	4	0	41	9	0	0	0	0	0	0	7	0	11	0	80	861
4:40 PM	0	3	5	0	46	11	0	0	0	0	0	0	12	0	19	0	96	882
4:45 PM	0	3	9	0	33	12	0	0	0	0	0	0	12	0	23	0	92	904
4:50 PM	0	3	10	0	40	17	0	0	0	0	0	0	9	0	13	0	92	918
4:55 PM	0	5	8	0	20	7	0	0	0	0	0	0	12	0	17	0	69	927
5:00 PM	0	3	3	0	21	8	0	0	0	0	0	0	15	0	18	0	68	930
5:05 PM	0	8	6	0	28	11	0	0	0	0	0	0	12	0	28	0	93	966
5:10 PM	0	1	9	0	37	12	0	0	0	0	0	0	11	0	16	1	87	973
5:15 PM	0	3	7	0	23	14	0	0	0	0	0	0	8	0	16	0	71	975
5:20 PM	0	3	5	0	27	14	0	0	0	0	0	0	19	0	11	0	79	975
5:25 PM	0	7	12	0	21	11	0	0	0	0	0	0	8	0	21	0	80	993
5:30 PM	0	5	10	0	21	7	0	0	0	0	0	0	15	0	13	0	71	978
5:35 PM	0	7	8	0	25	4	0	0	0	0	0	0	15	0	13	0	72	970
5:40 PM	0	7	17	0	12	7	0	0	0	0	0	0	12	0	14	0	69	943
5:45 PM	0	1	13	0	20	7	0	0	0	0	0	0	14	0	18	0	73	924
5:50 PM	0	2	7	0	24	6	0	0	0	0	0	0	10	0	8	0	57	889
5:55 PM	0	3	4	0	14	8	0	0	0	0	0	0	17	0	7	0	53	873
6:00 PM	0	4	19	0	15	6	0	0	0	0	0	0	6	0	5	0	55	860
6:05 PM	0	1	7	0	9	3	0	0	0	0	0	0	8	0	15	0	43	810

5-Min Count Period Beginning At	Butteville Rd NE (Northbound)				Butteville Rd NE (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:10 PM	0	5	7	0	13	5	0	0	0	0	0	0	14	0	13	0	57	780
6:15 PM	0	4	5	1	15	5	0	0	0	0	0	0	12	0	8	0	50	759
6:20 PM	0	2	8	0	18	3	0	0	0	0	0	0	21	0	8	0	60	740
6:25 PM	0	3	8	0	11	6	0	0	0	0	0	0	13	0	5	0	46	706
6:30 PM	0	4	10	0	19	4	0	0	0	0	0	0	9	0	11	0	57	692
6:35 PM	0	3	11	0	11	4	0	0	0	0	0	0	11	0	9	0	49	669
6:40 PM	0	3	9	0	10	5	0	0	0	0	0	0	8	0	9	0	44	644
6:45 PM	0	0	5	0	14	9	0	0	0	0	0	0	12	0	14	0	54	625
6:50 PM	0	6	4	0	10	5	0	0	0	0	0	0	11	0	8	0	44	612
6:55 PM	0	2	8	0	12	6	0	0	0	0	0	0	9	0	6	0	43	602

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	60	152	0	228	72	0	0	0	0	0	0	164	0	180	0	856
Heavy Trucks	0	12	4		12	4	0		0	0	0		0	0	12		44
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		4	0	0		0	0	0		0	0	0		4
Scooters																	

Comments:

Report generated on 5/21/2021 10:54 AM

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

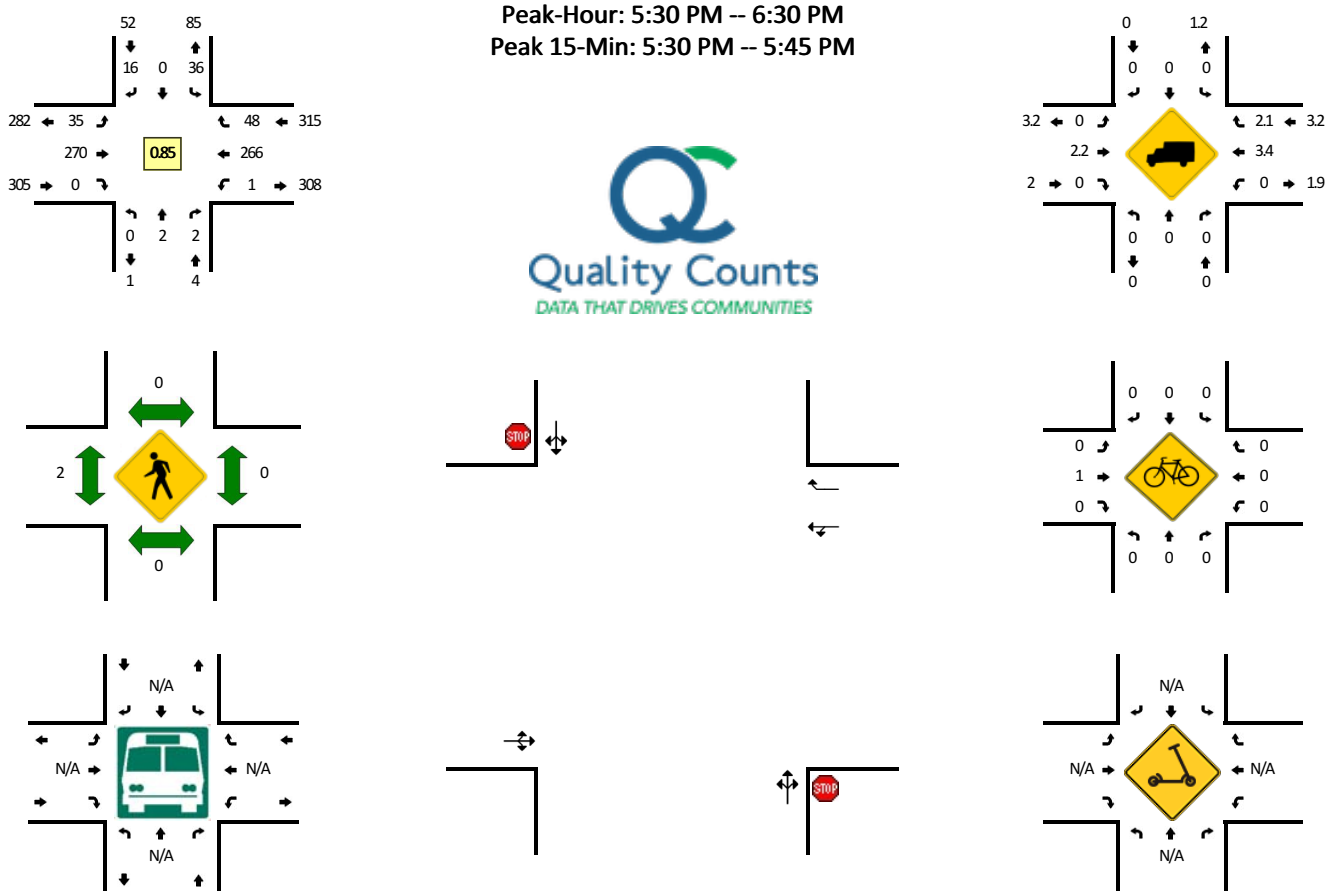
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

LOCATION: Willow Ave -- OR-219
CITY/STATE: Woodburn, OR

QC JOB #: 15405711
DATE: Wed, Apr 14 2021

Peak-Hour: 5:30 PM -- 6:30 PM
Peak 15-Min: 5:30 PM -- 5:45 PM



5-Min Count Period Beginning At	Willow Ave (Northbound)				Willow Ave (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	0	0	0	2	0	0	0	0	11	0	0	0	22	3	0	38	
3:05 PM	0	0	0	0	0	0	3	0	1	25	0	0	0	24	3	0	56	
3:10 PM	0	0	0	0	4	0	1	0	3	22	0	0	0	20	3	0	53	
3:15 PM	0	0	0	0	1	1	1	0	2	22	0	0	0	36	4	0	67	
3:20 PM	0	0	0	0	0	0	0	0	4	18	0	0	0	16	2	0	40	
3:25 PM	0	0	0	0	1	0	2	0	1	19	0	0	0	41	3	0	67	
3:30 PM	0	1	0	0	3	0	2	0	2	22	0	0	0	22	4	0	56	
3:35 PM	0	0	0	0	4	0	2	0	1	29	0	0	0	27	6	0	69	
3:40 PM	0	0	0	0	3	0	1	0	2	42	1	0	0	22	2	0	73	
3:45 PM	0	0	1	0	2	0	0	0	1	31	0	0	0	30	3	0	68	
3:50 PM	0	0	0	0	0	0	2	0	2	30	0	0	0	36	4	0	74	
3:55 PM	0	0	0	0	3	1	1	0	4	27	0	0	0	18	2	0	56	717
4:00 PM	0	0	0	0	0	0	2	0	2	21	0	0	0	27	9	0	61	740
4:05 PM	0	0	1	0	0	0	1	0	1	22	0	0	0	22	6	0	53	737
4:10 PM	0	0	0	0	0	0	2	0	1	40	0	0	0	27	7	0	77	761
4:15 PM	0	0	0	0	4	0	0	0	2	31	0	0	0	29	0	0	66	760
4:20 PM	0	0	0	0	3	0	1	0	5	25	0	0	0	31	2	0	67	787
4:25 PM	0	0	0	0	3	0	1	0	2	19	0	0	0	29	3	0	57	777
4:30 PM	0	0	0	0	1	0	2	0	1	33	0	0	0	30	6	0	73	794
4:35 PM	0	0	0	0	2	0	3	0	2	42	0	0	1	20	4	0	74	799
4:40 PM	0	0	0	0	1	0	2	0	3	47	0	0	0	28	2	0	83	809
4:45 PM	0	0	0	0	1	0	3	0	2	41	0	0	0	27	7	0	81	822
4:50 PM	0	0	0	0	1	0	2	0	2	45	1	0	0	21	2	0	74	822
4:55 PM	0	0	1	0	1	0	0	0	5	26	0	0	0	31	3	0	67	833
5:00 PM	0	0	0	0	2	0	2	0	3	21	0	0	0	30	4	0	62	834
5:05 PM	0	0	0	0	6	0	0	0	2	31	0	0	0	37	1	0	77	858
5:10 PM	0	0	0	0	3	0	1	0	0	45	0	0	0	26	3	0	78	859
5:15 PM	0	0	0	0	0	0	1	0	1	29	0	0	0	27	3	0	61	854
5:20 PM	0	0	1	0	1	0	1	0	4	28	1	0	1	25	5	0	67	854
5:25 PM	0	0	0	0	3	0	0	0	2	32	0	0	1	28	2	0	68	865
5:30 PM	0	2	1	0	3	0	1	0	2	30	0	0	1	27	6	0	73	865
5:35 PM	0	0	0	0	2	0	2	0	2	28	0	0	0	25	3	0	62	853
5:40 PM	0	0	0	0	5	0	1	0	2	26	0	0	0	26	3	0	63	833
5:45 PM	0	0	0	0	1	0	4	0	5	27	0	0	0	24	9	0	70	822
5:50 PM	0	0	0	0	2	0	3	0	4	27	0	0	0	17	2	0	55	803
5:55 PM	0	0	0	0	5	0	3	0	2	18	0	0	0	19	4	0	51	787
6:00 PM	0	0	0	0	3	0	0	0	4	29	0	0	0	16	3	0	55	780
6:05 PM	0	0	0	0	4	0	0	0	3	13	0	0	0	20	5	0	45	748

5-Min Count Period Beginning At	Willow Ave (Northbound)				Willow Ave (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:10 PM	0	0	1	0	3	0	1	0	0	17	0	0	0	26	2	0	50	720
6:15 PM	0	0	0	0	1	0	0	0	2	18	0	0	0	22	5	0	48	707
6:20 PM	0	0	0	0	4	0	1	0	5	20	0	0	0	25	4	0	59	699
6:25 PM	0	0	0	0	3	0	0	0	4	17	0	0	0	19	2	0	45	676
6:30 PM	0	0	0	0	2	0	0	0	2	25	0	0	0	19	3	0	51	654
6:35 PM	0	0	0	0	4	0	2	0	3	19	0	0	0	19	3	0	50	642
6:40 PM	0	0	0	0	0	0	1	0	5	15	0	0	0	16	1	0	38	617
6:45 PM	0	0	0	0	2	1	1	0	3	16	0	0	0	25	5	0	53	600
6:50 PM	0	1	0	0	1	0	2	1	0	12	0	0	0	18	5	0	40	585
6:55 PM	0	0	0	0	3	1	1	0	2	18	0	0	0	16	1	0	42	576

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	8	4	0	40	0	16	0	24	336	0	0	4	312	48	0	792
Heavy Trucks	0	0	0		0	0	0		0	8	0		0	4	0		12
Buses																	
Pedestrians		0				0				4				0			4
Bicycles	0	0	0		0	0	0		0	4	0		0	0	0		4
Scooters																	

Comments:

Report generated on 5/21/2021 10:54 AM

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

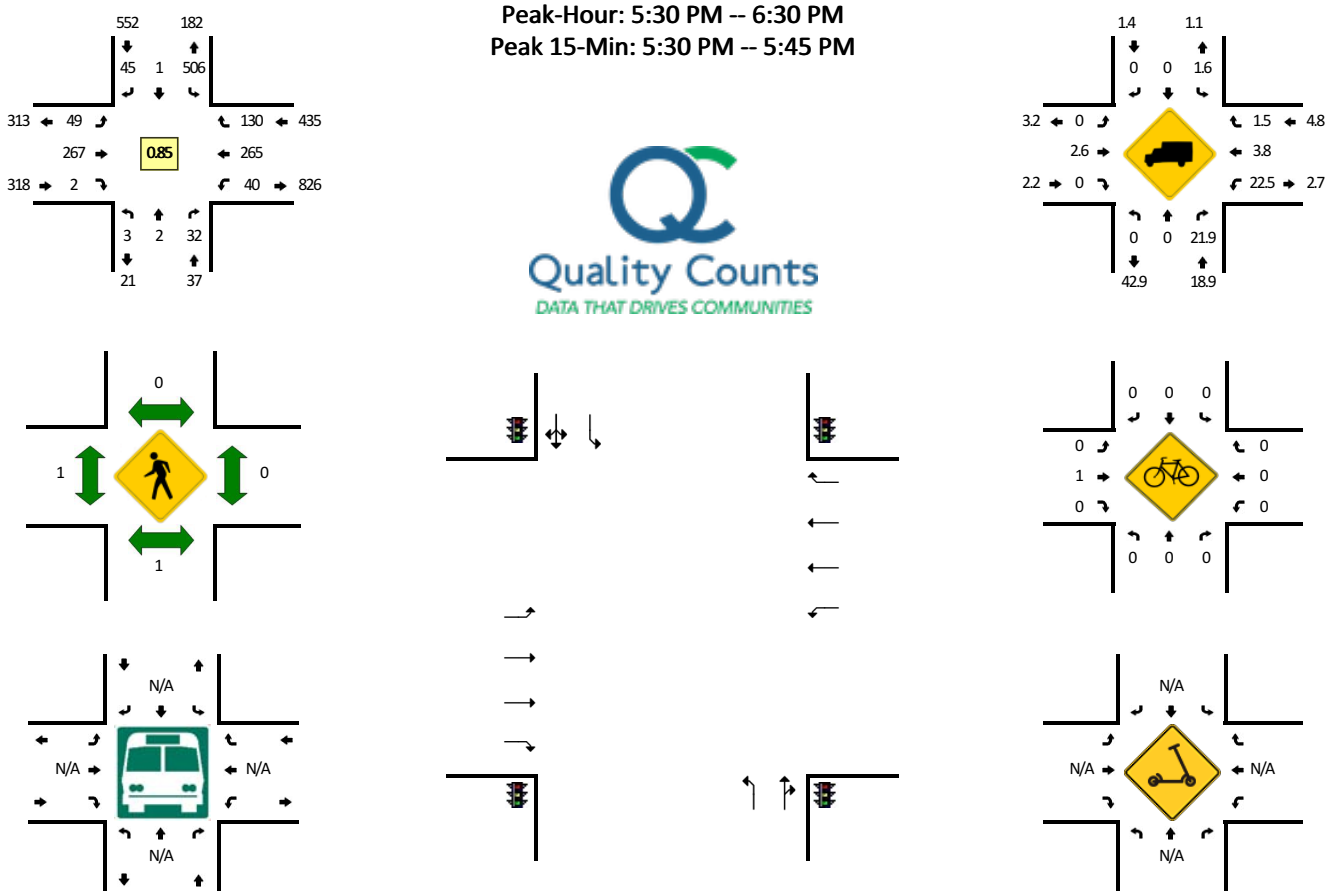
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

LOCATION: S Woodland Ave -- OR-219
CITY/STATE: Woodburn, OR

QC JOB #: 15405713
DATE: Wed, Apr 14 2021

Peak-Hour: 5:30 PM -- 6:30 PM
Peak 15-Min: 5:30 PM -- 5:45 PM



5-Min Count Period Beginning At	S Woodland Ave (Northbound)				S Woodland Ave (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	0	6	0	46	0	3	0	1	12	0	0	1	26	9	2	106	
3:05 PM	0	0	6	0	51	0	2	1	5	17	0	0	5	27	4	2	120	
3:10 PM	0	0	2	0	46	1	3	0	4	24	0	0	3	24	6	1	114	
3:15 PM	0	1	13	0	49	0	2	0	4	18	0	0	3	31	8	2	131	
3:20 PM	0	0	7	0	47	1	2	0	4	15	0	0	1	17	10	4	108	
3:25 PM	2	1	7	0	38	0	4	0	3	18	0	0	4	37	2	1	117	
3:30 PM	0	0	3	0	53	0	4	0	3	19	0	0	0	27	10	2	121	
3:35 PM	1	0	4	0	49	0	4	0	4	27	0	0	2	25	11	1	128	
3:40 PM	0	0	4	0	39	0	1	0	6	37	1	0	2	26	5	0	121	
3:45 PM	1	0	7	0	37	0	0	0	11	29	0	0	0	27	11	2	125	
3:50 PM	2	0	2	0	42	0	4	0	3	26	0	0	3	39	10	0	131	
3:55 PM	0	0	4	0	56	0	1	0	7	19	0	0	5	18	6	2	118	1440
4:00 PM	2	0	23	0	42	0	7	0	2	20	0	0	0	25	5	6	132	1466
4:05 PM	2	0	6	0	45	0	4	0	2	23	0	0	6	21	8	5	122	1468
4:10 PM	0	0	7	0	46	0	2	0	5	32	0	0	6	33	4	4	139	1493
4:15 PM	2	0	8	0	43	0	6	0	4	26	0	0	2	29	3	5	128	1490
4:20 PM	0	2	5	0	38	0	5	0	1	34	0	0	2	24	10	2	123	1505
4:25 PM	0	0	1	0	42	0	1	0	5	14	0	0	1	28	10	7	109	1497
4:30 PM	0	0	3	0	42	0	3	0	7	25	0	0	3	36	6	0	125	1501
4:35 PM	0	1	3	0	46	0	1	0	8	37	0	0	2	21	11	2	132	1505
4:40 PM	0	0	2	0	35	0	4	1	4	39	0	0	3	27	9	3	127	1511
4:45 PM	1	0	3	0	38	1	2	0	2	44	0	0	4	30	10	5	140	1526
4:50 PM	0	0	5	0	31	1	4	0	6	39	0	0	2	19	23	4	134	1529
4:55 PM	0	0	6	0	32	1	3	0	4	25	0	0	4	31	12	0	118	1529
5:00 PM	1	0	10	0	34	0	5	0	2	23	0	0	3	25	10	2	115	1512
5:05 PM	2	2	5	0	50	0	9	0	4	24	0	0	0	29	12	1	138	1528
5:10 PM	0	0	12	0	43	1	2	0	8	41	0	0	3	29	11	1	151	1540
5:15 PM	0	0	2	0	39	1	6	0	5	28	1	0	4	24	13	1	124	1536
5:20 PM	0	0	4	0	42	0	5	0	2	26	0	0	1	25	17	0	122	1535
5:25 PM	0	0	3	0	49	0	2	0	5	26	0	0	0	27	14	3	129	1555
5:30 PM	0	0	2	0	34	0	1	0	4	39	0	0	4	33	12	3	132	1562
5:35 PM	0	0	3	0	47	0	6	0	5	23	0	0	3	23	11	1	122	1552
5:40 PM	1	0	2	0	53	0	3	1	7	22	1	0	0	26	21	2	139	1564
5:45 PM	0	0	4	0	39	0	5	0	3	26	0	0	2	26	11	2	118	1542
5:50 PM	0	0	1	0	37	0	2	0	5	22	0	0	2	16	9	4	98	1506
5:55 PM	0	0	5	0	39	0	4	0	6	18	0	0	1	18	13	2	106	1494
6:00 PM	1	0	7	0	38	0	4	0	8	26	0	0	1	15	8	0	108	1487
6:05 PM	1	0	5	0	50	0	2	0	1	15	0	0	1	20	11	2	108	1457

5-Min Count Period Beginning At	S Woodland Ave (Northbound)				S Woodland Ave (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:10 PM	0	0	1	0	48	1	7	0	2	17	0	0	1	25	9	3	114	1420
6:15 PM	0	2	0	0	36	0	3	0	2	19	0	0	1	25	9	1	98	1394
6:20 PM	0	0	1	0	48	0	4	0	3	23	1	0	1	21	5	1	108	1380
6:25 PM	0	0	1	0	36	0	4	0	3	17	0	0	1	17	11	1	91	1342
6:30 PM	0	0	5	0	35	1	4	0	3	19	1	0	2	17	6	4	97	1307
6:35 PM	0	1	2	0	43	0	4	0	2	21	0	0	1	20	5	2	101	1286
6:40 PM	0	0	0	0	42	0	2	0	5	15	0	0	0	13	8	3	88	1235
6:45 PM	0	0	1	0	31	0	5	0	3	13	0	0	2	29	6	6	96	1213
6:50 PM	0	1	3	0	35	0	2	0	1	12	0	0	5	16	8	2	85	1200
6:55 PM	0	0	1	0	53	0	2	0	2	20	0	0	2	16	10	3	109	1203

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	0	28	0	536	0	40	4	64	336	4	0	28	328	176	24	1572
Heavy Trucks	0	0	16		12	0	0		0	12	0		20	4	0		64
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	4	0		0	0	0		4
Scooters																	

Comments:

Report generated on 5/21/2021 10:54 AM

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

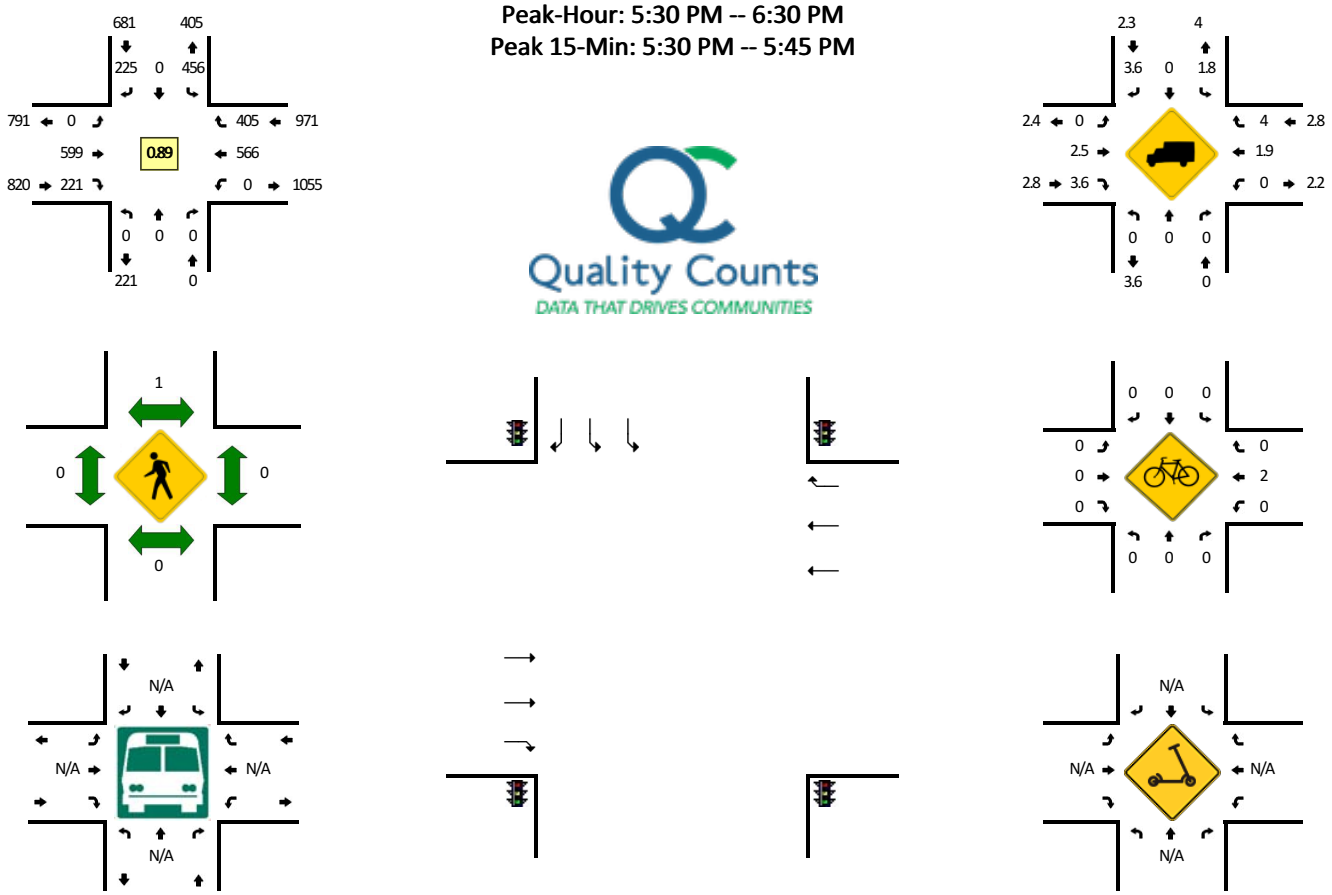
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

LOCATION: I-5 SB Ramps -- OR-219
CITY/STATE: Woodburn, OR

QC JOB #: 15405715
DATE: Wed, Apr 14 2021

Peak-Hour: 5:30 PM -- 6:30 PM
Peak 15-Min: 5:30 PM -- 5:45 PM



5-Min Count Period Beginning At	I-5 SB Ramps (Northbound)				I-5 SB Ramps (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	0	0	0	33	0	23	0	0	43	27	0	0	46	38	0	210	
3:05 PM	0	0	0	0	32	0	19	0	0	48	26	0	0	53	38	0	216	
3:10 PM	0	0	0	0	33	0	18	0	0	55	20	0	0	30	31	0	187	
3:15 PM	0	0	0	0	28	0	30	0	0	56	19	0	0	64	44	0	241	
3:20 PM	0	0	0	0	34	0	12	0	0	52	24	0	0	41	31	0	194	
3:25 PM	0	0	0	0	35	0	22	0	0	40	23	0	0	58	34	0	212	
3:30 PM	0	0	0	0	31	0	17	0	0	58	18	0	0	51	35	0	210	
3:35 PM	0	0	0	0	28	0	19	0	0	49	29	0	0	46	49	0	220	
3:40 PM	0	0	0	0	20	0	22	0	0	49	29	0	0	45	31	0	196	
3:45 PM	0	0	0	0	31	0	21	0	0	52	28	0	0	53	46	0	231	
3:50 PM	0	0	0	0	36	0	21	0	0	42	27	0	0	63	28	0	217	
3:55 PM	0	0	0	0	29	0	29	0	0	57	26	0	0	37	33	0	211	2545
4:00 PM	0	0	0	0	40	0	17	0	0	53	35	0	0	56	32	0	233	2568
4:05 PM	0	0	0	0	43	0	16	0	0	45	32	0	0	46	39	0	221	2573
4:10 PM	0	0	0	0	40	0	22	0	0	49	41	0	0	49	37	0	238	2624
4:15 PM	0	0	0	0	43	0	19	0	0	50	32	0	0	55	47	0	246	2629
4:20 PM	0	0	0	0	28	0	13	0	0	62	24	0	0	48	45	0	220	2655
4:25 PM	0	0	0	0	22	0	24	0	0	38	23	0	0	53	54	0	214	2657
4:30 PM	0	0	0	0	30	0	26	0	0	47	26	0	0	42	49	0	220	2667
4:35 PM	0	0	0	0	38	0	14	0	0	53	31	0	0	55	50	0	241	2688
4:40 PM	0	0	0	0	34	0	17	0	0	59	27	0	0	58	35	0	230	2722
4:45 PM	0	0	0	0	31	0	21	0	0	54	25	0	0	64	38	0	233	2724
4:50 PM	0	0	0	0	43	0	28	0	0	58	30	0	0	58	46	0	263	2770
4:55 PM	0	0	0	0	22	0	24	0	0	43	19	0	0	52	48	0	208	2767
5:00 PM	0	0	0	0	43	0	24	0	0	45	22	0	0	45	44	0	223	2757
5:05 PM	0	0	0	0	33	0	24	0	0	50	27	0	0	59	57	0	250	2786
5:10 PM	0	0	0	0	36	0	20	0	0	60	31	0	0	44	46	0	237	2785
5:15 PM	0	0	0	0	39	0	18	0	0	48	23	0	0	57	43	0	228	2767
5:20 PM	0	0	0	0	41	0	34	0	0	46	31	0	0	40	38	0	230	2777
5:25 PM	0	0	0	0	45	0	15	0	0	51	24	0	0	49	42	0	226	2789
5:30 PM	0	0	0	0	38	0	22	0	0	65	18	0	0	65	42	0	250	2819
5:35 PM	0	0	0	0	44	0	17	0	0	45	21	0	0	49	28	0	204	2782
5:40 PM	0	0	0	0	38	0	23	0	0	62	26	0	0	47	45	0	241	2793
5:45 PM	0	0	0	0	49	0	17	0	0	49	18	0	0	49	42	0	224	2784
5:50 PM	0	0	0	0	46	0	15	0	0	41	17	0	0	46	45	0	210	2731
5:55 PM	0	0	0	0	32	0	20	0	0	50	17	0	0	50	28	0	197	2720
6:00 PM	0	0	0	0	44	0	20	0	0	51	20	0	0	41	25	0	201	2698
6:05 PM	0	0	0	0	35	0	17	0	0	51	11	0	0	46	31	0	191	2639

5-Min Count Period Beginning At	I-5 SB Ramps (Northbound)				I-5 SB Ramps (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:10 PM	0	0	0	0	33	0	12	0	0	49	21	0	0	46	36	0	197	2599
6:15 PM	0	0	0	0	34	0	26	0	0	47	17	0	0	47	30	0	201	2572
6:20 PM	0	0	0	0	36	0	14	0	0	48	17	0	0	40	29	0	184	2526
6:25 PM	0	0	0	0	27	0	22	0	0	41	18	0	0	40	24	0	172	2472
6:30 PM	0	0	0	0	27	0	20	0	0	50	12	0	0	39	32	0	180	2402
6:35 PM	0	0	0	0	45	0	19	0	0	52	17	0	0	31	23	0	187	2385
6:40 PM	0	0	0	0	45	0	12	0	0	46	16	0	0	31	25	0	175	2319
6:45 PM	0	0	0	0	30	0	13	0	0	36	15	0	0	41	27	0	162	2257
6:50 PM	0	0	0	0	13	0	17	0	0	35	20	0	0	26	22	0	133	2180
6:55 PM	0	0	0	0	20	0	12	0	0	59	16	0	0	34	30	0	171	2154

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	480	0	248	0	0	688	260	0	0	644	460	0	2780
Heavy Trucks	0	0	0		8	0	16		0	28	16		0	8	20		96
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 5/21/2021 10:54 AM

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

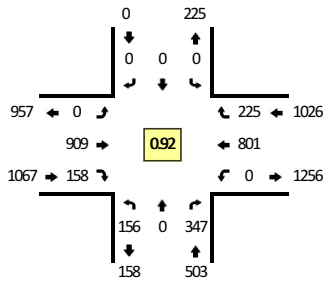
Type of peak hour being reported: User-Defined

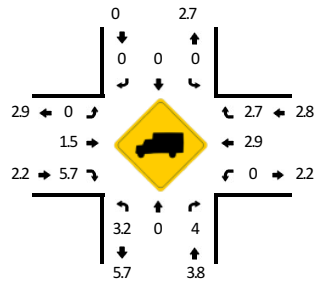
Method for determining peak hour: Total Entering Volume

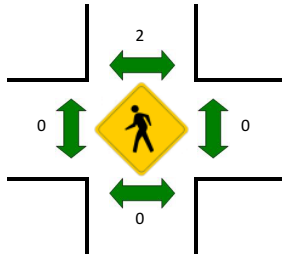
LOCATION: I-5 NB Ramps -- OR-219
CITY/STATE: Woodburn, OR

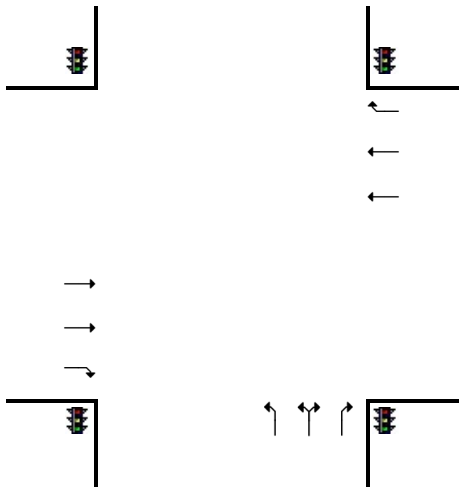
QC JOB #: 15405717
DATE: Wed, Apr 14 2021

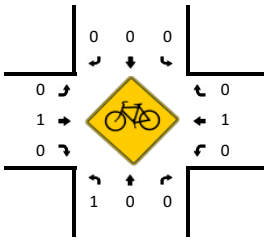
Peak-Hour: 5:30 PM -- 6:30 PM
Peak 15-Min: 5:30 PM -- 5:45 PM

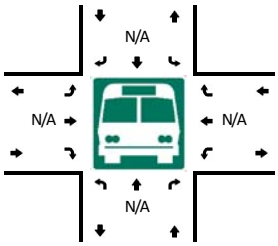


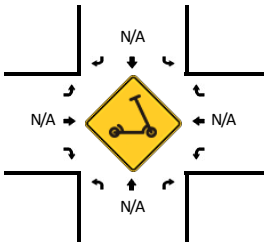












5-Min Count Period Beginning At	I-5 NB Ramps (Northbound)				I-5 NB Ramps (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	17	0	30	0	0	0	0	0	0	54	19	0	0	63	29	0	212	
3:05 PM	16	0	21	0	0	0	0	0	0	61	13	0	0	72	30	1	214	
3:10 PM	12	0	33	0	0	0	0	0	0	73	21	0	0	43	22	0	204	
3:15 PM	20	0	39	0	0	0	0	0	0	57	18	0	0	90	18	0	242	
3:20 PM	22	0	21	0	0	0	0	0	0	71	22	0	0	55	22	0	213	
3:25 PM	18	0	38	0	0	0	0	0	0	63	12	0	0	82	39	0	252	
3:30 PM	17	0	33	0	0	0	0	0	0	59	14	0	0	63	19	0	205	
3:35 PM	12	0	31	0	0	0	0	0	0	80	17	0	0	86	29	0	255	
3:40 PM	15	0	33	0	0	0	0	0	0	46	15	0	0	57	27	0	193	
3:45 PM	18	0	27	0	0	0	0	0	0	67	19	0	0	80	32	0	243	
3:50 PM	18	0	34	0	0	0	0	0	0	68	19	0	0	81	24	0	244	
3:55 PM	12	0	46	0	0	0	0	0	0	51	22	0	0	51	18	0	200	2677
4:00 PM	19	0	43	0	0	0	0	0	0	77	20	0	0	71	24	0	254	2719
4:05 PM	11	0	34	0	0	0	0	0	0	68	12	0	0	71	34	0	230	2735
4:10 PM	22	0	38	0	0	0	0	0	0	82	19	0	0	68	31	0	260	2791
4:15 PM	21	0	42	0	0	0	0	0	0	61	18	0	0	82	17	0	241	2790
4:20 PM	12	0	42	0	0	0	0	0	0	88	24	0	0	78	27	0	271	2848
4:25 PM	27	0	41	0	0	0	0	0	0	47	12	0	0	76	23	0	226	2822
4:30 PM	10	0	32	0	0	0	0	0	0	70	8	0	0	85	17	0	222	2839
4:35 PM	13	0	40	0	0	0	0	0	0	71	14	0	0	93	32	0	263	2847
4:40 PM	23	0	40	0	0	0	0	0	0	84	5	0	0	68	27	0	247	2901
4:45 PM	20	0	40	0	0	0	0	0	0	73	8	0	0	81	20	0	242	2900
4:50 PM	23	0	35	0	0	0	0	0	0	93	9	0	0	81	26	0	267	2923
4:55 PM	17	0	38	0	0	0	0	0	0	60	11	0	0	85	17	0	228	2951
5:00 PM	11	0	28	0	0	0	0	0	0	80	14	0	0	93	25	0	251	2948
5:05 PM	17	0	39	0	0	0	0	0	0	57	17	0	0	93	22	0	245	2963
5:10 PM	20	0	26	0	0	0	0	0	0	85	18	0	0	68	37	0	254	2957
5:15 PM	19	0	34	0	0	0	0	0	0	76	13	0	0	80	30	0	252	2968
5:20 PM	12	0	44	0	0	0	0	0	0	71	9	0	0	61	27	0	224	2921
5:25 PM	19	0	39	0	0	0	0	0	0	69	17	0	0	74	21	0	239	2934
5:30 PM	12	0	22	0	0	0	0	0	0	94	19	0	0	90	16	0	253	2965
5:35 PM	13	0	41	0	0	0	0	0	0	77	12	0	0	71	19	0	233	2935
5:40 PM	22	0	28	0	0	0	0	0	0	80	15	0	0	59	13	0	217	2905
5:45 PM	17	0	29	0	0	0	0	0	0	85	10	0	0	82	24	0	247	2910
5:50 PM	14	0	35	0	0	0	0	0	0	72	12	0	0	79	20	0	232	2875
5:55 PM	13	0	34	0	0	0	0	0	0	80	10	0	0	60	16	0	213	2860
6:00 PM	15	0	23	0	0	0	0	0	0	79	16	0	0	49	19	0	201	2810
6:05 PM	11	0	28	0	0	0	0	0	0	60	15	0	0	67	14	0	195	2760

5-Min Count Period Beginning At	I-5 NB Ramps (Northbound)				I-5 NB Ramps (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:10 PM	8	0	13	0	0	0	0	0	0	84	15	0	0	76	17	0	213	2719
6:15 PM	12	0	28	0	0	0	0	0	0	68	14	0	0	62	23	0	207	2674
6:20 PM	7	0	29	0	0	0	0	0	0	74	10	0	0	55	27	0	202	2652
6:25 PM	12	0	37	0	0	0	0	0	0	56	10	0	0	51	17	0	183	2596
6:30 PM	9	0	21	0	0	0	0	0	0	59	12	0	0	61	10	0	172	2515
6:35 PM	5	0	25	0	0	0	0	0	0	76	13	0	0	56	19	0	194	2476
6:40 PM	12	0	25	0	0	0	0	0	0	90	8	0	0	42	17	0	194	2453
6:45 PM	8	0	25	0	0	0	0	0	0	57	8	0	0	59	17	0	174	2380
6:50 PM	4	0	28	0	0	0	0	0	0	45	7	0	0	46	15	0	145	2293
6:55 PM	8	0	29	0	0	0	0	0	0	61	14	0	0	54	24	0	190	2270

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	188	0	364	0	0	0	0	0	0	1004	184	0	0	880	192	0	2812
Heavy Trucks	8	0	8		0	0	0		0	16	20		0	24	12		88
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	4	0		0	0	0		4
Scooters																	

Comments:

Report generated on 5/21/2021 10:54 AM

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

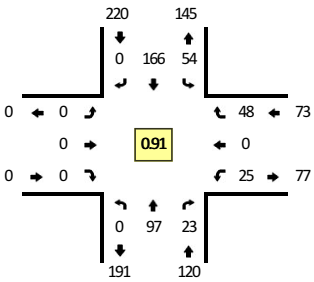
Type of peak hour being reported: User-Defined

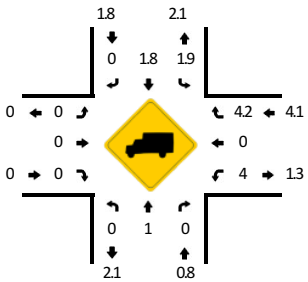
Method for determining peak hour: Total Entering Volume

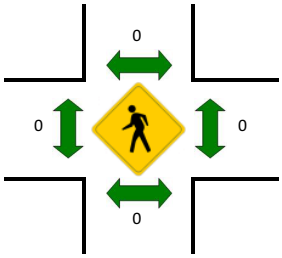
LOCATION: Butteville Rd NE -- Parr Rd NE
CITY/STATE: Woodburn, OR

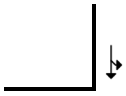
QC JOB #: 15405719
DATE: Wed, Apr 14 2021

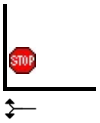
Peak-Hour: 5:30 PM -- 6:30 PM
Peak 15-Min: 5:30 PM -- 5:45 PM

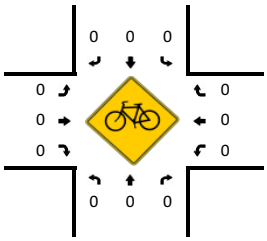


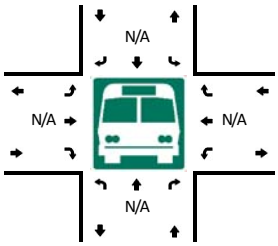


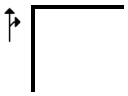


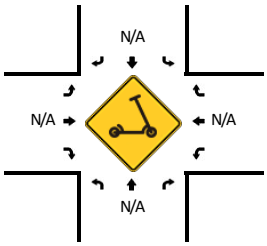












5-Min Count Period Beginning At	Butteville Rd NE (Northbound)				Butteville Rd NE (Southbound)				Parr Rd NE (Eastbound)				Parr Rd NE (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	5	2	0	2	12	0	0	0	0	0	0	2	0	0	0	23	
3:05 PM	0	9	1	0	0	12	0	0	0	0	0	0	2	0	1	0	25	
3:10 PM	0	8	1	0	2	12	0	0	0	0	0	0	0	0	6	0	29	
3:15 PM	0	5	2	0	0	16	0	0	0	0	0	0	0	0	1	0	24	
3:20 PM	0	5	1	0	5	10	0	0	0	0	0	0	3	0	4	0	28	
3:25 PM	0	12	1	0	3	16	0	0	0	0	0	0	0	0	1	0	33	
3:30 PM	0	6	2	0	6	18	0	0	0	0	0	0	2	0	3	0	37	
3:35 PM	0	8	2	1	2	10	0	0	0	0	0	0	0	0	3	0	26	
3:40 PM	0	13	0	0	5	13	0	0	0	0	0	0	0	0	8	0	39	
3:45 PM	0	4	0	0	6	12	0	0	0	0	0	0	2	0	2	0	26	
3:50 PM	0	9	1	0	2	16	0	0	0	0	0	0	0	0	5	0	33	
3:55 PM	0	7	2	0	2	17	0	0	0	0	0	0	3	0	0	0	31	354
4:00 PM	0	10	2	0	2	14	0	0	0	0	0	0	1	0	3	0	32	363
4:05 PM	0	8	2	0	2	9	0	0	0	0	0	0	0	0	4	0	25	363
4:10 PM	0	8	5	0	3	9	0	0	0	0	0	0	3	0	2	0	30	364
4:15 PM	0	14	1	0	7	17	0	0	0	0	0	0	1	0	3	0	43	383
4:20 PM	0	7	2	0	8	15	0	0	0	0	0	0	1	0	1	0	34	389
4:25 PM	0	8	1	0	2	19	0	0	0	0	0	0	1	0	2	0	33	389
4:30 PM	0	11	2	0	4	22	0	0	0	0	0	0	1	0	8	0	48	400
4:35 PM	0	7	4	0	3	14	0	0	0	0	0	0	0	0	5	0	33	407
4:40 PM	0	8	3	0	2	16	0	0	0	0	0	0	1	0	1	0	31	399
4:45 PM	0	6	3	0	6	23	0	0	0	0	0	0	1	0	6	0	45	418
4:50 PM	0	10	3	0	7	12	0	0	0	0	0	0	1	0	4	0	37	422
4:55 PM	0	4	1	0	3	16	0	0	0	0	0	0	3	0	3	0	30	421
5:00 PM	0	10	3	0	2	20	0	0	0	0	0	0	2	0	0	0	37	426
5:05 PM	0	7	4	0	5	14	0	0	0	0	0	0	2	0	5	0	37	438
5:10 PM	0	8	0	0	5	19	0	0	0	0	0	0	3	0	3	0	38	446
5:15 PM	0	7	3	0	6	18	0	0	0	0	0	0	3	0	3	0	40	443
5:20 PM	0	5	6	0	6	20	0	0	0	0	0	0	6	0	5	0	48	457
5:25 PM	0	12	2	0	8	22	0	0	0	0	0	0	2	0	5	0	51	475
5:30 PM	0	9	2	0	5	14	0	0	0	0	0	0	0	0	6	0	36	463
5:35 PM	0	9	1	0	2	17	0	0	0	0	0	0	3	0	5	0	37	467
5:40 PM	0	11	1	0	4	15	0	0	0	0	0	0	4	0	6	0	41	477
5:45 PM	0	4	3	0	6	12	0	0	0	0	0	0	3	0	4	0	32	464
5:50 PM	0	9	3	0	5	13	0	0	0	0	0	0	3	0	2	0	35	462
5:55 PM	0	12	3	0	3	17	0	0	0	0	0	0	2	0	2	0	39	471
6:00 PM	0	8	1	0	5	14	0	0	0	0	0	0	0	0	4	0	32	466
6:05 PM	0	4	2	0	4	8	0	0	0	0	0	0	3	0	5	0	26	455

5-Min Count Period Beginning At	Butteville Rd NE (Northbound)				Butteville Rd NE (Southbound)				Parr Rd NE (Eastbound)				Parr Rd NE (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:10 PM	0	10	2	0	4	11	0	0	0	0	0	0	4	0	4	0	35	452
6:15 PM	0	5	2	0	4	17	0	0	0	0	0	0	1	0	1	0	30	442
6:20 PM	0	10	1	0	6	12	0	0	0	0	0	0	0	0	6	0	35	429
6:25 PM	0	6	2	0	6	16	0	0	0	0	0	0	2	0	3	0	35	413
6:30 PM	0	10	3	0	5	9	0	0	0	0	0	0	3	0	3	0	33	410
6:35 PM	0	10	6	0	3	10	0	0	0	0	0	0	0	0	7	0	36	409
6:40 PM	0	7	4	0	4	12	0	0	0	0	0	0	2	0	3	0	32	400
6:45 PM	0	2	3	0	6	14	0	0	0	0	0	0	1	0	2	0	28	396
6:50 PM	0	13	2	0	8	8	0	0	0	0	0	0	1	0	2	0	34	395
6:55 PM	0	5	9	0	8	7	0	0	0	0	0	0	4	0	1	0	34	390

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	116	16	0	44	184	0	0	0	0	0	0	28	0	68	0	456
Heavy Trucks	0	0	0		4	4	0		0	0	0		0	0	4		12
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 5/21/2021 10:54 AM

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

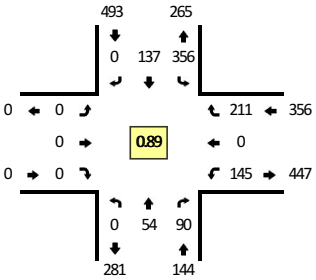
Type of peak hour being reported: User-Defined

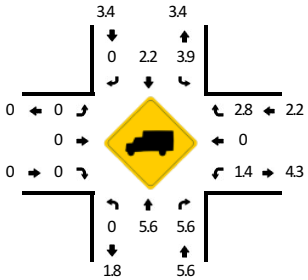
Method for determining peak hour: Total Entering Volume

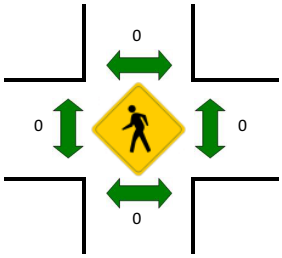
LOCATION: Butteville Rd NE -- OR-219
CITY/STATE: Woodburn, OR

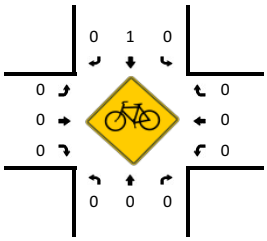
QC JOB #: 15405709
DATE: Wed, Apr 14 2021

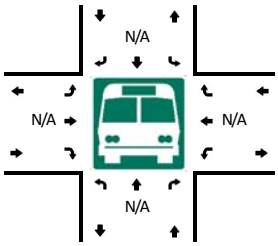
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 4:40 PM -- 4:55 PM

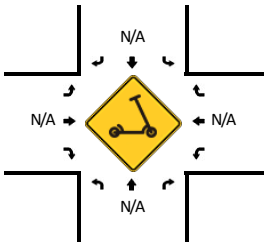












5-Min Count Period Beginning At	Butteville Rd NE (Northbound)				Butteville Rd NE (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	0	2	0	9	3	0	0	0	0	0	0	9	0	16	0	39	
3:05 PM	0	1	12	0	15	4	0	0	0	0	0	0	8	0	19	0	59	
3:10 PM	0	5	8	0	18	4	0	0	0	0	0	0	9	0	10	0	54	
3:15 PM	0	3	5	0	20	4	0	0	0	0	0	0	17	0	21	0	70	
3:20 PM	0	6	5	0	15	5	0	0	0	0	0	0	10	0	6	0	47	
3:25 PM	0	2	10	0	13	7	0	0	0	0	0	0	20	0	21	0	73	
3:30 PM	0	4	10	0	14	3	0	0	0	0	0	0	13	0	15	0	59	
3:35 PM	0	4	8	0	23	5	0	0	0	0	0	0	11	0	14	0	65	
3:40 PM	0	1	14	0	28	6	0	0	0	0	0	0	11	0	15	0	75	
3:45 PM	0	4	11	0	19	6	0	0	0	0	0	0	12	0	18	0	70	
3:50 PM	0	1	5	0	29	6	0	0	0	0	0	0	14	0	23	0	78	
3:55 PM	0	4	9	0	22	5	0	1	0	0	0	0	13	0	6	0	60	749
4:00 PM	0	5	6	1	18	5	0	0	0	0	0	0	12	0	18	0	65	775
4:05 PM	0	7	6	0	16	5	0	0	0	0	0	0	6	0	17	0	57	773
4:10 PM	0	3	11	0	31	5	0	0	0	0	0	0	14	0	16	0	80	799
4:15 PM	0	3	8	0	21	10	0	0	0	0	0	0	11	0	16	0	69	798
4:20 PM	0	10	8	0	24	6	0	0	0	0	0	0	15	0	16	0	79	830
4:25 PM	0	4	4	0	19	7	0	0	0	0	0	0	16	0	12	0	62	819
4:30 PM	0	7	12	0	19	11	0	0	0	0	0	0	19	0	18	0	86	846
4:35 PM	0	8	4	0	41	9	0	0	0	0	0	0	7	0	11	0	80	861
4:40 PM	0	3	5	0	46	11	0	0	0	0	0	0	12	0	19	0	96	882
4:45 PM	0	3	9	0	33	12	0	0	0	0	0	0	12	0	23	0	92	904
4:50 PM	0	3	10	0	40	17	0	0	0	0	0	0	9	0	13	0	92	918
4:55 PM	0	5	8	0	20	7	0	0	0	0	0	0	12	0	17	0	69	927
5:00 PM	0	3	3	0	21	8	0	0	0	0	0	0	15	0	18	0	68	930
5:05 PM	0	8	6	0	28	11	0	0	0	0	0	0	12	0	28	0	93	966
5:10 PM	0	1	9	0	37	12	0	0	0	0	0	0	11	0	16	1	87	973
5:15 PM	0	3	7	0	23	14	0	0	0	0	0	0	8	0	16	0	71	975
5:20 PM	0	3	5	0	27	14	0	0	0	0	0	0	19	0	11	0	79	975
5:25 PM	0	7	12	0	21	11	0	0	0	0	0	0	8	0	21	0	80	993
5:30 PM	0	5	10	0	21	7	0	0	0	0	0	0	15	0	13	0	71	978
5:35 PM	0	7	8	0	25	4	0	0	0	0	0	0	15	0	13	0	72	970
5:40 PM	0	7	17	0	12	7	0	0	0	0	0	0	12	0	14	0	69	943
5:45 PM	0	1	13	0	20	7	0	0	0	0	0	0	14	0	18	0	73	924
5:50 PM	0	2	7	0	24	6	0	0	0	0	0	0	10	0	8	0	57	889
5:55 PM	0	3	4	0	14	8	0	0	0	0	0	0	17	0	7	0	53	873
6:00 PM	0	4	19	0	15	6	0	0	0	0	0	0	6	0	5	0	55	860
6:05 PM	0	1	7	0	9	3	0	0	0	0	0	0	8	0	15	0	43	810

5-Min Count Period Beginning At	Butteville Rd NE (Northbound)				Butteville Rd NE (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:10 PM	0	5	7	0	13	5	0	0	0	0	0	0	14	0	13	0	57	780
6:15 PM	0	4	5	1	15	5	0	0	0	0	0	0	12	0	8	0	50	759
6:20 PM	0	2	8	0	18	3	0	0	0	0	0	0	21	0	8	0	60	740
6:25 PM	0	3	8	0	11	6	0	0	0	0	0	0	13	0	5	0	46	706
6:30 PM	0	4	10	0	19	4	0	0	0	0	0	0	9	0	11	0	57	692
6:35 PM	0	3	11	0	11	4	0	0	0	0	0	0	11	0	9	0	49	669
6:40 PM	0	3	9	0	10	5	0	0	0	0	0	0	8	0	9	0	44	644
6:45 PM	0	0	5	0	14	9	0	0	0	0	0	0	12	0	14	0	54	625
6:50 PM	0	6	4	0	10	5	0	0	0	0	0	0	11	0	8	0	44	612
6:55 PM	0	2	8	0	12	6	0	0	0	0	0	0	9	0	6	0	43	602

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	36	96	0	476	160	0	0	0	0	0	0	132	0	220	0	1120
Heavy Trucks	0	0	4		12	4	0		0	0	0		8	0	8		36
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 5/21/2021 10:53 AM

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

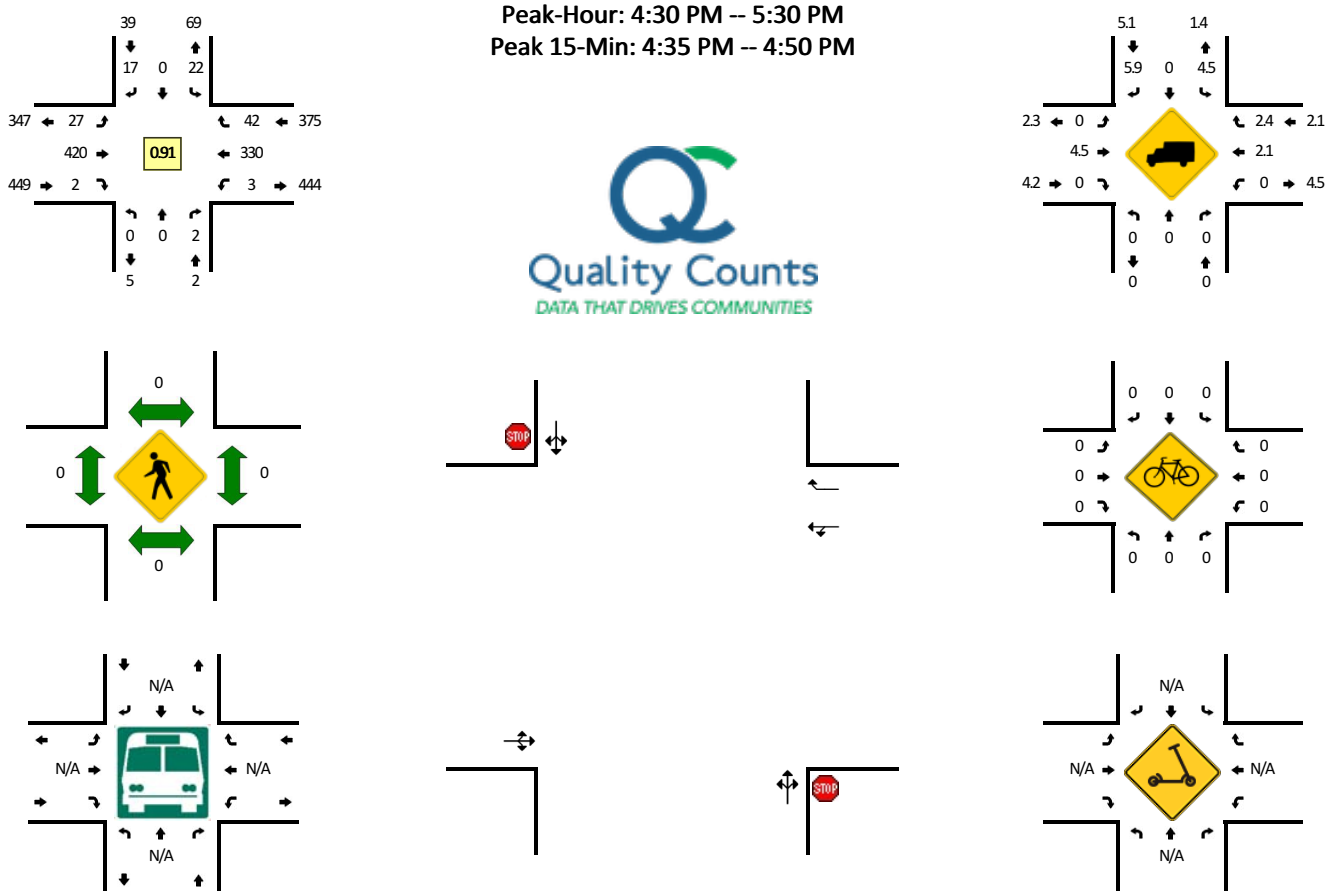
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

LOCATION: Willow Ave -- OR-219
CITY/STATE: Woodburn, OR

QC JOB #: 15405711
DATE: Wed, Apr 14 2021

Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 4:35 PM -- 4:50 PM



5-Min Count Period Beginning At	Willow Ave (Northbound)				Willow Ave (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	0	0	0	2	0	0	0	0	11	0	0	0	22	3	0	38	
3:05 PM	0	0	0	0	0	0	3	0	1	25	0	0	0	24	3	0	56	
3:10 PM	0	0	0	0	4	0	1	0	3	22	0	0	0	20	3	0	53	
3:15 PM	0	0	0	0	1	1	1	0	2	22	0	0	0	36	4	0	67	
3:20 PM	0	0	0	0	0	0	0	0	4	18	0	0	0	16	2	0	40	
3:25 PM	0	0	0	0	1	0	2	0	1	19	0	0	0	41	3	0	67	
3:30 PM	0	1	0	0	3	0	2	0	2	22	0	0	0	22	4	0	56	
3:35 PM	0	0	0	0	4	0	2	0	1	29	0	0	0	27	6	0	69	
3:40 PM	0	0	0	0	3	0	1	0	2	42	1	0	0	22	2	0	73	
3:45 PM	0	0	1	0	2	0	0	0	1	31	0	0	0	30	3	0	68	
3:50 PM	0	0	0	0	0	0	2	0	2	30	0	0	0	36	4	0	74	
3:55 PM	0	0	0	0	3	1	1	0	4	27	0	0	0	18	2	0	56	717
4:00 PM	0	0	0	0	0	0	2	0	2	21	0	0	0	27	9	0	61	740
4:05 PM	0	0	1	0	0	0	1	0	1	22	0	0	0	22	6	0	53	737
4:10 PM	0	0	0	0	0	0	2	0	1	40	0	0	0	27	7	0	77	761
4:15 PM	0	0	0	0	4	0	0	0	2	31	0	0	0	29	0	0	66	760
4:20 PM	0	0	0	0	3	0	1	0	5	25	0	0	0	31	2	0	67	787
4:25 PM	0	0	0	0	3	0	1	0	2	19	0	0	0	29	3	0	57	777
4:30 PM	0	0	0	0	1	0	2	0	1	33	0	0	0	30	6	0	73	794
4:35 PM	0	0	0	0	2	0	3	0	2	42	0	0	1	20	4	0	74	799
4:40 PM	0	0	0	0	1	0	2	0	3	47	0	0	0	28	2	0	83	809
4:45 PM	0	0	0	0	1	0	3	0	2	41	0	0	0	27	7	0	81	822
4:50 PM	0	0	0	0	1	0	2	0	2	45	1	0	0	21	2	0	74	822
4:55 PM	0	0	1	0	1	0	0	0	5	26	0	0	0	31	3	0	67	833
5:00 PM	0	0	0	0	2	0	2	0	3	21	0	0	0	30	4	0	62	834
5:05 PM	0	0	0	0	6	0	0	0	2	31	0	0	0	37	1	0	77	858
5:10 PM	0	0	0	0	3	0	1	0	0	45	0	0	0	26	3	0	78	859
5:15 PM	0	0	0	0	0	0	1	0	1	29	0	0	0	27	3	0	61	854
5:20 PM	0	0	1	0	1	0	1	0	4	28	1	0	1	25	5	0	67	854
5:25 PM	0	0	0	0	3	0	0	0	2	32	0	0	1	28	2	0	68	865
5:30 PM	0	2	1	0	3	0	1	0	2	30	0	0	1	27	6	0	73	865
5:35 PM	0	0	0	0	2	0	2	0	2	28	0	0	0	25	3	0	62	853
5:40 PM	0	0	0	0	5	0	1	0	2	26	0	0	0	26	3	0	63	833
5:45 PM	0	0	0	0	1	0	4	0	5	27	0	0	0	24	9	0	70	822
5:50 PM	0	0	0	0	2	0	3	0	4	27	0	0	0	17	2	0	55	803
5:55 PM	0	0	0	0	5	0	3	0	2	18	0	0	0	19	4	0	51	787
6:00 PM	0	0	0	0	3	0	0	0	4	29	0	0	0	16	3	0	55	780
6:05 PM	0	0	0	0	4	0	0	0	3	13	0	0	0	20	5	0	45	748

5-Min Count Period Beginning At	Willow Ave (Northbound)				Willow Ave (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:10 PM	0	0	1	0	3	0	1	0	0	17	0	0	0	26	2	0	50	720
6:15 PM	0	0	0	0	1	0	0	0	2	18	0	0	0	22	5	0	48	707
6:20 PM	0	0	0	0	4	0	1	0	5	20	0	0	0	25	4	0	59	699
6:25 PM	0	0	0	0	3	0	0	0	4	17	0	0	0	19	2	0	45	676
6:30 PM	0	0	0	0	2	0	0	0	2	25	0	0	0	19	3	0	51	654
6:35 PM	0	0	0	0	4	0	2	0	3	19	0	0	0	19	3	0	50	642
6:40 PM	0	0	0	0	0	0	1	0	5	15	0	0	0	16	1	0	38	617
6:45 PM	0	0	0	0	2	1	1	0	3	16	0	0	0	25	5	0	53	600
6:50 PM	0	1	0	0	1	0	2	1	0	12	0	0	0	18	5	0	40	585
6:55 PM	0	0	0	0	3	1	1	0	2	18	0	0	0	16	1	0	42	576

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	16	0	32	0	28	520	0	0	4	300	52	0	952
Heavy Trucks	0	0	0		4	0	0		0	32	0		0	16	0		52
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 5/21/2021 10:53 AM

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

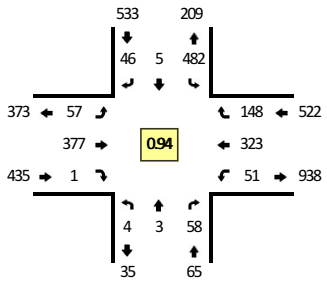
Type of peak hour being reported: User-Defined

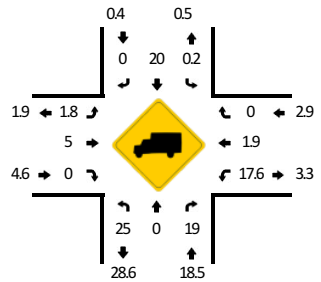
Method for determining peak hour: Total Entering Volume

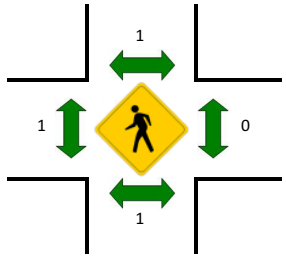
LOCATION: S Woodland Ave -- OR-219
CITY/STATE: Woodburn, OR

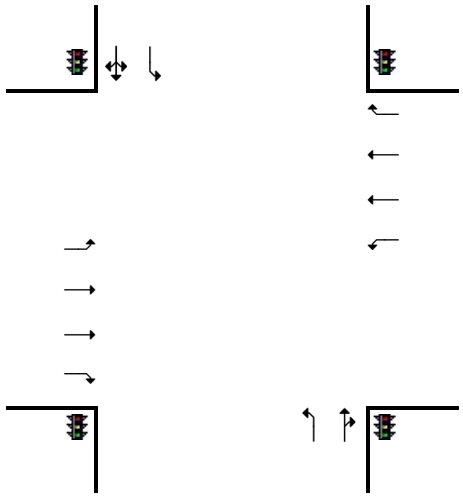
QC JOB #: 15405713
DATE: Wed, Apr 14 2021

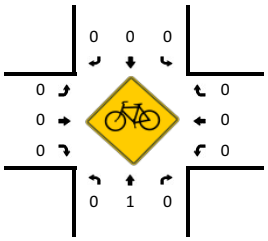
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

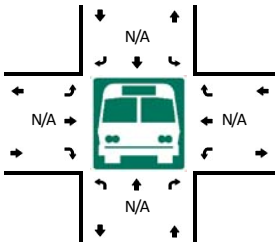


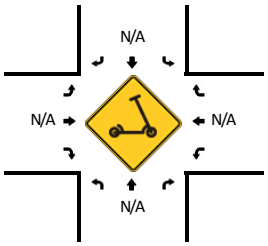












5-Min Count Period Beginning At	S Woodland Ave (Northbound)				S Woodland Ave (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	0	6	0	46	0	3	0	1	12	0	0	1	26	9	2	106	
3:05 PM	0	0	6	0	51	0	2	1	5	17	0	0	5	27	4	2	120	
3:10 PM	0	0	2	0	46	1	3	0	4	24	0	0	3	24	6	1	114	
3:15 PM	0	1	13	0	49	0	2	0	4	18	0	0	3	31	8	2	131	
3:20 PM	0	0	7	0	47	1	2	0	4	15	0	0	1	17	10	4	108	
3:25 PM	2	1	7	0	38	0	4	0	3	18	0	0	4	37	2	1	117	
3:30 PM	0	0	3	0	53	0	4	0	3	19	0	0	0	27	10	2	121	
3:35 PM	1	0	4	0	49	0	4	0	4	27	0	0	2	25	11	1	128	
3:40 PM	0	0	4	0	39	0	1	0	6	37	1	0	2	26	5	0	121	
3:45 PM	1	0	7	0	37	0	0	0	11	29	0	0	0	27	11	2	125	
3:50 PM	2	0	2	0	42	0	4	0	3	26	0	0	3	39	10	0	131	
3:55 PM	0	0	4	0	56	0	1	0	7	19	0	0	5	18	6	2	118	1440
4:00 PM	2	0	23	0	42	0	7	0	2	20	0	0	0	25	5	6	132	1466
4:05 PM	2	0	6	0	45	0	4	0	2	23	0	0	6	21	8	5	122	1468
4:10 PM	0	0	7	0	46	0	2	0	5	32	0	0	6	33	4	4	139	1493
4:15 PM	2	0	8	0	43	0	6	0	4	26	0	0	2	29	3	5	128	1490
4:20 PM	0	2	5	0	38	0	5	0	1	34	0	0	2	24	10	2	123	1505
4:25 PM	0	0	1	0	42	0	1	0	5	14	0	0	1	28	10	7	109	1497
4:30 PM	0	0	3	0	42	0	3	0	7	25	0	0	3	36	6	0	125	1501
4:35 PM	0	1	3	0	46	0	1	0	8	37	0	0	2	21	11	2	132	1505
4:40 PM	0	0	2	0	35	0	4	1	4	39	0	0	3	27	9	3	127	1511
4:45 PM	1	0	3	0	38	1	2	0	2	44	0	0	4	30	10	5	140	1526
4:50 PM	0	0	5	0	31	1	4	0	6	39	0	0	2	19	23	4	134	1529
4:55 PM	0	0	6	0	32	1	3	0	4	25	0	0	4	31	12	0	118	1529
5:00 PM	1	0	10	0	34	0	5	0	2	23	0	0	3	25	10	2	115	1512
5:05 PM	2	2	5	0	50	0	9	0	4	24	0	0	0	29	12	1	138	1528
5:10 PM	0	0	12	0	43	1	2	0	8	41	0	0	3	29	11	1	151	1540
5:15 PM	0	0	2	0	39	1	6	0	5	28	1	0	4	24	13	1	124	1536
5:20 PM	0	0	4	0	42	0	5	0	2	26	0	0	1	25	17	0	122	1535
5:25 PM	0	0	3	0	49	0	2	0	5	26	0	0	0	27	14	3	129	1555
5:30 PM	0	0	2	0	34	0	1	0	4	39	0	0	4	33	12	3	132	1562
5:35 PM	0	0	3	0	47	0	6	0	5	23	0	0	3	23	11	1	122	1552
5:40 PM	1	0	2	0	53	0	3	1	7	22	1	0	0	26	21	2	139	1564
5:45 PM	0	0	4	0	39	0	5	0	3	26	0	0	2	26	11	2	118	1542
5:50 PM	0	0	1	0	37	0	2	0	5	22	0	0	2	16	9	4	98	1506
5:55 PM	0	0	5	0	39	0	4	0	6	18	0	0	1	18	13	2	106	1494
6:00 PM	1	0	7	0	38	0	4	0	8	26	0	0	1	15	8	0	108	1487
6:05 PM	1	0	5	0	50	0	2	0	1	15	0	0	1	20	11	2	108	1457

5-Min Count Period Beginning At	S Woodland Ave (Northbound)				S Woodland Ave (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:10 PM	0	0	1	0	48	1	7	0	2	17	0	0	1	25	9	3	114	1420
6:15 PM	0	2	0	0	36	0	3	0	2	19	0	0	1	25	9	1	98	1394
6:20 PM	0	0	1	0	48	0	4	0	3	23	1	0	1	21	5	1	108	1380
6:25 PM	0	0	1	0	36	0	4	0	3	17	0	0	1	17	11	1	91	1342
6:30 PM	0	0	5	0	35	1	4	0	3	19	1	0	2	17	6	4	97	1307
6:35 PM	0	1	2	0	43	0	4	0	2	21	0	0	1	20	5	2	101	1286
6:40 PM	0	0	0	0	42	0	2	0	5	15	0	0	0	13	8	3	88	1235
6:45 PM	0	0	1	0	31	0	5	0	3	13	0	0	2	29	6	6	96	1213
6:50 PM	0	1	3	0	35	0	2	0	1	12	0	0	5	16	8	2	85	1200
6:55 PM	0	0	1	0	53	0	2	0	2	20	0	0	2	16	10	3	109	1203

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	8	8	76	0	528	8	68	0	68	372	4	0	28	328	144	12	1652
Heavy Trucks	0	0	20		0	0	0		0	12	0		4	0	0		36
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 5/21/2021 10:53 AM

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

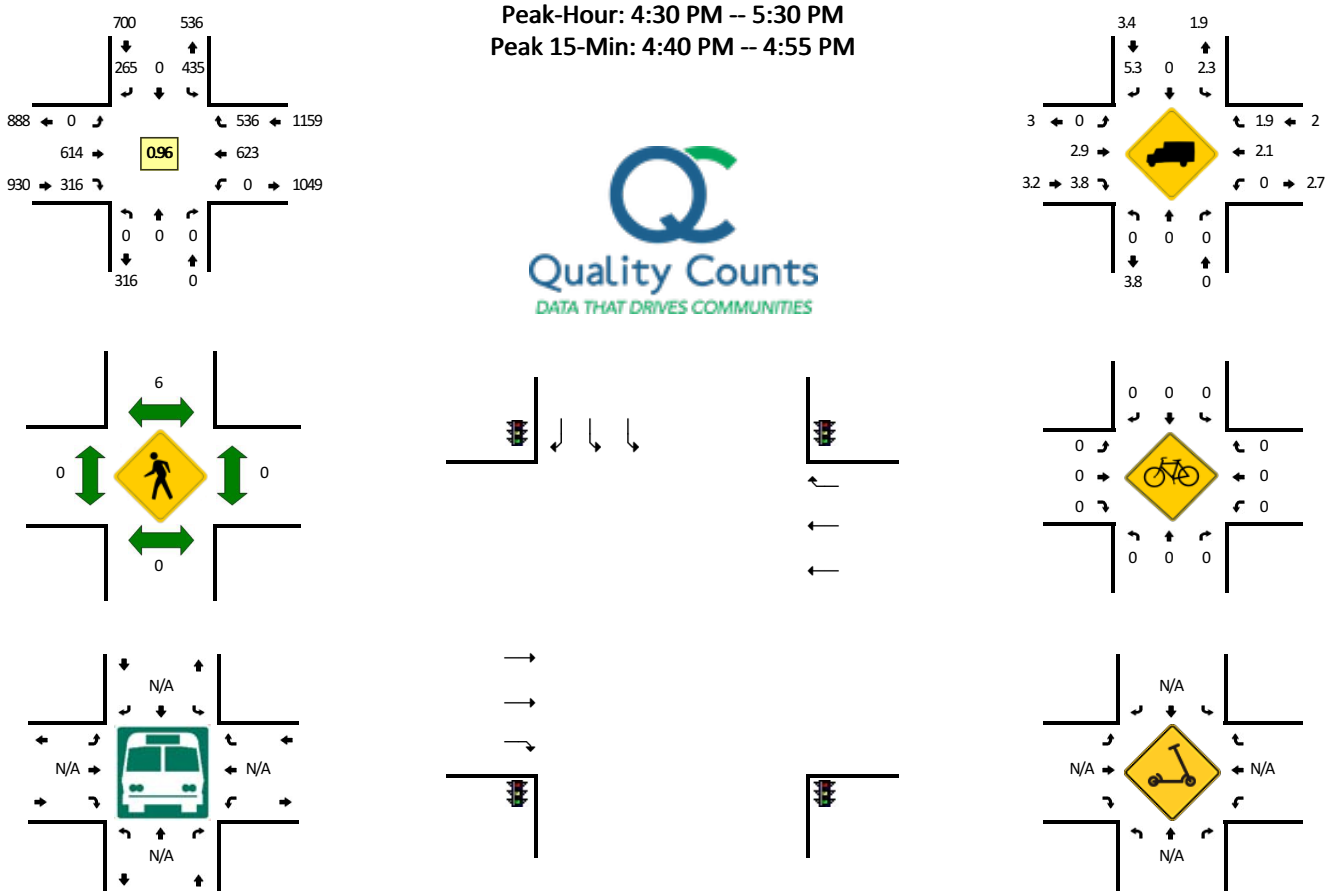
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

LOCATION: I-5 SB Ramps -- OR-219
CITY/STATE: Woodburn, OR

QC JOB #: 15405715
DATE: Wed, Apr 14 2021

Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 4:40 PM -- 4:55 PM



5-Min Count Period Beginning At	I-5 SB Ramps (Northbound)				I-5 SB Ramps (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	0	0	0	33	0	23	0	0	43	27	0	0	46	38	0	210	
3:05 PM	0	0	0	0	32	0	19	0	0	48	26	0	0	53	38	0	216	
3:10 PM	0	0	0	0	33	0	18	0	0	55	20	0	0	30	31	0	187	
3:15 PM	0	0	0	0	28	0	30	0	0	56	19	0	0	64	44	0	241	
3:20 PM	0	0	0	0	34	0	12	0	0	52	24	0	0	41	31	0	194	
3:25 PM	0	0	0	0	35	0	22	0	0	40	23	0	0	58	34	0	212	
3:30 PM	0	0	0	0	31	0	17	0	0	58	18	0	0	51	35	0	210	
3:35 PM	0	0	0	0	28	0	19	0	0	49	29	0	0	46	49	0	220	
3:40 PM	0	0	0	0	20	0	22	0	0	49	29	0	0	45	31	0	196	
3:45 PM	0	0	0	0	31	0	21	0	0	52	28	0	0	53	46	0	231	
3:50 PM	0	0	0	0	36	0	21	0	0	42	27	0	0	63	28	0	217	
3:55 PM	0	0	0	0	29	0	29	0	0	57	26	0	0	37	33	0	211	2545
4:00 PM	0	0	0	0	40	0	17	0	0	53	35	0	0	56	32	0	233	2568
4:05 PM	0	0	0	0	43	0	16	0	0	45	32	0	0	46	39	0	221	2573
4:10 PM	0	0	0	0	40	0	22	0	0	49	41	0	0	49	37	0	238	2624
4:15 PM	0	0	0	0	43	0	19	0	0	50	32	0	0	55	47	0	246	2629
4:20 PM	0	0	0	0	28	0	13	0	0	62	24	0	0	48	45	0	220	2655
4:25 PM	0	0	0	0	22	0	24	0	0	38	23	0	0	53	54	0	214	2657
4:30 PM	0	0	0	0	30	0	26	0	0	47	26	0	0	42	49	0	220	2667
4:35 PM	0	0	0	0	38	0	14	0	0	53	31	0	0	55	50	0	241	2688
4:40 PM	0	0	0	0	34	0	17	0	0	59	27	0	0	58	35	0	230	2722
4:45 PM	0	0	0	0	31	0	21	0	0	54	25	0	0	64	38	0	233	2724
4:50 PM	0	0	0	0	43	0	28	0	0	58	30	0	0	58	46	0	263	2770
4:55 PM	0	0	0	0	22	0	24	0	0	43	19	0	0	52	48	0	208	2767
5:00 PM	0	0	0	0	43	0	24	0	0	45	22	0	0	45	44	0	223	2757
5:05 PM	0	0	0	0	33	0	24	0	0	50	27	0	0	59	57	0	250	2786
5:10 PM	0	0	0	0	36	0	20	0	0	60	31	0	0	44	46	0	237	2785
5:15 PM	0	0	0	0	39	0	18	0	0	48	23	0	0	57	43	0	228	2767
5:20 PM	0	0	0	0	41	0	34	0	0	46	31	0	0	40	38	0	230	2777
5:25 PM	0	0	0	0	45	0	15	0	0	51	24	0	0	49	42	0	226	2789
5:30 PM	0	0	0	0	38	0	22	0	0	65	18	0	0	65	42	0	250	2819
5:35 PM	0	0	0	0	44	0	17	0	0	45	21	0	0	49	28	0	204	2782
5:40 PM	0	0	0	0	38	0	23	0	0	62	26	0	0	47	45	0	241	2793
5:45 PM	0	0	0	0	49	0	17	0	0	49	18	0	0	49	42	0	224	2784
5:50 PM	0	0	0	0	46	0	15	0	0	41	17	0	0	46	45	0	210	2731
5:55 PM	0	0	0	0	32	0	20	0	0	50	17	0	0	50	28	0	197	2720
6:00 PM	0	0	0	0	44	0	20	0	0	51	20	0	0	41	25	0	201	2698
6:05 PM	0	0	0	0	35	0	17	0	0	51	11	0	0	46	31	0	191	2639

5-Min Count Period Beginning At	I-5 SB Ramps (Northbound)				I-5 SB Ramps (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:10 PM	0	0	0	0	33	0	12	0	0	49	21	0	0	46	36	0	197	2599
6:15 PM	0	0	0	0	34	0	26	0	0	47	17	0	0	47	30	0	201	2572
6:20 PM	0	0	0	0	36	0	14	0	0	48	17	0	0	40	29	0	184	2526
6:25 PM	0	0	0	0	27	0	22	0	0	41	18	0	0	40	24	0	172	2472
6:30 PM	0	0	0	0	27	0	20	0	0	50	12	0	0	39	32	0	180	2402
6:35 PM	0	0	0	0	45	0	19	0	0	52	17	0	0	31	23	0	187	2385
6:40 PM	0	0	0	0	45	0	12	0	0	46	16	0	0	31	25	0	175	2319
6:45 PM	0	0	0	0	30	0	13	0	0	36	15	0	0	41	27	0	162	2257
6:50 PM	0	0	0	0	13	0	17	0	0	35	20	0	0	26	22	0	133	2180
6:55 PM	0	0	0	0	20	0	12	0	0	59	16	0	0	34	30	0	171	2154

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	432	0	264	0	0	684	328	0	0	720	476	0	2904
Heavy Trucks	0	0	0		8	0	20		0	12	12		0	8	8		68
Buses																	
Pedestrians		0				8				0				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 5/21/2021 10:53 AM

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

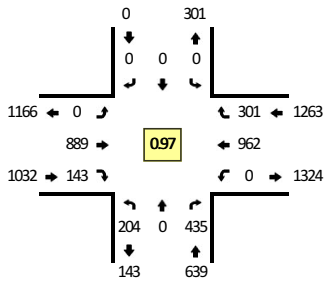
Type of peak hour being reported: User-Defined

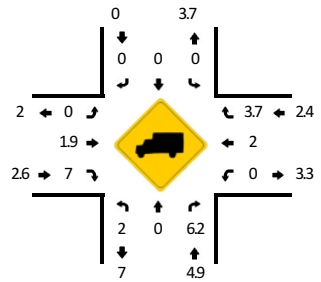
Method for determining peak hour: Total Entering Volume

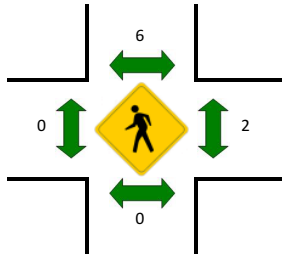
LOCATION: I-5 NB Ramps -- OR-219
CITY/STATE: Woodburn, OR

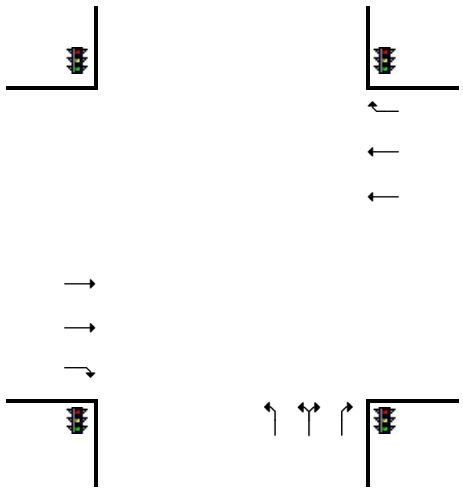
QC JOB #: 15405717
DATE: Wed, Apr 14 2021

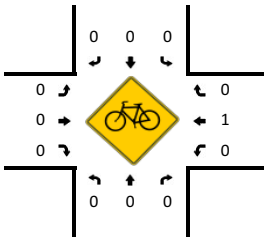
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 4:40 PM -- 4:55 PM

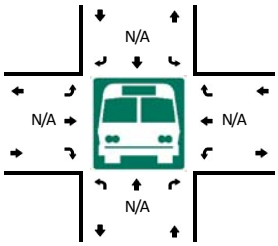


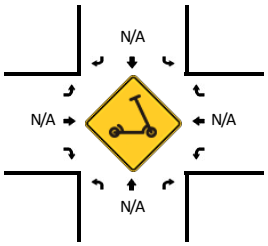












5-Min Count Period Beginning At	I-5 NB Ramps (Northbound)				I-5 NB Ramps (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	17	0	30	0	0	0	0	0	0	54	19	0	0	63	29	0	212	
3:05 PM	16	0	21	0	0	0	0	0	0	61	13	0	0	72	30	1	214	
3:10 PM	12	0	33	0	0	0	0	0	0	73	21	0	0	43	22	0	204	
3:15 PM	20	0	39	0	0	0	0	0	0	57	18	0	0	90	18	0	242	
3:20 PM	22	0	21	0	0	0	0	0	0	71	22	0	0	55	22	0	213	
3:25 PM	18	0	38	0	0	0	0	0	0	63	12	0	0	82	39	0	252	
3:30 PM	17	0	33	0	0	0	0	0	0	59	14	0	0	63	19	0	205	
3:35 PM	12	0	31	0	0	0	0	0	0	80	17	0	0	86	29	0	255	
3:40 PM	15	0	33	0	0	0	0	0	0	46	15	0	0	57	27	0	193	
3:45 PM	18	0	27	0	0	0	0	0	0	67	19	0	0	80	32	0	243	
3:50 PM	18	0	34	0	0	0	0	0	0	68	19	0	0	81	24	0	244	
3:55 PM	12	0	46	0	0	0	0	0	0	51	22	0	0	51	18	0	200	2677
4:00 PM	19	0	43	0	0	0	0	0	0	77	20	0	0	71	24	0	254	2719
4:05 PM	11	0	34	0	0	0	0	0	0	68	12	0	0	71	34	0	230	2735
4:10 PM	22	0	38	0	0	0	0	0	0	82	19	0	0	68	31	0	260	2791
4:15 PM	21	0	42	0	0	0	0	0	0	61	18	0	0	82	17	0	241	2790
4:20 PM	12	0	42	0	0	0	0	0	0	88	24	0	0	78	27	0	271	2848
4:25 PM	27	0	41	0	0	0	0	0	0	47	12	0	0	76	23	0	226	2822
4:30 PM	10	0	32	0	0	0	0	0	0	70	8	0	0	85	17	0	222	2839
4:35 PM	13	0	40	0	0	0	0	0	0	71	14	0	0	93	32	0	263	2847
4:40 PM	23	0	40	0	0	0	0	0	0	84	5	0	0	68	27	0	247	2901
4:45 PM	20	0	40	0	0	0	0	0	0	73	8	0	0	81	20	0	242	2900
4:50 PM	23	0	35	0	0	0	0	0	0	93	9	0	0	81	26	0	267	2923
4:55 PM	17	0	38	0	0	0	0	0	0	60	11	0	0	85	17	0	228	2951
5:00 PM	11	0	28	0	0	0	0	0	0	80	14	0	0	93	25	0	251	2948
5:05 PM	17	0	39	0	0	0	0	0	0	57	17	0	0	93	22	0	245	2963
5:10 PM	20	0	26	0	0	0	0	0	0	85	18	0	0	68	37	0	254	2957
5:15 PM	19	0	34	0	0	0	0	0	0	76	13	0	0	80	30	0	252	2968
5:20 PM	12	0	44	0	0	0	0	0	0	71	9	0	0	61	27	0	224	2921
5:25 PM	19	0	39	0	0	0	0	0	0	69	17	0	0	74	21	0	239	2934
5:30 PM	12	0	22	0	0	0	0	0	0	94	19	0	0	90	16	0	253	2965
5:35 PM	13	0	41	0	0	0	0	0	0	77	12	0	0	71	19	0	233	2935
5:40 PM	22	0	28	0	0	0	0	0	0	80	15	0	0	59	13	0	217	2905
5:45 PM	17	0	29	0	0	0	0	0	0	85	10	0	0	82	24	0	247	2910
5:50 PM	14	0	35	0	0	0	0	0	0	72	12	0	0	79	20	0	232	2875
5:55 PM	13	0	34	0	0	0	0	0	0	80	10	0	0	60	16	0	213	2860
6:00 PM	15	0	23	0	0	0	0	0	0	79	16	0	0	49	19	0	201	2810
6:05 PM	11	0	28	0	0	0	0	0	0	60	15	0	0	67	14	0	195	2760

5-Min Count Period Beginning At	I-5 NB Ramps (Northbound)				I-5 NB Ramps (Southbound)				OR-219 (Eastbound)				OR-219 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:10 PM	8	0	13	0	0	0	0	0	0	84	15	0	0	76	17	0	213	2719
6:15 PM	12	0	28	0	0	0	0	0	0	68	14	0	0	62	23	0	207	2674
6:20 PM	7	0	29	0	0	0	0	0	0	74	10	0	0	55	27	0	202	2652
6:25 PM	12	0	37	0	0	0	0	0	0	56	10	0	0	51	17	0	183	2596
6:30 PM	9	0	21	0	0	0	0	0	0	59	12	0	0	61	10	0	172	2515
6:35 PM	5	0	25	0	0	0	0	0	0	76	13	0	0	56	19	0	194	2476
6:40 PM	12	0	25	0	0	0	0	0	0	90	8	0	0	42	17	0	194	2453
6:45 PM	8	0	25	0	0	0	0	0	0	57	8	0	0	59	17	0	174	2380
6:50 PM	4	0	28	0	0	0	0	0	0	45	7	0	0	46	15	0	145	2293
6:55 PM	8	0	29	0	0	0	0	0	0	61	14	0	0	54	24	0	190	2270

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	264	0	460	0	0	0	0	0	0	1000	88	0	0	920	292	0	3024
Heavy Trucks	8	0	24		0	0	0		0	12	4		0	8	4		60
Buses																	
Pedestrians		0				8				0				8			16
Bicycles	0	0	0		0	0	0		0	0	0		0	4	0		4
Scooters																	

Comments:

Report generated on 5/21/2021 10:53 AM

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

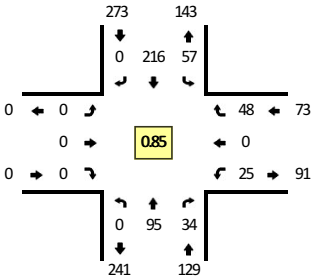
Type of peak hour being reported: User-Defined

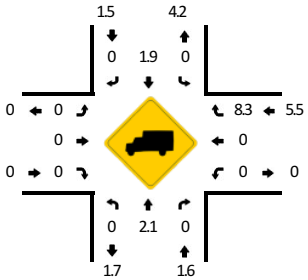
Method for determining peak hour: Total Entering Volume

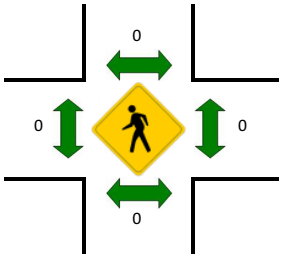
LOCATION: Butteville Rd NE -- Parr Rd NE
CITY/STATE: Woodburn, OR

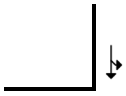
QC JOB #: 15405719
DATE: Wed, Apr 14 2021

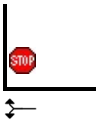
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

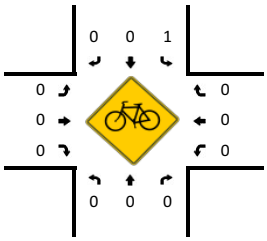


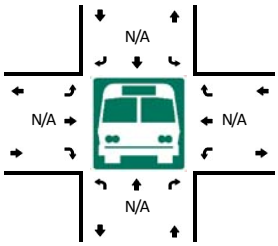


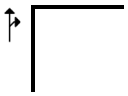


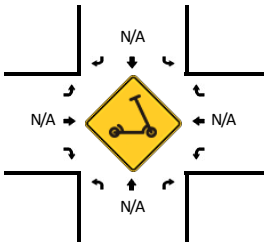












5-Min Count Period Beginning At	Butteville Rd NE (Northbound)				Butteville Rd NE (Southbound)				Parr Rd NE (Eastbound)				Parr Rd NE (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	5	2	0	2	12	0	0	0	0	0	0	2	0	0	0	23	
3:05 PM	0	9	1	0	0	12	0	0	0	0	0	0	2	0	1	0	25	
3:10 PM	0	8	1	0	2	12	0	0	0	0	0	0	0	0	6	0	29	
3:15 PM	0	5	2	0	0	16	0	0	0	0	0	0	0	0	1	0	24	
3:20 PM	0	5	1	0	5	10	0	0	0	0	0	0	3	0	4	0	28	
3:25 PM	0	12	1	0	3	16	0	0	0	0	0	0	0	0	1	0	33	
3:30 PM	0	6	2	0	6	18	0	0	0	0	0	0	2	0	3	0	37	
3:35 PM	0	8	2	1	2	10	0	0	0	0	0	0	0	0	3	0	26	
3:40 PM	0	13	0	0	5	13	0	0	0	0	0	0	0	0	8	0	39	
3:45 PM	0	4	0	0	6	12	0	0	0	0	0	0	2	0	2	0	26	
3:50 PM	0	9	1	0	2	16	0	0	0	0	0	0	0	0	5	0	33	
3:55 PM	0	7	2	0	2	17	0	0	0	0	0	0	3	0	0	0	31	354
4:00 PM	0	10	2	0	2	14	0	0	0	0	0	0	1	0	3	0	32	363
4:05 PM	0	8	2	0	2	9	0	0	0	0	0	0	0	0	4	0	25	363
4:10 PM	0	8	5	0	3	9	0	0	0	0	0	0	3	0	2	0	30	364
4:15 PM	0	14	1	0	7	17	0	0	0	0	0	0	1	0	3	0	43	383
4:20 PM	0	7	2	0	8	15	0	0	0	0	0	0	1	0	1	0	34	389
4:25 PM	0	8	1	0	2	19	0	0	0	0	0	0	1	0	2	0	33	389
4:30 PM	0	11	2	0	4	22	0	0	0	0	0	0	1	0	8	0	48	400
4:35 PM	0	7	4	0	3	14	0	0	0	0	0	0	0	0	5	0	33	407
4:40 PM	0	8	3	0	2	16	0	0	0	0	0	0	1	0	1	0	31	399
4:45 PM	0	6	3	0	6	23	0	0	0	0	0	0	1	0	6	0	45	418
4:50 PM	0	10	3	0	7	12	0	0	0	0	0	0	1	0	4	0	37	422
4:55 PM	0	4	1	0	3	16	0	0	0	0	0	0	3	0	3	0	30	421
5:00 PM	0	10	3	0	2	20	0	0	0	0	0	0	2	0	0	0	37	426
5:05 PM	0	7	4	0	5	14	0	0	0	0	0	0	2	0	5	0	37	438
5:10 PM	0	8	0	0	5	19	0	0	0	0	0	0	3	0	3	0	38	446
5:15 PM	0	7	3	0	6	18	0	0	0	0	0	0	3	0	3	0	40	443
5:20 PM	0	5	6	0	6	20	0	0	0	0	0	0	6	0	5	0	48	457
5:25 PM	0	12	2	0	8	22	0	0	0	0	0	0	2	0	5	0	51	475
5:30 PM	0	9	2	0	5	14	0	0	0	0	0	0	0	0	6	0	36	463
5:35 PM	0	9	1	0	2	17	0	0	0	0	0	0	3	0	5	0	37	467
5:40 PM	0	11	1	0	4	15	0	0	0	0	0	0	4	0	6	0	41	477
5:45 PM	0	4	3	0	6	12	0	0	0	0	0	0	3	0	4	0	32	464
5:50 PM	0	9	3	0	5	13	0	0	0	0	0	0	3	0	2	0	35	462
5:55 PM	0	12	3	0	3	17	0	0	0	0	0	0	2	0	2	0	39	471
6:00 PM	0	8	1	0	5	14	0	0	0	0	0	0	0	0	4	0	32	466
6:05 PM	0	4	2	0	4	8	0	0	0	0	0	0	3	0	5	0	26	455

5-Min Count Period Beginning At	Butteville Rd NE (Northbound)				Butteville Rd NE (Southbound)				Parr Rd NE (Eastbound)				Parr Rd NE (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:10 PM	0	10	2	0	4	11	0	0	0	0	0	0	4	0	4	0	35	452
6:15 PM	0	5	2	0	4	17	0	0	0	0	0	0	1	0	1	0	30	442
6:20 PM	0	10	1	0	6	12	0	0	0	0	0	0	0	0	6	0	35	429
6:25 PM	0	6	2	0	6	16	0	0	0	0	0	0	2	0	3	0	35	413
6:30 PM	0	10	3	0	5	9	0	0	0	0	0	0	3	0	3	0	33	410
6:35 PM	0	10	6	0	3	10	0	0	0	0	0	0	0	0	7	0	36	409
6:40 PM	0	7	4	0	4	12	0	0	0	0	0	0	2	0	3	0	32	400
6:45 PM	0	2	3	0	6	14	0	0	0	0	0	0	1	0	2	0	28	396
6:50 PM	0	13	2	0	8	8	0	0	0	0	0	0	1	0	2	0	34	395
6:55 PM	0	5	9	0	8	7	0	0	0	0	0	0	4	0	1	0	34	390

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	96	44	0	80	240	0	0	0	0	0	0	44	0	52	0	556
Heavy Trucks	0	0	0		0	4	0		0	0	0		0	0	0		4
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 5/21/2021 10:53 AM

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

Appendix C Existing Conditions Operations Worksheets

Intersection	
Int Delay, s/veh	5.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	106	51	59	316	87	132
Future Vol, veh/h	106	51	59	316	87	132
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	12	9	8	5	3	4
Mvmt Flow	125	60	69	372	102	155

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	185	0	665	155
Stage 1	-	-	-	-	155	-
Stage 2	-	-	-	-	510	-
Critical Hdwy	-	-	4.18	-	6.43	6.24
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.272	-	3.527	3.336
Pot Cap-1 Maneuver	-	-	1354	-	424	886
Stage 1	-	-	-	-	871	-
Stage 2	-	-	-	-	601	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1354	-	397	886
Mov Cap-2 Maneuver	-	-	-	-	397	-
Stage 1	-	-	-	-	871	-
Stage 2	-	-	-	-	563	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	15.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	595	-	-	1354	-
HCM Lane V/C Ratio	0.433	-	-	0.051	-
HCM Control Delay (s)	15.6	-	-	7.8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	2.2	-	-	0.2	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	236	0	0	354	11	0	0	0	32	0	19
Future Vol, veh/h	2	236	0	0	354	11	0	0	0	32	0	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	7	0	0	6	0	0	0	0	4	0	0
Mvmt Flow	2	271	0	0	407	13	0	0	0	37	0	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	420	0	0	271	0	0	700	695	271	682	682	407
Stage 1	-	-	-	-	-	-	275	275	-	407	407	-
Stage 2	-	-	-	-	-	-	425	420	-	275	275	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.14	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.14	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.14	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.536	4	3.3
Pot Cap-1 Maneuver	1150	-	-	1304	-	-	357	368	773	361	375	648
Stage 1	-	-	-	-	-	-	736	686	-	617	601	-
Stage 2	-	-	-	-	-	-	611	593	-	727	686	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1150	-	-	1304	-	-	345	367	773	360	374	648
Mov Cap-2 Maneuver	-	-	-	-	-	-	345	367	-	360	374	-
Stage 1	-	-	-	-	-	-	735	685	-	616	601	-
Stage 2	-	-	-	-	-	-	590	593	-	726	685	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	0	14.7
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1150	-	-	1304	-	-	431
HCM Lane V/C Ratio	-	0.002	-	-	-	-	-	0.136
HCM Control Delay (s)	0	8.1	0	-	0	-	-	14.7
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.5

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	27	238	3	17	59	348	21	0	1	28	213	5
Future Volume (vph)	27	238	3	17	59	348	21	0	1	28	213	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%				0%			0%			1%
Total Lost time (s)	4.0	4.5	4.5		4.0	4.5	4.5		4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95	1.00		1.00		0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00		1.00		1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	1.00	0.85		0.85		1.00	0.98
Flt Protected	0.95	1.00	1.00		0.95	1.00	1.00		1.00		0.95	0.96
Satd. Flow (prot)	1662	3107	1488		1352	3137	1417		946		1541	1482
Flt Permitted	0.95	1.00	1.00		0.95	1.00	1.00		1.00		0.95	0.96
Satd. Flow (perm)	1662	3107	1488		1352	3137	1417		946		1541	1482
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	30	264	3	19	66	387	23	0	1	31	237	6
RTOR Reduction (vph)	0	0	2	0	0	0	9	0	30	0	0	5
Lane Group Flow (vph)	30	264	1	0	85	387	14	0	2	0	133	124
Confl. Peds. (#/hr)											5	
Heavy Vehicles (%)	0%	7%	0%	23%	23%	6%	5%	0%	0%	60%	2%	25%
Turn Type	Prot	NA	pt+ov	Prot	Prot	NA	pt+ov	Split	NA		Split	NA
Protected Phases	5	2	2 8	1	1	6	6 4	8	8		4	4
Permitted Phases												
Actuated Green, G (s)	2.7	15.7	17.8		7.3	20.3	31.0		2.1		10.7	10.7
Effective Green, g (s)	2.7	15.7	17.8		7.3	20.3	31.0		2.1		10.7	10.7
Actuated g/C Ratio	0.05	0.30	0.34		0.14	0.39	0.59		0.04		0.20	0.20
Clearance Time (s)	4.0	4.5			4.0	4.5			4.0		4.0	4.0
Vehicle Extension (s)	2.5	4.2			2.5	4.2			2.5		2.5	2.5
Lane Grp Cap (vph)	85	932	506		188	1217	839		37		315	303
v/s Ratio Prot	0.02	c0.08	0.00		c0.06	c0.12	0.01		c0.00		c0.09	0.08
v/s Ratio Perm												
v/c Ratio	0.35	0.28	0.00		0.45	0.32	0.02		0.06		0.42	0.41
Uniform Delay, d1	24.0	14.0	11.4		20.7	11.2	4.4		24.2		18.1	18.1
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00
Incremental Delay, d2	1.8	0.3	0.0		1.3	0.2	0.0		0.5		0.7	0.7
Delay (s)	25.8	14.2	11.4		21.9	11.4	4.4		24.7		18.8	18.7
Level of Service	C	B	B		C	B	A		C		B	B
Approach Delay (s)		15.4				12.9			24.7			18.7
Approach LOS		B				B			C			B

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	52.3	Sum of lost time (s)	16.5
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	17
Future Volume (vph)	17
Ideal Flow (vphpl)	1750
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.90
Adj. Flow (vph)	19
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	213
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	27	238	3	17	59	348	21	0	1	28	213	5
Future Volume (veh/h)	27	238	3	17	59	348	21	0	1	28	213	5
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No				No			No			No
Adj Sat Flow, veh/h/ln	1750	1654	1750		1436	1668	1682	1750	1750	1750	1717	1403
Adj Flow Rate, veh/h	30	264	3		66	387	23	0	1	31	259	0
Peak Hour Factor	0.90	0.90	0.90		0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	7	0		23	6	5	0	0	0	2	25
Cap, veh/h	56	653	370		78	706	885	70	2	61	1303	559
Arrive On Green	0.03	0.21	0.21		0.06	0.22	0.22	0.00	0.04	0.04	0.40	0.00
Sat Flow, veh/h	1667	3143	1483		1368	3169	1425	1667	47	1444	3271	1403
Grp Volume(v), veh/h	30	264	3		66	387	23	0	0	32	259	0
Grp Sat Flow(s),veh/h/ln	1667	1572	1483		1368	1585	1425	1667	0	1490	1636	1403
Q Serve(g_s), s	1.0	4.1	0.1		2.7	6.1	0.3	0.0	0.0	1.2	2.9	0.0
Cycle Q Clear(g_c), s	1.0	4.1	0.1		2.7	6.1	0.3	0.0	0.0	1.2	2.9	0.0
Prop In Lane	1.00		1.00		1.00		1.00	1.00		0.97	1.00	
Lane Grp Cap(c), veh/h	56	653	370		78	706	885	70	0	63	1303	559
V/C Ratio(X)	0.54	0.40	0.01		0.84	0.55	0.03	0.00	0.00	0.51	0.20	0.00
Avail Cap(c_a), veh/h	596	2528	1255		489	2548	1714	893	0	799	2630	1128
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00		1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	26.6	19.2	15.8		26.1	19.3	4.1	0.0	0.0	26.2	11.0	0.0
Incr Delay (d2), s/veh	5.9	0.6	0.0		16.0	1.0	0.0	0.0	0.0	4.7	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.8	2.5	0.1		2.1	3.8	0.4	0.0	0.0	0.9	1.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.6	19.8	15.8		42.1	20.3	4.1	0.0	0.0	31.0	11.1	0.0
LnGrp LOS	C	B	B		D	C	A	A	A	C	B	A
Approach Vol, veh/h		297				476			32			259
Approach Delay, s/veh		21.0				22.5			31.0			11.1
Approach LOS		C				C			C			B

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.2	16.1		26.3	6.4	17.0		6.4
Change Period (Y+Rc), s	4.0	4.5		4.0	4.5	* 4.5		4.0
Max Green Setting (Gmax), s	20.0	45.0		45.0	20.0	* 45		30.0
Max Q Clear Time (g_c+I1), s	4.7	6.1		4.9	3.0	8.1		3.2
Green Ext Time (p_c), s	0.1	2.8		0.7	0.0	4.4		0.1

Intersection Summary	
HCM 6th Ctrl Delay	19.6
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	17
Future Volume (veh/h)	17
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1403
Adj Flow Rate, veh/h	0
Peak Hour Factor	0.90
Percent Heavy Veh, %	25
Cap, veh/h	0
Arrive On Green	0.00
Sat Flow, veh/h	0
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.00
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(I)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(95%),veh/ln	0.0
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	A
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer - Assigned Phs
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	380	116	0	462	366	0	0	0	183	0	108
Future Volume (vph)	0	380	116	0	462	366	0	0	0	183	0	108
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		3%			-4%			0%			5%	
Total Lost time (s)		4.5	4.0		4.5	4.0				4.5		2.5
Lane Util. Factor		0.95	1.00		0.95	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3090	1263		3140	1315				2859		1283
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3090	1263		3140	1315				2859		1283
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	404	123	0	491	389	0	0	0	195	0	115
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	88
Lane Group Flow (vph)	0	404	123	0	491	389	0	0	0	195	0	27
Confl. Peds. (#/hr)						1						1
Heavy Vehicles (%)	0%	6%	16%	0%	8%	13%	0%	0%	0%	10%	0%	13%
Turn Type		NA	Free		NA	Free				Prot		custom
Protected Phases		2			6					4		4 5
Permitted Phases			Free			Free						
Actuated Green, G (s)		79.3	100.0		70.3	100.0				11.7		21.2
Effective Green, g (s)		79.3	100.0		70.3	100.0				11.7		23.2
Actuated g/C Ratio		0.79	1.00		0.70	1.00				0.12		0.23
Clearance Time (s)		4.5			4.5					4.5		
Vehicle Extension (s)		6.0			4.0					2.5		
Lane Grp Cap (vph)		2450	1263		2207	1315				334		297
v/s Ratio Prot		0.13			0.16					c0.07		0.02
v/s Ratio Perm			0.10			c0.30						
v/c Ratio		0.16	0.10		0.22	0.30				0.58		0.09
Uniform Delay, d1		2.5	0.0		5.2	0.0				41.8		30.1
Progression Factor		1.00	1.00		0.73	1.00				1.00		1.00
Incremental Delay, d2		0.1	0.2		0.2	0.6				2.2		0.1
Delay (s)		2.6	0.2		4.0	0.6				44.0		30.2
Level of Service		A	A		A	A				D		C
Approach Delay (s)		2.0			2.5			0.0			38.9	
Approach LOS		A			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	8.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	28.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	380	116	0	462	366	0	0	0	183	0	108
Future Volume (veh/h)	0	380	116	0	462	366	0	0	0	183	0	108
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1619	1483	0	1784	1715				1478	0	1437
Adj Flow Rate, veh/h	0	404	0	0	491	0				195	0	115
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	6	16	0	8	13				10	0	13
Cap, veh/h	0	2437		0	2685					322	0	168
Arrive On Green	0.00	0.79	0.00	0.00	1.00	0.00				0.12	0.00	0.14
Sat Flow, veh/h	0	3158	1257	0	3479	1454				2731	0	1218
Grp Volume(v), veh/h	0	404	0	0	491	0				195	0	115
Grp Sat Flow(s),veh/h/ln	0	1538	1257	0	1695	1454				1365	0	1218
Q Serve(g_s), s	0.0	3.1	0.0	0.0	0.0	0.0				6.8	0.0	9.0
Cycle Q Clear(g_c), s	0.0	3.1	0.0	0.0	0.0	0.0				6.8	0.0	9.0
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2437		0	2685					322	0	168
V/C Ratio(X)	0.00	0.17		0.00	0.18					0.61	0.00	0.68
Avail Cap(c_a), veh/h	0	2437		0	2685					969	0	457
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.96	0.00	0.00	0.92	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	2.5	0.0	0.0	0.0	0.0				41.9	0.0	41.0
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.1	0.0				1.4	0.0	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	1.3	0.0	0.0	0.1	0.0				4.2	0.0	10.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	2.6	0.0	0.0	0.1	0.0				43.3	0.0	44.7
LnGrp LOS	A	A		A	A					D	A	D
Approach Vol, veh/h		404	A		491	A					310	
Approach Delay, s/veh		2.6			0.1						43.8	
Approach LOS		A			A						D	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		83.7		16.3		83.7						
Change Period (Y+Rc), s		4.5		4.5		4.5						
Max Green Setting (Gmax), s		55.5		35.5		35.5						
Max Q Clear Time (g_c+I1), s		5.1		11.0		2.0						
Green Ext Time (p_c), s		7.7		0.8		5.2						

Intersection Summary	
HCM 6th Ctrl Delay	12.2
HCM 6th LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	364	199	0	618	574	210	0	503	0	0	0
Future Volume (vph)	0	364	199	0	618	574	210	0	503	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-4%			3%			6%			0%	
Total Lost time (s)		4.5	4.0		4.5	4.0	4.5	4.5	4.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.86	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)		3111	1415		2951	1407	1445	1284	1331			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)		3111	1415		2951	1407	1445	1284	1331			
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	387	212	0	657	611	223	0	535	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	206	223	0	0	0
Lane Group Flow (vph)	0	387	212	0	657	611	201	73	55	0	0	0
Confl. Peds. (#/hr)			2			1						
Heavy Vehicles (%)	0%	9%	5%	0%	11%	2%	6%	0%	3%	0%	0%	0%
Turn Type		NA	Free		NA	Free	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases			Free			Free			8			
Actuated Green, G (s)		71.1	100.0		71.1	100.0	19.9	19.9	19.9			
Effective Green, g (s)		71.1	100.0		71.1	100.0	19.9	19.9	19.9			
Actuated g/C Ratio		0.71	1.00		0.71	1.00	0.20	0.20	0.20			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		4.0			6.0		2.5	2.5	2.5			
Lane Grp Cap (vph)		2211	1415		2098	1407	287	255	264			
v/s Ratio Prot		0.12			0.22		c0.14	0.06				
v/s Ratio Perm			0.15			c0.43			0.04			
v/c Ratio		0.18	0.15		0.31	0.43	0.70	0.29	0.21			
Uniform Delay, d1		4.8	0.0		5.4	0.0	37.3	34.0	33.5			
Progression Factor		2.20	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.2	0.2		0.4	1.0	7.0	0.5	0.3			
Delay (s)		10.7	0.2		5.8	1.0	44.2	34.5	33.8			
Level of Service		B	A		A	A	D	C	C			
Approach Delay (s)		7.0			3.5			36.8			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	364	199	0	618	574	210	0	503	0	0	0
Future Volume (veh/h)	0	364	199	0	618	574	210	0	503	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1770	1826	0	1551	1674	1473	1555	1514			
Adj Flow Rate, veh/h	0	387	0	0	657	0	149	0	402			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	0	9	5	0	11	2	6	0	3			
Cap, veh/h	0	2434		0	2132		262	0	479			
Arrive On Green	0.00	1.00	0.00	0.00	0.72	0.00	0.19	0.00	0.19			
Sat Flow, veh/h	0	3452	1547	0	3025	1419	1403	0	2566			
Grp Volume(v), veh/h	0	387	0	0	657	0	149	0	402			
Grp Sat Flow(s),veh/h/ln	0	1682	1547	0	1473	1419	1403	0	1283			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	7.9	0.0	9.7	0.0	15.1			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	7.9	0.0	9.7	0.0	15.1			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2434		0	2132		262	0	479			
V/C Ratio(X)	0.00	0.16		0.00	0.31		0.57	0.00	0.84			
Avail Cap(c_a), veh/h	0	2434		0	2132		498	0	911			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.96	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	4.9	0.0	37.0	0.0	39.2			
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.4	0.0	1.4	0.0	3.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	0.1	0.0	0.0	3.8	0.0	6.1	0.0	8.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.1	0.0	0.0	5.3	0.0	38.5	0.0	42.3			
LnGrp LOS	A	A		A	A		D	A	D			
Approach Vol, veh/h		387	A		657	A		551				
Approach Delay, s/veh		0.1			5.3			41.2				
Approach LOS		A			A			D				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		76.8				76.8		23.2				
Change Period (Y+Rc), s		4.5				4.5		4.5				
Max Green Setting (Gmax), s		55.5				55.5		35.5				
Max Q Clear Time (g_c+I1), s		2.0				9.9		17.1				
Green Ext Time (p_c), s		4.2				13.6		1.5				

Intersection Summary												
HCM 6th Ctrl Delay			16.5									
HCM 6th LOS			B									

Notes

User approved volume balancing among the lanes for turning movement.

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

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	1	0	154	117	0
Future Vol, veh/h	1	1	0	154	117	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	1	1	0	208	158	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	366	158	158	0	-	0
Stage 1	158	-	-	-	-	-
Stage 2	208	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	638	893	1434	-	-	-
Stage 1	875	-	-	-	-	-
Stage 2	832	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	638	893	1434	-	-	-
Mov Cap-2 Maneuver	638	-	-	-	-	-
Stage 1	875	-	-	-	-	-
Stage 2	832	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1434	-	744	-	-
HCM Lane V/C Ratio	-	-	0.004	-	-
HCM Control Delay (s)	0	-	9.9	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	17	40	184	18	44	61
Future Vol, veh/h	17	40	184	18	44	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	3	-	-	-3
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	0	1	0	10	7
Mvmt Flow	20	48	219	21	52	73

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	407	230	0	0	240	0
Stage 1	230	-	-	-	-	-
Stage 2	177	-	-	-	-	-
Critical Hdwy	7	6.5	-	-	4.2	-
Critical Hdwy Stg 1	6	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.29	-
Pot Cap-1 Maneuver	564	799	-	-	1281	-
Stage 1	782	-	-	-	-	-
Stage 2	834	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	540	799	-	-	1281	-
Mov Cap-2 Maneuver	540	-	-	-	-	-
Stage 1	782	-	-	-	-	-
Stage 2	799	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.7	0	3.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	699	1281	-
HCM Lane V/C Ratio	-	-	0.097	0.041	-
HCM Control Delay (s)	-	-	10.7	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection	
Int Delay, s/veh	5.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	139	54	94	190	86	111
Future Vol, veh/h	139	54	94	190	86	111
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	10	2	2	10	4	2
Mvmt Flow	143	56	97	196	89	114

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	199	0	561	171
Stage 1	-	-	-	-	171	-
Stage 2	-	-	-	-	390	-
Critical Hdwy	-	-	4.12	-	6.44	6.22
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.218	-	3.536	3.318
Pot Cap-1 Maneuver	-	-	1373	-	485	873
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	680	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1373	-	447	873
Mov Cap-2 Maneuver	-	-	-	-	447	-
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	626	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.6	13.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	617	-	-	1373	-
HCM Lane V/C Ratio	0.329	-	-	0.071	-
HCM Control Delay (s)	13.7	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.4	-	-	0.2	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	237	1	1	252	19	0	0	1	32	1	32
Future Vol, veh/h	12	237	1	1	252	19	0	0	1	32	1	32
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	6	0	0	10	0	0	0	0	5	0	5
Mvmt Flow	13	255	1	1	271	20	0	0	1	34	1	34

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	291	0	0	256	0	0	583	575	256	555	555	271
Stage 1	-	-	-	-	-	-	282	282	-	273	273	-
Stage 2	-	-	-	-	-	-	301	293	-	282	282	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.15	6.5	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.15	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.15	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.545	4	3.345
Pot Cap-1 Maneuver	1282	-	-	1321	-	-	427	431	788	438	443	761
Stage 1	-	-	-	-	-	-	729	681	-	726	688	-
Stage 2	-	-	-	-	-	-	712	674	-	718	681	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1282	-	-	1321	-	-	403	425	788	433	437	761
Mov Cap-2 Maneuver	-	-	-	-	-	-	403	425	-	433	437	-
Stage 1	-	-	-	-	-	-	720	673	-	717	687	-
Stage 2	-	-	-	-	-	-	678	673	-	708	673	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	9.6	12.5
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	788	1282	-	-	1321	-	-	550
HCM Lane V/C Ratio	0.001	0.01	-	-	0.001	-	-	0.127
HCM Control Delay (s)	9.6	7.8	0	-	7.7	0	-	12.5
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.4

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	20	241	9	17	63	249	36	1	1	31	262	2
Future Volume (vph)	20	241	9	17	63	249	36	1	1	31	262	2
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%				0%			0%			1%
Total Lost time (s)	4.0	4.5	4.5		4.0	4.5	4.5	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95	1.00	1.00	1.00		0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.85		1.00	0.98
Flt Protected	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (prot)	1662	3107	1488		1222	3167	1365	1662	968		1541	1505
Flt Permitted	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (perm)	1662	3107	1488		1222	3167	1365	1662	968		1541	1505
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	22	265	10	19	69	274	40	1	1	34	288	2
RTOR Reduction (vph)	0	0	7	0	0	0	16	0	32	0	0	5
Lane Group Flow (vph)	22	265	3	0	88	274	24	1	3	0	158	151
Confl. Peds. (#/hr)											1	
Heavy Vehicles (%)	0%	7%	0%	36%	36%	5%	9%	0%	0%	56%	2%	50%
Turn Type	Prot	NA	pt+ov	Prot	Prot	NA	pt+ov	Split	NA		Split	NA
Protected Phases	5	2	2 8	1	1	6	6 4	8	8		4	4
Permitted Phases												
Actuated Green, G (s)	2.1	15.8	19.1		7.8	21.5	33.8	3.3	3.3		12.3	12.3
Effective Green, g (s)	2.1	15.8	19.1		7.8	21.5	33.8	3.3	3.3		12.3	12.3
Actuated g/C Ratio	0.04	0.28	0.34		0.14	0.39	0.61	0.06	0.06		0.22	0.22
Clearance Time (s)	4.0	4.5			4.0	4.5		4.0	4.0		4.0	4.0
Vehicle Extension (s)	2.5	4.2			2.5	4.2		2.5	2.5		2.5	2.5
Lane Grp Cap (vph)	62	881	510		171	1222	828	98	57		340	332
v/s Ratio Prot	0.01	c0.09	0.00		c0.07	0.09	0.02	0.00	c0.00		c0.10	0.10
v/s Ratio Perm												
v/c Ratio	0.35	0.30	0.01		0.51	0.22	0.03	0.01	0.05		0.46	0.46
Uniform Delay, d1	26.1	15.6	12.1		22.2	11.5	4.4	24.7	24.7		18.8	18.8
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.5	0.3	0.0		1.9	0.1	0.0	0.0	0.3		0.7	0.7
Delay (s)	28.7	15.9	12.1		24.1	11.6	4.4	24.7	25.0		19.6	19.5
Level of Service	C	B	B		C	B	A	C	C		B	B
Approach Delay (s)		16.7				13.7			25.0			19.5
Approach LOS		B				B			C			B

Intersection Summary			
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	55.7	Sum of lost time (s)	16.5
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	22
Future Volume (vph)	22
Ideal Flow (vphpl)	1750
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.91
Adj. Flow (vph)	24
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Heavy Vehicles (%)	5%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

HCM 6th Signalized Intersection Summary
3: Woodland Ave & OR 219

05/21/2021

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	20	241	9	17	63	249	36	1	1	31	262	2
Future Volume (veh/h)	20	241	9	17	63	249	36	1	1	31	262	2
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No				No			No			No
Adj Sat Flow, veh/h/ln	1750	1654	1750		1259	1682	1627	1750	1750	1750	1717	1062
Adj Flow Rate, veh/h	22	265	10		69	274	40	1	1	34	312	0
Peak Hour Factor	0.91	0.91	0.91		0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	7	0		36	5	9	0	0	0	2	50
Cap, veh/h	93	730	420		84	742	552	85	2	73	550	179
Arrive On Green	0.06	0.23	0.23		0.07	0.23	0.23	0.05	0.05	0.05	0.17	0.00
Sat Flow, veh/h	1667	3143	1483		1199	3195	1379	1667	43	1447	3271	1062
Grp Volume(v), veh/h	22	265	10		69	274	40	1	0	35	312	0
Grp Sat Flow(s),veh/h/ln	1667	1572	1483		1199	1598	1379	1667	0	1490	1636	1062
Q Serve(g_s), s	0.4	2.4	0.2		2.0	2.5	0.6	0.0	0.0	0.8	3.0	0.0
Cycle Q Clear(g_c), s	0.4	2.4	0.2		2.0	2.5	0.6	0.0	0.0	0.8	3.0	0.0
Prop In Lane	1.00		1.00		1.00		1.00	1.00		0.97	1.00	
Lane Grp Cap(c), veh/h	93	730	420		84	742	552	85	0	76	550	179
V/C Ratio(X)	0.24	0.36	0.02		0.82	0.37	0.07	0.01	0.00	0.46	0.57	0.00
Avail Cap(c_a), veh/h	967	4105	2012		696	4172	2033	1451	0	1297	4271	1387
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	15.6	11.1	8.9		15.8	11.1	6.4	15.5	0.0	15.9	13.2	0.0
Incr Delay (d2), s/veh	1.0	0.5	0.0		13.5	0.5	0.1	0.0	0.0	3.2	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	1.2	0.1		1.4	1.3	0.4	0.0	0.0	0.5	1.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.5	11.6	9.0		29.3	11.6	6.5	15.6	0.0	19.1	13.9	0.0
LnGrp LOS	B	B	A		C	B	A	B	A	B	B	A
Approach Vol, veh/h		297				383			36			312
Approach Delay, s/veh		11.8				14.2			19.0			13.9
Approach LOS		B				B			B			B

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.4	12.5		9.8	6.4	12.5		5.7
Change Period (Y+Rc), s	4.0	4.5		4.0	4.5	* 4.5		4.0
Max Green Setting (Gmax), s	20.0	45.0		45.0	20.0	* 45		30.0
Max Q Clear Time (g_c+I1), s	4.0	4.4		5.0	2.4	4.5		2.8
Green Ext Time (p_c), s	0.1	2.9		0.8	0.0	3.2		0.1

Intersection Summary	
HCM 6th Ctrl Delay	13.6
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	413	138	0	371	414	0	0	0	239	0	120
Future Volume (vph)	0	413	138	0	371	414	0	0	0	239	0	120
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		3%			-4%			0%			5%	
Total Lost time (s)		4.5	4.0		4.5	4.0				4.5		2.5
Lane Util. Factor		0.95	1.00		0.95	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3090	1308		3055	1292				2859		1261
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3090	1308		3055	1292				2859		1261
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	454	152	0	408	455	0	0	0	263	0	132
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	98
Lane Group Flow (vph)	0	454	152	0	408	455	0	0	0	263	0	34
Confl. Peds. (#/hr)						1						1
Heavy Vehicles (%)	0%	6%	12%	0%	11%	15%	0%	0%	0%	10%	0%	15%
Turn Type		NA	Free		NA	Free				Prot		custom
Protected Phases		2			6					4		4 5
Permitted Phases			Free			Free						
Actuated Green, G (s)		76.9	100.0		67.9	100.0				14.1		23.6
Effective Green, g (s)		76.9	100.0		67.9	100.0				14.1		25.6
Actuated g/C Ratio		0.77	1.00		0.68	1.00				0.14		0.26
Clearance Time (s)		4.5			4.5					4.5		
Vehicle Extension (s)		6.0			4.0					2.5		
Lane Grp Cap (vph)		2376	1308		2074	1292				403		322
v/s Ratio Prot		0.15			0.13					c0.09		0.03
v/s Ratio Perm			0.12			c0.35						
v/c Ratio		0.19	0.12		0.20	0.35				0.65		0.10
Uniform Delay, d1		3.1	0.0		5.9	0.0				40.6		28.4
Progression Factor		1.00	1.00		0.80	1.00				1.00		1.00
Incremental Delay, d2		0.2	0.2		0.2	0.7				3.4		0.1
Delay (s)		3.3	0.2		5.0	0.7				44.0		28.5
Level of Service		A	A		A	A				D		C
Approach Delay (s)		2.5			2.7			0.0			38.8	
Approach LOS		A			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	27.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	413	138	0	371	414	0	0	0	239	0	120
Future Volume (veh/h)	0	413	138	0	371	414	0	0	0	239	0	120
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1619	1537	0	1743	1688				1478	0	1410
Adj Flow Rate, veh/h	0	454	0	0	408	0				263	0	132
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91				0.91	0.91	0.91
Percent Heavy Veh, %	0	6	12	0	11	15				10	0	15
Cap, veh/h	0	2383		0	2565					369	0	186
Arrive On Green	0.00	0.77	0.00	0.00	1.00	0.00				0.14	0.00	0.16
Sat Flow, veh/h	0	3158	1303	0	3398	1430				2731	0	1195
Grp Volume(v), veh/h	0	454	0	0	408	0				263	0	132
Grp Sat Flow(s),veh/h/ln	0	1538	1303	0	1656	1430				1365	0	1195
Q Serve(g_s), s	0.0	3.9	0.0	0.0	0.0	0.0				9.2	0.0	10.5
Cycle Q Clear(g_c), s	0.0	3.9	0.0	0.0	0.0	0.0				9.2	0.0	10.5
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2383		0	2565					369	0	186
V/C Ratio(X)	0.00	0.19		0.00	0.16					0.71	0.00	0.71
Avail Cap(c_a), veh/h	0	2383		0	2565					969	0	448
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.67	1.67				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.94	0.00	0.00	0.94	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	3.0	0.0	0.0	0.0	0.0				41.4	0.0	40.1
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.1	0.0				1.9	0.0	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	1.7	0.0	0.0	0.1	0.0				5.7	0.0	11.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	3.1	0.0	0.0	0.1	0.0				43.3	0.0	43.8
LnGrp LOS	A	A		A	A					D	A	D
Approach Vol, veh/h		454	A		408	A					395	
Approach Delay, s/veh		3.1			0.1						43.5	
Approach LOS		A			A						D	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		82.0		18.0		82.0						
Change Period (Y+Rc), s		4.5		4.5		4.5						
Max Green Setting (Gmax), s		55.5		35.5		35.5						
Max Q Clear Time (g_c+I1), s		5.9		12.5		2.0						
Green Ext Time (p_c), s		8.8		1.0		4.2						

Intersection Summary	
HCM 6th Ctrl Delay	14.8
HCM 6th LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	481	171	0	634	548	151	0	507	0	0	0
Future Volume (vph)	0	481	171	0	634	548	151	0	507	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-4%			3%			6%			0%	
Total Lost time (s)		4.5	4.0		4.5	4.0	4.5	4.5	4.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	1.00		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.86	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)		3111	1431		2873	1407	1405	1280	1331			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)		3111	1431		2873	1407	1405	1280	1331			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	506	180	0	667	577	159	0	534	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	221	229	0	0	0
Lane Group Flow (vph)	0	506	180	0	667	577	143	57	43	0	0	0
Confl. Peds. (#/hr)						1						
Heavy Vehicles (%)	0%	9%	6%	0%	14%	2%	9%	0%	3%	0%	0%	0%
Turn Type		NA	Free		NA	Free	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases			Free			Free			8			
Actuated Green, G (s)		75.2	100.0		75.2	100.0	15.8	15.8	15.8			
Effective Green, g (s)		75.2	100.0		75.2	100.0	15.8	15.8	15.8			
Actuated g/C Ratio		0.75	1.00		0.75	1.00	0.16	0.16	0.16			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		4.0			6.0		2.5	2.5	2.5			
Lane Grp Cap (vph)		2339	1431		2160	1407	221	202	210			
v/s Ratio Prot		0.16			0.23		c0.10	0.04				
v/s Ratio Perm			0.13			c0.41			0.03			
v/c Ratio		0.22	0.13		0.31	0.41	0.65	0.28	0.20			
Uniform Delay, d1		3.7	0.0		4.0	0.0	39.5	37.1	36.6			
Progression Factor		2.44	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.2	0.2		0.4	0.9	5.7	0.6	0.4			
Delay (s)		9.2	0.2		4.4	0.9	45.1	37.7	37.0			
Level of Service		A	A		A	A	D	D	D			
Approach Delay (s)		6.8			2.8			38.9			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	481	171	0	634	548	151	0	507	0	0	0
Future Volume (veh/h)	0	481	171	0	634	548	151	0	507	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1770	1812	0	1510	1674	1432	1555	1514			
Adj Flow Rate, veh/h	0	506	0	0	667	0	106	0	380			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	0	9	6	0	14	2	9	0	3			
Cap, veh/h	0	2466		0	2103		241	0	454			
Arrive On Green	0.00	1.00	0.00	0.00	0.73	0.00	0.18	0.00	0.18			
Sat Flow, veh/h	0	3452	1536	0	2945	1419	1364	0	2566			
Grp Volume(v), veh/h	0	506	0	0	667	0	106	0	380			
Grp Sat Flow(s),veh/h/ln	0	1682	1536	0	1435	1419	1364	0	1283			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	8.1	0.0	6.9	0.0	14.3			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	8.1	0.0	6.9	0.0	14.3			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2466		0	2103		241	0	454			
V/C Ratio(X)	0.00	0.21		0.00	0.32		0.44	0.00	0.84			
Avail Cap(c_a), veh/h	0	2466		0	2103		484	0	911			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.94	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	4.6	0.0	36.7	0.0	39.8			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.4	0.0	0.9	0.0	3.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	0.1	0.0	0.0	3.7	0.0	4.2	0.0	8.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.2	0.0	0.0	5.0	0.0	37.7	0.0	42.9			
LnGrp LOS	A	A		A	A		D	A	D			
Approach Vol, veh/h		506	A		667	A		486				
Approach Delay, s/veh		0.2			5.0			41.8				
Approach LOS		A			A			D				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		77.8				77.8		22.2				
Change Period (Y+Rc), s		4.5				4.5		4.5				
Max Green Setting (Gmax), s		55.5				55.5		35.5				
Max Q Clear Time (g_c+I1), s		2.0				10.1		16.3				
Green Ext Time (p_c), s		5.7				13.9		1.4				

Intersection Summary	
HCM 6th Ctrl Delay	14.3
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

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

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	1	0	154	117	0
Future Vol, veh/h	1	1	0	154	117	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	1	1	0	208	158	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	366	158	158	0	-	0
Stage 1	158	-	-	-	-	-
Stage 2	208	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	638	893	1434	-	-	-
Stage 1	875	-	-	-	-	-
Stage 2	832	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	638	893	1434	-	-	-
Mov Cap-2 Maneuver	638	-	-	-	-	-
Stage 1	875	-	-	-	-	-
Stage 2	832	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1434	-	744	-	-
HCM Lane V/C Ratio	-	-	0.004	-	-
HCM Control Delay (s)	0	-	9.9	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	25	166	28	31	78
Future Vol, veh/h	19	25	166	28	31	78
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	3	-	-	-3
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	6	0	6	0	4	3
Mvmt Flow	20	27	177	30	33	83

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	341	192	0	0	207	0
Stage 1	192	-	-	-	-	-
Stage 2	149	-	-	-	-	-
Critical Hdwy	7.06	6.5	-	-	4.14	-
Critical Hdwy Stg 1	6.06	-	-	-	-	-
Critical Hdwy Stg 2	6.06	-	-	-	-	-
Follow-up Hdwy	3.554	3.3	-	-	2.236	-
Pot Cap-1 Maneuver	611	841	-	-	1352	-
Stage 1	805	-	-	-	-	-
Stage 2	848	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	595	841	-	-	1352	-
Mov Cap-2 Maneuver	595	-	-	-	-	-
Stage 1	805	-	-	-	-	-
Stage 2	826	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	2.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	714	1352	-
HCM Lane V/C Ratio	-	-	0.066	0.024	-
HCM Control Delay (s)	-	-	10.4	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	6.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	223	74	177	142	50	128
Future Vol, veh/h	223	74	177	142	50	128
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	3	1	1	5	9	3
Mvmt Flow	269	89	213	171	60	154

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	358	0	911	314
Stage 1	-	-	-	-	314	-
Stage 2	-	-	-	-	597	-
Critical Hdwy	-	-	4.11	-	6.49	6.23
Critical Hdwy Stg 1	-	-	-	-	5.49	-
Critical Hdwy Stg 2	-	-	-	-	5.49	-
Follow-up Hdwy	-	-	2.209	-	3.581	3.327
Pot Cap-1 Maneuver	-	-	1206	-	296	724
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	536	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1206	-	238	724
Mov Cap-2 Maneuver	-	-	-	-	238	-
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	431	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.8	19.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	460	-	-	1206	-
HCM Lane V/C Ratio	0.466	-	-	0.177	-
HCM Control Delay (s)	19.5	-	-	8.6	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	2.4	-	-	0.6	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	36	315	0	1	301	54	0	2	2	42	0	18
Future Vol, veh/h	36	315	0	1	301	54	0	2	2	42	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	2	0	0	2	3	0	0	0	0	0	0
Mvmt Flow	42	371	0	1	354	64	0	2	2	49	0	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	418	0	0	371	0	0	854	875	371	813	811	354
Stage 1	-	-	-	-	-	-	455	455	-	356	356	-
Stage 2	-	-	-	-	-	-	399	420	-	457	455	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1152	-	-	1199	-	-	281	290	679	299	316	694
Stage 1	-	-	-	-	-	-	589	572	-	666	633	-
Stage 2	-	-	-	-	-	-	631	593	-	587	572	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1152	-	-	1199	-	-	263	276	679	286	301	694
Mov Cap-2 Maneuver	-	-	-	-	-	-	263	276	-	286	301	-
Stage 1	-	-	-	-	-	-	562	546	-	635	632	-
Stage 2	-	-	-	-	-	-	611	592	-	556	546	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0	14.3	18
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	392	1152	-	-	1199	-	-	347
HCM Lane V/C Ratio	0.012	0.037	-	-	0.001	-	-	0.203
HCM Control Delay (s)	14.3	8.2	0	-	8	0	-	18
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.8

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	55	302	2	22	20	302	147	3	2	36	575	1
Future Volume (vph)	55	302	2	22	20	302	147	3	2	36	575	1
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%				0%			0%			1%
Total Lost time (s)	4.0	4.5	4.5		4.0	4.5	4.5	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95	1.00	1.00	1.00		0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.86		1.00	0.98
Flt Protected	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (prot)	1662	3228	1488		1108	3197	1458	1662	1239		1541	1524
Flt Permitted	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (perm)	1662	3228	1488		1108	3197	1458	1662	1239		1541	1524
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	65	355	2	26	24	355	173	4	2	42	676	1
RTOR Reduction (vph)	0	0	1	0	0	0	65	0	40	0	0	4
Lane Group Flow (vph)	65	355	1	0	50	355	108	4	4	0	372	361
Confl. Peds. (#/hr)											1	
Heavy Vehicles (%)	0%	3%	0%	50%	50%	4%	2%	0%	0%	22%	2%	0%
Turn Type	Prot	NA	pt+ov	Prot	Prot	NA	pt+ov	Split	NA		Split	NA
Protected Phases	5	2	2 8	1	1	6	6 4	8	8		4	4
Permitted Phases												
Actuated Green, G (s)	7.0	17.3	20.7		7.3	17.6	44.2	3.4	3.4		26.6	26.6
Effective Green, g (s)	7.0	17.3	20.7		7.3	17.6	44.2	3.4	3.4		26.6	26.6
Actuated g/C Ratio	0.10	0.24	0.29		0.10	0.25	0.62	0.05	0.05		0.37	0.37
Clearance Time (s)	4.0	4.5			4.0	4.5		4.0	4.0		4.0	4.0
Vehicle Extension (s)	2.5	4.2			2.5	4.2		2.5	2.5		2.5	2.5
Lane Grp Cap (vph)	163	785	433		113	791	906	79	59		576	570
v/s Ratio Prot	0.04	c0.11	0.00		0.05	c0.11	0.07	0.00	c0.00		c0.24	0.24
v/s Ratio Perm												
v/c Ratio	0.40	0.45	0.00		0.44	0.45	0.12	0.05	0.07		0.65	0.63
Uniform Delay, d1	30.1	22.9	17.9		30.0	22.6	5.5	32.3	32.3		18.4	18.3
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.2	0.6	0.0		2.0	0.6	0.1	0.2	0.4		2.2	2.0
Delay (s)	31.2	23.5	17.9		32.0	23.3	5.6	32.5	32.7		20.6	20.3
Level of Service	C	C	B		C	C	A	C	C		C	C
Approach Delay (s)		24.7				18.7			32.7			20.4
Approach LOS		C				B			C			C

Intersection Summary			
HCM 2000 Control Delay	21.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	71.1	Sum of lost time (s)	16.5
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	51
Future Volume (vph)	51
Ideal Flow (vphpl)	1750
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.85
Adj. Flow (vph)	60
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

HCM 6th Signalized Intersection Summary
3: Woodland Ave & OR 219

05/21/2021

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	55	302	2	22	20	302	147	3	2	36	575	1
Future Volume (veh/h)	55	302	2	22	20	302	147	3	2	36	575	1
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No				No			No			No
Adj Sat Flow, veh/h/ln	1750	1709	1750		1068	1695	1723	1750	1750	1750	1717	1745
Adj Flow Rate, veh/h	65	355	2		24	355	173	4	2	42	733	0
Peak Hour Factor	0.85	0.85	0.85		0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	0	3	0		50	4	2	0	0	0	2	0
Cap, veh/h	100	915	505		29	772	777	98	4	84	955	510
Arrive On Green	0.06	0.28	0.28		0.03	0.24	0.24	0.06	0.06	0.06	0.29	0.00
Sat Flow, veh/h	1667	3247	1483		1017	3221	1460	1667	68	1426	3271	1745
Grp Volume(v), veh/h	65	355	2		24	355	173	4	0	44	733	0
Grp Sat Flow(s),veh/h/ln	1667	1624	1483		1017	1611	1460	1667	0	1493	1636	1745
Q Serve(g_s), s	1.9	4.3	0.0		1.1	4.6	3.1	0.1	0.0	1.4	10.0	0.0
Cycle Q Clear(g_c), s	1.9	4.3	0.0		1.1	4.6	3.1	0.1	0.0	1.4	10.0	0.0
Prop In Lane	1.00		1.00		1.00		1.00	1.00		0.95	1.00	
Lane Grp Cap(c), veh/h	100	915	505		29	772	777	98	0	88	955	510
V/C Ratio(X)	0.65	0.39	0.00		0.83	0.46	0.22	0.04	0.00	0.50	0.77	0.00
Avail Cap(c_a), veh/h	685	3001	1458		418	2978	1776	1027	0	920	3024	1613
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	22.4	14.1	10.6		23.5	15.8	6.1	21.6	0.0	22.2	15.7	0.0
Incr Delay (d2), s/veh	5.2	0.4	0.0		33.7	0.7	0.2	0.1	0.0	3.2	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.5	2.5	0.0		0.9	2.8	2.7	0.1	0.0	0.9	5.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.5	14.5	10.6		57.2	16.5	6.3	21.7	0.0	25.5	16.7	0.0
LnGrp LOS	C	B	B		E	B	A	C	A	C	B	A
Approach Vol, veh/h		422				552			48			733
Approach Delay, s/veh		16.5				15.0			25.2			16.7
Approach LOS		B				B			C			B

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.4	18.2		18.2	7.4	16.2		6.9
Change Period (Y+Rc), s	4.0	4.5		4.0	4.5	* 4.5		4.0
Max Green Setting (Gmax), s	20.0	45.0		45.0	20.0	* 45		30.0
Max Q Clear Time (g_c+I1), s	3.1	6.3		12.0	3.9	6.6		3.4
Green Ext Time (p_c), s	0.0	3.9		2.2	0.1	5.1		0.2

Intersection Summary	
HCM 6th Ctrl Delay	16.4
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	685	250	0	640	458	0	0	0	521	0	254
Future Volume (vph)	0	685	250	0	640	458	0	0	0	521	0	254
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		3%			-4%			0%			5%	
Total Lost time (s)		4.5	4.0		4.5	4.0				4.5		2.5
Lane Util. Factor		0.95	1.00		0.95	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3180	1409		3325	1429				3083		1395
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3180	1409		3325	1429				3083		1395
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	770	281	0	719	515	0	0	0	585	0	285
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	47
Lane Group Flow (vph)	0	770	281	0	719	515	0	0	0	585	0	238
Confl. Peds. (#/hr)						1						1
Heavy Vehicles (%)	0%	3%	4%	0%	2%	4%	0%	0%	0%	2%	0%	4%
Turn Type		NA	Free		NA	Free				Prot		custom
Protected Phases		2			6					4		4 5
Permitted Phases			Free			Free						
Actuated Green, G (s)		66.9	100.0		57.5	100.0				24.1		34.0
Effective Green, g (s)		66.9	100.0		57.5	100.0				24.1		36.0
Actuated g/C Ratio		0.67	1.00		0.58	1.00				0.24		0.36
Clearance Time (s)		4.5			4.5					4.5		
Vehicle Extension (s)		6.0			4.0					2.5		
Lane Grp Cap (vph)		2127	1409		1911	1429				743		502
v/s Ratio Prot		0.24			0.22					c0.19		c0.17
v/s Ratio Perm			0.20			c0.36						
v/c Ratio		0.36	0.20		0.38	0.36				0.79		0.47
Uniform Delay, d1		7.2	0.0		11.5	0.0				35.5		24.7
Progression Factor		1.00	1.00		0.78	1.00				1.00		1.00
Incremental Delay, d2		0.5	0.3		0.5	0.7				5.3		0.5
Delay (s)		7.7	0.3		9.5	0.7				40.9		25.2
Level of Service		A	A		A	A				D		C
Approach Delay (s)		5.7			5.8			0.0			35.8	
Approach LOS		A			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	685	250	0	640	458	0	0	0	521	0	254
Future Volume (veh/h)	0	685	250	0	640	458	0	0	0	521	0	254
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1660	1647	0	1867	1840				1587	0	1560
Adj Flow Rate, veh/h	0	770	0	0	719	0				585	0	173
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89				0.89	0.89	0.89
Percent Heavy Veh, %	0	3	4	0	2	4				2	0	4
Cap, veh/h	0	2142		0	2409					677	0	332
Arrive On Green	0.00	0.68	0.00	0.00	1.00	0.00				0.23	0.00	0.25
Sat Flow, veh/h	0	3237	1395	0	3641	1559				2932	0	1322
Grp Volume(v), veh/h	0	770	0	0	719	0				585	0	173
Grp Sat Flow(s),veh/h/ln	0	1577	1395	0	1774	1559				1466	0	1322
Q Serve(g_s), s	0.0	10.4	0.0	0.0	0.0	0.0				19.2	0.0	11.3
Cycle Q Clear(g_c), s	0.0	10.4	0.0	0.0	0.0	0.0				19.2	0.0	11.3
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2142		0	2409					677	0	332
V/C Ratio(X)	0.00	0.36		0.00	0.30					0.86	0.00	0.52
Avail Cap(c_a), veh/h	0	2142		0	2409					1041	0	496
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.83	0.00	0.00	0.88	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	6.8	0.0	0.0	0.0	0.0				36.9	0.0	32.3
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.3	0.0				4.2	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	5.8	0.0	0.0	0.2	0.0				11.5	0.0	13.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	7.2	0.0	0.0	0.3	0.0				41.1	0.0	33.2
LnGrp LOS	A	A		A	A					D	A	C
Approach Vol, veh/h		770	A		719	A					758	
Approach Delay, s/veh		7.2			0.3						39.3	
Approach LOS		A			A						D	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		72.4		27.6		72.4
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		55.5		35.5		35.5
Max Q Clear Time (g_c+I1), s		12.4		21.2		2.0
Green Ext Time (p_c), s		16.2		1.9		8.1

Intersection Summary	
HCM 6th Ctrl Delay	15.8
HCM 6th LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1027	179	0	919	254	179	0	392	0	0	0
Future Volume (vph)	0	1027	179	0	919	254	179	0	392	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-4%			3%			6%			0%	
Total Lost time (s)		4.5	4.0		4.5	4.0	4.5	4.5	4.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.86	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)		3325	1401		3180	1393	1487	1278	1318			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)		3325	1401		3180	1393	1487	1278	1318			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1116	195	0	999	276	195	0	426	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	60	60	0	0	0
Lane Group Flow (vph)	0	1116	195	0	999	276	175	164	162	0	0	0
Confl. Peds. (#/hr)			2			1						
Heavy Vehicles (%)	0%	2%	6%	0%	3%	3%	3%	0%	4%	0%	0%	0%
Turn Type		NA	Free		NA	Free	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases			Free			Free			8			
Actuated Green, G (s)		72.6	100.0		72.6	100.0	18.4	18.4	18.4			
Effective Green, g (s)		72.6	100.0		72.6	100.0	18.4	18.4	18.4			
Actuated g/C Ratio		0.73	1.00		0.73	1.00	0.18	0.18	0.18			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		4.0			6.0		2.5	2.5	2.5			
Lane Grp Cap (vph)		2413	1401		2308	1393	273	235	242			
v/s Ratio Prot		c0.34			0.31		0.12	c0.13				
v/s Ratio Perm			0.14			0.20			0.12			
v/c Ratio		0.46	0.14		0.43	0.20	0.64	0.70	0.67			
Uniform Delay, d1		5.7	0.0		5.5	0.0	37.7	38.2	38.0			
Progression Factor		2.05	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.6	0.2		0.6	0.3	4.5	8.0	6.1			
Delay (s)		12.2	0.2		6.1	0.3	42.2	46.2	44.1			
Level of Service		B	A		A	A	D	D	D			
Approach Delay (s)		10.4			4.8			44.3			0.0	
Approach LOS		B			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1027	179	0	919	254	179	0	392	0	0	0
Future Volume (veh/h)	0	1027	179	0	919	254	179	0	392	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1867	1812	0	1660	1660	1514	1555	1500			
Adj Flow Rate, veh/h	0	1116	0	0	999	0	130	0	387			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	6	0	3	3	3	0	4			
Cap, veh/h	0	2585		0	2298		262	0	461			
Arrive On Green	0.00	1.00	0.00	0.00	0.73	0.00	0.18	0.00	0.18			
Sat Flow, veh/h	0	3641	1536	0	3237	1407	1442	0	2543			
Grp Volume(v), veh/h	0	1116	0	0	999	0	130	0	387			
Grp Sat Flow(s),veh/h/ln	0	1774	1536	0	1577	1407	1442	0	1271			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	12.6	0.0	8.1	0.0	14.7			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	12.6	0.0	8.1	0.0	14.7			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2585		0	2298		262	0	461			
V/C Ratio(X)	0.00	0.43		0.00	0.43		0.50	0.00	0.84			
Avail Cap(c_a), veh/h	0	2585		0	2298		512	0	903			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.82	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	5.4	0.0	36.8	0.0	39.5			
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.6	0.0	1.1	0.0	3.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	0.3	0.0	0.0	6.5	0.0	5.2	0.0	8.3			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.4	0.0	0.0	6.0	0.0	37.9	0.0	42.6			
LnGrp LOS	A	A		A	A		D	A	D			
Approach Vol, veh/h		1116	A		999	A		517				
Approach Delay, s/veh		0.4			6.0			41.5				
Approach LOS		A			A			D				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		77.4				77.4		22.6				
Change Period (Y+Rc), s		4.5				4.5		4.5				
Max Green Setting (Gmax), s		55.5				55.5		35.5				
Max Q Clear Time (g_c+I1), s		2.0				14.6		16.7				
Green Ext Time (p_c), s		16.7				21.7		1.4				

Intersection Summary	
HCM 6th Ctrl Delay	10.6
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

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

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	3	4	174	246	5
Future Vol, veh/h	4	3	4	174	246	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	1	3	0
Mvmt Flow	5	4	5	205	289	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	507	292	295	0	-	0
Stage 1	292	-	-	-	-	-
Stage 2	215	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	529	752	1278	-	-	-
Stage 1	762	-	-	-	-	-
Stage 2	826	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	527	752	1278	-	-	-
Mov Cap-2 Maneuver	527	-	-	-	-	-
Stage 1	759	-	-	-	-	-
Stage 2	826	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1278	-	605	-	-
HCM Lane V/C Ratio	0.004	-	0.014	-	-
HCM Control Delay (s)	7.8	0	11	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	2.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	28	54	124	26	61	188
Future Vol, veh/h	28	54	124	26	61	188
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	3	-	-	-3
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	4	4	1	0	2	2
Mvmt Flow	31	59	136	29	67	207

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	492	151	0	0	165	0
Stage 1	151	-	-	-	-	-
Stage 2	341	-	-	-	-	-
Critical Hdwy	7.04	6.54	-	-	4.12	-
Critical Hdwy Stg 1	6.04	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	-	-	2.218	-
Pot Cap-1 Maneuver	491	879	-	-	1413	-
Stage 1	850	-	-	-	-	-
Stage 2	676	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	464	879	-	-	1413	-
Mov Cap-2 Maneuver	464	-	-	-	-	-
Stage 1	850	-	-	-	-	-
Stage 2	639	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.2	0	1.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	673	1413	-
HCM Lane V/C Ratio	-	-	0.134	0.047	-
HCM Control Delay (s)	-	-	11.2	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.1	-

Intersection	
Int Delay, s/veh	5.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	432	155	164	238	61	102
Future Vol, veh/h	432	155	164	238	61	102
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	2	1	3	6	6
Mvmt Flow	455	163	173	251	64	107

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	618	0	1134	537
Stage 1	-	-	-	-	537	-
Stage 2	-	-	-	-	597	-
Critical Hdwy	-	-	4.11	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.209	-	3.554	3.354
Pot Cap-1 Maneuver	-	-	967	-	220	536
Stage 1	-	-	-	-	578	-
Stage 2	-	-	-	-	542	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	967	-	174	536
Mov Cap-2 Maneuver	-	-	-	-	174	-
Stage 1	-	-	-	-	578	-
Stage 2	-	-	-	-	429	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.9	31.7
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	301	-	-	967	-
HCM Lane V/C Ratio	0.57	-	-	0.179	-
HCM Control Delay (s)	31.7	-	-	9.5	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	3.3	-	-	0.6	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	55	479	0	4	373	51	0	0	2	26	0	29
Future Vol, veh/h	55	479	0	4	373	51	0	0	2	26	0	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	5	0	0	2	2	0	0	0	5	0	6
Mvmt Flow	59	510	0	4	397	54	0	0	2	28	0	31

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	451	0	0	510	0	0	1076	1087	510	1034	1033	397
Stage 1	-	-	-	-	-	-	628	628	-	405	405	-
Stage 2	-	-	-	-	-	-	448	459	-	629	628	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.15	6.5	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.15	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.15	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.545	4	3.354
Pot Cap-1 Maneuver	1120	-	-	1065	-	-	199	218	567	208	234	644
Stage 1	-	-	-	-	-	-	474	479	-	617	602	-
Stage 2	-	-	-	-	-	-	594	570	-	465	479	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1120	-	-	1065	-	-	178	201	567	195	216	644
Mov Cap-2 Maneuver	-	-	-	-	-	-	178	201	-	195	216	-
Stage 1	-	-	-	-	-	-	439	444	-	572	599	-
Stage 2	-	-	-	-	-	-	563	567	-	429	444	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.1	11.4	19.4
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	567	1120	-	-	1065	-	-	308
HCM Lane V/C Ratio	0.004	0.052	-	-	0.004	-	-	0.19
HCM Control Delay (s)	11.4	8.4	0	-	8.4	0	-	19.4
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0	0.2	-	-	0	-	-	0.7

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	66	436	5	22	56	370	167	6	6	66	545	6
Future Volume (vph)	66	436	5	22	56	370	167	6	6	66	545	6
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%				0%			0%			1%
Total Lost time (s)	4.0	4.5	4.5		4.0	4.5	4.5	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95	1.00	1.00	1.00		0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.86		1.00	0.97
Flt Protected	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (prot)	1630	3167	1488		1269	3260	1488	1330	1284		1571	1543
Flt Permitted	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (perm)	1630	3167	1488		1269	3260	1488	1330	1284		1571	1543
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	69	454	5	23	58	385	174	6	6	69	568	6
RTOR Reduction (vph)	0	0	3	0	0	0	73	0	64	0	0	5
Lane Group Flow (vph)	69	454	2	0	81	385	101	6	11	0	318	305
Confl. Peds. (#/hr)											1	
Heavy Vehicles (%)	2%	5%	0%	31%	31%	2%	0%	25%	0%	19%	0%	20%
Turn Type	Prot	NA	pt+ov	Prot	Prot	NA	pt+ov	Split	NA		Split	NA
Protected Phases	5	2	2 8	1	1	6	6 4	8	8		4	4
Permitted Phases												
Actuated Green, G (s)	10.0	21.0	26.3		8.8	19.8	43.9	5.3	5.3		24.1	24.1
Effective Green, g (s)	10.0	21.0	26.3		8.8	19.8	43.9	5.3	5.3		24.1	24.1
Actuated g/C Ratio	0.13	0.28	0.35		0.12	0.26	0.58	0.07	0.07		0.32	0.32
Clearance Time (s)	4.0	4.5			4.0	4.5		4.0	4.0		4.0	4.0
Vehicle Extension (s)	2.5	4.2			2.5	4.2		2.5	2.5		2.5	2.5
Lane Grp Cap (vph)	215	878	516		147	852	862	93	89		500	491
v/s Ratio Prot	0.04	c0.14	0.00		c0.06	0.12	0.07	0.00	c0.01		c0.20	0.20
v/s Ratio Perm												
v/c Ratio	0.32	0.52	0.00		0.55	0.45	0.12	0.06	0.12		0.64	0.62
Uniform Delay, d1	29.8	23.1	16.1		31.6	23.4	7.2	32.9	33.0		22.1	21.9
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.6	0.8	0.0		3.5	0.6	0.1	0.2	0.4		2.3	2.1
Delay (s)	30.4	23.8	16.1		35.1	24.0	7.3	33.1	33.5		24.4	24.0
Level of Service	C	C	B		D	C	A	C	C		C	C
Approach Delay (s)		24.6				20.8			33.4			24.2
Approach LOS		C				C			C			C

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	75.7	Sum of lost time (s)	16.5
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	52
Future Volume (vph)	52
Ideal Flow (vphpl)	1750
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.96
Adj. Flow (vph)	54
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	66	436	5	22	56	370	167	6	6	66	545	6
Future Volume (veh/h)	66	436	5	22	56	370	167	6	6	66	545	6
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No				No			No			No
Adj Sat Flow, veh/h/ln	1723	1682	1750		1327	1723	1750	1409	1750	1750	1745	1472
Adj Flow Rate, veh/h	69	454	5		58	385	174	6	6	69	623	0
Peak Hour Factor	0.96	0.96	0.96		0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	5	0		31	2	0	25	0	0	0	20
Cap, veh/h	102	863	522		71	829	750	110	10	113	839	372
Arrive On Green	0.06	0.27	0.27		0.06	0.25	0.25	0.08	0.08	0.08	0.25	0.00
Sat Flow, veh/h	1641	3195	1483		1264	3273	1483	1342	120	1381	3323	1472
Grp Volume(v), veh/h	69	454	5		58	385	174	6	0	75	623	0
Grp Sat Flow(s),veh/h/ln	1641	1598	1483		1264	1637	1483	1342	0	1501	1661	1472
Q Serve(g_s), s	2.0	5.9	0.1		2.2	4.8	3.2	0.2	0.0	2.3	8.4	0.0
Cycle Q Clear(g_c), s	2.0	5.9	0.1		2.2	4.8	3.2	0.2	0.0	2.3	8.4	0.0
Prop In Lane	1.00		1.00		1.00		1.00	1.00		0.92	1.00	
Lane Grp Cap(c), veh/h	102	863	522		71	829	750	110	0	123	839	372
V/C Ratio(X)	0.67	0.53	0.01		0.82	0.46	0.23	0.05	0.00	0.61	0.74	0.00
Avail Cap(c_a), veh/h	675	2959	1495		520	3031	1748	828	0	927	3077	1363
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	22.3	15.1	10.2		22.7	15.4	6.7	20.6	0.0	21.6	16.7	0.0
Incr Delay (d2), s/veh	5.6	0.8	0.0		15.7	0.6	0.2	0.2	0.0	3.6	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.6	3.5	0.1		1.6	2.9	2.6	0.1	0.0	1.6	5.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.9	15.9	10.2		38.4	16.0	7.0	20.7	0.0	25.1	17.7	0.0
LnGrp LOS	C	B	B		D	B	A	C	A	C	B	A
Approach Vol, veh/h		528				617			81			623
Approach Delay, s/veh		17.4				15.5			24.8			17.7
Approach LOS		B				B			C			B

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.7	17.6		16.3	7.5	16.8		8.0
Change Period (Y+Rc), s	4.0	4.5		4.0	4.5	* 4.5		4.0
Max Green Setting (Gmax), s	20.0	45.0		45.0	20.0	* 45		30.0
Max Q Clear Time (g_c+I1), s	4.2	7.9		10.4	4.0	6.8		4.3
Green Ext Time (p_c), s	0.1	5.1		1.8	0.1	5.5		0.3

Intersection Summary	
HCM 6th Ctrl Delay	17.2
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	52
Future Volume (veh/h)	52
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1472
Adj Flow Rate, veh/h	0
Peak Hour Factor	0.96
Percent Heavy Veh, %	20
Cap, veh/h	0
Arrive On Green	0.00
Sat Flow, veh/h	0
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.00
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(I)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(95%),veh/ln	0.0
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	A
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer - Assigned Phs
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	705	364	0	709	609	0	0	0	534	0	299
Future Volume (vph)	0	705	364	0	709	609	0	0	0	534	0	299
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		3%			-4%			0%			5%	
Total Lost time (s)		4.5	4.0		4.5	4.0				4.5		2.5
Lane Util. Factor		0.95	1.00		0.95	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3180	1409		3325	1457				3083		1381
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3180	1409		3325	1457				3083		1381
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	719	371	0	723	621	0	0	0	545	0	305
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	47
Lane Group Flow (vph)	0	719	371	0	723	621	0	0	0	545	0	258
Confl. Peds. (#/hr)						1						1
Heavy Vehicles (%)	0%	3%	4%	0%	2%	2%	0%	0%	0%	2%	0%	5%
Turn Type		NA	Free		NA	Free				Prot		custom
Protected Phases		2			6					4		4 5
Permitted Phases			Free			Free						
Actuated Green, G (s)		68.0	100.0		58.5	100.0				23.0		33.0
Effective Green, g (s)		68.0	100.0		58.5	100.0				23.0		35.0
Actuated g/C Ratio		0.68	1.00		0.58	1.00				0.23		0.35
Clearance Time (s)		4.5			4.5					4.5		
Vehicle Extension (s)		6.0			4.0					2.5		
Lane Grp Cap (vph)		2162	1409		1945	1457				709		483
v/s Ratio Prot		0.23			0.22					c0.18		c0.19
v/s Ratio Perm			0.26			c0.43						
v/c Ratio		0.33	0.26		0.37	0.43				0.77		0.53
Uniform Delay, d1		6.6	0.0		11.0	0.0				36.0		26.0
Progression Factor		1.00	1.00		0.91	1.00				1.00		1.00
Incremental Delay, d2		0.4	0.5		0.5	0.8				4.8		0.9
Delay (s)		7.0	0.5		10.5	0.8				40.8		26.9
Level of Service		A	A		B	A				D		C
Approach Delay (s)		4.8			6.0			0.0			35.8	
Approach LOS		A			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	705	364	0	709	609	0	0	0	534	0	299
Future Volume (veh/h)	0	705	364	0	709	609	0	0	0	534	0	299
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1660	1647	0	1867	1867				1587	0	1546
Adj Flow Rate, veh/h	0	719	0	0	723	0				545	0	203
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	3	4	0	2	2				2	0	5
Cap, veh/h	0	2183		0	2455					639	0	312
Arrive On Green	0.00	0.69	0.00	0.00	1.00	0.00				0.22	0.00	0.24
Sat Flow, veh/h	0	3237	1395	0	3641	1582				2932	0	1310
Grp Volume(v), veh/h	0	719	0	0	723	0				545	0	203
Grp Sat Flow(s),veh/h/ln	0	1577	1395	0	1774	1582				1466	0	1310
Q Serve(g_s), s	0.0	9.1	0.0	0.0	0.0	0.0				17.9	0.0	14.0
Cycle Q Clear(g_c), s	0.0	9.1	0.0	0.0	0.0	0.0				17.9	0.0	14.0
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2183		0	2455					639	0	312
V/C Ratio(X)	0.00	0.33		0.00	0.29					0.85	0.00	0.65
Avail Cap(c_a), veh/h	0	2183		0	2455					1041	0	491
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.81	0.00	0.00	0.84	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	6.1	0.0	0.0	0.0	0.0				37.6	0.0	34.4
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.3	0.0				3.1	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	4.9	0.0	0.0	0.2	0.0				10.8	0.0	15.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	6.5	0.0	0.0	0.3	0.0				40.7	0.0	36.1
LnGrp LOS	A	A		A	A					D	A	D
Approach Vol, veh/h		719	A		723	A					748	
Approach Delay, s/veh		6.5			0.3						39.4	
Approach LOS		A			A						D	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		73.7		26.3		73.7
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		55.5		35.5		35.5
Max Q Clear Time (g_c+I1), s		11.1		19.9		2.0
Green Ext Time (p_c), s		15.0		1.9		8.2

Intersection Summary	
HCM 6th Ctrl Delay	15.7
HCM 6th LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1062	177	0	1087	340	231	0	500	0	0	0
Future Volume (vph)	0	1062	177	0	1087	340	231	0	500	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-4%			3%			6%			0%	
Total Lost time (s)		4.5	4.0		4.5	4.0	4.5	4.5	4.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.86	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)		3325	1388		3211	1380	1502	1257	1293			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)		3325	1388		3211	1380	1502	1257	1293			
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1084	181	0	1109	347	236	0	510	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	62	62	0	0	0
Lane Group Flow (vph)	0	1084	181	0	1109	347	212	207	203	0	0	0
Confl. Peds. (#/hr)			2			1						
Heavy Vehicles (%)	0%	2%	7%	0%	2%	4%	2%	0%	6%	0%	0%	0%
Turn Type		NA	Free		NA	Free	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases			Free			Free			8			
Actuated Green, G (s)		69.0	100.0		69.0	100.0	22.0	22.0	22.0			
Effective Green, g (s)		69.0	100.0		69.0	100.0	22.0	22.0	22.0			
Actuated g/C Ratio		0.69	1.00		0.69	1.00	0.22	0.22	0.22			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		4.0			6.0		2.5	2.5	2.5			
Lane Grp Cap (vph)		2294	1388		2215	1380	330	276	284			
v/s Ratio Prot		0.33			c0.35		0.14	c0.16				
v/s Ratio Perm			0.13			0.25			0.16			
v/c Ratio		0.47	0.13		0.50	0.25	0.64	0.75	0.71			
Uniform Delay, d1		7.1	0.0		7.3	0.0	35.4	36.4	36.1			
Progression Factor		2.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.7	0.2		0.8	0.4	3.8	10.1	7.7			
Delay (s)		14.9	0.2		8.2	0.4	39.2	46.5	43.8			
Level of Service		B	A		A	A	D	D	D			
Approach Delay (s)		12.8			6.3			43.4			0.0	
Approach LOS		B			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1062	177	0	1087	340	231	0	500	0	0	0
Future Volume (veh/h)	0	1062	177	0	1087	340	231	0	500	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1867	1798	0	1674	1647	1527	1555	1473			
Adj Flow Rate, veh/h	0	1084	0	0	1109	0	342	0	192			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	0	2	7	0	2	4	2	0	6			
Cap, veh/h	0	2582		0	2314		531	0	228			
Arrive On Green	0.00	1.00	0.00	0.00	0.73	0.00	0.18	0.00	0.18			
Sat Flow, veh/h	0	3641	1524	0	3264	1395	2909	0	1248			
Grp Volume(v), veh/h	0	1084	0	0	1109	0	342	0	192			
Grp Sat Flow(s),veh/h/ln	0	1774	1524	0	1590	1395	1455	0	1248			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	14.6	0.0	10.9	0.0	14.9			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	14.6	0.0	10.9	0.0	14.9			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2582		0	2314		531	0	228			
V/C Ratio(X)	0.00	0.42		0.00	0.48		0.64	0.00	0.84			
Avail Cap(c_a), veh/h	0	2582		0	2314		1033	0	443			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.84	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	5.7	0.0	37.9	0.0	39.5			
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.7	0.0	1.0	0.0	6.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	0.3	0.0	0.0	7.6	0.0	7.0	0.0	8.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.4	0.0	0.0	6.4	0.0	38.9	0.0	45.8			
LnGrp LOS	A	A		A	A		D	A	D			
Approach Vol, veh/h		1084	A		1109	A		534				
Approach Delay, s/veh		0.4			6.4			41.3				
Approach LOS		A			A			D				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		77.3				77.3		22.7				
Change Period (Y+Rc), s		4.5				4.5		4.5				
Max Green Setting (Gmax), s		55.5				55.5		35.5				
Max Q Clear Time (g_c+I1), s		2.0				16.6		16.9				
Green Ext Time (p_c), s		15.9				23.6		1.4				

Intersection Summary	
HCM 6th Ctrl Delay	10.9
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

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

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	0	2	162	314	5
Future Vol, veh/h	1	0	2	162	314	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	1	3	0
Mvmt Flow	1	0	2	191	369	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	567	372	375	0	-	0
Stage 1	372	-	-	-	-	-
Stage 2	195	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	488	678	1195	-	-	-
Stage 1	702	-	-	-	-	-
Stage 2	843	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	487	678	1195	-	-	-
Mov Cap-2 Maneuver	487	-	-	-	-	-
Stage 1	701	-	-	-	-	-
Stage 2	843	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.4	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1195	-	487	-	-
HCM Lane V/C Ratio	0.002	-	0.002	-	-
HCM Control Delay (s)	8	0	12.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	28	54	107	38	64	244
Future Vol, veh/h	28	54	107	38	64	244
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	3	-	-	-3
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	8	2	0	0	2
Mvmt Flow	33	64	126	45	75	287

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	586	149	0	0	171	0
Stage 1	149	-	-	-	-	-
Stage 2	437	-	-	-	-	-
Critical Hdwy	7	6.58	-	-	4.1	-
Critical Hdwy Stg 1	6	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.5	3.372	-	-	2.2	-
Pot Cap-1 Maneuver	432	871	-	-	1418	-
Stage 1	862	-	-	-	-	-
Stage 2	609	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	405	871	-	-	1418	-
Mov Cap-2 Maneuver	405	-	-	-	-	-
Stage 1	862	-	-	-	-	-
Stage 2	571	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.8	0	1.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	625	1418	-
HCM Lane V/C Ratio	-	-	0.154	0.053	-
HCM Control Delay (s)	-	-	11.8	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.2	-

Appendix D Detailed Crash Summary Worksheets

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANAYLYSIS AND REPORTING UNIT
COUNTY ROAD CRASH LISTING

MARION COUNTY

BUTTEVILLE RD NE A, MP 4 to 5, 01/01/2014 to 12/31/2018

1 - 1 of 1 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D R U G S	M J I N V	S C H L	W O R K	DATE / DAY / TIME / LAT	MILEPNT / DIST FROM / INTERSECT / LONG	COUNTY ROADS / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A G E	S E X	LICNS / RES	PED / LOC	ERROR	ACT	EVENT	CAUSE
03518	N	N	N				08/17/2016	4.09	BUTTEVILLE RD NE A	STRGHT		N	N	CLR	S-STRGHT	01	NONE 9	STRGHT											13
NONE							WE			UN	(NONE)	UNKNOWN	N	DRY	SS-O		N/A	S -N									000		00
N							1P			03			N	DAY	PDO		FARM TRCTR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N							45 9 3.33	-122 53 48.59			(02)													UNK					
																02	NONE 9	STRGHT											
																	N/A	S -N									000		00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																								UNK					

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

140: HILLSBORO-SILVERTON

Highway 140 ALL ROAD TYPES, MP 35.95 to 36.2 01/01/2010 to 12/31/2019, Both Add and Non-Add mileage

1 - 5 of 24 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	D R A C	M J U S	S I N V	C N L	W H K	O R	DATE / DAY / TIME / LAT	COUNTY / CITY / URBAN AREA / LONG	RD# / COMPNT / MLG / MILEPNT	FC / TYP	CONN# / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A / G / E	S / E / X	LICNS / RES	PED / LOC	ERROR	ACT	EVENT	CAUSE
00124	Y	Y	N	N	N	N	N	01/10/2019	MARION	1	16		STRGHT		N	Y	CLD	FIX OBJ	01	NONE 0	STRGHT										061,058	01
STATE								TH		MN	0		UN	(NONE)	UNKNOWN	N	DRY	FIX		PRVTE	S -N								000	061,058	00
Y								10P	WOODBURN UA	35.98			06			N	DARK	INJ		PSNGR CAR		01	DRVR	INJB	28	M	OR-Y		047,081	000		01
N								45 9 6.11	-122 53 47.93			014000100S00		(02)													OR<25					
04481	Y	N	N	N				12/18/2010	MARION	1	06		CURVE		N	Y	RAIN	FIX OBJ	01	NONE 0	STRGHT										079	01
NO RPT								SA		MN	0		UN	(NONE)	UNKNOWN	N	WET	FIX		PRVTE	N -S								000	079	00
Y								7P		36.00			01			N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	17	M	OR-Y		047,080,081	017		01
N								45 9 5.0884134	-122 53 48.0317468			014000100S00		(02)													OR<25					
04895	Y	N	N	N				12/07/2015	MARION	1	16		CURVE		N	N	RAIN	O-STRGHT	01	NONE 1	STRGHT										089	01
STATE								MO		MN	0		UN	(NONE)	UNKNOWN	N	WET	SS-M		PRVTE	S -N								000	089	00
Y								8A	WOODBURN UA	36.00			03			N	DAY	INJ		SEMI TOW		01	DRVR	NONE	53	M	OTH-Y		047,079,080	000		01
N								45 9 5.09	-122 53 48.03			014000100S00		(02)													N-RES					
																			02	NONE 0	STRGHT											00
																				PRVTE	N -S								000		
																				PSNGR CAR		01	DRVR	INJC	44	M	OR-Y		000	000		00
																											OR<25					
																			02	NONE 0	STRGHT											00
																				PRVTE	N -S								000		
																				PSNGR CAR		02	PSNG	INJC	08	M			000	000		00
																			02	NONE 0	STRGHT											00
																				PRVTE	N -S								000		
																				PSNGR CAR		03	PSNG	INJC	14	M			000	000		00
02875	N	Y	N	N				08/25/2013	MARION	1	06		CURVE		N	N	CLD	S-STRGHT	01	NONE 0	STRGHT											33,05,10
STATE								SU		MN	0		UN	(NONE)	UNKNOWN	N	WET	SS-O		PRVTE	S -N								000		00
Y								8P		36.01			03			N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	66	M	OR-Y		051,044	000		33,05,10
N								45 9 4.5776519	-122 53 47.9017679			014000100S00		(02)													OR<25					
																			02	NONE 1	STRGHT											00
																				PRVTE	N -S								000		
																				SEMI TOW		01	DRVR	NONE	51	M	OTH-Y		000	000		00
																											N-RES					
00137	N	N	N	N				01/14/2014	MARION	1	06		INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											07
COUNTY								TU		MN	0		UN		STOP SIGN	N	WET	REAR		PRVTE	S -N								000		00
N								7P		36.02			06	0		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	27	M	SUSP		026	000		07
N								45 9 4.1250959	-122 53 47.581296			014000100S00															OR>25					
																			02	NONE 0	STOP											00
																				PRVTE	S -N								012		
																				PSNGR CAR		01	DRVR	NONE	33	M	OR-Y		000	000		00
																											OR<25					
02907	Y	N	N	N	N	N		09/04/2011	MARION	1	06		INTER	3-LEG	N	Y	CLR	FIX OBJ	01	NONE 0	STRGHT										088	30,03
STATE								SU		MN	0		N		STOP SIGN	N	DRY	FIX		PRVTE	S -N								000	088	00
N								10P		36.02			05	0		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	18	M	OR-Y		050,021,081	000		30,03
N								45 9 4.1250967	-122 53 47.5812902			014000100S00															OR<25					

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140: HILLSBORO-SILVERTON

Highway 140 ALL ROAD TYPES, MP 35.95 to 36.2 01/01/2010 to 12/31/2019, Both Add and Non-Add mileage

6 - 10 of 24 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	D R A L C	M J U G S	S I N V	C H L	W O R K	DATE / DAY / TIME / LAT	COUNTY / CITY / URBAN AREA / LONG	RD# / COMPNT / MLG TYP / MILEPNT	FC	CONN# / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A / G / E	S / E / X	LICNS / RES	PED / LOC	ERROR	ACT	EVENT	CAUSE
																		02	NONE 0	PRKD-P											
																			PRVTE	S -N									032		00
																			PSNGR CAR												
03338	N	N	N	N	N	N	10/06/2010	MARION	1	06		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
STATE							WE		MN	0		E		UNKNOWN	N	DRY	REAR		PRVTE	S -N									000		00
N							5P		36.02			06	1		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	21	F	OR-Y		043,026	000		07
N							45 9 4.1250906	-122 53 47.5812717			014000100S00															OR<25					
																		02	NONE 0	STOP											
																			PRVTE	S -N									012		00
																			PSNGR CAR		01	DRVR	NONE	33	F	OR-Y		000	000		00
																										OR>25					
02466	Y	N	N	N			07/26/2012	MARION	1	06		INTER	3-LEG	N	N	CLR	O-STRGHT	01	NONE 0	STRGHT											01
NO RPT							TH		MN	0		E		UNKNOWN	N	DRY	SS-M		PRVTE	E -W									007		00
N							7A		36.02			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	48	M	OR-Y		047,080	000		01
N							45 9 4.1250907	-122 53 47.5812716			014000100S00															OR>25					
																		02	NONE 0	STRGHT											
																			PRVTE	W -E									000		00
																			PSNGR CAR		01	DRVR	NONE	42	F	OR-Y		000	000		00
																										OR<25					
05050	N	N	N	N			12/21/2018	MARION	1	16		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE							FR		MN	0		E		STOP SIGN	N	DRY	REAR		PRVTE	E -W									000		00
N							2P	WOODBURN UA	36.02			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	M	OR-Y		026	000		29
N							45 9 4.13	-122 53 47.58			014000100S00															OR<25					
																		02	NONE 0	STOP											
																			PRVTE	E -W									012		00
																			PSNGR CAR		01	DRVR	INJC	53	M	OR-Y		000	000		00
																										OR<25					
02702	N	N	N	N			08/19/2011	MARION	1	06		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										013	07
NONE							FR		MN	0		S		UNKNOWN	N	DRY	REAR		PRVTE	S -N									000		00
N							1P		36.02			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	M	OR-Y		026	000		07
N							45 9 4.1250967	-122 53 47.5812902			014000100S00															OR<25					
																		02	NONE 0	STOP											
																			PRVTE	S -N									011	013	00
																			PSNGR CAR		01	DRVR	NONE	26	M	OR-Y		000	000		00
																										OR<25					
																		03	NONE 0	STOP											
																			PRVTE	S -N									022		00
																			PSNGR CAR		01	DRVR	NONE	28	M	OR-Y		000	000		00
																										OR<25					
01065	N	N	N	N			03/23/2015	MARION	1	16		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE							MO		MN	0		S		STOP SIGN	N	DRY	REAR		RENTL	S -N									000		00
N							10A	WOODBURN UA	36.02			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	25	M	OR-Y		026	000		07
N							45 9 4.13	-122 53 47.58			014000100S00															OR<25					

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140: HILLSBORO-SILVERTON

Highway 140 ALL ROAD TYPES, MP 35.95 to 36.2 01/01/2010 to 12/31/2019, Both Add and Non-Add mileage

11 - 15 of 24 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D / E A L C	D R G U / S	M J N I / S	S C H V / L	W O R K	DATE / DAY / TIME / LAT	COUNTY / CITY / URBAN AREA / LONG	RD# FC / COMPNT / MLG TYP / MILEPNT	CONN# / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A G E	S E X	LICNS / RES	PED LOC	ERROR	ACT	EVENT	CAUSE
																02	NONE 0	STOP											
																	PRVTE	S -N								012		00
																	PSNGR CAR		01	DRVR	INJC	18	M	OR-Y	000	000		00
																								OR<25				
																02	NONE 0	STOP											
																	PRVTE	S -N								012		00
																	PSNGR CAR		02	PSNG	INJC	17	F		000	000		00
03986	N	N	N	N		10/16/2015	MARION	1 16		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											29
NONE						FR		MN 0		S		STOP SIGN	N	DRY	REAR		PRVTE	S -N								000		00
N						6A	WOODBURN UA	36.02		06	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	57	M	OR-Y	026	000		29
N						45 9 4.13	-122 53 47.58		014000100S00															OR<25				
																02	NONE 0	STOP											
																	PRVTE	S -N								012		00
																	PSNGR CAR		01	DRVR	NONE	00	F	UNK	000	000		00
																								UNK				
03497	N	N	N	N		09/11/2019	MARION	1 16		INTER	3-LEG	N	N	CLR	S-1STOP	01	UNKN 0	STRGHT											29
NONE						WE		MN 0		S		STOP SIGN	N	DRY	REAR		UNKN	S -N								000		00
N						7P	WOODBURN UA	36.02		06	0		N	DUSK	INJ		UNKNOWN		01	DRVR	NONE	00	Unk	UNK	026	000		29
N						45 9 4.14	-122 53 47.6		014000100S00															UNK				
																02	NONE 0	STOP											
																	PRVTE	S -N								012		00
																	PSNGR CAR		01	DRVR	INJC	20	M	OR-Y	000	000		00
																								OR<25				
																02	NONE 0	STOP											
																	PRVTE	S -N								012		00
																	PSNGR CAR		02	PSNG	INJC	19	F		000	000		00
01241	N	N	N	N		04/06/2015	MARION	1 16		INTER	3-LEG	N	N	CLR	O-STRGHT	01	NONE 0	STRGHT									128		10
NONE						MO		MN 0		CN		STOP SIGN	N	DRY	SS-M		PRVTE	N -S								000	128	00
N						5P	WOODBURN UA	36.02		02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	F	OR-Y	079,080	000		10
N						45 9 4.13	-122 53 47.58		014000100S00															OR<25				
																02	NONE 0	STRGHT											
																	PRVTE	S -N								000	128	00
																	PSNGR CAR		01	DRVR	NONE	40	M	OR-Y	000	000		00
																								OR>25				
00038	N	N	N	N		01/05/2015	MARION	1 16		INTER	3-LEG	N	N	RAIN	ANGL-OTH	01	NONE 0	TURN-R											02
NONE						MO		MN 0		CN		STOP SIGN	N	WET	TURN		PRVTE	W -S								000		00
N						1A	WOODBURN UA	36.02		03	0		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	028	000		02
N						45 9 4.13	-122 53 47.58		014000100S00															UNK				
																02	NONE 0	STRGHT											
																	PRVTE	N -S								000		00
																	PSNGR CAR		01	DRVR	NONE	36	M	OR-Y	000	000		00
																								OR<25				
03101	N	N	N	N		09/15/2010	MARION	1 06		INTER	3-LEG	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT											02
NONE						WE		MN 0		CN		STOP SIGN	N	WET	ANGL		PRVTE	S -N								000		00
N						3P		36.02		04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	21	M	OR-Y	028	000		02
N						45 9 4.1250906	-122 53 47.5812717		014000100S00															OR<25				

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140: HILLSBORO-SILVERTON

Highway 140 ALL ROAD TYPES, MP 35.95 to 36.2 01/01/2010 to 12/31/2019, Both Add and Non-Add mileage

16 - 22 of 24 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	D R A L C	M J U G S	S I V	C N H	W O R K	DATE / DAY / TIME / LAT	COUNTY / CITY / URBAN AREA / LONG	RD# FC / COMPNT / MLG TYP / MILEPNT	CONN# / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A G E	S E X	LICNS / RES	PED LOC	ERROR	ACT	EVENT	CAUSE
																	02	NONE 0	STRGHT											
																		PRVTE	N -S								000		00
																		PSNGR CAR		01	DRVR	NONE	49	M	OR-Y	000	000		00
																									OR<25				
03423	Y	N	N	N			09/11/2018	MARION	1 16		CURVE		N	Y	RAIN	FIX OBJ	01	NONE 9	STRGHT									062,079 ,010	01
COUNTY							TU		MN 0		UN	(NONE)	CURVE	N	WET	FIX		N/A	N -S								000		00
Y							2P	WOODBURN UA	36.03		01			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000		00
N							45 9 3.82	-122 53 46.97		014000100S00		(02)													UNK				
00935	N	N	N	N	N	N	03/09/2017	MARION	1 16		CURVE		N	N	CLD	O-STRGHT	01	NONE 0	STRGHT									093	32,27
STATE							TH		MN 0		UN	(NONE)	UNKNOWN	N	WET	SS-M		PRVTE	S -N								022		00
Y							10P	WOODBURN UA	36.03		04			N	DARK	INJ		PSNGR CAR		01	DRVR	NONE	21	M	SUSP	052,016,080	038	093	32,27
N							45 9 3.82	-122 53 46.97		014000100S00		(02)													OR<25				
																	02	NONE 0	STRGHT											
																		PRVTE	N -S								000		00
																		PSNGR CAR		01	DRVR	INJC	30	M	OR-Y	000	000		00
																									OR<25				
																	03	NONE 0	STRGHT											
																		PRVTE	N -S								022		00
																		PSNGR CAR		01	DRVR	INJC	29	F	OR-Y	000	022		00
																									OR<25				
81104	N	N	N	N			03/04/2019	MARION	1 16		ALLEY		N	N	CLR	S-1TURN	01	NONE 9	STRGHT									079	06
NONE							MO		MN 0		UN	(NONE)	UNKNOWN	N	DRY	TURN		N/A	S -N								031		00
N							12P	WOODBURN UA	36.04		03			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000		00
N							45 9 3.59	-122 53 46.29		014000100S00		(02)													UNK				
																	02	NONE 9	TURN-L											
																		N/A	S -W								019		00
																		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000		00
																									UNK				
04731	Y	N	N	N			11/04/2017	MARION	1 16		STRGHT		N	Y	RAIN	FIX OBJ	01	NONE 9	STRGHT									058,079 ,010	30
STATE							SA		MN 0		UN	(NONE)	CURVE	N	WET	FIX		N/A	W -E								000		00
Y							9P	WOODBURN UA	36.05		01			N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000		00
N							45 9 3.47	-122 53 45.57		014000100S00		(02)													UNK				
03570	N	N	N	N			09/16/2015	MARION	1 16		STRGHT		N	Y	RAIN	FIX OBJ	01	NONE 0	STRGHT									043,124	12
NONE							WE		MN 0		UN	(NONE)	UNKNOWN	N	WET	FIX		PRVTE	N -S								001	043,124	00
Y							5P	WOODBURN UA	36.05		06			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	23	M	OR-Y	081	017		12
N							45 9 3.47	-122 53 45.57		014000100S00		(02)													OR<25				
01744	N	N	N	N			05/27/2014	MARION	1 06		STRGHT		N	Y	RAIN	FIX OBJ	01	NONE 0	STRGHT									043	10
NONE							TU		MN 0		UN	(NONE)	UNKNOWN	N	WET	FIX		PRVTE	W -E								000	043	00
Y							7P		36.06		07			N	DUSK	INJ		PSNGR CAR		01	DRVR	INJC	23	M	OR-Y	081,083	000		10
N							45 9 3.429216	-122 53 44.822328		014000100S00		(02)													OR<25				
																	01	NONE 0	STRGHT											
																		PRVTE	W -E								000	043	00
																		PSNGR CAR		02	PSNG	INJC	22	M		000	000		00

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CITY OF WOODBURN, MARION COUNTY

HILLSBORO-SILV HY and WILLOW AVE, City of Woodburn, Marion County, 01/01/2014 to 12/31/2018

1 - 4 of 4 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D R U G S	M J I N V	S C H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / INJ / SVRTY	A G E	S E X	LICNS / RES	PED LOC	ERROR	ACT	EVENT	CAUSE
03967	Y	N	N				11/06/2014	14	HILLSBORO-SILV HY	INTER	3-LEG	N	N	RAIN	S-1TURN	01	NONE 0	STRGHT										30,27,07
CITY							TH		WILLOW AVE	CN		STOP SIGN	N	WET	REAR		PRVTE	W -E								000		00
N							7A			04	0		N	DAY	PDO		PSNGR CAR		01	DRVR NONE	58	M	OR-Y		016,050,042	038		30,27,07
N							45 9 3.49	-122 53 31.34	014000100S00														OR<25					
																02	NONE 0	TURN-L										
																	PRVTE	W -N								000		00
																	PSNGR CAR		01	DRVR NONE	25	F	OR-Y		000	000		00
																							OR<25					
																02	NONE 0	TURN-L										
																	PRVTE	W -N								000		00
																	PSNGR CAR		02	PSNG NO<5	04	M			000	000		00
03326	N	N	N		N	N	08/05/2016	16	HILLSBORO-SILV HY	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	TURN-L										02
CITY							FR		WILLOW AVE	CN		STOP SIGN	N	DRY	TURN		PRVTE	N -E								000		00
N							6A			01	0		N	DAWN	INJ		PSNGR CAR		01	DRVR INJC	48	M	OR-Y		028	000		02
N							45 9 3.49	-122 53 31.34	014000100S00														OR<25					
																02	NONE 0	STRGHT										
																	PRVTE	E -W								000		00
																	PSNGR CAR		01	DRVR INJC	31	M	OR-Y		000	000		00
																							OR<25					
00203	N	Y	N		N	N	01/20/2018	16	HILLSBORO-SILV HY	INTER	3-LEG	N	N	CLD	O-1 L-TURN	01	NONE 0	TURN-L									087	02
CITY							SA		WILLOW AVE	CN		STOP SIGN	N	DRY	TURN		PRVTE	W -N								000	087	00
N							1A			02	0		N	DARK	INJ		PSNGR CAR		01	DRVR INJA	23	M	NONE		028,004	000		02
N							45 9 3.49	-122 53 31.34	014000100S00														OR<25					
																02	NONE 0	STRGHT										
																	PRVTE	E -W								000		00
																	PSNGR CAR		01	DRVR NONE	25	M	OR-Y		000	000		00
																							OR<25					
02968	N	N	N		N	N	08/11/2018	16	HILLSBORO-SILV HY	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	TURN-L										02
CITY							SA		WILLOW AVE	CN		STOP SIGN	N	DRY	TURN		PRVTE	W -N								000		00
N							2P			02	0		N	DAY	INJ		PSNGR CAR		01	DRVR INJC	33	F	OR-Y		028,004	000		02
N							45 9 3.49	-122 53 31.34	014000100S00														OR<25					
																02	NONE 0	STRGHT										
																	PRVTE	E -W								000		00
																	PSNGR CAR		01	DRVR INJC	25	F	OR-Y		000	000		00
																							OR<25					

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CITY OF WOODBURN, MARION COUNTY

WOODLAND AVE and HILLSBORO-SILV HY, City of Woodburn, Marion County, 01/01/2014 to 12/31/2018

1 - 4 of 10 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D R U G S	M J I N V	S C H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / INJ / SVRTY	A G E	S E X	LICNS / RES	PED LOC	ERROR	ACT	EVENT	CAUSE
04656	N	N	N				10/22/2016	14	HILLSBORO-SILV HY	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										07,29
NONE							SA		WOODLAND AVE	W		TRF SIGNAL	N	DRY	REAR		PRVTE	W -E								000		00
N							10P			06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR NONE	38	M	OR-Y		043,026	000		07,29
N							45 9 3.71	-122 53 10.85	014000100S00														OR<25					
																02	NONE 0	STOP										
																	PRVTE	W -E								011		00
																	PSNGR CAR		01	DRVR INJC	47	M	OR-Y		000	000		00
																							OR<25					
																02	NONE 0	STOP										
																	PRVTE	W -E								011		00
																	PSNGR CAR		02	PSNG INJC	42	F			000	000		00
00672	N	N	N				02/27/2014	14	HILLSBORO-SILV HY	INTER	CROSS	N	N	CLR	S-OTHER	01	NONE 0	U-TURN										08
NONE							TH		WOODLAND AVE	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	W -W								000		00
N							7P			03	0		N	DLIT	PDO		PSNGR CAR		01	DRVR NONE	23	F	OR-Y		008,006	000		08
N							45 9 3.710952	-122 53 10.8466079	014000100S00														OR<25					
																02	NONE 0	TURN-L										
																	PRVTE	W -N								000		00
																	PSNGR CAR		01	DRVR NONE	00	M	UNK		000	000		00
																							UNK					
01097	N	N	N				04/05/2014	14	HILLSBORO-SILV HY	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										04
NONE							SA		WOODLAND AVE	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	E -W								000		00
N							10A			01	0		N	DAY	PDO		PSNGR CAR		01	DRVR NONE	48	F	OR-Y		097	000		00
N							45 9 3.710952	-122 53 10.8466079	014000100S00														OR<25					
																02	NONE 0	STRGHT										
																	PRVTE	N -S								000		00
																	PSNGR CAR		01	DRVR NONE	00	M	UNK		097	000		00
																							UNK					
05439	Y	N	N				12/09/2016	14	HILLSBORO-SILV HY	INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE 9	STRGHT										04,01
CITY							FR		WOODLAND AVE	CN		TRF SIGNAL	N	WET	ANGL		N/A	E -W								000		00
N							9A			02	0		N	DAY	PDO		PSNGR CAR		01	DRVR NONE	00	Unk	UNK		000	000		00
N							45 9 3.71	-122 53 10.85	014000100S00														UNK					
																02	NONE 9	STRGHT										
																	N/A	S -N								000		00
																	SEMI TOW		01	DRVR NONE	00	Unk	UNK		000	000		00
																							UNK					
02296	N	N	N	N	N		06/10/2017	14	HILLSBORO-SILV HY	INTER	CROSS	N	N	RAIN	S-1TURN	01	NONE 0	STRGHT										14
CITY							SA		WOODLAND AVE	CN		L-GRN-SIG	N	WET	TURN		PRVTE	N -S								000		00
N							9P			03	0		N	DLIT	INJ		PSNGR CAR		01	DRVR NONE	34	M	NONE		003,019	000		14
N							45 9 3.71	-122 53 10.85	014000100S00														OR>25					

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CITY OF WOODBURN, MARION COUNTY

WOODLAND AVE and HILLSBORO-SILV HY, City of Woodburn, Marion County, 01/01/2014 to 12/31/2018

5 - 8 of 10 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D R U G S	M J I N V	S C H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A G E	S E X	LICNS / RES	PED / LOC	ERROR	ACT	EVENT	CAUSE
																02	NONE 0	TURN-L											
																	PRVTE	N -E									000		00
																	PSNGR CAR		01	DRVR	INJC	18	M	OR-Y		000	000		00
																								OR<25					
																02	NONE 0	TURN-L											
																	PRVTE	N -E									000		00
																	PSNGR CAR		02	PSNG	INJC	18	F			000	000		00
05150	N	N	N				11/24/2017	14	HILLSBORO-SILV HY	STRGHT		N	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
NONE							FR		WOODLAND AVE	E	(NONE)	UNKNOWN	N	DRY	REAR		N/A	W -E									000		00
N							5P			03			N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N							45 9 3.78	-122 53 7.96	014000100S00		(04)													UNK					
																02	NONE 9	STOP											
																	N/A	W -E									011		00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																								UNK					
02372	N	N	N		N	N	06/07/2016	16	HILLSBORO-SILV HY	STRGHT		Y	N	CLR	S-1STOP	01	NONE 0	STRGHT											32,16
CITY							TU		WOODLAND AVE	W	(NONE)	UNKNOWN	N	DRY	REAR		PRVTE	W -E									000		00
N							8A			03			N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	33	M	OR-Y		052,026	025		32,16
N							45 9 3.7	-122 53 12.31	014000100S00		(02)													OR<25					
																01	NONE 0	STRGHT											
																	PRVTE	W -E									000		00
																	PSNGR CAR		02	PSNG	INJB	12	M			000	000		00
																02	NONE 1	STOP											
																	PRVTE	W -E									011		00
																	SEMI TOW		01	DRVR	NONE	25	M	OR-Y		000	000		00
																								OR<25					
05596	Y	N	N				12/16/2016	16	HILLSBORO-SILV HY	STRGHT		N	N	CLD	O-STRGHT	01	NONE 0	STRGHT										087	01
CITY							FR		WOODLAND AVE	W	(NONE)	UNKNOWN	N	SNO	SS-M		PRVTE	E -W									000	087	00
Y							4P			03			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	72	F	OR-Y		047,080	000		01
N							45 9 3.69	-122 53 13.04	014000100S00		(02)													OR<25					
																02	NONE 0	STRGHT											
																	PRVTE	W -E									000	087	00
																	PSNGR CAR		01	DRVR	INJC	50	M	NONE		000	000		00
																								OR<25					
																02	NONE 0	STRGHT											
																	PRVTE	W -E									000	087	00
																	PSNGR CAR		02	PSNG	INJC	00	M			000	000		00

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

Appendix E 2023 Background Traffic Conditions Operations Worksheets

Intersection	
Int Delay, s/veh	5.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	117	53	61	360	90	140
Future Vol, veh/h	117	53	61	360	90	140
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	12	9	8	5	3	4
Mvmt Flow	138	62	72	424	106	165

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	200	0	737	169
Stage 1	-	-	-	-	169	-
Stage 2	-	-	-	-	568	-
Critical Hdwy	-	-	4.18	-	6.43	6.24
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.272	-	3.527	3.336
Pot Cap-1 Maneuver	-	-	1337	-	384	870
Stage 1	-	-	-	-	858	-
Stage 2	-	-	-	-	565	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1337	-	357	870
Mov Cap-2 Maneuver	-	-	-	-	357	-
Stage 1	-	-	-	-	858	-
Stage 2	-	-	-	-	525	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	17.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	557	-	-	1337	-
HCM Lane V/C Ratio	0.486	-	-	0.054	-
HCM Control Delay (s)	17.4	-	-	7.8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	2.6	-	-	0.2	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	255	0	0	401	11	0	0	0	34	0	20
Future Vol, veh/h	2	255	0	0	401	11	0	0	0	34	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	7	0	0	6	0	0	0	0	4	0	0
Mvmt Flow	2	293	0	0	461	13	0	0	0	39	0	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	474	0	0	293	0	0	776	771	293	758	758	461
Stage 1	-	-	-	-	-	-	297	297	-	461	461	-
Stage 2	-	-	-	-	-	-	479	474	-	297	297	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.14	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.14	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.14	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.536	4	3.3
Pot Cap-1 Maneuver	1099	-	-	1280	-	-	317	333	751	321	339	605
Stage 1	-	-	-	-	-	-	716	671	-	577	569	-
Stage 2	-	-	-	-	-	-	571	561	-	707	671	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1099	-	-	1280	-	-	305	332	751	320	338	605
Mov Cap-2 Maneuver	-	-	-	-	-	-	305	332	-	320	338	-
Stage 1	-	-	-	-	-	-	715	670	-	576	569	-
Stage 2	-	-	-	-	-	-	549	561	-	706	670	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	0	16
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1099	-	-	1280	-	-	388
HCM Lane V/C Ratio	-	0.002	-	-	-	-	-	0.16
HCM Control Delay (s)	0	8.3	0	-	0	-	-	16
HCM Lane LOS	A	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.6

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	35	251	3	17	61	377	42	0	1	29	324	5
Future Volume (vph)	35	251	3	17	61	377	42	0	1	29	324	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%				0%			0%			1%
Total Lost time (s)	4.0	4.5	4.5		4.0	4.5	4.5		4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95	1.00		1.00		0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00		1.00		1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	1.00	0.85		0.85		1.00	0.97
Flt Protected	0.95	1.00	1.00		0.95	1.00	1.00		1.00		0.95	0.96
Satd. Flow (prot)	1662	3107	1488		1352	3137	1417		945		1541	1467
Flt Permitted	0.95	1.00	1.00		0.95	1.00	1.00		1.00		0.95	0.96
Satd. Flow (perm)	1662	3107	1488		1352	3137	1417		945		1541	1467
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	39	279	3	19	68	419	47	0	1	32	360	6
RTOR Reduction (vph)	0	0	2	0	0	0	20	0	30	0	0	6
Lane Group Flow (vph)	39	279	1	0	87	419	27	0	3	0	205	194
Confl. Peds. (#/hr)											5	
Heavy Vehicles (%)	0%	7%	0%	23%	23%	6%	5%	0%	0%	60%	2%	25%
Turn Type	Prot	NA	pt+ov	Prot	Prot	NA	pt+ov	Split	NA		Split	NA
Protected Phases	5	2	2 8	1	1	6	6 4	8	8		4	4
Permitted Phases												
Actuated Green, G (s)	4.0	15.0	18.3		7.7	18.7	33.4		3.3		14.7	14.7
Effective Green, g (s)	4.0	15.0	18.3		7.7	18.7	33.4		3.3		14.7	14.7
Actuated g/C Ratio	0.07	0.26	0.32		0.13	0.33	0.58		0.06		0.26	0.26
Clearance Time (s)	4.0	4.5			4.0	4.5			4.0		4.0	4.0
Vehicle Extension (s)	2.5	4.2			2.5	4.2			2.5		2.5	2.5
Lane Grp Cap (vph)	116	814	476		182	1025	827		54		396	377
v/s Ratio Prot	0.02	c0.09	0.00		0.06	c0.13	0.02		c0.00		c0.13	0.13
v/s Ratio Perm												
v/c Ratio	0.34	0.34	0.00		0.48	0.41	0.03		0.05		0.52	0.51
Uniform Delay, d1	25.3	17.1	13.2		22.9	15.0	5.0		25.5		18.2	18.2
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00
Incremental Delay, d2	1.3	0.4	0.0		1.4	0.4	0.0		0.3		0.9	0.9
Delay (s)	26.6	17.5	13.2		24.3	15.4	5.1		25.8		19.1	19.1
Level of Service	C	B	B		C	B	A		C		B	B
Approach Delay (s)		18.6				15.9			25.8			19.1
Approach LOS		B				B			C			B

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	57.2	Sum of lost time (s)	16.5
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	35
Future Volume (vph)	35
Ideal Flow (vphpl)	1750
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.90
Adj. Flow (vph)	39
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	213
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	35	251	3	17	61	377	42	0	1	29	324	5
Future Volume (veh/h)	35	251	3	17	61	377	42	0	1	29	324	5
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No				No			No			No
Adj Sat Flow, veh/h/ln	1750	1654	1750		1436	1668	1682	1750	1750	1750	1717	1403
Adj Flow Rate, veh/h	39	279	3		68	419	47	0	1	32	401	0
Peak Hour Factor	0.90	0.90	0.90		0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	7	0		23	6	5	0	0	0	2	25
Cap, veh/h	67	713	400		78	746	894	71	2	61	1281	550
Arrive On Green	0.04	0.23	0.23		0.06	0.24	0.24	0.00	0.04	0.04	0.39	0.00
Sat Flow, veh/h	1667	3143	1483		1368	3169	1425	1667	45	1445	3271	1403
Grp Volume(v), veh/h	39	279	3		68	419	47	0	0	33	401	0
Grp Sat Flow(s),veh/h/ln	1667	1572	1483		1368	1585	1425	1667	0	1490	1636	1403
Q Serve(g_s), s	1.3	4.4	0.1		2.9	6.8	0.7	0.0	0.0	1.3	5.0	0.0
Cycle Q Clear(g_c), s	1.3	4.4	0.1		2.9	6.8	0.7	0.0	0.0	1.3	5.0	0.0
Prop In Lane	1.00		1.00		1.00		1.00	1.00		0.97	1.00	
Lane Grp Cap(c), veh/h	67	713	400		78	746	894	71	0	63	1281	550
V/C Ratio(X)	0.58	0.39	0.01		0.87	0.56	0.05	0.00	0.00	0.52	0.31	0.00
Avail Cap(c_a), veh/h	569	2415	1203		467	2435	1653	854	0	763	2513	1078
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00		1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.6	19.2	15.7		27.4	19.7	4.2	0.0	0.0	27.4	12.3	0.0
Incr Delay (d2), s/veh	5.9	0.5	0.0		18.7	1.0	0.0	0.0	0.0	4.8	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	2.8	0.1		2.3	4.3	0.9	0.0	0.0	0.9	2.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.5	19.7	15.7		46.1	20.7	4.2	0.0	0.0	32.3	12.5	0.0
LnGrp LOS	C	B	B		D	C	A	A	A	C	B	A
Approach Vol, veh/h		321				534			33			401
Approach Delay, s/veh		21.4				22.5			32.3			12.5
Approach LOS		C				C			C			B

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.3	17.8		26.9	6.8	18.3		6.5
Change Period (Y+Rc), s	4.0	4.5		4.0	4.5	* 4.5		4.0
Max Green Setting (Gmax), s	20.0	45.0		45.0	20.0	* 45		30.0
Max Q Clear Time (g_c+I1), s	4.9	6.4		7.0	3.3	8.8		3.3
Green Ext Time (p_c), s	0.1	3.0		1.1	0.0	5.0		0.1

Intersection Summary	
HCM 6th Ctrl Delay	19.4
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	35
Future Volume (veh/h)	35
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1403
Adj Flow Rate, veh/h	0
Peak Hour Factor	0.90
Percent Heavy Veh, %	25
Cap, veh/h	0
Arrive On Green	0.00
Sat Flow, veh/h	0
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.00
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(I)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(95%),veh/ln	0.0
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	A
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer - Assigned Phs
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	469	152	0	500	381	0	0	0	191	0	119
Future Volume (vph)	0	469	152	0	500	381	0	0	0	191	0	119
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		3%			-4%			0%			5%	
Total Lost time (s)		4.5	4.0		4.5	4.0				4.5		2.5
Lane Util. Factor		0.95	1.00		0.95	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3090	1263		3140	1315				2859		1283
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3090	1263		3140	1315				2859		1283
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	499	162	0	532	405	0	0	0	203	0	127
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	97
Lane Group Flow (vph)	0	499	162	0	532	405	0	0	0	203	0	30
Confl. Peds. (#/hr)						1						1
Heavy Vehicles (%)	0%	6%	16%	0%	8%	13%	0%	0%	0%	10%	0%	13%
Turn Type		NA	Free		NA	Free				Prot		custom
Protected Phases		2			6					4		4 5
Permitted Phases			Free			Free						
Actuated Green, G (s)		79.0	100.0		70.0	100.0				12.0		21.5
Effective Green, g (s)		79.0	100.0		70.0	100.0				12.0		23.5
Actuated g/C Ratio		0.79	1.00		0.70	1.00				0.12		0.24
Clearance Time (s)		4.5			4.5					4.5		
Vehicle Extension (s)		6.0			4.0					2.5		
Lane Grp Cap (vph)		2441	1263		2198	1315				343		301
v/s Ratio Prot		0.16			0.17					c0.07		0.02
v/s Ratio Perm			0.13			c0.31						
v/c Ratio		0.20	0.13		0.24	0.31				0.59		0.10
Uniform Delay, d1		2.6	0.0		5.4	0.0				41.7		30.0
Progression Factor		1.00	1.00		0.72	1.00				1.00		1.00
Incremental Delay, d2		0.2	0.2		0.2	0.6				2.3		0.1
Delay (s)		2.8	0.2		4.1	0.6				44.0		30.1
Level of Service		A	A		A	A				D		C
Approach Delay (s)		2.2			2.6			0.0			38.6	
Approach LOS		A			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	30.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	469	152	0	500	381	0	0	0	191	0	119
Future Volume (veh/h)	0	469	152	0	500	381	0	0	0	191	0	119
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1619	1483	0	1784	1715				1478	0	1437
Adj Flow Rate, veh/h	0	499	0	0	532	0				203	0	127
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	6	16	0	8	13				10	0	13
Cap, veh/h	0	2407		0	2652					349	0	180
Arrive On Green	0.00	0.78	0.00	0.00	1.00	0.00				0.13	0.00	0.15
Sat Flow, veh/h	0	3158	1257	0	3479	1454				2731	0	1218
Grp Volume(v), veh/h	0	499	0	0	532	0				203	0	127
Grp Sat Flow(s),veh/h/ln	0	1538	1257	0	1695	1454				1365	0	1218
Q Serve(g_s), s	0.0	4.2	0.0	0.0	0.0	0.0				7.0	0.0	9.9
Cycle Q Clear(g_c), s	0.0	4.2	0.0	0.0	0.0	0.0				7.0	0.0	9.9
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2407		0	2652					349	0	180
V/C Ratio(X)	0.00	0.21		0.00	0.20					0.58	0.00	0.71
Avail Cap(c_a), veh/h	0	2407		0	2652					969	0	457
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.92	0.00	0.00	0.91	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	2.8	0.0	0.0	0.0	0.0				41.1	0.0	40.5
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.2	0.0				1.1	0.0	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	1.8	0.0	0.0	0.1	0.0				4.3	0.0	11.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	3.0	0.0	0.0	0.2	0.0				42.2	0.0	44.3
LnGrp LOS	A	A		A	A					D	A	D
Approach Vol, veh/h		499	A		532	A					330	
Approach Delay, s/veh		3.0			0.2						43.0	
Approach LOS		A			A						D	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		82.7		17.3		82.7
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		55.5		35.5		35.5
Max Q Clear Time (g_c+I1), s		6.2		11.9		2.0
Green Ext Time (p_c), s		9.9		0.9		5.7

Intersection Summary	
HCM 6th Ctrl Delay	11.6
HCM 6th LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	411	249	0	651	597	230	0	523	0	0	0
Future Volume (vph)	0	411	249	0	651	597	230	0	523	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-4%			3%			6%			0%	
Total Lost time (s)		4.5	4.0		4.5	4.0	4.5	4.5	4.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.86	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)		3111	1415		2951	1407	1445	1285	1331			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)		3111	1415		2951	1407	1445	1285	1331			
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	437	265	0	693	635	245	0	556	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	210	228	0	0	0
Lane Group Flow (vph)	0	437	265	0	693	635	220	82	61	0	0	0
Confl. Peds. (#/hr)			2			1						
Heavy Vehicles (%)	0%	9%	5%	0%	11%	2%	6%	0%	3%	0%	0%	0%
Turn Type		NA	Free		NA	Free	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases			Free			Free			8			
Actuated Green, G (s)		69.8	100.0		69.8	100.0	21.2	21.2	21.2			
Effective Green, g (s)		69.8	100.0		69.8	100.0	21.2	21.2	21.2			
Actuated g/C Ratio		0.70	1.00		0.70	1.00	0.21	0.21	0.21			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		4.0			6.0		2.5	2.5	2.5			
Lane Grp Cap (vph)		2171	1415		2059	1407	306	272	282			
v/s Ratio Prot		0.14			0.23		c0.15	0.06				
v/s Ratio Perm			0.19			c0.45			0.05			
v/c Ratio		0.20	0.19		0.34	0.45	0.72	0.30	0.22			
Uniform Delay, d1		5.3	0.0		6.0	0.0	36.6	33.2	32.5			
Progression Factor		1.97	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.2	0.3		0.4	1.0	7.3	0.5	0.3			
Delay (s)		10.7	0.3		6.4	1.0	44.0	33.6	32.8			
Level of Service		B	A		A	A	D	C	C			
Approach Delay (s)		6.8			3.8			36.2			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	411	249	0	651	597	230	0	523	0	0	0
Future Volume (veh/h)	0	411	249	0	651	597	230	0	523	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1770	1826	0	1551	1674	1473	1555	1514			
Adj Flow Rate, veh/h	0	437	0	0	693	0	367	0	212			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	0	9	5	0	11	2	6	0	3			
Cap, veh/h	0	2407		0	2109		545	0	249			
Arrive On Green	0.00	1.00	0.00	0.00	0.72	0.00	0.19	0.00	0.19			
Sat Flow, veh/h	0	3452	1547	0	3025	1419	2805	0	1283			
Grp Volume(v), veh/h	0	437	0	0	693	0	367	0	212			
Grp Sat Flow(s),veh/h/ln	0	1682	1547	0	1473	1419	1403	0	1283			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	8.7	0.0	12.1	0.0	15.9			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	8.7	0.0	12.1	0.0	15.9			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2407		0	2109		545	0	249			
V/C Ratio(X)	0.00	0.18		0.00	0.33		0.67	0.00	0.85			
Avail Cap(c_a), veh/h	0	2407		0	2109		996	0	455			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.96	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	5.3	0.0	37.3	0.0	38.9			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.4	0.0	1.1	0.0	6.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	0.1	0.0	0.0	4.3	0.0	7.6	0.0	9.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.2	0.0	0.0	5.7	0.0	38.4	0.0	44.9			
LnGrp LOS	A	A		A	A		D	A	D			
Approach Vol, veh/h		437	A		693	A		579				
Approach Delay, s/veh		0.2			5.7			40.8				
Approach LOS		A			A			D				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		76.1				76.1		23.9				
Change Period (Y+Rc), s		4.5				4.5		4.5				
Max Green Setting (Gmax), s		55.5				55.5		35.5				
Max Q Clear Time (g_c+I1), s		2.0				10.7		17.9				
Green Ext Time (p_c), s		4.8				14.5		1.5				

Intersection Summary	
HCM 6th Ctrl Delay	16.2
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

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

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	0	230	114	0
Future Vol, veh/h	0	1	0	230	114	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	0	1	0	311	154	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	465	154	154	0	-	0
Stage 1	154	-	-	-	-	-
Stage 2	311	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	559	897	1439	-	-	-
Stage 1	879	-	-	-	-	-
Stage 2	748	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	559	897	1439	-	-	-
Mov Cap-2 Maneuver	559	-	-	-	-	-
Stage 1	879	-	-	-	-	-
Stage 2	748	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1439	-	897	-	-
HCM Lane V/C Ratio	-	-	0.002	-	-
HCM Control Delay (s)	0	-	9	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	18	42	191	19	46	63
Future Vol, veh/h	18	42	191	19	46	63
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	3	-	-	-3
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	0	1	0	10	7
Mvmt Flow	21	50	227	23	55	75

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	424	239	0	0	250	0
Stage 1	239	-	-	-	-	-
Stage 2	185	-	-	-	-	-
Critical Hdwy	7	6.5	-	-	4.2	-
Critical Hdwy Stg 1	6	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.29	-
Pot Cap-1 Maneuver	550	789	-	-	1270	-
Stage 1	774	-	-	-	-	-
Stage 2	826	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	525	789	-	-	1270	-
Mov Cap-2 Maneuver	525	-	-	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	789	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.9	0	3.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	686	1270	-
HCM Lane V/C Ratio	-	-	0.104	0.043	-
HCM Control Delay (s)	-	-	10.9	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection	
Int Delay, s/veh	5.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	151	56	98	218	89	115
Future Vol, veh/h	151	56	98	218	89	115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	10	2	2	10	4	2
Mvmt Flow	156	58	101	225	92	119

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	214	0	612	185
Stage 1	-	-	-	-	185	-
Stage 2	-	-	-	-	427	-
Critical Hdwy	-	-	4.12	-	6.44	6.22
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.218	-	3.536	3.318
Pot Cap-1 Maneuver	-	-	1356	-	453	857
Stage 1	-	-	-	-	842	-
Stage 2	-	-	-	-	654	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1356	-	414	857
Mov Cap-2 Maneuver	-	-	-	-	414	-
Stage 1	-	-	-	-	842	-
Stage 2	-	-	-	-	598	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	14.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	584	-	-	1356	-
HCM Lane V/C Ratio	0.36	-	-	0.075	-
HCM Control Delay (s)	14.6	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.6	-	-	0.2	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	253	1	1	283	20	0	0	1	33	1	33
Future Vol, veh/h	12	253	1	1	283	20	0	0	1	33	1	33
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	6	0	0	10	0	0	0	0	5	0	5
Mvmt Flow	13	272	1	1	304	22	0	0	1	35	1	35

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	326	0	0	273	0	0	634	627	273	605	605	304
Stage 1	-	-	-	-	-	-	299	299	-	306	306	-
Stage 2	-	-	-	-	-	-	335	328	-	299	299	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.15	6.5	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.15	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.15	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.545	4	3.345
Pot Cap-1 Maneuver	1245	-	-	1302	-	-	395	403	771	405	415	729
Stage 1	-	-	-	-	-	-	714	670	-	697	665	-
Stage 2	-	-	-	-	-	-	683	651	-	703	670	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1245	-	-	1302	-	-	371	398	771	401	410	729
Mov Cap-2 Maneuver	-	-	-	-	-	-	371	398	-	401	410	-
Stage 1	-	-	-	-	-	-	705	662	-	689	664	-
Stage 2	-	-	-	-	-	-	648	650	-	694	662	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	9.7	13.1
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	771	1245	-	-	1302	-	-	515
HCM Lane V/C Ratio	0.001	0.01	-	-	0.001	-	-	0.14
HCM Control Delay (s)	9.7	7.9	0	-	7.8	0	-	13.1
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.5

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	27	251	9	17	66	260	61	1	1	32	379	2
Future Volume (vph)	27	251	9	17	66	260	61	1	1	32	379	2
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%				0%			0%			1%
Total Lost time (s)	4.0	4.5	4.5		4.0	4.5	4.5	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95	1.00	1.00	1.00		0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.85		1.00	0.97
Flt Protected	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (prot)	1662	3107	1488		1222	3167	1365	1662	968		1541	1497
Flt Permitted	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (perm)	1662	3107	1488		1222	3167	1365	1662	968		1541	1497
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	30	276	10	19	73	286	67	1	1	35	416	2
RTOR Reduction (vph)	0	0	7	0	0	0	26	0	33	0	0	6
Lane Group Flow (vph)	30	276	3	0	92	286	41	1	3	0	237	222
Confl. Peds. (#/hr)											1	
Heavy Vehicles (%)	0%	7%	0%	36%	36%	5%	9%	0%	0%	56%	2%	50%
Turn Type	Prot	NA	pt+ov	Prot	Prot	NA	pt+ov	Split	NA		Split	NA
Protected Phases	5	2	2 8	1	1	6	6 4	8	8		4	4
Permitted Phases												
Actuated Green, G (s)	4.4	16.2	19.6		8.7	20.5	37.2	3.4	3.4		16.7	16.7
Effective Green, g (s)	4.4	16.2	19.6		8.7	20.5	37.2	3.4	3.4		16.7	16.7
Actuated g/C Ratio	0.07	0.26	0.32		0.14	0.33	0.60	0.06	0.06		0.27	0.27
Clearance Time (s)	4.0	4.5			4.0	4.5		4.0	4.0		4.0	4.0
Vehicle Extension (s)	2.5	4.2			2.5	4.2		2.5	2.5		2.5	2.5
Lane Grp Cap (vph)	118	818	474		172	1055	825	91	53		418	406
v/s Ratio Prot	0.02	c0.09	0.00		c0.08	0.09	0.03	0.00	c0.00		c0.15	0.15
v/s Ratio Perm												
v/c Ratio	0.25	0.34	0.01		0.53	0.27	0.05	0.01	0.06		0.57	0.55
Uniform Delay, d1	27.0	18.3	14.3		24.5	15.0	4.9	27.5	27.5		19.3	19.2
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.8	0.4	0.0		2.5	0.2	0.0	0.0	0.3		1.4	1.2
Delay (s)	27.8	18.7	14.3		27.0	15.2	5.0	27.5	27.8		20.7	20.4
Level of Service	C	B	B		C	B	A	C	C		C	C
Approach Delay (s)		19.4				16.1			27.8			20.5
Approach LOS		B				B			C			C

Intersection Summary			
HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	61.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	43
Future Volume (vph)	43
Ideal Flow (vphpl)	1750
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.91
Adj. Flow (vph)	47
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Heavy Vehicles (%)	5%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	27	251	9	17	66	260	61	1	1	32	379	2
Future Volume (veh/h)	27	251	9	17	66	260	61	1	1	32	379	2
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No				No			No			No
Adj Sat Flow, veh/h/ln	1750	1654	1750		1259	1682	1627	1750	1750	1750	1717	1062
Adj Flow Rate, veh/h	30	276	10		73	286	67	1	1	35	461	0
Peak Hour Factor	0.91	0.91	0.91		0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	7	0		36	5	9	0	0	0	2	50
Cap, veh/h	81	677	396		85	718	610	85	2	74	712	231
Arrive On Green	0.05	0.22	0.22		0.07	0.22	0.22	0.05	0.05	0.05	0.22	0.00
Sat Flow, veh/h	1667	3143	1483		1199	3195	1379	1667	41	1448	3271	1062
Grp Volume(v), veh/h	30	276	10		73	286	67	1	0	36	461	0
Grp Sat Flow(s),veh/h/ln	1667	1572	1483		1199	1598	1379	1667	0	1489	1636	1062
Q Serve(g_s), s	0.6	2.8	0.2		2.2	2.8	1.1	0.0	0.0	0.9	4.8	0.0
Cycle Q Clear(g_c), s	0.6	2.8	0.2		2.2	2.8	1.1	0.0	0.0	0.9	4.8	0.0
Prop In Lane	1.00		1.00		1.00		1.00	1.00		0.97	1.00	
Lane Grp Cap(c), veh/h	81	677	396		85	718	610	85	0	76	712	231
V/C Ratio(X)	0.37	0.41	0.03		0.85	0.40	0.11	0.01	0.00	0.47	0.65	0.00
Avail Cap(c_a), veh/h	898	3809	1873		646	3872	1971	1346	0	1203	3964	1287
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.1	12.5	10.1		17.1	12.3	6.1	16.7	0.0	17.1	13.2	0.0
Incr Delay (d2), s/veh	2.1	0.6	0.0		16.0	0.5	0.1	0.0	0.0	3.3	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.5	1.5	0.1		1.6	1.5	0.7	0.0	0.0	0.6	2.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.2	13.1	10.1		33.1	12.8	6.2	16.8	0.0	20.5	14.0	0.0
LnGrp LOS	B	B	B		C	B	A	B	A	C	B	A
Approach Vol, veh/h		316				426			37			461
Approach Delay, s/veh		13.6				15.2			20.4			14.0
Approach LOS		B				B			C			B

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.6	12.5		12.1	6.3	12.8		5.9
Change Period (Y+Rc), s	4.0	4.5		4.0	4.5	* 4.5		4.0
Max Green Setting (Gmax), s	20.0	45.0		45.0	20.0	* 45		30.0
Max Q Clear Time (g_c+I1), s	4.2	4.8		6.8	2.6	4.8		2.9
Green Ext Time (p_c), s	0.1	3.0		1.3	0.0	3.5		0.1

Intersection Summary	
HCM 6th Ctrl Delay	14.5
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	43
Future Volume (veh/h)	43
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1062
Adj Flow Rate, veh/h	0
Peak Hour Factor	0.91
Percent Heavy Veh, %	50
Cap, veh/h	0
Arrive On Green	0.00
Sat Flow, veh/h	0
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.00
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(I)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(95%),veh/ln	0.0
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	A
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer - Assigned Phs
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	507	182	0	402	431	0	0	0	249	0	133
Future Volume (vph)	0	507	182	0	402	431	0	0	0	249	0	133
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		3%			-4%			0%			5%	
Total Lost time (s)		4.5	4.0		4.5	4.0				4.5		2.5
Lane Util. Factor		0.95	1.00		0.95	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3090	1308		3055	1292				2859		1261
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3090	1308		3055	1292				2859		1261
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	557	200	0	442	474	0	0	0	274	0	146
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	108
Lane Group Flow (vph)	0	557	200	0	442	474	0	0	0	274	0	38
Confl. Peds. (#/hr)						1						1
Heavy Vehicles (%)	0%	6%	12%	0%	11%	15%	0%	0%	0%	10%	0%	15%
Turn Type		NA	Free		NA	Free				Prot		custom
Protected Phases		2			6					4		4 5
Permitted Phases			Free			Free						
Actuated Green, G (s)		76.5	100.0		67.5	100.0				14.5		24.0
Effective Green, g (s)		76.5	100.0		67.5	100.0				14.5		26.0
Actuated g/C Ratio		0.76	1.00		0.68	1.00				0.14		0.26
Clearance Time (s)		4.5			4.5					4.5		
Vehicle Extension (s)		6.0			4.0					2.5		
Lane Grp Cap (vph)		2363	1308		2062	1292				414		327
v/s Ratio Prot		0.18			0.14					c0.10		0.03
v/s Ratio Perm			0.15			c0.37						
v/c Ratio		0.24	0.15		0.21	0.37				0.66		0.12
Uniform Delay, d1		3.4	0.0		6.2	0.0				40.4		28.2
Progression Factor		1.00	1.00		0.79	1.00				1.00		1.00
Incremental Delay, d2		0.2	0.2		0.2	0.8				3.6		0.1
Delay (s)		3.6	0.2		5.1	0.8				44.0		28.3
Level of Service		A	A		A	A				D		C
Approach Delay (s)		2.7			2.9			0.0			38.6	
Approach LOS		A			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	30.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	507	182	0	402	431	0	0	0	249	0	133
Future Volume (veh/h)	0	507	182	0	402	431	0	0	0	249	0	133
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1619	1537	0	1743	1688				1478	0	1410
Adj Flow Rate, veh/h	0	557	0	0	442	0				274	0	146
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91				0.91	0.91	0.91
Percent Heavy Veh, %	0	6	12	0	11	15				10	0	15
Cap, veh/h	0	2348		0	2527					401	0	199
Arrive On Green	0.00	0.76	0.00	0.00	1.00	0.00				0.15	0.00	0.17
Sat Flow, veh/h	0	3158	1303	0	3398	1430				2731	0	1195
Grp Volume(v), veh/h	0	557	0	0	442	0				274	0	146
Grp Sat Flow(s),veh/h/ln	0	1538	1303	0	1656	1430				1365	0	1195
Q Serve(g_s), s	0.0	5.2	0.0	0.0	0.0	0.0				9.5	0.0	11.6
Cycle Q Clear(g_c), s	0.0	5.2	0.0	0.0	0.0	0.0				9.5	0.0	11.6
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2348		0	2527					401	0	199
V/C Ratio(X)	0.00	0.24		0.00	0.17					0.68	0.00	0.73
Avail Cap(c_a), veh/h	0	2348		0	2527					969	0	448
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.67	1.67				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.90	0.00	0.00	0.93	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	3.4	0.0	0.0	0.0	0.0				40.4	0.0	39.5
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.1	0.0				1.5	0.0	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	2.4	0.0	0.0	0.1	0.0				5.9	0.0	12.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	3.6	0.0	0.0	0.1	0.0				42.0	0.0	43.4
LnGrp LOS	A	A		A	A					D	A	D
Approach Vol, veh/h		557	A		442	A					420	
Approach Delay, s/veh		3.6			0.1						42.5	
Approach LOS		A			A						D	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		80.8		19.2		80.8
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		55.5		35.5		35.5
Max Q Clear Time (g_c+I1), s		7.2		13.6		2.0
Green Ext Time (p_c), s		11.2		1.1		4.6

Intersection Summary	
HCM 6th Ctrl Delay	14.0
HCM 6th LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	540	216	0	668	570	165	0	527	0	0	0
Future Volume (vph)	0	540	216	0	668	570	165	0	527	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-4%			3%			6%			0%	
Total Lost time (s)		4.5	4.0		4.5	4.0	4.5	4.5	4.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	1.00		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.86	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)		3111	1431		2873	1407	1405	1280	1331			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)		3111	1431		2873	1407	1405	1280	1331			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	568	227	0	703	600	174	0	555	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	226	235	0	0	0
Lane Group Flow (vph)	0	568	227	0	703	600	157	63	48	0	0	0
Confl. Peds. (#/hr)						1						
Heavy Vehicles (%)	0%	9%	6%	0%	14%	2%	9%	0%	3%	0%	0%	0%
Turn Type		NA	Free		NA	Free	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases			Free			Free			8			
Actuated Green, G (s)		74.2	100.0		74.2	100.0	16.8	16.8	16.8			
Effective Green, g (s)		74.2	100.0		74.2	100.0	16.8	16.8	16.8			
Actuated g/C Ratio		0.74	1.00		0.74	1.00	0.17	0.17	0.17			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		4.0			6.0		2.5	2.5	2.5			
Lane Grp Cap (vph)		2308	1431		2131	1407	236	215	223			
v/s Ratio Prot		0.18			0.24		c0.11	0.05				
v/s Ratio Perm			0.16			c0.43			0.04			
v/c Ratio		0.25	0.16		0.33	0.43	0.67	0.29	0.21			
Uniform Delay, d1		4.1	0.0		4.4	0.0	39.0	36.4	35.9			
Progression Factor		2.17	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.2	0.2		0.4	0.9	6.2	0.6	0.3			
Delay (s)		9.1	0.2		4.8	0.9	45.2	36.9	36.2			
Level of Service		A	A		A	A	D	D	D			
Approach Delay (s)		6.6			3.0			38.5			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	13.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	540	216	0	668	570	165	0	527	0	0	0
Future Volume (veh/h)	0	540	216	0	668	570	165	0	527	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1770	1812	0	1510	1674	1432	1555	1514			
Adj Flow Rate, veh/h	0	568	0	0	703	0	116	0	407			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	0	9	6	0	14	2	9	0	3			
Cap, veh/h	0	2429		0	2072		256	0	482			
Arrive On Green	0.00	1.00	0.00	0.00	0.72	0.00	0.19	0.00	0.19			
Sat Flow, veh/h	0	3452	1536	0	2945	1419	1364	0	2566			
Grp Volume(v), veh/h	0	568	0	0	703	0	116	0	407			
Grp Sat Flow(s),veh/h/ln	0	1682	1536	0	1435	1419	1364	0	1283			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	9.0	0.0	7.6	0.0	15.3			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	9.0	0.0	7.6	0.0	15.3			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2429		0	2072		256	0	482			
V/C Ratio(X)	0.00	0.23		0.00	0.34		0.45	0.00	0.84			
Avail Cap(c_a), veh/h	0	2429		0	2072		484	0	911			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.93	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	5.1	0.0	36.0	0.0	39.2			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.4	0.0	0.9	0.0	3.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	0.1	0.0	0.0	4.3	0.0	4.6	0.0	8.6			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.2	0.0	0.0	5.6	0.0	37.0	0.0	42.3			
LnGrp LOS	A	A		A	A		D	A	D			
Approach Vol, veh/h		568	A		703	A		523				
Approach Delay, s/veh		0.2			5.6			41.1				
Approach LOS		A			A			D				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		76.7				76.7		23.3				
Change Period (Y+Rc), s		4.5				4.5		4.5				
Max Green Setting (Gmax), s		55.5				55.5		35.5				
Max Q Clear Time (g_c+I1), s		2.0				11.0		17.3				
Green Ext Time (p_c), s		6.6				14.7		1.5				

Intersection Summary	
HCM 6th Ctrl Delay	14.2
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

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

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	0	204	154	0
Future Vol, veh/h	0	1	0	204	154	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	0	1	0	276	208	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	484	208	208	0	-	0
Stage 1	208	-	-	-	-	-
Stage 2	276	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	545	837	1375	-	-	-
Stage 1	832	-	-	-	-	-
Stage 2	775	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	545	837	1375	-	-	-
Mov Cap-2 Maneuver	545	-	-	-	-	-
Stage 1	832	-	-	-	-	-
Stage 2	775	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1375	-	837	-	-
HCM Lane V/C Ratio	-	-	0.002	-	-
HCM Control Delay (s)	0	-	9.3	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	26	173	29	32	81
Future Vol, veh/h	20	26	173	29	32	81
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	3	-	-	-3
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	6	0	6	0	4	3
Mvmt Flow	21	28	184	31	34	86

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	354	200	0	0	215	0
Stage 1	200	-	-	-	-	-
Stage 2	154	-	-	-	-	-
Critical Hdwy	7.06	6.5	-	-	4.14	-
Critical Hdwy Stg 1	6.06	-	-	-	-	-
Critical Hdwy Stg 2	6.06	-	-	-	-	-
Follow-up Hdwy	3.554	3.3	-	-	2.236	-
Pot Cap-1 Maneuver	599	832	-	-	1343	-
Stage 1	797	-	-	-	-	-
Stage 2	843	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	583	832	-	-	1343	-
Mov Cap-2 Maneuver	583	-	-	-	-	-
Stage 1	797	-	-	-	-	-
Stage 2	820	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.5	0	2.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	702	1343	-
HCM Lane V/C Ratio	-	-	0.07	0.025	-
HCM Control Delay (s)	-	-	10.5	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	6.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	246	77	187	157	52	135
Future Vol, veh/h	246	77	187	157	52	135
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	3	1	1	5	9	3
Mvmt Flow	296	93	225	189	63	163

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	389	0	982	343
Stage 1	-	-	-	-	343	-
Stage 2	-	-	-	-	639	-
Critical Hdwy	-	-	4.11	-	6.49	6.23
Critical Hdwy Stg 1	-	-	-	-	5.49	-
Critical Hdwy Stg 2	-	-	-	-	5.49	-
Follow-up Hdwy	-	-	2.209	-	3.581	3.327
Pot Cap-1 Maneuver	-	-	1175	-	268	697
Stage 1	-	-	-	-	703	-
Stage 2	-	-	-	-	513	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1175	-	211	697
Mov Cap-2 Maneuver	-	-	-	-	211	-
Stage 1	-	-	-	-	703	-
Stage 2	-	-	-	-	403	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.8	22.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	425	-	-	1175	-
HCM Lane V/C Ratio	0.53	-	-	0.192	-
HCM Control Delay (s)	22.6	-	-	8.8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	3	-	-	0.7	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	37	344	0	1	325	56	0	2	2	44	0	19
Future Vol, veh/h	37	344	0	1	325	56	0	2	2	44	0	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	2	0	0	2	3	0	0	0	0	0	0
Mvmt Flow	44	405	0	1	382	66	0	2	2	52	0	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	448	0	0	405	0	0	921	943	405	879	877	382
Stage 1	-	-	-	-	-	-	493	493	-	384	384	-
Stage 2	-	-	-	-	-	-	428	450	-	495	493	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1123	-	-	1165	-	-	253	265	650	270	289	670
Stage 1	-	-	-	-	-	-	562	550	-	643	615	-
Stage 2	-	-	-	-	-	-	609	575	-	560	550	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1123	-	-	1165	-	-	235	251	650	257	274	670
Mov Cap-2 Maneuver	-	-	-	-	-	-	235	251	-	257	274	-
Stage 1	-	-	-	-	-	-	533	522	-	610	614	-
Stage 2	-	-	-	-	-	-	588	574	-	527	522	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0	15.1	19.8
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	362	1123	-	-	1165	-	-	316
HCM Lane V/C Ratio	0.013	0.039	-	-	0.001	-	-	0.235
HCM Control Delay (s)	15.1	8.3	0	-	8.1	0	-	19.8
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.9

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	74	314	2	22	21	314	236	3	2	37	660	1
Future Volume (vph)	74	314	2	22	21	314	236	3	2	37	660	1
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%				0%			0%			1%
Total Lost time (s)	4.0	4.5	4.5		4.0	4.5	4.5	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95	1.00	1.00	1.00		0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.86		1.00	0.97
Flt Protected	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (prot)	1662	3228	1488		1108	3197	1458	1662	1238		1541	1521
Flt Permitted	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (perm)	1662	3228	1488		1108	3197	1458	1662	1238		1541	1521
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	87	369	2	26	25	369	278	4	2	44	776	1
RTOR Reduction (vph)	0	0	1	0	0	0	94	0	41	0	0	4
Lane Group Flow (vph)	87	369	1	0	51	369	184	4	5	0	435	414
Confl. Peds. (#/hr)											1	
Heavy Vehicles (%)	0%	3%	0%	50%	50%	4%	2%	0%	0%	22%	2%	0%
Turn Type	Prot	NA	pt+ov	Prot	Prot	NA	pt+ov	Split	NA		Split	NA
Protected Phases	5	2	2 8	1	1	6	6 4	8	8		4	4
Permitted Phases												
Actuated Green, G (s)	8.1	19.6	24.6		7.7	19.2	57.8	5.0	5.0		38.6	38.6
Effective Green, g (s)	8.1	19.6	24.6		7.7	19.2	57.8	5.0	5.0		38.6	38.6
Actuated g/C Ratio	0.09	0.22	0.28		0.09	0.22	0.66	0.06	0.06		0.44	0.44
Clearance Time (s)	4.0	4.5			4.0	4.5		4.0	4.0		4.0	4.0
Vehicle Extension (s)	2.5	4.2			2.5	4.2		2.5	2.5		2.5	2.5
Lane Grp Cap (vph)	154	723	418		97	702	964	95	70		680	671
v/s Ratio Prot	0.05	c0.11	0.00		0.05	c0.12	0.13	0.00	c0.00		c0.28	0.27
v/s Ratio Perm												
v/c Ratio	0.56	0.51	0.00		0.53	0.53	0.19	0.04	0.06		0.64	0.62
Uniform Delay, d1	38.0	29.7	22.6		38.1	30.1	5.7	38.9	39.0		19.0	18.7
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	3.8	0.9	0.0		3.9	1.0	0.1	0.1	0.3		1.7	1.4
Delay (s)	41.8	30.6	22.6		42.0	31.1	5.9	39.1	39.3		20.7	20.2
Level of Service	D	C	C		D	C	A	D	D		C	C
Approach Delay (s)		32.7				21.8			39.3			20.5
Approach LOS		C				C			D			C

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	87.4	Sum of lost time (s)	16.5
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	65
Future Volume (vph)	65
Ideal Flow (vphpl)	1750
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.85
Adj. Flow (vph)	76
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

HCM 6th Signalized Intersection Summary
3: Woodland Ave & OR 219

05/21/2021

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	74	314	2	22	21	314	236	3	2	37	660	1
Future Volume (veh/h)	74	314	2	22	21	314	236	3	2	37	660	1
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No				No			No			No
Adj Sat Flow, veh/h/ln	1750	1709	1750		1068	1695	1723	1750	1750	1750	1717	1745
Adj Flow Rate, veh/h	87	369	2		25	369	278	4	2	44	848	0
Peak Hour Factor	0.85	0.85	0.85		0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	0	3	0		50	4	2	0	0	0	2	0
Cap, veh/h	111	956	523		29	797	831	97	4	83	1052	561
Arrive On Green	0.07	0.29	0.29		0.03	0.25	0.25	0.06	0.06	0.06	0.32	0.00
Sat Flow, veh/h	1667	3247	1483		1017	3221	1460	1667	65	1428	3271	1745
Grp Volume(v), veh/h	87	369	2		25	369	278	4	0	46	848	0
Grp Sat Flow(s),veh/h/ln	1667	1624	1483		1017	1611	1460	1667	0	1493	1636	1745
Q Serve(g_s), s	2.9	5.0	0.0		1.4	5.4	5.6	0.1	0.0	1.7	13.2	0.0
Cycle Q Clear(g_c), s	2.9	5.0	0.0		1.4	5.4	5.6	0.1	0.0	1.7	13.2	0.0
Prop In Lane	1.00		1.00		1.00		1.00	1.00		0.96	1.00	
Lane Grp Cap(c), veh/h	111	956	523		29	797	831	97	0	87	1052	561
V/C Ratio(X)	0.78	0.39	0.00		0.85	0.46	0.33	0.04	0.00	0.53	0.81	0.00
Avail Cap(c_a), veh/h	601	2633	1289		366	2612	1653	901	0	807	2653	1415
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	25.5	15.6	11.7		26.8	17.7	6.4	24.7	0.0	25.4	17.2	0.0
Incr Delay (d2), s/veh	8.7	0.4	0.0		36.8	0.6	0.4	0.1	0.0	3.7	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.4	3.1	0.0		1.1	3.4	5.5	0.1	0.0	1.2	8.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.2	16.0	11.7		63.6	18.4	6.7	24.8	0.0	29.1	18.4	0.0
LnGrp LOS	C	B	B		E	B	A	C	A	C	B	A
Approach Vol, veh/h		458				672			50			848
Approach Delay, s/veh		19.4				15.2			28.7			18.4
Approach LOS		B				B			C			B

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.6	20.8		21.8	8.2	18.2		7.2
Change Period (Y+Rc), s	4.0	4.5		4.0	4.5	* 4.5		4.0
Max Green Setting (Gmax), s	20.0	45.0		45.0	20.0	* 45		30.0
Max Q Clear Time (g_c+I1), s	3.4	7.0		15.2	4.9	7.6		3.7
Green Ext Time (p_c), s	0.0	4.1		2.6	0.1	6.1		0.2

Intersection Summary	
HCM 6th Ctrl Delay	17.8
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	757	276	0	723	476	0	0	0	542	0	291
Future Volume (vph)	0	757	276	0	723	476	0	0	0	542	0	291
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		3%			-4%			0%			5%	
Total Lost time (s)		4.5	4.0		4.5	4.0				4.5		2.5
Lane Util. Factor		0.95	1.00		0.95	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3180	1409		3325	1429				3083		1395
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3180	1409		3325	1429				3083		1395
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	0	851	310	0	812	535	0	0	0	609	0	327
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	31
Lane Group Flow (vph)	0	851	310	0	812	535	0	0	0	609	0	296
Confl. Peds. (#/hr)						1						1
Heavy Vehicles (%)	0%	3%	4%	0%	2%	4%	0%	0%	0%	2%	0%	4%
Turn Type		NA	Free		NA	Free				Prot		custom
Protected Phases		2			6					4		4 5
Permitted Phases			Free			Free						
Actuated Green, G (s)		65.8	100.0		56.2	100.0				25.2		35.3
Effective Green, g (s)		65.8	100.0		56.2	100.0				25.2		37.3
Actuated g/C Ratio		0.66	1.00		0.56	1.00				0.25		0.37
Clearance Time (s)		4.5			4.5					4.5		
Vehicle Extension (s)		6.0			4.0					2.5		
Lane Grp Cap (vph)		2092	1409		1868	1429				776		520
v/s Ratio Prot		0.27			c0.24					c0.20		c0.21
v/s Ratio Perm			0.22			0.37						
v/c Ratio		0.41	0.22		0.43	0.37				0.78		0.57
Uniform Delay, d1		8.0	0.0		12.7	0.0				34.9		24.9
Progression Factor		1.00	1.00		0.81	1.00				1.00		1.00
Incremental Delay, d2		0.6	0.4		0.7	0.7				5.0		1.2
Delay (s)		8.6	0.4		11.0	0.7				39.9		26.1
Level of Service		A	A		B	A				D		C
Approach Delay (s)		6.4			6.9			0.0			35.1	
Approach LOS		A			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	48.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	757	276	0	723	476	0	0	0	542	0	291
Future Volume (veh/h)	0	757	276	0	723	476	0	0	0	542	0	291
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1660	1647	0	1867	1840				1587	0	1560
Adj Flow Rate, veh/h	0	851	0	0	812	0				609	0	215
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89				0.89	0.89	0.89
Percent Heavy Veh, %	0	3	4	0	2	4				2	0	4
Cap, veh/h	0	2113		0	2377					704	0	344
Arrive On Green	0.00	0.67	0.00	0.00	1.00	0.00				0.24	0.00	0.26
Sat Flow, veh/h	0	3237	1395	0	3641	1559				2932	0	1322
Grp Volume(v), veh/h	0	851	0	0	812	0				609	0	215
Grp Sat Flow(s),veh/h/ln	0	1577	1395	0	1774	1559				1466	0	1322
Q Serve(g_s), s	0.0	12.2	0.0	0.0	0.0	0.0				19.9	0.0	14.4
Cycle Q Clear(g_c), s	0.0	12.2	0.0	0.0	0.0	0.0				19.9	0.0	14.4
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2113		0	2377					704	0	344
V/C Ratio(X)	0.00	0.40		0.00	0.34					0.86	0.00	0.63
Avail Cap(c_a), veh/h	0	2113		0	2377					1041	0	496
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.80	0.00	0.00	0.85	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	7.5	0.0	0.0	0.0	0.0				36.4	0.0	32.7
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	0.3	0.0				4.6	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	6.7	0.0	0.0	0.2	0.0				11.9	0.0	15.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	7.9	0.0	0.0	0.3	0.0				41.1	0.0	34.1
LnGrp LOS	A	A		A	A					D	A	C
Approach Vol, veh/h		851	A		812	A					824	
Approach Delay, s/veh		7.9			0.3						39.2	
Approach LOS		A			A						D	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		71.5		28.5		71.5
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		55.5		35.5		35.5
Max Q Clear Time (g_c+I1), s		14.2		21.9		2.0
Green Ext Time (p_c), s		18.0		2.1		9.4

Intersection Summary	
HCM 6th Ctrl Delay	15.8
HCM 6th LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1091	208	0	986	264	213	0	408	0	0	0
Future Volume (vph)	0	1091	208	0	986	264	213	0	408	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-4%			3%			6%			0%	
Total Lost time (s)		4.5	4.0		4.5	4.0	4.5	4.5	4.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.86	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)		3325	1401		3180	1393	1487	1279	1318			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)		3325	1401		3180	1393	1487	1279	1318			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1186	226	0	1072	287	232	0	443	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	49	49	0	0	0
Lane Group Flow (vph)	0	1186	226	0	1072	287	209	187	181	0	0	0
Confl. Peds. (#/hr)			2			1						
Heavy Vehicles (%)	0%	2%	6%	0%	3%	3%	3%	0%	4%	0%	0%	0%
Turn Type		NA	Free		NA	Free	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases			Free			Free			8			
Actuated Green, G (s)		70.6	100.0		70.6	100.0	20.4	20.4	20.4			
Effective Green, g (s)		70.6	100.0		70.6	100.0	20.4	20.4	20.4			
Actuated g/C Ratio		0.71	1.00		0.71	1.00	0.20	0.20	0.20			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		4.0			6.0		2.5	2.5	2.5			
Lane Grp Cap (vph)		2347	1401		2245	1393	303	260	268			
v/s Ratio Prot		c0.36			0.34		0.14	c0.15				
v/s Ratio Perm			0.16			0.21			0.14			
v/c Ratio		0.51	0.16		0.48	0.21	0.69	0.72	0.67			
Uniform Delay, d1		6.7	0.0		6.5	0.0	36.9	37.1	36.7			
Progression Factor		1.86	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.7	0.2		0.7	0.3	5.9	8.5	6.0			
Delay (s)		13.2	0.2		7.3	0.3	42.7	45.6	42.7			
Level of Service		B	A		A	A	D	D	D			
Approach Delay (s)		11.1			5.8			43.7			0.0	
Approach LOS		B			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1091	208	0	986	264	213	0	408	0	0	0
Future Volume (veh/h)	0	1091	208	0	986	264	213	0	408	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1867	1812	0	1660	1660	1514	1555	1500			
Adj Flow Rate, veh/h	0	1186	0	0	1072	0	302	0	150			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	6	0	3	3	3	0	4			
Cap, veh/h	0	2711		0	2410		421	0	186			
Arrive On Green	0.00	1.00	0.00	0.00	0.76	0.00	0.15	0.00	0.15			
Sat Flow, veh/h	0	3641	1536	0	3237	1407	2883	0	1271			
Grp Volume(v), veh/h	0	1186	0	0	1072	0	302	0	150			
Grp Sat Flow(s),veh/h/ln	0	1774	1536	0	1577	1407	1442	0	1271			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	12.1	0.0	10.0	0.0	11.4			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	12.1	0.0	10.0	0.0	11.4			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2711		0	2410		421	0	186			
V/C Ratio(X)	0.00	0.44		0.00	0.44		0.72	0.00	0.81			
Avail Cap(c_a), veh/h	0	2711		0	2410		1024	0	451			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.80	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	4.2	0.0	40.7	0.0	41.3			
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.6	0.0	1.7	0.0	6.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	0.3	0.0	0.0	5.7	0.0	6.5	0.0	7.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.4	0.0	0.0	4.8	0.0	42.5	0.0	47.5			
LnGrp LOS	A	A		A	A		D	A	D			
Approach Vol, veh/h		1186	A		1072	A		452				
Approach Delay, s/veh		0.4			4.8			44.1				
Approach LOS		A			A			D				

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	80.9	80.9	19.1
Change Period (Y+Rc), s	4.5	4.5	4.5
Max Green Setting (Gmax), s	55.5	55.5	35.5
Max Q Clear Time (g_c+I1), s	2.0	14.1	13.4
Green Ext Time (p_c), s	18.4	23.6	1.2

Intersection Summary	
HCM 6th Ctrl Delay	9.4
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

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

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	3	4	183	259	5
Future Vol, veh/h	4	3	4	183	259	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	1	3	0
Mvmt Flow	5	4	5	215	305	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	533	308	311	0	-	0
Stage 1	308	-	-	-	-	-
Stage 2	225	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	511	737	1261	-	-	-
Stage 1	750	-	-	-	-	-
Stage 2	817	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	508	737	1261	-	-	-
Mov Cap-2 Maneuver	508	-	-	-	-	-
Stage 1	746	-	-	-	-	-
Stage 2	817	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.2	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1261	-	586	-	-
HCM Lane V/C Ratio	0.004	-	0.014	-	-
HCM Control Delay (s)	7.9	0	11.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	2.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	29	56	129	27	63	196
Future Vol, veh/h	29	56	129	27	63	196
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	3	-	-	-3
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	4	4	1	0	2	2
Mvmt Flow	32	62	142	30	69	215

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	510	157	0	0	172	0
Stage 1	157	-	-	-	-	-
Stage 2	353	-	-	-	-	-
Critical Hdwy	7.04	6.54	-	-	4.12	-
Critical Hdwy Stg 1	6.04	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	-	-	2.218	-
Pot Cap-1 Maneuver	477	872	-	-	1405	-
Stage 1	844	-	-	-	-	-
Stage 2	666	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	450	872	-	-	1405	-
Mov Cap-2 Maneuver	450	-	-	-	-	-
Stage 1	844	-	-	-	-	-
Stage 2	629	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.3	0	1.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	661	1405	-
HCM Lane V/C Ratio	-	-	0.141	0.049	-
HCM Control Delay (s)	-	-	11.3	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.2	-

Intersection	
Int Delay, s/veh	6.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	469	161	171	260	63	106
Future Vol, veh/h	469	161	171	260	63	106
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	2	1	3	6	6
Mvmt Flow	494	169	180	274	66	112

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	663	0	1213	579
Stage 1	-	-	-	-	579	-
Stage 2	-	-	-	-	634	-
Critical Hdwy	-	-	4.11	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.209	-	3.554	3.354
Pot Cap-1 Maneuver	-	-	931	-	197	507
Stage 1	-	-	-	-	553	-
Stage 2	-	-	-	-	521	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	931	-	152	507
Mov Cap-2 Maneuver	-	-	-	-	152	-
Stage 1	-	-	-	-	553	-
Stage 2	-	-	-	-	402	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.9	40.5
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	271	-	-	931	-
HCM Lane V/C Ratio	0.656	-	-	0.193	-
HCM Control Delay (s)	40.5	-	-	9.8	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	4.2	-	-	0.7	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	57	518	0	4	401	53	0	0	2	27	0	30
Future Vol, veh/h	57	518	0	4	401	53	0	0	2	27	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	5	0	0	2	2	0	0	0	5	0	6
Mvmt Flow	61	551	0	4	427	56	0	0	2	29	0	32

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	483	0	0	551	0	0	1152	1164	551	1109	1108	427
Stage 1	-	-	-	-	-	-	673	673	-	435	435	-
Stage 2	-	-	-	-	-	-	479	491	-	674	673	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.15	6.5	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.15	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.15	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.545	4	3.354
Pot Cap-1 Maneuver	1090	-	-	1029	-	-	176	196	538	184	212	619
Stage 1	-	-	-	-	-	-	448	457	-	594	584	-
Stage 2	-	-	-	-	-	-	571	552	-	439	457	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1090	-	-	1029	-	-	156	179	538	171	194	619
Mov Cap-2 Maneuver	-	-	-	-	-	-	156	179	-	171	194	-
Stage 1	-	-	-	-	-	-	412	420	-	546	581	-
Stage 2	-	-	-	-	-	-	539	549	-	402	420	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.1	11.7	21.7
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	538	1090	-	-	1029	-	-	276
HCM Lane V/C Ratio	0.004	0.056	-	-	0.004	-	-	0.22
HCM Control Delay (s)	11.7	8.5	0	-	8.5	0	-	21.7
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0	0.2	-	-	0	-	-	0.8

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	89	453	5	22	58	386	269	6	6	69	627	6
Future Volume (vph)	89	453	5	22	58	386	269	6	6	69	627	6
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%				0%			0%			1%
Total Lost time (s)	4.0	4.5	4.5		4.0	4.5	4.5	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95	1.00	1.00	1.00		0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.86		1.00	0.97
Flt Protected	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (prot)	1630	3167	1488		1269	3260	1488	1330	1283		1571	1541
Flt Permitted	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (perm)	1630	3167	1488		1269	3260	1488	1330	1283		1571	1541
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	93	472	5	23	60	402	280	6	6	72	653	6
RTOR Reduction (vph)	0	0	3	0	0	0	109	0	67	0	0	5
Lane Group Flow (vph)	93	472	2	0	83	402	171	6	11	0	366	357
Confl. Peds. (#/hr)											1	
Heavy Vehicles (%)	2%	5%	0%	31%	31%	2%	0%	25%	0%	19%	0%	20%
Turn Type	Prot	NA	pt+ov	Prot	Prot	NA	pt+ov	Split	NA		Split	NA
Protected Phases	5	2	2 8	1	1	6	6 4	8	8		4	4
Permitted Phases												
Actuated Green, G (s)	10.3	22.4	27.8		9.3	21.4	50.7	5.4	5.4		29.3	29.3
Effective Green, g (s)	10.3	22.4	27.8		9.3	21.4	50.7	5.4	5.4		29.3	29.3
Actuated g/C Ratio	0.12	0.27	0.34		0.11	0.26	0.61	0.07	0.07		0.35	0.35
Clearance Time (s)	4.0	4.5			4.0	4.5		4.0	4.0		4.0	4.0
Vehicle Extension (s)	2.5	4.2			2.5	4.2		2.5	2.5		2.5	2.5
Lane Grp Cap (vph)	202	855	498		142	841	910	86	83		555	544
v/s Ratio Prot	0.06	c0.15	0.00		c0.07	0.12	0.12	0.00	c0.01		c0.23	0.23
v/s Ratio Perm												
v/c Ratio	0.46	0.55	0.00		0.58	0.48	0.19	0.07	0.13		0.66	0.66
Uniform Delay, d1	33.7	25.9	18.3		35.0	26.0	7.1	36.4	36.5		22.6	22.6
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.2	1.0	0.0		5.0	0.6	0.2	0.3	0.5		2.5	2.5
Delay (s)	34.9	27.0	18.3		40.0	26.7	7.2	36.6	37.0		25.1	25.1
Level of Service	C	C	B		D	C	A	D	D		C	C
Approach Delay (s)		28.2				21.0			37.0			25.1
Approach LOS		C				C			D			C

Intersection Summary			
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	82.9	Sum of lost time (s)	16.5
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	66
Future Volume (vph)	66
Ideal Flow (vphpl)	1750
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.96
Adj. Flow (vph)	69
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	89	453	5	22	58	386	269	6	6	69	627	6
Future Volume (veh/h)	89	453	5	22	58	386	269	6	6	69	627	6
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No				No			No			No
Adj Sat Flow, veh/h/ln	1723	1682	1750		1327	1723	1750	1409	1750	1750	1745	1472
Adj Flow Rate, veh/h	93	472	5		60	402	280	6	6	72	722	0
Peak Hour Factor	0.96	0.96	0.96		0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	5	0		31	2	0	25	0	0	0	20
Cap, veh/h	118	923	545		69	860	801	106	9	109	922	408
Arrive On Green	0.07	0.29	0.29		0.05	0.26	0.26	0.08	0.08	0.08	0.28	0.00
Sat Flow, veh/h	1641	3195	1483		1264	3273	1483	1342	115	1385	3323	1472
Grp Volume(v), veh/h	93	472	5		60	402	280	6	0	78	722	0
Grp Sat Flow(s),veh/h/ln	1641	1598	1483		1264	1637	1483	1342	0	1501	1661	1472
Q Serve(g_s), s	3.1	6.8	0.1		2.6	5.7	5.9	0.2	0.0	2.8	11.0	0.0
Cycle Q Clear(g_c), s	3.1	6.8	0.1		2.6	5.7	5.9	0.2	0.0	2.8	11.0	0.0
Prop In Lane	1.00		1.00		1.00		1.00	1.00		0.92	1.00	
Lane Grp Cap(c), veh/h	118	923	545		69	860	801	106	0	118	922	408
V/C Ratio(X)	0.79	0.51	0.01		0.87	0.47	0.35	0.06	0.00	0.66	0.78	0.00
Avail Cap(c_a), veh/h	597	2618	1332		460	2681	1626	733	0	820	2722	1206
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	25.1	16.3	11.0		25.8	17.0	7.2	23.4	0.0	24.6	18.3	0.0
Incr Delay (d2), s/veh	8.5	0.7	0.0		20.7	0.6	0.4	0.2	0.0	4.6	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.5	4.1	0.1		2.0	3.6	5.4	0.1	0.0	1.9	7.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.6	17.0	11.0		46.4	17.6	7.6	23.6	0.0	29.1	19.4	0.0
LnGrp LOS	C	B	B		D	B	A	C	A	C	B	A
Approach Vol, veh/h		570				742			84			722
Approach Delay, s/veh		19.6				16.2			28.7			19.4
Approach LOS		B				B			C			B

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.0	20.4		19.2	8.4	18.9		8.3
Change Period (Y+Rc), s	4.0	4.5		4.0	4.5	* 4.5		4.0
Max Green Setting (Gmax), s	20.0	45.0		45.0	20.0	* 45		30.0
Max Q Clear Time (g_c+I1), s	4.6	8.8		13.0	5.1	7.9		4.8
Green Ext Time (p_c), s	0.1	5.4		2.1	0.1	6.5		0.3

Intersection Summary	
HCM 6th Ctrl Delay	18.7
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	66
Future Volume (veh/h)	66
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1472
Adj Flow Rate, veh/h	0
Peak Hour Factor	0.96
Percent Heavy Veh, %	20
Cap, veh/h	0
Arrive On Green	0.00
Sat Flow, veh/h	0
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.00
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(I)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(95%),veh/ln	0.0
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	A
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer - Assigned Phs
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	772	399	0	800	633	0	0	0	555	0	343
Future Volume (vph)	0	772	399	0	800	633	0	0	0	555	0	343
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		3%			-4%			0%			5%	
Total Lost time (s)		4.5	4.0		4.5	4.0				4.5		2.5
Lane Util. Factor		0.95	1.00		0.95	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3180	1409		3325	1457				3083		1381
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3180	1409		3325	1457				3083		1381
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	788	407	0	816	646	0	0	0	566	0	350
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	30
Lane Group Flow (vph)	0	788	407	0	816	646	0	0	0	566	0	320
Confl. Peds. (#/hr)						1						1
Heavy Vehicles (%)	0%	3%	4%	0%	2%	2%	0%	0%	0%	2%	0%	5%
Turn Type		NA	Free		NA	Free				Prot		custom
Protected Phases		2			6					4		4 5
Permitted Phases			Free			Free						
Actuated Green, G (s)		65.3	100.0		55.6	100.0				25.7		35.9
Effective Green, g (s)		65.3	100.0		55.6	100.0				25.7		37.9
Actuated g/C Ratio		0.65	1.00		0.56	1.00				0.26		0.38
Clearance Time (s)		4.5			4.5					4.5		
Vehicle Extension (s)		6.0			4.0					2.5		
Lane Grp Cap (vph)		2076	1409		1848	1457				792		523
v/s Ratio Prot		0.25			0.25					c0.18		c0.23
v/s Ratio Perm			0.29			c0.44						
v/c Ratio		0.38	0.29		0.44	0.44				0.71		0.61
Uniform Delay, d1		8.0	0.0		13.1	0.0				33.8		25.1
Progression Factor		1.00	1.00		0.92	1.00				1.00		1.00
Incremental Delay, d2		0.5	0.5		0.7	0.8				2.9		1.8
Delay (s)		8.5	0.5		12.7	0.8				36.7		26.9
Level of Service		A	A		B	A				D		C
Approach Delay (s)		5.8			7.5			0.0			32.9	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	772	399	0	800	633	0	0	0	555	0	343
Future Volume (veh/h)	0	772	399	0	800	633	0	0	0	555	0	343
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1660	1647	0	1867	1867				1587	0	1546
Adj Flow Rate, veh/h	0	788	0	0	816	0				566	0	248
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	3	4	0	2	2				2	0	5
Cap, veh/h	0	2157		0	2426					663	0	323
Arrive On Green	0.00	0.68	0.00	0.00	1.00	0.00				0.23	0.00	0.25
Sat Flow, veh/h	0	3237	1395	0	3641	1582				2932	0	1310
Grp Volume(v), veh/h	0	788	0	0	816	0				566	0	248
Grp Sat Flow(s),veh/h/ln	0	1577	1395	0	1774	1582				1466	0	1310
Q Serve(g_s), s	0.0	10.5	0.0	0.0	0.0	0.0				18.5	0.0	17.6
Cycle Q Clear(g_c), s	0.0	10.5	0.0	0.0	0.0	0.0				18.5	0.0	17.6
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2157		0	2426					663	0	323
V/C Ratio(X)	0.00	0.37		0.00	0.34					0.85	0.00	0.77
Avail Cap(c_a), veh/h	0	2157		0	2426					1041	0	491
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.78	0.00	0.00	0.79	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	6.7	0.0	0.0	0.0	0.0				37.1	0.0	35.0
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.3	0.0				3.5	0.0	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	5.8	0.0	0.0	0.2	0.0				11.1	0.0	18.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	7.0	0.0	0.0	0.3	0.0				40.6	0.0	38.1
LnGrp LOS	A	A		A	A					D	A	D
Approach Vol, veh/h		788	A		816	A					814	
Approach Delay, s/veh		7.0			0.3						39.8	
Approach LOS		A			A						D	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		72.9		27.1		72.9						
Change Period (Y+Rc), s		4.5		4.5		4.5						
Max Green Setting (Gmax), s		55.5		35.5		35.5						
Max Q Clear Time (g_c+I1), s		12.5		20.5		2.0						
Green Ext Time (p_c), s		16.6		2.1		9.5						

Intersection Summary	
HCM 6th Ctrl Delay	15.8
HCM 6th LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1123	204	0	1161	354	272	0	520	0	0	0
Future Volume (vph)	0	1123	204	0	1161	354	272	0	520	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-4%			3%			6%			0%	
Total Lost time (s)		4.5	4.0		4.5	4.0	4.5	4.5	4.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.86	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)		3325	1388		3211	1380	1502	1259	1293			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)		3325	1388		3211	1380	1502	1259	1293			
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1146	208	0	1185	361	278	0	531	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	52	52	0	0	0
Lane Group Flow (vph)	0	1146	208	0	1185	361	250	231	224	0	0	0
Confl. Peds. (#/hr)			2			1						
Heavy Vehicles (%)	0%	2%	7%	0%	2%	4%	2%	0%	6%	0%	0%	0%
Turn Type		NA	Free		NA	Free	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases			Free			Free			8			
Actuated Green, G (s)		66.8	100.0		66.8	100.0	24.2	24.2	24.2			
Effective Green, g (s)		66.8	100.0		66.8	100.0	24.2	24.2	24.2			
Actuated g/C Ratio		0.67	1.00		0.67	1.00	0.24	0.24	0.24			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		4.0			6.0		2.5	2.5	2.5			
Lane Grp Cap (vph)		2221	1388		2144	1380	363	304	312			
v/s Ratio Prot		0.34			c0.37		0.17	c0.18				
v/s Ratio Perm			0.15			0.26			0.17			
v/c Ratio		0.52	0.15		0.55	0.26	0.69	0.76	0.72			
Uniform Delay, d1		8.4	0.0		8.7	0.0	34.5	35.2	34.8			
Progression Factor		1.78	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.8	0.2		1.0	0.5	4.9	9.9	7.1			
Delay (s)		15.7	0.2		9.8	0.5	39.4	45.1	41.9			
Level of Service		B	A		A	A	D	D	D			
Approach Delay (s)		13.3			7.6			42.2			0.0	
Approach LOS		B			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1123	204	0	1161	354	272	0	520	0	0	0
Future Volume (veh/h)	0	1123	204	0	1161	354	272	0	520	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1867	1798	0	1674	1647	1527	1555	1473			
Adj Flow Rate, veh/h	0	1146	0	0	1185	0	387	0	210			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	0	2	7	0	2	4	2	0	6			
Cap, veh/h	0	2527		0	2266		575	0	247			
Arrive On Green	0.00	1.00	0.00	0.00	0.71	0.00	0.20	0.00	0.20			
Sat Flow, veh/h	0	3641	1524	0	3264	1395	2909	0	1248			
Grp Volume(v), veh/h	0	1146	0	0	1185	0	387	0	210			
Grp Sat Flow(s),veh/h/ln	0	1774	1524	0	1590	1395	1455	0	1248			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	17.1	0.0	12.3	0.0	16.2			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	17.1	0.0	12.3	0.0	16.2			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2527		0	2266		575	0	247			
V/C Ratio(X)	0.00	0.45		0.00	0.52		0.67	0.00	0.85			
Avail Cap(c_a), veh/h	0	2527		0	2266		1033	0	443			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.84	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	6.6	0.0	37.1	0.0	38.7			
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	0.9	0.0	1.0	0.0	6.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	0.3	0.0	0.0	8.8	0.0	7.9	0.0	9.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.5	0.0	0.0	7.5	0.0	38.2	0.0	44.8			
LnGrp LOS	A	A		A	A		D	A	D			
Approach Vol, veh/h		1146	A		1185	A		597				
Approach Delay, s/veh		0.5			7.5			40.5				
Approach LOS		A			A			D				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		75.7				75.7		24.3				
Change Period (Y+Rc), s		4.5				4.5		4.5				
Max Green Setting (Gmax), s		55.5				55.5		35.5				
Max Q Clear Time (g_c+I1), s		2.0				19.1		18.2				
Green Ext Time (p_c), s		17.4				24.2		1.5				

Intersection Summary	
HCM 6th Ctrl Delay	11.5
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

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

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	0	2	168	327	5
Future Vol, veh/h	1	0	2	168	327	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	1	3	0
Mvmt Flow	1	0	2	198	385	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	590	388	391	0	-	0
Stage 1	388	-	-	-	-	-
Stage 2	202	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	474	665	1179	-	-	-
Stage 1	690	-	-	-	-	-
Stage 2	837	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	473	665	1179	-	-	-
Mov Cap-2 Maneuver	473	-	-	-	-	-
Stage 1	689	-	-	-	-	-
Stage 2	837	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.6	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1179	-	473	-	-
HCM Lane V/C Ratio	0.002	-	0.002	-	-
HCM Control Delay (s)	8.1	0	12.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	29	56	111	40	67	254
Future Vol, veh/h	29	56	111	40	67	254
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	3	-	-	-3
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	8	2	0	0	2
Mvmt Flow	34	66	131	47	79	299

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	612	155	0	0	178	0
Stage 1	155	-	-	-	-	-
Stage 2	457	-	-	-	-	-
Critical Hdwy	7	6.58	-	-	4.1	-
Critical Hdwy Stg 1	6	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.5	3.372	-	-	2.2	-
Pot Cap-1 Maneuver	415	864	-	-	1410	-
Stage 1	856	-	-	-	-	-
Stage 2	595	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	387	864	-	-	1410	-
Mov Cap-2 Maneuver	387	-	-	-	-	-
Stage 1	856	-	-	-	-	-
Stage 2	555	-	-	-	-	-

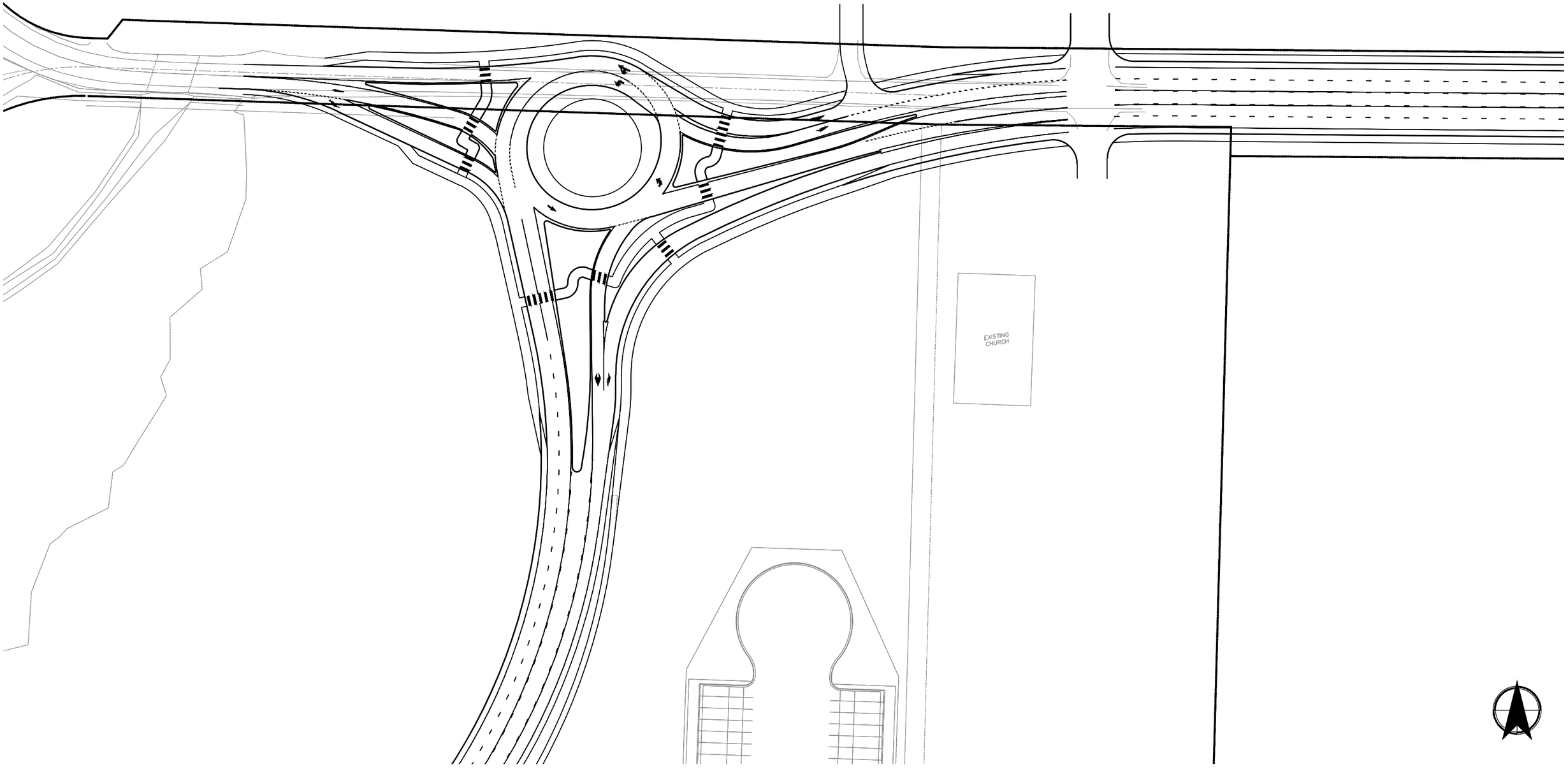
Approach	WB	NB	SB
HCM Control Delay, s	12.1	0	1.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	608	1410	-
HCM Lane V/C Ratio	-	-	0.164	0.056	-
HCM Control Delay (s)	-	-	12.1	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0.2	-

Appendix F OR 219/Realigned Butteville Road Roundabout Concept Drawings

Design Layout: 1"=100'

Preliminary Design Subject to Change
Date: May 2021



KITTELSON & ASSOCIATES
PHONE: (503) 936-1463 CONTACT: Matt Hughart

OR219/Butteville Road Roundabout Concept

Woodburn, OR

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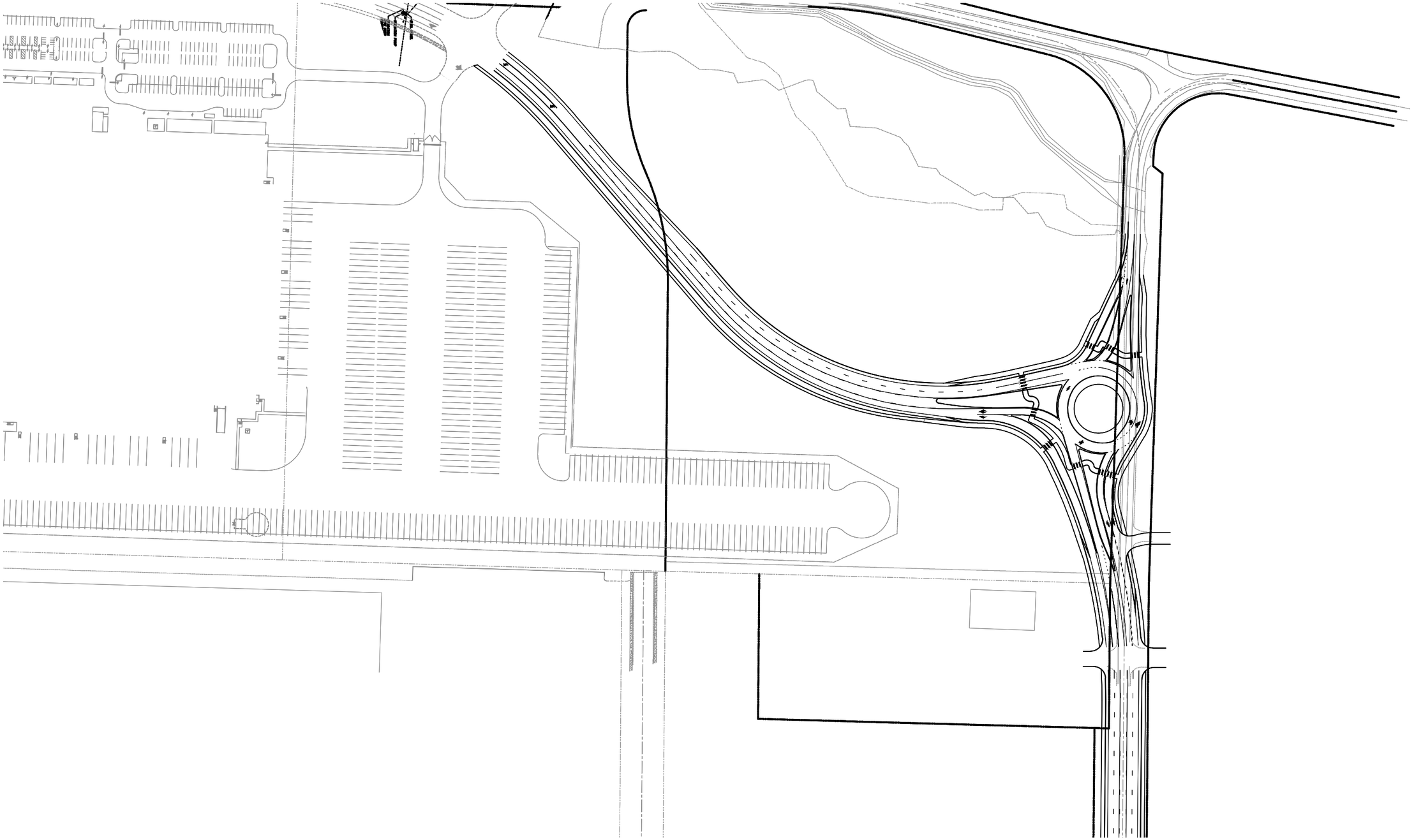
Design Layout: 1"=200'

Preliminary Design Subject to Change
Date: May 2021



KITTELSON & ASSOCIATES
PHONE: (503) 936-1463 CONTACT: Matt Hughart

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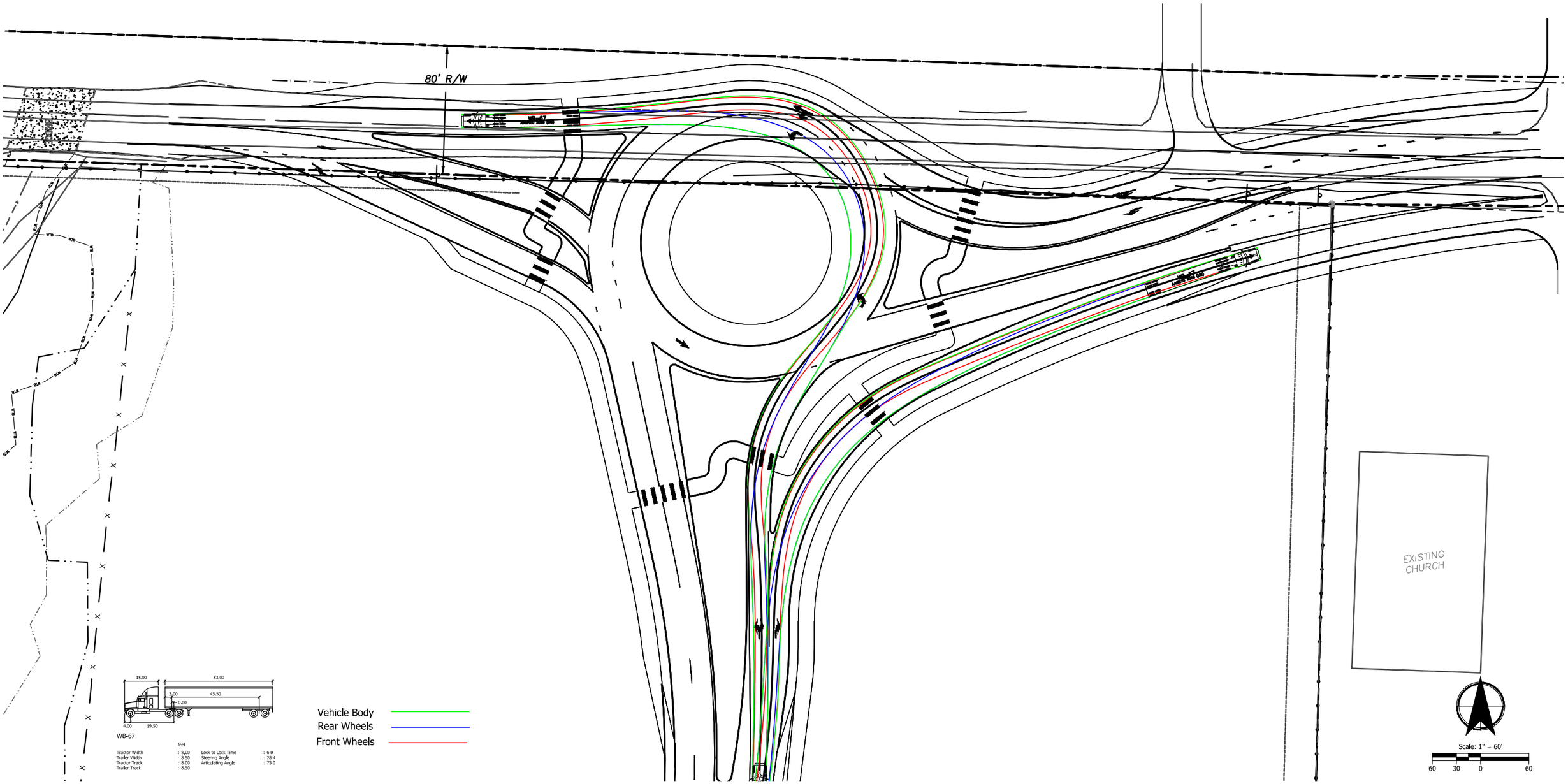
Design Vehicle Checks

Preliminary Design Subject to Change
Date: May 2021



KITTELSON & ASSOCIATES
PHONE: (503) 936-1463 CONTACT: Matt Hughart

OR219/Butteville Road Roundabout Concept

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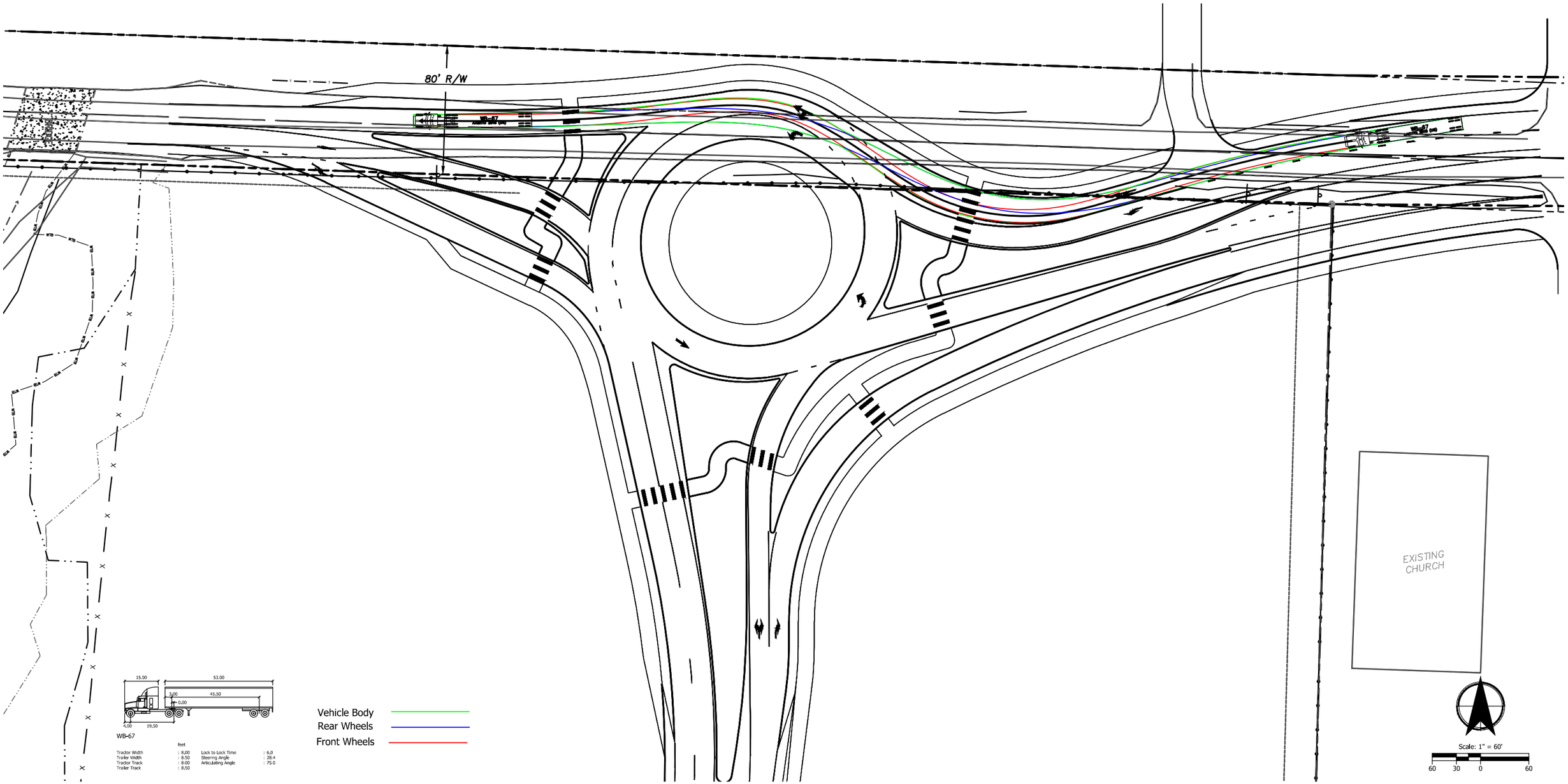
Design Vehicle Checks

Preliminary Design Subject to Change
Date: May 2021



KITTELSON & ASSOCIATES
PHONE: (503) 936-1463 CONTACT: Matt Hughart

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Woodburn, OR

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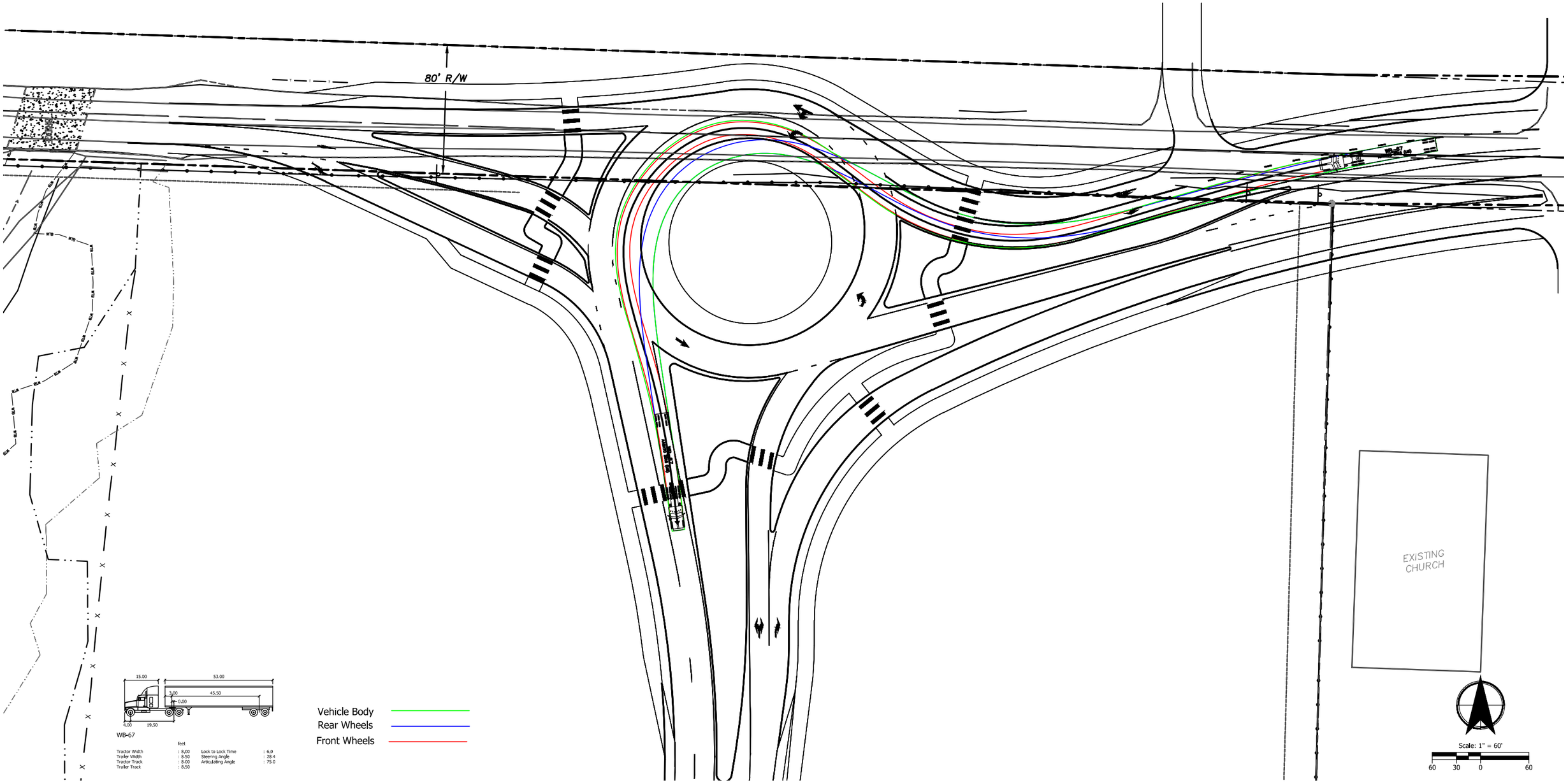
Design Vehicle Checks

Preliminary Design Subject to Change
Date: May 2021



KITTELSON & ASSOCIATES
PHONE: (503) 936-1463 CONTACT: Matt Hughart

OR219/Butteville Road Roundabout Concept

Woodburn, OR

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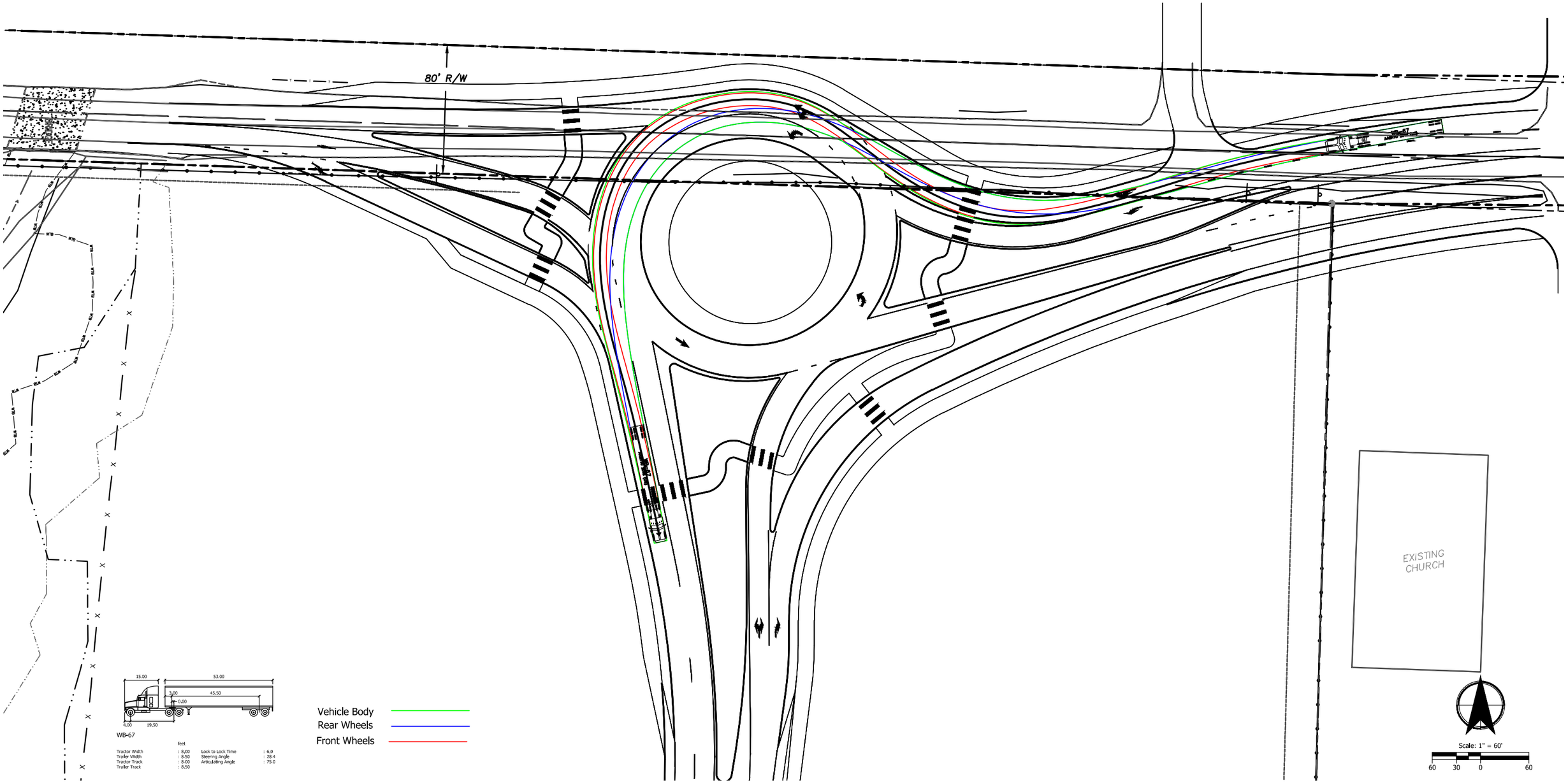
Design Vehicle Checks

Preliminary Design Subject to Change
Date: May 2021



KITTELSON & ASSOCIATES
PHONE: (503) 936-1463 CONTACT: Matt Hughart

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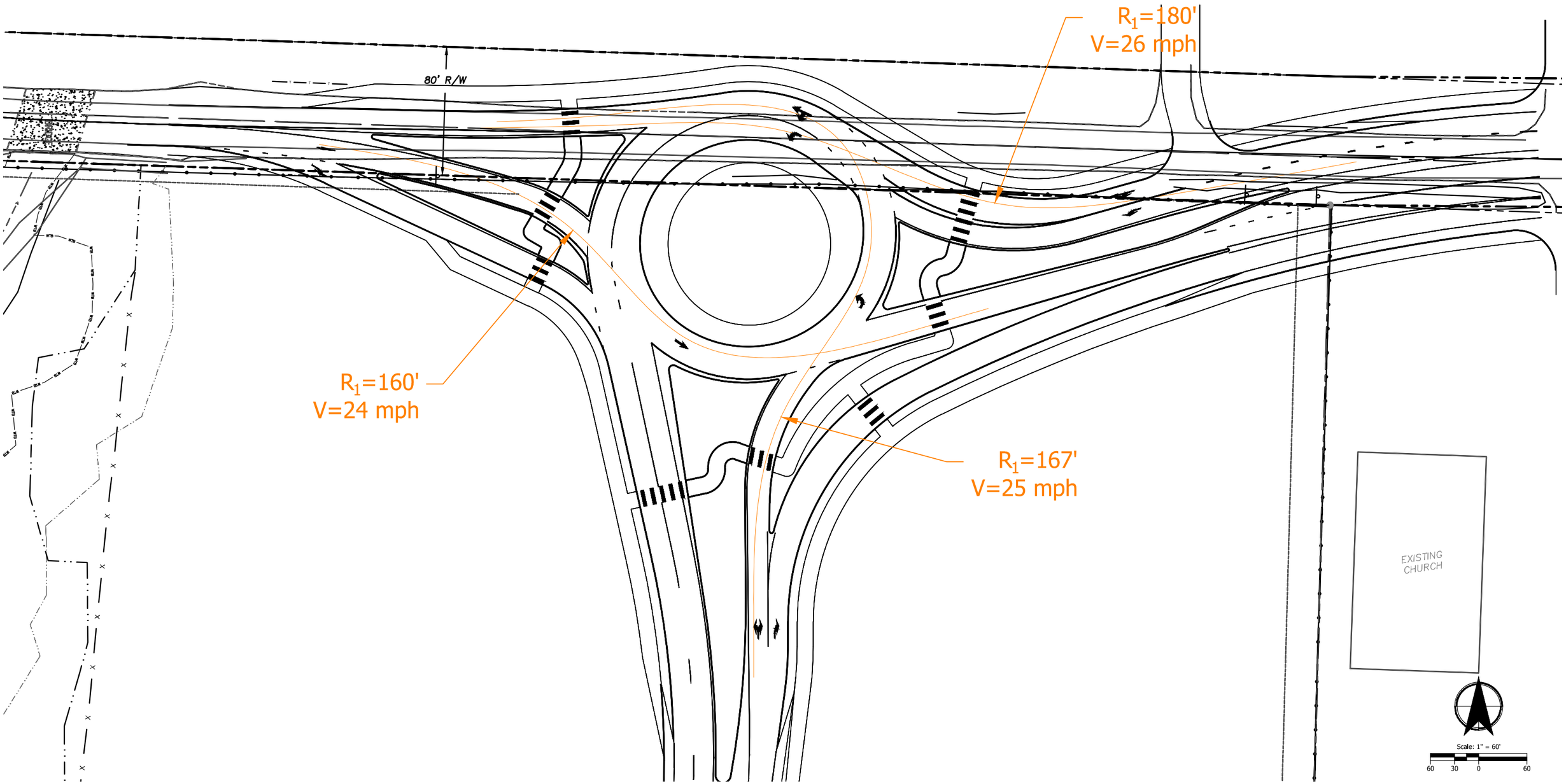
Fastest Path Entry Speeds

Preliminary Design Subject to Change
Date: May 2021



KITTELSON & ASSOCIATES
PHONE: (503) 936-1463 CONTACT: Matt Hughart

OR219/Butteville Road Roundabout Concept

Woodburn, OR

Appendix G Project Basie Daily Trip Profile

AR Sortable 640K FC - Non-Peak Season

Headcount

	Total
Headcount - Day Shift	937
Headcount - Night Shift	937

Shift Structure

		Start	End
Adjustment below accounts for	Day Shift - Inbound Employees	7:00:00 AM	5:30:00 PM
mass transit and carpool users.	Day Shift - Outbound Employees	7:30:00 AM	6:00:00 PM
Adjust as needed for jurisdiction	Night Shift - Inbound Employees	6:00:00 PM	4:30:00 AM
Net Cars Factor 95%	Night Shift - Outbound Employees	6:30:00 PM	5:00:00 AM

Traffic Schedule

Cars
Average Weekday

Time	In	Out	Total
00:00	3	6	9
01:00	1	4	5
02:00	5	13	18
03:00	8	13	21
04:00	16	170	186
05:00	35	451	486
06:00	27	15	42
06:15	69	16	86
06:30	121	10	130
06:45	162	7	168
07:00	160	9	168
07:15	207	4	211
07:30	30	6	36
07:45	7	5	11
08:00	24	17	41
09:00	15	10	25
10:00	19	16	35
11:00	36	39	75
12:00	10	16	27
13:00	12	13	26
14:00	10	24	34
15:00	28	35	63
16:00	43	30	73
17:00	25	31	56
17:15	48	14	62
17:30	105	122	226
17:45	136	70	206
18:00	169	234	403
18:15	163	158	321
18:30	22	105	127
18:45	5	39	44
19:00	17	33	50
20:00	8	8	15
21:00	14	14	29
22:00	16	20	36
23:00	3	5	8

Trucks
Average Weekday

Time	In	Out	Total
00:00	11	11	23
01:00	19	19	38
02:00	8	8	15
03:00	15	15	30
04:00	8	8	15
05:00	11	11	23
06:00	3	3	5
06:15	3	3	5
06:30	3	3	5
06:45	3	3	5
07:00	4	4	8
07:15	4	4	8
07:30	4	4	8
07:45	4	4	8
08:00	15	15	30
09:00	27	27	53
10:00	15	15	30
11:00	16	16	33
12:00	16	16	33
13:00	10	10	20
14:00	10	10	20
15:00	10	10	20
16:00	11	11	23
17:00	3	3	5
17:15	3	3	5
17:30	3	3	5
17:45	3	3	5
18:00	3	3	5
18:15	3	3	5
18:30	3	3	5
18:45	3	3	5
19:00	9	9	18
20:00	14	14	28
21:00	10	10	20
22:00	14	14	28
23:00	10	10	20

Total Vehicles
Cars + Trucks Average Weekday

	In	Out	Total
00:00	14	17	31
01:00	20	23	43
02:00	12	21	33
03:00	23	28	51
04:00	24	178	201
05:00	47	463	509
06:00	29	18	47
06:15	72	19	91
06:30	123	12	135
06:45	164	9	173
07:00	163	12	176
07:15	211	8	218
07:30	34	9	44
07:45	10	9	19
08:00	39	32	71
09:00	42	36	78
10:00	34	31	65
11:00	53	55	108
12:00	27	33	59
13:00	22	23	46
14:00	21	34	54
15:00	38	45	83
16:00	54	42	96
17:00	27	34	61
17:15	50	17	67
17:30	107	124	231
17:45	138	73	211
18:00	172	236	408
18:15	166	160	326
18:30	24	108	132
18:45	7	41	49
19:00	26	42	68
20:00	21	21	43
21:00	24	24	49
22:00	30	34	64
23:00	13	15	28

Morning Peak Hour of Generator			
	Enter	Exit	Total
06:30-07:30	661	41	703

Evening Peak Hour of Generator			
	Enter	Exit	Total
17:30-18:30	583	593	1,176

Appendix H 2023 Total Traffic Conditions Operations and Queuing Worksheets

Table 17 - Year 2023 Estimated 95th Percentile Queuing Analysis (Synchro Output)

Intersection	Movement	Storage (ft)	2023 Background				2023 Total				Queue Storage Adequate?
			7:00 – 8:00 AM	4:30 – 5:30 PM	6:30 – 7:30 AM	5:30 – 6:30 PM	7:00 – 8:00 AM	4:30 – 5:30 PM	6:30 – 7:30 AM	5:30 – 6:30 PM	
1: OR 219 / Butteville Rd	NBL		300	700	400	325	See Table 17				Yes
	NBR	100									Yes
	EBT		<25	<25	<25	<25					Yes
	EBR	150									Yes
	WBLT		25	50	25	50					Yes
2: OR 219 / Willow Ave	NBLTR	50	<25	<25	<25	<25	<25	<25	<25	25	Yes
	EBLTR	75	<25	25	<25	25	<25	25	<25	25	Yes
	WBLT	100	<25	<25	<25	<25	<25	<25	<25	<25	Yes
	SBLTR	100	25	25	25	25	25	25	25	75	Yes
3: OR 219 / Woodland Ave	EBL	225	25	75	50	75	25	75	50	100	Yes
	EBT	500+	50	125	75	100	50	125	50	225	Yes
	EBR	150	25	25	25	<25	25	25	<25	<25	Yes
	WBL	225	50	75	75	50	75	75	50	50	Yes
	WBT	800	50	100	125	100	125	125	200	250	Yes
	NBL	200	<25	25	<25	25	<25	25	<25	25	Yes
	NBTR	200	25	75	25	50	25	75	50	50	Yes
	SBLTR	475	75	200	75	250	125	225	125	275	Yes
4: OR 219 / I-5 SB Ramps	EBT	900	100	150	50	175	75	150	75	250	Yes
	EBR	275	<25	<25	<25	<25	<25	<25	<25	<25	Yes
	WBT	575	25	25	25	25	25	25	25	25	Yes
	WBR	550	<25	<25	<25	<25	<25	<25	<25	<25	Yes
	SBL	650	150	300	125	300	150	300	100	275	Yes
	SBR	430	325	475	275	400	325	500	350	600	No
5: OR 219 / I-5 NB Ramps	EBT	575	25	25	25	25	25	25	25	25	Yes
	EBR	550	<25	<25	<25	<25	<25	<25	<25	<25	Yes
	WBT	775	125	225	125	150	150	250	175	225	Yes
	WBR	380	<25	<25	<25	<25	<25	<25	<25	<25	Yes
	NBLTR	620	225	250	250	175	250	250	300	275	Yes
6: Old Butteville Rd / North Site Access / Butteville Rd	NBL	100	<25	<25	<25	<25	<25	<25	<25	<25	Yes
	EBLTR	100	<25	25	<25	25	<25	<25	<25	25	Yes
	SBL	100	<25	<25	<25	<25	25	<25	25	<25	Yes
	WBLTR	150					<25	<25	<25	25	Yes
7: North Site Access / Butteville Rd	WBLR	100					<25	<25	<25	25	Yes
	SBL	100					25	<25	25	25	Yes
8: South Site Access / Butteville Rd	WBL	175					25	<25	<25	25	Yes
	WBR	175					<25	25	<25	50	Yes
	SBL	100					25	25	25	25	Yes
9: South Site Access / Lebrun Rd / Butteville Rd	EBLTR	100					25	25	25	25	Yes
	NBL	100					<25	25	<25	25	Yes
	WBLT	200					<25	<25	<25	25	Yes
	WBR	200					25	25	25	50	Yes
	SBL	100					25	25	25	25	Yes
10: Parr Rd / Butteville Rd	WBLR	200	25	25	25	25	25	25	25	25	Yes

Home Destination Report - Where Workers Live Who are Employed in the Woodburn Area - by Places (Cities, CDPs, etc.)

Total All Jobs

Year	2018	
	Count	**Share**
Total All Jobs	9,517	100.0%

Jobs Counts by Places (Cities, CDPs, etc.)
Where Workers Live - All Jobs

	2018	
	Count	**Share**
Woodburn city, OR	1,690	17.8%
Salem city, OR	1,131	11.9%
Keizer city, OR	423	4.4%
Portland city, OR	382	4.0%
Hayesville CDP, OR	224	2.4%
Hillsboro city, OR	168	1.8%
Canby city, OR	148	1.6%
Silverton city, OR	148	1.6%
Gervais city, OR	137	1.4%
Wilsonville city, OR	136	1.4%
Tigard city, OR	132	1.4%
Gresham city, OR	126	1.3%
Four Corners CDP, OR	125	1.3%
Albany city, OR	109	1.1%
Hubbard city, OR	105	1.1%
Beaverton city, OR	95	1.0%
Newberg city, OR	92	1.0%
Tualatin city, OR	87	0.9%
Mount Angel city, OR	86	0.9%
McMinnville city, OR	83	0.9%
Eugene city, OR	80	0.8%
Molalla city, OR	73	0.8%
Oregon City city, OR	73	0.8%
Lake Oswego city, OR	69	0.7%
West Linn city, OR	67	0.7%
All Other Locations	3,528	37.1%
	9,517	

	Jobs	%
I-5 North	1,335	0.22
99E North	253	0.04
Butteville South	137	0.02
Woodburn	1,690	0.28
OR 219 West	175	0.03
I-5 South	2,092	0.35
211 East	73	0.01
99E South	234	0.04
	5,989	

HCS7 Roundabouts Report

General Information

Analyst	ZHB
Agency or Co.	Kittelson
Date Performed	4/29/2021
Analysis Year	2023
Time Analyzed	AM Total - Generator Peak
Project Description	Project Basie

Site Information

Intersection	OR 219/Butteville Rd
E/W Street Name	OR 219
N/S Street Name	Butteville (Realigned)
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.95
Jurisdiction	Woodburn, OR

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	1	0	1	1	0	0	1	0	0	0	0	0	0
Lane Assignment	T		R		L		LT				L					
Volume (V), veh/h	0		117	113	0	577	360		0	94		172				
Percent Heavy Vehicles, %	0		10	19	0	7	5		0	3		4				
Flow Rate (v_{PCE}), pc/h	0		135	142	0	650	398		0	102		188				
Right-Turn Bypass	None				None				Non-Yielding				None			
Conflicting Lanes	2				1				1							
Pedestrians Crossing, p/h	0				0				0							

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)	4.6453	4.3276		4.5436	4.5436			4.9763				
Follow-Up Headway (s)	2.6667	2.5352		2.5352	2.5352			2.6087				

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	135.00	142.00		555.44	492.56			102.00	188.00			
Entry Volume veh/h	117.97	124.09		522.86	463.67			99.03	180.77			
Circulating Flow (v_c), pc/h	650			102			135			1150		
Exiting Flow (v_{ex}), pc/h	135			500			0			792		
Capacity (c_{pce}), pc/h	742.38	817.23		1294.13	1294.13			1202.48				
Capacity (c), veh/h	648.72	714.13		1218.22	1218.22			1167.45				
v/c Ratio (x)	0.18	0.17		0.43	0.38			0.08				

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	7.7	7.0		7.3	6.7			3.8				
Lane LOS	A	A		A	A			A	A			
95% Queue, veh	0.7	0.6		2.2	1.8			0.3				
Approach Delay, s/veh	7.3			7.0			1.3					
Approach LOS	A			A			A					
Intersection Delay, s/veh | LOS	6.0						A					

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Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	287	0	0	917	11	0	0	0	34	0	20
Future Vol, veh/h	2	287	0	0	917	11	0	0	0	34	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	7	0	0	6	0	0	0	0	4	0	0
Mvmt Flow	2	302	0	0	965	12	0	0	0	36	0	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	977	0	0	302	0	0	789	1283	152	1127	1277	489
Stage 1	-	-	-	-	-	-	306	306	-	971	971	-
Stage 2	-	-	-	-	-	-	483	977	-	156	306	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.58	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.58	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.58	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.54	4	3.3
Pot Cap-1 Maneuver	714	-	-	1270	-	-	285	167	873	157	168	530
Stage 1	-	-	-	-	-	-	684	665	-	268	334	-
Stage 2	-	-	-	-	-	-	539	332	-	825	665	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	714	-	-	1270	-	-	273	166	872	157	167	530
Mov Cap-2 Maneuver	-	-	-	-	-	-	273	166	-	157	167	-
Stage 1	-	-	-	-	-	-	682	663	-	267	334	-
Stage 2	-	-	-	-	-	-	518	332	-	822	663	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	0	28.1
HCM LOS			A	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	714	-	-	1270	-	-	212
HCM Lane V/C Ratio	-	0.003	-	-	-	-	-	0.268
HCM Control Delay (s)	0	10.1	-	-	0	-	-	28.1
HCM Lane LOS	A	B	-	-	A	-	-	D
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	1

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	36	282	3	17	61	886	42	0	1	29	324	5
Future Volume (vph)	36	282	3	17	61	886	42	0	1	29	324	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%				0%			0%			1%
Total Lost time (s)	4.0	4.5	4.5		4.0	4.5	4.5		4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95	1.00		1.00		0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	1.00	0.85		0.85		1.00	0.97
Flt Protected	0.95	1.00	1.00		0.95	1.00	1.00		1.00		0.95	0.96
Satd. Flow (prot)	1662	3107	1488		1515	3167	1488		1427		1257	1282
Flt Permitted	0.95	1.00	1.00		0.95	1.00	1.00		1.00		0.95	0.96
Satd. Flow (perm)	1662	3107	1488		1515	3167	1488		1427		1257	1282
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	38	297	3	18	64	933	44	0	1	31	341	5
RTOR Reduction (vph)	0	0	2	0	0	0	11	0	30	0	0	8
Lane Group Flow (vph)	38	297	1	0	82	933	33	0	2	0	198	184
Confl. Peds. (#/hr)								1				
Heavy Vehicles (%)	0%	7%	0%	23%	6%	5%	0%	0%	60%	3%	25%	0%
Turn Type	Prot	NA	pt+ov	Prot	Prot	NA	pt+ov	Split	NA		Split	NA
Protected Phases	5	2	2 8	1	1	6	6 4	8	8		4	4
Permitted Phases												
Actuated Green, G (s)	4.3	38.3	41.6		8.4	42.4	61.6		3.3		19.2	19.2
Effective Green, g (s)	4.3	38.3	41.6		8.4	42.4	61.6		3.3		19.2	19.2
Actuated g/C Ratio	0.05	0.45	0.49		0.10	0.49	0.72		0.04		0.22	0.22
Clearance Time (s)	4.0	4.5			4.0	4.5			4.0		4.0	4.0
Vehicle Extension (s)	2.5	4.2			2.5	4.2			2.5		2.5	2.5
Lane Grp Cap (vph)	83	1388	722		148	1566	1069		54		281	287
v/s Ratio Prot	c0.02	0.10	0.00		0.05	c0.29	0.02		c0.00		c0.16	0.14
v/s Ratio Perm												
v/c Ratio	0.46	0.21	0.00		0.55	0.60	0.03		0.04		0.70	0.64
Uniform Delay, d1	39.6	14.5	11.4		36.9	15.5	3.5		39.7		30.6	30.1
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00
Incremental Delay, d2	2.9	0.1	0.0		3.6	0.8	0.0		0.2		7.2	4.3
Delay (s)	42.5	14.6	11.4		40.4	16.3	3.5		39.9		37.9	34.4
Level of Service	D	B	B		D	B	A		D		D	C
Approach Delay (s)		17.7				17.6			39.9			36.2
Approach LOS		B				B			D			D

Intersection Summary			
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	85.7	Sum of lost time (s)	16.5
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	42
Future Volume (vph)	42
Ideal Flow (vphpl)	1750
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	44
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	1
Heavy Vehicles (%)	5%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	36	282	3	17	61	886	42	0	1	29	324	5
Future Volume (veh/h)	36	282	3	17	61	886	42	0	1	29	324	5
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No				No			No			No
Adj Sat Flow, veh/h/ln	1750	1654	1750		1668	1682	1750	1750	931	931	1403	1745
Adj Flow Rate, veh/h	38	297	3		64	933	44	0	1	31	386	0
Peak Hour Factor	0.95	0.95	0.95		0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	7	0		6	5	0	0	60	60	25	0
Cap, veh/h	65	1390	723		86	1436	947	75	1	34	507	331
Arrive On Green	0.04	0.44	0.44		0.05	0.45	0.45	0.00	0.04	0.04	0.19	0.00
Sat Flow, veh/h	1667	3143	1483		1589	3195	1483	1667	25	766	2673	1745
Grp Volume(v), veh/h	38	297	3		64	933	44	0	0	32	386	0
Grp Sat Flow(s),veh/h/ln	1667	1572	1483		1589	1598	1483	1667	0	790	1336	1745
Q Serve(g_s), s	1.4	3.6	0.1		2.4	13.9	0.7	0.0	0.0	2.5	8.4	0.0
Cycle Q Clear(g_c), s	1.4	3.6	0.1		2.4	13.9	0.7	0.0	0.0	2.5	8.4	0.0
Prop In Lane	1.00		1.00		1.00		1.00	1.00		0.97	1.00	
Lane Grp Cap(c), veh/h	65	1390	723		86	1436	947	75	0	36	507	331
V/C Ratio(X)	0.59	0.21	0.00		0.74	0.65	0.05	0.00	0.00	0.90	0.76	0.00
Avail Cap(c_a), veh/h	544	2308	1155		518	2346	1370	816	0	387	1962	1281
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00		1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	29.0	10.5	8.1		28.6	13.1	4.1	0.0	0.0	29.1	23.5	0.0
Incr Delay (d2), s/veh	6.1	0.1	0.0		9.0	0.8	0.0	0.0	0.0	39.0	1.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	2.0	0.0		2.0	7.9	0.5	0.0	0.0	1.5	4.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.1	10.6	8.1		37.6	13.9	4.2	0.0	0.0	68.2	25.3	0.0
LnGrp LOS	D	B	A		D	B	A	A	A	E	C	A
Approach Vol, veh/h		338				1041			32			386
Approach Delay, s/veh		13.4				14.9			68.2			25.3
Approach LOS		B				B			E			C

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.3	31.6		15.6	6.9	32.0		6.8
Change Period (Y+Rc), s	4.0	4.5		4.0	4.5	* 4.5		4.0
Max Green Setting (Gmax), s	20.0	45.0		45.0	20.0	* 45		30.0
Max Q Clear Time (g_c+I1), s	4.4	5.6		10.4	3.4	15.9		4.5
Green Ext Time (p_c), s	0.1	3.2		1.1	0.0	11.6		0.1

Intersection Summary	
HCM 6th Ctrl Delay	17.8
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	42
Future Volume (veh/h)	42
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1745
Adj Flow Rate, veh/h	0
Peak Hour Factor	0.95
Percent Heavy Veh, %	0
Cap, veh/h	0
Arrive On Green	0.00
Sat Flow, veh/h	0
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.00
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(I)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(95%),veh/ln	0.0
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	A
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer - Assigned Phs
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	486	166	0	863	381	0	0	0	191	0	265
Future Volume (vph)	0	486	166	0	863	381	0	0	0	191	0	265
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		3%			-4%			0%			5%	
Total Lost time (s)		4.5	4.0		4.5	4.0				4.5		2.5
Lane Util. Factor		0.95	1.00		0.95	1.00				0.97		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3090	1263		3140	1343				2716		1283
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3090	1263		3140	1343				2716		1283
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	512	175	0	908	401	0	0	0	201	0	279
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	22
Lane Group Flow (vph)	0	512	175	0	908	401	0	0	0	201	0	257
Heavy Vehicles (%)	0%	6%	16%	0%	8%	13%	0%	0%	0%	10%	0%	13%
Parking (#/hr)										0		
Turn Type		NA	Free		NA	Free				Prot		custom
Protected Phases		2			6					4		4 5
Permitted Phases			Free			Free						
Actuated Green, G (s)		68.0	100.0		58.4	100.0				23.0		33.1
Effective Green, g (s)		68.0	100.0		58.4	100.0				23.0		35.1
Actuated g/C Ratio		0.68	1.00		0.58	1.00				0.23		0.35
Clearance Time (s)		4.5			4.5					4.5		
Vehicle Extension (s)		6.0			4.0					2.5		
Lane Grp Cap (vph)		2101	1263		1833	1343				624		450
v/s Ratio Prot		0.17			c0.29					0.07		c0.20
v/s Ratio Perm			0.14			0.30						
v/c Ratio		0.24	0.14		0.50	0.30				0.32		0.57
Uniform Delay, d1		6.1	0.0		12.2	0.0				32.0		26.3
Progression Factor		1.00	1.00		0.70	1.00				1.00		1.00
Incremental Delay, d2		0.3	0.2		0.8	0.5				0.2		1.4
Delay (s)		6.4	0.2		9.3	0.5				32.2		27.8
Level of Service		A	A		A	A				C		C
Approach Delay (s)		4.8			6.6			0.0			29.6	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	10.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	486	166	0	863	381	0	0	0	191	0	265
Future Volume (veh/h)	0	486	166	0	863	381	0	0	0	191	0	265
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				0.95	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1619	1483	0	1784	1715				1478	0	1437
Adj Flow Rate, veh/h	0	512	0	0	908	0				201	0	174
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	6	16	0	8	13				10	0	13
Cap, veh/h	0	2291		0	2525					429	0	226
Arrive On Green	0.00	0.74	0.00	0.00	1.00	0.00				0.17	0.00	0.19
Sat Flow, veh/h	0	3158	1257	0	3479	1454				2594	0	1218
Grp Volume(v), veh/h	0	512	0	0	908	0				201	0	174
Grp Sat Flow(s),veh/h/ln	0	1538	1257	0	1695	1454				1297	0	1218
Q Serve(g_s), s	0.0	5.1	0.0	0.0	0.0	0.0				7.0	0.0	13.6
Cycle Q Clear(g_c), s	0.0	5.1	0.0	0.0	0.0	0.0				7.0	0.0	13.6
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2291		0	2525					429	0	226
V/C Ratio(X)	0.00	0.22		0.00	0.36					0.47	0.00	0.77
Avail Cap(c_a), veh/h	0	2291		0	2525					921	0	457
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.92	0.00	0.00	0.80	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	3.9	0.0	0.0	0.0	0.0				37.8	0.0	38.7
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.3	0.0				0.6	0.0	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	2.4	0.0	0.0	0.2	0.0				4.0	0.0	14.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	4.1	0.0	0.0	0.3	0.0				38.4	0.0	42.9
LnGrp LOS	A	A		A	A					D	A	D
Approach Vol, veh/h		512	A		908	A					375	
Approach Delay, s/veh		4.1			0.3						40.4	
Approach LOS		A			A						D	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		79.0		21.0		79.0
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		55.5		35.5		35.5
Max Q Clear Time (g_c+I1), s		7.1		15.6		2.0
Green Ext Time (p_c), s		10.1		1.0		10.9

Intersection Summary	
HCM 6th Ctrl Delay	9.8
HCM 6th LOS	A

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	419	258	0	783	597	461	0	523	0	0	0
Future Volume (vph)	0	419	258	0	783	597	461	0	523	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-4%			3%			6%			0%	
Total Lost time (s)		4.5	4.0		4.5	4.0	4.5	4.5	4.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frt		1.00	0.85		1.00	0.85	1.00	0.90	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.98	1.00			
Satd. Flow (prot)		3111	1445		2951	1436	1445	1318	1331			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.98	1.00			
Satd. Flow (perm)		3111	1445		2951	1436	1445	1318	1331			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	441	272	0	824	628	485	0	551	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	68	233	0	0	0
Lane Group Flow (vph)	0	441	272	0	824	628	359	278	98	0	0	0
Heavy Vehicles (%)	0%	9%	5%	0%	11%	2%	6%	0%	3%	0%	0%	0%
Turn Type		NA	Free		NA	Free	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases			Free			Free			8			
Actuated Green, G (s)		61.3	100.0		61.3	100.0	29.7	29.7	29.7			
Effective Green, g (s)		61.3	100.0		61.3	100.0	29.7	29.7	29.7			
Actuated g/C Ratio		0.61	1.00		0.61	1.00	0.30	0.30	0.30			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		4.0			6.0		2.5	2.5	2.5			
Lane Grp Cap (vph)		1907	1445		1808	1436	429	391	395			
v/s Ratio Prot		0.14			0.28		c0.25	0.21				
v/s Ratio Perm			0.19			c0.44			0.07			
v/c Ratio		0.23	0.19		0.46	0.44	0.84	0.71	0.25			
Uniform Delay, d1		8.7	0.0		10.4	0.0	32.9	31.3	26.7			
Progression Factor		1.41	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.3	0.3		0.8	1.0	13.0	5.6	0.2			
Delay (s)		12.6	0.3		11.2	1.0	45.9	36.9	26.9			
Level of Service		B	A		B	A	D	D	C			
Approach Delay (s)		7.9			6.8			36.8			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	419	258	0	783	597	461	0	523	0	0	0
Future Volume (veh/h)	0	419	258	0	783	597	461	0	523	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1770	1826	0	1551	1674	1473	1555	1514			
Adj Flow Rate, veh/h	0	441	0	0	824	0	591	0	227			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	0	9	5	0	11	2	6	0	3			
Cap, veh/h	0	2244		0	1966		681	0	311			
Arrive On Green	0.00	1.00	0.00	0.00	0.67	0.00	0.24	0.00	0.24			
Sat Flow, veh/h	0	3452	1547	0	3025	1419	2805	0	1283			
Grp Volume(v), veh/h	0	441	0	0	824	0	591	0	227			
Grp Sat Flow(s),veh/h/ln	0	1682	1547	0	1473	1419	1403	0	1283			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	12.9	0.0	20.2	0.0	16.3			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	12.9	0.0	20.2	0.0	16.3			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2244		0	1966		681	0	311			
V/C Ratio(X)	0.00	0.20		0.00	0.42		0.87	0.00	0.73			
Avail Cap(c_a), veh/h	0	2244		0	1966		996	0	455			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.97	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	7.7	0.0	36.3	0.0	34.8			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.7	0.0	5.1	0.0	2.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	0.1	0.0	0.0	6.9	0.0	11.7	0.0	9.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.2	0.0	0.0	8.3	0.0	41.4	0.0	37.3			
LnGrp LOS	A	A		A	A		D	A	D			
Approach Vol, veh/h		441	A		824	A		818				
Approach Delay, s/veh		0.2			8.3			40.2				
Approach LOS		A			A			D				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		71.2				71.2		28.8				
Change Period (Y+Rc), s		4.5				4.5		4.5				
Max Green Setting (Gmax), s		55.5				55.5		35.5				
Max Q Clear Time (g_c+I1), s		2.0				14.9		22.2				
Green Ext Time (p_c), s		4.9				17.2		2.1				

Intersection Summary												
HCM 6th Ctrl Delay			19.1									
HCM 6th LOS			B									

Notes

User approved volume balancing among the lanes for turning movement.

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

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	1	1	0	3	0	263	9	58	632	0
Future Vol, veh/h	0	0	1	1	0	3	0	263	9	58	632	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	2	0
Mvmt Flow	0	0	1	1	0	3	0	277	9	61	665	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1070	1073	665	1070	1069	282	665	0	0	286	0	0
Stage 1	787	787	-	282	282	-	-	-	-	-	-	-
Stage 2	283	286	-	788	787	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	201	222	464	201	223	762	934	-	-	1288	-	-
Stage 1	388	406	-	729	681	-	-	-	-	-	-	-
Stage 2	728	679	-	387	406	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	193	212	464	193	213	762	934	-	-	1288	-	-
Mov Cap-2 Maneuver	193	212	-	193	213	-	-	-	-	-	-	-
Stage 1	388	387	-	729	681	-	-	-	-	-	-	-
Stage 2	725	679	-	368	387	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.8	13.3	0	0.7
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	934	-	-	464	439	1288	-	-
HCM Lane V/C Ratio	-	-	-	0.002	0.01	0.047	-	-
HCM Control Delay (s)	0	-	-	12.8	13.3	7.9	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0.1	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	4	268	9	58	576
Future Vol, veh/h	1	4	268	9	58	576
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	3	0	0	2
Mvmt Flow	1	4	282	9	61	606

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1015	287	0	0	291	0
Stage 1	287	-	-	-	-	-
Stage 2	728	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	266	757	-	-	1282	-
Stage 1	766	-	-	-	-	-
Stage 2	482	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	253	757	-	-	1282	-
Mov Cap-2 Maneuver	253	-	-	-	-	-
Stage 1	766	-	-	-	-	-
Stage 2	459	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	0.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	541	1282	-
HCM Lane V/C Ratio	-	-	0.01	0.048	-
HCM Control Delay (s)	-	-	11.7	7.9	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0.1	-

Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	11	266	34	230	347
Future Vol, veh/h	1	11	266	34	230	347
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	3	0	0	2
Mvmt Flow	1	12	280	36	242	365

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1147	298	0	0	316	0
Stage 1	298	-	-	-	-	-
Stage 2	849	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	222	746	-	-	1256	-
Stage 1	758	-	-	-	-	-
Stage 2	423	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	179	746	-	-	1256	-
Mov Cap-2 Maneuver	179	-	-	-	-	-
Stage 1	758	-	-	-	-	-
Stage 2	341	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.2	0	3.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	179	746	1256	-
HCM Lane V/C Ratio	-	-	0.006	0.016	0.193	-
HCM Control Delay (s)	-	-	25.2	9.9	8.5	-
HCM Lane LOS	-	-	D	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	0.7	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	5	2	0	18	11	277	34	230	107	11
Future Vol, veh/h	5	0	5	2	0	18	11	277	34	230	107	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	2	0	2	0	3	2	2	2	0
Mvmt Flow	5	0	5	2	0	19	12	292	36	242	113	12

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	947	955	119	940	943	310	125	0	0	328	0	0
Stage 1	603	603	-	334	334	-	-	-	-	-	-	-
Stage 2	344	352	-	606	609	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.12	6.5	6.22	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.12	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.12	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.518	4	3.318	2.2	-	-	2.218	-	-
Pot Cap-1 Maneuver	243	260	938	244	265	730	1474	-	-	1232	-	-
Stage 1	489	492	-	680	647	-	-	-	-	-	-	-
Stage 2	676	635	-	484	488	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	200	207	938	205	211	730	1474	-	-	1232	-	-
Mov Cap-2 Maneuver	200	207	-	205	211	-	-	-	-	-	-	-
Stage 1	485	396	-	675	642	-	-	-	-	-	-	-
Stage 2	653	630	-	387	392	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.3	11.4	0.3	5.7
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1474	-	-	330	205	730	1232	-	-
HCM Lane V/C Ratio	0.008	-	-	0.032	0.01	0.026	0.197	-	-
HCM Control Delay (s)	7.5	-	-	16.3	22.7	10.1	8.6	-	-
HCM Lane LOS	A	-	-	C	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0.1	0.7	-	-

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	18	95	224	19	49	65
Future Vol, veh/h	18	95	224	19	49	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	3	-	-	-3
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	10	7
Mvmt Flow	19	100	236	20	52	68

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	418	246	0	0	256	0
Stage 1	246	-	-	-	-	-
Stage 2	172	-	-	-	-	-
Critical Hdwy	7	6.5	-	-	4.2	-
Critical Hdwy Stg 1	6	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.29	-
Pot Cap-1 Maneuver	555	782	-	-	1264	-
Stage 1	767	-	-	-	-	-
Stage 2	839	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	531	782	-	-	1264	-
Mov Cap-2 Maneuver	531	-	-	-	-	-
Stage 1	767	-	-	-	-	-
Stage 2	803	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.9	0	3.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	727	1264	-
HCM Lane V/C Ratio	-	-	0.164	0.041	-
HCM Control Delay (s)	-	-	10.9	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-

HCS7 Roundabouts Report

General Information

Analyst	ZHB
Agency or Co.	Kittelson
Date Performed	4/29/2021
Analysis Year	2023
Time Analyzed	AM Total - System Peak
Project Description	Project Basie

Site Information

Intersection	OR 219/Butteville Rd
E/W Street Name	OR 219
N/S Street Name	Butteville (Realigned)
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.85
Jurisdiction	Woodburn, OR

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	1	0	1	1	0	0	1	0	0	0	0	0	0
Lane Assignment	T		R		L		LT				L					
Volume (V), veh/h	0		151	96	0	441	218		0	93		145				
Percent Heavy Vehicles, %	0		12	9	0	8	5		0	3		4				
Flow Rate (v_{PCE}), pc/h	0		199	123	0	560	269		0	113		177				
Right-Turn Bypass	None				None				Non-Yielding				None			
Conflicting Lanes	2				1				1							
Pedestrians Crossing, p/h	0				0				0							

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)	4.6453	4.3276		4.5436	4.5436			4.9763				
Follow-Up Headway (s)	2.6667	2.5352		2.5352	2.5352			2.6087				

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	199.00	123.00		439.37	389.63			113.00	177.00			
Entry Volume veh/h	179.55	110.98		410.60	364.11			109.71	170.19			
Circulating Flow (v_c), pc/h	560			113			199			942		
Exiting Flow (v_{ex}), pc/h	199			382			0			683		
Capacity (c_{pce}), pc/h	806.46	882.20		1281.24	1281.24			1126.49				
Capacity (c), veh/h	727.62	795.96		1197.34	1197.34			1093.68				
v/c Ratio (x)	0.25	0.14		0.34	0.30			0.10				

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	7.8	6.0		6.3	5.8			4.2				
Lane LOS	A	A		A	A			A	A			
95% Queue, veh	1.0	0.5		1.5	1.3			0.3				
Approach Delay, s/veh	7.1			6.1			1.6					
Approach LOS	A			A			A					
Intersection Delay, s/veh | LOS	5.4						A					

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Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	283	1	1	626	20	0	0	1	33	1	33
Future Vol, veh/h	12	283	1	1	626	20	0	0	1	33	1	33
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	6	0	0	10	0	0	0	0	5	0	5
Mvmt Flow	13	304	1	1	673	22	0	0	1	35	1	35

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	695	0	0	305	0	0	670	1028	153	864	1017	348
Stage 1	-	-	-	-	-	-	331	331	-	686	686	-
Stage 2	-	-	-	-	-	-	339	697	-	178	331	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.6	6.5	7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.6	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.6	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.55	4	3.35
Pot Cap-1 Maneuver	910	-	-	1267	-	-	347	236	872	243	239	639
Stage 1	-	-	-	-	-	-	662	649	-	397	451	-
Stage 2	-	-	-	-	-	-	655	446	-	798	649	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	910	-	-	1267	-	-	323	232	872	240	235	639
Mov Cap-2 Maneuver	-	-	-	-	-	-	323	232	-	240	235	-
Stage 1	-	-	-	-	-	-	653	640	-	391	451	-
Stage 2	-	-	-	-	-	-	617	446	-	786	640	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	9.1	18.1
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	872	910	-	-	1267	-	-	346
HCM Lane V/C Ratio	0.001	0.014	-	-	0.001	-	-	0.208
HCM Control Delay (s)	9.1	9	-	-	7.8	-	-	18.1
HCM Lane LOS	A	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.8

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	27	281	9	17	66	599	61	1	1	32	379	2
Future Volume (vph)	27	281	9	17	66	599	61	1	1	32	379	2
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%				0%			0%			1%
Total Lost time (s)	4.0	4.5	4.5		4.0	4.5	4.5	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95	1.00	1.00	1.00		0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.85		1.00	0.97
Flt Protected	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (prot)	1662	3107	1488		1222	3167	1365	1662	968		1541	1494
Flt Permitted	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (perm)	1662	3107	1488		1222	3167	1365	1662	968		1541	1494
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	30	309	10	19	73	658	67	1	1	35	416	2
RTOR Reduction (vph)	0	0	6	0	0	0	21	0	33	0	0	7
Lane Group Flow (vph)	30	309	4	0	92	658	46	1	3	0	237	226
Confl. Peds. (#/hr)											1	
Heavy Vehicles (%)	0%	7%	0%	36%	36%	5%	9%	0%	0%	56%	2%	50%
Turn Type	Prot	NA	pt+ov	Prot	Prot	NA	pt+ov	Split	NA		Split	NA
Protected Phases	5	2	2 8	1	1	6	6 4	8	8		4	4
Permitted Phases												
Actuated Green, G (s)	3.7	20.8	24.3		9.4	26.5	44.7	3.5	3.5		18.2	18.2
Effective Green, g (s)	3.7	20.8	24.3		9.4	26.5	44.7	3.5	3.5		18.2	18.2
Actuated g/C Ratio	0.05	0.30	0.36		0.14	0.39	0.65	0.05	0.05		0.27	0.27
Clearance Time (s)	4.0	4.5			4.0	4.5		4.0	4.0		4.0	4.0
Vehicle Extension (s)	2.5	4.2			2.5	4.2		2.5	2.5		2.5	2.5
Lane Grp Cap (vph)	89	944	528		167	1226	892	85	49		410	397
v/s Ratio Prot	0.02	c0.10	0.00		0.08	c0.21	0.03	0.00	c0.00		c0.15	0.15
v/s Ratio Perm												
v/c Ratio	0.34	0.33	0.01		0.55	0.54	0.05	0.01	0.06		0.58	0.57
Uniform Delay, d1	31.2	18.4	14.3		27.5	16.2	4.2	30.8	30.9		21.8	21.7
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.6	0.3	0.0		3.1	0.6	0.0	0.0	0.4		1.6	1.6
Delay (s)	32.8	18.7	14.3		30.7	16.8	4.3	30.8	31.2		23.4	23.3
Level of Service	C	B	B		C	B	A	C	C		C	C
Approach Delay (s)		19.8				17.4			31.2			23.4
Approach LOS		B				B			C			C

Intersection Summary			
HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	68.4	Sum of lost time (s)	16.5
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	47
Future Volume (vph)	47
Ideal Flow (vphpl)	1750
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.91
Adj. Flow (vph)	52
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Heavy Vehicles (%)	5%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	27	281	9	17	66	599	61	1	1	32	379	2
Future Volume (veh/h)	27	281	9	17	66	599	61	1	1	32	379	2
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No				No			No			No
Adj Sat Flow, veh/h/ln	1750	1654	1750		1259	1682	1627	1750	1750	1750	1717	1062
Adj Flow Rate, veh/h	30	309	10		73	658	67	1	1	35	466	0
Peak Hour Factor	0.91	0.91	0.91		0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	7	0		36	5	9	0	0	0	2	50
Cap, veh/h	57	1104	592		78	1189	791	81	2	70	659	214
Arrive On Green	0.03	0.35	0.35		0.07	0.37	0.37	0.05	0.05	0.05	0.20	0.00
Sat Flow, veh/h	1667	3143	1483		1199	3195	1379	1667	41	1448	3271	1062
Grp Volume(v), veh/h	30	309	10		73	658	67	1	0	36	466	0
Grp Sat Flow(s),veh/h/ln	1667	1572	1483		1199	1598	1379	1667	0	1489	1636	1062
Q Serve(g_s), s	0.9	3.5	0.2		3.0	8.0	1.1	0.0	0.0	1.2	6.6	0.0
Cycle Q Clear(g_c), s	0.9	3.5	0.2		3.0	8.0	1.1	0.0	0.0	1.2	6.6	0.0
Prop In Lane	1.00		1.00		1.00		1.00	1.00		0.97	1.00	
Lane Grp Cap(c), veh/h	57	1104	592		78	1189	791	81	0	72	659	214
V/C Ratio(X)	0.53	0.28	0.02		0.93	0.55	0.08	0.01	0.00	0.50	0.71	0.00
Avail Cap(c_a), veh/h	674	2862	1422		485	2909	1533	1011	0	904	2978	967
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	23.5	11.5	9.0		23.0	12.3	4.7	22.4	0.0	22.9	18.4	0.0
Incr Delay (d2), s/veh	5.5	0.2	0.0		27.2	0.6	0.1	0.0	0.0	3.9	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.7	1.9	0.1		2.5	4.5	0.8	0.0	0.0	0.8	4.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.0	11.8	9.0		50.2	12.9	4.8	22.4	0.0	26.9	19.4	0.0
LnGrp LOS	C	B	A		D	B	A	C	A	C	B	A
Approach Vol, veh/h		349				798			37			466
Approach Delay, s/veh		13.2				15.6			26.8			19.4
Approach LOS		B				B			C			B

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.2	21.9		14.0	6.2	22.9		6.4
Change Period (Y+Rc), s	4.0	4.5		4.0	4.5	* 4.5		4.0
Max Green Setting (Gmax), s	20.0	45.0		45.0	20.0	* 45		30.0
Max Q Clear Time (g_c+I1), s	5.0	5.5		8.6	2.9	10.0		3.2
Green Ext Time (p_c), s	0.1	3.4		1.3	0.0	8.3		0.1

Intersection Summary	
HCM 6th Ctrl Delay	16.4
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	47
Future Volume (veh/h)	47
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1062
Adj Flow Rate, veh/h	0
Peak Hour Factor	0.91
Percent Heavy Veh, %	50
Cap, veh/h	0
Arrive On Green	0.00
Sat Flow, veh/h	0
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.00
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(I)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(95%),veh/ln	0.0
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	A
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer - Assigned Phs
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	524	195	0	644	431	0	0	0	249	0	230
Future Volume (vph)	0	524	195	0	644	431	0	0	0	249	0	230
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		3%			-4%			0%			5%	
Total Lost time (s)		4.5	4.0		4.5	4.0				4.5		2.5
Lane Util. Factor		0.95	1.00		0.95	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3090	1308		3055	1292				2716		1261
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3090	1308		3055	1292				2716		1261
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	576	214	0	708	474	0	0	0	274	0	253
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	53
Lane Group Flow (vph)	0	576	214	0	708	474	0	0	0	274	0	200
Confl. Peds. (#/hr)						1						1
Heavy Vehicles (%)	0%	6%	12%	0%	11%	15%	0%	0%	0%	10%	0%	15%
Parking (#/hr)										0		
Turn Type		NA	Free		NA	Free				Prot		custom
Protected Phases		2			6					4		4 5
Permitted Phases			Free			Free						
Actuated Green, G (s)		72.2	100.0		62.8	100.0				18.8		28.7
Effective Green, g (s)		72.2	100.0		62.8	100.0				18.8		30.7
Actuated g/C Ratio		0.72	1.00		0.63	1.00				0.19		0.31
Clearance Time (s)		4.5			4.5					4.5		
Vehicle Extension (s)		6.0			4.0					2.5		
Lane Grp Cap (vph)		2230	1308		1918	1292				510		387
v/s Ratio Prot		0.19			0.23					0.10		c0.16
v/s Ratio Perm			0.16			c0.37						
v/c Ratio		0.26	0.16		0.37	0.37				0.54		0.52
Uniform Delay, d1		4.8	0.0		9.0	0.0				36.7		28.5
Progression Factor		1.00	1.00		0.78	1.00				1.00		1.00
Incremental Delay, d2		0.3	0.3		0.5	0.7				0.8		0.9
Delay (s)		5.0	0.3		7.5	0.7				37.5		29.4
Level of Service		A	A		A	A				D		C
Approach Delay (s)		3.7			4.8			0.0			33.6	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	524	195	0	644	431	0	0	0	249	0	230
Future Volume (veh/h)	0	524	195	0	644	431	0	0	0	249	0	230
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				0.95	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1619	1537	0	1743	1688				1478	0	1410
Adj Flow Rate, veh/h	0	576	0	0	708	0				274	0	143
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91				0.91	0.91	0.91
Percent Heavy Veh, %	0	6	12	0	11	15				10	0	15
Cap, veh/h	0	2355		0	2535					375	0	197
Arrive On Green	0.00	0.77	0.00	0.00	1.00	0.00				0.14	0.00	0.16
Sat Flow, veh/h	0	3158	1303	0	3398	1430				2594	0	1195
Grp Volume(v), veh/h	0	576	0	0	708	0				274	0	143
Grp Sat Flow(s),veh/h/ln	0	1538	1303	0	1656	1430				1297	0	1195
Q Serve(g_s), s	0.0	5.4	0.0	0.0	0.0	0.0				10.1	0.0	11.4
Cycle Q Clear(g_c), s	0.0	5.4	0.0	0.0	0.0	0.0				10.1	0.0	11.4
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2355		0	2535					375	0	197
V/C Ratio(X)	0.00	0.24		0.00	0.28					0.73	0.00	0.73
Avail Cap(c_a), veh/h	0	2355		0	2535					921	0	448
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.90	0.00	0.00	0.83	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	3.4	0.0	0.0	0.0	0.0				40.9	0.0	39.6
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.2	0.0				2.1	0.0	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	2.4	0.0	0.0	0.1	0.0				5.9	0.0	12.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	3.6	0.0	0.0	0.2	0.0				43.0	0.0	43.4
LnGrp LOS	A	A		A	A					D	A	D
Approach Vol, veh/h		576	A		708	A					417	
Approach Delay, s/veh		3.6			0.2						43.1	
Approach LOS		A			A						D	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		81.0		19.0		81.0
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		55.5		35.5		35.5
Max Q Clear Time (g_c+I1), s		7.4		13.4		2.0
Green Ext Time (p_c), s		11.7		1.1		8.0

Intersection Summary	
HCM 6th Ctrl Delay	11.9
HCM 6th LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	548	225	0	756	570	319	0	527	0	0	0
Future Volume (vph)	0	548	225	0	756	570	319	0	527	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-4%			3%			6%			0%	
Total Lost time (s)		4.5	4.0		4.5	4.0	4.5	4.5	4.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.87	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.99	1.00			
Satd. Flow (prot)		3111	1401		2873	1407	1405	1285	1331			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.99	1.00			
Satd. Flow (perm)		3111	1401		2873	1407	1405	1285	1331			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	577	237	0	796	600	336	0	555	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	191	204	0	0	0
Lane Group Flow (vph)	0	577	237	0	796	600	302	104	90	0	0	0
Confl. Peds. (#/hr)			2			1						
Heavy Vehicles (%)	0%	9%	6%	0%	14%	2%	9%	0%	3%	0%	0%	0%
Turn Type		NA	Free		NA	Free	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases			Free			Free			8			
Actuated Green, G (s)		64.0	100.0		64.0	100.0	27.0	27.0	27.0			
Effective Green, g (s)		64.0	100.0		64.0	100.0	27.0	27.0	27.0			
Actuated g/C Ratio		0.64	1.00		0.64	1.00	0.27	0.27	0.27			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		4.0			6.0		2.5	2.5	2.5			
Lane Grp Cap (vph)		1991	1401		1838	1407	379	346	359			
v/s Ratio Prot		0.19			0.28		c0.21	0.08				
v/s Ratio Perm			0.17			c0.43			0.07			
v/c Ratio		0.29	0.17		0.43	0.43	0.80	0.30	0.25			
Uniform Delay, d1		8.0	0.0		9.0	0.0	33.9	29.0	28.6			
Progression Factor		1.70	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.4	0.3		0.7	0.9	10.7	0.4	0.3			
Delay (s)		13.9	0.3		9.7	0.9	44.7	29.4	28.9			
Level of Service		B	A		A	A	D	C	C			
Approach Delay (s)		9.9			5.9			34.4			0.0	
Approach LOS		A			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	548	225	0	756	570	319	0	527	0	0	0
Future Volume (veh/h)	0	548	225	0	756	570	319	0	527	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1770	1812	0	1510	1674	1432	1555	1514			
Adj Flow Rate, veh/h	0	577	0	0	796	0	444	0	228			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	0	9	6	0	14	2	9	0	3			
Cap, veh/h	0	2360		0	2013		569	0	268			
Arrive On Green	0.00	1.00	0.00	0.00	0.70	0.00	0.21	0.00	0.21			
Sat Flow, veh/h	0	3452	1536	0	2945	1419	2727	0	1283			
Grp Volume(v), veh/h	0	577	0	0	796	0	444	0	228			
Grp Sat Flow(s),veh/h/ln	0	1682	1536	0	1435	1419	1364	0	1283			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	11.5	0.0	15.4	0.0	17.1			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	11.5	0.0	15.4	0.0	17.1			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2360		0	2013		569	0	268			
V/C Ratio(X)	0.00	0.24		0.00	0.40		0.78	0.00	0.85			
Avail Cap(c_a), veh/h	0	2360		0	2013		968	0	455			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.95	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	6.2	0.0	37.4	0.0	38.1			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.6	0.0	1.8	0.0	5.8			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	0.1	0.0	0.0	5.6	0.0	8.9	0.0	9.6			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.2	0.0	0.0	6.8	0.0	39.2	0.0	43.9			
LnGrp LOS	A	A		A	A		D	A	D			
Approach Vol, veh/h		577	A		796	A		672				
Approach Delay, s/veh		0.2			6.8			40.8				
Approach LOS		A			A			D				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		74.6				74.6		25.4				
Change Period (Y+Rc), s		4.5				4.5		4.5				
Max Green Setting (Gmax), s		55.5				55.5		35.5				
Max Q Clear Time (g_c+I1), s		2.0				13.5		19.1				
Green Ext Time (p_c), s		6.7				16.8		1.7				

Intersection Summary	
HCM 6th Ctrl Delay	16.1
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

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

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	1	1	0	3	0	235	6	37	500	0
Future Vol, veh/h	0	0	1	1	0	3	0	235	6	37	500	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	74	74	74	74	74	74	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	2	0
Mvmt Flow	0	0	1	1	0	4	0	318	8	50	676	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1100	1102	676	1099	1098	322	676	0	0	326	0	0
Stage 1	776	776	-	322	322	-	-	-	-	-	-	-
Stage 2	324	326	-	777	776	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	191	213	457	192	215	724	925	-	-	1245	-	-
Stage 1	393	410	-	694	655	-	-	-	-	-	-	-
Stage 2	692	652	-	393	410	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	184	204	457	185	206	724	925	-	-	1245	-	-
Mov Cap-2 Maneuver	184	204	-	185	206	-	-	-	-	-	-	-
Stage 1	393	394	-	694	655	-	-	-	-	-	-	-
Stage 2	688	652	-	376	394	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.9	13.7	0	0.6
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	925	-	-	457	419	1245	-	-
HCM Lane V/C Ratio	-	-	-	0.003	0.013	0.04	-	-
HCM Control Delay (s)	0	-	-	12.9	13.7	8	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0.1	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	1	238	6	77	425
Future Vol, veh/h	1	1	238	6	77	425
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	3	0	0	2
Mvmt Flow	1	1	322	8	104	574

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1108	326	0	0	330	0
Stage 1	326	-	-	-	-	-
Stage 2	782	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	234	720	-	-	1241	-
Stage 1	736	-	-	-	-	-
Stage 2	454	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	214	720	-	-	1241	-
Mov Cap-2 Maneuver	214	-	-	-	-	-
Stage 1	736	-	-	-	-	-
Stage 2	416	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16	0	1.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	330	1241	-
HCM Lane V/C Ratio	-	-	0.008	0.084	-
HCM Control Delay (s)	-	-	16	8.2	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0	0.3	-

Intersection	
Int Delay, s/veh	2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	15	229	23	153	273
Future Vol, veh/h	1	15	229	23	153	273
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	3	0	0	2
Mvmt Flow	1	20	309	31	207	369

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1108	325	0	0	340	0
Stage 1	325	-	-	-	-	-
Stage 2	783	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	234	721	-	-	1230	-
Stage 1	737	-	-	-	-	-
Stage 2	454	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	195	721	-	-	1230	-
Mov Cap-2 Maneuver	195	-	-	-	-	-
Stage 1	737	-	-	-	-	-
Stage 2	378	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.9	0	3.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	195	721	1230	-
HCM Lane V/C Ratio	-	-	0.007	0.028	0.168	-
HCM Control Delay (s)	-	-	23.6	10.1	8.5	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0.1	0.6	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	0	5	1	0	14	5	228	23	115	112	47
Future Vol, veh/h	10	0	5	1	0	14	5	228	23	115	112	47
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	74	74	74	74	74	74	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	2	0	2	0	3	2	2	2	0
Mvmt Flow	14	0	7	1	0	19	7	308	31	155	151	64

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	840	846	183	835	863	324	215	0	0	339	0	0
Stage 1	493	493	-	338	338	-	-	-	-	-	-	-
Stage 2	347	353	-	497	525	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.12	6.5	6.22	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.12	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.12	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.518	4	3.318	2.2	-	-	2.218	-	-
Pot Cap-1 Maneuver	287	301	865	287	295	717	1367	-	-	1220	-	-
Stage 1	562	550	-	676	644	-	-	-	-	-	-	-
Stage 2	673	634	-	555	533	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	251	262	865	256	256	717	1367	-	-	1220	-	-
Mov Cap-2 Maneuver	251	262	-	256	256	-	-	-	-	-	-	-
Stage 1	559	480	-	673	641	-	-	-	-	-	-	-
Stage 2	652	631	-	481	465	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.7	10.8	0.1	3.5
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1367	-	-	329	256	717	1220	-	-
HCM Lane V/C Ratio	0.005	-	-	0.062	0.005	0.026	0.127	-	-
HCM Control Delay (s)	7.6	-	-	16.7	19.1	10.2	8.4	-	-
HCM Lane LOS	A	-	-	C	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0.1	0.4	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	61	195	29	35	83
Future Vol, veh/h	20	61	195	29	35	83
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	3	-	-	-3
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	6	0	6	0	4	3
Mvmt Flow	21	65	207	31	37	88

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	385	223	0	0	238	0
Stage 1	223	-	-	-	-	-
Stage 2	162	-	-	-	-	-
Critical Hdwy	7.06	6.5	-	-	4.14	-
Critical Hdwy Stg 1	6.06	-	-	-	-	-
Critical Hdwy Stg 2	6.06	-	-	-	-	-
Follow-up Hdwy	3.554	3.3	-	-	2.236	-
Pot Cap-1 Maneuver	572	806	-	-	1317	-
Stage 1	775	-	-	-	-	-
Stage 2	834	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	555	806	-	-	1317	-
Mov Cap-2 Maneuver	555	-	-	-	-	-
Stage 1	775	-	-	-	-	-
Stage 2	809	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.6	0	2.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	725	1317	-
HCM Lane V/C Ratio	-	-	0.119	0.028	-
HCM Control Delay (s)	-	-	10.6	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-

HCS7 Roundabouts Report

General Information

Analyst	ZHB	Intersection	OR 219/Butteville Rd
Agency or Co.	Kittelson	E/W Street Name	OR 219
Date Performed	4/29/2021	N/S Street Name	Butteville (Realigned)
Analysis Year	2023	Analysis Time Period (hrs)	0.25
Time Analyzed	PM Total - Generator Peak	Peak Hour Factor	0.95
Project Description	Project Basie	Jurisdiction	Woodburn, OR

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	1	0	1	1	0	0	1	0	0	0	0	0	0
Lane Assignment	T		R		L		LT				L					
Volume (V), veh/h	0		246	129	0	642	157		0	105		596				
Percent Heavy Vehicles, %	0		3	1	0	1	5		0	9		3				
Flow Rate (v_{PCE}), pc/h	0		267	137	0	683	174		0	120		646				
Right-Turn Bypass	None				None				Non-Yielding				None			
Conflicting Lanes	2				1				1							
Pedestrians Crossing, p/h	0				0				0							

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)	4.6453	4.3276		4.5436	4.5436			4.9763				
Follow-Up Headway (s)	2.6667	2.5352		2.5352	2.5352			2.6087				

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	267.00	137.00		454.21	402.79			120.00	646.00			
Entry Volume veh/h	260.96	133.90		446.23	395.72			110.09	627.18			
Circulating Flow (v_c), pc/h	683			120			267			977		
Exiting Flow (v_{ex}), pc/h	267			294			0			820		
Capacity (c_{pce}), pc/h	720.18	794.62		1273.11	1273.11			1051.00				
Capacity (c), veh/h	703.90	776.66		1250.75	1250.75			964.22				
v/c Ratio (x)	0.37	0.17		0.36	0.32			0.11				

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	9.9	6.5		6.2	5.8			4.8				
Lane LOS	A	A		A	A			A	A			
95% Queue, veh	1.7	0.6		1.6	1.4			0.4				
Approach Delay, s/veh	8.8			6.0			0.7					
Approach LOS	A			A			A					
Intersection Delay, s/veh | LOS	4.6						A					

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Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	37	807	0	1	780	56	0	2	2	44	0	19
Future Vol, veh/h	37	807	0	1	780	56	0	2	2	44	0	19
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	2	0	0	3	2	0	0	0	0	0	0
Mvmt Flow	39	849	0	1	821	59	0	2	2	46	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	880	0	0	849	0	0	1342	1809	425	1357	1780	442
Stage 1	-	-	-	-	-	-	927	927	-	853	853	-
Stage 2	-	-	-	-	-	-	415	882	-	504	927	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	777	-	-	798	-	-	112	80	583	110	83	569
Stage 1	-	-	-	-	-	-	293	350	-	324	378	-
Stage 2	-	-	-	-	-	-	591	367	-	524	350	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	777	-	-	798	-	-	104	76	583	103	79	568
Mov Cap-2 Maneuver	-	-	-	-	-	-	104	76	-	103	79	-
Stage 1	-	-	-	-	-	-	278	333	-	308	378	-
Stage 2	-	-	-	-	-	-	568	367	-	493	333	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	32.7	53.8
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	134	777	-	-	798	-	-	137
HCM Lane V/C Ratio	0.031	0.05	-	-	0.001	-	-	0.484
HCM Control Delay (s)	32.7	9.9	-	-	9.5	-	-	53.8
HCM Lane LOS	D	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0	-	-	2.2

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	80	771	2	22	21	763	236	3	2	37	660	1
Future Volume (vph)	80	771	2	22	21	763	236	3	2	37	660	1
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%				0%			0%			1%
Total Lost time (s)	4.0	4.5	4.5		4.0	4.5	4.5	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95	1.00	1.00	1.00		0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.86		1.00	0.97
Flt Protected	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (prot)	1662	3228	1488		1108	3197	1458	1662	1241		1541	1515
Flt Permitted	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (perm)	1662	3228	1488		1108	3197	1458	1662	1241		1541	1515
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	84	812	2	23	22	803	248	3	2	39	695	1
RTOR Reduction (vph)	0	0	1	0	0	0	53	0	37	0	0	5
Lane Group Flow (vph)	84	812	1	0	45	803	195	3	4	0	389	377
Confl. Peds. (#/hr)			1		1			1				
Heavy Vehicles (%)	0%	3%	0%	50%	50%	4%	2%	0%	0%	22%	2%	0%
Turn Type	Prot	NA	pt+ov	Prot	Prot	NA	pt+ov	Split	NA		Split	NA
Protected Phases	5	2	2 8	1	1	6	6 4	8	8		4	4
Permitted Phases												
Actuated Green, G (s)	8.6	38.3	43.3		7.8	37.5	73.2	5.0	5.0		35.7	35.7
Effective Green, g (s)	8.6	38.3	43.3		7.8	37.5	73.2	5.0	5.0		35.7	35.7
Actuated g/C Ratio	0.08	0.37	0.42		0.08	0.36	0.71	0.05	0.05		0.35	0.35
Clearance Time (s)	4.0	4.5			4.0	4.5		4.0	4.0		4.0	4.0
Vehicle Extension (s)	2.5	4.2			2.5	4.2		2.5	2.5		2.5	2.5
Lane Grp Cap (vph)	138	1196	623		83	1160	1033	80	60		532	523
v/s Ratio Prot	0.05	c0.25	0.00		0.04	c0.25	0.13	0.00	c0.00		c0.25	0.25
v/s Ratio Perm												
v/c Ratio	0.61	0.68	0.00		0.54	0.69	0.19	0.04	0.06		0.73	0.72
Uniform Delay, d1	45.7	27.3	17.4		46.0	28.0	5.1	46.9	46.9		29.6	29.5
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	6.3	1.7	0.0		5.6	2.0	0.1	0.1	0.3		4.8	4.6
Delay (s)	52.0	29.1	17.4		51.6	30.0	5.2	47.0	47.3		34.4	34.0
Level of Service	D	C	B		D	C	A	D	D		C	C
Approach Delay (s)		31.2				25.3			47.2			34.2
Approach LOS		C				C			D			C

Intersection Summary			
HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	103.3	Sum of lost time (s)	16.5
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	71
Future Volume (vph)	71
Ideal Flow (vphpl)	1750
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	75
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	1
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	80	771	2	22	21	763	236	3	2	37	660	1
Future Volume (veh/h)	80	771	2	22	21	763	236	3	2	37	660	1
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No				No			No			No
Adj Sat Flow, veh/h/ln	1750	1709	1750		1068	1695	1723	1750	1750	1750	1717	1745
Adj Flow Rate, veh/h	84	812	2		22	803	248	3	2	39	766	0
Peak Hour Factor	0.95	0.95	0.95		0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	3	0		50	4	2	0	0	0	2	0
Cap, veh/h	107	1388	710		25	1227	961	86	4	73	910	485
Arrive On Green	0.06	0.43	0.43		0.02	0.38	0.38	0.05	0.05	0.05	0.28	0.00
Sat Flow, veh/h	1667	3247	1481		1017	3221	1458	1667	73	1416	3271	1745
Grp Volume(v), veh/h	84	812	2		22	803	248	3	0	41	766	0
Grp Sat Flow(s),veh/h/ln	1667	1624	1481		1017	1611	1458	1667	0	1489	1636	1745
Q Serve(g_s), s	3.8	14.4	0.1		1.6	15.5	5.3	0.1	0.0	2.0	16.7	0.0
Cycle Q Clear(g_c), s	3.8	14.4	0.1		1.6	15.5	5.3	0.1	0.0	2.0	16.7	0.0
Prop In Lane	1.00		1.00		1.00		1.00	1.00		0.95	1.00	
Lane Grp Cap(c), veh/h	107	1388	710		25	1227	961	86	0	77	910	485
V/C Ratio(X)	0.78	0.59	0.00		0.88	0.65	0.26	0.03	0.00	0.53	0.84	0.00
Avail Cap(c_a), veh/h	441	1935	959		269	1920	1275	662	0	592	1949	1040
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	34.8	16.5	10.3		36.7	19.3	5.3	34.0	0.0	34.9	25.7	0.0
Incr Delay (d2), s/veh	9.0	0.6	0.0		46.7	0.9	0.2	0.1	0.0	4.2	1.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.1	8.7	0.0		1.3	9.4	5.5	0.1	0.0	1.5	10.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.8	17.1	10.3		83.4	20.2	5.5	34.1	0.0	39.1	27.3	0.0
LnGrp LOS	D	B	B		F	C	A	C	A	D	C	A
Approach Vol, veh/h		898				1073			44			766
Approach Delay, s/veh		19.6				18.1			38.8			27.3
Approach LOS		B				B			D			C

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.8	36.8		25.0	9.3	33.3		7.9
Change Period (Y+Rc), s	4.0	4.5		4.0	4.5	* 4.5		4.0
Max Green Setting (Gmax), s	20.0	45.0		45.0	20.0	* 45		30.0
Max Q Clear Time (g_c+I1), s	3.6	16.4		18.7	5.8	17.5		4.0
Green Ext Time (p_c), s	0.0	9.5		2.3	0.1	11.1		0.1

Intersection Summary	
HCM 6th Ctrl Delay	21.5
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	71
Future Volume (veh/h)	71
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1745
Adj Flow Rate, veh/h	0
Peak Hour Factor	0.95
Percent Heavy Veh, %	0
Cap, veh/h	0
Arrive On Green	0.00
Sat Flow, veh/h	0
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.00
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(I)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(95%),veh/ln	0.0
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	A
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer - Assigned Phs
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1006	484	0	1044	476	0	0	0	542	0	419
Future Volume (vph)	0	1006	484	0	1044	476	0	0	0	542	0	419
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		3%			-4%			0%			5%	
Total Lost time (s)		4.5	4.0		4.5	4.0				4.5		2.5
Lane Util. Factor		0.95	1.00		0.95	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3180	1409		3325	1429				2929		1395
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3180	1409		3325	1429				2929		1395
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1059	509	0	1099	501	0	0	0	571	0	441
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	9
Lane Group Flow (vph)	0	1059	509	0	1099	501	0	0	0	571	0	432
Confl. Peds. (#/hr)						1						1
Heavy Vehicles (%)	0%	3%	4%	0%	2%	4%	0%	0%	0%	2%	0%	4%
Parking (#/hr)										0		
Turn Type		NA	Free		NA	Free				Prot		custom
Protected Phases		2			6					4		4 5
Permitted Phases			Free			Free						
Actuated Green, G (s)		59.7	100.0		48.8	100.0				31.3		42.7
Effective Green, g (s)		59.7	100.0		48.8	100.0				31.3		44.7
Actuated g/C Ratio		0.60	1.00		0.49	1.00				0.31		0.45
Clearance Time (s)		4.5			4.5					4.5		
Vehicle Extension (s)		6.0			4.0					2.5		
Lane Grp Cap (vph)		1898	1409		1622	1429				916		623
v/s Ratio Prot		0.33			c0.33					0.19		c0.31
v/s Ratio Perm			0.36			0.35						
v/c Ratio		0.56	0.36		0.68	0.35				0.62		0.69
Uniform Delay, d1		12.2	0.0		19.6	0.0				29.3		22.2
Progression Factor		1.00	1.00		0.84	1.00				1.00		1.00
Incremental Delay, d2		1.2	0.7		1.9	0.6				1.2		3.1
Delay (s)		13.4	0.7		18.3	0.6				30.5		25.2
Level of Service		B	A		B	A				C		C
Approach Delay (s)		9.3			12.7			0.0			28.2	
Approach LOS		A			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1006	484	0	1044	476	0	0	0	542	0	419
Future Volume (veh/h)	0	1006	484	0	1044	476	0	0	0	542	0	419
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				0.95	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1660	1647	0	1867	1840				1587	0	1560
Adj Flow Rate, veh/h	0	1059	0	0	1099	0				571	0	336
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	3	4	0	2	4				2	0	4
Cap, veh/h	0	1990		0	2238					778	0	396
Arrive On Green	0.00	0.63	0.00	0.00	1.00	0.00				0.28	0.00	0.30
Sat Flow, veh/h	0	3237	1395	0	3641	1559				2786	0	1322
Grp Volume(v), veh/h	0	1059	0	0	1099	0				571	0	336
Grp Sat Flow(s),veh/h/ln	0	1577	1395	0	1774	1559				1393	0	1322
Q Serve(g_s), s	0.0	18.7	0.0	0.0	0.0	0.0				18.6	0.0	23.9
Cycle Q Clear(g_c), s	0.0	18.7	0.0	0.0	0.0	0.0				18.6	0.0	23.9
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1990		0	2238					778	0	396
V/C Ratio(X)	0.00	0.53		0.00	0.49					0.73	0.00	0.85
Avail Cap(c_a), veh/h	0	1990		0	2238					989	0	496
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.67	0.00	0.00	0.76	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	10.3	0.0	0.0	0.0	0.0				32.7	0.0	32.9
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.0	0.6	0.0				1.8	0.0	10.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	9.4	0.0	0.0	0.3	0.0				10.5	0.0	23.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	11.0	0.0	0.0	0.6	0.0				34.5	0.0	43.2
LnGrp LOS	A	B		A	A					C	A	D
Approach Vol, veh/h		1059	A		1099	A					907	
Approach Delay, s/veh		11.0			0.6						37.7	
Approach LOS		B			A						D	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		67.6		32.4		67.6
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		55.5		35.5		35.5
Max Q Clear Time (g_c+I1), s		20.7		25.9		2.0
Green Ext Time (p_c), s		21.0		2.0		13.9

Intersection Summary	
HCM 6th Ctrl Delay	15.2
HCM 6th LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1210	338	0	1103	264	417	0	408	0	0	0
Future Volume (vph)	0	1210	338	0	1103	264	417	0	408	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-4%			3%			6%			0%	
Total Lost time (s)		4.5	4.0		4.5	4.0	4.5	4.5	4.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	1.00		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.92	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.98	1.00			
Satd. Flow (prot)		3325	1431		3180	1393	1487	1342	1318			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.98	1.00			
Satd. Flow (perm)		3325	1431		3180	1393	1487	1342	1318			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1274	356	0	1161	278	439	0	429	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	37	37	0	0	0
Lane Group Flow (vph)	0	1274	356	0	1161	278	303	253	238	0	0	0
Confl. Peds. (#/hr)						2						
Heavy Vehicles (%)	0%	2%	6%	0%	3%	3%	3%	0%	4%	0%	0%	0%
Turn Type		NA	Free		NA	Free	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases			Free			Free			8			
Actuated Green, G (s)		64.7	100.0		64.7	100.0	26.3	26.3	26.3			
Effective Green, g (s)		64.7	100.0		64.7	100.0	26.3	26.3	26.3			
Actuated g/C Ratio		0.65	1.00		0.65	1.00	0.26	0.26	0.26			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		4.0			6.0		2.5	2.5	2.5			
Lane Grp Cap (vph)		2151	1431		2057	1393	391	352	346			
v/s Ratio Prot		c0.38			0.37		c0.20	0.19				
v/s Ratio Perm			0.25			0.20			0.18			
v/c Ratio		0.59	0.25		0.56	0.20	0.77	0.72	0.69			
Uniform Delay, d1		10.1	0.0		9.8	0.0	34.1	33.5	33.2			
Progression Factor		1.27	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		1.0	0.3		1.1	0.3	8.9	6.4	5.1			
Delay (s)		13.8	0.3		10.9	0.3	43.0	39.9	38.3			
Level of Service		B	A		B	A	D	D	D			
Approach Delay (s)		10.9			8.9			40.5			0.0	
Approach LOS		B			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1210	338	0	1103	264	417	0	408	0	0	0
Future Volume (veh/h)	0	1210	338	0	1103	264	417	0	408	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1867	1812	0	1660	1660	1514	1555	1500			
Adj Flow Rate, veh/h	0	1274	0	0	1161	0	507	0	146			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	0	2	6	0	3	3	3	0	4			
Cap, veh/h	0	2497		0	2220		595	0	262			
Arrive On Green	0.00	1.00	0.00	0.00	0.70	0.00	0.21	0.00	0.21			
Sat Flow, veh/h	0	3641	1536	0	3237	1407	2883	0	1271			
Grp Volume(v), veh/h	0	1274	0	0	1161	0	507	0	146			
Grp Sat Flow(s),veh/h/ln	0	1774	1536	0	1577	1407	1442	0	1271			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	17.3	0.0	16.9	0.0	10.3			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	17.3	0.0	16.9	0.0	10.3			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2497		0	2220		595	0	262			
V/C Ratio(X)	0.00	0.51		0.00	0.52		0.85	0.00	0.56			
Avail Cap(c_a), veh/h	0	2497		0	2220		1024	0	451			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.79	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	6.9	0.0	38.2	0.0	35.6			
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	0.9	0.0	2.7	0.0	1.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	0.4	0.0	0.0	8.9	0.0	10.2	0.0	5.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.6	0.0	0.0	7.8	0.0	40.9	0.0	37.0			
LnGrp LOS	A	A		A	A		D	A	D			
Approach Vol, veh/h		1274	A		1161	A		653				
Approach Delay, s/veh		0.6			7.8			40.0				
Approach LOS		A			A			D				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		74.9				74.9		25.1				
Change Period (Y+Rc), s		4.5				4.5		4.5				
Max Green Setting (Gmax), s		55.5				55.5		35.5				
Max Q Clear Time (g_c+I1), s		2.0				19.3		18.9				
Green Ext Time (p_c), s		20.6				23.6		1.7				

Intersection Summary	
HCM 6th Ctrl Delay	11.7
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

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

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	0	3	8	0	52	4	647	8	51	715	5
Future Vol, veh/h	4	0	3	8	0	52	4	647	8	51	715	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	3	0
Mvmt Flow	4	0	3	8	0	55	4	681	8	54	753	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1585	1561	756	1558	1559	685	758	0	0	689	0	0
Stage 1	864	864	-	693	693	-	-	-	-	-	-	-
Stage 2	721	697	-	865	866	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	89	113	411	92	113	452	862	-	-	915	-	-
Stage 1	352	374	-	437	448	-	-	-	-	-	-	-
Stage 2	422	446	-	351	373	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	74	106	411	87	106	452	862	-	-	915	-	-
Mov Cap-2 Maneuver	74	106	-	87	106	-	-	-	-	-	-	-
Stage 1	350	352	-	435	446	-	-	-	-	-	-	-
Stage 2	369	444	-	328	351	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	38.8	20.8	0.1	0.6
HCM LOS	E	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	862	-	-	114	290	915	-	-
HCM Lane V/C Ratio	0.005	-	-	0.065	0.218	0.059	-	-
HCM Control Delay (s)	9.2	-	-	38.8	20.8	9.2	-	-
HCM Lane LOS	A	-	-	E	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.8	0.2	-	-

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	51	608	8	51	675
Future Vol, veh/h	8	51	608	8	51	675
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	0	3
Mvmt Flow	8	54	640	8	54	711

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1463	644	0	0	648	0
Stage 1	644	-	-	-	-	-
Stage 2	819	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	143	476	-	-	947	-
Stage 1	527	-	-	-	-	-
Stage 2	437	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	135	476	-	-	947	-
Mov Cap-2 Maneuver	135	-	-	-	-	-
Stage 1	527	-	-	-	-	-
Stage 2	412	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.3	0	0.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	355	947	-
HCM Lane V/C Ratio	-	-	0.175	0.057	-
HCM Control Delay (s)	-	-	17.3	9	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.6	0.2	-

Intersection	
Int Delay, s/veh	4.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	206	410	29	203	480
Future Vol, veh/h	31	206	410	29	203	480
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	1	2	2	3
Mvmt Flow	33	217	432	31	214	505

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1381	448	0	0	463	0
Stage 1	448	-	-	-	-	-
Stage 2	933	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	159	611	-	-	1098	-
Stage 1	644	-	-	-	-	-
Stage 2	383	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	128	611	-	-	1098	-
Mov Cap-2 Maneuver	128	-	-	-	-	-
Stage 1	644	-	-	-	-	-
Stage 2	308	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.8	0	2.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	128	611	1098	-
HCM Lane V/C Ratio	-	-	0.255	0.355	0.195	-
HCM Control Delay (s)	-	-	42.5	14.1	9.1	-
HCM Lane LOS	-	-	E	B	A	-
HCM 95th %tile Q(veh)	-	-	1	1.6	0.7	-

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	5	31	0	206	5	228	30	203	303	5
Future Vol, veh/h	5	0	5	31	0	206	5	228	30	203	303	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	2	0	2	0	1	2	2	3	0
Mvmt Flow	5	0	5	33	0	217	5	240	32	214	319	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1125	1032	322	1018	1018	256	324	0	0	272	0	0
Stage 1	750	750	-	266	266	-	-	-	-	-	-	-
Stage 2	375	282	-	752	752	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.12	6.5	6.22	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.12	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.12	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.518	4	3.318	2.2	-	-	2.218	-	-
Pot Cap-1 Maneuver	184	235	724	216	239	783	1247	-	-	1291	-	-
Stage 1	407	422	-	739	692	-	-	-	-	-	-	-
Stage 2	650	681	-	402	421	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	116	195	724	187	199	783	1247	-	-	1291	-	-
Mov Cap-2 Maneuver	116	195	-	187	199	-	-	-	-	-	-	-
Stage 1	405	352	-	736	689	-	-	-	-	-	-	-
Stage 2	468	678	-	333	351	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	24	13.5	0.2	3.3
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1247	-	-	200	187	783	1291	-	-
HCM Lane V/C Ratio	0.004	-	-	0.053	0.175	0.277	0.166	-	-
HCM Control Delay (s)	7.9	-	-	24	28.3	11.3	8.3	-	-
HCM Lane LOS	A	-	-	C	D	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.6	1.1	0.6	-	-

Intersection	
Int Delay, s/veh	3.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	29	103	158	27	110	226
Future Vol, veh/h	29	103	158	27	110	226
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	3	-	-	-3
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	4	1	0	2	2
Mvmt Flow	31	108	166	28	116	238

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	650	180	0	0	194	0
Stage 1	180	-	-	-	-	-
Stage 2	470	-	-	-	-	-
Critical Hdwy	7.04	6.54	-	-	4.12	-
Critical Hdwy Stg 1	6.04	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	-	-	2.218	-
Pot Cap-1 Maneuver	386	845	-	-	1379	-
Stage 1	821	-	-	-	-	-
Stage 2	578	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	349	845	-	-	1379	-
Mov Cap-2 Maneuver	349	-	-	-	-	-
Stage 1	821	-	-	-	-	-
Stage 2	522	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.1	0	2.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	644	1379	-
HCM Lane V/C Ratio	-	-	0.216	0.084	-
HCM Control Delay (s)	-	-	12.1	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0.3	-

HCS7 Roundabouts Report

General Information

Analyst	ZHB
Agency or Co.	Kittelson
Date Performed	4/29/2021
Analysis Year	2023
Time Analyzed	PM Total - System Peak
Project Description	Project Basie

Site Information

Intersection	OR 219/Butteville Rd
E/W Street Name	OR 219
N/S Street Name	Butteville (Realigned)
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.95
Jurisdiction	Woodburn, OR

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	1	0	1	1	0	0	1	0	0	0	0	0	0
Lane Assignment	T		R		L		LT				L					
Volume (V), veh/h	0		471	171	0	256	259		0	70		164				
Percent Heavy Vehicles, %	0		4	2	0	1	3		0	6		6				
Flow Rate (v_{PCE}), pc/h	0		516	184	0	272	281		0	78		183				
Right-Turn Bypass	None				None				Non-Yielding				None			
Conflicting Lanes	2				1				1							
Pedestrians Crossing, p/h	0				0				0							

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)	4.6453	4.3276		4.5436	4.5436			4.9763				
Follow-Up Headway (s)	2.6667	2.5352		2.5352	2.5352			2.6087				

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	516.00	184.00		293.09	259.91			78.00	183.00			
Entry Volume veh/h	498.71	177.83		287.32	254.80			73.58	172.64			
Circulating Flow (v_c), pc/h	272			78			516			631		
Exiting Flow (v_{ex}), pc/h	516			359			0			456		
Capacity (c_{pce}), pc/h	1051.12	1126.89		1322.71	1322.71			815.27				
Capacity (c), veh/h	1015.90	1089.13		1296.69	1296.69			769.13				
v/c Ratio (x)	0.49	0.16		0.22	0.20			0.10				

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	9.4	4.8		4.7	4.4			5.7				
Lane LOS	A	A		A	A			A	A			
95% Queue, veh	2.8	0.6		0.8	0.7			0.3				
Approach Delay, s/veh	8.2			4.6			1.7					
Approach LOS	A			A			A					
Intersection Delay, s/veh | LOS	5.7						A					

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Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	57	576	0	4	486	53	0	0	2	27	0	30
Future Vol, veh/h	57	576	0	4	486	53	0	0	2	27	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	5	0	0	2	2	0	0	0	5	0	6
Mvmt Flow	61	613	0	4	517	56	0	0	2	29	0	32

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	573	0	0	613	0	0	1002	1316	307	982	1288	287
Stage 1	-	-	-	-	-	-	735	735	-	553	553	-
Stage 2	-	-	-	-	-	-	267	581	-	429	735	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.6	6.5	7.02
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.6	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.6	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.55	4	3.36
Pot Cap-1 Maneuver	1010	-	-	976	-	-	200	159	695	199	165	698
Stage 1	-	-	-	-	-	-	382	428	-	477	518	-
Stage 2	-	-	-	-	-	-	721	503	-	566	428	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1010	-	-	976	-	-	181	149	695	189	154	698
Mov Cap-2 Maneuver	-	-	-	-	-	-	181	149	-	189	154	-
Stage 1	-	-	-	-	-	-	359	402	-	448	516	-
Stage 2	-	-	-	-	-	-	685	501	-	530	402	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.1	10.2	19.6
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	695	1010	-	-	976	-	-	307
HCM Lane V/C Ratio	0.003	0.06	-	-	0.004	-	-	0.198
HCM Control Delay (s)	10.2	8.8	-	-	8.7	-	-	19.6
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0	0.2	-	-	0	-	-	0.7

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	90	510	5	22	58	470	269	6	6	69	627	6
Future Volume (vph)	90	510	5	22	58	470	269	6	6	69	627	6
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%				0%			0%			1%
Total Lost time (s)	4.0	4.5	4.5		4.0	4.5	4.5	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95	1.00	1.00	1.00		0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.86		1.00	0.97
Flt Protected	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (prot)	1630	3167	1488		1269	3260	1488	1330	1283		1571	1540
Flt Permitted	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (perm)	1630	3167	1488		1269	3260	1488	1330	1283		1571	1540
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	94	531	5	23	60	490	280	6	6	72	653	6
RTOR Reduction (vph)	0	0	3	0	0	0	103	0	67	0	0	5
Lane Group Flow (vph)	94	531	2	0	83	490	177	6	11	0	366	358
Confl. Peds. (#/hr)											1	
Heavy Vehicles (%)	2%	5%	0%	31%	31%	2%	0%	25%	0%	19%	0%	20%
Turn Type	Prot	NA	pt+ov	Prot	Prot	NA	pt+ov	Split	NA		Split	NA
Protected Phases	5	2	2 8	1	1	6	6 4	8	8		4	4
Permitted Phases												
Actuated Green, G (s)	9.8	24.8	30.2		9.5	24.5	54.6	5.4	5.4		30.1	30.1
Effective Green, g (s)	9.8	24.8	30.2		9.5	24.5	54.6	5.4	5.4		30.1	30.1
Actuated g/C Ratio	0.11	0.29	0.35		0.11	0.28	0.63	0.06	0.06		0.35	0.35
Clearance Time (s)	4.0	4.5			4.0	4.5		4.0	4.0		4.0	4.0
Vehicle Extension (s)	2.5	4.2			2.5	4.2		2.5	2.5		2.5	2.5
Lane Grp Cap (vph)	185	910	520		139	925	941	83	80		547	537
v/s Ratio Prot	0.06	c0.17	0.00		0.07	c0.15	0.12	0.00	c0.01		c0.23	0.23
v/s Ratio Perm												
v/c Ratio	0.51	0.58	0.00		0.60	0.53	0.19	0.07	0.13		0.67	0.67
Uniform Delay, d1	36.0	26.3	18.3		36.6	26.0	6.6	38.1	38.2		23.9	23.8
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.6	1.2	0.0		5.7	0.8	0.1	0.3	0.5		2.8	2.8
Delay (s)	37.6	27.5	18.3		42.2	26.8	6.8	38.4	38.8		26.7	26.7
Level of Service	D	C	B		D	C	A	D	D		C	C
Approach Delay (s)		29.0				21.7			38.7			26.7
Approach LOS		C				C			D			C

Intersection Summary			
HCM 2000 Control Delay	25.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	86.3	Sum of lost time (s)	16.5
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	67
Future Volume (vph)	67
Ideal Flow (vphpl)	1750
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.96
Adj. Flow (vph)	70
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	90	510	5	22	58	470	269	6	6	69	627	6
Future Volume (veh/h)	90	510	5	22	58	470	269	6	6	69	627	6
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No				No			No			No
Adj Sat Flow, veh/h/ln	1723	1682	1750		1327	1723	1750	1409	1750	1750	1745	1472
Adj Flow Rate, veh/h	94	531	5		60	490	280	6	6	72	723	0
Peak Hour Factor	0.96	0.96	0.96		0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	5	0		31	2	0	25	0	0	0	20
Cap, veh/h	119	1015	584		67	948	835	102	9	105	909	403
Arrive On Green	0.07	0.32	0.32		0.05	0.29	0.29	0.08	0.08	0.08	0.27	0.00
Sat Flow, veh/h	1641	3195	1483		1264	3273	1483	1342	115	1385	3323	1472
Grp Volume(v), veh/h	94	531	5		60	490	280	6	0	78	723	0
Grp Sat Flow(s),veh/h/ln	1641	1598	1483		1264	1637	1483	1342	0	1501	1661	1472
Q Serve(g_s), s	3.3	8.0	0.1		2.8	7.4	6.0	0.2	0.0	3.0	11.9	0.0
Cycle Q Clear(g_c), s	3.3	8.0	0.1		2.8	7.4	6.0	0.2	0.0	3.0	11.9	0.0
Prop In Lane	1.00		1.00		1.00		1.00	1.00		0.92	1.00	
Lane Grp Cap(c), veh/h	119	1015	584		67	948	835	102	0	114	909	403
V/C Ratio(X)	0.79	0.52	0.01		0.89	0.52	0.34	0.06	0.00	0.68	0.80	0.00
Avail Cap(c_a), veh/h	556	2438	1244		429	2497	1537	682	0	763	2535	1123
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	26.9	16.5	10.9		27.8	17.5	6.9	25.3	0.0	26.6	19.9	0.0
Incr Delay (d2), s/veh	8.3	0.6	0.0		24.2	0.7	0.4	0.2	0.0	5.3	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.7	4.9	0.1		2.2	4.7	5.6	0.1	0.0	2.1	7.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.2	17.1	10.9		52.0	18.2	7.3	25.5	0.0	31.8	21.1	0.0
LnGrp LOS	D	B	B		D	B	A	C	A	C	C	A
Approach Vol, veh/h		630				830			84			723
Approach Delay, s/veh		19.8				16.9			31.4			21.1
Approach LOS		B				B			C			C

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.1	23.2		20.1	8.8	21.6		8.5
Change Period (Y+Rc), s	4.0	4.5		4.0	4.5	* 4.5		4.0
Max Green Setting (Gmax), s	20.0	45.0		45.0	20.0	* 45		30.0
Max Q Clear Time (g_c+I1), s	4.8	10.0		13.9	5.3	9.4		5.0
Green Ext Time (p_c), s	0.1	6.1		2.1	0.1	7.7		0.3

Intersection Summary	
HCM 6th Ctrl Delay	19.6
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	67
Future Volume (veh/h)	67
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1472
Adj Flow Rate, veh/h	0
Peak Hour Factor	0.96
Percent Heavy Veh, %	20
Cap, veh/h	0
Arrive On Green	0.00
Sat Flow, veh/h	0
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.00
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(I)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(95%),veh/ln	0.0
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	A
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer - Assigned Phs
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	804	424	0	860	633	0	0	0	555	0	367
Future Volume (vph)	0	804	424	0	860	633	0	0	0	555	0	367
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		3%			-4%			0%			5%	
Total Lost time (s)		4.5	4.0		4.5	4.0				4.5		2.5
Lane Util. Factor		0.95	1.00		0.95	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3180	1409		3325	1457				2929		1381
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3180	1409		3325	1457				2929		1381
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	820	433	0	878	646	0	0	0	566	0	374
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	24
Lane Group Flow (vph)	0	820	433	0	878	646	0	0	0	566	0	350
Confl. Peds. (#/hr)						1						1
Heavy Vehicles (%)	0%	3%	4%	0%	2%	2%	0%	0%	0%	2%	0%	5%
Parking (#/hr)										0		
Turn Type		NA	Free		NA	Free				Prot		custom
Protected Phases		2			6					4		4 5
Permitted Phases			Free			Free						
Actuated Green, G (s)		63.7	100.0		53.9	100.0				27.3		37.6
Effective Green, g (s)		63.7	100.0		53.9	100.0				27.3		39.6
Actuated g/C Ratio		0.64	1.00		0.54	1.00				0.27		0.40
Clearance Time (s)		4.5			4.5					4.5		
Vehicle Extension (s)		6.0			4.0					2.5		
Lane Grp Cap (vph)		2025	1409		1792	1457				799		546
v/s Ratio Prot		0.26			c0.26					c0.19		c0.25
v/s Ratio Perm			0.31			0.44						
v/c Ratio		0.40	0.31		0.49	0.44				0.71		0.64
Uniform Delay, d1		8.9	0.0		14.4	0.0				32.8		24.5
Progression Factor		1.00	1.00		0.90	1.00				1.00		1.00
Incremental Delay, d2		0.6	0.6		0.8	0.8				2.7		2.3
Delay (s)		9.5	0.6		13.8	0.8				35.4		26.7
Level of Service		A	A		B	A				D		C
Approach Delay (s)		6.4			8.3			0.0			32.0	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	804	424	0	860	633	0	0	0	555	0	367
Future Volume (veh/h)	0	804	424	0	860	633	0	0	0	555	0	367
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				0.95	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1660	1647	0	1867	1867				1587	0	1546
Adj Flow Rate, veh/h	0	820	0	0	878	0				566	0	272
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	3	4	0	2	2				2	0	5
Cap, veh/h	0	2125		0	2390					658	0	336
Arrive On Green	0.00	0.67	0.00	0.00	1.00	0.00				0.24	0.00	0.26
Sat Flow, veh/h	0	3237	1395	0	3641	1582				2786	0	1310
Grp Volume(v), veh/h	0	820	0	0	878	0				566	0	272
Grp Sat Flow(s),veh/h/ln	0	1577	1395	0	1774	1582				1393	0	1310
Q Serve(g_s), s	0.0	11.5	0.0	0.0	0.0	0.0				19.5	0.0	19.5
Cycle Q Clear(g_c), s	0.0	11.5	0.0	0.0	0.0	0.0				19.5	0.0	19.5
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2125		0	2390					658	0	336
V/C Ratio(X)	0.00	0.39		0.00	0.37					0.86	0.00	0.81
Avail Cap(c_a), veh/h	0	2125		0	2390					989	0	491
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.75	0.00	0.00	0.76	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	7.2	0.0	0.0	0.0	0.0				36.6	0.0	34.9
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.3	0.0				4.4	0.0	5.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	6.2	0.0	0.0	0.2	0.0				11.2	0.0	19.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	7.6	0.0	0.0	0.3	0.0				41.0	0.0	40.3
LnGrp LOS	A	A		A	A					D	A	D
Approach Vol, veh/h		820	A		878	A					838	
Approach Delay, s/veh		7.6			0.3						40.8	
Approach LOS		A			A						D	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		71.9		28.1		71.9
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		55.5		35.5		35.5
Max Q Clear Time (g_c+I1), s		13.5		21.5		2.0
Green Ext Time (p_c), s		17.3		2.1		10.4

Intersection Summary	
HCM 6th Ctrl Delay	16.0
HCM 6th LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1138	221	0	1183	354	310	0	520	0	0	0
Future Volume (vph)	0	1138	221	0	1183	354	310	0	520	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-4%			3%			6%			0%	
Total Lost time (s)		4.5	4.0		4.5	4.0	4.5	4.5	4.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.87	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.99	1.00			
Satd. Flow (prot)		3325	1388		3211	1380	1502	1262	1293			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.99	1.00			
Satd. Flow (perm)		3325	1388		3211	1380	1502	1262	1293			
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1161	226	0	1207	361	316	0	531	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	49	49	0	0	0
Lane Group Flow (vph)	0	1161	226	0	1207	361	284	233	232	0	0	0
Confl. Peds. (#/hr)			2			1						
Heavy Vehicles (%)	0%	2%	7%	0%	2%	4%	2%	0%	6%	0%	0%	0%
Turn Type		NA	Free		NA	Free	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases			Free			Free			8			
Actuated Green, G (s)		65.9	100.0		65.9	100.0	25.1	25.1	25.1			
Effective Green, g (s)		65.9	100.0		65.9	100.0	25.1	25.1	25.1			
Actuated g/C Ratio		0.66	1.00		0.66	1.00	0.25	0.25	0.25			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		4.0			6.0		2.5	2.5	2.5			
Lane Grp Cap (vph)		2191	1388		2116	1380	377	316	324			
v/s Ratio Prot		0.35			c0.38		c0.19	0.18				
v/s Ratio Perm			0.16			0.26			0.18			
v/c Ratio		0.53	0.16		0.57	0.26	0.75	0.74	0.71			
Uniform Delay, d1		8.9	0.0		9.3	0.0	34.6	34.4	34.2			
Progression Factor		1.67	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.8	0.2		1.1	0.5	7.9	8.1	6.8			
Delay (s)		15.7	0.2		10.4	0.5	42.5	42.5	41.0			
Level of Service		B	A		B	A	D	D	D			
Approach Delay (s)		13.2			8.1			42.0			0.0	
Approach LOS		B			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	17.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1138	221	0	1183	354	310	0	520	0	0	0
Future Volume (veh/h)	0	1138	221	0	1183	354	310	0	520	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1867	1798	0	1674	1647	1527	1555	1473			
Adj Flow Rate, veh/h	0	1161	0	0	1207	0	419	0	216			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	0	2	7	0	2	4	2	0	6			
Cap, veh/h	0	2508		0	2248		591	0	254			
Arrive On Green	0.00	1.00	0.00	0.00	0.71	0.00	0.20	0.00	0.20			
Sat Flow, veh/h	0	3641	1524	0	3264	1395	2909	0	1248			
Grp Volume(v), veh/h	0	1161	0	0	1207	0	419	0	216			
Grp Sat Flow(s),veh/h/ln	0	1774	1524	0	1590	1395	1455	0	1248			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	17.9	0.0	13.4	0.0	16.7			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	17.9	0.0	13.4	0.0	16.7			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2508		0	2248		591	0	254			
V/C Ratio(X)	0.00	0.46		0.00	0.54		0.71	0.00	0.85			
Avail Cap(c_a), veh/h	0	2508		0	2248		1033	0	443			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.84	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	6.9	0.0	37.1	0.0	38.4			
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	0.9	0.0	1.2	0.0	6.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	0.3	0.0	0.0	9.2	0.0	8.4	0.0	9.3			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.5	0.0	0.0	7.8	0.0	38.3	0.0	44.4			
LnGrp LOS	A	A		A	A		D	A	D			
Approach Vol, veh/h		1161	A		1207	A		635				
Approach Delay, s/veh		0.5			7.8			40.4				
Approach LOS		A			A			D				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		75.2				75.2		24.8				
Change Period (Y+Rc), s		4.5				4.5		4.5				
Max Green Setting (Gmax), s		55.5				55.5		35.5				
Max Q Clear Time (g_c+I1), s		2.0				19.9		18.7				
Green Ext Time (p_c), s		17.7				24.2		1.6				

Intersection Summary	
HCM 6th Ctrl Delay	11.9
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

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

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	0	1	0	6	2	227	1	10	412	5
Future Vol, veh/h	1	0	0	1	0	6	2	227	1	10	412	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	3	0
Mvmt Flow	1	0	0	1	0	7	2	267	1	12	485	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	787	784	488	784	787	268	491	0	0	268	0	0
Stage 1	512	512	-	272	272	-	-	-	-	-	-	-
Stage 2	275	272	-	512	515	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	312	327	584	313	326	776	1083	-	-	1307	-	-
Stage 1	548	540	-	738	688	-	-	-	-	-	-	-
Stage 2	736	688	-	548	538	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	307	323	584	310	322	776	1083	-	-	1307	-	-
Mov Cap-2 Maneuver	307	323	-	310	322	-	-	-	-	-	-	-
Stage 1	547	535	-	737	687	-	-	-	-	-	-	-
Stage 2	728	687	-	543	533	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.8	10.7	0.1	0.2
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1083	-	-	307	639	1307	-	-
HCM Lane V/C Ratio	0.002	-	-	0.004	0.013	0.009	-	-
HCM Control Delay (s)	8.3	-	-	16.8	10.7	7.8	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	7	223	1	9	404
Future Vol, veh/h	1	7	223	1	9	404
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	1	0	0	3
Mvmt Flow	1	8	262	1	11	475

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	760	263	0	0	263	0
Stage 1	263	-	-	-	-	-
Stage 2	497	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	377	781	-	-	1313	-
Stage 1	786	-	-	-	-	-
Stage 2	615	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	374	781	-	-	1313	-
Mov Cap-2 Maneuver	374	-	-	-	-	-
Stage 1	786	-	-	-	-	-
Stage 2	610	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.3	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	687	1313	-
HCM Lane V/C Ratio	-	-	0.014	0.008	-
HCM Control Delay (s)	-	-	10.3	7.8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	26	198	6	38	367
Future Vol, veh/h	4	26	198	6	38	367
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	1	2	2	3
Mvmt Flow	5	31	233	7	45	432

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	759	237	0	0	240	0
Stage 1	237	-	-	-	-	-
Stage 2	522	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	374	802	-	-	1327	-
Stage 1	802	-	-	-	-	-
Stage 2	595	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	361	802	-	-	1327	-
Mov Cap-2 Maneuver	361	-	-	-	-	-
Stage 1	802	-	-	-	-	-
Stage 2	575	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	0.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	361	802	1327	-
HCM Lane V/C Ratio	-	-	0.013	0.038	0.034	-
HCM Control Delay (s)	-	-	15.1	9.7	7.8	-
HCM Lane LOS	-	-	C	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0.1	0.1	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	0	5	4	0	26	20	138	6	38	322	11
Future Vol, veh/h	40	0	5	4	0	26	20	138	6	38	322	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	2	0	2	0	1	2	2	3	0
Mvmt Flow	47	0	6	5	0	31	24	162	7	45	379	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	705	693	386	693	696	166	392	0	0	169	0	0
Stage 1	476	476	-	214	214	-	-	-	-	-	-	-
Stage 2	229	217	-	479	482	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.12	6.5	6.22	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.12	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.12	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.518	4	3.318	2.2	-	-	2.218	-	-
Pot Cap-1 Maneuver	354	369	666	358	368	878	1178	-	-	1409	-	-
Stage 1	574	560	-	788	729	-	-	-	-	-	-	-
Stage 2	778	727	-	568	557	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	328	350	666	341	349	878	1178	-	-	1409	-	-
Mov Cap-2 Maneuver	328	350	-	341	349	-	-	-	-	-	-	-
Stage 1	563	542	-	772	714	-	-	-	-	-	-	-
Stage 2	736	712	-	545	539	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.2	10.1	1	0.8
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1178	-	-	348	341	878	1409	-	-
HCM Lane V/C Ratio	0.02	-	-	0.152	0.014	0.035	0.032	-	-
HCM Control Delay (s)	8.1	-	-	17.2	15.7	9.2	7.6	-	-
HCM Lane LOS	A	-	-	C	C	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	2.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	29	65	116	40	73	258
Future Vol, veh/h	29	65	116	40	73	258
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	3	-	-	-3
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	8	2	0	0	2
Mvmt Flow	34	76	136	47	86	304

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	636	160	0	0	183	0
Stage 1	160	-	-	-	-	-
Stage 2	476	-	-	-	-	-
Critical Hdwy	7	6.58	-	-	4.1	-
Critical Hdwy Stg 1	6	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.5	3.372	-	-	2.2	-
Pot Cap-1 Maneuver	400	858	-	-	1404	-
Stage 1	851	-	-	-	-	-
Stage 2	581	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	370	858	-	-	1404	-
Mov Cap-2 Maneuver	370	-	-	-	-	-
Stage 1	851	-	-	-	-	-
Stage 2	538	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.2	0	1.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	610	1404	-
HCM Lane V/C Ratio	-	-	0.181	0.061	-
HCM Control Delay (s)	-	-	12.2	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0.2	-

Appendix I 2040 Background Traffic Conditions Operations Worksheets

Intersection	
Int Delay, s/veh	30.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	259	120	90	443	120	355
Future Vol, veh/h	259	120	90	443	120	355
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	12	9	8	5	3	4
Mvmt Flow	273	126	95	466	126	374

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	399	0	992	336
Stage 1	-	-	-	-	336	-
Stage 2	-	-	-	-	656	-
Critical Hdwy	-	-	4.18	-	6.43	6.24
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.272	-	3.527	3.336
Pot Cap-1 Maneuver	-	-	1128	-	271	701
Stage 1	-	-	-	-	722	-
Stage 2	-	-	-	-	514	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1128	-	240	701
Mov Cap-2 Maneuver	-	-	-	-	240	-
Stage 1	-	-	-	-	722	-
Stage 2	-	-	-	-	455	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	87.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	472	-	-	1128	-
HCM Lane V/C Ratio	1.059	-	-	0.084	-
HCM Control Delay (s)	87.7	-	-	8.5	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	15.6	-	-	0.3	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	607	0	0	507	16	0	0	0	45	0	26
Future Vol, veh/h	7	607	0	0	507	16	0	0	0	45	0	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	7	0	0	6	0	0	0	0	4	0	0
Mvmt Flow	7	639	0	0	534	17	0	0	0	47	0	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	551	0	0	639	0	0	1209	1204	639	1187	1187	534
Stage 1	-	-	-	-	-	-	653	653	-	534	534	-
Stage 2	-	-	-	-	-	-	556	551	-	653	653	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.14	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.14	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.14	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.536	4	3.3
Pot Cap-1 Maneuver	1029	-	-	955	-	-	161	186	480	164	190	550
Stage 1	-	-	-	-	-	-	460	467	-	526	528	-
Stage 2	-	-	-	-	-	-	519	519	-	453	467	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1029	-	-	955	-	-	152	184	480	163	188	550
Mov Cap-2 Maneuver	-	-	-	-	-	-	152	184	-	163	188	-
Stage 1	-	-	-	-	-	-	455	462	-	520	528	-
Stage 2	-	-	-	-	-	-	493	519	-	448	462	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	0	29.6
HCM LOS			A	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1029	-	-	955	-	-	220
HCM Lane V/C Ratio	-	0.007	-	-	-	-	-	0.34
HCM Control Delay (s)	0	8.5	0	-	0	-	-	29.6
HCM Lane LOS	A	A	A	-	A	-	-	D
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	1.4

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	38	610	4	17	85	497	173	0	4	39	347	12
Future Volume (vph)	38	610	4	17	85	497	173	0	4	39	347	12
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%				0%			0%			1%
Total Lost time (s)	4.0	4.5	4.5		4.0	4.5	4.5		4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95	1.00		1.00		0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00		1.00		1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	1.00	0.85		0.86		1.00	0.98
Flt Protected	0.95	1.00	1.00		0.95	1.00	1.00		1.00		0.95	0.96
Satd. Flow (prot)	1662	3107	1488		1352	3137	1417		977		1541	1470
Flt Permitted	0.95	1.00	1.00		0.95	1.00	1.00		1.00		0.95	0.96
Satd. Flow (perm)	1662	3107	1488		1352	3137	1417		977		1541	1470
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	40	642	4	18	89	523	182	0	4	41	365	13
RTOR Reduction (vph)	0	0	2	0	0	0	69	0	39	0	0	4
Lane Group Flow (vph)	40	642	2	0	107	523	113	0	6	0	204	197
Confl. Peds. (#/hr)											5	
Heavy Vehicles (%)	0%	7%	0%	23%	23%	6%	5%	0%	0%	60%	2%	25%
Turn Type	Prot	NA	pt+ov	Prot	Prot	NA	pt+ov	Split	NA		Split	NA
Protected Phases	5	2	2 8	1	1	6	6 4	8	8		4	4
Permitted Phases												
Actuated Green, G (s)	8.9	27.6	31.4		10.1	28.8	47.4		3.8		18.6	18.6
Effective Green, g (s)	8.9	27.6	31.4		10.1	28.8	47.4		3.8		18.6	18.6
Actuated g/C Ratio	0.12	0.36	0.41		0.13	0.38	0.62		0.05		0.24	0.24
Clearance Time (s)	4.0	4.5			4.0	4.5			4.0		4.0	4.0
Vehicle Extension (s)	2.5	4.2			2.5	4.2			2.5		2.5	2.5
Lane Grp Cap (vph)	193	1119	609		178	1179	876		48		374	356
v/s Ratio Prot	0.02	c0.21	0.00		c0.08	0.17	0.08		c0.01		0.13	c0.13
v/s Ratio Perm												
v/c Ratio	0.21	0.57	0.00		0.60	0.44	0.13		0.13		0.55	0.55
Uniform Delay, d1	30.7	19.8	13.4		31.4	17.9	6.0		34.8		25.3	25.4
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00
Incremental Delay, d2	0.4	0.9	0.0		4.8	0.4	0.1		0.9		1.3	1.5
Delay (s)	31.0	20.7	13.4		36.1	18.3	6.1		35.7		26.6	26.9
Level of Service	C	C	B		D	B	A		D		C	C
Approach Delay (s)		21.2				17.9			35.7			26.7
Approach LOS		C				B			D			C

Intersection Summary			
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	76.6	Sum of lost time (s)	16.5
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	26
Future Volume (vph)	26
Ideal Flow (vphpl)	1750
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	27
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	213
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

HCM 6th Signalized Intersection Summary
3: Woodland Ave & OR 219

05/21/2021

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	38	610	4	17	85	497	173	0	4	39	347	12
Future Volume (veh/h)	38	610	4	17	85	497	173	0	4	39	347	12
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No				No			No			No
Adj Sat Flow, veh/h/ln	1750	1654	1750		1436	1668	1682	1750	1750	1750	1717	1403
Adj Flow Rate, veh/h	40	642	4		89	523	119	0	4	41	399	0
Peak Hour Factor	0.95	0.95	0.95		0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	7	0		23	6	5	0	0	0	2	25
Cap, veh/h	187	967	530		106	844	858	82	7	68	1098	471
Arrive On Green	0.11	0.31	0.31		0.08	0.27	0.27	0.00	0.05	0.05	0.34	0.00
Sat Flow, veh/h	1667	3143	1483		1368	3169	1425	1667	134	1370	3271	1403
Grp Volume(v), veh/h	40	642	4		89	523	119	0	0	45	399	0
Grp Sat Flow(s),veh/h/ln	1667	1572	1483		1368	1585	1425	1667	0	1503	1636	1403
Q Serve(g_s), s	1.6	12.8	0.1		4.6	10.4	2.6	0.0	0.0	2.1	6.6	0.0
Cycle Q Clear(g_c), s	1.6	12.8	0.1		4.6	10.4	2.6	0.0	0.0	2.1	6.6	0.0
Prop In Lane	1.00		1.00		1.00		1.00	1.00		0.91	1.00	
Lane Grp Cap(c), veh/h	187	967	530		106	844	858	82	0	74	1098	471
V/C Ratio(X)	0.21	0.66	0.01		0.84	0.62	0.14	0.00	0.00	0.61	0.36	0.00
Avail Cap(c_a), veh/h	463	1966	1001		380	1983	1370	695	0	627	2046	878
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00		1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	29.0	21.7	14.9		32.7	23.2	6.2	0.0	0.0	33.5	18.1	0.0
Incr Delay (d2), s/veh	0.4	1.2	0.0		11.9	1.1	0.1	0.0	0.0	5.8	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	8.1	0.1		3.3	6.9	2.8	0.0	0.0	1.6	4.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.5	22.9	14.9		44.6	24.3	6.3	0.0	0.0	39.3	18.2	0.0
LnGrp LOS	C	C	B		D	C	A	A	A	D	B	A
Approach Vol, veh/h		686				731			45			399
Approach Delay, s/veh		23.2				23.9			39.3			18.2
Approach LOS		C				C			D			B

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.6	26.6		28.1	12.6	23.6		7.6
Change Period (Y+Rc), s	4.0	4.5		4.0	4.5	* 4.5		4.0
Max Green Setting (Gmax), s	20.0	45.0		45.0	20.0	* 45		30.0
Max Q Clear Time (g_c+I1), s	6.6	14.8		8.6	3.6	12.4		4.1
Green Ext Time (p_c), s	0.1	7.4		1.1	0.0	6.7		0.2

Intersection Summary	
HCM 6th Ctrl Delay	22.8
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	26
Future Volume (veh/h)	26
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1403
Adj Flow Rate, veh/h	0
Peak Hour Factor	0.95
Percent Heavy Veh, %	25
Cap, veh/h	0
Arrive On Green	0.00
Sat Flow, veh/h	0
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.00
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(I)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(95%),veh/ln	0.0
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	A
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer - Assigned Phs
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	683	330	0	737	696	0	0	0	414	0	196
Future Volume (vph)	0	683	330	0	737	696	0	0	0	414	0	196
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		3%			-4%			0%			5%	
Total Lost time (s)		4.5	4.0		4.5	4.0				4.5		2.5
Lane Util. Factor		0.95	1.00		0.95	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3090	1263		3140	1315				2859		1283
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3090	1263		3140	1315				2859		1283
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	719	347	0	776	733	0	0	0	436	0	206
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	39
Lane Group Flow (vph)	0	719	347	0	776	733	0	0	0	436	0	167
Confl. Peds. (#/hr)						1						1
Heavy Vehicles (%)	0%	6%	16%	0%	8%	13%	0%	0%	0%	10%	0%	13%
Turn Type		NA	Free		NA	Free				Prot		custom
Protected Phases		2			6					4		4 5
Permitted Phases			Free			Free						
Actuated Green, G (s)		70.7	100.0		61.4	100.0				20.3		30.1
Effective Green, g (s)		70.7	100.0		61.4	100.0				20.3		32.1
Actuated g/C Ratio		0.71	1.00		0.61	1.00				0.20		0.32
Clearance Time (s)		4.5			4.5					4.5		
Vehicle Extension (s)		6.0			4.0					2.5		
Lane Grp Cap (vph)		2184	1263		1927	1315				580		411
v/s Ratio Prot		0.23			0.25					c0.15		0.13
v/s Ratio Perm			0.27			c0.56						
v/c Ratio		0.33	0.27		0.40	0.56				0.75		0.41
Uniform Delay, d1		5.6	0.0		9.9	0.0				37.5		26.5
Progression Factor		1.00	1.00		0.72	1.00				1.00		1.00
Incremental Delay, d2		0.4	0.5		0.4	1.2				5.2		0.5
Delay (s)		6.0	0.5		7.6	1.2				42.7		27.0
Level of Service		A	A		A	A				D		C
Approach Delay (s)		4.2			4.5			0.0			37.6	
Approach LOS		A			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	683	330	0	737	696	0	0	0	414	0	196
Future Volume (veh/h)	0	683	330	0	737	696	0	0	0	414	0	196
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1619	1483	0	1784	1715				1478	0	1437
Adj Flow Rate, veh/h	0	719	0	0	776	0				436	0	206
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	6	16	0	8	13				10	0	13
Cap, veh/h	0	2195		0	2419					537	0	264
Arrive On Green	0.00	0.71	0.00	0.00	1.00	0.00				0.20	0.00	0.22
Sat Flow, veh/h	0	3158	1257	0	3479	1454				2731	0	1218
Grp Volume(v), veh/h	0	719	0	0	776	0				436	0	206
Grp Sat Flow(s),veh/h/ln	0	1538	1257	0	1695	1454				1365	0	1218
Q Serve(g_s), s	0.0	8.7	0.0	0.0	0.0	0.0				15.3	0.0	16.0
Cycle Q Clear(g_c), s	0.0	8.7	0.0	0.0	0.0	0.0				15.3	0.0	16.0
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2195		0	2419					537	0	264
V/C Ratio(X)	0.00	0.33		0.00	0.32					0.81	0.00	0.78
Avail Cap(c_a), veh/h	0	2195		0	2419					969	0	457
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.80	0.00	0.00	0.67	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	5.4	0.0	0.0	0.0	0.0				38.4	0.0	36.9
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.2	0.0				2.3	0.0	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	4.5	0.0	0.0	0.1	0.0				9.0	0.0	15.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	5.7	0.0	0.0	0.2	0.0				40.7	0.0	40.7
LnGrp LOS	A	A		A	A					D	A	D
Approach Vol, veh/h		719	A		776	A					642	
Approach Delay, s/veh		5.7			0.2						40.7	
Approach LOS		A			A						D	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		75.8		24.2		75.8
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		55.5		35.5		35.5
Max Q Clear Time (g_c+I1), s		10.7		18.0		2.0
Green Ext Time (p_c), s		15.1		1.7		9.0

Intersection Summary	
HCM 6th Ctrl Delay	14.2
HCM 6th LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	676	421	0	853	792	580	0	726	0	0	0
Future Volume (vph)	0	676	421	0	853	792	580	0	726	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-4%			3%			6%			0%	
Total Lost time (s)		4.5	4.0		4.5	4.0	4.5	4.5	4.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.89	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.99	1.00			
Satd. Flow (prot)		3111	1415		2951	1407	1445	1310	1331			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.99	1.00			
Satd. Flow (perm)		3111	1415		2951	1407	1445	1310	1331			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	712	443	0	898	834	611	0	764	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	88	131	0	0	0
Lane Group Flow (vph)	0	712	443	0	898	834	477	367	312	0	0	0
Confl. Peds. (#/hr)			2			1						
Heavy Vehicles (%)	0%	9%	5%	0%	11%	2%	6%	0%	3%	0%	0%	0%
Turn Type		NA	Free		NA	Free	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases			Free			Free			8			
Actuated Green, G (s)		56.3	100.0		56.3	100.0	34.7	34.7	34.7			
Effective Green, g (s)		56.3	100.0		56.3	100.0	34.7	34.7	34.7			
Actuated g/C Ratio		0.56	1.00		0.56	1.00	0.35	0.35	0.35			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		4.0			6.0		2.5	2.5	2.5			
Lane Grp Cap (vph)		1751	1415		1661	1407	501	454	461			
v/s Ratio Prot		0.23			0.30		c0.33	0.28				
v/s Ratio Perm			0.31			c0.59			0.23			
v/c Ratio		0.41	0.31		0.54	0.59	0.95	0.81	0.68			
Uniform Delay, d1		12.4	0.0		13.7	0.0	31.8	29.6	27.9			
Progression Factor		1.73	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.7	0.5		1.3	1.8	28.4	10.0	3.6			
Delay (s)		22.1	0.5		15.0	1.8	60.2	39.6	31.4			
Level of Service		C	A		B	A	E	D	C			
Approach Delay (s)		13.8			8.7			44.1			0.0	
Approach LOS		B			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	21.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	676	421	0	853	792	580	0	726	0	0	0
Future Volume (veh/h)	0	676	421	0	853	792	580	0	726	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1770	1826	0	1551	1674	1473	1555	1514			
Adj Flow Rate, veh/h	0	712	0	0	898	0	783	0	369			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	0	9	5	0	11	2	6	0	3			
Cap, veh/h	0	1996		0	1749		888	0	406			
Arrive On Green	0.00	1.00	0.00	0.00	0.59	0.00	0.32	0.00	0.32			
Sat Flow, veh/h	0	3452	1547	0	3025	1419	2805	0	1283			
Grp Volume(v), veh/h	0	712	0	0	898	0	783	0	369			
Grp Sat Flow(s),veh/h/ln	0	1682	1547	0	1473	1419	1403	0	1283			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	17.8	0.0	26.5	0.0	27.6			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	17.8	0.0	26.5	0.0	27.6			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1996		0	1749		888	0	406			
V/C Ratio(X)	0.00	0.36		0.00	0.51		0.88	0.00	0.91			
Avail Cap(c_a), veh/h	0	1996		0	1749		996	0	455			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.87	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	11.9	0.0	32.4	0.0	32.8			
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	1.1	0.0	8.4	0.0	20.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	0.2	0.0	0.0	9.6	0.0	14.9	0.0	16.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.4	0.0	0.0	13.0	0.0	40.8	0.0	53.0			
LnGrp LOS	A	A		A	B		D	A	D			
Approach Vol, veh/h		712	A		898	A		1152				
Approach Delay, s/veh		0.4			13.0			44.7				
Approach LOS		A			B			D				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		63.8				63.8		36.2				
Change Period (Y+Rc), s		4.5				4.5		4.5				
Max Green Setting (Gmax), s		55.5				55.5		35.5				
Max Q Clear Time (g_c+I1), s		2.0				19.8		29.6				
Green Ext Time (p_c), s		8.8				17.9		2.1				

Intersection Summary	
HCM 6th Ctrl Delay	23.0
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

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

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	0	475	210	0
Future Vol, veh/h	0	1	0	475	210	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	0	1	0	500	221	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	721	221	221	0	-	0
Stage 1	221	-	-	-	-	-
Stage 2	500	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	397	824	1360	-	-	-
Stage 1	821	-	-	-	-	-
Stage 2	613	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	397	824	1360	-	-	-
Mov Cap-2 Maneuver	397	-	-	-	-	-
Stage 1	821	-	-	-	-	-
Stage 2	613	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1360	-	824	-	-
HCM Lane V/C Ratio	-	-	0.001	-	-
HCM Control Delay (s)	0	-	9.4	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	23	55	441	25	61	182
Future Vol, veh/h	23	55	441	25	61	182
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	3	-	-	-3
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	10	7
Mvmt Flow	24	58	464	26	64	192

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	797	477	0	0	490	0
Stage 1	477	-	-	-	-	-
Stage 2	320	-	-	-	-	-
Critical Hdwy	7	6.5	-	-	4.2	-
Critical Hdwy Stg 1	6	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.29	-
Pot Cap-1 Maneuver	314	569	-	-	1033	-
Stage 1	580	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	292	569	-	-	1033	-
Mov Cap-2 Maneuver	292	-	-	-	-	-
Stage 1	580	-	-	-	-	-
Stage 2	654	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.9	0	2.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	445	1033	-
HCM Lane V/C Ratio	-	-	0.185	0.062	-
HCM Control Delay (s)	-	-	14.9	8.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0.2	-

Intersection	
Int Delay, s/veh	21.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	345	129	130	268	119	274
Future Vol, veh/h	345	129	130	268	119	274
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	10	2	2	10	4	2
Mvmt Flow	356	133	134	276	123	282

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	489	0	967	423
Stage 1	-	-	-	-	423	-
Stage 2	-	-	-	-	544	-
Critical Hdwy	-	-	4.12	-	6.44	6.22
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.218	-	3.536	3.318
Pot Cap-1 Maneuver	-	-	1074	-	280	631
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	578	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1074	-	239	631
Mov Cap-2 Maneuver	-	-	-	-	239	-
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	493	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.9	65.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	422	-	-	1074	-
HCM Lane V/C Ratio	0.96	-	-	0.125	-
HCM Control Delay (s)	65.9	-	-	8.8	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	11.3	-	-	0.4	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	601	1	1	354	27	0	0	1	44	1	44
Future Vol, veh/h	17	601	1	1	354	27	0	0	1	44	1	44
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	6	0	0	10	0	0	0	0	5	0	5
Mvmt Flow	18	633	1	1	373	28	0	0	1	46	1	46

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	401	0	0	634	0	0	1083	1073	634	1045	1045	373
Stage 1	-	-	-	-	-	-	670	670	-	375	375	-
Stage 2	-	-	-	-	-	-	413	403	-	670	670	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.15	6.5	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.15	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.15	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.545	4	3.345
Pot Cap-1 Maneuver	1169	-	-	959	-	-	197	222	483	204	231	666
Stage 1	-	-	-	-	-	-	450	459	-	640	621	-
Stage 2	-	-	-	-	-	-	620	603	-	442	459	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1169	-	-	959	-	-	179	216	483	200	225	666
Mov Cap-2 Maneuver	-	-	-	-	-	-	179	216	-	200	225	-
Stage 1	-	-	-	-	-	-	439	448	-	625	620	-
Stage 2	-	-	-	-	-	-	575	602	-	430	448	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	12.5	21.9
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	483	1169	-	-	959	-	-	306
HCM Lane V/C Ratio	0.002	0.015	-	-	0.001	-	-	0.306
HCM Control Delay (s)	12.5	8.1	0	-	8.8	0	-	21.9
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	1.3

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	36	598	12	17	92	346	210	2	4	43	380	6
Future Volume (vph)	36	598	12	17	92	346	210	2	4	43	380	6
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%				0%			0%			1%
Total Lost time (s)	4.0	4.5	4.5		4.0	4.5	4.5	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95	1.00	1.00	1.00		0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.86		1.00	0.98
Flt Protected	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (prot)	1662	3107	1488		1222	3167	1365	1662	996		1541	1494
Flt Permitted	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (perm)	1662	3107	1488		1222	3167	1365	1662	996		1541	1494
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	38	629	13	18	97	364	221	2	4	45	400	6
RTOR Reduction (vph)	0	0	8	0	0	0	93	0	42	0	0	5
Lane Group Flow (vph)	38	629	5	0	115	364	128	2	7	0	224	213
Confl. Peds. (#/hr)											1	
Heavy Vehicles (%)	0%	7%	0%	36%	36%	5%	9%	0%	0%	56%	2%	50%
Turn Type	Prot	NA	pt+ov	Prot	Prot	NA	pt+ov	Split	NA		Split	NA
Protected Phases	5	2	2 8	1	1	6	6 4	8	8		4	4
Permitted Phases												
Actuated Green, G (s)	13.2	27.9	33.4		14.7	29.4	48.7	5.5	5.5		19.3	19.3
Effective Green, g (s)	13.2	27.9	33.4		14.7	29.4	48.7	5.5	5.5		19.3	19.3
Actuated g/C Ratio	0.16	0.33	0.40		0.18	0.35	0.58	0.07	0.07		0.23	0.23
Clearance Time (s)	4.0	4.5			4.0	4.5		4.0	4.0		4.0	4.0
Vehicle Extension (s)	2.5	4.2			2.5	4.2		2.5	2.5		2.5	2.5
Lane Grp Cap (vph)	261	1033	592		214	1109	792	108	65		354	343
v/s Ratio Prot	0.02	c0.20	0.00		c0.09	0.11	0.09	0.00	c0.01		c0.15	0.14
v/s Ratio Perm												
v/c Ratio	0.15	0.61	0.01		0.54	0.33	0.16	0.02	0.11		0.63	0.62
Uniform Delay, d1	30.5	23.4	15.3		31.5	20.0	8.2	36.7	36.9		29.1	29.0
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2	1.2	0.0		2.0	0.3	0.1	0.1	0.5		3.2	3.0
Delay (s)	30.7	24.7	15.3		33.5	20.3	8.3	36.7	37.4		32.3	32.0
Level of Service	C	C	B		C	C	A	D	D		C	C
Approach Delay (s)		24.8				18.7			37.4			32.2
Approach LOS		C				B			D			C

Intersection Summary			
HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	83.9	Sum of lost time (s)	16.5
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	34
Future Volume (vph)	34
Ideal Flow (vphpl)	1750
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	36
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Heavy Vehicles (%)	5%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	36	598	12	17	92	346	210	2	4	43	380	6
Future Volume (veh/h)	36	598	12	17	92	346	210	2	4	43	380	6
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No				No			No			No
Adj Sat Flow, veh/h/ln	1750	1654	1750		1259	1682	1627	1750	1750	1750	1717	1062
Adj Flow Rate, veh/h	38	629	13		97	364	221	2	4	45	438	0
Peak Hour Factor	0.95	0.95	0.95		0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	7	0		36	5	9	0	0	0	2	50
Cap, veh/h	292	1085	601		110	804	607	100	7	83	618	201
Arrive On Green	0.18	0.35	0.35		0.09	0.25	0.25	0.06	0.06	0.06	0.19	0.00
Sat Flow, veh/h	1667	3143	1483		1199	3195	1379	1667	123	1379	3271	1062
Grp Volume(v), veh/h	38	629	13		97	364	221	2	0	49	438	0
Grp Sat Flow(s),veh/h/ln	1667	1572	1483		1199	1598	1379	1667	0	1502	1636	1062
Q Serve(g_s), s	1.0	8.6	0.3		4.2	5.0	5.6	0.1	0.0	1.7	6.6	0.0
Cycle Q Clear(g_c), s	1.0	8.6	0.3		4.2	5.0	5.6	0.1	0.0	1.7	6.6	0.0
Prop In Lane	1.00		1.00		1.00		1.00	1.00		0.92	1.00	
Lane Grp Cap(c), veh/h	292	1085	601		110	804	607	100	0	90	618	201
V/C Ratio(X)	0.13	0.58	0.02		0.89	0.45	0.36	0.02	0.00	0.54	0.71	0.00
Avail Cap(c_a), veh/h	636	2698	1362		457	2743	1444	954	0	859	2807	912
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.2	14.1	9.4		23.5	16.6	9.8	23.2	0.0	23.9	19.9	0.0
Incr Delay (d2), s/veh	0.1	0.8	0.0		15.6	0.6	0.6	0.1	0.0	3.8	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.7	4.9	0.2		2.8	3.1	4.0	0.0	0.0	1.2	4.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.4	14.8	9.4		39.2	17.2	10.3	23.3	0.0	27.7	21.0	0.0
LnGrp LOS	B	B	A		D	B	B	C	A	C	C	A
Approach Vol, veh/h		680				682			51			438
Approach Delay, s/veh		14.9				18.1			27.5			21.0
Approach LOS		B				B			C			C

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.8	22.6		13.9	13.7	17.7		7.1
Change Period (Y+Rc), s	4.0	4.5		4.0	4.5	* 4.5		4.0
Max Green Setting (Gmax), s	20.0	45.0		45.0	20.0	* 45		30.0
Max Q Clear Time (g_c+I1), s	6.2	10.6		8.6	3.0	7.6		3.7
Green Ext Time (p_c), s	0.1	7.5		1.2	0.0	5.6		0.2

Intersection Summary	
HCM 6th Ctrl Delay	17.9
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	34
Future Volume (veh/h)	34
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1062
Adj Flow Rate, veh/h	0
Peak Hour Factor	0.95
Percent Heavy Veh, %	50
Cap, veh/h	0
Arrive On Green	0.00
Sat Flow, veh/h	0
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.00
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(I)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(95%),veh/ln	0.0
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	A
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer - Assigned Phs
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	655	383	0	537	705	0	0	0	450	0	222
Future Volume (vph)	0	655	383	0	537	705	0	0	0	450	0	222
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		3%			-4%			0%			5%	
Total Lost time (s)		4.5	4.0		4.5	4.0				4.5		2.5
Lane Util. Factor		0.95	1.00		0.95	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3090	1308		3055	1292				2859		1261
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3090	1308		3055	1292				2859		1261
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	689	403	0	565	742	0	0	0	474	0	234
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	89
Lane Group Flow (vph)	0	689	403	0	565	742	0	0	0	474	0	145
Confl. Peds. (#/hr)						1						1
Heavy Vehicles (%)	0%	6%	12%	0%	11%	15%	0%	0%	0%	10%	0%	15%
Turn Type		NA	Free		NA	Free				Prot		custom
Protected Phases		2			6					4		4 5
Permitted Phases			Free			Free						
Actuated Green, G (s)		69.4	100.0		60.2	100.0				21.6		31.3
Effective Green, g (s)		69.4	100.0		60.2	100.0				21.6		33.3
Actuated g/C Ratio		0.69	1.00		0.60	1.00				0.22		0.33
Clearance Time (s)		4.5			4.5					4.5		
Vehicle Extension (s)		6.0			4.0					2.5		
Lane Grp Cap (vph)		2144	1308		1839	1292				617		419
v/s Ratio Prot		0.22			0.18					c0.17		0.12
v/s Ratio Perm			0.31			c0.57						
v/c Ratio		0.32	0.31		0.31	0.57				0.77		0.35
Uniform Delay, d1		6.0	0.0		9.7	0.0				36.8		25.1
Progression Factor		1.00	1.00		0.89	1.00				1.00		1.00
Incremental Delay, d2		0.4	0.6		0.4	1.5				5.5		0.4
Delay (s)		6.4	0.6		9.0	1.5				42.3		25.5
Level of Service		A	A		A	A				D		C
Approach Delay (s)		4.3			4.8			0.0			36.8	
Approach LOS		A			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	40.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	655	383	0	537	705	0	0	0	450	0	222
Future Volume (veh/h)	0	655	383	0	537	705	0	0	0	450	0	222
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1619	1537	0	1743	1688				1478	0	1410
Adj Flow Rate, veh/h	0	689	0	0	565	0				474	0	234
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	6	12	0	11	15				10	0	15
Cap, veh/h	0	2114		0	2275					608	0	290
Arrive On Green	0.00	0.69	0.00	0.00	1.00	0.00				0.22	0.00	0.24
Sat Flow, veh/h	0	3158	1303	0	3398	1430				2731	0	1195
Grp Volume(v), veh/h	0	689	0	0	565	0				474	0	234
Grp Sat Flow(s),veh/h/ln	0	1538	1303	0	1656	1430				1365	0	1195
Q Serve(g_s), s	0.0	9.0	0.0	0.0	0.0	0.0				16.3	0.0	18.4
Cycle Q Clear(g_c), s	0.0	9.0	0.0	0.0	0.0	0.0				16.3	0.0	18.4
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2114		0	2275					608	0	290
V/C Ratio(X)	0.00	0.33		0.00	0.25					0.78	0.00	0.81
Avail Cap(c_a), veh/h	0	2114		0	2275					969	0	448
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.67	1.67				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.73	0.00	0.00	0.76	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	6.3	0.0	0.0	0.0	0.0				36.5	0.0	35.6
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.2	0.0				1.6	0.0	4.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	4.8	0.0	0.0	0.1	0.0				9.4	0.0	17.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	6.6	0.0	0.0	0.2	0.0				38.2	0.0	40.5
LnGrp LOS	A	A		A	A					D	A	D
Approach Vol, veh/h		689	A		565	A					708	
Approach Delay, s/veh		6.6			0.2						39.0	
Approach LOS		A			A						D	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		73.2		26.8		73.2
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		55.5		35.5		35.5
Max Q Clear Time (g_c+I1), s		11.0		20.4		2.0
Green Ext Time (p_c), s		14.3		1.8		6.1

Intersection Summary	
HCM 6th Ctrl Delay	16.4
HCM 6th LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	749	356	0	875	756	367	0	733	0	0	0
Future Volume (vph)	0	749	356	0	875	756	367	0	733	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-4%			3%			6%			0%	
Total Lost time (s)		4.5	4.0		4.5	4.0	4.5	4.5	4.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	1.00		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.86	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)		3111	1431		2873	1407	1405	1283	1331			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)		3111	1431		2873	1407	1405	1283	1331			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	788	375	0	921	796	386	0	772	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	118	118	0	0	0
Lane Group Flow (vph)	0	788	375	0	921	796	347	292	283	0	0	0
Confl. Peds. (#/hr)						1						
Heavy Vehicles (%)	0%	9%	6%	0%	14%	2%	9%	0%	3%	0%	0%	0%
Turn Type		NA	Free		NA	Free	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases			Free			Free			8			
Actuated Green, G (s)		60.9	100.0		60.9	100.0	30.1	30.1	30.1			
Effective Green, g (s)		60.9	100.0		60.9	100.0	30.1	30.1	30.1			
Actuated g/C Ratio		0.61	1.00		0.61	1.00	0.30	0.30	0.30			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		4.0			6.0		2.5	2.5	2.5			
Lane Grp Cap (vph)		1894	1431		1749	1407	422	386	400			
v/s Ratio Prot		0.25			0.32		c0.25	0.23				
v/s Ratio Perm			0.26			c0.57			0.21			
v/c Ratio		0.42	0.26		0.53	0.57	0.82	0.76	0.71			
Uniform Delay, d1		10.2	0.0		11.3	0.0	32.5	31.6	31.0			
Progression Factor		1.82	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.6	0.4		1.1	1.7	11.9	7.8	5.2			
Delay (s)		19.3	0.4		12.4	1.7	44.4	39.5	36.3			
Level of Service		B	A		B	A	D	D	D			
Approach Delay (s)		13.2			7.4			39.8			0.0	
Approach LOS		B			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	749	356	0	875	756	367	0	733	0	0	0
Future Volume (veh/h)	0	749	356	0	875	756	367	0	733	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1770	1812	0	1510	1674	1432	1555	1514			
Adj Flow Rate, veh/h	0	788	0	0	921	0	257	0	699			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	0	9	6	0	14	2	9	0	3			
Cap, veh/h	0	2046		0	1745		411	0	774			
Arrive On Green	0.00	1.00	0.00	0.00	0.61	0.00	0.30	0.00	0.30			
Sat Flow, veh/h	0	3452	1536	0	2945	1419	1364	0	2566			
Grp Volume(v), veh/h	0	788	0	0	921	0	257	0	699			
Grp Sat Flow(s),veh/h/ln	0	1682	1536	0	1435	1419	1364	0	1283			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	18.5	0.0	16.2	0.0	26.1			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	18.5	0.0	16.2	0.0	26.1			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2046		0	1745		411	0	774			
V/C Ratio(X)	0.00	0.39		0.00	0.53		0.62	0.00	0.90			
Avail Cap(c_a), veh/h	0	2046		0	1745		484	0	911			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.86	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	11.3	0.0	30.0	0.0	33.5			
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	1.1	0.0	1.5	0.0	10.6			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	0.2	0.0	0.0	9.6	0.0	9.2	0.0	14.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.5	0.0	0.0	12.4	0.0	31.6	0.0	44.1			
LnGrp LOS	A	A		A	B		C	A	D			
Approach Vol, veh/h		788	A		921	A		956				
Approach Delay, s/veh		0.5			12.4			40.7				
Approach LOS		A			B			D				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		65.3				65.3		34.7				
Change Period (Y+Rc), s		4.5				4.5		4.5				
Max Green Setting (Gmax), s		55.5				55.5		35.5				
Max Q Clear Time (g_c+I1), s		2.0				20.5		28.1				
Green Ext Time (p_c), s		10.1				18.2		2.0				

Intersection Summary	
HCM 6th Ctrl Delay	19.1
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

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

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	0	393	259	0
Future Vol, veh/h	0	1	0	393	259	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	3	2	0
Mvmt Flow	0	1	0	414	273	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	687	273	273	0	-	0
Stage 1	273	-	-	-	-	-
Stage 2	414	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	416	771	1302	-	-	-
Stage 1	778	-	-	-	-	-
Stage 2	671	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	416	771	1302	-	-	-
Mov Cap-2 Maneuver	416	-	-	-	-	-
Stage 1	778	-	-	-	-	-
Stage 2	671	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1302	-	771	-	-
HCM Lane V/C Ratio	-	-	0.001	-	-
HCM Control Delay (s)	0	-	9.7	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	26	35	368	39	43	192
Future Vol, veh/h	26	35	368	39	43	192
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	3	-	-	-3
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	6	0	6	0	4	3
Mvmt Flow	27	37	387	41	45	202

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	700	408	0	0	428	0
Stage 1	408	-	-	-	-	-
Stage 2	292	-	-	-	-	-
Critical Hdwy	7.06	6.5	-	-	4.14	-
Critical Hdwy Stg 1	6.06	-	-	-	-	-
Critical Hdwy Stg 2	6.06	-	-	-	-	-
Follow-up Hdwy	3.554	3.3	-	-	2.236	-
Pot Cap-1 Maneuver	356	626	-	-	1121	-
Stage 1	619	-	-	-	-	-
Stage 2	713	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	340	626	-	-	1121	-
Mov Cap-2 Maneuver	340	-	-	-	-	-
Stage 1	619	-	-	-	-	-
Stage 2	681	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.1	0	1.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	461	1121	-
HCM Lane V/C Ratio	-	-	0.139	0.04	-
HCM Control Delay (s)	-	-	14.1	8.3	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.1	-

Intersection	
Int Delay, s/veh	32.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	311	102	301	199	101	183
Future Vol, veh/h	311	102	301	199	101	183
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	1	1	5	9	3
Mvmt Flow	327	107	317	209	106	193

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	434	0	1224	381
Stage 1	-	-	-	-	381	-
Stage 2	-	-	-	-	843	-
Critical Hdwy	-	-	4.11	-	6.49	6.23
Critical Hdwy Stg 1	-	-	-	-	5.49	-
Critical Hdwy Stg 2	-	-	-	-	5.49	-
Follow-up Hdwy	-	-	2.209	-	3.581	3.327
Pot Cap-1 Maneuver	-	-	1131	-	191	664
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	411	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1131	-	130	664
Mov Cap-2 Maneuver	-	-	-	-	130	-
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	281	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.7	127.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	270	-	-	1131	-
HCM Lane V/C Ratio	1.107	-	-	0.28	-
HCM Control Delay (s)	127.5	-	-	9.4	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	12.6	-	-	1.2	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	444	0	1	475	76	0	3	3	59	0	25
Future Vol, veh/h	50	444	0	1	475	76	0	3	3	59	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	2	0	0	2	3	0	0	0	0	0	0
Mvmt Flow	53	467	0	1	500	80	0	3	3	62	0	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	580	0	0	467	0	0	1128	1155	467	1078	1075	500
Stage 1	-	-	-	-	-	-	573	573	-	502	502	-
Stage 2	-	-	-	-	-	-	555	582	-	576	573	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1004	-	-	1105	-	-	183	199	600	198	221	575
Stage 1	-	-	-	-	-	-	508	507	-	555	545	-
Stage 2	-	-	-	-	-	-	520	502	-	506	507	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1004	-	-	1105	-	-	165	185	600	184	205	575
Mov Cap-2 Maneuver	-	-	-	-	-	-	165	185	-	184	205	-
Stage 1	-	-	-	-	-	-	472	471	-	516	544	-
Stage 2	-	-	-	-	-	-	496	501	-	464	471	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0	18	29.9
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	283	1004	-	-	1105	-	-	231
HCM Lane V/C Ratio	0.022	0.052	-	-	0.001	-	-	0.383
HCM Control Delay (s)	18	8.8	0	-	8.3	0	-	29.9
HCM Lane LOS	C	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0	-	-	1.7

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	76	418	12	22	28	471	237	11	4	51	799	1
Future Volume (vph)	76	418	12	22	28	471	237	11	4	51	799	1
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%				0%			0%			1%
Total Lost time (s)	4.0	4.5	4.5		4.0	4.5	4.5	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95	1.00	1.00	1.00		0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.86		1.00	0.98
Flt Protected	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (prot)	1662	3228	1488		1108	3197	1458	1662	1250		1541	1524
Flt Permitted	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (perm)	1662	3228	1488		1108	3197	1458	1662	1250		1541	1524
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	80	440	13	23	29	496	249	12	4	54	841	1
RTOR Reduction (vph)	0	0	9	0	0	0	75	0	51	0	0	3
Lane Group Flow (vph)	80	440	4	0	52	496	174	12	7	0	463	450
Confl. Peds. (#/hr)											1	
Heavy Vehicles (%)	0%	3%	0%	50%	50%	4%	2%	0%	0%	22%	2%	0%
Turn Type	Prot	NA	pt+ov	Prot	Prot	NA	pt+ov	Split	NA		Split	NA
Protected Phases	5	2	2 8	1	1	6	6 4	8	8		4	4
Permitted Phases												
Actuated Green, G (s)	8.3	23.1	28.5		8.3	23.1	69.7	5.4	5.4		46.6	46.6
Effective Green, g (s)	8.3	23.1	28.5		8.3	23.1	69.7	5.4	5.4		46.6	46.6
Actuated g/C Ratio	0.08	0.23	0.29		0.08	0.23	0.70	0.05	0.05		0.47	0.47
Clearance Time (s)	4.0	4.5			4.0	4.5		4.0	4.0		4.0	4.0
Vehicle Extension (s)	2.5	4.2			2.5	4.2		2.5	2.5		2.5	2.5
Lane Grp Cap (vph)	138	746	424		92	739	1017	89	67		718	710
v/s Ratio Prot	0.05	c0.14	0.00		0.05	c0.16	0.12	c0.01	0.01		c0.30	0.30
v/s Ratio Perm												
v/c Ratio	0.58	0.59	0.01		0.57	0.67	0.17	0.13	0.10		0.64	0.63
Uniform Delay, d1	44.1	34.2	25.6		44.1	34.9	5.2	45.0	44.9		20.3	20.2
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	4.8	1.5	0.0		6.3	2.7	0.1	0.5	0.5		1.8	1.6
Delay (s)	48.9	35.7	25.6		50.4	37.7	5.3	45.5	45.4		22.1	21.8
Level of Service	D	D	C		D	D	A	D	D		C	C
Approach Delay (s)		37.4				28.4			45.5			22.0
Approach LOS		D				C			D			C

Intersection Summary			
HCM 2000 Control Delay	28.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	99.9	Sum of lost time (s)	16.5
Intersection Capacity Utilization	62.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	70
Future Volume (vph)	70
Ideal Flow (vphpl)	1750
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	74
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

HCM 6th Signalized Intersection Summary
3: Woodland Ave & OR 219

05/21/2021

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	76	418	12	22	28	471	237	11	4	51	799	1
Future Volume (veh/h)	76	418	12	22	28	471	237	11	4	51	799	1
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No				No			No			No
Adj Sat Flow, veh/h/ln	1750	1709	1750		1068	1695	1723	1750	1750	1750	1717	1745
Adj Flow Rate, veh/h	80	440	13		29	496	249	12	4	54	911	0
Peak Hour Factor	0.95	0.95	0.95		0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	3	0		50	4	2	0	0	0	2	0
Cap, veh/h	101	1023	566		32	895	891	111	7	93	1088	580
Arrive On Green	0.06	0.31	0.31		0.03	0.28	0.28	0.07	0.07	0.07	0.33	0.00
Sat Flow, veh/h	1667	3247	1483		1017	3221	1460	1667	103	1395	3271	1745
Grp Volume(v), veh/h	80	440	13		29	496	249	12	0	58	911	0
Grp Sat Flow(s),veh/h/ln	1667	1624	1483		1017	1611	1460	1667	0	1499	1636	1745
Q Serve(g_s), s	3.1	7.0	0.4		1.8	8.5	5.2	0.4	0.0	2.4	16.7	0.0
Cycle Q Clear(g_c), s	3.1	7.0	0.4		1.8	8.5	5.2	0.4	0.0	2.4	16.7	0.0
Prop In Lane	1.00		1.00		1.00		1.00	1.00		0.93	1.00	
Lane Grp Cap(c), veh/h	101	1023	566		32	895	891	111	0	99	1088	580
V/C Ratio(X)	0.79	0.43	0.02		0.91	0.55	0.28	0.11	0.00	0.58	0.84	0.00
Avail Cap(c_a), veh/h	515	2256	1129		314	2238	1500	772	0	694	2272	1212
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	30.0	17.6	12.5		31.3	20.0	5.9	28.4	0.0	29.4	20.0	0.0
Incr Delay (d2), s/veh	9.6	0.4	0.0		43.7	0.8	0.3	0.3	0.0	4.0	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.6	4.4	0.2		1.5	5.5	5.6	0.3	0.0	1.7	10.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.6	18.0	12.5		75.0	20.8	6.2	28.8	0.0	33.3	21.3	0.0
LnGrp LOS	D	B	B		E	C	A	C	A	C	C	A
Approach Vol, veh/h		533				774			70			911
Approach Delay, s/veh		21.1				18.1			32.6			21.3
Approach LOS		C				B			C			C

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.0	24.9		25.5	8.4	22.5		8.3
Change Period (Y+Rc), s	4.0	4.5		4.0	4.5	* 4.5		4.0
Max Green Setting (Gmax), s	20.0	45.0		45.0	20.0	* 45		30.0
Max Q Clear Time (g_c+I1), s	3.8	9.0		18.7	5.1	10.5		4.4
Green Ext Time (p_c), s	0.0	5.0		2.8	0.1	7.5		0.2

Intersection Summary	
HCM 6th Ctrl Delay	20.5
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	945	345	0	929	632	0	0	0	760	0	351
Future Volume (vph)	0	945	345	0	929	632	0	0	0	760	0	351
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		3%			-4%			0%			5%	
Total Lost time (s)		4.5	4.0		4.5	4.0				4.5		2.5
Lane Util. Factor		0.95	1.00		0.95	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3180	1409		3325	1429				3083		1395
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3180	1409		3325	1429				3083		1395
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	995	363	0	978	665	0	0	0	800	0	369
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	15
Lane Group Flow (vph)	0	995	363	0	978	665	0	0	0	800	0	354
Confl. Peds. (#/hr)						1						1
Heavy Vehicles (%)	0%	3%	4%	0%	2%	4%	0%	0%	0%	2%	0%	4%
Turn Type		NA	Free		NA	Free				Prot		custom
Protected Phases		2			6					4		4 5
Permitted Phases			Free			Free						
Actuated Green, G (s)		60.5	100.0		50.7	100.0				30.5		40.8
Effective Green, g (s)		60.5	100.0		50.7	100.0				30.5		42.8
Actuated g/C Ratio		0.60	1.00		0.51	1.00				0.30		0.43
Clearance Time (s)		4.5			4.5					4.5		
Vehicle Extension (s)		6.0			4.0					2.5		
Lane Grp Cap (vph)		1923	1409		1685	1429				940		597
v/s Ratio Prot		0.31			c0.29					c0.26		c0.25
v/s Ratio Perm			0.26			0.47						
v/c Ratio		0.52	0.26		0.58	0.47				0.85		0.59
Uniform Delay, d1		11.4	0.0		17.2	0.0				32.6		21.9
Progression Factor		1.00	1.00		1.01	1.00				1.00		1.00
Incremental Delay, d2		1.0	0.4		1.1	0.8				7.4		1.3
Delay (s)		12.4	0.4		18.5	0.8				40.0		23.3
Level of Service		B	A		B	A				D		C
Approach Delay (s)		9.2			11.3			0.0			34.7	
Approach LOS		A			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	945	345	0	929	632	0	0	0	760	0	351
Future Volume (veh/h)	0	945	345	0	929	632	0	0	0	760	0	351
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1660	1647	0	1867	1840				1587	0	1560
Adj Flow Rate, veh/h	0	995	0	0	978	0				800	0	264
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	3	4	0	2	4				2	0	4
Cap, veh/h	0	1915		0	2154					888	0	427
Arrive On Green	0.00	0.61	0.00	0.00	1.00	0.00				0.30	0.00	0.32
Sat Flow, veh/h	0	3237	1395	0	3641	1559				2932	0	1322
Grp Volume(v), veh/h	0	995	0	0	978	0				800	0	264
Grp Sat Flow(s),veh/h/ln	0	1577	1395	0	1774	1559				1466	0	1322
Q Serve(g_s), s	0.0	18.1	0.0	0.0	0.0	0.0				26.2	0.0	16.9
Cycle Q Clear(g_c), s	0.0	18.1	0.0	0.0	0.0	0.0				26.2	0.0	16.9
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1915		0	2154					888	0	427
V/C Ratio(X)	0.00	0.52		0.00	0.45					0.90	0.00	0.62
Avail Cap(c_a), veh/h	0	1915		0	2154					1041	0	496
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.76	0.00	0.00	0.70	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.3	0.0	0.0	0.0	0.0				33.4	0.0	28.6
Incr Delay (d2), s/veh	0.0	0.8	0.0	0.0	0.5	0.0				9.3	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	9.5	0.0	0.0	0.3	0.0				15.5	0.0	18.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	12.1	0.0	0.0	0.5	0.0				42.7	0.0	30.1
LnGrp LOS	A	B		A	A					D	A	C
Approach Vol, veh/h		995	A		978	A					1064	
Approach Delay, s/veh		12.1			0.5						39.6	
Approach LOS		B			A						D	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		65.2		34.8		65.2
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		55.5		35.5		35.5
Max Q Clear Time (g_c+I1), s		20.1		28.2		2.0
Green Ext Time (p_c), s		19.8		2.1		12.0

Intersection Summary	
HCM 6th Ctrl Delay	18.0
HCM 6th LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1450	255	0	1277	351	284	0	545	0	0	0
Future Volume (vph)	0	1450	255	0	1277	351	284	0	545	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-4%			3%			6%			0%	
Total Lost time (s)		4.5	4.0		4.5	4.0	4.5	4.5	4.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.86	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)		3325	1401		3180	1393	1487	1279	1318			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)		3325	1401		3180	1393	1487	1279	1318			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1526	268	0	1344	369	299	0	574	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	19	19	0	0	0
Lane Group Flow (vph)	0	1526	268	0	1344	369	269	287	279	0	0	0
Confl. Peds. (#/hr)			2			1						
Heavy Vehicles (%)	0%	2%	6%	0%	3%	3%	3%	0%	4%	0%	0%	0%
Turn Type		NA	Free		NA	Free	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases			Free			Free			8			
Actuated Green, G (s)		63.6	100.0		63.6	100.0	27.4	27.4	27.4			
Effective Green, g (s)		63.6	100.0		63.6	100.0	27.4	27.4	27.4			
Actuated g/C Ratio		0.64	1.00		0.64	1.00	0.27	0.27	0.27			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		4.0			6.0		2.5	2.5	2.5			
Lane Grp Cap (vph)		2114	1401		2022	1393	407	350	361			
v/s Ratio Prot		c0.46			0.42		0.18	c0.22				
v/s Ratio Perm			0.19			0.26			0.21			
v/c Ratio		0.72	0.19		0.66	0.26	0.66	0.82	0.77			
Uniform Delay, d1		12.2	0.0		11.5	0.0	32.2	34.0	33.4			
Progression Factor		1.57	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		1.7	0.2		1.7	0.5	3.6	13.9	9.5			
Delay (s)		20.9	0.2		13.2	0.5	35.8	47.9	43.0			
Level of Service		C	A		B	A	D	D	D			
Approach Delay (s)		17.8			10.5			42.5			0.0	
Approach LOS		B			B			D			A	

Intersection Summary			
HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1450	255	0	1277	351	284	0	545	0	0	0
Future Volume (veh/h)	0	1450	255	0	1277	351	284	0	545	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1867	1812	0	1660	1660	1514	1555	1500			
Adj Flow Rate, veh/h	0	1526	0	0	1344	0	422	0	232			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	0	2	6	0	3	3	3	0	4			
Cap, veh/h	0	2475		0	2200		613	0	270			
Arrive On Green	0.00	1.00	0.00	0.00	0.70	0.00	0.21	0.00	0.21			
Sat Flow, veh/h	0	3641	1536	0	3237	1407	2883	0	1271			
Grp Volume(v), veh/h	0	1526	0	0	1344	0	422	0	232			
Grp Sat Flow(s),veh/h/ln	0	1774	1536	0	1577	1407	1442	0	1271			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	22.5	0.0	13.5	0.0	17.6			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	22.5	0.0	13.5	0.0	17.6			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2475		0	2200		613	0	270			
V/C Ratio(X)	0.00	0.62		0.00	0.61		0.69	0.00	0.86			
Avail Cap(c_a), veh/h	0	2475		0	2200		1024	0	451			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.69	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	8.0	0.0	36.3	0.0	37.9			
Incr Delay (d2), s/veh	0.0	0.8	0.0	0.0	1.3	0.0	1.0	0.0	6.7			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	0.5	0.0	0.0	11.1	0.0	8.4	0.0	9.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.8	0.0	0.0	9.2	0.0	37.4	0.0	44.7			
LnGrp LOS	A	A		A	A		D	A	D			
Approach Vol, veh/h		1526	A		1344	A		654				
Approach Delay, s/veh		0.8			9.2			40.0				
Approach LOS		A			A			D				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		74.3				74.3		25.7				
Change Period (Y+Rc), s		4.5				4.5		4.5				
Max Green Setting (Gmax), s		55.5				55.5		35.5				
Max Q Clear Time (g_c+I1), s		2.0				24.5		19.6				
Green Ext Time (p_c), s		27.4				24.0		1.7				

Intersection Summary												
HCM 6th Ctrl Delay			11.3									
HCM 6th LOS			B									

Notes

User approved volume balancing among the lanes for turning movement.

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

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	4	6	278	396	7
Future Vol, veh/h	6	4	6	278	396	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	3	0
Mvmt Flow	6	4	6	293	417	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	726	421	424	0	-	0
Stage 1	421	-	-	-	-	-
Stage 2	305	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	394	637	1146	-	-	-
Stage 1	667	-	-	-	-	-
Stage 2	752	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	392	637	1146	-	-	-
Mov Cap-2 Maneuver	392	-	-	-	-	-
Stage 1	663	-	-	-	-	-
Stage 2	752	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1146	-	463	-	-
HCM Lane V/C Ratio	0.006	-	0.023	-	-
HCM Control Delay (s)	8.2	0	13	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	39	75	236	36	84	334
Future Vol, veh/h	39	75	236	36	84	334
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	3	-	-	-3
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	4	1	0	2	2
Mvmt Flow	41	79	248	38	88	352

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	795	267	0	0	286	0
Stage 1	267	-	-	-	-	-
Stage 2	528	-	-	-	-	-
Critical Hdwy	7.04	6.54	-	-	4.12	-
Critical Hdwy Stg 1	6.04	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	-	-	2.218	-
Pot Cap-1 Maneuver	310	750	-	-	1276	-
Stage 1	740	-	-	-	-	-
Stage 2	538	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	283	750	-	-	1276	-
Mov Cap-2 Maneuver	283	-	-	-	-	-
Stage 1	740	-	-	-	-	-
Stage 2	492	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15	0	1.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	479	1276	-
HCM Lane V/C Ratio	-	-	0.251	0.069	-
HCM Control Delay (s)	-	-	15	8	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1	0.2	-

Intersection	
Int Delay, s/veh	149.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	596	214	275	359	129	141
Future Vol, veh/h	596	214	275	359	129	141
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	2	1	3	6	6
Mvmt Flow	627	225	289	378	136	148

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	852	0	1696	740
Stage 1	-	-	-	-	740	-
Stage 2	-	-	-	-	956	-
Critical Hdwy	-	-	4.11	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.209	-	3.554	3.354
Pot Cap-1 Maneuver	-	-	791	-	~ 100	410
Stage 1	-	-	-	-	465	-
Stage 2	-	-	-	-	367	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	791	-	~ 54	410
Mov Cap-2 Maneuver	-	-	-	-	~ 54	-
Stage 1	-	-	-	-	465	-
Stage 2	-	-	-	-	197	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.3	$ 935.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	99	-	-	791	-
HCM Lane V/C Ratio	2.871	-	-	0.366	-
HCM Control Delay (s)	$ 935.8	-	-	12.2	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	27.1	-	-	1.7	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	76	661	0	6	594	71	0	0	3	36	0	40
Future Vol, veh/h	76	661	0	6	594	71	0	0	3	36	0	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	5	0	0	2	2	0	0	0	5	0	6
Mvmt Flow	80	696	0	6	625	75	0	0	3	38	0	42

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	700	0	0	696	0	0	1552	1568	696	1495	1493	625
Stage 1	-	-	-	-	-	-	856	856	-	637	637	-
Stage 2	-	-	-	-	-	-	696	712	-	858	856	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.15	6.5	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.15	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.15	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.545	4	3.354
Pot Cap-1 Maneuver	906	-	-	909	-	-	93	112	445	100	124	478
Stage 1	-	-	-	-	-	-	355	377	-	460	475	-
Stage 2	-	-	-	-	-	-	435	439	-	347	377	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	906	-	-	909	-	-	75	95	445	88	105	478
Mov Cap-2 Maneuver	-	-	-	-	-	-	75	95	-	88	105	-
Stage 1	-	-	-	-	-	-	304	323	-	394	470	-
Stage 2	-	-	-	-	-	-	392	434	-	295	323	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.1	13.1	51.2
HCM LOS			B	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	445	906	-	-	909	-	-	154
HCM Lane V/C Ratio	0.007	0.088	-	-	0.007	-	-	0.519
HCM Control Delay (s)	13.1	9.4	0	-	9	0	-	51.2
HCM Lane LOS	B	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	0	0.3	-	-	0	-	-	2.5

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	91	602	7	22	77	585	270	14	8	92	759	8
Future Volume (vph)	91	602	7	22	77	585	270	14	8	92	759	8
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%				0%			0%			1%
Total Lost time (s)	4.0	4.5	4.5		4.0	4.5	4.5	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95	1.00	1.00	1.00		0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.86		1.00	0.97
Flt Protected	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (prot)	1630	3167	1488		1269	3260	1488	1330	1283		1571	1543
Flt Permitted	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (perm)	1630	3167	1488		1269	3260	1488	1330	1283		1571	1543
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	95	627	7	23	80	609	281	15	8	96	791	8
RTOR Reduction (vph)	0	0	5	0	0	0	96	0	89	0	0	4
Lane Group Flow (vph)	95	627	2	0	103	609	185	15	15	0	443	427
Confl. Peds. (#/hr)											1	
Heavy Vehicles (%)	2%	5%	0%	31%	31%	2%	0%	25%	0%	19%	0%	20%
Turn Type	Prot	NA	pt+ov	Prot	Prot	NA	pt+ov	Split	NA		Split	NA
Protected Phases	5	2	2 8	1	1	6	6 4	8	8		4	4
Permitted Phases												
Actuated Green, G (s)	14.2	29.7	37.6		14.1	29.6	71.6	7.9	7.9		42.0	42.0
Effective Green, g (s)	14.2	29.7	37.6		14.1	29.6	71.6	7.9	7.9		42.0	42.0
Actuated g/C Ratio	0.13	0.27	0.34		0.13	0.27	0.65	0.07	0.07		0.38	0.38
Clearance Time (s)	4.0	4.5			4.0	4.5		4.0	4.0		4.0	4.0
Vehicle Extension (s)	2.5	4.2			2.5	4.2		2.5	2.5		2.5	2.5
Lane Grp Cap (vph)	210	853	507		162	875	966	95	91		598	588
v/s Ratio Prot	0.06	c0.20	0.00		0.08	c0.19	0.12	0.01	c0.01		c0.28	0.28
v/s Ratio Perm												
v/c Ratio	0.45	0.74	0.00		0.64	0.70	0.19	0.16	0.16		0.74	0.73
Uniform Delay, d1	44.4	36.7	24.0		45.6	36.3	7.7	48.0	48.0		29.4	29.2
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.1	3.6	0.0		7.0	2.7	0.1	0.6	0.6		4.7	4.2
Delay (s)	45.5	40.3	24.0		52.6	38.9	7.9	48.6	48.7		34.1	33.3
Level of Service	D	D	C		D	D	A	D	D		C	C
Approach Delay (s)		40.8				31.6			48.7			33.7
Approach LOS		D				C			D			C

Intersection Summary			
HCM 2000 Control Delay	35.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	110.2	Sum of lost time (s)	16.5
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	72
Future Volume (vph)	72
Ideal Flow (vphpl)	1750
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.96
Adj. Flow (vph)	75
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	91	602	7	22	77	585	270	14	8	92	759	8
Future Volume (veh/h)	91	602	7	22	77	585	270	14	8	92	759	8
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No				No			No			No
Adj Sat Flow, veh/h/ln	1723	1682	1750		1327	1723	1750	1409	1750	1750	1745	1472
Adj Flow Rate, veh/h	95	627	7		80	609	219	15	8	96	867	0
Peak Hour Factor	0.96	0.96	0.96		0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	5	0		31	2	0	25	0	0	0	20
Cap, veh/h	121	982	593		93	984	901	124	11	128	1019	451
Arrive On Green	0.07	0.31	0.31		0.07	0.30	0.30	0.09	0.09	0.09	0.31	0.00
Sat Flow, veh/h	1641	3195	1483		1264	3273	1483	1342	115	1385	3323	1472
Grp Volume(v), veh/h	95	627	7		80	609	219	15	0	104	867	0
Grp Sat Flow(s),veh/h/ln	1641	1598	1483		1264	1637	1483	1342	0	1501	1661	1472
Q Serve(g_s), s	4.3	12.7	0.2		4.7	12.0	5.1	0.8	0.0	5.1	18.3	0.0
Cycle Q Clear(g_c), s	4.3	12.7	0.2		4.7	12.0	5.1	0.8	0.0	5.1	18.3	0.0
Prop In Lane	1.00		1.00		1.00		1.00	1.00		0.92	1.00	
Lane Grp Cap(c), veh/h	121	982	593		93	984	901	124	0	138	1019	451
V/C Ratio(X)	0.79	0.64	0.01		0.86	0.62	0.24	0.12	0.00	0.75	0.85	0.00
Avail Cap(c_a), veh/h	438	1918	1027		337	1965	1345	537	0	601	1995	884
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	34.1	22.4	13.6		34.3	22.5	6.8	31.2	0.0	33.2	24.4	0.0
Incr Delay (d2), s/veh	8.2	1.1	0.0		15.4	1.0	0.2	0.3	0.0	6.0	1.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.5	8.2	0.1		3.2	8.0	5.5	0.5	0.0	3.6	11.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.3	23.4	13.6		49.8	23.5	7.0	31.5	0.0	39.1	25.9	0.0
LnGrp LOS	D	C	B		D	C	A	C	A	D	C	A
Approach Vol, veh/h		729				908			119			867
Approach Delay, s/veh		25.8				21.8			38.2			25.9
Approach LOS		C				C			D			C

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.5	27.5		27.0	10.0	27.0		10.9
Change Period (Y+Rc), s	4.0	4.5		4.0	4.5	* 4.5		4.0
Max Green Setting (Gmax), s	20.0	45.0		45.0	20.0	* 45		30.0
Max Q Clear Time (g_c+I1), s	6.7	14.7		20.3	6.3	14.0		7.1
Green Ext Time (p_c), s	0.1	7.2		2.6	0.1	8.6		0.5

Intersection Summary	
HCM 6th Ctrl Delay	25.0
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	72
Future Volume (veh/h)	72
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1472
Adj Flow Rate, veh/h	0
Peak Hour Factor	0.96
Percent Heavy Veh, %	20
Cap, veh/h	0
Arrive On Green	0.00
Sat Flow, veh/h	0
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.00
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(I)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(95%),veh/ln	0.0
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	A
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer - Assigned Phs
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	973	502	0	1094	840	0	0	0	737	0	413
Future Volume (vph)	0	973	502	0	1094	840	0	0	0	737	0	413
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		3%			-4%			0%			5%	
Total Lost time (s)		4.5	4.0		4.5	4.0				4.5		2.5
Lane Util. Factor		0.95	1.00		0.95	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3180	1409		3325	1457				3083		1381
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3180	1409		3325	1457				3083		1381
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	993	512	0	1116	857	0	0	0	752	0	421
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	9
Lane Group Flow (vph)	0	993	512	0	1116	857	0	0	0	752	0	412
Confl. Peds. (#/hr)						1						1
Heavy Vehicles (%)	0%	3%	4%	0%	2%	2%	0%	0%	0%	2%	0%	5%
Turn Type		NA	Free		NA	Free				Prot		custom
Protected Phases		2			6					4		4 5
Permitted Phases			Free			Free						
Actuated Green, G (s)		60.7	100.0		50.3	100.0				30.3		41.2
Effective Green, g (s)		60.7	100.0		50.3	100.0				30.3		43.2
Actuated g/C Ratio		0.61	1.00		0.50	1.00				0.30		0.43
Clearance Time (s)		4.5			4.5					4.5		
Vehicle Extension (s)		6.0			4.0					2.5		
Lane Grp Cap (vph)		1930	1409		1672	1457				934		596
v/s Ratio Prot		0.31			c0.34					c0.24		c0.30
v/s Ratio Perm			0.36			0.59						
v/c Ratio		0.51	0.36		0.67	0.59				0.81		0.69
Uniform Delay, d1		11.2	0.0		18.6	0.0				32.1		23.0
Progression Factor		1.00	1.00		1.14	1.00				1.00		1.00
Incremental Delay, d2		1.0	0.7		1.4	1.1				5.0		3.2
Delay (s)		12.2	0.7		22.6	1.1				37.1		26.2
Level of Service		B	A		C	A				D		C
Approach Delay (s)		8.3			13.3			0.0			33.2	
Approach LOS		A			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	973	502	0	1094	840	0	0	0	737	0	413
Future Volume (veh/h)	0	973	502	0	1094	840	0	0	0	737	0	413
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1660	1647	0	1867	1867				1587	0	1546
Adj Flow Rate, veh/h	0	993	0	0	1116	0				752	0	319
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	3	4	0	2	2				2	0	5
Cap, veh/h	0	1958		0	2203					848	0	405
Arrive On Green	0.00	0.62	0.00	0.00	1.00	0.00				0.29	0.00	0.31
Sat Flow, veh/h	0	3237	1395	0	3641	1582				2932	0	1310
Grp Volume(v), veh/h	0	993	0	0	1116	0				752	0	319
Grp Sat Flow(s),veh/h/ln	0	1577	1395	0	1774	1582				1466	0	1310
Q Serve(g_s), s	0.0	17.4	0.0	0.0	0.0	0.0				24.5	0.0	22.2
Cycle Q Clear(g_c), s	0.0	17.4	0.0	0.0	0.0	0.0				24.5	0.0	22.2
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1958		0	2203					848	0	405
V/C Ratio(X)	0.00	0.51		0.00	0.51					0.89	0.00	0.79
Avail Cap(c_a), veh/h	0	1958		0	2203					1041	0	491
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.59	0.00	0.00	0.51	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	10.5	0.0	0.0	0.0	0.0				34.0	0.0	31.5
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	0.4	0.0				7.7	0.0	6.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	8.7	0.0	0.0	0.2	0.0				14.5	0.0	22.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	11.0	0.0	0.0	0.4	0.0				41.7	0.0	37.9
LnGrp LOS	A	B		A	A					D	A	D
Approach Vol, veh/h		993	A		1116	A					1071	
Approach Delay, s/veh		11.0			0.4						40.6	
Approach LOS		B			A						D	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		66.6		33.4		66.6
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		55.5		35.5		35.5
Max Q Clear Time (g_c+I1), s		19.4		26.5		2.0
Green Ext Time (p_c), s		20.0		2.4		14.2

Intersection Summary	
HCM 6th Ctrl Delay	17.3
HCM 6th LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1466	244	0	1505	469	369	0	690	0	0	0
Future Volume (vph)	0	1466	244	0	1505	469	369	0	690	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-4%			3%			6%			0%	
Total Lost time (s)		4.5	4.0		4.5	4.0	4.5	4.5	4.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.87	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.99	1.00			
Satd. Flow (prot)		3325	1388		3211	1380	1502	1259	1293			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.99	1.00			
Satd. Flow (perm)		3325	1388		3211	1380	1502	1259	1293			
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1496	249	0	1536	479	377	0	704	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	19	19	0	0	0
Lane Group Flow (vph)	0	1496	249	0	1536	479	339	357	347	0	0	0
Confl. Peds. (#/hr)			2			1						
Heavy Vehicles (%)	0%	2%	7%	0%	2%	4%	2%	0%	6%	0%	0%	0%
Turn Type		NA	Free		NA	Free	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases			Free			Free			8			
Actuated Green, G (s)		59.1	100.0		59.1	100.0	31.9	31.9	31.9			
Effective Green, g (s)		59.1	100.0		59.1	100.0	31.9	31.9	31.9			
Actuated g/C Ratio		0.59	1.00		0.59	1.00	0.32	0.32	0.32			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		4.0			6.0		2.5	2.5	2.5			
Lane Grp Cap (vph)		1965	1388		1897	1380	479	401	412			
v/s Ratio Prot		0.45			c0.48		0.23	c0.28				
v/s Ratio Perm			0.18			0.35			0.27			
v/c Ratio		0.76	0.18		0.81	0.35	0.71	0.89	0.84			
Uniform Delay, d1		15.2	0.0		16.0	0.0	29.9	32.4	31.7			
Progression Factor		1.51	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		2.3	0.2		3.9	0.7	4.4	21.0	14.2			
Delay (s)		25.3	0.2		19.9	0.7	34.4	53.4	45.9			
Level of Service		C	A		B	A	C	D	D			
Approach Delay (s)		21.7			15.3			44.9			0.0	
Approach LOS		C			B			D			A	

Intersection Summary			
HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	82.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1466	244	0	1505	469	369	0	690	0	0	0
Future Volume (veh/h)	0	1466	244	0	1505	469	369	0	690	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1867	1798	0	1674	1647	1527	1555	1473			
Adj Flow Rate, veh/h	0	1496	0	0	1536	0	552	0	313			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	0	2	7	0	2	4	2	0	6			
Cap, veh/h	0	2235		0	2003		815	0	350			
Arrive On Green	0.00	1.00	0.00	0.00	0.63	0.00	0.28	0.00	0.28			
Sat Flow, veh/h	0	3641	1524	0	3264	1395	2909	0	1248			
Grp Volume(v), veh/h	0	1496	0	0	1536	0	552	0	313			
Grp Sat Flow(s),veh/h/ln	0	1774	1524	0	1590	1395	1455	0	1248			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	34.6	0.0	16.9	0.0	24.1			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	34.6	0.0	16.9	0.0	24.1			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2235		0	2003		815	0	350			
V/C Ratio(X)	0.00	0.67		0.00	0.77		0.68	0.00	0.90			
Avail Cap(c_a), veh/h	0	2235		0	2003		1033	0	443			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.73	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	13.2	0.0	32.0	0.0	34.6			
Incr Delay (d2), s/veh	0.0	1.2	0.0	0.0	2.9	0.0	1.0	0.0	16.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	0.7	0.0	0.0	17.4	0.0	9.9	0.0	13.6			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	1.2	0.0	0.0	16.1	0.0	33.0	0.0	51.1			
LnGrp LOS	A	A		A	B		C	A	D			
Approach Vol, veh/h		1496	A		1536	A		865				
Approach Delay, s/veh		1.2			16.1			39.5				
Approach LOS		A			B			D				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		67.5				67.5		32.5				
Change Period (Y+Rc), s		4.5				4.5		4.5				
Max Green Setting (Gmax), s		55.5				55.5		35.5				
Max Q Clear Time (g_c+I1), s		2.0				36.6		26.1				
Green Ext Time (p_c), s		26.6				16.9		1.9				

Intersection Summary	
HCM 6th Ctrl Delay	15.6
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

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

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	3	4	266	482	7
Future Vol, veh/h	4	3	4	266	482	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	3	0
Mvmt Flow	4	3	4	280	507	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	799	511	514	0	-	0
Stage 1	511	-	-	-	-	-
Stage 2	288	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	357	567	1062	-	-	-
Stage 1	606	-	-	-	-	-
Stage 2	766	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	356	567	1062	-	-	-
Mov Cap-2 Maneuver	356	-	-	-	-	-
Stage 1	604	-	-	-	-	-
Stage 2	766	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.6	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1062	-	424	-	-
HCM Lane V/C Ratio	0.004	-	0.017	-	-
HCM Control Delay (s)	8.4	0	13.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	2.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	39	75	191	52	88	410
Future Vol, veh/h	39	75	191	52	88	410
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	3	-	-	-3
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	8	2	0	0	2
Mvmt Flow	41	79	201	55	93	432

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	847	229	0	0	256	0
Stage 1	229	-	-	-	-	-
Stage 2	618	-	-	-	-	-
Critical Hdwy	7	6.58	-	-	4.1	-
Critical Hdwy Stg 1	6	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.5	3.372	-	-	2.2	-
Pot Cap-1 Maneuver	291	781	-	-	1321	-
Stage 1	783	-	-	-	-	-
Stage 2	489	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	264	781	-	-	1321	-
Mov Cap-2 Maneuver	264	-	-	-	-	-
Stage 1	783	-	-	-	-	-
Stage 2	444	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.3	0	1.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	468	1321	-
HCM Lane V/C Ratio	-	-	0.256	0.07	-
HCM Control Delay (s)	-	-	15.3	7.9	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1	0.2	-

Appendix J 2040 Total Traffic Conditions Operations and Queuing Worksheets

Table 18 – Estimated 95th Percentile Queuing Analysis

Intersection	Movement	Storage (ft)	2023 Background				2023 Total				Queue Storage Adequate?
			7:00 – 8:00 AM	4:30 – 5:30 PM	6:30 – 7:30 AM	5:30 – 6:30 PM	7:00 – 8:00 AM	4:30 – 5:30 PM	6:30 – 7:30 AM	5:30 – 6:30 PM	
1: OR 219 / Butteville Rd	NBL		300	700	400	325	See Table 17				Yes
	NBR	100									Yes
	EBT		<25	<25	<25	<25					Yes
	EBR	150									Yes
	WBLT		25	50	25	50					Yes
2: OR 219 / Willow Ave	NBLTR	50	<25	<25	<25	25	<25	<25	<25	25	Yes
	EBLTR	75	<25	25	<25	25	25	25	<25	25	Yes
	WBLT	100	<25	<25	<25	<25	<25	<25	<25	<25	Yes
	SBLTR	150	50	75	50	50	50	50	75	150	Yes
3: OR 219 / Woodland Ave	EBL	225	25	100	50	75	25	100	50	125	Yes
	EBT	500+	125	225	225	125	150	250	175	325	Yes
	EBR	150	25	25	25	25	25	25	25	25	Yes
	WBL	225	75	100	100	50	75	100	100	75	Yes
	WBT	800	75	200	175	150	150	250	275	375	Yes
	NBL	200	<25	25	<25	25	<25	25	<25	25	Yes
	NBTR	200	50	100	50	50	50	100	75	75	Yes
	SBLTR	475	125	300	125	275	125	325	150	400	Yes
4: OR 219 / I-5 SB Ramps	EBT	900	125	225	125	250	125	250	150	325	Yes
	EBR	275	<25	<25	<25	<25	<25	<25	<25	<25	Yes
	WBT	575	25	25	25	25	25	25	25	25	Yes
	WBR	550	<25	<25	<25	<25	<25	<25	<25	<25	Yes
	SBL	650	250	375	225	400	250	375	225	400	Yes
	SBR	430	450	575	400	475	450	600	475	700	No
5: OR 219 / I-5 NB Ramps	EBT	575	25	25	25	25	25	25	25	25	Yes
	EBR	550	<25	<25	<25	<25	<25	<25	<25	<25	Yes
	WBT	775	250	450	250	300	300	475	325	375	Yes
	WBR	380	<25	<25	<25	<25	<25	<25	<25	<25	Yes
	NBLTR	620	350	350	400	250	425	350	600	325	Yes
6: Old Butteville Rd / North Site Access / Butteville Rd	NBL	100	<25	<25	<25	<25	<25	<25	<25	<25	Yes
	EBLTR	100	<25	25	<25	25	<25	25	<25	25	Yes
	SBL	100	<25	<25	<25	<25	25	<25	25	25	Yes
	WBLTR	150					<25	<25	<25	50	Yes
7: North Site Access /	WBLR	100					<25	<25	<25	25	Yes
	SBL	100					25	<25	25	25	Yes
8: South Site Access / Butteville Rd	WBL	175					<25	<25	<25	50	Yes
	WBR	175					25	25	25	50	Yes
	SBL	100					25	25	25	25	Yes
9: South Site Access / Lebrun Rd / Butteville Rd	EBLTR	100					25	25	25	25	Yes
	NBL	100					<25	25	<25	<25	Yes
	WBLT	200					<25	25	25	25	Yes
	WBR	200					25	25	25	50	Yes
	SBL	100					25	25	25	25	Yes
10: Parr Rd / Butteville Rd	WBLR	200	25	25	25	25	25	25	25	25	Yes

HCS7 Roundabouts Report

General Information

Analyst	ZHB	Intersection	OR 219/Butteville Rd
Agency or Co.	Kittelson	E/W Street Name	OR 219
Date Performed	4/29/2021	N/S Street Name	Butteville (Realigned)
Analysis Year	2040	Analysis Time Period (hrs)	0.25
Time Analyzed	AM Total - Generator Peak	Peak Hour Factor	0.95
Project Description	Project Basie	Jurisdiction	Woodburn, OR

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	1	0	1	1	0	0	1	0	0	0	0	0	0
Lane Assignment	T		R		L		LT				L					
Volume (V), veh/h	0		259	180	0	606	443		0	124		387				
Percent Heavy Vehicles, %	0		10	19	0	7	5		0	3		4				
Flow Rate (v_{PCE}), pc/h	0		300	225	0	683	490		0	134		424				
Right-Turn Bypass	None				None				Non-Yielding				None			
Conflicting Lanes	2				1				1							
Pedestrians Crossing, p/h	0				0				0							

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)	4.6453	4.3276		4.5436	4.5436			4.9763				
Follow-Up Headway (s)	2.6667	2.5352		2.5352	2.5352			2.6087				

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	300.00	225.00		621.69	551.31			134.00	424.00			
Entry Volume veh/h	263.89	197.92		585.64	519.34			130.10	407.69			
Circulating Flow (v_c), pc/h	683			134			300			1307		
Exiting Flow (v_{ex}), pc/h	300			624			0			908		
Capacity (c_{pce}), pc/h	720.18	794.62		1256.99	1256.99			1016.22				
Capacity (c), veh/h	633.49	698.97		1184.11	1184.11			986.62				
v/c Ratio (x)	0.42	0.28		0.49	0.44			0.13				

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	11.8	8.6		8.5	7.6			4.9				
Lane LOS	B	A		A	A			A	A			
95% Queue, veh	2.1	1.2		2.8	2.3			0.5				
Approach Delay, s/veh	10.4			8.0			1.2					
Approach LOS	B			A			A					
Intersection Delay, s/veh | LOS	6.8						A					

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Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	639	0	0	1023	16	0	0	0	45	0	26
Future Vol, veh/h	7	639	0	0	1023	16	0	0	0	45	0	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	7	0	0	6	0	0	0	0	4	0	0
Mvmt Flow	7	673	0	0	1077	17	0	0	0	47	0	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1094	0	0	673	0	0	1226	1781	338	1438	1773	547
Stage 1	-	-	-	-	-	-	687	687	-	1086	1086	-
Stage 2	-	-	-	-	-	-	539	1094	-	352	687	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.58	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.58	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.58	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.54	4	3.3
Pot Cap-1 Maneuver	645	-	-	927	-	-	137	83	664	92	84	486
Stage 1	-	-	-	-	-	-	408	450	-	227	295	-
Stage 2	-	-	-	-	-	-	499	292	-	632	450	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	645	-	-	927	-	-	128	82	663	91	83	486
Mov Cap-2 Maneuver	-	-	-	-	-	-	128	82	-	91	83	-
Stage 1	-	-	-	-	-	-	404	445	-	225	295	-
Stage 2	-	-	-	-	-	-	471	292	-	625	445	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	0	64.8
HCM LOS			A	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	645	-	-	927	-	-	130
HCM Lane V/C Ratio	-	0.011	-	-	-	-	-	0.575
HCM Control Delay (s)	0	10.6	-	-	0	-	-	64.8
HCM Lane LOS	A	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	2.9

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	39	641	4	17	85	1006	173	0	4	39	347	12
Future Volume (vph)	39	641	4	17	85	1006	173	0	4	39	347	12
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%				0%			0%			1%
Total Lost time (s)	4.0	4.5	4.5		4.0	4.5	4.5		4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95	1.00		1.00		0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	1.00	0.85		0.86		1.00	0.97
Flt Protected	0.95	1.00	1.00		0.95	1.00	1.00		1.00		0.95	0.96
Satd. Flow (prot)	1662	3107	1488		1527	3167	1488		1398		1257	1291
Flt Permitted	0.95	1.00	1.00		0.95	1.00	1.00		1.00		0.95	0.96
Satd. Flow (perm)	1662	3107	1488		1527	3167	1488		1398		1257	1291
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	41	675	4	18	89	1059	182	0	4	41	365	13
RTOR Reduction (vph)	0	0	2	0	0	0	29	0	39	0	0	5
Lane Group Flow (vph)	41	675	2	0	107	1059	153	0	6	0	208	200
Confl. Peds. (#/hr)								1				
Heavy Vehicles (%)	0%	7%	0%	23%	6%	5%	0%	0%	60%	3%	25%	0%
Turn Type	Prot	NA	pt+ov	Prot	Prot	NA	pt+ov	Split	NA		Split	NA
Protected Phases	5	2	2 8	1	1	6	6 4	8	8		4	4
Permitted Phases												
Actuated Green, G (s)	5.4	40.4	45.6		12.2	47.2	68.4		5.2		21.2	21.2
Effective Green, g (s)	5.4	40.4	45.6		12.2	47.2	68.4		5.2		21.2	21.2
Actuated g/C Ratio	0.06	0.42	0.48		0.13	0.49	0.72		0.05		0.22	0.22
Clearance Time (s)	4.0	4.5			4.0	4.5			4.0		4.0	4.0
Vehicle Extension (s)	2.5	4.2			2.5	4.2			2.5		2.5	2.5
Lane Grp Cap (vph)	93	1314	710		195	1565	1065		76		279	286
v/s Ratio Prot	0.02	c0.22	0.00		0.07	c0.33	0.10		c0.00		c0.17	0.15
v/s Ratio Perm												
v/c Ratio	0.44	0.51	0.00		0.55	0.68	0.14		0.08		0.75	0.70
Uniform Delay, d1	43.6	20.3	13.1		39.1	18.4	4.3		42.9		34.6	34.2
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00
Incremental Delay, d2	2.4	0.5	0.0		2.5	1.3	0.1		0.3		9.8	6.7
Delay (s)	46.0	20.8	13.1		41.6	19.7	4.4		43.2		44.5	40.9
Level of Service	D	C	B		D	B	A		D		D	D
Approach Delay (s)		22.2				19.3			43.2			42.7
Approach LOS		C				B			D			D

Intersection Summary			
HCM 2000 Control Delay	24.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	95.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	33
Future Volume (vph)	33
Ideal Flow (vphpl)	1750
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	35
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	1
Heavy Vehicles (%)	5%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	39	641	4	17	85	1006	173	0	4	39	347	12
Future Volume (veh/h)	39	641	4	17	85	1006	173	0	4	39	347	12
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No				No			No			No
Adj Sat Flow, veh/h/ln	1750	1654	1750		1668	1682	1750	1750	931	931	1403	1745
Adj Flow Rate, veh/h	41	675	4		89	1059	119	0	4	41	407	0
Peak Hour Factor	0.95	0.95	0.95		0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	7	0		6	5	0	0	60	60	25	0
Cap, veh/h	65	1411	745		112	1511	986	89	4	39	514	335
Arrive On Green	0.04	0.45	0.45		0.07	0.47	0.47	0.00	0.05	0.05	0.19	0.00
Sat Flow, veh/h	1667	3143	1483		1589	3195	1483	1667	71	726	2673	1745
Grp Volume(v), veh/h	41	675	4		89	1059	119	0	0	45	407	0
Grp Sat Flow(s),veh/h/ln	1667	1572	1483		1589	1598	1483	1667	0	797	1336	1745
Q Serve(g_s), s	1.7	10.6	0.1		3.9	18.3	2.1	0.0	0.0	3.8	10.2	0.0
Cycle Q Clear(g_c), s	1.7	10.6	0.1		3.9	18.3	2.1	0.0	0.0	3.8	10.2	0.0
Prop In Lane	1.00		1.00		1.00		1.00	1.00		0.91	1.00	
Lane Grp Cap(c), veh/h	65	1411	745		112	1511	986	89	0	43	514	335
V/C Ratio(X)	0.63	0.48	0.01		0.80	0.70	0.12	0.00	0.00	1.05	0.79	0.00
Avail Cap(c_a), veh/h	475	2015	1030		453	2048	1236	712	0	341	1714	1118
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00		1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.2	13.6	8.7		32.1	14.6	4.3	0.0	0.0	33.2	27.0	0.0
Incr Delay (d2), s/veh	7.1	0.4	0.0		9.2	1.0	0.1	0.0	0.0	69.3	2.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.4	6.2	0.1		3.1	10.1	1.8	0.0	0.0	2.7	5.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.4	14.0	8.7		41.4	15.6	4.4	0.0	0.0	102.6	29.1	0.0
LnGrp LOS	D	B	A		D	B	A	A	A	F	C	A
Approach Vol, veh/h		720				1267			45			407
Approach Delay, s/veh		15.4				16.3			102.6			29.1
Approach LOS		B				B			F			C

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.9	36.0		17.5	7.3	37.7		7.8
Change Period (Y+Rc), s	4.0	4.5		4.0	4.5	* 4.5		4.0
Max Green Setting (Gmax), s	20.0	45.0		45.0	20.0	* 45		30.0
Max Q Clear Time (g_c+I1), s	5.9	12.6		12.2	3.7	20.3		5.8
Green Ext Time (p_c), s	0.1	8.0		1.2	0.0	12.8		0.2

Intersection Summary	
HCM 6th Ctrl Delay	19.8
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	33
Future Volume (veh/h)	33
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1745
Adj Flow Rate, veh/h	0
Peak Hour Factor	0.95
Percent Heavy Veh, %	0
Cap, veh/h	0
Arrive On Green	0.00
Sat Flow, veh/h	0
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.00
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(I)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(95%),veh/ln	0.0
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	A
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer - Assigned Phs
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	700	344	0	1100	696	0	0	0	414	0	342
Future Volume (vph)	0	700	344	0	1100	696	0	0	0	414	0	342
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		3%			-4%			0%			5%	
Total Lost time (s)		4.5	4.0		4.5	4.0				4.5		2.5
Lane Util. Factor		0.95	1.00		0.95	1.00				0.97		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3090	1263		3140	1343				2716		1283
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3090	1263		3140	1343				2716		1283
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	737	362	0	1158	733	0	0	0	436	0	360
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	9
Lane Group Flow (vph)	0	737	362	0	1158	733	0	0	0	436	0	351
Heavy Vehicles (%)	0%	6%	16%	0%	8%	13%	0%	0%	0%	10%	0%	13%
Parking (#/hr)										0		
Turn Type		NA	Free		NA	Free				Prot		custom
Protected Phases		2			6					4		4 5
Permitted Phases			Free			Free						
Actuated Green, G (s)		61.9	100.0		52.0	100.0				29.1		39.5
Effective Green, g (s)		61.9	100.0		52.0	100.0				29.1		41.5
Actuated g/C Ratio		0.62	1.00		0.52	1.00				0.29		0.42
Clearance Time (s)		4.5			4.5					4.5		
Vehicle Extension (s)		6.0			4.0					2.5		
Lane Grp Cap (vph)		1912	1263		1632	1343				790		532
v/s Ratio Prot		0.24			c0.37					0.16		c0.27
v/s Ratio Perm			0.29			0.55						
v/c Ratio		0.39	0.29		0.71	0.55				0.55		0.66
Uniform Delay, d1		9.5	0.0		18.3	0.0				29.9		23.6
Progression Factor		1.00	1.00		0.78	1.00				1.00		1.00
Incremental Delay, d2		0.6	0.6		1.4	0.8				0.7		2.6
Delay (s)		10.1	0.6		15.7	0.8				30.6		26.2
Level of Service		B	A		B	A				C		C
Approach Delay (s)		7.0			9.9			0.0			28.6	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	700	344	0	1100	696	0	0	0	414	0	342
Future Volume (veh/h)	0	700	344	0	1100	696	0	0	0	414	0	342
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				0.95	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1619	1483	0	1784	1715				1478	0	1437
Adj Flow Rate, veh/h	0	737	0	0	1158	0				436	0	255
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	6	16	0	8	13				10	0	13
Cap, veh/h	0	2077		0	2289					609	0	310
Arrive On Green	0.00	0.68	0.00	0.00	1.00	0.00				0.23	0.00	0.25
Sat Flow, veh/h	0	3158	1257	0	3479	1454				2594	0	1218
Grp Volume(v), veh/h	0	737	0	0	1158	0				436	0	255
Grp Sat Flow(s),veh/h/ln	0	1538	1257	0	1695	1454				1297	0	1218
Q Serve(g_s), s	0.0	10.2	0.0	0.0	0.0	0.0				15.5	0.0	19.7
Cycle Q Clear(g_c), s	0.0	10.2	0.0	0.0	0.0	0.0				15.5	0.0	19.7
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2077		0	2289					609	0	310
V/C Ratio(X)	0.00	0.35		0.00	0.51					0.72	0.00	0.82
Avail Cap(c_a), veh/h	0	2077		0	2289					921	0	457
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.79	0.00	0.00	0.50	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	6.9	0.0	0.0	0.0	0.0				35.2	0.0	35.1
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.4	0.0				1.2	0.0	6.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	5.5	0.0	0.0	0.2	0.0				8.5	0.0	18.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	7.3	0.0	0.0	0.4	0.0				36.4	0.0	41.5
LnGrp LOS	A	A		A	A					D	A	D
Approach Vol, veh/h		737	A		1158	A					691	
Approach Delay, s/veh		7.3			0.4						38.3	
Approach LOS		A			A						D	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		72.0		28.0		72.0
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		55.5		35.5		35.5
Max Q Clear Time (g_c+I1), s		12.2		21.7		2.0
Green Ext Time (p_c), s		15.4		1.7		15.0

Intersection Summary	
HCM 6th Ctrl Delay	12.5
HCM 6th LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	684	430	0	985	792	811	0	726	0	0	0
Future Volume (vph)	0	684	430	0	985	792	811	0	726	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-4%			3%			6%			0%	
Total Lost time (s)		4.5	4.0		4.5	4.0	4.5	4.5	4.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frt		1.00	0.85		1.00	0.85	1.00	0.93	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.97	1.00			
Satd. Flow (prot)		3111	1445		2951	1436	1445	1338	1331			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.97	1.00			
Satd. Flow (perm)		3111	1445		2951	1436	1445	1338	1331			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	720	453	0	1037	834	854	0	764	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	32	129	0	0	0
Lane Group Flow (vph)	0	720	453	0	1037	834	564	510	383	0	0	0
Heavy Vehicles (%)	0%	9%	5%	0%	11%	2%	6%	0%	3%	0%	0%	0%
Turn Type		NA	Free		NA	Free	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases			Free			Free			8			
Actuated Green, G (s)		55.5	100.0		55.5	100.0	35.5	35.5	35.5			
Effective Green, g (s)		55.5	100.0		55.5	100.0	35.5	35.5	35.5			
Actuated g/C Ratio		0.56	1.00		0.56	1.00	0.36	0.36	0.36			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		4.0			6.0		2.5	2.5	2.5			
Lane Grp Cap (vph)		1726	1445		1637	1436	512	474	472			
v/s Ratio Prot		0.23			c0.35		c0.39	0.38				
v/s Ratio Perm			0.31			0.58			0.29			
v/c Ratio		0.42	0.31		0.63	0.58	1.10	1.08	0.81			
Uniform Delay, d1		12.9	0.0		15.3	0.0	32.2	32.2	29.2			
Progression Factor		1.45	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.7	0.5		1.9	1.7	70.4	63.5	10.0			
Delay (s)		19.4	0.5		17.1	1.7	102.7	95.8	39.2			
Level of Service		B	A		B	A	F	F	D			
Approach Delay (s)		12.1			10.3			80.3			0.0	
Approach LOS		B			B			F			A	

Intersection Summary			
HCM 2000 Control Delay	35.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	684	430	0	985	792	811	0	726	0	0	0
Future Volume (veh/h)	0	684	430	0	985	792	811	0	726	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1770	1826	0	1551	1674	1473	1555	1514			
Adj Flow Rate, veh/h	0	720	0	0	1037	0	1026	0	369			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	0	9	5	0	11	2	6	0	3			
Cap, veh/h	0	1867		0	1636		996	0	455			
Arrive On Green	0.00	1.00	0.00	0.00	0.56	0.00	0.35	0.00	0.35			
Sat Flow, veh/h	0	3452	1547	0	3025	1419	2805	0	1283			
Grp Volume(v), veh/h	0	720	0	0	1037	0	1026	0	369			
Grp Sat Flow(s),veh/h/ln	0	1682	1547	0	1473	1419	1403	0	1283			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	24.2	0.0	35.5	0.0	26.0			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	24.2	0.0	35.5	0.0	26.0			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1867		0	1636		996	0	455			
V/C Ratio(X)	0.00	0.39		0.00	0.63		1.03	0.00	0.81			
Avail Cap(c_a), veh/h	0	1867		0	1636		996	0	455			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.89	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	15.3	0.0	32.3	0.0	29.2			
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	1.9	0.0	36.5	0.0	10.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	0.3	0.0	0.0	12.6	0.0	23.8	0.0	14.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.5	0.0	0.0	17.2	0.0	68.8	0.0	39.5			
LnGrp LOS	A	A		A	B		F	A	D			
Approach Vol, veh/h		720	A		1037	A		1395				
Approach Delay, s/veh		0.5			17.2			61.0				
Approach LOS		A			B			E				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		60.0				60.0		40.0				
Change Period (Y+Rc), s		4.5				4.5		4.5				
Max Green Setting (Gmax), s		55.5				55.5		35.5				
Max Q Clear Time (g_c+I1), s		2.0				26.2		37.5				
Green Ext Time (p_c), s		8.9				18.4		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	32.8
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

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

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	1	1	0	3	0	508	9	58	728	0
Future Vol, veh/h	0	0	1	1	0	3	0	508	9	58	728	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	2	0
Mvmt Flow	0	0	1	1	0	3	0	535	9	61	766	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1429	1432	766	1429	1428	540	766	0	0	544	0	0
Stage 1	888	888	-	540	540	-	-	-	-	-	-	-
Stage 2	541	544	-	889	888	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	114	136	406	114	136	546	856	-	-	1035	-	-
Stage 1	341	365	-	530	524	-	-	-	-	-	-	-
Stage 2	529	522	-	341	365	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	108	128	406	109	128	546	856	-	-	1035	-	-
Mov Cap-2 Maneuver	108	128	-	109	128	-	-	-	-	-	-	-
Stage 1	341	343	-	530	524	-	-	-	-	-	-	-
Stage 2	526	522	-	320	343	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.9	18.4	0	0.6
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	856	-	-	406	273	1035	-	-
HCM Lane V/C Ratio	-	-	-	0.003	0.015	0.059	-	-
HCM Control Delay (s)	0	-	-	13.9	18.4	8.7	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0.2	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	4	513	9	58	672
Future Vol, veh/h	1	4	513	9	58	672
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	3	0	0	2
Mvmt Flow	1	4	540	9	61	707

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1374	545	0	0	549	0
Stage 1	545	-	-	-	-	-
Stage 2	829	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	162	542	-	-	1031	-
Stage 1	585	-	-	-	-	-
Stage 2	432	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	152	542	-	-	1031	-
Mov Cap-2 Maneuver	152	-	-	-	-	-
Stage 1	585	-	-	-	-	-
Stage 2	407	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.2	0	0.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	358	1031	-
HCM Lane V/C Ratio	-	-	0.015	0.059	-
HCM Control Delay (s)	-	-	15.2	8.7	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0	0.2	-

Intersection	
Int Delay, s/veh	1.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	11	511	34	230	443
Future Vol, veh/h	1	11	511	34	230	443
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	3	0	0	2
Mvmt Flow	1	12	538	36	242	466

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1506	556	0	0	574	0
Stage 1	556	-	-	-	-	-
Stage 2	950	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	135	534	-	-	1009	-
Stage 1	578	-	-	-	-	-
Stage 2	379	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	103	534	-	-	1009	-
Mov Cap-2 Maneuver	103	-	-	-	-	-
Stage 1	578	-	-	-	-	-
Stage 2	288	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.3	0	3.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	103	534	1009	-
HCM Lane V/C Ratio	-	-	0.01	0.022	0.24	-
HCM Control Delay (s)	-	-	40.3	11.9	9.7	-
HCM Lane LOS	-	-	E	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0.1	0.9	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	5	2	0	18	11	522	34	230	214	11
Future Vol, veh/h	5	0	5	2	0	18	11	522	34	230	214	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	2	0	2	0	3	2	2	2	0
Mvmt Flow	5	0	5	2	0	19	12	549	36	242	225	12

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1316	1324	231	1309	1312	567	237	0	0	585	0	0
Stage 1	715	715	-	591	591	-	-	-	-	-	-	-
Stage 2	601	609	-	718	721	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.12	6.5	6.22	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.12	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.12	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.518	4	3.318	2.2	-	-	2.218	-	-
Pot Cap-1 Maneuver	136	157	813	136	160	523	1342	-	-	990	-	-
Stage 1	425	438	-	493	498	-	-	-	-	-	-	-
Stage 2	491	488	-	420	435	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	106	118	813	109	120	523	1342	-	-	990	-	-
Mov Cap-2 Maneuver	106	118	-	109	120	-	-	-	-	-	-	-
Stage 1	421	331	-	489	494	-	-	-	-	-	-	-
Stage 2	469	484	-	315	329	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	25.3	14.8	0.1	5
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1342	-	-	188	109	523	990	-	-
HCM Lane V/C Ratio	0.009	-	-	0.056	0.019	0.036	0.245	-	-
HCM Control Delay (s)	7.7	-	-	25.3	38.7	12.1	9.8	-	-
HCM Lane LOS	A	-	-	D	E	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0.1	1	-	-

Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	23	108	474	25	64	184
Future Vol, veh/h	23	108	474	25	64	184
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	3	-	-	-3
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	10	7
Mvmt Flow	24	114	499	26	67	194

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	840	512	0	0	525	0
Stage 1	512	-	-	-	-	-
Stage 2	328	-	-	-	-	-
Critical Hdwy	7	6.5	-	-	4.2	-
Critical Hdwy Stg 1	6	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.29	-
Pot Cap-1 Maneuver	294	542	-	-	1002	-
Stage 1	556	-	-	-	-	-
Stage 2	695	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	272	542	-	-	1002	-
Mov Cap-2 Maneuver	272	-	-	-	-	-
Stage 1	556	-	-	-	-	-
Stage 2	643	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.1	0	2.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	462	1002	-
HCM Lane V/C Ratio	-	-	0.298	0.067	-
HCM Control Delay (s)	-	-	16.1	8.9	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0.2	-

HCS7 Roundabouts Report

General Information

Analyst	ZHB
Agency or Co.	Kittelson
Date Performed	4/29/2021
Analysis Year	2040
Time Analyzed	AM Total - System Peak
Project Description	Project Basie

Site Information

Intersection	OR 219/Butteville Rd
E/W Street Name	OR 219
N/S Street Name	Butteville (Realigned)
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.95
Jurisdiction	Woodburn, OR

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	1	0	1	1	0	0	1	0	0	0	0	0	0
Lane Assignment	T		R		L		LT				L					
Volume (V), veh/h	0		345	169	0	473	268		0	123		304				
Percent Heavy Vehicles, %	0		12	9	0	8	5		0	3		4				
Flow Rate (v_{PCE}), pc/h	0		407	194	0	538	296		0	133		333				
Right-Turn Bypass	None				None				Non-Yielding				None			
Conflicting Lanes	2				1				1							
Pedestrians Crossing, p/h	0				0				0							

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)	4.6453	4.3276		4.5436	4.5436			4.9763				
Follow-Up Headway (s)	2.6667	2.5352		2.5352	2.5352			2.6087				

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	407.00	194.00		442.02	391.98			133.00	333.00			
Entry Volume veh/h	366.62	174.75		413.43	366.62			129.13	320.19			
Circulating Flow (v_c), pc/h	538			133			407			967		
Exiting Flow (v_{ex}), pc/h	407			429			0			732		
Capacity (c_{pce}), pc/h	822.95	898.85		1258.14	1258.14			911.15				
Capacity (c), veh/h	741.30	809.68		1176.75	1176.75			884.61				
v/c Ratio (x)	0.49	0.22		0.35	0.31			0.15				

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	12.0	6.7		6.5	6.0			5.5				
Lane LOS	B	A		A	A			A	A			
95% Queue, veh	2.8	0.8		1.6	1.3			0.5				
Approach Delay, s/veh	10.3			6.2			1.6					
Approach LOS	B			A			A					
Intersection Delay, s/veh | LOS	6.3						A					

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Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	631	1	1	697	27	0	0	1	44	1	44
Future Vol, veh/h	17	631	1	1	697	27	0	0	1	44	1	44
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	240	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	6	0	0	10	0	0	0	0	5	0	5
Mvmt Flow	18	664	1	1	734	28	0	0	1	46	1	46

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	762	0	0	665	0	0	1071	1465	333	1118	1451	381
Stage 1	-	-	-	-	-	-	701	701	-	750	750	-
Stage 2	-	-	-	-	-	-	370	764	-	368	701	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.6	6.5	7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.6	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.6	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.55	4	3.35
Pot Cap-1 Maneuver	859	-	-	934	-	-	178	129	669	158	132	608
Stage 1	-	-	-	-	-	-	400	444	-	363	422	-
Stage 2	-	-	-	-	-	-	628	416	-	616	444	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	859	-	-	934	-	-	161	126	669	155	129	608
Mov Cap-2 Maneuver	-	-	-	-	-	-	161	126	-	155	129	-
Stage 1	-	-	-	-	-	-	392	435	-	355	422	-
Stage 2	-	-	-	-	-	-	578	416	-	602	435	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	10.4	28.5
HCM LOS			B	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	669	859	-	-	934	-	-	245
HCM Lane V/C Ratio	0.002	0.021	-	-	0.001	-	-	0.382
HCM Control Delay (s)	10.4	9.3	-	-	8.9	-	-	28.5
HCM Lane LOS	B	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	1.7

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	36	628	12	17	92	685	210	2	4	43	380	6
Future Volume (vph)	36	628	12	17	92	685	210	2	4	43	380	6
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%				0%			0%			1%
Total Lost time (s)	4.0	4.5	4.5		4.0	4.5	4.5	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95	1.00	1.00	1.00		0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.86		1.00	0.97
Flt Protected	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (prot)	1662	3107	1488		1222	3167	1365	1662	996		1541	1491
Flt Permitted	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (perm)	1662	3107	1488		1222	3167	1365	1662	996		1541	1491
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	38	661	13	18	97	721	221	2	4	45	400	6
RTOR Reduction (vph)	0	0	8	0	0	0	62	0	42	0	0	5
Lane Group Flow (vph)	38	661	5	0	115	721	159	2	7	0	224	217
Confl. Peds. (#/hr)											1	
Heavy Vehicles (%)	0%	7%	0%	36%	36%	5%	9%	0%	0%	56%	2%	50%
Turn Type	Prot	NA	pt+ov	Prot	Prot	NA	pt+ov	Split	NA		Split	NA
Protected Phases	5	2	2 8	1	1	6	6 4	8	8		4	4
Permitted Phases												
Actuated Green, G (s)	7.3	29.2	34.7		14.8	36.7	56.3	5.5	5.5		19.6	19.6
Effective Green, g (s)	7.3	29.2	34.7		14.8	36.7	56.3	5.5	5.5		19.6	19.6
Actuated g/C Ratio	0.09	0.34	0.41		0.17	0.43	0.66	0.06	0.06		0.23	0.23
Clearance Time (s)	4.0	4.5			4.0	4.5		4.0	4.0		4.0	4.0
Vehicle Extension (s)	2.5	4.2			2.5	4.2		2.5	2.5		2.5	2.5
Lane Grp Cap (vph)	141	1059	603		211	1357	897	106	63		352	341
v/s Ratio Prot	0.02	c0.21	0.00		0.09	c0.23	0.12	0.00	c0.01		c0.15	0.15
v/s Ratio Perm												
v/c Ratio	0.27	0.62	0.01		0.55	0.53	0.18	0.02	0.11		0.64	0.64
Uniform Delay, d1	36.7	23.6	15.2		32.3	18.1	5.7	37.5	37.7		29.8	29.8
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.8	1.4	0.0		2.3	0.6	0.1	0.1	0.6		3.3	3.4
Delay (s)	37.4	25.0	15.2		34.6	18.6	5.8	37.6	38.3		33.1	33.1
Level of Service	D	C	B		C	B	A	D	D		C	C
Approach Delay (s)		25.5				17.7			38.3			33.1
Approach LOS		C				B			D			C

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	85.6	Sum of lost time (s)	16.5
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	38
Future Volume (vph)	38
Ideal Flow (vphpl)	1750
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	40
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Heavy Vehicles (%)	5%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	36	628	12	17	92	685	210	2	4	43	380	6
Future Volume (veh/h)	36	628	12	17	92	685	210	2	4	43	380	6
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No				No			No			No
Adj Sat Flow, veh/h/ln	1750	1654	1750		1259	1682	1627	1750	1750	1750	1717	1062
Adj Flow Rate, veh/h	38	661	13		97	721	158	2	4	45	442	0
Peak Hour Factor	0.95	0.95	0.95		0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	7	0		36	5	9	0	0	0	2	50
Cap, veh/h	68	1117	615		110	1267	807	99	7	82	617	200
Arrive On Green	0.04	0.36	0.36		0.09	0.40	0.40	0.06	0.06	0.06	0.19	0.00
Sat Flow, veh/h	1667	3143	1483		1199	3195	1379	1667	123	1379	3271	1062
Grp Volume(v), veh/h	38	661	13		97	721	158	2	0	49	442	0
Grp Sat Flow(s),veh/h/ln	1667	1572	1483		1199	1598	1379	1667	0	1502	1636	1062
Q Serve(g_s), s	1.2	9.3	0.3		4.3	9.5	2.9	0.1	0.0	1.7	6.9	0.0
Cycle Q Clear(g_c), s	1.2	9.3	0.3		4.3	9.5	2.9	0.1	0.0	1.7	6.9	0.0
Prop In Lane	1.00		1.00		1.00		1.00	1.00		0.92	1.00	
Lane Grp Cap(c), veh/h	68	1117	615		110	1267	807	99	0	89	617	200
V/C Ratio(X)	0.55	0.59	0.02		0.88	0.57	0.20	0.02	0.00	0.55	0.72	0.00
Avail Cap(c_a), veh/h	617	2616	1322		443	2659	1408	925	0	833	2722	884
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	25.4	14.2	9.3		24.3	12.7	5.3	23.9	0.0	24.7	20.6	0.0
Incr Delay (d2), s/veh	5.1	0.8	0.0		15.3	0.6	0.2	0.1	0.0	3.9	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.0	5.3	0.2		2.9	5.4	2.1	0.0	0.0	1.2	4.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.6	15.0	9.4		39.6	13.3	5.4	24.0	0.0	28.6	21.8	0.0
LnGrp LOS	C	B	A		D	B	A	C	A	C	C	A
Approach Vol, veh/h		712				976			51			442
Approach Delay, s/veh		15.7				14.7			28.4			21.8
Approach LOS		B				B			C			C

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.0	23.7		14.2	6.7	25.9		7.2
Change Period (Y+Rc), s	4.0	4.5		4.0	4.5	* 4.5		4.0
Max Green Setting (Gmax), s	20.0	45.0		45.0	20.0	* 45		30.0
Max Q Clear Time (g_c+I1), s	6.3	11.3		8.9	3.2	11.5		3.7
Green Ext Time (p_c), s	0.1	7.9		1.2	0.0	9.9		0.2

Intersection Summary	
HCM 6th Ctrl Delay	16.8
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	38
Future Volume (veh/h)	38
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1062
Adj Flow Rate, veh/h	0
Peak Hour Factor	0.95
Percent Heavy Veh, %	50
Cap, veh/h	0
Arrive On Green	0.00
Sat Flow, veh/h	0
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.00
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(I)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(95%),veh/ln	0.0
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	A
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer - Assigned Phs
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	672	396	0	779	705	0	0	0	450	0	319
Future Volume (vph)	0	672	396	0	779	705	0	0	0	450	0	319
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		3%			-4%			0%			5%	
Total Lost time (s)		4.5	4.0		4.5	4.0				4.5		2.5
Lane Util. Factor		0.95	1.00		0.95	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3090	1308		3055	1292				2716		1261
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3090	1308		3055	1292				2716		1261
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	707	417	0	820	742	0	0	0	474	0	336
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	30
Lane Group Flow (vph)	0	707	417	0	820	742	0	0	0	474	0	306
Confl. Peds. (#/hr)						1						1
Heavy Vehicles (%)	0%	6%	12%	0%	11%	15%	0%	0%	0%	10%	0%	15%
Parking (#/hr)										0		
Turn Type		NA	Free		NA	Free				Prot		custom
Protected Phases		2			6					4		4 5
Permitted Phases			Free			Free						
Actuated Green, G (s)		64.6	100.0		54.9	100.0				26.4		36.6
Effective Green, g (s)		64.6	100.0		54.9	100.0				26.4		38.6
Actuated g/C Ratio		0.65	1.00		0.55	1.00				0.26		0.39
Clearance Time (s)		4.5			4.5					4.5		
Vehicle Extension (s)		6.0			4.0					2.5		
Lane Grp Cap (vph)		1996	1308		1677	1292				717		486
v/s Ratio Prot		0.23			0.27					0.17		c0.24
v/s Ratio Perm			0.32			c0.57						
v/c Ratio		0.35	0.32		0.49	0.57				0.66		0.63
Uniform Delay, d1		8.1	0.0		13.9	0.0				32.8		24.9
Progression Factor		1.00	1.00		0.90	1.00				1.00		1.00
Incremental Delay, d2		0.5	0.6		0.7	1.3				2.1		2.2
Delay (s)		8.6	0.6		13.3	1.3				34.9		27.1
Level of Service		A	A		B	A				C		C
Approach Delay (s)		5.7			7.6			0.0			31.7	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	12.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	672	396	0	779	705	0	0	0	450	0	319
Future Volume (veh/h)	0	672	396	0	779	705	0	0	0	450	0	319
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				0.95	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1619	1537	0	1743	1688				1478	0	1410
Adj Flow Rate, veh/h	0	707	0	0	820	0				474	0	231
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	6	12	0	11	15				10	0	15
Cap, veh/h	0	2122		0	2283					572	0	287
Arrive On Green	0.00	0.69	0.00	0.00	1.00	0.00				0.22	0.00	0.24
Sat Flow, veh/h	0	3158	1303	0	3398	1430				2594	0	1195
Grp Volume(v), veh/h	0	707	0	0	820	0				474	0	231
Grp Sat Flow(s),veh/h/ln	0	1538	1303	0	1656	1430				1297	0	1195
Q Serve(g_s), s	0.0	9.3	0.0	0.0	0.0	0.0				17.4	0.0	18.2
Cycle Q Clear(g_c), s	0.0	9.3	0.0	0.0	0.0	0.0				17.4	0.0	18.2
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2122		0	2283					572	0	287
V/C Ratio(X)	0.00	0.33		0.00	0.36					0.83	0.00	0.80
Avail Cap(c_a), veh/h	0	2122		0	2283					921	0	448
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.71	0.00	0.00	0.61	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	6.3	0.0	0.0	0.0	0.0				37.2	0.0	35.8
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.3	0.0				2.7	0.0	4.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	4.9	0.0	0.0	0.2	0.0				9.6	0.0	17.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	6.6	0.0	0.0	0.3	0.0				39.9	0.0	40.3
LnGrp LOS	A	A		A	A					D	A	D
Approach Vol, veh/h		707	A		820	A					705	
Approach Delay, s/veh		6.6			0.3						40.0	
Approach LOS		A			A						D	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	73.5	26.5	73.5
Change Period (Y+Rc), s	4.5	4.5	4.5
Max Green Setting (Gmax), s	55.5	35.5	35.5
Max Q Clear Time (g_c+I1), s	11.3	20.2	2.0
Green Ext Time (p_c), s	14.7	1.8	9.6

Intersection Summary	
HCM 6th Ctrl Delay	14.8
HCM 6th LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	757	365	0	963	756	521	0	733	0	0	0
Future Volume (vph)	0	757	365	0	963	756	521	0	733	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-4%			3%			6%			0%	
Total Lost time (s)		4.5	4.0		4.5	4.0	4.5	4.5	4.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.88	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.99	1.00			
Satd. Flow (prot)		3111	1401		2873	1407	1405	1292	1331			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.99	1.00			
Satd. Flow (perm)		3111	1401		2873	1407	1405	1292	1331			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	797	384	0	1014	796	548	0	772	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	107	107	0	0	0
Lane Group Flow (vph)	0	797	384	0	1014	796	460	328	318	0	0	0
Confl. Peds. (#/hr)			2			1						
Heavy Vehicles (%)	0%	9%	6%	0%	14%	2%	9%	0%	3%	0%	0%	0%
Turn Type		NA	Free		NA	Free	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases			Free			Free			8			
Actuated Green, G (s)		56.4	100.0		56.4	100.0	34.6	34.6	34.6			
Effective Green, g (s)		56.4	100.0		56.4	100.0	34.6	34.6	34.6			
Actuated g/C Ratio		0.56	1.00		0.56	1.00	0.35	0.35	0.35			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		4.0			6.0		2.5	2.5	2.5			
Lane Grp Cap (vph)		1754	1401		1620	1407	486	447	460			
v/s Ratio Prot		0.26			c0.35		c0.33	0.25				
v/s Ratio Perm			0.27			0.57			0.24			
v/c Ratio		0.45	0.27		0.63	0.57	0.95	0.73	0.69			
Uniform Delay, d1		12.8	0.0		14.7	0.0	31.8	28.7	28.1			
Progression Factor		1.61	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.8	0.5		1.8	1.7	27.6	5.8	4.1			
Delay (s)		21.4	0.5		16.5	1.7	59.4	34.5	32.2			
Level of Service		C	A		B	A	E	C	C			
Approach Delay (s)		14.6			10.0			42.4			0.0	
Approach LOS		B			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	21.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	757	365	0	963	756	521	0	733	0	0	0
Future Volume (veh/h)	0	757	365	0	963	756	521	0	733	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1770	1812	0	1510	1674	1432	1555	1514			
Adj Flow Rate, veh/h	0	797	0	0	1014	0	725	0	372			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	0	9	6	0	14	2	9	0	3			
Cap, veh/h	0	1993		0	1700		866	0	407			
Arrive On Green	0.00	1.00	0.00	0.00	0.59	0.00	0.32	0.00	0.32			
Sat Flow, veh/h	0	3452	1536	0	2945	1419	2727	0	1283			
Grp Volume(v), veh/h	0	797	0	0	1014	0	725	0	372			
Grp Sat Flow(s),veh/h/ln	0	1682	1536	0	1435	1419	1364	0	1283			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	22.3	0.0	24.7	0.0	27.9			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	22.3	0.0	24.7	0.0	27.9			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1993		0	1700		866	0	407			
V/C Ratio(X)	0.00	0.40		0.00	0.60		0.84	0.00	0.91			
Avail Cap(c_a), veh/h	0	1993		0	1700		968	0	455			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.87	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	12.8	0.0	31.7	0.0	32.8			
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	1.6	0.0	5.7	0.0	20.9			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	0.3	0.0	0.0	11.3	0.0	13.4	0.0	16.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.5	0.0	0.0	14.4	0.0	37.4	0.0	53.7			
LnGrp LOS	A	A		A	B		D	A	D			
Approach Vol, veh/h		797	A		1014	A		1097				
Approach Delay, s/veh		0.5			14.4			42.9				
Approach LOS		A			B			D				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		63.7				63.7		36.3				
Change Period (Y+Rc), s		4.5				4.5		4.5				
Max Green Setting (Gmax), s		55.5				55.5		35.5				
Max Q Clear Time (g_c+I1), s		2.0				24.3		29.9				
Green Ext Time (p_c), s		10.2				18.8		1.9				

Intersection Summary		
HCM 6th Ctrl Delay		21.4
HCM 6th LOS		C

Notes

User approved volume balancing among the lanes for turning movement.

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

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	1	1	0	3	0	424	6	37	605	0
Future Vol, veh/h	0	0	1	1	0	3	0	424	6	37	605	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	0	2	0
Mvmt Flow	0	0	1	1	0	3	0	446	6	39	637	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1166	1167	637	1165	1164	449	637	0	0	452	0	0
Stage 1	715	715	-	449	449	-	-	-	-	-	-	-
Stage 2	451	452	-	716	715	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	172	195	481	173	196	614	956	-	-	1119	-	-
Stage 1	425	438	-	593	576	-	-	-	-	-	-	-
Stage 2	592	574	-	424	438	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	166	188	481	168	189	614	956	-	-	1119	-	-
Mov Cap-2 Maneuver	166	188	-	168	189	-	-	-	-	-	-	-
Stage 1	425	423	-	593	576	-	-	-	-	-	-	-
Stage 2	589	574	-	408	423	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.5	14.9	0	0.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	956	-	-	481	369	1119	-	-
HCM Lane V/C Ratio	-	-	-	0.002	0.011	0.035	-	-
HCM Control Delay (s)	0	-	-	12.5	14.9	8.3	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0.1	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	1	427	6	77	529
Future Vol, veh/h	1	1	427	6	77	529
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	3	0	0	2
Mvmt Flow	1	1	449	6	81	557

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1171	452	0	0	455	0
Stage 1	452	-	-	-	-	-
Stage 2	719	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	215	612	-	-	1116	-
Stage 1	645	-	-	-	-	-
Stage 2	486	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	199	612	-	-	1116	-
Mov Cap-2 Maneuver	199	-	-	-	-	-
Stage 1	645	-	-	-	-	-
Stage 2	451	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.1	0	1.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	300	1116	-
HCM Lane V/C Ratio	-	-	0.007	0.073	-
HCM Control Delay (s)	-	-	17.1	8.5	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0	0.2	-

Intersection	
Int Delay, s/veh	1.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	15	418	23	153	377
Future Vol, veh/h	1	15	418	23	153	377
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	3	0	0	2
Mvmt Flow	1	16	440	24	161	397

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1171	452	0	0	464	0
Stage 1	452	-	-	-	-	-
Stage 2	719	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	215	612	-	-	1108	-
Stage 1	645	-	-	-	-	-
Stage 2	486	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	184	612	-	-	1108	-
Mov Cap-2 Maneuver	184	-	-	-	-	-
Stage 1	645	-	-	-	-	-
Stage 2	416	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	2.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	184	612	1108	-
HCM Lane V/C Ratio	-	-	0.006	0.026	0.145	-
HCM Control Delay (s)	-	-	24.7	11	8.8	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0.1	0.5	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	0	5	1	0	14	5	417	23	115	216	47
Future Vol, veh/h	10	0	5	1	0	14	5	417	23	115	216	47
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	2	0	2	0	3	2	2	2	0
Mvmt Flow	11	0	5	1	0	15	5	439	24	121	227	49

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	963	967	252	957	979	451	276	0	0	463	0	0
Stage 1	494	494	-	461	461	-	-	-	-	-	-	-
Stage 2	469	473	-	496	518	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.12	6.5	6.22	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.12	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.12	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.518	4	3.318	2.2	-	-	2.218	-	-
Pot Cap-1 Maneuver	237	256	792	237	252	608	1299	-	-	1098	-	-
Stage 1	561	550	-	581	569	-	-	-	-	-	-	-
Stage 2	579	562	-	556	536	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	211	227	792	215	223	608	1299	-	-	1098	-	-
Mov Cap-2 Maneuver	211	227	-	215	223	-	-	-	-	-	-	-
Stage 1	559	490	-	579	567	-	-	-	-	-	-	-
Stage 2	563	560	-	491	477	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.7	11.8	0.1	2.6
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1299	-	-	279	215	608	1098	-	-
HCM Lane V/C Ratio	0.004	-	-	0.057	0.005	0.024	0.11	-	-
HCM Control Delay (s)	7.8	-	-	18.7	21.8	11.1	8.7	-	-
HCM Lane LOS	A	-	-	C	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0.1	0.4	-	-

Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	26	70	390	39	46	194
Future Vol, veh/h	26	70	390	39	46	194
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	3	-	-	-3
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	6	0	6	0	4	3
Mvmt Flow	27	74	411	41	48	204

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	732	432	0	0	452	0
Stage 1	432	-	-	-	-	-
Stage 2	300	-	-	-	-	-
Critical Hdwy	7.06	6.5	-	-	4.14	-
Critical Hdwy Stg 1	6.06	-	-	-	-	-
Critical Hdwy Stg 2	6.06	-	-	-	-	-
Follow-up Hdwy	3.554	3.3	-	-	2.236	-
Pot Cap-1 Maneuver	339	606	-	-	1098	-
Stage 1	601	-	-	-	-	-
Stage 2	706	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	322	606	-	-	1098	-
Mov Cap-2 Maneuver	322	-	-	-	-	-
Stage 1	601	-	-	-	-	-
Stage 2	671	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.3	0	1.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	489	1098	-
HCM Lane V/C Ratio	-	-	0.207	0.044	-
HCM Control Delay (s)	-	-	14.3	8.4	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-

HCS7 Roundabouts Report

General Information

Analyst	ZHB
Agency or Co.	Kittelson
Date Performed	4/29/2021
Analysis Year	2040
Time Analyzed	PM Total - Generator Peak
Project Description	Project Basie

Site Information

Intersection	OR 219/Butteville Rd
E/W Street Name	OR 219
N/S Street Name	Butteville (Realigned)
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.95
Jurisdiction	Woodburn, OR

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	1	0	1	1	0	0	1	0	0	0	0	0	0
Lane Assignment	T		R		L		LT				L					
Volume (V), veh/h	0		311	154	0	756	199		0	154		646				
Percent Heavy Vehicles, %	0		3	1	0	1	5		0	9		3				
Flow Rate (v_{PCE}), pc/h	0		337	164	0	804	220		0	177		700				
Right-Turn Bypass	None				None				Non-Yielding				None			
Conflicting Lanes	2				1				1							
Pedestrians Crossing, p/h	0				0				0							

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)	4.6453	4.3276		4.5436	4.5436			4.9763				
Follow-Up Headway (s)	2.6667	2.5352		2.5352	2.5352			2.6087				

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	337.00	164.00		542.72	481.28			177.00	700.00			
Entry Volume veh/h	329.31	160.26		532.95	472.61			162.39	679.61			
Circulating Flow (v_c), pc/h	804			177			337			1201		
Exiting Flow (v_{ex}), pc/h	337			397			0			968		
Capacity (c_{pce}), pc/h	644.31	716.96		1208.76	1208.76			978.58				
Capacity (c), veh/h	629.60	700.59		1186.99	1186.99			897.78				
v/c Ratio (x)	0.52	0.23		0.45	0.40			0.18				

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	14.4	7.8		7.7	7.0			5.8				
Lane LOS	B	A		A	A			A	A			
95% Queue, veh	3.0	0.9		2.4	1.9			0.7				
Approach Delay, s/veh	12.3			7.4			1.1					
Approach LOS	B			A			A					
Intersection Delay, s/veh | LOS	6.2						A					

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Intersection	
Int Delay, s/veh	8.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	907	0	1	930	76	0	3	3	59	0	25
Future Vol, veh/h	50	907	0	1	930	76	0	3	3	59	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	240	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	2	0	0	3	2	0	0	0	0	0	0
Mvmt Flow	53	955	0	1	979	80	0	3	3	62	0	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1059	0	0	955	0	0	1555	2122	478	1606	2082	532
Stage 1	-	-	-	-	-	-	1061	1061	-	1021	1021	-
Stage 2	-	-	-	-	-	-	494	1061	-	585	1061	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	665	-	-	728	-	-	78	51	539	72	54	497
Stage 1	-	-	-	-	-	-	243	303	-	257	316	-
Stage 2	-	-	-	-	-	-	531	303	-	469	303	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	665	-	-	728	-	-	69	47	539	64	50	496
Mov Cap-2 Maneuver	-	-	-	-	-	-	69	47	-	64	50	-
Stage 1	-	-	-	-	-	-	224	279	-	236	316	-
Stage 2	-	-	-	-	-	-	501	303	-	424	279	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	50.2	192.5
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	86	665	-	-	728	-	-	86
HCM Lane V/C Ratio	0.073	0.079	-	-	0.001	-	-	1.028
HCM Control Delay (s)	50.2	10.9	-	-	10	-	-	192.5
HCM Lane LOS	F	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	0.2	0.3	-	-	0	-	-	5.9

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	82	875	12	22	28	920	237	11	4	51	799	1
Future Volume (vph)	82	875	12	22	28	920	237	11	4	51	799	1
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%				0%			0%			1%
Total Lost time (s)	4.0	4.5	4.5		4.0	4.5	4.5	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95	1.00	1.00	1.00		0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.86		1.00	0.97
Flt Protected	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (prot)	1662	3228	1488		1108	3197	1458	1662	1250		1541	1519
Flt Permitted	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (perm)	1662	3228	1488		1108	3197	1458	1662	1250		1541	1519
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	86	921	13	23	29	968	249	12	4	54	841	1
RTOR Reduction (vph)	0	0	7	0	0	0	42	0	51	0	0	4
Lane Group Flow (vph)	86	921	6	0	52	968	207	12	7	0	463	455
Confl. Peds. (#/hr)			1		1			1				
Heavy Vehicles (%)	0%	3%	0%	50%	50%	4%	2%	0%	0%	22%	2%	0%
Turn Type	Prot	NA	pt+ov	Prot	Prot	NA	pt+ov	Split	NA		Split	NA
Protected Phases	5	2	2 8	1	1	6	6 4	8	8		4	4
Permitted Phases												
Actuated Green, G (s)	12.1	48.0	53.8		9.3	45.2	90.4	5.8	5.8		45.2	45.2
Effective Green, g (s)	12.1	48.0	53.8		9.3	45.2	90.4	5.8	5.8		45.2	45.2
Actuated g/C Ratio	0.10	0.38	0.43		0.07	0.36	0.72	0.05	0.05		0.36	0.36
Clearance Time (s)	4.0	4.5			4.0	4.5		4.0	4.0		4.0	4.0
Vehicle Extension (s)	2.5	4.2			2.5	4.2		2.5	2.5		2.5	2.5
Lane Grp Cap (vph)	161	1241	641		82	1157	1056	77	58		558	550
v/s Ratio Prot	0.05	c0.29	0.00		0.05	c0.30	0.14	c0.01	0.01		c0.30	0.30
v/s Ratio Perm												
v/c Ratio	0.53	0.74	0.01		0.63	0.84	0.20	0.16	0.11		0.83	0.83
Uniform Delay, d1	53.7	33.1	20.3		56.1	36.4	5.5	57.1	57.0		36.3	36.2
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.6	2.7	0.0		13.2	5.7	0.1	0.7	0.6		9.7	9.7
Delay (s)	56.3	35.7	20.3		69.3	42.2	5.7	57.8	57.7		46.0	45.9
Level of Service	E	D	C		E	D	A	E	E		D	D
Approach Delay (s)		37.3				36.1			57.7			45.9
Approach LOS		D				D			E			D

Intersection Summary			
HCM 2000 Control Delay	39.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	124.8	Sum of lost time (s)	16.5
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	76
Future Volume (vph)	76
Ideal Flow (vphpl)	1750
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	80
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	1
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	82	875	12	22	28	920	237	11	4	51	799	1
Future Volume (veh/h)	82	875	12	22	28	920	237	11	4	51	799	1
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No				No			No			No
Adj Sat Flow, veh/h/ln	1750	1709	1750		1068	1695	1723	1750	1750	1750	1717	1745
Adj Flow Rate, veh/h	86	921	13		29	968	186	12	4	54	916	0
Peak Hour Factor	0.95	0.95	0.95		0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	3	0		50	4	2	0	0	0	2	0
Cap, veh/h	109	1395	720		28	1247	1024	94	6	78	1030	549
Arrive On Green	0.07	0.43	0.43		0.03	0.39	0.39	0.06	0.06	0.06	0.31	0.00
Sat Flow, veh/h	1667	3247	1481		1017	3221	1458	1667	103	1389	3271	1745
Grp Volume(v), veh/h	86	921	13		29	968	186	12	0	58	916	0
Grp Sat Flow(s),veh/h/ln	1667	1624	1481		1017	1611	1458	1667	0	1492	1636	1745
Q Serve(g_s), s	4.9	21.8	0.4		2.7	25.4	4.2	0.7	0.0	3.7	25.7	0.0
Cycle Q Clear(g_c), s	4.9	21.8	0.4		2.7	25.4	4.2	0.7	0.0	3.7	25.7	0.0
Prop In Lane	1.00		1.00		1.00		1.00	1.00		0.93	1.00	
Lane Grp Cap(c), veh/h	109	1395	720		28	1247	1024	94	0	84	1030	549
V/C Ratio(X)	0.79	0.66	0.02		1.02	0.78	0.18	0.13	0.00	0.69	0.89	0.00
Avail Cap(c_a), veh/h	346	1517	775		211	1505	1141	519	0	465	1528	815
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	44.4	21.9	12.8		46.8	25.9	4.9	43.2	0.0	44.6	31.4	0.0
Incr Delay (d2), s/veh	9.0	1.2	0.0		72.3	2.6	0.1	0.5	0.0	7.3	4.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.1	12.9	0.3		2.3	14.9	5.3	0.5	0.0	2.7	15.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.4	23.1	12.9		119.2	28.4	5.0	43.7	0.0	52.0	35.6	0.0
LnGrp LOS	D	C	B		F	C	A	D	A	D	D	A
Approach Vol, veh/h		1020				1183			70			916
Approach Delay, s/veh		25.5				27.0			50.5			35.6
Approach LOS		C				C			D			D

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.7	45.9		34.3	10.8	41.8		9.4
Change Period (Y+Rc), s	4.0	4.5		4.0	4.5	* 4.5		4.0
Max Green Setting (Gmax), s	20.0	45.0		45.0	20.0	* 45		30.0
Max Q Clear Time (g_c+I1), s	4.7	23.8		27.7	6.9	27.4		5.7
Green Ext Time (p_c), s	0.0	9.6		2.7	0.1	9.9		0.2

Intersection Summary	
HCM 6th Ctrl Delay	29.5
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	76
Future Volume (veh/h)	76
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1745
Adj Flow Rate, veh/h	0
Peak Hour Factor	0.95
Percent Heavy Veh, %	0
Cap, veh/h	0
Arrive On Green	0.00
Sat Flow, veh/h	0
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.00
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(I)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(95%),veh/ln	0.0
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	A
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer - Assigned Phs
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1194	553	0	1250	632	0	0	0	760	0	479
Future Volume (vph)	0	1194	553	0	1250	632	0	0	0	760	0	479
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		3%			-4%			0%			5%	
Total Lost time (s)		4.5	4.0		4.5	4.0				4.5		2.5
Lane Util. Factor		0.95	1.00		0.95	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3180	1409		3325	1429				2929		1395
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3180	1409		3325	1429				2929		1395
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1257	582	0	1316	665	0	0	0	800	0	504
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	8
Lane Group Flow (vph)	0	1257	582	0	1316	665	0	0	0	800	0	496
Confl. Peds. (#/hr)						1						1
Heavy Vehicles (%)	0%	3%	4%	0%	2%	4%	0%	0%	0%	2%	0%	4%
Parking (#/hr)										0		
Turn Type		NA	Free		NA	Free				Prot		custom
Protected Phases		2			6					4		4 5
Permitted Phases			Free			Free						
Actuated Green, G (s)		58.3	100.0		46.1	100.0				32.7		45.4
Effective Green, g (s)		58.3	100.0		46.1	100.0				32.7		47.4
Actuated g/C Ratio		0.58	1.00		0.46	1.00				0.33		0.47
Clearance Time (s)		4.5			4.5					4.5		
Vehicle Extension (s)		6.0			4.0					2.5		
Lane Grp Cap (vph)		1853	1409		1532	1429				957		661
v/s Ratio Prot		0.40			c0.40					c0.27		c0.36
v/s Ratio Perm			0.41			0.47						
v/c Ratio		0.68	0.41		0.86	0.47				0.84		0.75
Uniform Delay, d1		14.4	0.0		24.0	0.0				31.2		21.5
Progression Factor		1.00	1.00		0.99	1.00				1.00		1.00
Incremental Delay, d2		2.0	0.9		4.2	0.7				6.3		4.4
Delay (s)		16.4	0.9		28.1	0.7				37.5		25.9
Level of Service		B	A		C	A				D		C
Approach Delay (s)		11.5			18.9			0.0			33.0	
Approach LOS		B			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	19.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1194	553	0	1250	632	0	0	0	760	0	479
Future Volume (veh/h)	0	1194	553	0	1250	632	0	0	0	760	0	479
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				0.95	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1660	1647	0	1867	1840				1587	0	1560
Adj Flow Rate, veh/h	0	1257	0	0	1316	0				800	0	399
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	3	4	0	2	4				2	0	4
Cap, veh/h	0	1851		0	2082					901	0	454
Arrive On Green	0.00	0.59	0.00	0.00	1.00	0.00				0.32	0.00	0.34
Sat Flow, veh/h	0	3237	1395	0	3641	1559				2786	0	1322
Grp Volume(v), veh/h	0	1257	0	0	1316	0				800	0	399
Grp Sat Flow(s),veh/h/ln	0	1577	1395	0	1774	1559				1393	0	1322
Q Serve(g_s), s	0.0	27.4	0.0	0.0	0.0	0.0				27.3	0.0	28.4
Cycle Q Clear(g_c), s	0.0	27.4	0.0	0.0	0.0	0.0				27.3	0.0	28.4
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1851		0	2082					901	0	454
V/C Ratio(X)	0.00	0.68		0.00	0.63					0.89	0.00	0.88
Avail Cap(c_a), veh/h	0	1851		0	2082					989	0	496
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.56	0.00	0.00	0.53	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	14.2	0.0	0.0	0.0	0.0				32.1	0.0	30.9
Incr Delay (d2), s/veh	0.0	1.1	0.0	0.0	0.8	0.0				9.1	0.0	15.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	13.0	0.0	0.0	0.4	0.0				15.3	0.0	27.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.3	0.0	0.0	0.8	0.0				41.3	0.0	46.1
LnGrp LOS	A	B		A	A					D	A	D
Approach Vol, veh/h		1257	A		1316	A					1199	
Approach Delay, s/veh		15.3			0.8						42.9	
Approach LOS		B			A						D	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		63.2		36.8		63.2
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		55.5		35.5		35.5
Max Q Clear Time (g_c+I1), s		29.4		30.4		2.0
Green Ext Time (p_c), s		19.8		1.9		17.5

Intersection Summary	
HCM 6th Ctrl Delay	19.0
HCM 6th LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1569	385	0	1394	351	488	0	545	0	0	0
Future Volume (vph)	0	1569	385	0	1394	351	488	0	545	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-4%			3%			6%			0%	
Total Lost time (s)		4.5	4.0		4.5	4.0	4.5	4.5	4.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	1.00		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.91	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.98	1.00			
Satd. Flow (prot)		3325	1431		3180	1393	1487	1325	1318			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.98	1.00			
Satd. Flow (perm)		3325	1431		3180	1393	1487	1325	1318			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1652	405	0	1467	369	514	0	574	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	13	13	0	0	0
Lane Group Flow (vph)	0	1652	405	0	1467	369	380	351	331	0	0	0
Confl. Peds. (#/hr)						2						
Heavy Vehicles (%)	0%	2%	6%	0%	3%	3%	3%	0%	4%	0%	0%	0%
Turn Type		NA	Free		NA	Free	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases			Free			Free			8			
Actuated Green, G (s)		60.2	100.0		60.2	100.0	30.8	30.8	30.8			
Effective Green, g (s)		60.2	100.0		60.2	100.0	30.8	30.8	30.8			
Actuated g/C Ratio		0.60	1.00		0.60	1.00	0.31	0.31	0.31			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		4.0			6.0		2.5	2.5	2.5			
Lane Grp Cap (vph)		2001	1431		1914	1393	457	408	405			
v/s Ratio Prot		c0.50			0.46		0.26	c0.26				
v/s Ratio Perm			0.28			0.26			0.25			
v/c Ratio		0.83	0.28		0.77	0.26	0.83	0.86	0.82			
Uniform Delay, d1		15.7	0.0		14.7	0.0	32.2	32.6	32.0			
Progression Factor		1.26	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		2.8	0.3		3.0	0.5	12.0	16.2	11.8			
Delay (s)		22.6	0.3		17.7	0.5	44.2	48.7	43.8			
Level of Service		C	A		B	A	D	D	D			
Approach Delay (s)		18.3			14.2			45.6			0.0	
Approach LOS		B			B			D			A	

Intersection Summary			
HCM 2000 Control Delay	22.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1569	385	0	1394	351	488	0	545	0	0	0
Future Volume (veh/h)	0	1569	385	0	1394	351	488	0	545	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1867	1812	0	1660	1660	1514	1555	1500			
Adj Flow Rate, veh/h	0	1652	0	0	1467	0	627	0	242			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	0	2	6	0	3	3	3	0	4			
Cap, veh/h	0	2341		0	2081		721	0	318			
Arrive On Green	0.00	1.00	0.00	0.00	0.66	0.00	0.25	0.00	0.25			
Sat Flow, veh/h	0	3641	1536	0	3237	1407	2883	0	1271			
Grp Volume(v), veh/h	0	1652	0	0	1467	0	627	0	242			
Grp Sat Flow(s),veh/h/ln	0	1774	1536	0	1577	1407	1442	0	1271			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	29.6	0.0	20.8	0.0	17.6			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	29.6	0.0	20.8	0.0	17.6			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2341		0	2081		721	0	318			
V/C Ratio(X)	0.00	0.71		0.00	0.70		0.87	0.00	0.76			
Avail Cap(c_a), veh/h	0	2341		0	2081		1024	0	451			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.59	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	10.8	0.0	35.9	0.0	34.7			
Incr Delay (d2), s/veh	0.0	1.1	0.0	0.0	2.0	0.0	5.3	0.0	3.8			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	0.6	0.0	0.0	14.7	0.0	12.3	0.0	9.6			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	1.1	0.0	0.0	12.8	0.0	41.2	0.0	38.6			
LnGrp LOS	A	A		A	B		D	A	D			
Approach Vol, veh/h		1652	A		1467	A		869				
Approach Delay, s/veh		1.1			12.8			40.5				
Approach LOS		A			B			D				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		70.5				70.5		29.5				
Change Period (Y+Rc), s		4.5				4.5		4.5				
Max Green Setting (Gmax), s		55.5				55.5		35.5				
Max Q Clear Time (g_c+I1), s		2.0				31.6		22.8				
Green Ext Time (p_c), s		30.9				20.4		2.2				

Intersection Summary	
HCM 6th Ctrl Delay	14.0
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

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

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	0	4	8	0	52	6	742	8	51	852	7
Future Vol, veh/h	6	0	4	8	0	52	6	742	8	51	852	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	3	0
Mvmt Flow	6	0	4	8	0	55	6	781	8	54	897	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1834	1810	901	1808	1809	785	904	0	0	789	0	0
Stage 1	1009	1009	-	797	797	-	-	-	-	-	-	-
Stage 2	825	801	-	1011	1012	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	59	80	340	62	80	396	761	-	-	840	-	-
Stage 1	292	320	-	383	401	-	-	-	-	-	-	-
Stage 2	370	400	-	291	319	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	48	74	340	58	74	396	761	-	-	840	-	-
Mov Cap-2 Maneuver	48	74	-	58	74	-	-	-	-	-	-	-
Stage 1	290	300	-	380	398	-	-	-	-	-	-	-
Stage 2	316	397	-	269	299	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	62.5	27.4	0.1	0.5
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	761	-	-	73	223	840	-	-
HCM Lane V/C Ratio	0.008	-	-	0.144	0.283	0.064	-	-
HCM Control Delay (s)	9.8	-	-	62.5	27.4	9.6	-	-
HCM Lane LOS	A	-	-	F	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.5	1.1	0.2	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	51	705	8	51	813
Future Vol, veh/h	8	51	705	8	51	813
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	0	3
Mvmt Flow	8	54	742	8	54	856

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1710	746	0	0	750	0
Stage 1	746	-	-	-	-	-
Stage 2	964	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	101	417	-	-	868	-
Stage 1	472	-	-	-	-	-
Stage 2	373	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	95	417	-	-	868	-
Mov Cap-2 Maneuver	95	-	-	-	-	-
Stage 1	472	-	-	-	-	-
Stage 2	350	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21	0	0.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	286	868	-
HCM Lane V/C Ratio	-	-	0.217	0.062	-
HCM Control Delay (s)	-	-	21	9.4	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.8	0.2	-

Intersection	
Int Delay, s/veh	4.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	206	507	29	203	618
Future Vol, veh/h	31	206	507	29	203	618
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	1	2	2	3
Mvmt Flow	33	217	534	31	214	651

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1629	550	0	0	565	0
Stage 1	550	-	-	-	-	-
Stage 2	1079	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	112	535	-	-	1007	-
Stage 1	578	-	-	-	-	-
Stage 2	326	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	88	535	-	-	1007	-
Mov Cap-2 Maneuver	88	-	-	-	-	-
Stage 1	578	-	-	-	-	-
Stage 2	257	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23	0	2.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	88	535	1007	-
HCM Lane V/C Ratio	-	-	0.371	0.405	0.212	-
HCM Control Delay (s)	-	-	68.3	16.2	9.5	-
HCM Lane LOS	-	-	F	C	A	-
HCM 95th %tile Q(veh)	-	-	1.5	1.9	0.8	-

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	5	31	0	206	5	325	30	203	441	5
Future Vol, veh/h	5	0	5	31	0	206	5	325	30	203	441	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	2	0	2	0	1	2	2	3	0
Mvmt Flow	5	0	5	33	0	217	5	342	32	214	464	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1372	1279	467	1265	1265	358	469	0	0	374	0	0
Stage 1	895	895	-	368	368	-	-	-	-	-	-	-
Stage 2	477	384	-	897	897	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.12	6.5	6.22	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.12	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.12	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.518	4	3.318	2.2	-	-	2.218	-	-
Pot Cap-1 Maneuver	124	167	600	146	171	686	1103	-	-	1184	-	-
Stage 1	338	362	-	652	625	-	-	-	-	-	-	-
Stage 2	573	615	-	334	361	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	73	136	600	124	139	686	1103	-	-	1184	-	-
Mov Cap-2 Maneuver	73	136	-	124	139	-	-	-	-	-	-	-
Stage 1	336	296	-	649	622	-	-	-	-	-	-	-
Stage 2	390	612	-	271	296	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	35.1	16.8	0.1	2.7
HCM LOS	E	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1103	-	-	130	124	686	1184	-	-
HCM Lane V/C Ratio	0.005	-	-	0.081	0.263	0.316	0.18	-	-
HCM Control Delay (s)	8.3	-	-	35.1	44.1	12.7	8.7	-	-
HCM Lane LOS	A	-	-	E	E	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	1	1.4	0.7	-	-

Intersection	
Int Delay, s/veh	4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	39	122	265	36	131	364
Future Vol, veh/h	39	122	265	36	131	364
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	3	-	-	-3
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	4	1	0	2	2
Mvmt Flow	41	128	279	38	138	383

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	957	298	0	0	317	0
Stage 1	298	-	-	-	-	-
Stage 2	659	-	-	-	-	-
Critical Hdwy	7.04	6.54	-	-	4.12	-
Critical Hdwy Stg 1	6.04	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	-	-	2.218	-
Pot Cap-1 Maneuver	242	719	-	-	1243	-
Stage 1	712	-	-	-	-	-
Stage 2	458	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	208	719	-	-	1243	-
Mov Cap-2 Maneuver	208	-	-	-	-	-
Stage 1	712	-	-	-	-	-
Stage 2	393	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.7	0	2.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	451	1243	-
HCM Lane V/C Ratio	-	-	0.376	0.111	-
HCM Control Delay (s)	-	-	17.7	8.3	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.7	0.4	-

HCS7 Roundabouts Report

General Information

Analyst	ZHB
Agency or Co.	Kittelson
Date Performed	4/29/2021
Analysis Year	2040
Time Analyzed	PM Total - System Peak
Project Description	Project Basie

Site Information

Intersection	OR 219/Butteville Rd
E/W Street Name	OR 219
N/S Street Name	Butteville (Realigned)
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.95
Jurisdiction	Woodburn, OR

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	1	0	1	1	0	0	1	0	0	0	0	0	0
Lane Assignment	T		R		L		LT				L					
Volume (V), veh/h	0		596	224	0	360	359		0	136		199				
Percent Heavy Vehicles, %	0		4	2	0	1	3		0	6		6				
Flow Rate (v_{PCE}), pc/h	0		652	241	0	383	389		0	152		222				
Right-Turn Bypass	None				None				Non-Yielding				None			
Conflicting Lanes	2				1				1							
Pedestrians Crossing, p/h	0				0				0							

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)	4.6453	4.3276		4.5436	4.5436			4.9763				
Follow-Up Headway (s)	2.6667	2.5352		2.5352	2.5352			2.6087				

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	652.00	241.00		409.16	362.84			152.00	222.00			
Entry Volume veh/h	630.24	232.96		401.15	355.73			143.40	209.43			
Circulating Flow (v_c), pc/h	383			152			652			924		
Exiting Flow (v_{ex}), pc/h	652			541			0			624		
Capacity (c_{pce}), pc/h	949.08	1025.43		1236.57	1236.57			709.67				
Capacity (c), veh/h	917.41	991.21		1212.35	1212.35			669.50				
v/c Ratio (x)	0.69	0.24		0.33	0.29			0.21				

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	15.5	5.9		6.1	5.7			7.9				
Lane LOS	C	A		A	A			A	A			
95% Queue, veh	5.7	0.9		1.5	1.2			0.8				
Approach Delay, s/veh	12.9			5.9			3.2					
Approach LOS	B			A			A					
Intersection Delay, s/veh | LOS	8.5						A					

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Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	76	719	0	6	679	71	0	0	3	36	0	40
Future Vol, veh/h	76	719	0	6	679	71	0	0	3	36	0	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	5	0	0	2	2	0	0	0	5	0	6
Mvmt Flow	80	757	0	6	715	75	0	0	3	38	0	42

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	790	0	0	757	0	0	1287	1719	379	1304	1682	395
Stage 1	-	-	-	-	-	-	917	917	-	765	765	-
Stage 2	-	-	-	-	-	-	370	802	-	539	917	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.6	6.5	7.02
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.6	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.6	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.55	4	3.36
Pot Cap-1 Maneuver	839	-	-	863	-	-	123	91	625	115	95	593
Stage 1	-	-	-	-	-	-	297	354	-	355	415	-
Stage 2	-	-	-	-	-	-	628	399	-	487	354	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	839	-	-	863	-	-	105	82	625	106	85	593
Mov Cap-2 Maneuver	-	-	-	-	-	-	105	82	-	106	85	-
Stage 1	-	-	-	-	-	-	269	320	-	321	412	-
Stage 2	-	-	-	-	-	-	579	396	-	438	320	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.1	10.8	37.9
HCM LOS			B	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	625	839	-	-	863	-	-	187
HCM Lane V/C Ratio	0.005	0.095	-	-	0.007	-	-	0.428
HCM Control Delay (s)	10.8	9.7	-	-	9.2	-	-	37.9
HCM Lane LOS	B	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	0	0.3	-	-	0	-	-	2

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	92	659	7	22	77	669	270	14	8	92	759	8
Future Volume (vph)	92	659	7	22	77	669	270	14	8	92	759	8
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		0%				0%			0%			1%
Total Lost time (s)	4.0	4.5	4.5		4.0	4.5	4.5	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95	1.00	1.00	1.00		0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	1.00	0.85	1.00	0.86		1.00	0.97
Flt Protected	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (prot)	1630	3167	1488		1269	3260	1488	1330	1283		1571	1542
Flt Permitted	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96
Satd. Flow (perm)	1630	3167	1488		1269	3260	1488	1330	1283		1571	1542
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	96	686	7	23	80	697	281	15	8	96	791	8
RTOR Reduction (vph)	0	0	5	0	0	0	80	0	89	0	0	4
Lane Group Flow (vph)	96	686	2	0	103	697	201	15	15	0	443	428
Confl. Peds. (#/hr)											1	
Heavy Vehicles (%)	2%	5%	0%	31%	31%	2%	0%	25%	0%	19%	0%	20%
Turn Type	Prot	NA	pt+ov	Prot	Prot	NA	pt+ov	Split	NA		Split	NA
Protected Phases	5	2	2 8	1	1	6	6 4	8	8		4	4
Permitted Phases												
Actuated Green, G (s)	13.4	32.5	40.4		14.3	33.4	75.8	7.9	7.9		42.4	42.4
Effective Green, g (s)	13.4	32.5	40.4		14.3	33.4	75.8	7.9	7.9		42.4	42.4
Actuated g/C Ratio	0.12	0.29	0.36		0.13	0.29	0.67	0.07	0.07		0.37	0.37
Clearance Time (s)	4.0	4.5			4.0	4.5		4.0	4.0		4.0	4.0
Vehicle Extension (s)	2.5	4.2			2.5	4.2		2.5	2.5		2.5	2.5
Lane Grp Cap (vph)	192	906	529		159	958	992	92	89		586	575
v/s Ratio Prot	0.06	c0.22	0.00		0.08	c0.21	0.14	0.01	c0.01		c0.28	0.28
v/s Ratio Perm												
v/c Ratio	0.50	0.76	0.00		0.65	0.73	0.20	0.16	0.16		0.76	0.74
Uniform Delay, d1	47.0	37.0	23.6		47.3	36.0	7.3	49.7	49.7		31.1	30.9
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.5	4.0	0.0		7.8	3.1	0.2	0.6	0.6		5.3	4.9
Delay (s)	48.5	40.9	23.6		55.0	39.1	7.4	50.3	50.4		36.3	35.8
Level of Service	D	D	C		E	D	A	D	D		D	D
Approach Delay (s)		41.7				32.4			50.4			36.1
Approach LOS		D				C			D			D

Intersection Summary			
HCM 2000 Control Delay	36.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	113.6	Sum of lost time (s)	16.5
Intersection Capacity Utilization	68.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	73
Future Volume (vph)	73
Ideal Flow (vphpl)	1750
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.96
Adj. Flow (vph)	76
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	92	659	7	22	77	669	270	14	8	92	759	8
Future Volume (veh/h)	92	659	7	22	77	669	270	14	8	92	759	8
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No				No			No			No
Adj Sat Flow, veh/h/ln	1723	1682	1750		1327	1723	1750	1409	1750	1750	1745	1472
Adj Flow Rate, veh/h	96	686	7		80	697	219	15	8	96	868	0
Peak Hour Factor	0.96	0.96	0.96		0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	5	0		31	2	0	25	0	0	0	20
Cap, veh/h	122	1053	624		93	1058	929	123	11	127	1007	446
Arrive On Green	0.07	0.33	0.33		0.07	0.32	0.32	0.09	0.09	0.09	0.30	0.00
Sat Flow, veh/h	1641	3195	1483		1264	3273	1483	1342	115	1385	3323	1472
Grp Volume(v), veh/h	96	686	7		80	697	219	15	0	104	868	0
Grp Sat Flow(s),veh/h/ln	1641	1598	1483		1264	1637	1483	1342	0	1501	1661	1472
Q Serve(g_s), s	4.7	15.0	0.2		5.1	15.0	5.3	0.8	0.0	5.5	20.1	0.0
Cycle Q Clear(g_c), s	4.7	15.0	0.2		5.1	15.0	5.3	0.8	0.0	5.5	20.1	0.0
Prop In Lane	1.00		1.00		1.00		1.00	1.00		0.92	1.00	
Lane Grp Cap(c), veh/h	122	1053	624		93	1058	929	123	0	137	1007	446
V/C Ratio(X)	0.79	0.65	0.01		0.86	0.66	0.24	0.12	0.00	0.76	0.86	0.00
Avail Cap(c_a), veh/h	402	1761	953		309	1804	1266	493	0	551	1831	811
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	37.2	23.4	13.7		37.4	23.8	6.7	34.1	0.0	36.2	26.9	0.0
Incr Delay (d2), s/veh	8.2	1.0	0.0		15.0	1.1	0.2	0.3	0.0	6.2	1.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.8	9.4	0.2		3.5	9.6	5.9	0.5	0.0	4.0	12.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.4	24.4	13.8		52.3	24.8	6.9	34.4	0.0	42.4	28.6	0.0
LnGrp LOS	D	C	B		D	C	A	C	A	D	C	A
Approach Vol, veh/h		789				996			119			868
Approach Delay, s/veh		26.9				23.1			41.4			28.6
Approach LOS		C				C			D			C

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	31.4		28.7	10.5	30.9		11.5
Change Period (Y+Rc), s	4.0	4.5		4.0	4.5	* 4.5		4.0
Max Green Setting (Gmax), s	20.0	45.0		45.0	20.0	* 45		30.0
Max Q Clear Time (g_c+I1), s	7.1	17.0		22.1	6.7	17.0		7.5
Green Ext Time (p_c), s	0.1	7.8		2.6	0.1	9.5		0.5

Intersection Summary	
HCM 6th Ctrl Delay	26.7
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	73
Future Volume (veh/h)	73
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1472
Adj Flow Rate, veh/h	0
Peak Hour Factor	0.96
Percent Heavy Veh, %	20
Cap, veh/h	0
Arrive On Green	0.00
Sat Flow, veh/h	0
Grp Volume(v), veh/h	0
Grp Sat Flow(s),veh/h/ln	0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.00
Lane Grp Cap(c), veh/h	0
V/C Ratio(X)	0.00
Avail Cap(c_a), veh/h	0
HCM Platoon Ratio	1.00
Upstream Filter(I)	0.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(95%),veh/ln	0.0
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	0.0
LnGrp LOS	A
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer - Assigned Phs
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1005	527	0	1094	840	0	0	0	737	0	437
Future Volume (vph)	0	1005	527	0	1094	840	0	0	0	737	0	437
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		3%			-4%			0%			5%	
Total Lost time (s)		4.5	4.0		4.5	4.0				4.5		2.5
Lane Util. Factor		0.95	1.00		0.95	1.00				0.97		1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98				1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00				1.00		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		3180	1409		3325	1457				2929		1381
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		3180	1409		3325	1457				2929		1381
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1026	538	0	1116	857	0	0	0	752	0	446
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	9
Lane Group Flow (vph)	0	1026	538	0	1116	857	0	0	0	752	0	437
Confl. Peds. (#/hr)						1						1
Heavy Vehicles (%)	0%	3%	4%	0%	2%	2%	0%	0%	0%	2%	0%	5%
Parking (#/hr)										0		
Turn Type		NA	Free		NA	Free				Prot		custom
Protected Phases		2			6					4		4 5
Permitted Phases			Free			Free						
Actuated Green, G (s)		59.8	100.0		48.6	100.0				31.2		42.9
Effective Green, g (s)		59.8	100.0		48.6	100.0				31.2		44.9
Actuated g/C Ratio		0.60	1.00		0.49	1.00				0.31		0.45
Clearance Time (s)		4.5			4.5					4.5		
Vehicle Extension (s)		6.0			4.0					2.5		
Lane Grp Cap (vph)		1901	1409		1615	1457				913		620
v/s Ratio Prot		0.32			c0.34					c0.26		c0.32
v/s Ratio Perm			0.38			0.59						
v/c Ratio		0.54	0.38		0.69	0.59				0.82		0.71
Uniform Delay, d1		11.9	0.0		19.9	0.0				31.9		22.2
Progression Factor		1.00	1.00		1.13	1.00				1.00		1.00
Incremental Delay, d2		1.1	0.8		1.4	1.0				6.0		3.4
Delay (s)		13.0	0.8		23.8	1.0				37.8		25.6
Level of Service		B	A		C	A				D		C
Approach Delay (s)		8.8			13.9			0.0			33.3	
Approach LOS		A			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1005	527	0	1094	840	0	0	0	737	0	437
Future Volume (veh/h)	0	1005	527	0	1094	840	0	0	0	737	0	437
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				0.95	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1660	1647	0	1867	1867				1587	0	1546
Adj Flow Rate, veh/h	0	1026	0	0	1116	0				752	0	344
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	3	4	0	2	2				2	0	5
Cap, veh/h	0	1921		0	2160					839	0	421
Arrive On Green	0.00	0.61	0.00	0.00	1.00	0.00				0.30	0.00	0.32
Sat Flow, veh/h	0	3237	1395	0	3641	1582				2786	0	1310
Grp Volume(v), veh/h	0	1026	0	0	1116	0				752	0	344
Grp Sat Flow(s),veh/h/ln	0	1577	1395	0	1774	1582				1393	0	1310
Q Serve(g_s), s	0.0	18.9	0.0	0.0	0.0	0.0				25.8	0.0	24.2
Cycle Q Clear(g_c), s	0.0	18.9	0.0	0.0	0.0	0.0				25.8	0.0	24.2
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1921		0	2160					839	0	421
V/C Ratio(X)	0.00	0.53		0.00	0.52					0.90	0.00	0.82
Avail Cap(c_a), veh/h	0	1921		0	2160					989	0	491
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.56	0.00	0.00	0.48	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.3	0.0	0.0	0.0	0.0				33.5	0.0	31.3
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	0.4	0.0				9.3	0.0	8.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	9.3	0.0	0.0	0.2	0.0				14.7	0.0	23.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	11.9	0.0	0.0	0.4	0.0				42.7	0.0	39.9
LnGrp LOS	A	B		A	A					D	A	D
Approach Vol, veh/h		1026	A		1116	A					1096	
Approach Delay, s/veh		11.9			0.4						41.8	
Approach LOS		B			A						D	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		65.4		34.6		65.4
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		55.5		35.5		35.5
Max Q Clear Time (g_c+I1), s		20.9		27.8		2.0
Green Ext Time (p_c), s		20.2		2.3		14.2

Intersection Summary	
HCM 6th Ctrl Delay	18.1
HCM 6th LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1481	261	0	1527	469	407	0	690	0	0	0
Future Volume (vph)	0	1481	261	0	1527	469	407	0	690	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Grade (%)		-4%			3%			6%			0%	
Total Lost time (s)		4.5	4.0		4.5	4.0	4.5	4.5	4.5			
Lane Util. Factor		0.95	1.00		0.95	1.00	0.95	0.91	0.95			
Frpb, ped/bikes		1.00	0.98		1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.87	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.99	1.00			
Satd. Flow (prot)		3325	1388		3211	1380	1502	1262	1293			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.99	1.00			
Satd. Flow (perm)		3325	1388		3211	1380	1502	1262	1293			
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1511	266	0	1558	479	415	0	704	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	18	18	0	0	0
Lane Group Flow (vph)	0	1511	266	0	1558	479	373	355	355	0	0	0
Confl. Peds. (#/hr)			2			1						
Heavy Vehicles (%)	0%	2%	7%	0%	2%	4%	2%	0%	6%	0%	0%	0%
Turn Type		NA	Free		NA	Free	Split	NA	Perm			
Protected Phases		2			6		8	8				
Permitted Phases			Free			Free			8			
Actuated Green, G (s)		59.0	100.0		59.0	100.0	32.0	32.0	32.0			
Effective Green, g (s)		59.0	100.0		59.0	100.0	32.0	32.0	32.0			
Actuated g/C Ratio		0.59	1.00		0.59	1.00	0.32	0.32	0.32			
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5			
Vehicle Extension (s)		4.0			6.0		2.5	2.5	2.5			
Lane Grp Cap (vph)		1961	1388		1894	1380	480	403	413			
v/s Ratio Prot		0.45			c0.49		0.25	c0.28				
v/s Ratio Perm			0.19			0.35			0.27			
v/c Ratio		0.77	0.19		0.82	0.35	0.78	0.88	0.86			
Uniform Delay, d1		15.4	0.0		16.3	0.0	30.8	32.2	31.9			
Progression Factor		1.45	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		2.4	0.2		4.2	0.7	7.4	19.4	15.9			
Delay (s)		24.7	0.2		20.5	0.7	38.2	51.6	47.8			
Level of Service		C	A		C	A	D	D	D			
Approach Delay (s)		21.1			15.9			45.9			0.0	
Approach LOS		C			B			D			A	

Intersection Summary			
HCM 2000 Control Delay	24.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1481	261	0	1527	469	407	0	690	0	0	0
Future Volume (veh/h)	0	1481	261	0	1527	469	407	0	690	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1867	1798	0	1674	1647	1527	1555	1473			
Adj Flow Rate, veh/h	0	1511	0	0	1558	0	584	0	319			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	0	2	7	0	2	4	2	0	6			
Cap, veh/h	0	2217		0	1987		830	0	356			
Arrive On Green	0.00	1.00	0.00	0.00	0.62	0.00	0.29	0.00	0.29			
Sat Flow, veh/h	0	3641	1524	0	3264	1395	2909	0	1248			
Grp Volume(v), veh/h	0	1511	0	0	1558	0	584	0	319			
Grp Sat Flow(s),veh/h/ln	0	1774	1524	0	1590	1395	1455	0	1248			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	36.0	0.0	18.0	0.0	24.5			
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	36.0	0.0	18.0	0.0	24.5			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2217		0	1987		830	0	356			
V/C Ratio(X)	0.00	0.68		0.00	0.78		0.70	0.00	0.90			
Avail Cap(c_a), veh/h	0	2217		0	1987		1033	0	443			
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	0.70	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	13.8	0.0	32.0	0.0	34.3			
Incr Delay (d2), s/veh	0.0	1.2	0.0	0.0	3.2	0.0	1.4	0.0	17.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	0.7	0.0	0.0	18.2	0.0	10.5	0.0	13.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	1.2	0.0	0.0	17.0	0.0	33.3	0.0	51.3			
LnGrp LOS	A	A		A	B		C	A	D			
Approach Vol, veh/h		1511	A		1558	A		903				
Approach Delay, s/veh		1.2			17.0			39.7				
Approach LOS		A			B			D				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		67.0				67.0		33.0				
Change Period (Y+Rc), s		4.5				4.5		4.5				
Max Green Setting (Gmax), s		55.5				55.5		35.5				
Max Q Clear Time (g_c+I1), s		2.0				38.0		26.5				
Green Ext Time (p_c), s		27.0				15.8		2.0				

Intersection Summary	
HCM 6th Ctrl Delay	16.1
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

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

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	0	3	1	0	6	4	325	1	10	567	7
Future Vol, veh/h	4	0	3	1	0	6	4	325	1	10	567	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	3	0
Mvmt Flow	4	0	3	1	0	6	4	342	1	11	597	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	977	974	601	975	977	343	604	0	0	343	0	0
Stage 1	623	623	-	351	351	-	-	-	-	-	-	-
Stage 2	354	351	-	624	626	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	232	254	504	233	253	704	984	-	-	1227	-	-
Stage 1	477	481	-	670	636	-	-	-	-	-	-	-
Stage 2	667	636	-	477	480	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	228	251	504	229	250	704	984	-	-	1227	-	-
Mov Cap-2 Maneuver	228	251	-	229	250	-	-	-	-	-	-	-
Stage 1	475	477	-	667	633	-	-	-	-	-	-	-
Stage 2	658	633	-	470	476	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.4	11.7	0.1	0.1
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	984	-	-	298	543	1227	-	-
HCM Lane V/C Ratio	0.004	-	-	0.025	0.014	0.009	-	-
HCM Control Delay (s)	8.7	-	-	17.4	11.7	8	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	7	323	1	9	562
Future Vol, veh/h	1	7	323	1	9	562
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	0	3
Mvmt Flow	1	7	340	1	9	592

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	951	341	0	0	341	0
Stage 1	341	-	-	-	-	-
Stage 2	610	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	291	706	-	-	1229	-
Stage 1	725	-	-	-	-	-
Stage 2	546	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	289	706	-	-	1229	-
Mov Cap-2 Maneuver	289	-	-	-	-	-
Stage 1	725	-	-	-	-	-
Stage 2	542	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.1	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	598	1229	-
HCM Lane V/C Ratio	-	-	0.014	0.008	-
HCM Control Delay (s)	-	-	11.1	8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	26	298	6	38	525
Future Vol, veh/h	4	26	298	6	38	525
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	1	2	2	3
Mvmt Flow	4	27	314	6	40	553

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	950	317	0	0	320	0
Stage 1	317	-	-	-	-	-
Stage 2	633	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	289	724	-	-	1240	-
Stage 1	738	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	280	724	-	-	1240	-
Mov Cap-2 Maneuver	280	-	-	-	-	-
Stage 1	738	-	-	-	-	-
Stage 2	512	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.3	0	0.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	280	724	1240	-
HCM Lane V/C Ratio	-	-	0.015	0.038	0.032	-
HCM Control Delay (s)	-	-	18.1	10.2	8	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0.1	0.1	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	0	10	4	0	26	20	238	6	38	471	20
Future Vol, veh/h	40	0	10	4	0	26	20	238	6	38	471	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	2	0	2	0	1	2	2	3	0
Mvmt Flow	42	0	11	4	0	27	21	251	6	40	496	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	897	886	507	888	893	254	517	0	0	257	0	0
Stage 1	587	587	-	296	296	-	-	-	-	-	-	-
Stage 2	310	299	-	592	597	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.12	6.5	6.22	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.12	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.12	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.518	4	3.318	2.2	-	-	2.218	-	-
Pot Cap-1 Maneuver	263	286	570	264	283	785	1059	-	-	1308	-	-
Stage 1	499	500	-	712	672	-	-	-	-	-	-	-
Stage 2	705	670	-	493	495	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	244	272	570	249	269	785	1059	-	-	1308	-	-
Mov Cap-2 Maneuver	244	272	-	249	269	-	-	-	-	-	-	-
Stage 1	489	485	-	698	659	-	-	-	-	-	-	-
Stage 2	667	657	-	469	480	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.1	11.1	0.6	0.6
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1059	-	-	276	249	785	1308	-	-
HCM Lane V/C Ratio	0.02	-	-	0.191	0.017	0.035	0.031	-	-
HCM Control Delay (s)	8.5	-	-	21.1	19.7	9.8	7.8	-	-
HCM Lane LOS	A	-	-	C	C	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.1	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	39	84	196	52	94	414
Future Vol, veh/h	39	84	196	52	94	414
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	3	-	3	-	-	-3
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	8	2	0	0	2
Mvmt Flow	41	88	206	55	99	436

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	868	234	0	0	261	0
Stage 1	234	-	-	-	-	-
Stage 2	634	-	-	-	-	-
Critical Hdwy	7	6.58	-	-	4.1	-
Critical Hdwy Stg 1	6	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.5	3.372	-	-	2.2	-
Pot Cap-1 Maneuver	282	775	-	-	1315	-
Stage 1	779	-	-	-	-	-
Stage 2	479	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	254	775	-	-	1315	-
Mov Cap-2 Maneuver	254	-	-	-	-	-
Stage 1	779	-	-	-	-	-
Stage 2	432	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.5	0	1.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	470	1315	-
HCM Lane V/C Ratio	-	-	0.275	0.075	-
HCM Control Delay (s)	-	-	15.5	8	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.1	0.2	-