



RENEWS:

Coho Point Mixed-Use Building

Transportation Impact Study

Milwaukie, Oregon

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Table of Contents

Executive Summary	4
Project Description	5
Introduction	5
Location Description	5
Vicinity Streets	5
Study Intersections	7
Site Access Configuration	8
Proposed Parking	8
Transit	9
Site Trips	12
Trip Generation	12
Pass-by Trips	12
Multi-Modal Split Reduction	12
Analysis Results	12
Trip Distribution	13
Traffic Volumes	17
Existing Conditions	17
Background Conditions	17
Buildout Conditions	18
Safety Analysis	25
Crash History Review	25
SE Harrison Street at OR-99E	27
SE Washington Street at OR-99E	27
SE Washington Street at SE 21 st Avenue	27
Analysis Conclusions	27
Sight Distance Evaluation	27
Warrant Analysis	28
Safe Pedestrian Routes to Vicinity School	28
Milwaukie High School & Milwaukie Academy of the Arts	28
Milwaukie El Puente Elementary	29
Rowe Middle School	29
Operational Analysis	31
Intersection Capacity Analysis	31
Performance Standards	31
Delay & Capacity Analysis	31
Queuing Analysis	34
Conclusions	35

Appendices

Appendix A

Site Plan

Appendix B

Trip Generation Calculations

Appendix C

Traffic Counts

Appendix D

In-Process Trips

Appendix E

Crash History Data

Appendix F

Sight Distance Exhibit

Appendix G

Preliminary Signal Warrant Analysis

Appendix H

Capacity Reports

Queuing Reports

List of Figures

Figure 1: Vicinity Map	11
Figure 2: Site Trip Assignment – Full Movement	14
Figure 3: Site Trip Assignment – Restricted Left-turn Egress	15
Figure 4: Site Trip Assignment – Right-in/Right-out	16
Figure 5: Year 2020 Existing Traffic Volumes	20
Figure 6: Year 2022 Background Conditions	21
Figure 7: Year 2022 Buildout Conditions – Full Movement	22
Figure 8: Year 2022 Buildout Conditions – Restricted Left-turn Egress	23
Figure 9: Year 2022 Buildout Conditions – Right-in/Right-out	24
Figure 10: Pedestrian Routes to Schools	30

List of Tables

Table 1: Vicinity Roadway Descriptions	6
Table 2: Downtown Street Cross Sections (Standard Drawing 506A)	7
Table 3: Study Intersection Descriptions	8
Table 4: Transit Line Descriptions	9
Table 5: Trip Generation Summary	13
Table 6: Crash Type Summary	26
Table 7: Crash Severity and Rate Summary	26
Table 8: Capacity Analysis Summary	32
Table 9: Site Access Queuing Analysis Summary	34

Executive Summary

1. The proposed Coho Point Mixed-Use Building will include the construction of a six-story building, consisting of 195 apartment units and up to 6,733 square feet of retail space, on five lots located at 11103 SE Main Street in Milwaukie, Oregon.
2. The trip generation calculations show that the proposed development is projected to generate 58 trips during the morning peak hour, 86 trips during the evening peak hour, and 1,046 average weekday trips.
3. No significant trends or crash patterns were identified at any of the study intersections that were indicative of safety concerns. In addition, none of the study intersections exhibit crash rates near or above the 1.00 CMEV threshold nor do any of the study intersections along OR-99E have a crash rate exceeding ODOT's 90th percentile rate.
4. Adequate sight distances are currently available at the site access intersection to ensure safe and efficient operation along SE Washington Street.
5. Due to insufficient main and side-street traffic volumes, traffic signal warrants are not projected to be met at the intersection of SE Washington Street at SE Main Street under any of the analysis scenarios.
6. All study intersections are currently operating acceptably per City of Milwaukie and ODOT standards and are projected to continue operating acceptably through the 2022 buildout year of the site.
7. The projected 95th percentile queues which may result from site entering trips are not projected to extend back to the adjacent study intersections along SE Washington Street.



Project Description

Introduction

The proposed Coho Point Mixed-Use Building will include the construction of a six-story building, consisting of 195 apartment units and up to 6,733 square feet of retail space, on five lots located at 11103 SE Main Street in Milwaukie, Oregon. Based on correspondence with City of Milwaukie and Oregon Department of Transportation (ODOT) staff, the report conducts safety and capacity/level of service analyses at the following intersections.

1. SE Harrison Street at SE McLoughlin Boulevard (OR-99E);
2. SE Monroe Street at OR-99E;
3. SE Washington Street at OR-99E;
4. SE Washington Street at SE Main Street; and
5. SE Washington Street at SE 21st Avenue.

The purpose of this study is to determine whether the transportation system within the vicinity of the site is capable of safely and efficiently supporting the existing and proposed uses and to determine any mitigation that may be necessary to do so. Detailed information on traffic counts, trip generation calculations, safety analyses, and level of service calculations is included in the appendix to this report.

Location Description

The project site is located south of SE Washington Street, east of OR-99E, and west of SE Main Street in Milwaukie, Oregon. The subject site is located within downtown Milwaukie, with a mix of commercial and residential uses to the north and east, a public dog park to the south, Milwaukie Bay Park to the west (across the highway). Two notable land uses of significance within the site vicinity include a high school and elementary school to the east.

The project site includes five tax lots (lots 1100, 1200, 1300, 1301, and 1302) which encompass an approximate total of 0.94 acres. The northeastern lot (1200) is currently developed with a commercial office building while the remaining lots are utilized for off-street vehicle parking. Existing access to the site is currently provided along SE Washington Street and OR-99E; however, upon redevelopment of the site access to OR-99E will be closed while the current access onto SE Washington Street will be maintained.

Vicinity Streets

The proposed development is expected to impact seven roadways near the site. Table 1 provides a description of each of the vicinity roadways.

Table 1: Vicinity Roadway Descriptions

Street Name	Jurisdiction	Functional Classification	Speed (MPH)	On-Street Parking	Curbs & Sidewalks	Bicycle Lanes
SE Harrison Street	City of Milwaukie	Arterial	25	Partially Permitted	Both Sides	Partial Both Sides
SE 17th Avenue	ODOT/City of Milwaukie	Arterial	35	Not Permitted	Partial Both Sides	Both Sides
SE Monroe Street	City of Milwaukie	Collector	25	Partially Permitted	Both Sides	None
SE Washington Street	City of Milwaukie	Collector	25	Partially Permitted	Both Sides	None
OR-99E	ODOT	Arterial/ District Hwy	30	Not Permitted	Partial Both Sides	Partial Both Sides
SE Main Street	City of Milwaukie	Collector/ Local Street	20/35	Partially Permitted	Partial Both Sides	Sharrow Streets
SE 21st Avenue	City of Milwaukie	Arterial	20	Partially Permitted	Both Sides	Sharrow Streets

Table Notes: Functional classification based on City of Milwaukie TSP and ODOT OHP.

Jurisdiction based on Milwaukie Road Jurisdiction Map and ODOT OHP.

In accordance with comments received by the City of Milwaukie’s transportation consultant, a review of the cross-sections of adjacent roadways to the site was conducted. The adjacent roadways of SE Washington Street and SE Main Street are both classified as Collectors. According to the City’s Transportation System Plan (TSP), collector cross-sections may contain the following:

- Pedestrian Zone with a minimum 5-foot width (if next to a Green Zone) or minimum 6-foot width if next to a Street Zone;
- Green Zone with a minimum 5-foot width; and
- Street Zone consisting of a Parking Zone (6-8 feet), Bicycle Zone (5-6 feet), and Motor Vehicle Zone (9-12 feet per travel lane).

Specific to Collectors, the Green Zone, Parking Zone and Bicycle Zone are optional if right-of-way width is limited. Additionally, a center turn lane is only required when warranted. However, variations to the cross-sections may be allowed under specific circumstances.



Additionally, the roadways are located the City's downtown plan area, where standard drawing number 506A would be applicable. Per this standard detail, dimensions pertaining to each roadway are presented in Table 2.

Table 2: Downtown Street Cross Sections (Standard Drawing 506A)

Street Name	Right-of-Way	Curb-to-Curb	Sidewalk	Landscape	Parking	Bike Lane	Travel Lane	Median or Turn Lane
SE Washington Street	60 ft	36 ft - 40 ft	10 ft - 12 ft	0 ft to 5 ft	0 ft to 7 ft	0 ft	11 ft	0 ft to 11 ft lane
SE Main Street	60 ft - 80 ft	22 ft - 54 ft	12 ft - 16 ft	0 ft to 7 ft	0 ft to 7 ft	0 ft	11 ft - 14 ft	None

SE Washington Street along site frontage generally has four vehicular travel lanes (two travel lanes in the eastbound direction and two travel lanes in the westbound direction), all of which are approximately 10 feet in width. Near the intersection with SE Main Street, the westbound direction of travel is reduced to a single travel lane with a width of approximately 12 feet, in order to accommodate a curb extension at the intersection. Just west of the curb extension is a 60 foot "No Parking Loading Zone". No Green Zone or Bicycle Zone are provided, and sidewalks are at least 6 feet wide.

SE Main Street along site frontage has no Green Zone or Bicycle Zone but has temporary asphalt sidewalks of at least 6 feet wide. On-street parking is available along both sides of the roadway: angled parking is available along the east side of the road with a width of approximately 11 feet while parallel parking is available along the west side of the road with a width of approximately 9 feet. The roadway has one vehicular travel lane in the northbound direction and one lane in the southbound direction of travel, each of which are 11 feet wide.

It should be noted that both roadways have recently undergone reconstruction/redesign. Based on a review of these adjacent roadways in conjunction with the reconstruction/redesign projects, both are consistent with the applicable roadway cross-section standards identified in the TSP.

Study Intersections

A majority of site trips generated by the proposed development are expected to impact five nearby intersections of significance. A summarized description of the study intersections, under their existing lane configurations, is provided in Table 3.



Table 3: Study Intersection Descriptions

Number	Intersection	Geometry	Traffic Control	Phasing/Stopped Approaches
1	SE Harrison Street at OR-99E	Four-Legged	Traffic Signal	Protected NB/SB Left-turns, Split EB/WB Approaches, Overlap EB Right-turn
2	SE Monroe Street at OR-99E	Three-Legged	Traffic Signal	Permitted NB/SB & WB Approaches, Restricted SB Left-turn
3	SE Washington Street at OR-99E	Four-Legged	Traffic Signal	FYA SB Left-turn, Permitted EB/WB Approaches, Restricted SB Right-turn, NB Left-turn
4	SE Washington Street at SE Main Street	Four-Legged	Stop-Controlled	All-Way Stop-Controlled
5	SE Washington Street at SE 21st Avenue	Four-Legged	Traffic Signal	Permitted NB/SB & EB/WB Approaches

Table Notes: Flashing-Yellow-Arrow denoted as FYA.

Site Access Configuration

According to the City of Milwaukie Municipal Code Section 12.16.040 Access Requirements and Standards, spacing for accessways along Collector and Arterial roadways shall be a minimum of 300 feet and 600 feet, respectively, measured between the nearest edge of driveway aprons between accessways or the nearest edge of the driveway apron to the nearest face of curb of the intersecting street (or nearest edge of pavement if no curb is available).

Based on an assessment of the adjacent roadways to the site, there are no locations along OR-99E, SE Washington Street, or SE Main Street where access spacing standards can be met (i.e. spacing with driveways and intersecting roadways along either sides of the adjacent streets). Accordingly, the proposed public access along SE Washington Street is planned near its current existing location, offset slightly to the east further away from OR-99E. However, in the event that City staff require turning-movements be restricted at the site access intersection, the following three access scenarios were analyzed: full-movement, restricted left-turn site egress, and right-in/right-out only. Note that the current public access driveway was planned and constructed as part of the City's South Downtown Improvements project.

Proposed Parking

As part of the proposed development, below grade vehicle parking as well as bicycle parking will be available for residents. In total 101 below grade parking stalls and 232 bicycle parking spaces will be provided. For customers of the retail uses, existing at grade parking may be utilized.

Transit

The project site is located near 11 TriMet transit lines, all of which have stops located within a quarter-mile walking/biking distance of the site. Complete sidewalks and adequate crossing measures are available between the site and the nearest stops which serve each transit line. A summarized description of each transit line is shown in Table 4.

Table 4: Transit Line Descriptions

Transit Line (TriMet)	Service Area	Service Time			Typical Headways (Minutes)	Nearest Stops
		Day	To	From		
MAX Orange LRL	Milwaukie, Portland State University, Portland City Center	Wk	4:00 AM	12:30 PM	15 to 30	Northwest of SE Lake Road at SE 21st Avenue
		Sat	5:00 AM	1:30 AM	15 to 30	
		Sun	5:00 AM	1:30 AM	15 to 30	
Bus Line #29 - Lake/Webster Rd	Milwaukie, Clackamas Town Center	Wk	5:35 AM	7:55 PM	75 to 90	SE Washington Street at SE 21st Avenue
		Sat	-	-	-	
		Sun	-	-	-	
Bus Line #30 - Estacada	Clackamas Town Center, Estacada, Milwaukie, Portland City Center	Wk	4:30 AM	9:20 PM	30 to 60	SE Jackson Street between Main Street and 21st Avenue
		Sat	8:20 AM	7:20 PM	60	
		Sun	-	-	-	
Bus Line #32 - Oatfield	Milwaukie, Gladstone, Oregon City, CCC	Wk	4:45 AM	9:55 PM	15 to 60	SE Washington Street at SE 21st Avenue
		Sat	9:40 AM	5:30 PM	60	
		Sun	-	-	-	
Bus Line #33 - McLoughlin/ King Rd	Clackamas Town Center, Milwaukie, Gladstone, Oregon City, CCC	Wk	4:15 AM	1:55 AM	15 to 60	SE Jefferson Street at SE Main Street
		Sat	5:30 AM	1:50 AM	15 to 60	
		Sun	5:30 AM	1:50 AM	15 to 60	
Bus Line #34 - Linwood/ River Road	Clackamas Town Center, Milwaukie, Gladstone, Oregon City TC	Wk	5:55 AM	8:05 PM	30 to 40	SE Jefferson Street at SE Main Street
		Sat	-	-	-	
		Sun	-	-	-	
Bus Line #70 - 12th/NE 33rd Ave	Columbia River Correctional Facility, Lloyd Center, Milwaukie	Wk	5:00 AM	11:10 PM	10 to 45	SE Jackson Street between Main Street and 21st Avenue
		Sat	8:40 AM	11:05 PM	20 to 30	
		Sun	8:45 AM	7:50 PM	20 to 35	

Table Notes: Light Rail Line denoted as LRL.

BOLDED text indicates frequent service.

Table 4: Transit Line Descriptions (Continued)

Transit Line (TriMet)	Service Area	Service Time			Typical Headways (Minutes)	Nearest Stops
		Day	To	From		
Bus Line #75 - Cesar Chavez/ Lombard	St. Johns Neighborhood, N Lombard TC, Hollywood TC, Milwaukie	Wk	4:45 AM	1:30 AM	15 to 30	SE Jackson Street between Main Street and 21st Avenue
		Sat	5:30 AM	1:40 AM	15 to 40	
		Sun	5:30 AM	1:40 AM	15 to 40	
Bus Line #99 - Macadam/ McLoughlin	Portland City Center, Milwaukie, Oregon City TC, CCC	Wk	5:15 AM	7:20 PM	15 to 30	SE Jackson Street between Main Street and 21st Avenue
		Sat	-	-	-	
		Sun	-	-	-	
Bus Line #152 - Milwaukie	Milwaukie, Clackamas Town Center	Wk	6:30 AM	6:35 PM	30 to 40	SE Jackson Street between Main Street and 21st Avenue
		Sat	-	-	-	
		Sun	-	-	-	
Bus Line #291 - Orange Night Bus	Milwaukie, Portland State University, Portland City Center	Wk	11:45 PM	1:20 AM	60	SE Jackson Street between Main Street and 21st Avenue
		Sat	12:45 PM	1:20 AM	-	
		Sun	12:45 PM	1:20 AM	-	

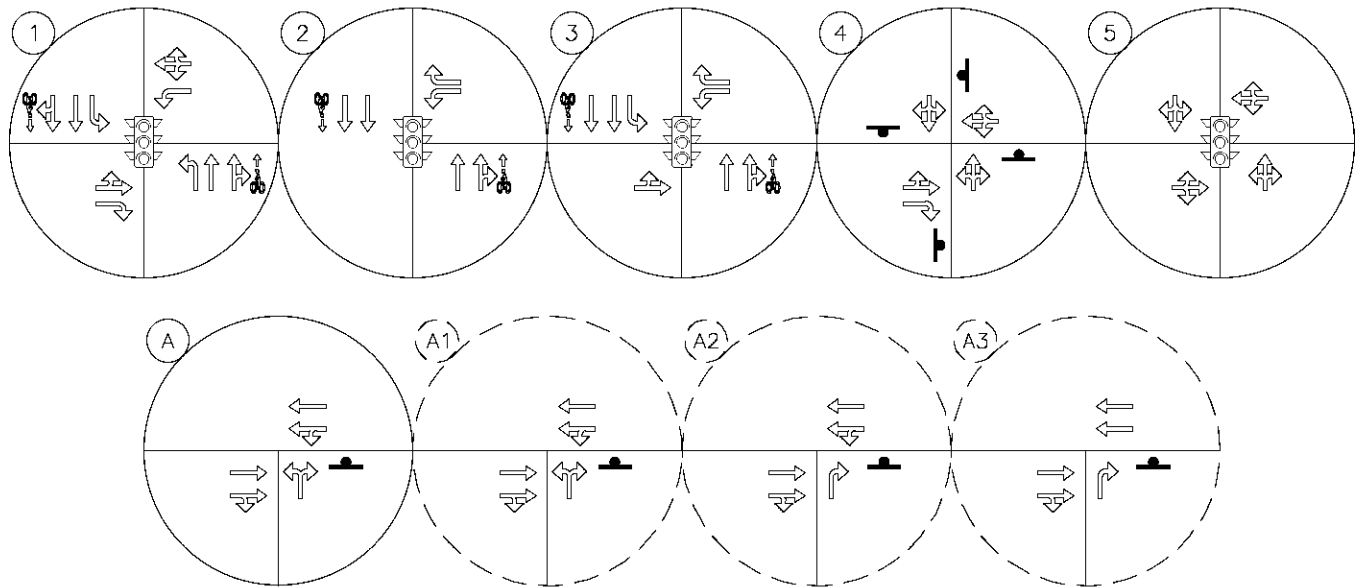
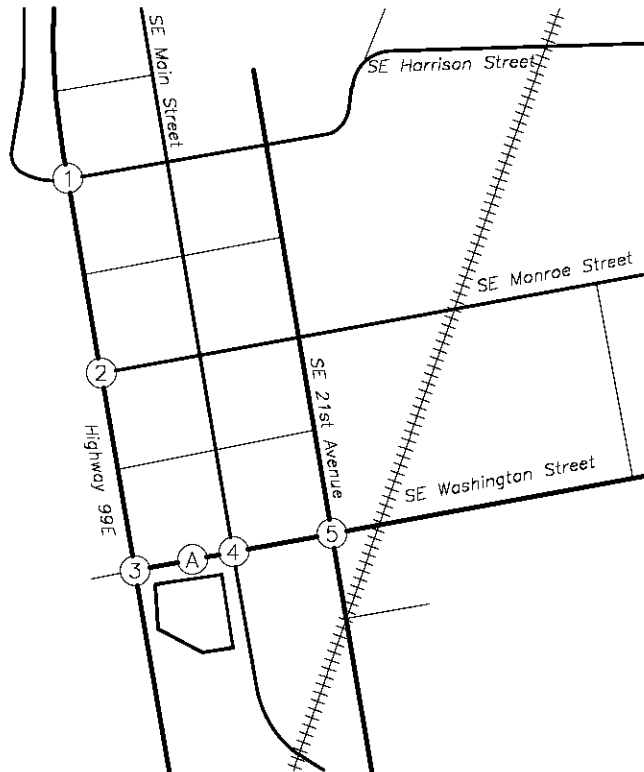
Table Notes: Light Rail Line denoted as LRL.

BOLDED text indicates frequent service.

A vicinity map displaying the project site, vicinity streets, and the study intersections with their associated lane configurations is shown in Figure 1.

LEGEND

- STUDY INTERSECTION (EXISTING)
- STUDY INTERSECTION (PROPOSED)
- ⊥ STOP SIGN
- 🚦 TRAFFIC SIGNAL
- 🚲 BIKE LANE
- ▭ PROJECT SITE
- ARTERIAL ROADWAY
- COLLECTOR ROADWAY
- LOCAL ROADWAY
- ⊕ RAILROAD TRACKS



Site Trips

Trip Generation

The proposed Coho Point Mixed-Use Building will include the construction of a six-story building, consisting of 195 apartment units and up to 6,733 square feet of retail space, replacing an existing office building of approximately 7,706 square feet. To estimate the number of trips generated by the existing and proposed uses, trip rates from the *Trip Generation Manual*¹ were used. Data from land use code 221, *Multifamily Housing (Mid-Rise)*, and code 820, *Shopping Center*, was used to estimate the proposed development's trip generation based on the number of dwelling units and square footage of gross building floor area, respectively. To estimate the existing office building's trip generation, data from land use code 710, *General Office Building*, was used based on the square-footage of gross building floor area.

Pass-by Trips

The retail portion of the proposed development is expected to attract pass-by and diverted trips to the site. Pass-by trips are trips that leave the adjacent roadway to patronize a land use and then continue in their original direction of travel. Similar to pass-by trips, diverted trips are trips that divert from the nearby roadway not adjacent to the site to patronize a land use before continuing to their original destination. Pass-by trips do not add additional vehicles to the surrounding transportation system; however, they do add additional turning movements at site access intersections. Diverted trips may add turning movements at both site access and other nearby intersections.

Pass-by and diverted trip rates were determined using data provided within the *Trip Generation Handbook*². Data from land use code 820 was used to determine an evening peak hour pass-by rate for the retail portion of the proposed mixed-use building. It is assumed that the morning peak hour and weekday rates would approximately match the evening peak hour rate. For the purposes of this analysis, pass-by trips were drawn from SE Washington Street while diverted trips were treated as primary trips.

Multi-Modal Split Reduction

The proposed mixed-use building is located within a multi-modal area of downtown Milwaukie, which provides well-connected pedestrian/bicycle facilities with multiple transit services nearby. Due to the variety of alternative modes of travel to and from the site, and to maintain consistency with the *Project Galaxy Transportation Impact Analysis (TIA)*, dated May 5th, 2017, a ten percent transit reduction to the site trips generated by the residential portion of the proposed use was taken.

Analysis Results

The trip generation calculations show that the proposed development is projected to generate 58 trips during the morning peak hour, 86 trips during the evening peak hour, and 1,046 average weekday trips. The trip generation estimates are summarized in Table 5. Detailed trip generation calculations are included in the technical appendix to this report.

¹ Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 10th Edition, 2017.

² Institute of Transportation Engineers (ITE), *Trip Generation Handbook*, 3rd Edition, 2014.

Table 5: Trip Generation Summary

	ITE Code	Size/Rate	Morning Peak Hour			Evening Peak Hour			Weekday Total
			Enter	Exit	Total	Enter	Exit	Total	
<i>Existing Conditions</i>									
Office Building	710	7,706 SF	8	1	9	1	8	9	76
<i>Proposed Conditions</i>									
Apartments	221	195 units	18	52	70	52	34	86	1,060
<i>Transit Reduction</i>		10%	2	5	7	5	4	9	106
Net Total			16	47	63	47	30	77	954
Retail Space	820	6,733 SF	4	2	6	12	14	26	254
<i>Pass-by Trips</i>		34%	1	1	2	4	4	8	86
Net Total	820	34% (34%)	3	1	4	8	10	18	168
Net New Trips			11	47	58	54	32	86	1,046

Trip Distribution

The directional distribution of site trips to/from the project site was estimated based on the locations of likely trip destinations, locations of major transportation facilities in the site vicinity, and existing travel patterns at the study intersections.

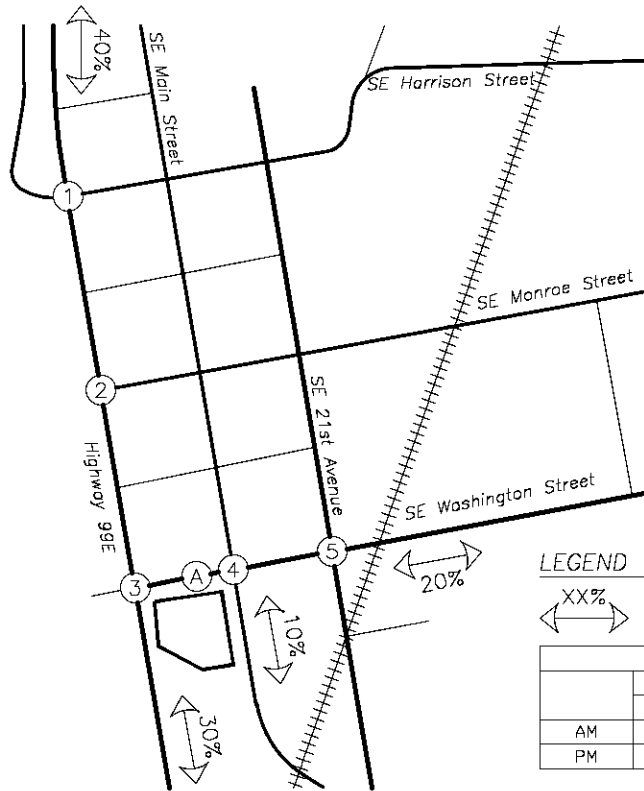
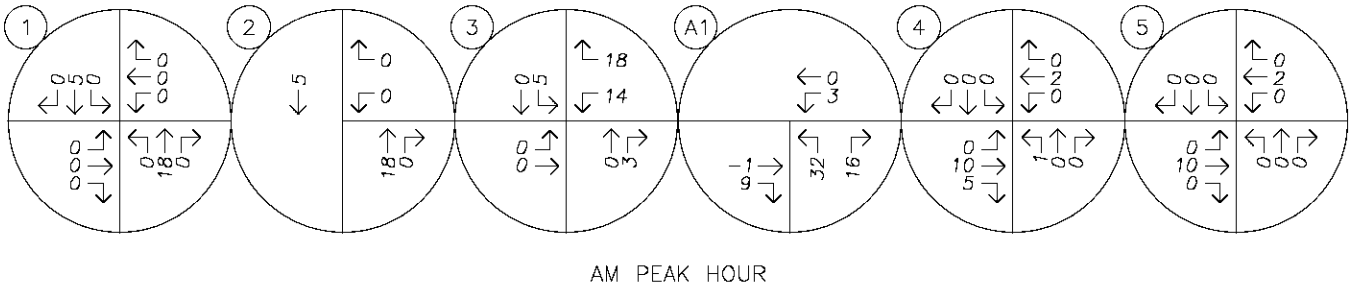
The following trip distribution was estimated and used for analysis:

- Approximately 40 percent of site trips will travel to/from the north along OR-99E;
- Approximately 30 percent of site trips will travel to/from the south along OR-99E;
- Approximately 20 percent of site trips will travel to/from the east along SE Washington Street; and
- Approximately 10 percent of site trips will travel to/from the south along SE Lake Street.

The trip distribution and assignment for the site trips generated by the proposed development during the morning and evening peak hours are shown in the following figures for each of the three access configuration scenarios, as described in the *Site Access Configuration* section:

- Figure 2: Full-Movement Access;
- Figure 3: Restricted Left-turn Egress Access; and
- Figure 4: Right-in/Right-out Access.

Note that Figures 2 through 4 depict the combined trip generation associated with both pass-by trips and primary trips.

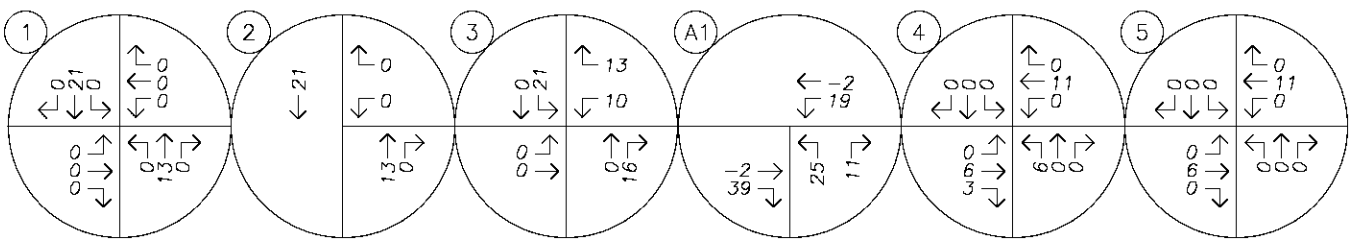


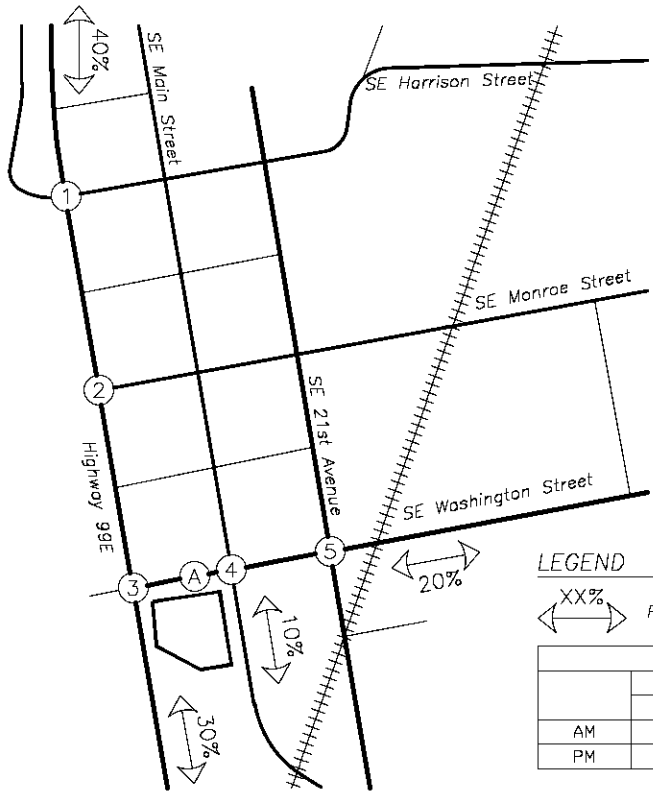
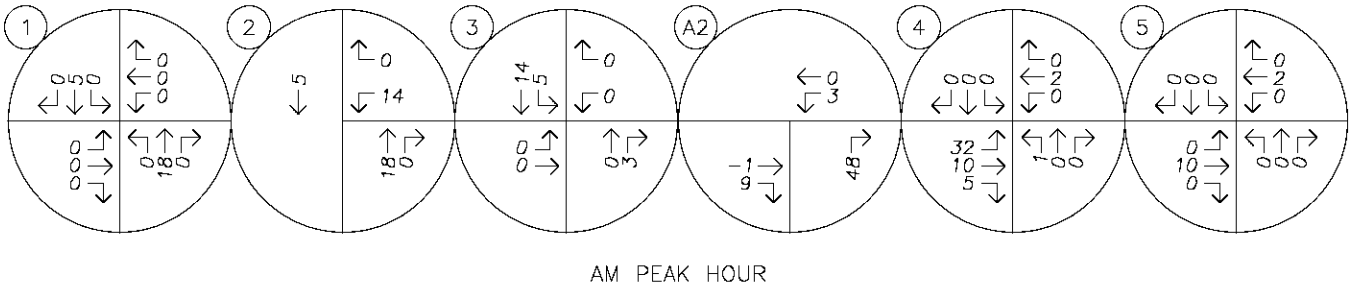
LEGEND

XX% PERCENT OF PROJECT TRIPS

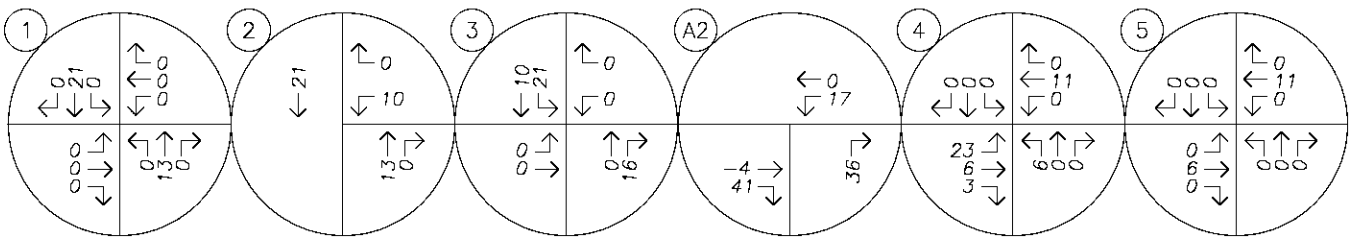
	PRIMARY		PASS-BY	TOTAL
	IN	OUT		
AM	11	47	2	60
PM	54	32	8	94

PM PEAK HOUR

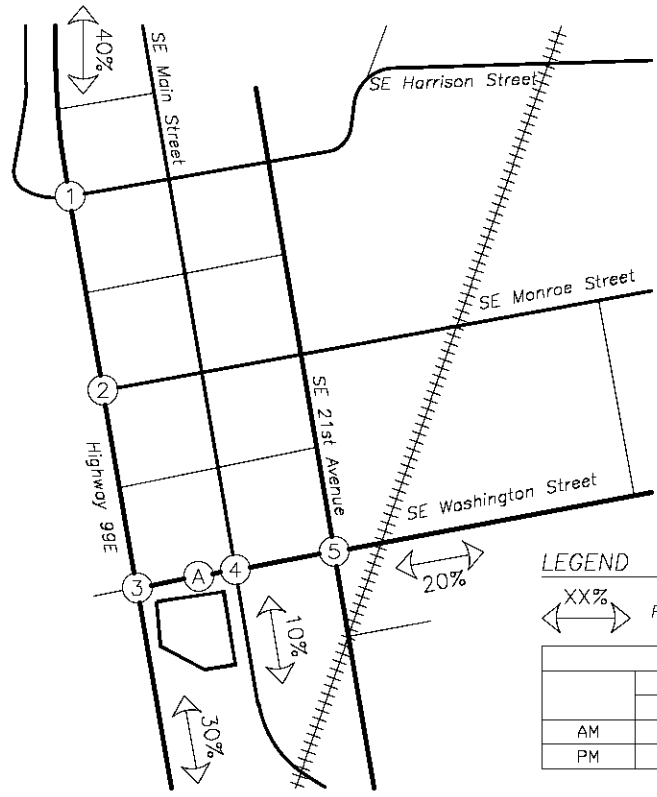
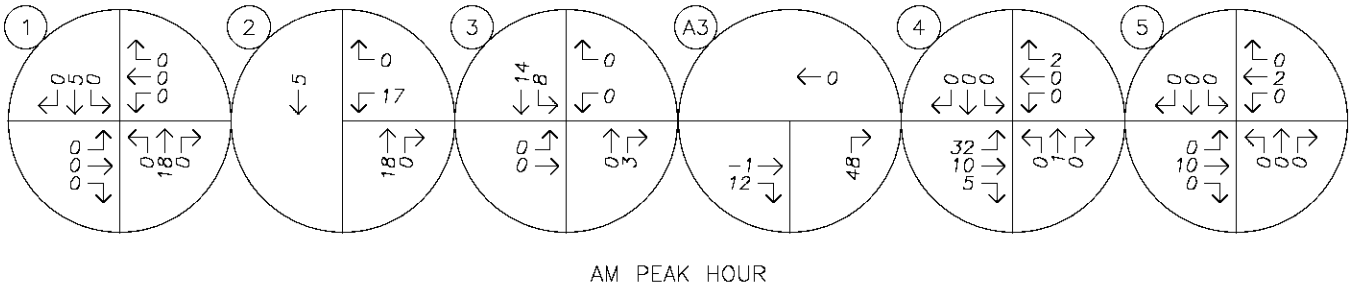




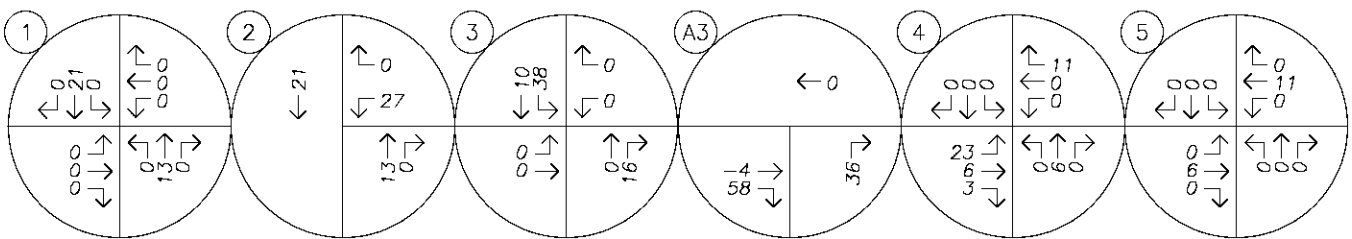
PM PEAK HOUR



no scale



PM PEAK HOUR



Traffic Volumes

Existing Conditions

Traffic counts were conducted at the study intersections on Thursday, March 5th, 2019, from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM. Data was used from each intersection's respective morning and evening peak hours.

It should be noted that the traffic counts at the study intersections were collected prior to COVID-19 significantly impacting traffic conditions and general operations through the Portland Metropolitan Area. To reflect existing year 2020 conditions without the impact of COVID-19, the collected 2019 traffic counts were grown by applying a compounded growth rate of two percent per year over a one-year period to the non-ODOT study intersections. For the ODOT study intersections, a linear growth rate of approximately 0.70 percent per year was calculated for the traffic volumes along OR-99E using data from ODOT's 2038 Future Volume Tables. This growth rate was applied to the through traffic volumes along OR-99E over a one-year period.

At the time of data collection, SE Main Street between SE Adams Street and SE 21st Avenue was closed due to roadway construction work. Based on correspondence with the City's transportation consultant, a percentage of traffic traveling along SE 21st Avenue, south of SE Washington Street, was rerouted to SE Main Street at follows:

- Approximately 30 percent of traffic traveling to/from the north of the SE Washington Street at SE 21st Avenue intersection was rerouted to SE Main Street.
- Approximately 25 percent of traffic turning to/from the west of the SE Washington Street at SE 21st Avenue intersection was rerouted to SE Main Street.
- Approximately 5 percent of traffic turning to/from the east of the SE Washington Street at SE 21st Avenue intersection was rerouted to SE Main Street.

To determine traffic volumes at the existing site access intersection along SE Washington Street, volumes were balanced with the adjacent intersections of SE Washington Street at OR-99E and SE Washington Street at SE Main Street. To determine turning volumes to and from the site access, the trip generation for the existing office building and the estimated distribution, as described in the *Site Trips* section of this report, were utilized.

Figure 5 shows the existing traffic volumes at the study intersections during the morning and evening peak hours.

Background Conditions

To provide an analysis of the impact of the proposed development on the nearby transportation facilities, an estimate of future traffic volumes is required. In order to calculate the future traffic volumes for non-ODOT facilities, a compounded growth rate of two percent per year for an assumed buildout condition of two years was applied to the measured existing traffic volumes to approximate year 2022 background conditions.

To estimate the future traffic volumes for ODOT facilities, a linear growth rate of approximately 0.70 percent per year was calculated for the traffic volumes along OR-99E using data from ODOT's 2038 Future Volume Tables. This growth rate was applied to the measured existing traffic volumes over a two-year period to determine year

2022 background volumes for the through traffic traveling along OR-99E. A compounded growth rate of two percent per year for an assumed buildout condition of two years was applied to all other turning movement traffic volumes.

In addition to the traffic volume growth described above, there are four nearby in-process development projects that are currently approved for construction and are expected to impact nearby study intersections. These projects include the following:

- Axeltree (11125 SE 21st Avenue), which includes the construction of 110 apartment units with 7,000 square feet of retail/restaurant space
- Northwest Housing Alternatives (2316 SE Willard Street), which includes the construction of a temporary shelter for eight families, 28 affordable housing units, and a 12,500 square-foot office building.
- Cereghino Farms (located southeast of the intersection of SE Lake Road at SE Kuehn Road), which includes the construction of a 55-lot residential subdivision.
- Waverly Woods Apartments (located at 10415 SE Waverly Court), which includes the construction of a 132-unit apartment facility.
- Monroe Apartments (located southwest of the intersection of SE Monroe Street at SE 37th Avenue), which includes the construction of a 234-unit apartment facility.

These in-process development projects are currently not fully contributing trips to the transportation system but may potentially be by the 2022 buildout year of the site. Additional trips corresponding to these uses were added to the existing year traffic volumes in addition to the two years of traffic growth at each of the applicable study intersections. To maintain a conservative analysis of operation at the study intersections, all in-process development projects were assumed to be constructed and occupied by year 2022.

Additionally, in-process development impacts associated with the nearby Milwaukie High School reconstruction project were considered. Based on a review of the project's traffic study/application materials and subsequent correspondence with the City and their transportation consultant, minimal impacts to the study intersections are expected from this in-process project.

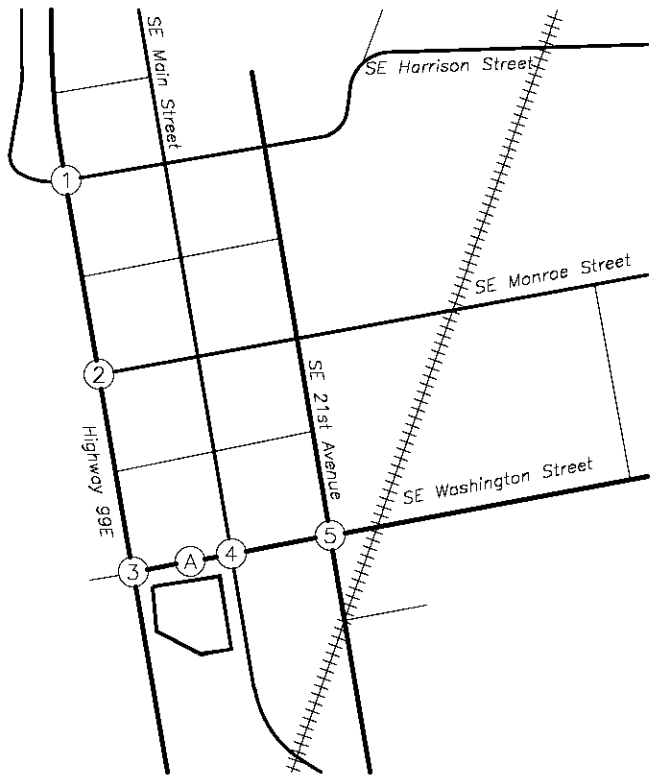
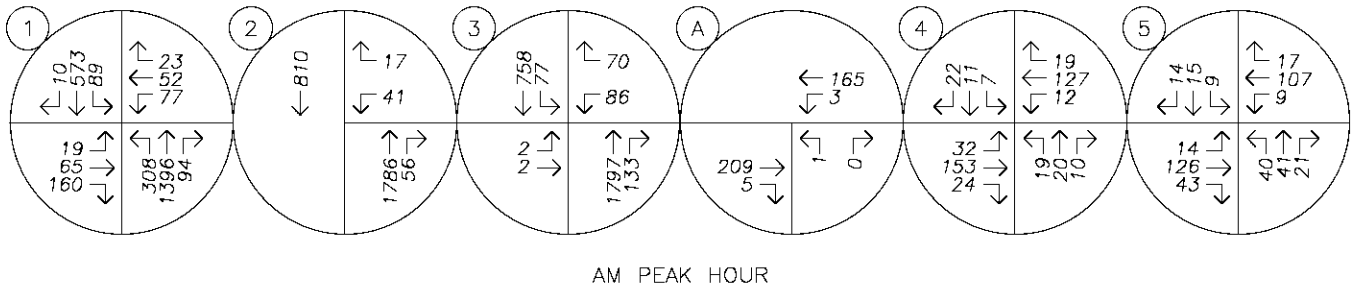
Figure 6 shows the projected year 2022 background traffic volumes at the study intersections during the morning and evening peak hours. In-process development morning and evening peak hour trips applied to the study intersections are included in Figure A in the appendix.

Buildout Conditions

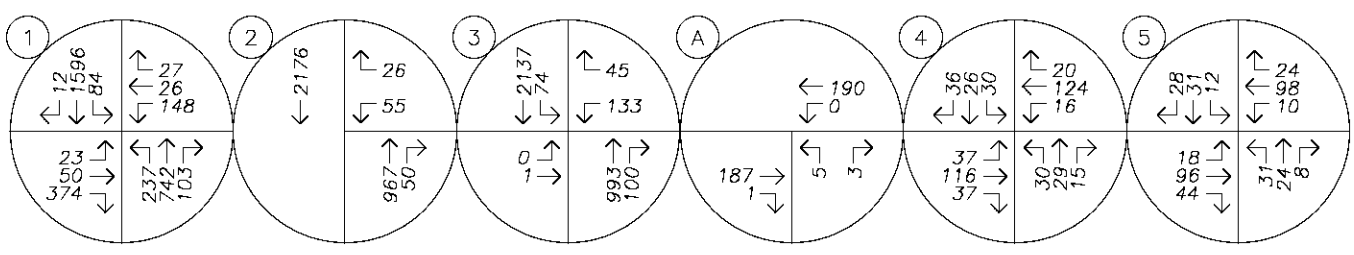
Peak hour trips calculated to be generated by the proposed development, as described earlier within the *Site Trips* section, were added to the projected year 2022 background traffic volumes to obtain the expected year 2022 buildout volumes. Additionally, site trips associated with the existing office building were rerouted to through the transportation system to coincide with the potential changes to the allowed turning movements at the site access intersection.

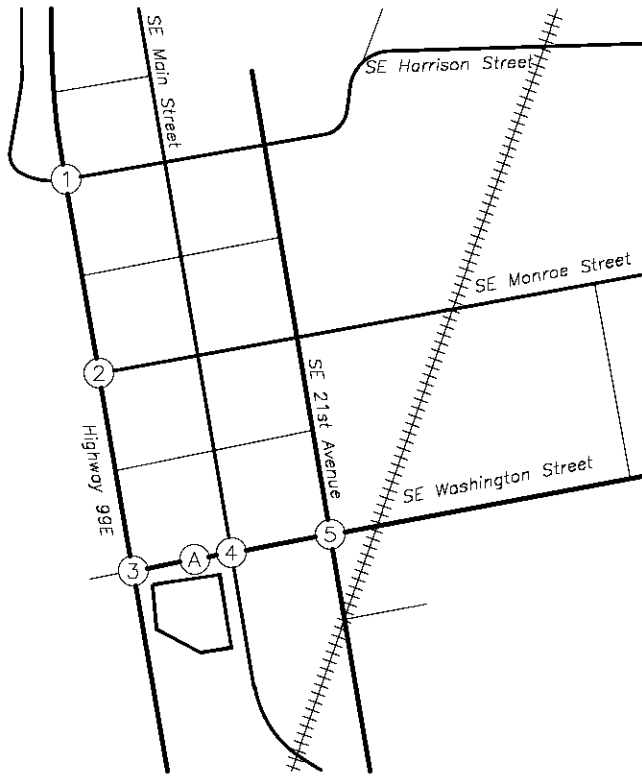
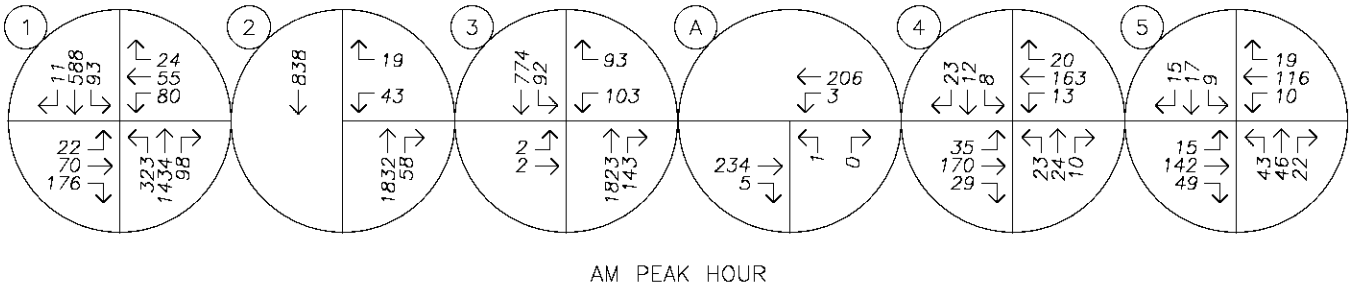
The projected 2022 site buildout year traffic volumes at the study intersections during the morning and evening peak hours are shown in the following figures for each of the three access configuration scenarios, as described in the *Site Access Configuration* section:

- Figure 7: Full-Movement Access;
- Figure 8: Restricted Left-turn Egress Access; and
- Figure 9: Right-in/Right-out Access.

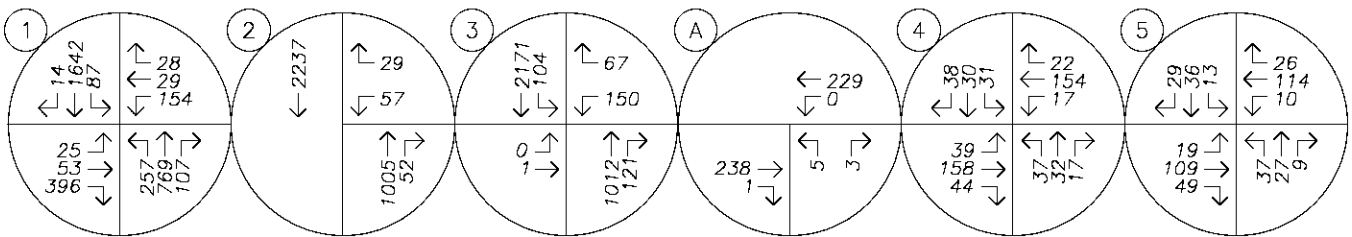


PM PEAK HOUR

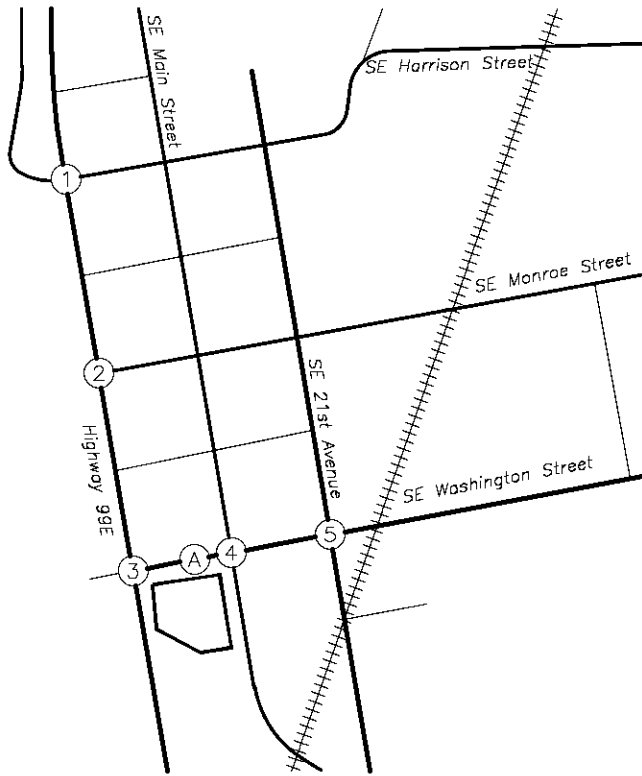
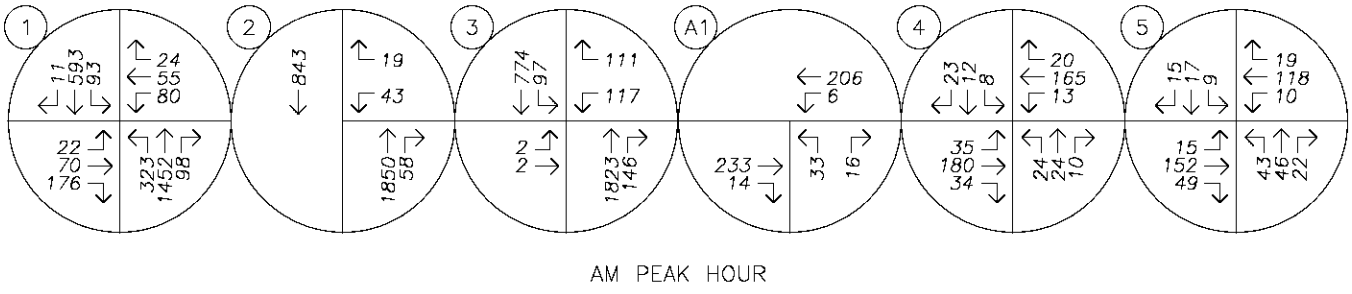




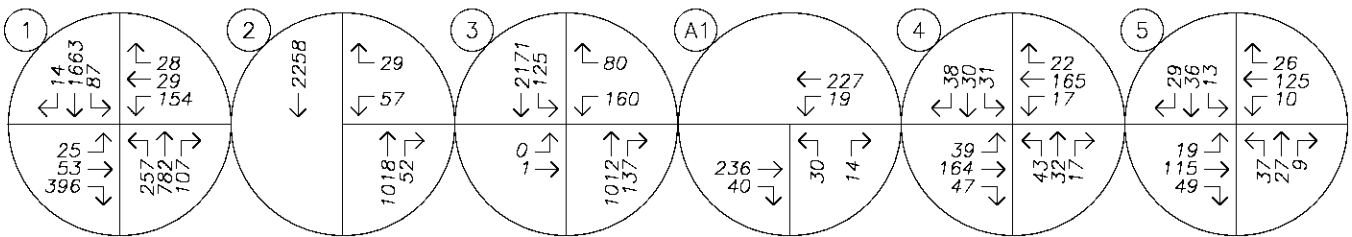
PM PEAK HOUR



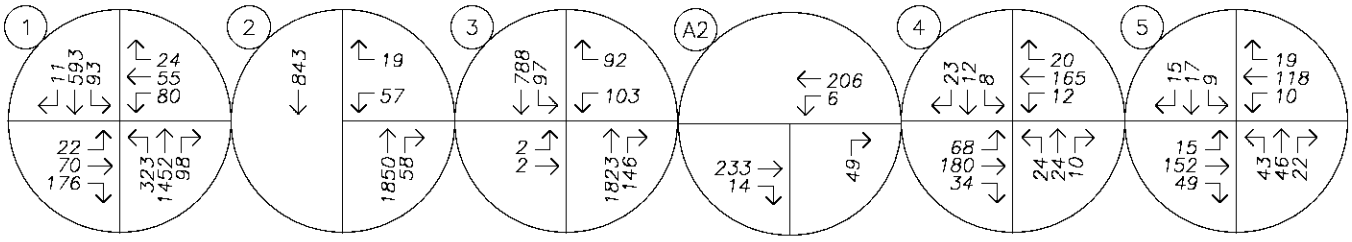
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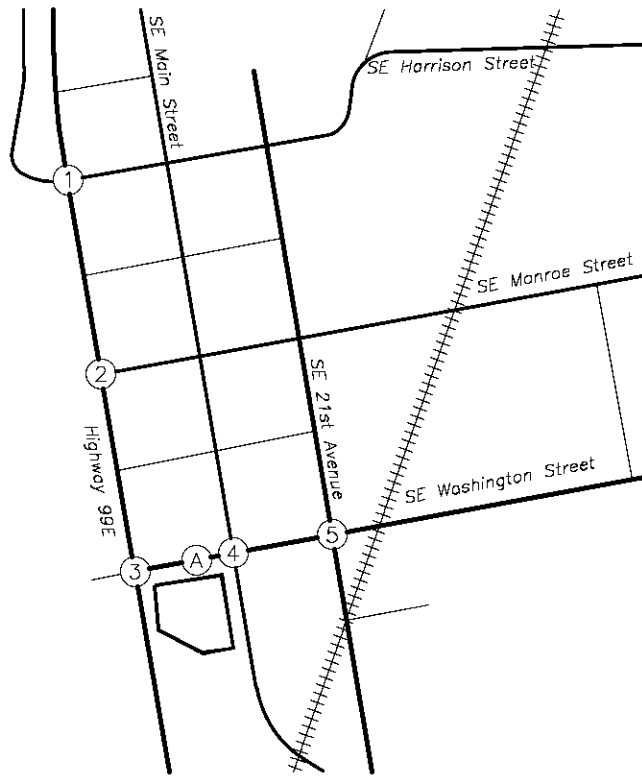
PM PEAK HOUR



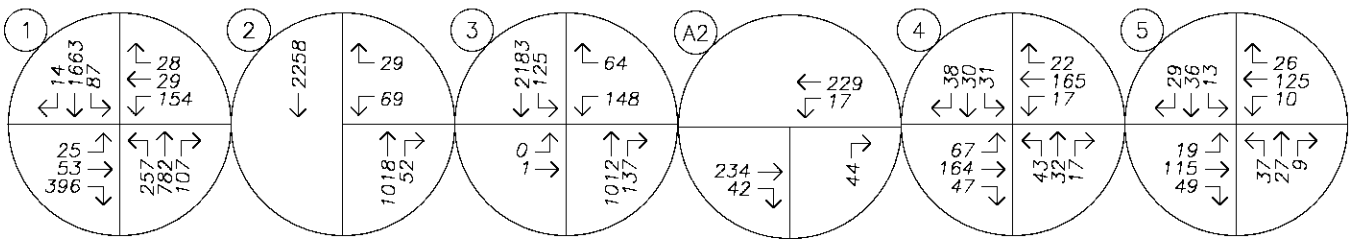
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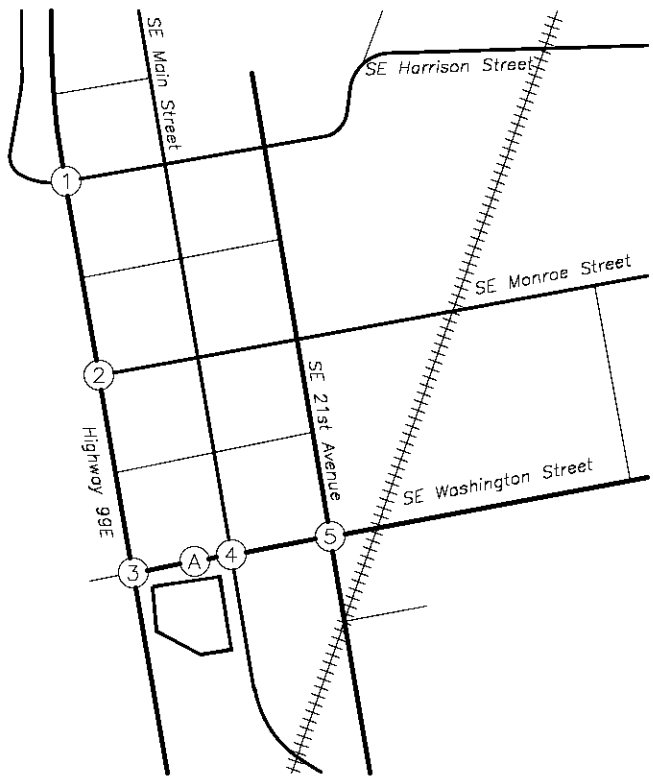
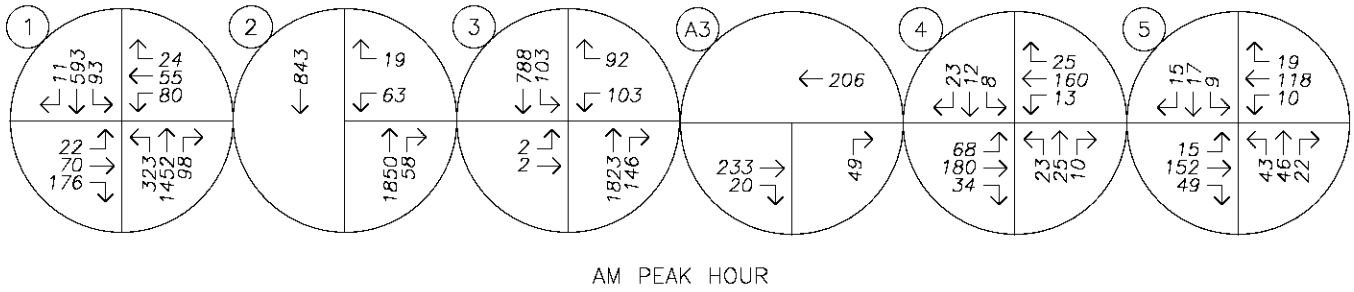
AM PEAK HOUR



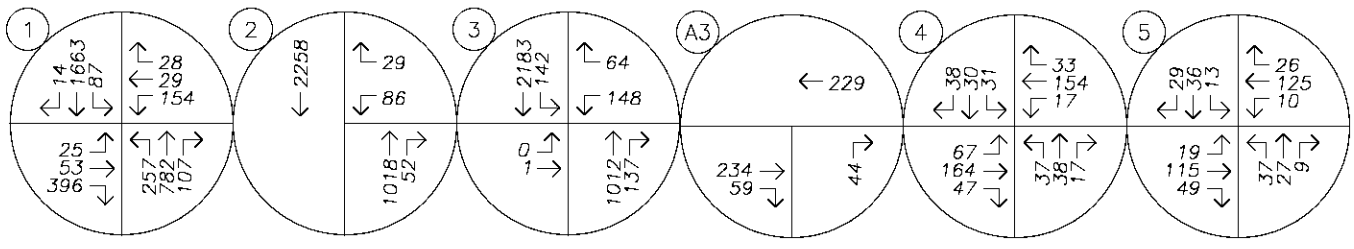
PM PEAK HOUR



no scale



PM PEAK HOUR



Safety Analysis

Crash History Review

Using data obtained from ODOT's Crash Analysis and Reporting Unit, a review of the most recent available five years of crash history (January 2014 to December 2018) at the study intersections was performed. The crash data was evaluated based on the number of crashes, the type of collisions, the severity of the collisions, and the resulting crash rate for the intersection. Crash rates provide the ability to compare safety risks at different intersections by accounting for both the number of crashes that have occurred during the study period and the number of vehicles that typically travel through the intersection. Crash rates were calculated using the common assumption that traffic counted during the evening peak hour represents approximately 10 percent of the annual average daily traffic (AADT) at the intersection. Crash rates in excess of 1.00 crashes per million entering vehicles (CMEV) may be indicative of design deficiencies and therefore require a need for further investigation and possible mitigation.

With regard to crash severity, ODOT classifies crashes in the following categories:

- *Property Damage Only* (PDO);
- *Possible Injury – Complaint of Pain* (Injury C);
- *Non-Incapacitating Injury* (Injury B);
- *Incapacitating Injury – Bleeding, Broken Bones* (Injury A); and
- *Fatality or Fatal Injury*.

The study intersections along OR-99E are ODOT facilities which adhere to the crash analysis methodologies within ODOT's *Analysis Procedures Manual* (APM). According to *Exhibit 4-1: Intersection Crash Rates per MEV by Land Type and Traffic Control* of the APM, intersections which experience crash rates in excess of the 90th percentile crash rate should be "flagged for further analysis". For signalized intersections in urban settings, the 90th percentile rates for three-legged and four-legged intersections are 0.509 CMEV and 0.860 CMEV, respectively.

Table 6 provides a summary of crash types while Table 7 summarizes crash severities and rates for each of the study intersections. Detailed crash data is provided in the appendix to this report.

Table 6: Crash Type Summary

Number	Intersection	Crash Type							Total
		Rear End	Turn	Angle	Fixed Object	Side swipe	Ped/Bike	Other	
1	SE Harrison Street at OR-99E	11	6	4	0	0	1	1	23
2	SE Monroe Street at OR-99E	5	2	0	0	1	0	0	8
3	SE Washington Street at OR-99E	9	4	0	0	0	1	0	14
4	SE Washington Street at SE Main Street	1	2	2	0	0	0	0	5
5	SE Washington Street at SE 21st Avenue	0	2	0	1	0	2	0	5

Table 7: Crash Severity and Rate Summary

Number	Intersection	Crash Severity						Total Crashes	AADT	Crash Rate
		PDO	C	B	A	Fatal	Unknown			
1	SE Harrison Street at OR-99E	9	11	3	0	0	0	23	34,220	0.37
2	SE Monroe Street at OR-99E	4	3	1	0	0	0	8	32,740	0.13
3	SE Washington Street at OR-99E	9	4	1	0	0	0	14	34,830	0.22
4	SE Washington Street at SE Main Street	4	1	0	0	0	0	5	5,160	0.53
5	SE Washington Street at SE 21st Avenue	3	0	2	0	0	0	5	4,240	0.65

Table Notes: **BOLDED** text indicates a crash rate in excess of 1.00 CMEV.



As shown in Table 5 above, there were four crashes at the study intersection which involved either a pedestrian or bicyclist. An in-depth analysis of these crashes is detailed in the following sections.

SE Harrison Street at OR-99E

The intersection of SE Harrison Street at OR-99E had one crash which involved a bicyclist. The crash occurred when the driver of an eastbound passenger car failed to yield right-of-way to a north/south traveling bicyclist. The bicyclist sustained injuries consistent with *Injury B* classification.

SE Washington Street at OR-99E

The intersection of SE Washington Street at OR-99E had one crash which involved a bicyclist. The crash occurred when the driver of a westbound, left-turning passenger car failed to yield right-of-way to an east/west traveling bicyclist who was utilizing an intersection crosswalk. The bicyclist sustained injuries consistent with *Injury C* classification.

SE Washington Street at SE 21st Avenue

The intersection of SE Washington Street at SE 21st Avenue had two crashes which involved a pedestrian. One of the crashes occurred when a north/south traveling pedestrian disregarded the traffic signal, illegally crossed through the intersection, and was struck by a southbound passenger car. The other crash occurred when the driver of a southbound left-turning passenger car failed to yield right-of-way to a north/south pedestrian who was crossing at the intersection. In both crashes, the pedestrian sustained injuries consistent with *Injury B* classification.

Analysis Conclusions

Based on a review of the most recent five years of available crash data, no significant trends or crash patterns were identified at any of the study intersections that were indicative of safety concerns. In addition, none of the study intersections exhibit crash rates near or above the 1.00 CMEV threshold nor do any of the study intersections along OR-99E have a crash rate exceeding ODOT's 90th percentile rate. Accordingly, no safety mitigation is recommended per the crash data analysis.

Sight Distance Evaluation

Intersection sight distance was measured for the site access intersection located along SE Washington Street. Sight distance was measured and evaluated in accordance with standards established in *A Policy on Geometric Design of Highways and Streets*³. According to AASHTO, the driver's eye is assumed to be 15 feet from the near edge of the nearest travel lane of the intersecting street and at a height of 3.5 feet above the minor-street approach pavement. The vehicle driver's eye-height along the major-street approach is assumed to be 3.5 feet above the cross-street pavement.

Based on a posted speed of 25 mph, the minimum recommended intersection sight distance to provide efficient operation of the proposed access intersection is 280 feet to the east and west along the major street. The minimum required stopping sight distance to ensure safe operation is 155 feet in both directions, assuming a travel speed of 25 mph. However, in instances where vehicles may be turning onto SE Washington Street from a

³ American Association of State Highway and Transportation Officials (AASHTO), *A Policy on Geometric Design of Highways and Streets*, 6th Edition, 2011.

cross-street a vehicle may conduct such a maneuver at a conservative 20 mph, requiring a minimum stopping sight distance of 115 feet.

Under existing conditions, sight distance at the site access intersection were measured back to SE 21st Avenue to the east (approximately 400 feet away) and back to OR-99E to the west (approximately 140 feet away). To determine whether sufficient sight distances will be available with buildout of the site (i.e. the proposed building will not obstruct sight lines below minimum safe standards), sight lines were reviewed based on the proposed development's site plan. With buildout of the proposed development, from the garage to the west sight distances will be available back to OR-99E (approximately 140 feet away). To the east, sight distances would be limited to 209 feet, approximately 64 feet beyond the all-way stop-controlled intersection of SE Washington Street at SW Main Street. Since westbound approaching vehicles are required to stop at the intersection SE Washington Street at SW Main Street (i.e. will be traveling at 0 mph when stopped), sufficient sight distance is available to ensure safe and efficient operation of the roadway to the east.

Based on the sight distance analysis, adequate sight distances will be available at the site access intersection to ensure safe and efficient operation along SE Washington Street. No sight distance mitigation is necessary or recommended.

An exhibit depicting sight distances with buildout of the proposed development is presented in Figure B in the technical appendix.

Warrant Analysis

Preliminary traffic signal warrants were examined for the intersection of SE Washington Street at SE Main Street to determine whether the installation of a new traffic signal will be warranted upon completion of the proposed development. Based on the preliminary signal warrant analysis, traffic signal warrants are not projected to be met at the unsignalized study intersection under any of the analysis scenarios.

Safe Pedestrian Routes to Vicinity School

According to the North Clackamas School District's school boundary maps, there are four nearby public schools which may reasonably serve the site:

- Milwaukie High School & Milwaukie Academy of the Arts;
- Milwaukie El Puente Elementary; and
- Rowe Middle School.

Milwaukie High School & Milwaukie Academy of the Arts

Milwaukie High School & Milwaukie Academy of the Arts are located within a 0.25-mile walking/biking distance to the east of the site. Pedestrian travel between the school and site is available utilizing multiple routes of travel by way of SE Washington Street, SE Main Street/SE Lake Road, and/or SE 21st Avenue. Complete sidewalks are available along both sides of these roadways, with marked crossings at the applicable intersections of SE Washington Street at SE Main Street, SE Washington Street at SE 21st Avenue, SE Washington Street at SE 23rd Avenue, SE Adams Street at SE 21st Avenue, and SE Lake Road at SE 21st Avenue.

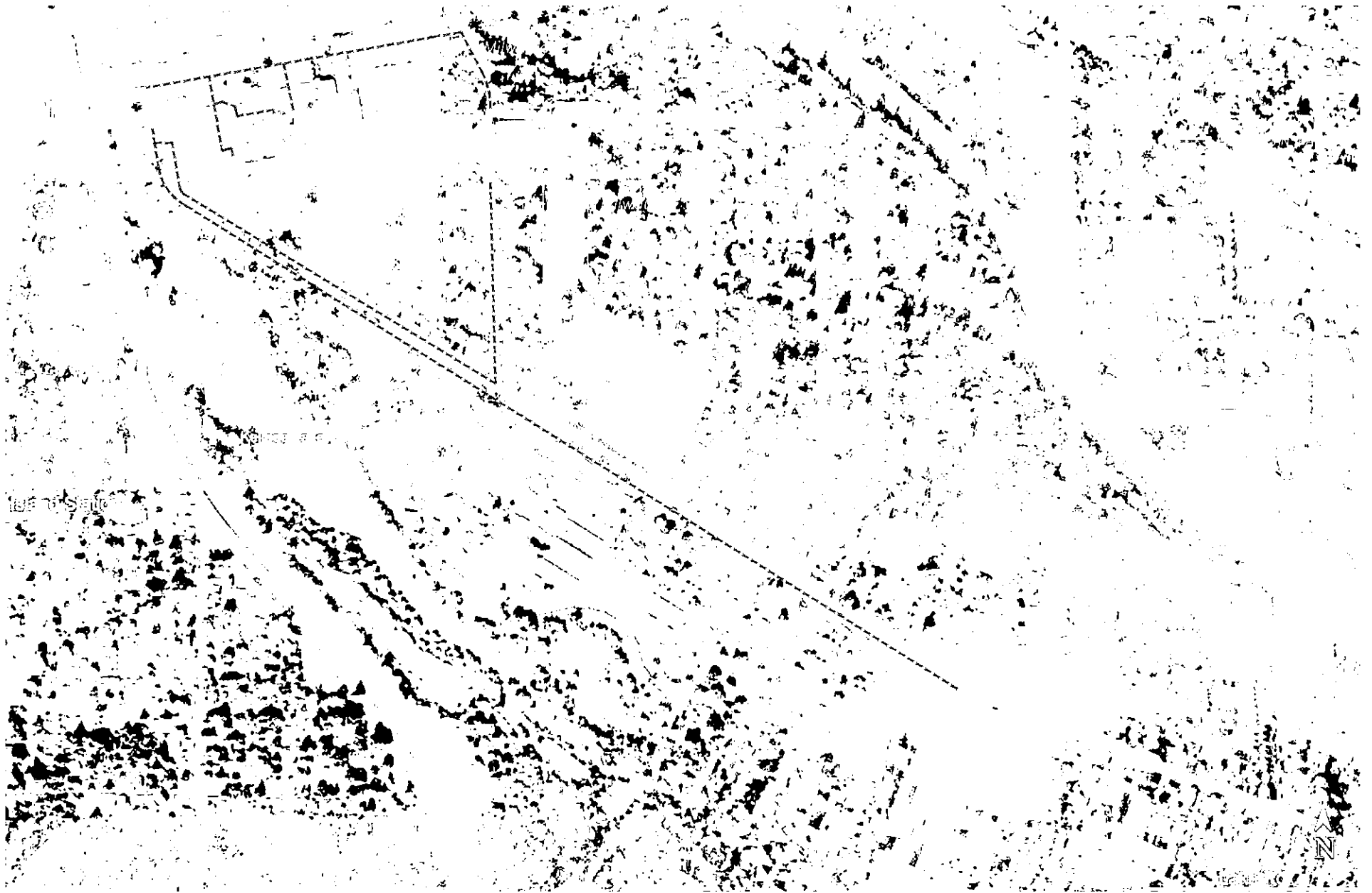
Milwaukie El Puente Elementary

Milwaukie El Puente Elementary is located within an approximate 0.50-mile walking/biking distance to the east of the site. Pedestrian travel between the school and site is available by way of either SE Washington Street and SE 27th Avenue or by SE Main Street/SE Lake Road and SE 27th Avenue. Complete sidewalks are available along both sides of these roadways. Relevant marked crossings are available across all intermittent intersections along these routes. Additionally, multiple mid-block crossings are available along SE Main Street/SE Lake Road, SE Washington Street, and SE 27th Avenue.

Rowe Middle School

Rowe Middle School is located within a 1.00-mile walking/biking distance to the southeast of the site. Pedestrian travel between the school and site is available by way of SE Main Street/SE Lake Road. Sidewalks are complete along both sides of these roadways and relevant marked crossings are generally available at intermittent intersections as well as across SE Main Street/SE Lake Road.

Figure 10 depicts the available pedestrian routes to the nearby public schools which may serve residents of the site.



Operational Analysis

Intersection Capacity Analysis

A capacity and delay analysis were conducted for each of the study intersections per the signalized and unsignalized intersection analysis methodologies in the *Highway Capacity Manual (HCM)*⁴. Intersections are generally evaluated based on the average control delay experienced by vehicles and are assigned a grade according to their operation. The level of service (LOS) of an intersection can range from LOS A, which indicates very little or no delay experienced by vehicles, to LOS F, which indicates a high degree of congestion and delay. The volume-to-capacity (v/c) ratio is a measure that compares the traffic volumes (demand) against the available capacity of an intersection.

Performance Standards

According to City of Milwaukee's TSP Article 13, intersections under City jurisdiction are required to operate at LOS D or better. For intersections under ODOT jurisdiction (i.e. intersections along OR-99E), per *Table 7: Volume to Capacity Ratio Targets within Portland Metropolitan Region of the Oregon Highway Plan (OHP)* intersections are required to operate with v/c ratios of 0.99 or less.

Delay & Capacity Analysis

The LOS, delay, and v/c results of the capacity analysis are shown in Table 8 for the morning and evening peak hours. Due to the lane configurations of SE Harrison Street at OR-99E and SE Washington Street at OR-99E, the HCM 6th Edition, utilizing Synchro software, does not provide capacity outputs. Therefore, HCM 2000 methodologies and capacity results were reported at these intersections in lieu of the HCM 6th Edition. Additionally, the Synchro software does not report the overall v/c ratio of signalized intersections in the HCM 6th Edition capacity reports. For these intersections, the v/c ratio was calculated utilizing methods detailed in ODOT's *APM Section 13 Signalized Intersection Analysis*.

Detailed calculations as well as tables showing the relationship between delay and LOS are included in the appendix to this report.

⁴ Transportation Research Board, *Highway Capacity Manual 6th Edition*, 2016.

Table 8: Capacity Analysis Summary

	AM Peak Hour			PM Peak Hour		
	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
1. SE Harrison Street at OR-99E						
2020 Existing Conditions	C	30	0.76	E	55	0.91
2022 Background Conditions	C	31	0.78	E	69	0.95
2022 Buildout Conditions (Full Movement Access)	C	31	0.79	E	72	0.96
2022 Buildout Conditions (No LT Egress Access)	C	31	0.79	E	72	0.96
2022 Buildout Conditions (RIRO Access)	C	31	0.79	E	72	0.96
2. SE Monroe Street at OR-99E						
2020 Existing Conditions	A	2	0.59	A	4	0.69
2022 Background Conditions	A	2	0.60	A	4	0.71
2022 Buildout Conditions (Full Movement Access)	A	2	0.61	A	4	0.72
2022 Buildout Conditions (No LT Egress Access)	A	3	0.62	A	4	0.73
2022 Buildout Conditions (RIRO Access)	A	3	0.62	A	5	0.74
3. SE Washington Street at OR-99E						
2020 Existing Conditions	B	13	0.75	B	10	0.83
2022 Background Conditions	B	16	0.79	B	12	0.85
2022 Buildout Conditions (Full Movement Access)	B	17	0.81	B	14	0.86
2022 Buildout Conditions (No LT Egress Access)	B	16	0.79	B	13	0.85
2022 Buildout Conditions (RIRO Access)	B	16	0.80	B	13	0.85

Table Notes: **BOLDED** text indicates intersection operation above jurisdictional standards.

Table 8: Capacity Analysis Summary (Continued)

	AM Peak Hour			PM Peak Hour		
	LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
A. Site Access at SE Washington Street						
2020 Existing Conditions	A	10	<0.01	A	10	0.01
2022 Background Conditions	B	10	<0.01	B	10	0.01
2022 Buildout Conditions (Full Movement Access)	B	11	0.08	B	11	0.08
2022 Buildout Conditions (No LT Egress Access)	A	9	0.06	A	9	0.06
2022 Buildout Conditions (RIRO Access)	A	9	0.06	A	9	0.06
4. SE Washington Street at SE Main Street						
2020 Existing Conditions	A	9	-	A	9	-
2022 Background Conditions	A	10	-	A	10	-
2022 Buildout Conditions (Full Movement Access)	A	10	-	A	10	-
2022 Buildout Conditions (No LT Egress Access)	B	10	-	B	10	-
2022 Buildout Conditions (RIRO Access)	B	10	-	B	10	-
5. SE Washington Street at SE 21st Avenue						
2020 Existing Conditions	A	7	0.25	A	7	0.17
2022 Background Conditions	A	7	0.27	A	7	0.19
2022 Buildout Conditions (Full Movement Access)	A	7	0.28	A	7	0.20
2022 Buildout Conditions (No LT Egress Access)	A	7	0.28	A	7	0.20
2022 Buildout Conditions (RIRO Access)	A	7	0.28	A	7	0.20

Table Notes: **BOLDED** text indicates intersection operation above jurisdictional standards.

Based on the results of the operational analysis, all study intersections are currently operating acceptably per City of Milwaukie and ODOT standards and are projected to continue operating acceptable through the 2022 site buildout year. No operational mitigation is necessary or recommended at these intersections.

Queuing Analysis

To determine whether queue lengths from site entering traffic would extend back to the adjacent study intersections along SE Washington Street, a queuing analysis was conducted. The queue lengths were projected based on the results of a Synchro/SimTraffic simulation, with the reported values based on the 95th percentile queue lengths. The 95th percentile queue is a statistical measurement which indicates there is a 5 percent chance that the queue may exceed this length during the analysis period; however, given this is a probability, the 95th percentile queue length may theoretically never be met or observed in the field.

The projected 95th percentile queue lengths reported in the simulation are presented in Table 9 for the morning and evening peak hours. Reported queue lengths were rounded up to the nearest five feet. Note, the queuing analysis takes in account potential queues which may form due to the site access and does not take into consideration extended queues which may result from the adjacent intersections of along SE Washington Street. Detailed queuing analysis worksheets are included in the technical appendix to this report.

Table 9: Site Access Queuing Analysis Summary

	Available Storage (Feet)	Full Movement Access		Restricted Left-out Access		Right-in/Right-out Access	
		AM	PM	AM	PM	AM	PM
EB Through Lane/Right-turn Lane	125	0	5	0	5	0	0
WB Left-turn/Through Lane	55	15	30	15	25	-	-

BOLDED text indicates queue extends beyond available lane storage.

Based on the analysis, the projected 95th percentile queues which may result from site entering trips are not projected to extend back to the adjacent study intersections along SE Washington Street. Accordingly, no queuing-related issues are expected to occur, and no mitigation is necessary or recommended.

Conclusions

No significant trends or crash patterns were identified at any of the study intersections that were indicative of safety concerns. In addition, none of the study intersections exhibit crash rates near or above the 1.00 CMEV threshold nor do any of the study intersections along OR-99E have a crash rate exceeding ODOT's 90th percentile rate.

Adequate sight distances are currently available at the site access intersection to ensure safe and efficient operation along SE Washington Street.

Due to insufficient main and side-street traffic volumes, traffic signal warrants are not projected to be met at the intersection of SE Washington Street at SE Main Street under any of the analysis scenarios.

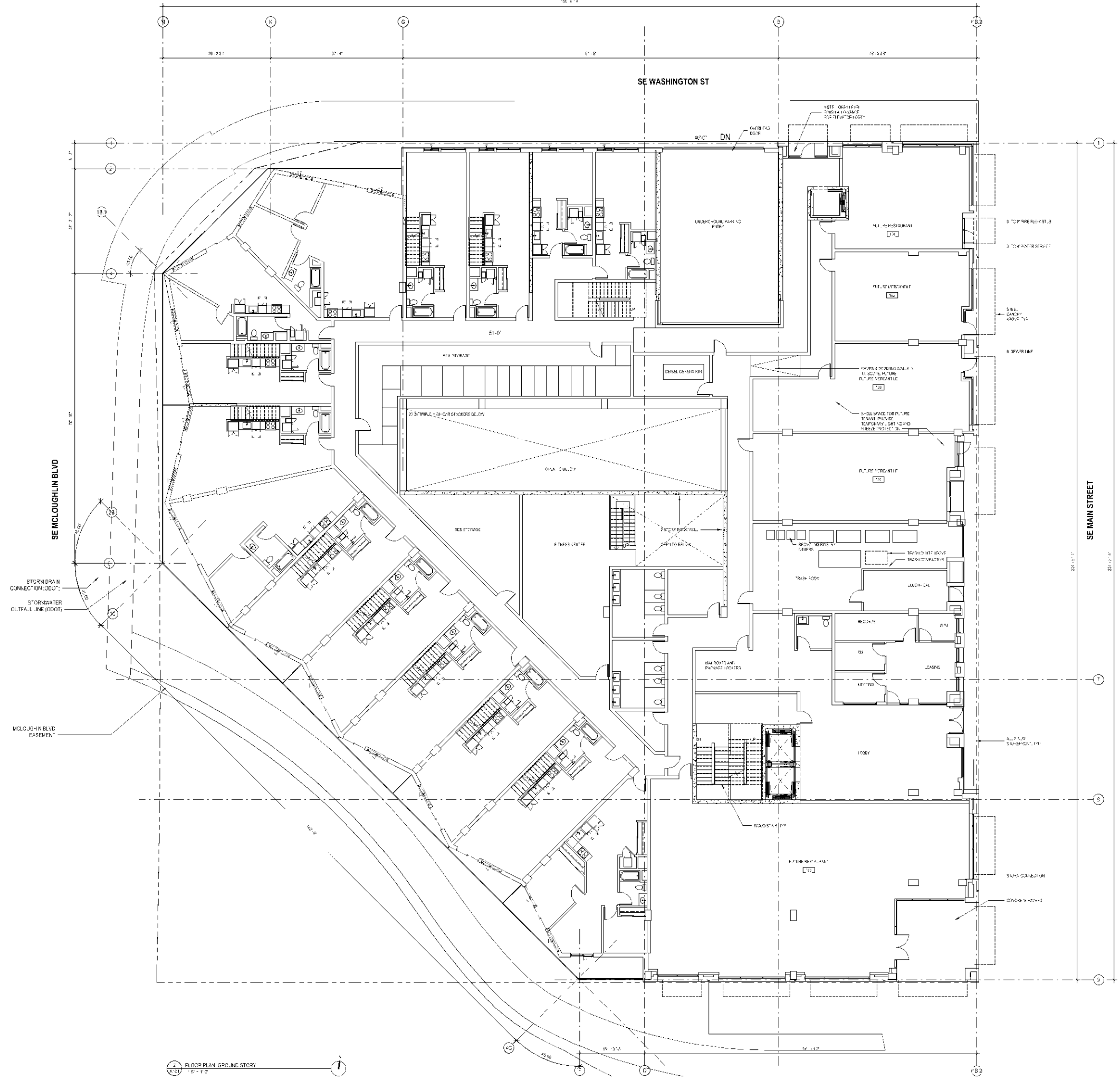
All study intersections are currently operating acceptably per City of Milwaukie and ODOT standards and are projected to continue operating acceptably through the 2022 buildout year of the site.

The projected 95th percentile queues which may result from site entering trips are not projected to extend back to the adjacent study intersections along SE Washington Street.

Appendix A

Site Plan





COHO POINT

17-021
11103 SE MAIN ST
MILWAUKIE, OR 97222

50% DESIGN DEVELOPMENT

APRIL 30, 2019

COMPANY:
JONES ARCHITECTURE
120 WEST 5TH AVE. SUITE 210
PORTLAND, OREGON 97209
P. 503.255.7555
WWW.JONESARCH.COM

4/15/19

FLOOR PLAN, GROUND STORY

A101

2 FLOOR PLAN, GROUND STORY
8" = 1'-0"

Appendix B

Trip Generation Calculations





TRIP GENERATION CALCULATIONS
Existing Conditions

Land Use: General Office Building
Land Use Code: 710
Setting/Location: General Urban/Suburban
Variable: 1000 Sq Ft Gross Floor Area
Variable Value: 7.706

AM PEAK HOUR

Trip Rate: 1.16

	Enter	Exit	Total
Directional Distribution	86%	14%	
Trip Ends	8	1	9

PM PEAK HOUR

Trip Rate: 1.15

	Enter	Exit	Total
Directional Distribution	16%	84%	
Trip Ends	1	8	9

WEEKDAY

Trip Rate: 9.74

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	38	38	76

SATURDAY

Trip Rate: 2.21

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	9	9	18



TRIP GENERATION CALCULATIONS
Proposed Conditions

Land Use: Multifamily Housing (Mid-Rise)
Land Use Code: 221
Setting/Location: General Urban/Suburban
Variable: Dwelling Units
Variable Value: 195

AM PEAK HOUR

Trip Rate: 0.36

	Enter	Exit	Total
Directional Distribution	26%	74%	
Trip Ends	18	52	70

PM PEAK HOUR

Trip Rate: 0.44

	Enter	Exit	Total
Directional Distribution	61%	39%	
Trip Ends	52	34	86

WEEKDAY

Trip Rate: 5.44

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	530	530	1,060

SATURDAY

Trip Rate: 4.91

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	479	479	958



TRIP GENERATION CALCULATIONS
Proposed Conditions

Land Use: Shopping Center
Land Use Code: 820
Setting/Location: General Urban/Suburban
Variable: 1,000 Sq. Ft. GFA
Variable Value: 6.733

AM PEAK HOUR

Trip Rate: 0.94

	Enter	Exit	Total
Directional Distribution	62%	38%	
Trip Ends	4	2	6

PM PEAK HOUR

Trip Rate: 3.81

	Enter	Exit	Total
Directional Distribution	48%	52%	
Trip Ends	12	14	26

WEEKDAY

Trip Rate: 37.75

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	127	127	254

SATURDAY

Trip Rate: 46.12

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	155	155	310

Appendix C

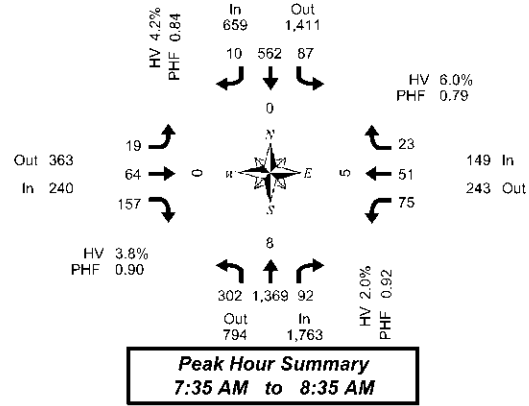
Traffic Counts



Total Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 99 & SE Harrison St

Tuesday, March 05, 2019
7:00 AM to 9:00 AM

5-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	24	114	4	0	3	25	0	0	2	1	8	0	3	2	0	0	186	0	0	0	0
7:05 AM	17	123	4	0	5	36	1	0	2	0	9	0	6	2	4	0	209	0	0	0	0
7:10 AM	27	140	6	0	1	35	3	0	0	1	9	0	3	3	0	0	228	0	2	0	0
7:15 AM	24	125	5	0	5	32	3	0	2	0	13	0	9	4	0	0	222	0	0	0	0
7:20 AM	32	148	5	0	0	50	0	0	1	3	12	0	4	2	2	0	259	0	0	0	0
7:25 AM	17	98	7	0	4	48	4	0	0	2	9	0	10	1	1	0	201	0	1	0	0
7:30 AM	33	119	4	0	3	33	1	0	0	1	9	0	7	1	1	0	212	0	2	0	0
7:35 AM	20	91	3	0	2	43	1	0	0	4	22	0	6	4	1	0	197	0	1	0	0
7:40 AM	21	155	11	0	2	54	1	0	0	0	14	0	9	0	4	0	271	0	0	0	0
7:45 AM	19	83	6	0	3	65	0	0	3	3	6	0	8	4	1	0	201	0	0	0	0
7:50 AM	38	137	9	0	7	40	3	0	3	4	17	0	4	0	3	0	265	0	0	0	0
7:55 AM	22	97	12	0	6	46	0	0	2	5	10	0	5	2	0	0	207	0	1	0	0
8:00 AM	28	126	4	0	7	43	1	0	1	4	13	0	7	5	2	0	241	0	1	0	0
8:05 AM	9	87	6	0	19	70	1	0	3	6	13	0	5	6	2	0	227	0	1	1	0
8:10 AM	22	133	9	0	12	41	0	0	2	11	14	0	4	4	3	0	255	0	2	1	0
8:15 AM	23	117	8	0	13	37	2	0	1	2	11	0	6	4	3	0	227	0	1	1	0
8:20 AM	39	121	5	0	3	32	0	0	2	11	10	2	7	8	0	0	238	0	0	1	0
8:25 AM	22	104	10	0	11	60	1	0	0	12	15	0	6	5	2	0	248	0	1	0	0
8:30 AM	39	118	9	0	2	31	0	0	2	2	12	0	8	9	2	0	234	0	0	1	0
8:35 AM	23	71	3	0	8	54	1	0	0	5	12	0	4	5	5	0	191	0	2	2	0
8:40 AM	25	72	7	0	10	34	1	0	1	1	15	1	3	3	2	0	174	0	3	2	0
8:45 AM	15	63	3	0	7	61	2	0	0	4	13	0	12	3	3	0	186	0	1	0	0
8:50 AM	20	83	10	0	7	45	0	0	1	3	12	0	7	1	1	0	190	0	0	0	0
8:55 AM	8	57	3	0	10	46	1	0	3	8	10	1	7	1	3	0	157	0	0	0	0
Total Survey	567	2,582	153	0	150	1,061	27	0	31	93	288	4	150	79	45	0	5,226	0	19	9	0

15-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	68	377	14	0	9	96	4	0	4	2	26	0	12	7	4	0	623	0	2	0	0
7:15 AM	73	371	17	0	9	130	7	0	3	5	34	0	23	7	3	0	682	0	1	0	0
7:30 AM	74	365	18	0	7	130	3	0	0	5	45	0	22	5	6	0	680	0	3	0	0
7:45 AM	79	317	27	0	16	151	3	0	8	12	33	0	17	6	4	0	673	0	1	0	0
8:00 AM	59	346	19	0	38	154	2	0	6	21	40	0	16	15	7	0	723	0	4	2	0
8:15 AM	84	342	23	0	27	129	3	0	3	25	36	2	19	17	5	0	713	0	2	2	0
8:30 AM	87	261	19	0	20	119	2	0	3	8	39	1	15	17	9	0	599	0	5	5	0
8:45 AM	43	203	16	0	24	152	3	0	4	15	35	1	26	5	7	0	533	0	1	0	0
Total Survey	567	2,582	153	0	150	1,061	27	0	31	93	288	4	150	79	45	0	5,226	0	19	9	0

Peak Hour Summary 7:35 AM to 8:35 AM

By Approach	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	1,763	794	2,557	0	659	1,411	2,070	0	240	363	603	2	149	243	392	0	2,811	0	8	5	0
%HV	2.0%				4.2%				3.8%				6.0%				2.9%				
PHF	0.92				0.84				0.90				0.79				0.95				

By Movement	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	302	1,369	92	1,763	87	562	10	659	19	64	157	240	75	51	23	149	2,811
%HV	3.0%	1.8%	3.3%	2.0%	1.1%	4.8%	0.0%	4.2%	5.3%	6.3%	2.5%	3.8%	5.3%	7.8%	4.3%	6.0%	2.9%
PHF	0.76	0.91	0.85	0.92	0.49	0.87	0.63	0.84	0.59	0.64	0.93	0.90	0.82	0.58	0.72	0.79	0.95

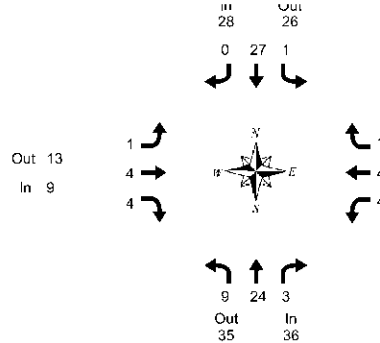
Rolling Hour Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
7:00 AM	294	1,430	76	0	41	507	17	0	15	24	138	0	74	25	17	0	2,658	0	7	0	0
7:15 AM	285	1,399	81	0	70	565	15	0	17	43	152	0	78	33	20	0	2,758	0	9	2	0
7:30 AM	296	1,370	87	0	88	564	11	0	17	63	154	2	74	43	22	0	2,789	0	10	4	0
7:45 AM	309	1,266	88	0	101	553	10	0	20	66	148	3	67	55	25	0	2,708	0	12	9	0
8:00 AM	273	1,152	77	0	109	554	10	0	16	69	150	4	76	54	28	0	2,568	0	12	9	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 99 & SE Harrison St

Tuesday, March 05, 2019

7:00 AM to 9:00 AM

Peak Hour Summary
7:35 AM to 8:35 AM

Heavy Vehicle 5-Minute Interval Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	1	1	1	3	0	2	0	2	1	1	1	3	0	0	0	0	8
7:05 AM	0	3	0	3	1	1	0	2	0	0	0	0	0	0	0	0	5
7:10 AM	0	3	0	3	0	1	0	1	0	0	0	0	0	1	0	1	5
7:15 AM	0	2	0	2	2	1	0	3	0	0	0	0	0	0	0	0	5
7:20 AM	0	1	0	1	0	1	0	1	0	1	0	1	0	0	0	0	3
7:25 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
7:30 AM	0	2	0	2	0	1	0	1	0	0	0	0	1	0	0	1	4
7:35 AM	1	0	0	1	0	1	0	1	0	1	0	1	0	0	0	0	3
7:40 AM	0	1	0	1	0	3	0	3	0	0	0	0	0	0	0	0	4
7:45 AM	0	0	0	0	0	2	0	2	0	0	1	1	0	1	0	1	4
7:50 AM	1	4	0	5	0	4	0	4	0	0	0	0	0	0	0	0	9
7:55 AM	0	0	1	1	0	3	0	3	0	1	0	1	0	1	0	1	6
8:00 AM	0	1	0	1	0	2	0	2	0	0	0	0	1	0	0	1	4
8:05 AM	0	1	0	1	1	3	0	4	1	1	0	2	0	1	0	1	8
8:10 AM	1	3	1	5	0	1	0	1	0	0	0	0	0	0	1	1	7
8:15 AM	1	6	1	8	0	2	0	2	0	0	1	1	0	0	0	0	11
8:20 AM	2	4	0	6	0	2	0	2	0	1	1	2	1	0	0	1	11
8:25 AM	1	2	0	3	0	2	0	2	0	0	0	0	2	1	0	3	8
8:30 AM	2	2	0	4	0	2	0	2	0	0	1	1	0	0	0	0	7
8:35 AM	0	5	0	5	0	3	0	3	0	1	0	1	0	0	1	1	10
8:40 AM	2	4	0	6	1	2	0	3	0	0	1	1	0	0	0	0	10
8:45 AM	1	0	0	1	0	4	0	4	0	0	1	1	0	2	0	2	8
8:50 AM	1	2	0	3	0	2	0	2	0	1	0	1	0	0	0	0	6
8:55 AM	0	2	0	2	0	1	0	1	1	2	0	3	1	0	0	1	7
Total Survey	14	49	4	67	5	47	0	52	3	10	7	20	6	8	2	16	155

Heavy Vehicle 15-Minute Interval Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	1	7	1	9	1	4	0	5	1	1	1	3	0	1	0	1	18
7:15 AM	0	3	0	3	2	3	0	5	0	1	0	1	0	1	0	1	10
7:30 AM	1	3	0	4	0	5	0	5	0	1	0	1	1	0	0	1	11
7:45 AM	1	4	1	6	0	9	0	9	0	1	1	2	0	2	0	2	19
8:00 AM	1	5	1	7	1	6	0	7	1	1	0	2	1	1	1	3	19
8:15 AM	4	12	1	17	0	6	0	6	0	1	2	3	3	1	0	4	30
8:30 AM	4	11	0	15	1	7	0	8	0	1	2	3	0	0	1	1	27
8:45 AM	2	4	0	6	0	7	0	7	1	3	1	5	1	2	0	3	21
Total Survey	14	49	4	67	5	47	0	52	3	10	7	20	6	8	2	16	155

Heavy Vehicle Peak Hour Summary

7:35 AM to 8:35 AM

By Approach	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Harrison St			Westbound SE Harrison St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	36	35	71	28	26	54	9	13	22	9	8	17	82
PHF	0.47			0.78			0.75			0.56			0.68

By Movement	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	9	24	3	36	1	27	0	28	1	4	4	9	4	4	1	9	82
PHF	0.45	0.46	0.38	0.47	0.25	0.75	0.00	0.78	0.25	0.50	0.50	0.75	0.33	0.50	0.25	0.56	0.68

Heavy Vehicle Rolling Hour Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	3	17	2	22	3	21	0	24	1	4	2	7	1	4	0	5	58
7:15 AM	3	15	2	20	3	23	0	26	1	4	1	6	2	4	1	7	59
7:30 AM	7	24	3	34	1	25	0	27	1	4	3	8	5	4	1	10	79
7:45 AM	10	32	3	45	2	28	0	30	1	4	5	10	4	4	2	10	95
8:00 AM	11	32	2	45	2	25	0	28	2	6	5	13	5	4	2	11	97

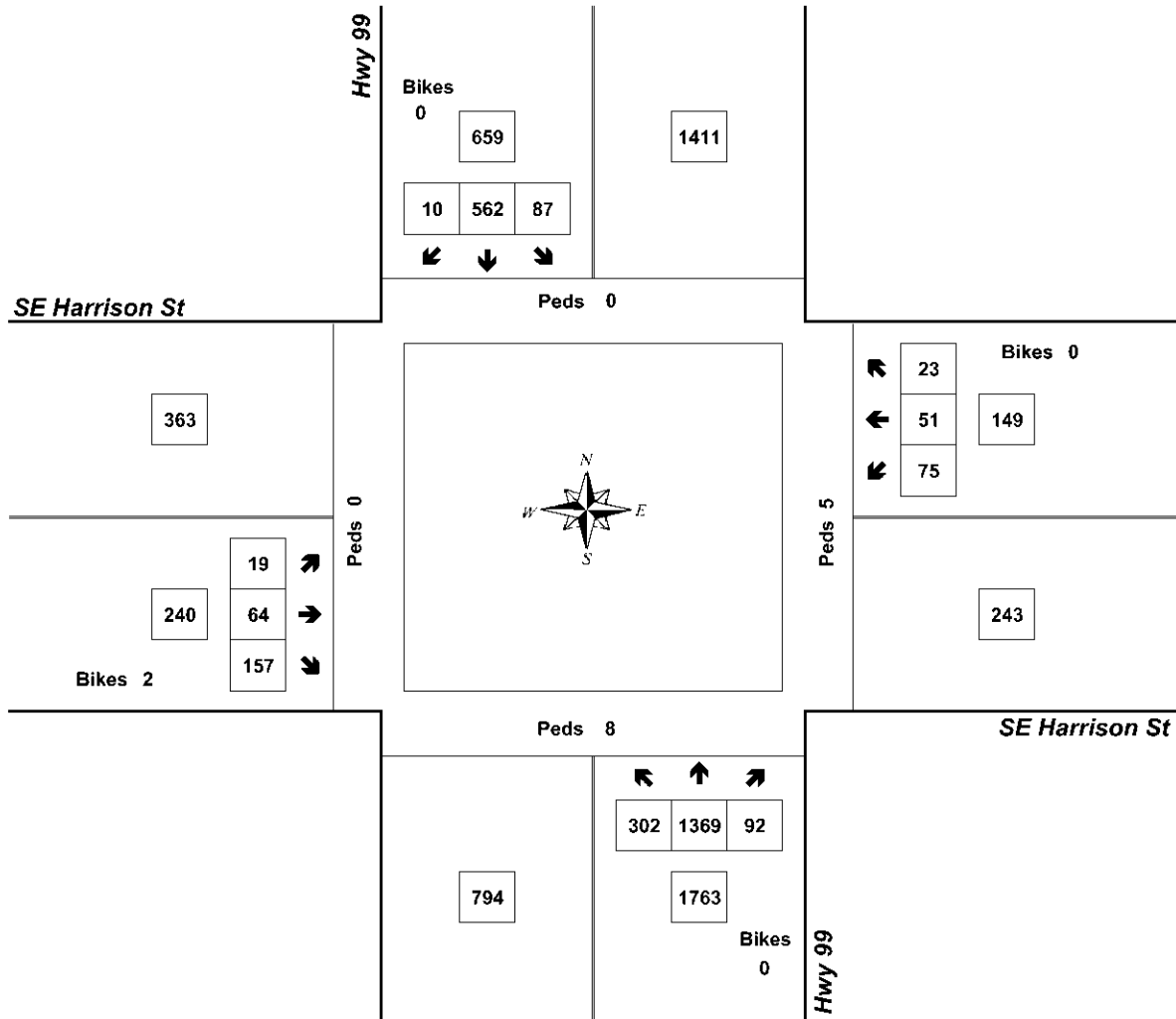
Peak Hour Summary



Clay Carney
(503) 833-2740

Hwy 99 & SE Harrison St

7:35 AM to 8:35 AM
Tuesday, March 05, 2019



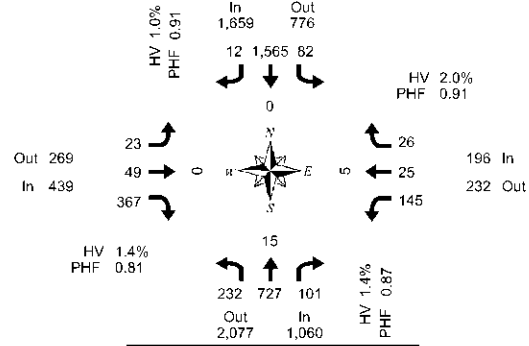
Approach	PHF	HV%	Volume
EB	0.90	3.8%	240
WB	0.79	6.0%	149
NB	0.92	2.0%	1,763
SB	0.84	4.2%	659
Intersection	0.95	2.9%	2,811

Count Period: 7:00 AM to 9:00 AM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 99 & SE Harrison St

Tuesday, March 05, 2019
4:00 PM to 6:00 PM

Peak Hour Summary
4:50 PM to 5:50 PM

5-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	16	35	3	0	10	106	1	0	2	4	38	0	15	5	2	0	238	0	1	0	0
4:05 PM	13	55	5	0	5	162	2	0	0	3	31	0	13	1	0	0	290	0	0	1	0
4:10 PM	26	56	7	1	9	128	0	0	1	6	30	0	10	4	1	0	278	0	1	0	0
4:15 PM	14	66	10	0	9	146	0	0	2	4	32	0	10	2	2	0	297	0	1	0	0
4:20 PM	22	40	6	0	5	124	0	0	2	6	33	0	13	2	2	0	255	0	0	0	0
4:25 PM	15	55	10	0	8	172	1	0	0	2	30	0	5	2	1	1	301	0	0	0	0
4:30 PM	20	43	7	0	4	113	2	0	3	10	43	0	17	3	3	0	268	0	2	0	0
4:35 PM	14	69	11	0	7	136	0	0	3	4	36	0	9	5	1	0	295	0	1	0	0
4:40 PM	17	52	13	0	7	120	0	0	2	6	34	0	13	4	4	0	272	0	1	0	0
4:45 PM	15	45	7	0	6	148	0	0	1	2	20	0	8	4	0	0	256	0	1	0	0
4:50 PM	20	49	5	0	7	116	1	0	1	4	32	0	10	0	4	0	249	0	1	0	0
4:55 PM	15	66	3	0	4	158	1	0	1	3	23	0	12	4	2	0	292	0	1	0	0
5:00 PM	20	48	4	0	7	128	1	0	2	2	30	0	15	1	2	0	260	0	1	0	0
5:05 PM	17	75	10	0	6	148	2	0	5	3	26	0	9	0	1	0	302	0	1	0	0
5:10 PM	26	46	6	0	5	93	1	0	4	5	44	0	17	0	1	0	248	0	1	0	0
5:15 PM	18	76	13	0	10	146	0	0	0	2	28	1	11	4	1	0	309	0	1	0	0
5:20 PM	25	45	10	0	5	133	1	0	0	5	29	0	16	2	2	0	273	0	0	0	0
5:25 PM	18	88	11	0	8	153	0	0	1	2	21	1	10	1	3	0	316	0	0	0	0
5:30 PM	15	42	4	0	9	96	0	0	3	11	40	1	13	3	3	0	239	0	4	3	0
5:35 PM	16	68	16	0	8	135	2	0	2	5	28	0	7	2	5	0	294	0	4	2	0
5:40 PM	24	64	10	0	5	99	0	0	2	3	41	0	14	6	1	0	289	0	1	0	0
5:45 PM	18	60	9	0	8	160	3	0	2	4	25	0	11	2	1	0	303	0	0	0	0
5:50 PM	19	41	9	0	11	106	1	0	1	1	26	1	15	0	2	0	232	0	0	0	0
5:55 PM	16	60	10	0	4	135	5	0	0	4	15	0	6	2	5	0	264	0	0	1	0
Total Survey	441	1,345	199	1	167	3,161	24	0	40	101	735	4	279	59	49	1	6,600	0	23	7	0

15-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	55	147	15	1	24	396	3	0	3	13	99	0	38	10	3	0	806	0	2	1	0
4:15 PM	51	161	26	0	22	442	1	0	4	12	95	0	26	6	5	1	853	0	1	0	0
4:30 PM	51	164	31	0	18	369	2	0	8	20	113	0	39	12	8	0	835	0	4	0	0
4:45 PM	50	160	15	0	17	422	2	0	3	9	75	0	30	8	6	0	797	0	3	0	0
5:00 PM	63	169	20	0	18	369	4	0	11	10	100	0	41	1	4	0	810	0	3	0	0
5:15 PM	61	209	34	0	23	432	1	0	1	9	78	2	37	7	6	0	898	0	1	0	0
5:30 PM	55	174	30	0	22	330	2	0	7	19	109	1	34	11	9	0	802	0	9	5	0
5:45 PM	55	161	28	0	23	401	9	0	3	9	66	1	32	4	8	0	799	0	0	1	0
Total Survey	441	1,345	199	1	167	3,161	24	0	40	101	735	4	279	59	49	1	6,600	0	23	7	0

Peak Hour Summary

4:50 PM to 5:50 PM

By Approach	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	1,060	2,077	3,137	0	1,659	776	2,435	0	439	269	708	3	196	232	428	0	3,354	0	15	5	0
%HV	1.4%				1.0%				1.4%				2.0%				1.2%				
PHF	0.87				0.91				0.81				0.91				0.93				

By Movement	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	232	727	101	1,060	82	1,565	12	1,659	23	49	367	439	145	25	26	196	3,354
%HV	0.9%	1.8%	0.0%	1.4%	1.2%	1.0%	0.0%	1.0%	4.3%	8.2%	0.3%	1.4%	0.0%	16.0%	0.0%	2.0%	1.2%
PHF	0.84	0.87	0.72	0.87	0.82	0.90	0.60	0.91	0.52	0.64	0.84	0.81	0.82	0.57	0.59	0.91	0.93

Rolling Hour Summary

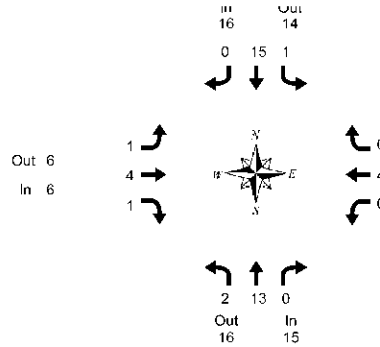
4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	207	632	87	1	81	1,629	8	0	18	54	382	0	135	36	22	1	3,291	0	10	1	0
4:15 PM	215	654	92	0	75	1,602	9	0	26	51	383	0	138	27	23	1	3,295	0	11	0	0
4:30 PM	225	702	100	0	76	1,592	9	0	23	48	366	2	147	26	24	0	3,340	0	11	0	0
4:45 PM	229	712	99	0	80	1,553	9	0	22	47	362	3	142	27	25	0	3,307	0	16	5	0
5:00 PM	234	713	112	0	86	1,532	16	0	22	47	353	4	144	23	27	0	3,309	0	13	6	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 99 & SE Harrison St

Tuesday, March 05, 2019

4:00 PM to 6:00 PM

Peak Hour Summary
4:50 PM to 5:50 PM

Heavy Vehicle 5-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Interval Total	
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total		
4:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	1	2
4:05 PM	0	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	0	3
4:10 PM	0	0	0	0	1	1	0	2	0	1	0	1	0	0	0	0	0	3
4:15 PM	0	4	0	4	0	1	0	1	0	1	0	1	0	0	0	0	0	6
4:20 PM	0	1	0	1	0	5	0	5	0	0	0	0	1	1	0	2	8	
4:25 PM	0	1	0	1	0	2	0	2	0	0	0	0	1	0	0	1	4	
4:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2	
4:35 PM	1	3	0	4	0	0	0	0	0	1	0	1	0	1	0	1	6	
4:40 PM	0	3	1	4	0	0	0	0	0	0	0	0	0	1	0	1	5	
4:45 PM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	
4:50 PM	0	1	0	1	0	1	0	1	0	1	0	1	0	0	0	0	3	
4:55 PM	0	2	0	2	0	1	0	1	0	0	0	0	0	1	0	1	4	
5:00 PM	0	1	0	1	0	2	0	2	0	0	0	0	0	0	0	0	3	
5:05 PM	1	1	0	2	0	2	0	2	0	0	0	0	0	0	0	0	4	
5:10 PM	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2	
5:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2	
5:20 PM	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0	2	
5:25 PM	1	1	0	2	0	2	0	2	0	1	1	2	0	0	0	0	6	
5:30 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	1	2	
5:35 PM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	
5:40 PM	0	2	0	2	0	4	0	4	0	0	0	0	0	1	0	1	7	
5:45 PM	0	1	0	1	1	1	0	2	0	1	0	1	0	0	0	0	4	
5:50 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	
5:55 PM	0	1	0	1	0	1	0	1	0	0	0	0	0	1	0	1	3	
Total Survey	3	30	1	34	2	30	0	32	1	7	1	9	2	9	0	11	86	

Heavy Vehicle 15-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Interval Total	
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total		
4:00 PM	0	2	0	2	1	3	0	4	0	1	0	1	0	1	0	0	1	8
4:15 PM	0	6	0	6	0	8	0	8	0	1	0	1	2	1	0	3	18	
4:30 PM	1	6	1	8	0	2	0	2	0	1	0	1	0	2	0	2	13	
4:45 PM	0	5	0	5	0	2	0	2	0	1	0	1	0	1	0	1	9	
5:00 PM	1	3	0	4	0	5	0	5	0	0	0	0	0	0	0	0	9	
5:15 PM	1	2	0	3	0	3	0	3	0	2	1	3	0	1	0	1	10	
5:30 PM	0	4	0	4	0	4	0	4	1	0	0	1	0	2	0	2	11	
5:45 PM	0	2	0	2	1	3	0	4	0	1	0	1	0	1	0	1	8	
Total Survey	3	30	1	34	2	30	0	32	1	7	1	9	2	9	0	11	86	

Heavy Vehicle Peak Hour Summary

4:50 PM to 5:50 PM

By Approach	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Harrison St			Westbound SE Harrison St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	15	16	31	16	14	30	6	6	12	4	5	9	41
PHF	0.75			0.67			0.38			0.50			0.79

By Movement	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	2	13	0	15	1	15	0	16	1	4	1	6	0	4	0	4	41
PHF	0.50	0.65	0.00	0.75	0.25	0.75	0.00	0.67	0.25	0.50	0.25	0.38	0.00	0.50	0.00	0.50	0.79

Heavy Vehicle Rolling Hour Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Harrison St				Westbound SE Harrison St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	1	19	1	21	1	15	0	16	0	4	0	4	2	5	0	7	48
4:15 PM	2	20	1	23	0	17	0	17	0	3	0	3	2	4	0	6	49
4:30 PM	3	16	1	20	0	12	0	12	0	4	1	5	0	4	0	4	41
4:45 PM	2	14	0	16	0	14	0	14	1	3	1	5	0	4	0	4	39
5:00 PM	2	11	0	13	1	15	0	16	1	3	1	5	0	4	0	4	38

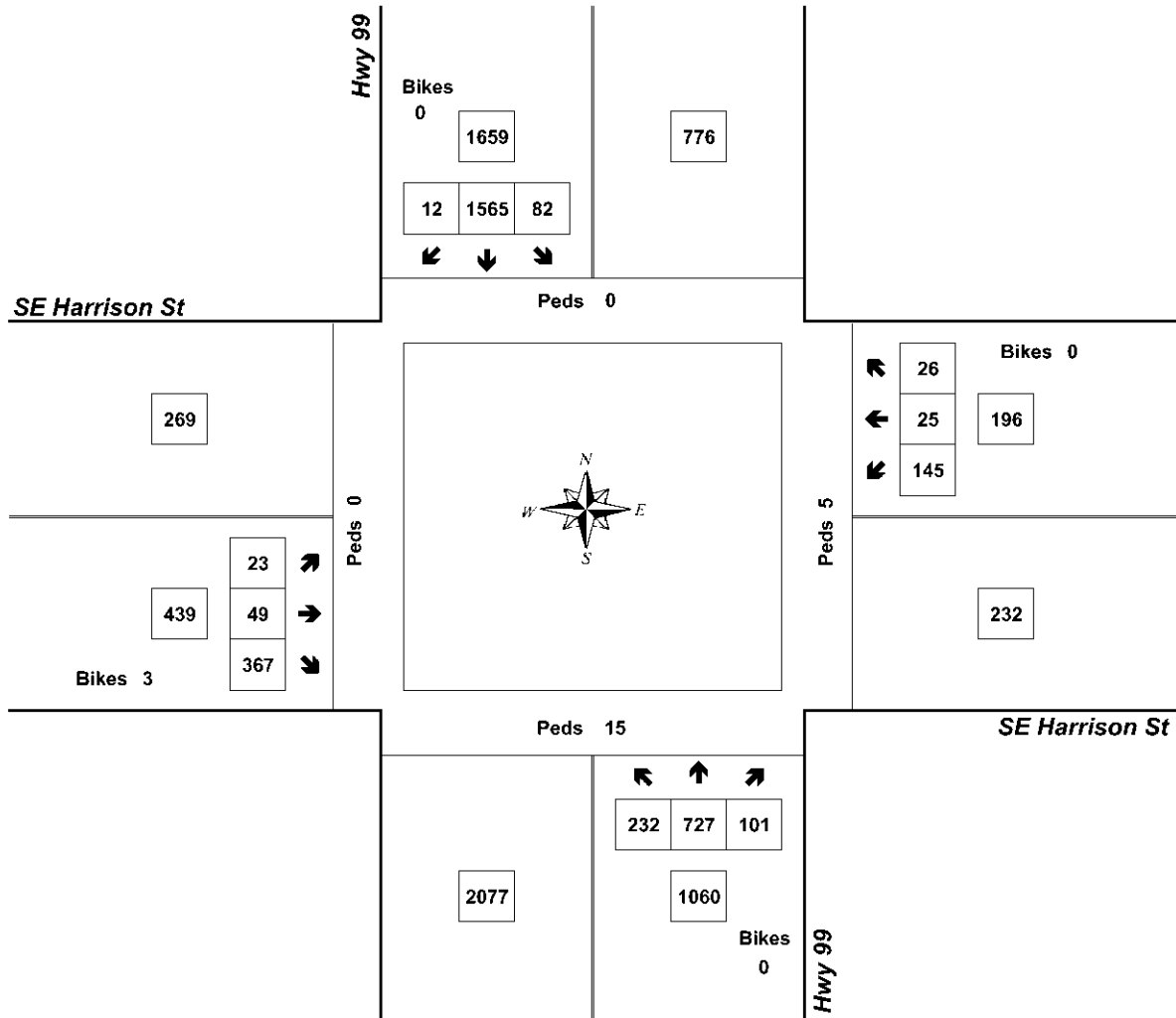
Peak Hour Summary



Clay Carney
(503) 833-2740

Hwy 99 & SE Harrison St

4:50 PM to 5:50 PM
Tuesday, March 05, 2019



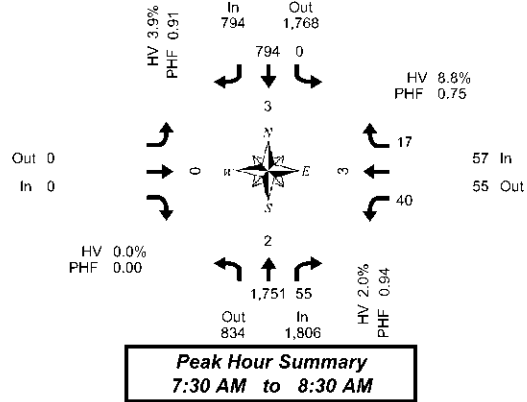
Approach	PHF	HV%	Volume
EB	0.81	1.4%	439
WB	0.91	2.0%	196
NB	0.87	1.4%	1,060
SB	0.91	1.0%	1,659
Intersection	0.93	1.2%	3,354

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 99 & SE Monroe St

Tuesday, March 05, 2019
7:00 AM to 9:00 AM

5-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St		Westbound SE Monroe St			Interval Total	Pedestrians Crosswalk			
	T	R	Bikes	L	T	Bikes	Bikes	L	R	Bikes	North		South	East	West	
7:00 AM	137	1	0	0	39	0	0	2	1	0	180	0	0	0	0	
7:05 AM	169	1	0	0	51	0	0	1	1	0	222	0	0	0	0	
7:10 AM	140	2	0	0	57	0	0	1	0	0	201	0	0	0	0	
7:15 AM	191	3	0	0	51	1	0	1	0	0	246	0	0	0	0	
7:20 AM	159	0	0	0	74	0	0	2	2	0	237	0	0	0	0	
7:25 AM	125	0	0	0	54	0	0	0	0	0	179	0	0	0	0	
7:30 AM	123	4	0	0	66	0	0	3	0	0	196	0	1	0	0	
7:35 AM	167	4	0	0	74	0	0	0	0	0	245	0	0	0	0	
7:40 AM	152	2	0	0	69	0	0	5	0	0	228	0	0	0	0	
7:45 AM	135	3	0	0	76	0	0	4	0	0	218	0	0	0	0	
7:50 AM	124	3	0	0	68	0	0	4	4	0	203	0	0	0	0	
7:55 AM	143	6	0	0	57	0	0	2	0	0	208	0	0	0	0	
8:00 AM	152	8	0	0	67	0	0	5	0	0	232	0	0	0	0	
8:05 AM	143	3	0	0	77	0	0	6	2	0	231	1	0	0	0	
8:10 AM	142	10	0	0	64	0	0	5	1	0	222	1	0	2	0	
8:15 AM	162	7	0	0	46	0	0	2	1	0	220	0	0	0	0	
8:20 AM	138	4	0	0	47	0	0	2	5	0	196	1	0	0	0	
8:25 AM	170	1	0	0	81	0	0	2	4	0	258	0	1	1	0	
8:30 AM	129	5	0	0	53	0	0	5	3	0	195	0	0	0	0	
8:35 AM	84	10	0	0	75	0	0	4	0	0	173	0	0	0	0	
8:40 AM	107	4	0	0	64	0	0	4	4	0	183	0	1	0	0	
8:45 AM	100	4	0	0	75	0	0	1	2	0	182	0	0	0	0	
8:50 AM	74	3	0	0	74	0	0	1	1	0	153	2	0	3	0	
8:55 AM	85	6	0	0	61	0	0	0	3	0	155	0	0	0	0	
Total Survey	3,251	94	0	0	1,522	1	0	62	34	0	4,963	5	3	6	0	

15-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St		Westbound SE Monroe St			Interval Total	Pedestrians Crosswalk			
	T	R	Bikes	L	T	Bikes	Bikes	L	R	Bikes	North		South	East	West	
7:00 AM	446	4	0	0	147	0	0	4	2	0	603	0	0	0	0	
7:15 AM	475	3	0	0	179	1	0	3	2	0	662	0	0	0	0	
7:30 AM	442	10	0	0	209	0	0	8	0	0	669	0	1	0	0	
7:45 AM	402	12	0	0	201	0	0	10	4	0	629	0	0	0	0	
8:00 AM	437	21	0	0	208	0	0	16	3	0	685	2	0	2	0	
8:15 AM	470	12	0	0	176	0	0	6	10	0	674	1	1	1	0	
8:30 AM	320	19	0	0	192	0	0	13	7	0	551	0	1	0	0	
8:45 AM	259	13	0	0	210	0	0	2	6	0	490	2	0	3	0	
Total Survey	3,251	94	0	0	1,522	1	0	62	34	0	4,963	5	3	6	0	

Peak Hour Summary 7:30 AM to 8:30 AM

By Approach	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Monroe St				Westbound SE Monroe St				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	1,806	834	2,640	0	794	1,768	2,562	0	0	0	0	0	57	55	112	0	2,657	3	2	3	0
%HV	2.0%				3.9%				0.0%				8.8%				2.7%				
PHF	0.94				0.91				0.00				0.75				0.96				

By Movement	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Monroe St				Westbound SE Monroe St				Total
	T	R	Total	Bikes	L	T	Total	Bikes	L	R	Total	Bikes	L	R	Total	Bikes	
Volume	1,751	55	1,806	0	794	794	0	0	40	17	57	0	2,657				
%HV	NA	2.1%	0.0%	2.0%	0.0%	3.9%	NA	3.9%	NA	NA	NA	0.0%	12.5%	NA	0.0%	8.8%	2.7%
PHF	0.93	0.65	0.94	0.00	0.91	0.91	0.00	0.63	0.43	0.75	0.96						

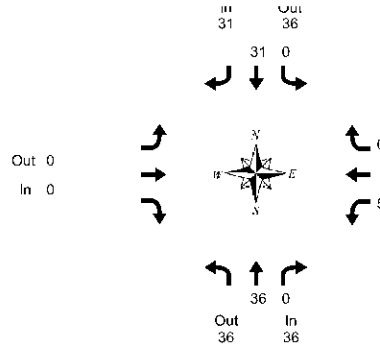
Rolling Hour Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St		Westbound SE Monroe St			Interval Total	Pedestrians Crosswalk			
	T	R	Bikes	L	T	Bikes	Bikes	L	R	Bikes	North		South	East	West	
7:00 AM	1,765	29	0	0	736	1	0	25	8	0	2,563	0	1	0	0	
7:15 AM	1,756	46	0	0	797	1	0	37	9	0	2,645	2	1	2	0	
7:30 AM	1,751	55	0	0	794	0	0	40	17	0	2,657	3	2	3	0	
7:45 AM	1,629	64	0	0	777	0	0	45	24	0	2,539	3	2	3	0	
8:00 AM	1,486	65	0	0	786	0	0	37	25	0	2,400	5	2	6	0	

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 99 & SE Monroe St

Tuesday, March 05, 2019

7:00 AM to 9:00 AM

Peak Hour Summary
7:30 AM to 8:30 AM

Heavy Vehicle 5-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St		Westbound SE Monroe St			Interval Total
	T	R	Total	L	T	Total	Total	L	R	Total		
7:00 AM	3	0	3	0	2	2	0	0	0	0	5	
7:05 AM	2	0	2	0	1	1	0	1	0	1	4	
7:10 AM	2	0	2	0	1	1	0	0	0	0	3	
7:15 AM	2	0	2	0	1	1	0	0	0	0	3	
7:20 AM	3	0	3	0	1	1	0	0	0	0	4	
7:25 AM	2	0	2	0	1	1	0	0	0	0	3	
7:30 AM	0	0	0	0	2	2	0	0	0	0	2	
7:35 AM	1	0	1	0	1	1	0	0	0	0	2	
7:40 AM	3	0	3	0	1	1	0	1	0	1	5	
7:45 AM	1	0	1	0	3	3	0	0	0	0	4	
7:50 AM	4	0	4	0	5	5	0	0	0	0	9	
7:55 AM	2	0	2	0	2	2	0	1	0	1	5	
8:00 AM	0	0	0	0	3	3	0	0	0	0	3	
8:05 AM	1	0	1	0	3	3	0	1	0	1	5	
8:10 AM	7	0	7	0	2	2	0	1	0	1	10	
8:15 AM	6	0	6	0	1	1	0	1	0	1	8	
8:20 AM	6	0	6	0	5	5	0	0	0	0	11	
8:25 AM	5	0	5	0	3	3	0	0	0	0	8	
8:30 AM	3	0	3	0	3	3	0	0	0	0	6	
8:35 AM	2	0	2	0	4	4	0	0	0	0	6	
8:40 AM	5	0	5	0	4	4	0	0	0	0	9	
8:45 AM	2	0	2	0	5	5	0	0	0	0	7	
8:50 AM	3	0	3	0	2	2	0	0	0	0	5	
8:55 AM	3	1	4	0	3	3	0	0	1	1	8	
Total Survey	68	1	69	0	59	59	0	6	1	7	135	

Heavy Vehicle 15-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St		Westbound SE Monroe St			Interval Total
	T	R	Total	L	T	Total	Total	L	R	Total		
7:00 AM	7	0	7	0	4	4	0	1	0	1	12	
7:15 AM	7	0	7	0	3	3	0	0	0	0	10	
7:30 AM	4	0	4	0	4	4	0	1	0	1	9	
7:45 AM	7	0	7	0	10	10	0	1	0	1	18	
8:00 AM	8	0	8	0	8	8	0	2	0	2	18	
8:15 AM	17	0	17	0	9	9	0	1	0	1	27	
8:30 AM	10	0	10	0	11	11	0	0	0	0	21	
8:45 AM	8	1	9	0	10	10	0	0	1	1	20	
Total Survey	68	1	69	0	59	59	0	6	1	7	135	

Heavy Vehicle Peak Hour Summary 7:30 AM to 8:30 AM

By Approach	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St			Westbound SE Monroe St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	36	36	72	31	36	67	0	0	0	5	0	5	72
PHF	0.47			0.78			0.00			0.42			0.62

By Movement	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St		Westbound SE Monroe St			Total
	T	R	Total	L	T	Total	Total	L	R	Total		
Volume	36	0	36	0	31	31	0	5	0	5	72	
PHF	0.47	0.00	0.47	0.00	0.78	0.78	0.00	0.42	0.00	0.42	0.62	

Heavy Vehicle Rolling Hour Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St		Westbound SE Monroe St			Interval Total
	T	R	Total	L	T	Total	Total	L	R	Total		
7:00 AM	25	0	25	0	21	21	0	3	0	3	49	
7:15 AM	26	0	26	0	25	25	0	4	0	4	55	
7:30 AM	36	0	36	0	31	31	0	5	0	5	72	
7:45 AM	42	0	42	0	38	38	0	4	0	4	84	
8:00 AM	43	1	44	0	36	36	0	3	1	4	86	

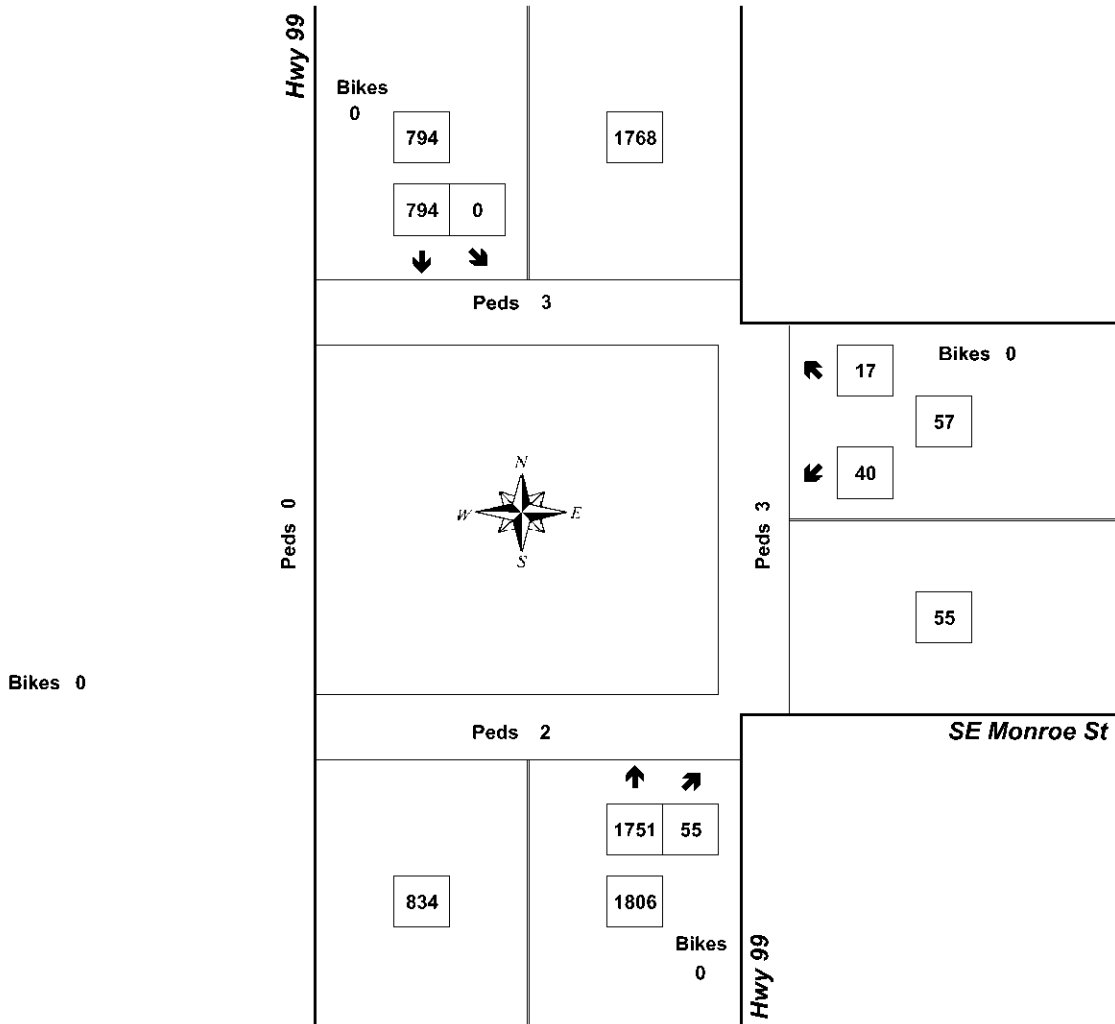
Peak Hour Summary



Clay Carney
(503) 833-2740

Hwy 99 & SE Monroe St

7:30 AM to 8:30 AM
Tuesday, March 05, 2019



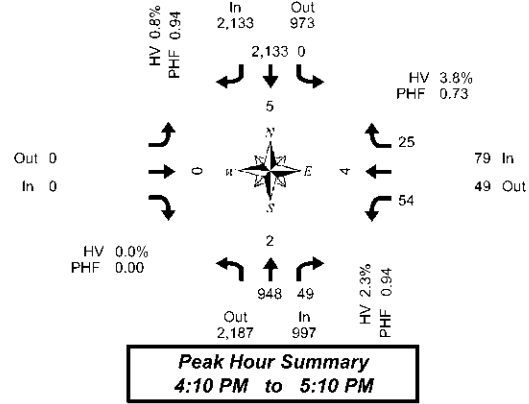
Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.75	8.8%	57
NB	0.94	2.0%	1,806
SB	0.91	3.9%	794
Intersection	0.96	2.7%	2,657

Count Period: 7:00 AM to 9:00 AM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 99 & SE Monroe St

Tuesday, March 05, 2019
4:00 PM to 6:00 PM

5-Minute Interval Summary 4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St		Westbound SE Monroe St			Interval Total	Pedestrians Crosswalk			
	T	R	Bikes	L	T	Bikes	Bikes	L	R	Bikes	North		South	East	West	
4:00 PM	79	2	0	0	185	0	0	1	2	0	269	0	0	2	0	
4:05 PM	71	3	0	0	172	0	0	6	1	0	253	0	0	0	0	
4:10 PM	98	7	1	0	196	0	0	3	2	0	306	0	0	0	0	
4:15 PM	74	2	0	0	170	0	0	6	2	0	254	0	0	0	0	
4:20 PM	81	4	0	0	190	0	0	2	4	0	281	1	0	0	0	
4:25 PM	63	6	0	0	185	0	0	4	4	0	262	0	0	0	0	
4:30 PM	70	6	0	0	194	0	0	2	2	0	274	1	0	2	0	
4:35 PM	95	0	0	0	157	0	0	2	1	0	255	1	1	0	0	
4:40 PM	67	4	0	0	195	0	0	4	1	0	271	0	0	0	0	
4:45 PM	76	3	0	0	148	0	0	3	0	0	230	0	0	0	0	
4:50 PM	75	3	0	0	185	0	0	5	5	0	273	1	1	0	0	
4:55 PM	72	2	0	0	170	0	0	3	2	0	249	0	0	0	0	
5:00 PM	82	6	0	0	182	0	0	11	1	0	282	0	0	2	0	
5:05 PM	95	6	0	0	161	0	0	9	1	1	272	1	0	0	0	
5:10 PM	82	2	0	0	182	0	0	4	3	0	273	0	0	1	0	
5:15 PM	94	4	0	0	163	0	0	3	3	0	267	0	0	2	0	
5:20 PM	84	1	0	0	186	0	0	4	3	0	278	0	0	0	0	
5:25 PM	91	2	0	0	169	1	0	9	4	0	275	1	0	0	0	
5:30 PM	77	3	0	0	177	0	0	3	3	0	263	0	0	1	0	
5:35 PM	92	4	0	0	151	0	0	2	3	0	252	0	0	0	0	
5:40 PM	77	1	0	0	168	0	0	6	4	0	256	0	1	0	0	
5:45 PM	77	3	0	0	180	0	0	5	2	0	257	0	0	0	0	
5:50 PM	75	3	0	0	169	1	0	2	1	0	250	0	0	0	0	
5:55 PM	71	3	0	0	135	0	0	1	4	0	214	0	0	1	0	
Total Survey	1,918	80	1	0	4,170	2	0	100	58	1	6,326	6	3	11	0	

15-Minute Interval Summary 4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St		Westbound SE Monroe St			Interval Total	Pedestrians Crosswalk			
	T	R	Bikes	L	T	Bikes	Bikes	L	R	Bikes	North		South	East	West	
4:00 PM	248	12	1	0	553	0	0	10	5	0	828	0	0	2	0	
4:15 PM	218	12	0	0	545	0	0	12	10	0	797	1	0	0	0	
4:30 PM	232	10	0	0	546	0	0	8	4	0	800	2	1	2	0	
4:45 PM	223	8	0	0	503	0	0	11	7	0	752	1	1	0	0	
5:00 PM	259	14	0	0	525	0	0	24	5	1	827	1	0	3	0	
5:15 PM	269	7	0	0	518	1	0	16	10	0	820	1	0	2	0	
5:30 PM	246	8	0	0	496	0	0	11	10	0	771	0	1	1	0	
5:45 PM	223	9	0	0	484	1	0	8	7	0	731	0	0	1	0	
Total Survey	1,918	80	1	0	4,170	2	0	100	58	1	6,326	6	3	11	0	

Peak Hour Summary 4:10 PM to 5:10 PM

By Approach	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Monroe St				Westbound SE Monroe St				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	997	2,187	3,184	1	2,133	973	3,106	0	0	0	0	0	79	49	128	1	3,209	5	2	4	0
%HV	2.3%				0.8%				0.0%				3.8%				1.4%				
PHF	0.94				0.94				0.00				0.73				0.95				

By Movement	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Monroe St				Westbound SE Monroe St				Total
	T	R	Total	Bikes	L	T	Total	Bikes	L	R	Total	Bikes	L	R	Total	Bikes	
Volume	948	49	997	1	0	2,133	2,133	0	54	25	79	1	3,209				
%HV	NA	2.3%	2.0%	2.3%	0.0%	0.8%	NA	0.8%	NA	NA	NA	0.0%	5.6%	NA	0.0%	3.8%	1.4%
PHF	0.94	0.77	0.94	0.00	0.94	0.94	0.94	0.00	0.59	0.63	0.73	0.95					

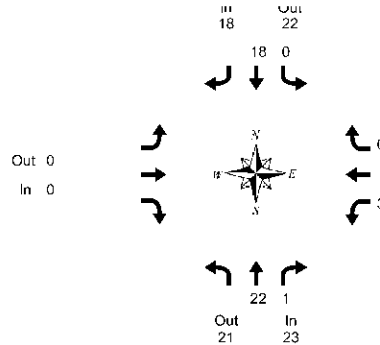
Rolling Hour Summary 4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St		Westbound SE Monroe St			Interval Total	Pedestrians Crosswalk			
	T	R	Bikes	L	T	Bikes	Bikes	L	R	Bikes	North		South	East	West	
4:00 PM	921	42	1	0	2,147	0	0	41	26	0	3,177	4	2	4	0	
4:15 PM	932	44	0	0	2,119	0	0	55	26	1	3,176	5	2	5	0	
4:30 PM	983	39	0	0	2,092	1	0	59	26	1	3,199	5	2	7	0	
4:45 PM	997	37	0	0	2,042	1	0	62	32	1	3,170	3	2	6	0	
5:00 PM	997	38	0	0	2,023	2	0	59	32	1	3,149	2	1	7	0	

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 99 & SE Monroe St

Tuesday, March 05, 2019

4:00 PM to 6:00 PM

Peak Hour Summary
4:10 PM to 5:10 PM

Heavy Vehicle 5-Minute Interval Summary 4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St			Westbound SE Monroe St			Interval Total
	T	R	Total	L	T	Total	Total	L	R	Total	Total		
4:00 PM	0	0	0	0	3	3	0	0	0	0	0	3	
4:05 PM	2	0	2	0	0	0	0	0	0	0	0	2	
4:10 PM	1	0	1	0	1	1	0	0	0	0	0	2	
4:15 PM	6	0	6	0	2	2	0	1	0	1	9		
4:20 PM	0	0	0	0	6	6	0	0	0	0	6		
4:25 PM	1	0	1	0	2	2	0	1	0	1	4		
4:30 PM	0	0	0	0	1	1	0	0	0	0	1		
4:35 PM	5	0	5	0	0	0	0	0	0	0	5		
4:40 PM	2	1	3	0	0	0	0	1	0	1	4		
4:45 PM	2	0	2	0	0	0	0	0	0	0	2		
4:50 PM	2	0	2	0	1	1	0	0	0	0	3		
4:55 PM	1	0	1	0	0	0	0	0	0	0	1		
5:00 PM	2	0	2	0	4	4	0	0	0	0	6		
5:05 PM	0	0	0	0	1	1	0	0	0	0	1		
5:10 PM	1	0	1	0	1	1	0	1	0	1	3		
5:15 PM	1	0	1	0	0	0	0	0	0	0	1		
5:20 PM	1	0	1	0	1	1	0	1	0	1	3		
5:25 PM	1	0	1	0	3	3	0	1	0	1	5		
5:30 PM	1	0	1	0	0	0	0	0	0	0	1		
5:35 PM	0	0	0	0	1	1	0	0	0	0	1		
5:40 PM	2	0	2	0	4	4	0	0	0	0	6		
5:45 PM	1	0	1	0	1	1	0	1	0	1	3		
5:50 PM	0	0	0	0	1	1	0	0	0	0	1		
5:55 PM	1	0	1	0	2	2	0	0	0	0	3		
Total Survey	33	1	34	0	35	35	0	7	0	7	76		

Heavy Vehicle 15-Minute Interval Summary 4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St			Westbound SE Monroe St			Interval Total
	T	R	Total	L	T	Total	Total	L	R	Total	Total		
4:00 PM	3	0	3	0	4	4	0	0	0	0	7		
4:15 PM	7	0	7	0	10	10	0	2	0	2	19		
4:30 PM	7	1	8	0	1	1	0	1	0	1	10		
4:45 PM	5	0	5	0	1	1	0	0	0	0	6		
5:00 PM	3	0	3	0	6	6	0	1	0	1	10		
5:15 PM	3	0	3	0	4	4	0	2	0	2	9		
5:30 PM	3	0	3	0	5	5	0	0	0	0	8		
5:45 PM	2	0	2	0	4	4	0	1	0	1	7		
Total Survey	33	1	34	0	35	35	0	7	0	7	76		

Heavy Vehicle Peak Hour Summary 4:10 PM to 5:10 PM

By Approach	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St			Westbound SE Monroe St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	23	21	44	18	22	40	0	0	0	3	1	4	44
PHF	0.58			0.45			0.00			0.38			0.58

By Movement	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St			Westbound SE Monroe St			Total
	T	R	Total	L	T	Total	Total	L	R	Total	Total		
Volume	22	1	23	0	18	18	0	3	0	3	4	44	
PHF	0.61	0.25	0.58	0.00	0.45	0.45	0.00	0.38	0.00	0.38	0.58		

Heavy Vehicle Rolling Hour Summary 4:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Monroe St			Westbound SE Monroe St			Interval Total
	T	R	Total	L	T	Total	Total	L	R	Total	Total		
4:00 PM	22	1	23	0	16	16	0	3	0	3	42		
4:15 PM	22	1	23	0	18	18	0	4	0	4	45		
4:30 PM	16	1	19	0	12	12	0	4	0	4	35		
4:45 PM	14	0	14	0	16	16	0	3	0	3	33		
5:00 PM	11	0	11	0	19	19	0	4	0	4	34		

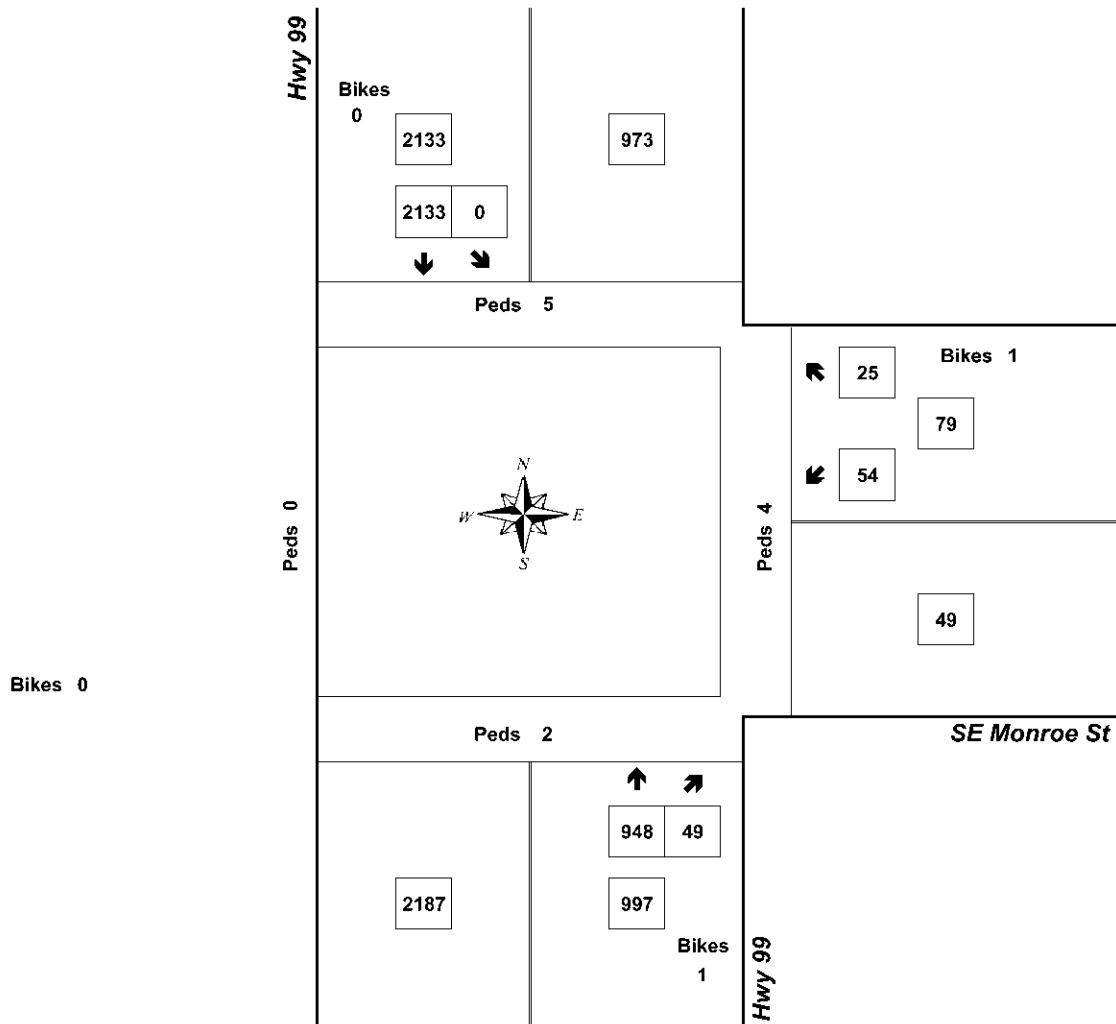
Peak Hour Summary



Clay Carney
(503) 833-2740

Hwy 99 & SE Monroe St

4:10 PM to 5:10 PM
Tuesday, March 05, 2019



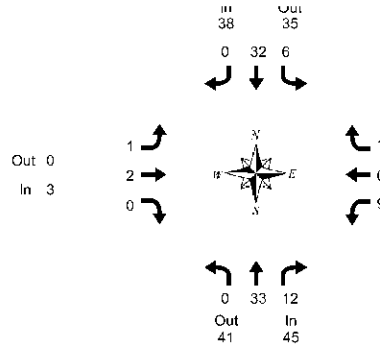
Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.73	3.8%	79
NB	0.94	2.3%	997
SB	0.94	0.8%	2,133
Intersection	0.95	1.4%	3,209

Count Period: 4:00 PM to 6:00 PM

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 99 & SE Washington St

Tuesday, March 05, 2019
7:00 AM to 9:00 AM

Peak Hour Summary
7:35 AM to 8:35 AM

Heavy Vehicle 5-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	3	1	4	1	2	0	3	0	0	0	0	0	0	0	0	7
7:05 AM	0	2	1	3	0	3	0	3	0	0	0	0	0	0	0	0	6
7:10 AM	0	1	0	1	0	1	0	1	0	0	0	0	0	2	0	0	2
7:15 AM	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
7:20 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
7:25 AM	0	0	1	1	1	0	0	1	0	0	0	0	1	0	0	1	3
7:30 AM	0	2	0	2	0	2	0	2	0	0	0	0	0	0	0	0	4
7:35 AM	0	1	3	4	0	2	0	2	0	0	0	0	0	0	0	0	6
7:40 AM	0	1	0	1	0	2	0	2	0	1	0	1	2	0	0	2	6
7:45 AM	0	2	0	2	1	3	0	4	0	0	0	0	0	0	0	0	6
7:50 AM	0	2	0	2	2	1	0	3	0	1	0	1	2	0	0	2	8
7:55 AM	0	2	1	3	1	3	0	4	0	0	0	0	1	0	0	1	8
8:00 AM	0	2	1	3	0	3	0	3	0	0	0	0	0	0	0	0	6
8:05 AM	0	1	1	2	0	4	0	4	0	0	0	0	1	0	0	1	7
8:10 AM	0	6	2	8	0	3	0	3	0	0	0	0	1	0	1	2	13
8:15 AM	0	5	2	7	0	2	0	2	1	0	0	1	0	0	0	0	10
8:20 AM	0	5	1	6	0	5	0	5	0	0	0	0	0	0	0	0	11
8:25 AM	0	4	1	5	1	1	0	2	0	0	0	0	0	0	0	0	7
8:30 AM	0	2	0	2	1	3	0	4	0	0	0	0	2	0	0	2	6
8:35 AM	0	1	1	2	0	2	0	2	0	0	0	0	0	0	2	2	6
8:40 AM	0	5	0	5	1	2	0	3	0	0	0	0	1	0	0	1	9
8:45 AM	0	1	1	2	2	3	0	5	0	0	0	0	0	0	0	0	7
8:50 AM	0	2	1	3	0	3	0	3	0	0	0	0	1	0	1	2	8
8:55 AM	0	3	0	3	2	1	0	3	0	0	0	0	0	0	0	0	6
Total Survey	0	54	18	72	13	53	0	66	1	2	0	3	14	0	4	18	159

Heavy Vehicle 15-Minute Interval Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	6	2	8	1	6	0	7	0	0	0	0	2	0	0	2	17
7:15 AM	0	1	1	2	1	2	0	3	0	0	0	0	1	0	0	1	6
7:30 AM	0	4	3	7	0	6	0	6	0	1	0	1	2	0	0	2	16
7:45 AM	0	6	1	7	4	7	0	11	0	1	0	1	3	0	0	3	22
8:00 AM	0	9	4	13	0	10	0	10	0	0	0	0	2	0	1	3	26
8:15 AM	0	14	4	18	1	8	0	9	1	0	0	1	0	0	0	0	28
8:30 AM	0	8	1	9	2	7	0	9	0	0	0	0	3	0	2	5	23
8:45 AM	0	6	2	8	4	7	0	11	0	0	0	0	1	0	1	2	21
Total Survey	0	54	18	72	13	53	0	66	1	2	0	3	14	0	4	18	159

Heavy Vehicle Peak Hour Summary 7:35 AM to 8:35 AM

By Approach	Northbound Hwy 99			Southbound Hwy 99			Eastbound SE Washington St			Westbound SE Washington St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	45	41	86	38	35	73	3	0	3	10	20	30	96
PHF	0.54			0.86			0.38			0.63			0.71

By Movement	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Washington St				Westbound SE Washington St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	33	12	45	6	32	0	38	1	2	0	3	9	0	1	10	96
PHF	0.00	0.52	0.60	0.54	0.38	0.80	0.00	0.86	0.25	0.25	0.00	0.38	0.56	0.00	0.25	0.63	0.71

Heavy Vehicle Rolling Hour Summary 7:00 AM to 9:00 AM

Interval Start Time	Northbound Hwy 99				Southbound Hwy 99				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	17	7	24	6	21	0	27	0	2	0	2	8	0	0	8	61
7:15 AM	0	20	9	29	5	25	0	30	0	2	0	2	8	0	1	9	70
7:30 AM	0	33	12	45	5	31	0	36	1	2	0	3	7	0	1	8	92
7:45 AM	0	37	10	47	7	32	0	39	1	1	0	2	8	0	3	11	99
8:00 AM	0	37	11	48	7	32	0	39	1	0	0	1	6	0	4	10	98

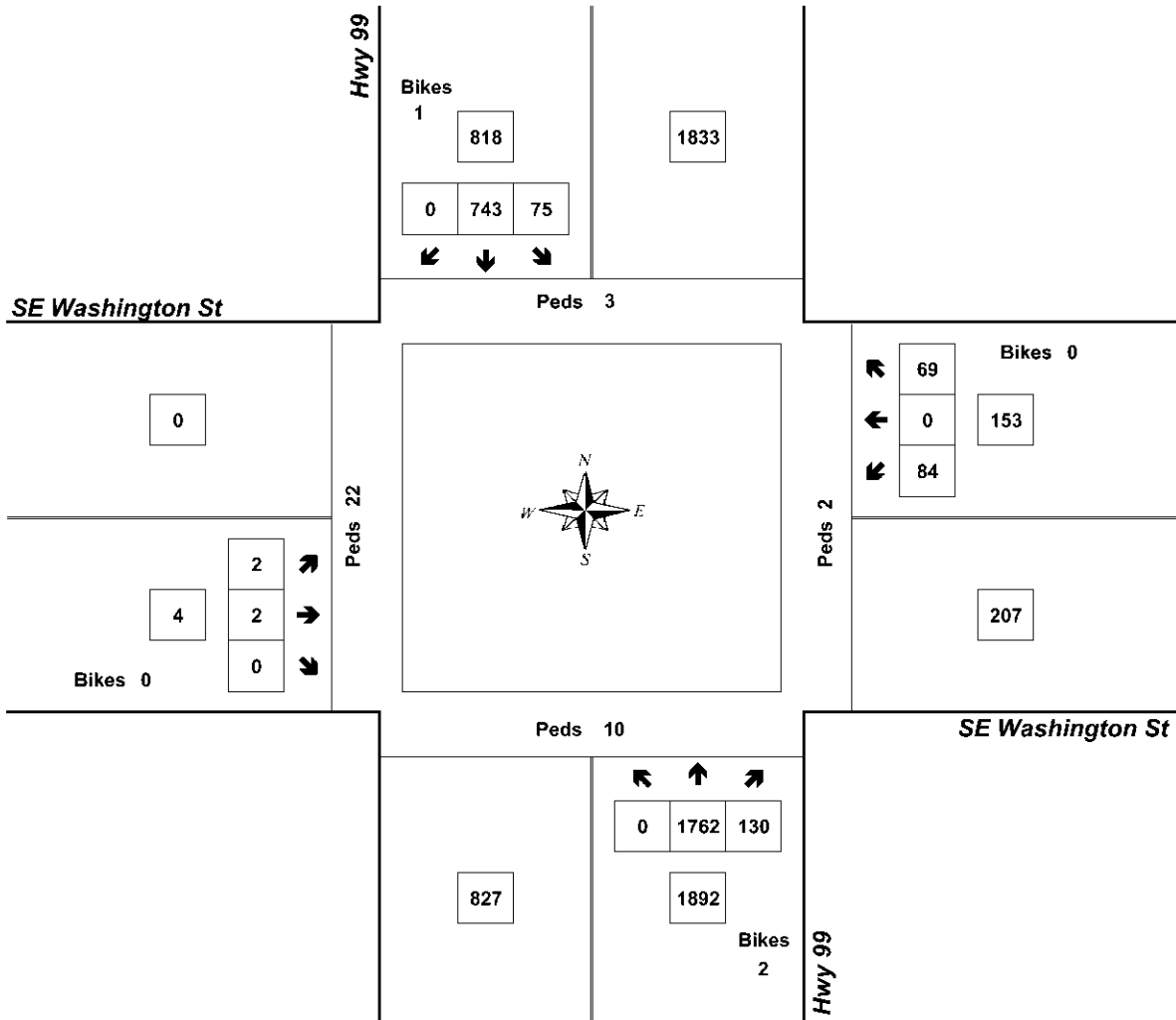
Peak Hour Summary



Clay Carney
(503) 833-2740

Hwy 99 & SE Washington St

7:35 AM to 8:35 AM
Tuesday, March 05, 2019



Approach	PHF	HV%	Volume
EB	0.50	75.0%	4
WB	0.72	6.5%	153
NB	0.97	2.4%	1,892
SB	0.87	4.6%	818
Intersection	0.96	3.3%	2,867

Count Period: 7:00 AM to 9:00 AM

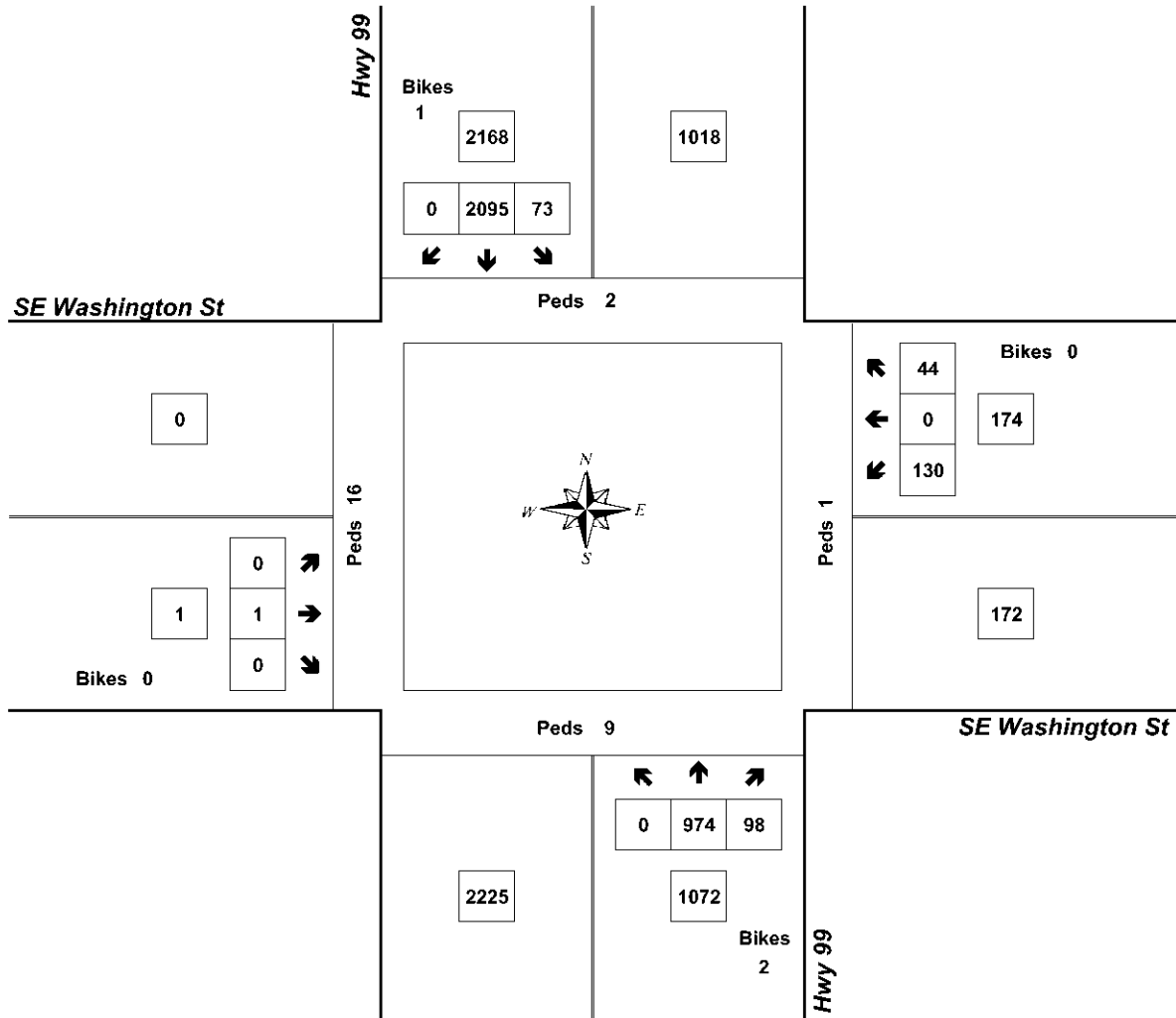
Peak Hour Summary



Clay Carney
(503) 833-2740

Hwy 99 & SE Washington St

4:10 PM to 5:10 PM
Tuesday, March 05, 2019



Approach	PHF	HV%	Volume
EB	0.25	0.0%	1
WB	0.81	4.0%	174
NB	0.92	2.7%	1,072
SB	0.94	1.0%	2,168
Intersection	0.95	1.7%	3,415

Count Period: 4:00 PM to 6:00 PM

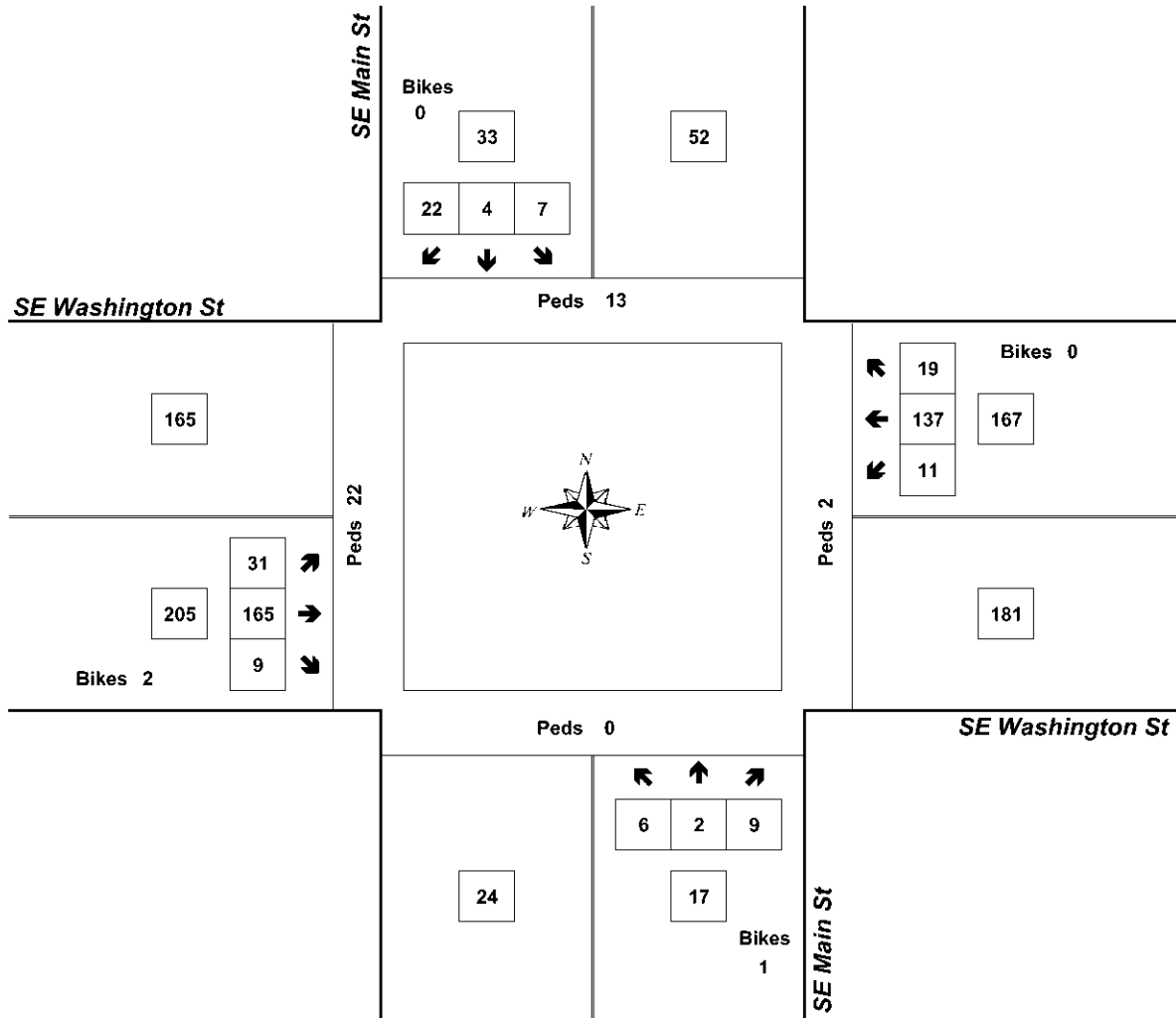
Peak Hour Summary



Clay Carney
(503) 833-2740

SE Main St & SE Washington St

7:50 AM to 8:50 AM
Tuesday, March 05, 2019



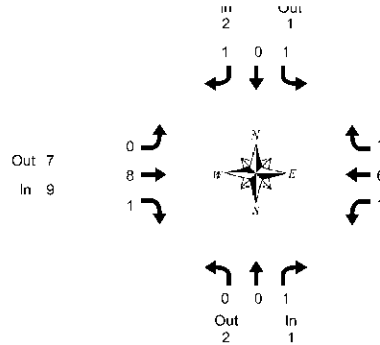
Approach	PHF	HV%	Volume
EB	0.84	8.8%	205
WB	0.79	6.0%	167
NB	0.71	5.9%	17
SB	0.69	6.1%	33
Intersection	0.88	7.3%	422

Count Period: 7:00 AM to 9:00 AM

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



SE Main St & SE Washington St

Tuesday, March 05, 2019

4:00 PM to 6:00 PM

Peak Hour Summary
4:00 PM to 5:00 PM

Heavy Vehicle 5-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound SE Main St				Southbound SE Main St				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
4:05 PM	0	0	0	0	1	0	0	1	0	2	0	2	0	1	0	1	4
4:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
4:20 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
4:25 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:35 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2	3
4:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	2
4:50 PM	0	0	1	1	0	0	0	0	0	1	1	2	0	1	0	1	4
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:00 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:05 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
5:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:25 PM	0	0	0	0	0	0	0	0	0	2	0	2	1	2	0	3	5
5:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
5:35 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
5:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:45 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:55 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
Total Survey	1	0	2	3	1	0	1	2	0	14	1	15	2	13	1	16	36

Heavy Vehicle 15-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound SE Main St				Southbound SE Main St				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	1	0	0	1	0	3	0	3	0	1	1	2	6
4:15 PM	0	0	0	0	0	0	0	0	0	3	0	3	1	0	0	1	4
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2	3
4:45 PM	0	0	1	1	0	0	1	1	0	1	1	2	0	3	0	3	7
5:00 PM	0	0	1	1	0	0	0	0	0	1	0	1	0	2	0	2	4
5:15 PM	0	0	0	0	0	0	0	0	0	2	0	2	1	2	0	3	5
5:30 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3
5:45 PM	1	0	0	1	0	0	0	0	0	1	0	1	0	2	0	2	4
Total Survey	1	0	2	3	1	0	1	2	0	14	1	15	2	13	1	16	36

Heavy Vehicle Peak Hour Summary

4:00 PM to 5:00 PM

By Approach	Northbound SE Main St			Southbound SE Main St			Eastbound SE Washington St			Westbound SE Washington St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	2	3	2	1	3	9	7	16	8	10	18	20
PHF	0.25			0.50			0.75			0.67			0.71

By Movement	Northbound SE Main St				Southbound SE Main St				Eastbound SE Washington St				Westbound SE Washington St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	1	1	1	0	1	2	0	8	1	9	1	6	1	8	20
PHF	0.00	0.00	0.25	0.25	0.25	0.00	0.25	0.50	0.00	0.67	0.25	0.75	0.25	0.50	0.25	0.67	0.71

Heavy Vehicle Rolling Hour Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound SE Main St				Southbound SE Main St				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	1	1	1	0	1	2	0	8	1	9	1	6	1	8	20
4:15 PM	0	0	2	2	0	0	1	1	0	6	1	7	1	7	0	8	18
4:30 PM	0	0	2	2	0	0	1	1	0	5	1	6	1	9	0	10	19
4:45 PM	0	0	2	2	0	0	1	1	0	6	1	7	1	8	0	9	19
5:00 PM	1	0	1	2	0	0	0	0	0	6	0	6	1	7	0	8	16

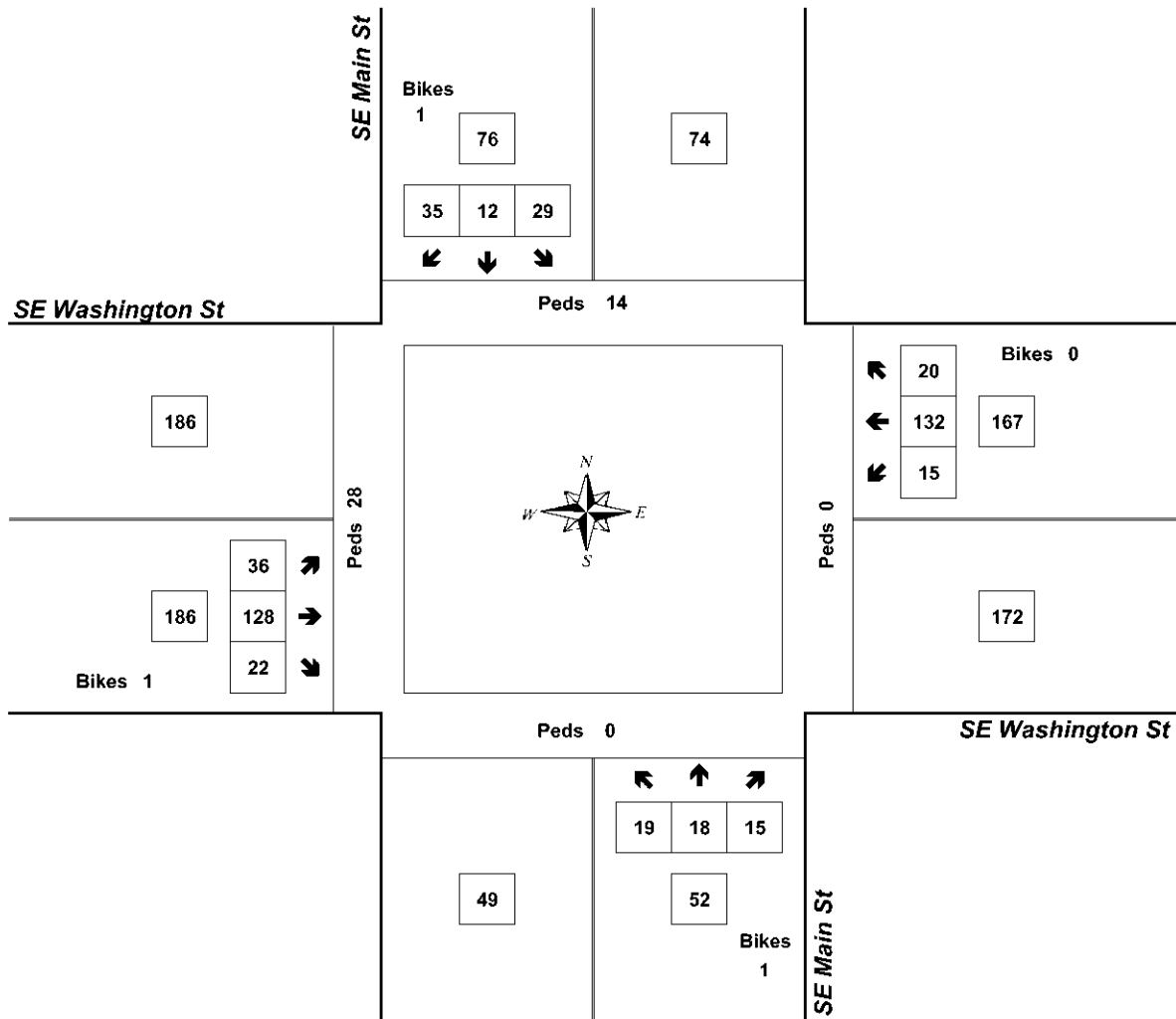
Peak Hour Summary



Clay Carney
(503) 833-2740

SE Main St & SE Washington St

4:00 PM to 5:00 PM
Tuesday, March 05, 2019



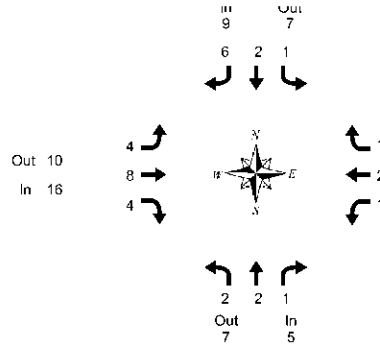
Approach	PHF	HV%	Volume
EB	0.93	4.8%	186
WB	0.84	4.8%	167
NB	0.72	1.9%	52
SB	0.90	2.6%	76
Intersection	0.93	4.2%	481

Count Period: 4:00 PM to 6:00 PM

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



SE 21st Ave & SE Washington St

Tuesday, March 05, 2019

7:00 AM to 9:00 AM

Peak Hour Summary
7:45 AM to 8:45 AM

Heavy Vehicle 5-Minute Interval Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound SE 21st Ave				Southbound SE 21st Ave				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	0	0	0	1	0	0	1	0	0	1	1	0	0	0	0	2
7:05 AM	0	1	0	1	0	0	1	1	2	0	0	2	1	0	1	2	6
7:10 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
7:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
7:20 AM	0	0	1	1	0	1	1	2	0	0	0	0	0	1	0	1	4
7:25 AM	0	0	0	0	1	0	1	2	1	0	0	1	0	0	0	0	3
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:35 AM	0	0	0	0	1	0	0	1	2	0	1	3	1	0	0	1	5
7:40 AM	1	0	0	1	1	0	1	2	0	0	0	0	0	0	0	0	3
7:45 AM	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
7:50 AM	0	0	0	0	0	0	1	1	0	0	2	2	0	0	1	1	4
7:55 AM	0	0	0	0	0	1	1	2	0	1	0	1	0	0	0	0	3
8:00 AM	0	0	0	0	0	0	0	0	1	0	1	2	1	0	0	1	3
8:05 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
8:10 AM	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0	2
8:15 AM	1	0	0	1	0	0	0	0	1	0	1	2	0	0	0	0	3
8:20 AM	0	0	0	0	0	0	0	0	1	2	0	3	0	0	0	0	3
8:25 AM	0	1	0	1	0	0	1	1	0	2	0	2	0	0	0	0	4
8:30 AM	1	0	0	1	0	1	1	2	0	0	0	0	0	0	0	0	3
8:35 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
8:40 AM	0	0	0	0	1	0	1	2	1	1	0	2	0	0	0	0	4
8:45 AM	0	1	1	2	0	0	0	0	0	1	0	1	0	0	0	0	3
8:50 AM	0	0	0	0	0	1	0	1	2	0	0	2	0	1	0	1	4
8:55 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	3	5	3	11	5	4	11	20	11	9	6	26	3	4	2	9	66

Heavy Vehicle 15-Minute Interval Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound SE 21st Ave				Southbound SE 21st Ave				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	0	1	0	1	1	0	2	3	2	0	1	3	1	0	1	2	9
7:15 AM	0	1	1	2	1	1	2	4	1	0	0	1	0	1	0	1	8
7:30 AM	1	0	0	1	2	0	1	3	2	0	1	3	1	0	0	1	8
7:45 AM	0	1	0	1	0	1	2	3	0	2	2	4	0	0	1	1	9
8:00 AM	0	0	1	1	0	0	1	1	1	1	1	3	1	1	0	2	7
8:15 AM	1	1	0	2	0	0	1	1	2	4	1	7	0	0	0	0	10
8:30 AM	1	0	0	1	1	1	2	4	1	1	0	2	0	1	0	1	8
8:45 AM	0	1	1	2	0	1	0	1	2	1	0	3	0	1	0	1	7
Total Survey	3	5	3	11	5	4	11	20	11	9	6	26	3	4	2	9	66

Heavy Vehicle Peak Hour Summary

7:45 AM to 8:45 AM

By Approach	Northbound SE 21st Ave			Southbound SE 21st Ave			Eastbound SE Washington St			Westbound SE Washington St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	5	7	12	9	7	16	18	10	26	4	10	14	34
PHF	0.63			0.56			0.57			0.50			0.85

By Movement	Northbound SE 21st Ave				Southbound SE 21st Ave				Eastbound SE Washington St				Westbound SE Washington St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	2	2	1	5	1	2	6	9	4	8	4	16	1	2	1	4	34
PHF	0.50	0.50	0.25	0.63	0.25	0.50	0.75	0.56	0.50	0.50	0.33	0.57	0.25	0.50	0.25	0.50	0.85

Heavy Vehicle Rolling Hour Summary

7:00 AM to 9:00 AM

Interval Start Time	Northbound SE 21st Ave				Southbound SE 21st Ave				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
7:00 AM	1	3	1	5	4	2	7	13	5	2	4	11	2	1	2	5	34
7:15 AM	1	2	2	5	3	2	6	11	4	3	4	11	2	2	1	5	32
7:30 AM	2	2	1	5	2	1	5	8	5	7	5	17	2	1	1	4	34
7:45 AM	2	2	1	5	1	2	6	9	4	8	4	16	1	2	1	4	34
8:00 AM	2	2	2	6	1	2	4	7	6	7	2	15	1	3	0	4	32

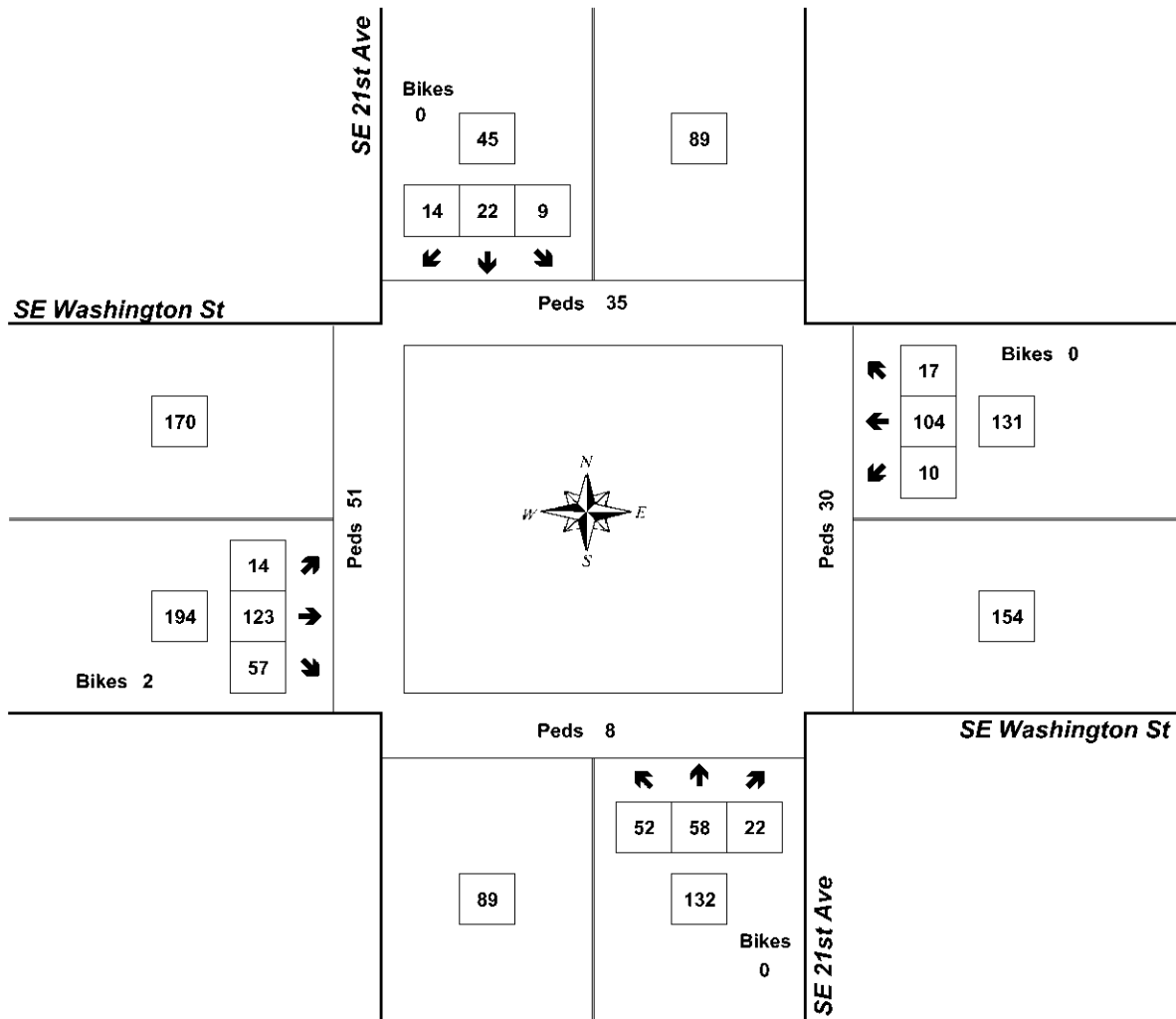
Peak Hour Summary



Clay Carney
(503) 833-2740

SE 21st Ave & SE Washington St

7:45 AM to 8:45 AM
Tuesday, March 05, 2019



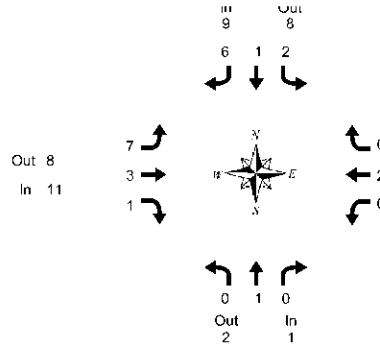
Approach	PHF	HV%	Volume
EB	0.84	8.2%	194
WB	0.80	3.1%	131
NB	0.72	3.8%	132
SB	0.80	20.0%	45
Intersection	0.84	6.8%	502

Count Period: 7:00 AM to 9:00 AM

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



SE 21st Ave & SE Washington St

Tuesday, March 05, 2019

4:00 PM to 6:00 PM

Peak Hour Summary
4:05 PM to 5:05 PM

Heavy Vehicle 5-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound SE 21st Ave				Southbound SE 21st Ave				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0	2
4:05 PM	0	0	0	0	0	0	2	2	1	2	0	3	0	0	0	0	5
4:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
4:20 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
4:25 PM	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0	0	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:35 PM	0	1	0	1	1	1	1	3	1	0	0	1	0	1	0	1	6
4:40 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
4:50 PM	0	0	0	0	0	0	1	1	1	0	1	2	0	0	0	0	3
4:55 PM	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
5:05 PM	0	1	0	1	0	0	0	0	1	0	0	1	0	0	0	0	2
5:10 PM	0	0	0	0	0	1	2	3	0	0	0	0	0	0	0	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:20 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	2
5:25 PM	0	0	0	0	0	0	0	0	1	1	0	2	0	1	0	1	3
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:35 PM	0	1	0	1	0	0	0	0	2	0	0	2	0	0	0	0	3
5:40 PM	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:50 PM	0	1	0	1	0	0	2	2	0	0	0	0	0	0	0	0	3
5:55 PM	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0	2
Total Survey	0	4	0	4	2	5	12	19	12	5	1	18	0	4	0	4	45

Heavy Vehicle 15-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound SE 21st Ave				Southbound SE 21st Ave				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	1	2	3	1	3	0	4	0	0	0	0	7
4:15 PM	0	0	0	0	0	0	1	1	2	0	0	2	0	1	0	1	4
4:30 PM	0	1	0	1	2	1	1	4	1	0	0	1	0	1	0	1	7
4:45 PM	0	0	0	0	0	0	2	2	3	0	1	4	0	0	0	0	6
5:00 PM	0	1	0	1	0	1	2	3	1	1	0	2	0	0	0	0	6
5:15 PM	0	0	0	0	0	0	1	1	1	1	0	2	0	2	0	2	5
5:30 PM	0	1	0	1	0	1	1	2	2	0	0	2	0	0	0	0	5
5:45 PM	0	1	0	1	0	1	2	3	1	0	0	1	0	0	0	0	5
Total Survey	0	4	0	4	2	5	12	19	12	5	1	18	0	4	0	4	45

Heavy Vehicle Peak Hour Summary

4:05 PM to 5:05 PM

By Approach	Northbound SE 21st Ave			Southbound SE 21st Ave			Eastbound SE Washington St			Westbound SE Washington St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	2	3	9	8	17	11	8	19	2	5	7	23
PHF	0.25			0.45			0.55			0.50			0.72

By Movement	Northbound SE 21st Ave				Southbound SE 21st Ave				Eastbound SE Washington St				Westbound SE Washington St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	1	0	1	2	2	6	9	7	3	1	11	0	2	0	2	23
PHF	0.00	0.25	0.00	0.25	0.25	0.25	0.75	0.45	0.58	0.38	0.25	0.55	0.00	0.50	0.00	0.50	0.72

Heavy Vehicle Rolling Hour Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound SE 21st Ave				Southbound SE 21st Ave				Eastbound SE Washington St				Westbound SE Washington St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	1	0	1	2	2	6	10	7	3	1	11	0	2	0	2	24
4:15 PM	0	2	0	2	2	2	6	10	7	1	1	9	0	2	0	2	23
4:30 PM	0	2	0	2	2	2	6	10	6	2	1	9	0	3	0	3	24
4:45 PM	0	2	0	2	0	2	6	8	7	2	1	10	0	2	0	2	22
5:00 PM	0	3	0	3	0	3	6	9	5	2	0	7	0	2	0	2	21

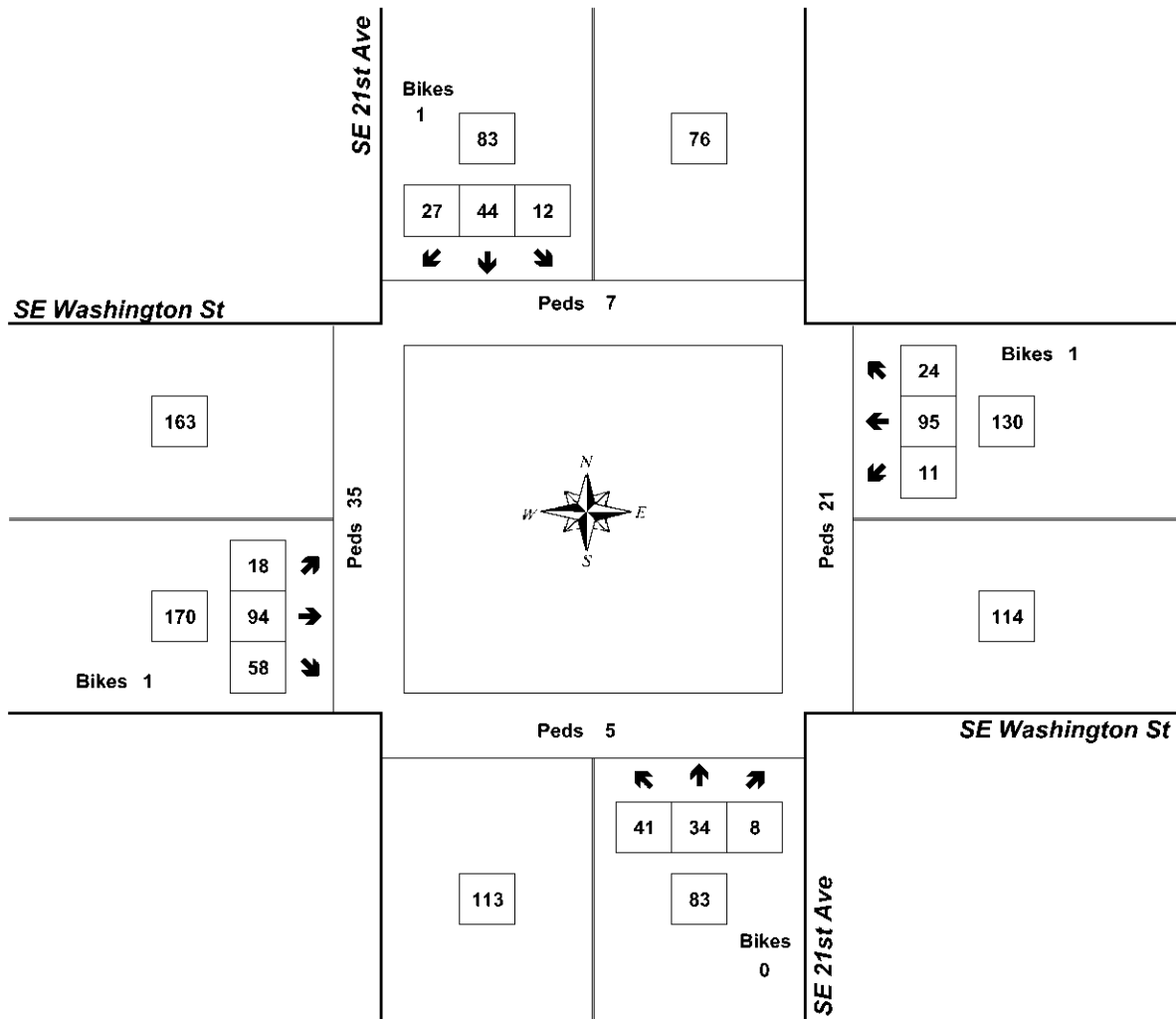
Peak Hour Summary



Clay Carney
(503) 833-2740

SE 21st Ave & SE Washington St

4:05 PM to 5:05 PM
Tuesday, March 05, 2019



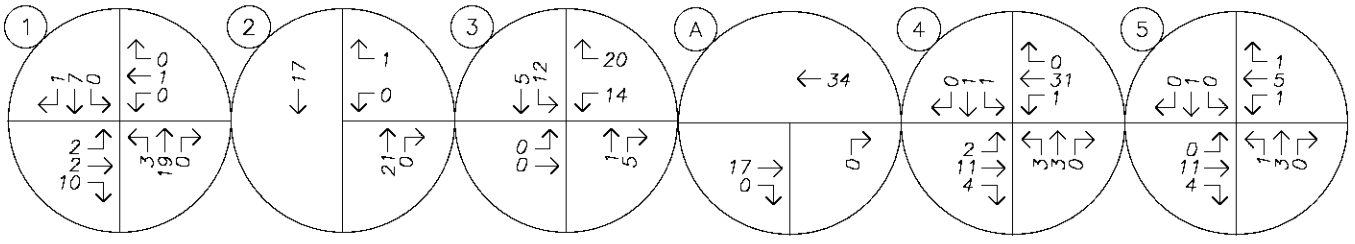
Approach	PHF	HV%	Volume
EB	0.90	6.5%	170
WB	0.81	1.5%	130
NB	0.77	1.2%	83
SB	0.83	10.8%	83
Intersection	0.94	4.9%	466

Count Period: 4:00 PM to 6:00 PM

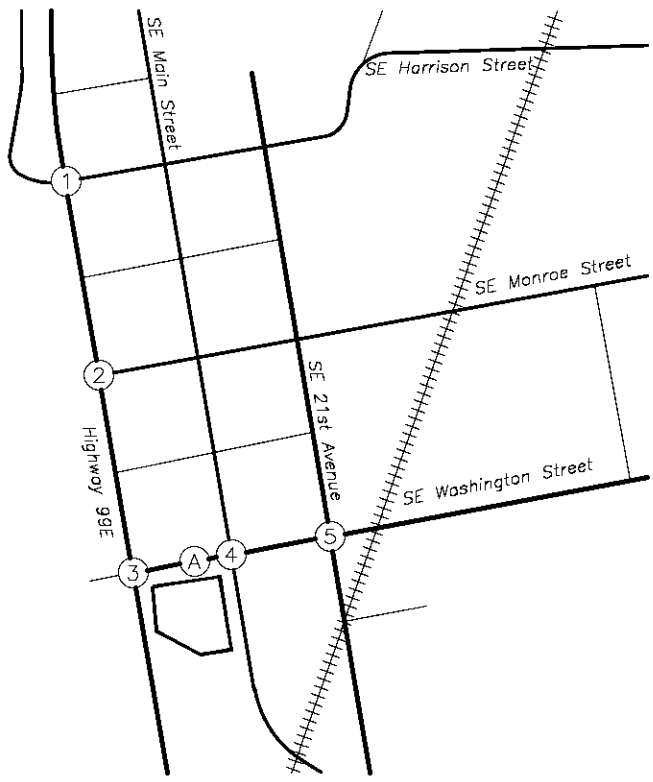
Appendix D

In-Process Trips

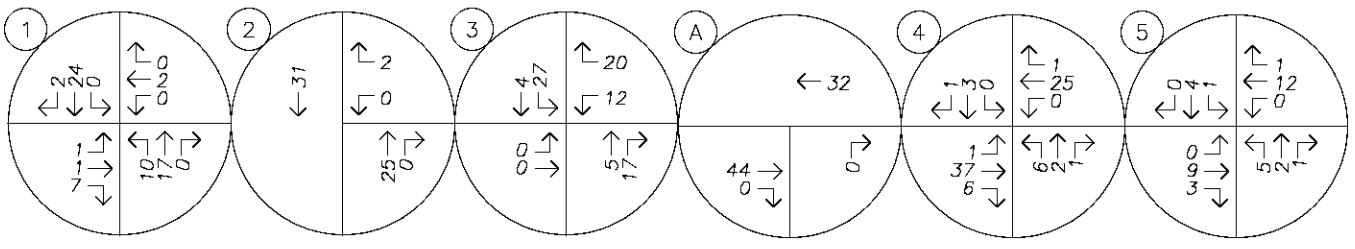




AM PEAK HOUR



PM PEAK HOUR



no scale

Appendix E

Crash History Data



CITY OF MILWAUKIE, CLACKAMAS COUNTY

17TH AVE at MCLOUGHLIN BLVD, City of Milwaukie, Clackamas County, 01/01/2014 to 12/31/2018

5 6 of 6 Crash records shown.

S	D	M	CLASS	CITY STREET	INT	TYPE	SPCL	USE	ACT	EVNT	CAUSE																			
SPR#	P	R	J	S	W	DATE	DISC	FIRST STREET	RD	CHAR	(MEDIAN)	INTL	RBL	OPFRD	WDER	CRASH	CRKR	QTY	MOVE	PRPC	INC	A	S	PED	ERRR	ACT	EVNT	CAUSE		
INVEST	E	A	U	I	C	O	DAY	SECOND STREET	DIRECT	LEGS	TRAF	RNDCT	SURF	COLL	CWNER	FROM	FILE	TYPE	SVRTY	E	X	ERR	LOC	ERRR	ACT	EVNT	CAUSE			
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRG	LOCNTN	(PLANES)	CONTL	DRVWY	LICHT	SVETY	VH	TYPE	CO	PR	TYPR	SVRCTY	E	X	ERR	LOC	ERRR	ACT	EVNT	CAUSE	
03046	N	N	N			08/31/2018	14	MCLOUGHLIN BLVD	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE	C	STRGHT												
NONE						FR		17TH AVE	ON		TRF	SIGNAL	N	DRY	ANGL	PRVTE														
N						11P			04					DLIT	INT	PSNGR	CAR			01	DRVR	NOKE	26	F	OR-Y		020	000		04
N						45 26 43.36	122 38 43.97	008109209800																						

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.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF MILWAUKIE, CLACKAMAS COUNTY

HARRISON ST at MCLOUGHLIN BLVD, City of Milwaukie, Clackamas County, 01/01/2014 to 12/31/2018

6 9 of 17 Crash records shown.

S	D	M	SPR#	P	R	J	S	W	DATE	CLASS	CITY STREET	INT TYPE	SPCL USE	ACT	EVNT	CAUSE														
INVEST	E	A	U	I	C	O	DAY	DISE	FIRST STREET	RD CHAR	(MEDIAN)	INL-RBL	OPFRD	WDER	CRASH	DRLR QTY	MOVE	A	S											
ED DPT	E	L	G	N	H	R	TIME	FRON	SECOND STREET	DIRECT	LEGS	TRAF-	RNDCT	SURF	COLL	CNMER	FROM	PRCC	INC	H	E	LICNS	PED							
UNLOC#	D	C	S	V	I	K	TAT	LONG	IRS	LOCNTN	(LANES)	CONTL	DRVWY	LGHTC	SVETY	V#	CYPR	DO	FR	TYPR	SVCTY	E	X	BRS	LOC	RRROR	ACT	EVNT	CAUSE	
02106	N	N	N		05/19/2016	16			HARRISON ST	INTR	CROSS	N	N	CLR	S-18TOP	01	NONE	9	STRGHT								006	29		
	NONE				TU			0	MCLOUGHLIN BLVD	S		TRF SIGNAL	N	DRY	REAR	N/A	E -W										000	90		
	N				1P					06	0		N	DAY	PDO		FSNGR CAR		C1	DRVR	NCKE	00	Unk	UNK		000	000	00		
	N				45 26 43.37	-122 38			33.97																					
													02	NONE	9	STOP												011	90	
																	N/A	E -W		C1	DRVR	NCKE	00	Unk	UNK		000	000	00	
																	FSNGR CAR													
01679	N	N	N		N N 04/13/2016	14			HARRISON ST	INTR	CROSS	N	N	CLR	S 18TOP	01	NONE	0	STRGHT									29		
	CITY				WE				MCLOUGHLIN BLVD	S		TRF SIGNAL	N	DRY	REAR	PRVTE	S -N										000	90		
	N				10A					06	0		N	DAY	INJ		FSNGR CAR		C1	DRVR	NCKE	64	F	OR Y		026	000	29		
	N				45 26 43.37	-122 38			008100203500																					
													02	NONE	0	STOP												011	90	
																	PRVTE	S -N		C1	DRVR	NCKE	38	X	OR Y		000	000	90	
																	FSNGR CAR													
													02	NONE	0	STOP												011	90	
																	PRVTE	S -N		C1	DRVR	NCKE	38	F	OR Y		000	000	90	
																	FSNGR CAR													
																	FSNGR CAR			C1	DRVR	NCKE	38	F			000	000	90	
05890	N	N	N		11/29/2016	14			HARRISON ST	INTR	CROSS	N	N	CLR	0 OTHER	01	NONE	9	BACK									10		
	NONE				TU				MCLOUGHLIN BLVD	S		TRF SIGNAL	N	DRY	BACK	N/A	N -S										000	90		
	N				1P					06	0		N	DAY	PDO		TRUCK		C1	DRVR	NCKE	00	Unk	UNK		000	000	90		
	N				45 26 43.37	-122 38			008100203500																					
													02	NONE	9	STOP												011	90	
																	N/A	S -N		C1	DRVR	NCKE	00	Unk	UNK		000	000	90	
																	FSNGR CAR													
06294	N	N	N		12/28/2016	14			HARRISON ST	INTR	CROSS	N	N	CLR	S-18TOP	01	NONE	9	STRGHT									29		
	NONE				WE				MCLOUGHLIN BLVD	S		TRF SIGNAL	N	DRY	REAR	N/A	S -N										000	90		
	N				10A					06	0		N	DAY	PDO		UNKNOWN		C1	DRVR	NCKE	00	Unk	UNK		000	000	90		
	N				45 26 43.37	-122 38			008100203500																					
													02	NONE	9	STOP												011	90	
																	N/A	S -N		C1	DRVR	NCKE	00	Unk	UNK		000	000	90	
																	FSNGR CAR													
03035	N	N	N		07/26/2017	14			HARRISON ST	INTR	CROSS	N	N	CLR	S-OTHER	01	NONE	9	TURN-L									06, 14		
	NONE				WE				MCLOUGHLIN BLVD	S		TRF SIGNAL	N	DRY	TURN	N/A	E -S										000	90		
	N				3P					05	0		N	DAY	PDO		FSNGR CAR		C1	DRVR	NCKE	00	Unk	UNK		000	000	90		
	N				45 26 43.37	-122 38			008100203500																					

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.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING
WASHINGTON ST at MCLOUGHLIN BLVD, City of Milwaukie, Clackamas County, 01/01/2014 to 12/31/2018

13 14 of 14 Crash records shown.

SPR#	P	R	J	S	W	DATE	CLASS	CITY STREET	INT	TYPE	SPCL USE	DRKR QTY	MOVE	A	S	PED	ACT	EVNT	CAUSE							
INVEST	E	A	U	I	C	O	DAY	FIRST STREET	RD CHAR	(MEDIAN)	INT-RBL	OPFRD	WTR	CRASH	DRKR QTY	MOVE	PRCC	INT	EX	ERR	LOC	RROR	ACT	EVNT	CAUSE	
RD DPT	E	L	G	N	H	R	TIME	SECOND STREET	DIRECT	LEGS	TRAF-	RNDCT	SURF	COLL	CWNER	FROM	PRCC	INT	EX	ERR	LOC	RROR	ACT	EVNT	CAUSE	
UNLOC?	D	C	S	V	L	K	LAT	LONG	LR5	(PLANES)	CONTL	DRWY	LIGHT	SVETY	VH	TYPE	DR	TYPE	SVRCY	EX	ERR	LOC	RROR	ACT	EVNT	CAUSE
												02	NONE	9	TURN L									000	00	
												N/A												000	00	
												FSMGR	CAR				C1	DRVR	NOCK	C0	DRK	UNK			000	00
00327	N	N	N	N	N	01/27/2018	14	MCLOUGHLIN BLVD	INTER	3-LEG	N	N	RAIN	0-1	L-TURN	01	NONE	9	STRGHT						02,08	
CTTY						SA		WASHINGTON ST	CN		TRF	STONAL	N	WFT	TURK	N/A								000	00	
N						12P			04	0		N	DAY	PDG	FSMGR	CAR								000	00	
N						45 26 32.45	122 38 31.2	008108103800																		
												02	NONE	9	TORN-L										000	00
												N/A			NW	NR									000	00
												FSMGR	CAR				C1	DRVR	NOCK	C0	DRK	UNK			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.

OREGON... DEPARTMENT OF TRANSPORTATION TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF MILWAUKIE, CLACKAMAS COUNTY

WASHINGTON ST at MAIN ST, City of Milwaukie, Clackamas County, 01/01/2014 to 12/31/2018

1 5 of 5 Crash records shown.

SPR#	P	R	J	S	W	DATE	CLASS	CITY STREET	INT	TYPR	SPCL	USE											
INVEST	E	A	U	I	C	O	DAY	FIRST STREET	RD	CHAR	(MEDIAN)	INFL	REBL	OPFRD	WTR	CRASH	DRLR	QTY	MOVE	A	S		
ED DPT	E	L	G	N	H	R	TIME	SECOND STREET	DIRECT	LEGS	TRAF-	ENBD	SURF	COLL		CMNER	FROM	PREC	INC	E	X	BRS	
UNLOC	D	C	S	V	I	K	DAT	LOC	LOCTN	(H/ANRA)	CONTI	DRWY	LGHT	SVETY	V4	TYPR	DO	PR	TYPE	SVCTY	E	X	BRS
00999	N	X	N	N	N	N	02/29/2016	16	MAIN ST	INTER	CROSS	X	N	RAIK	S-1820P	01	NONE	9	STRGHT				
CITY						MO			0	WASHINGTON ST	E		STOP	SIGN	K	WET	REAR	N/A		E-W			
N						10P				00													
N						15 26 32.94	-122 38																

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 F

Sight Distance Exhibit



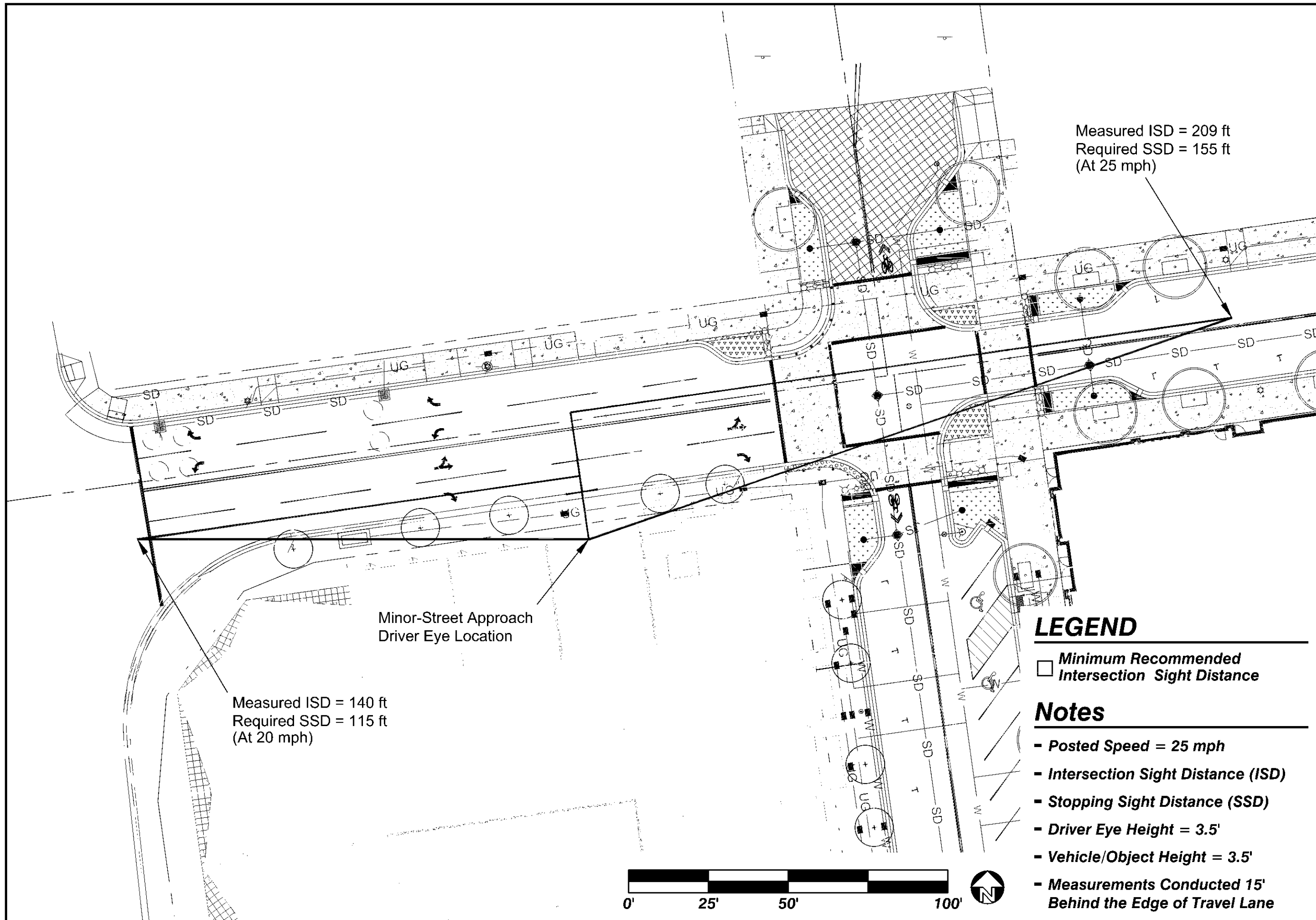


Figure B

SIGHT DISTANCE EXHIBIT

Coho Point Mixed-Use Building

Sight Distance Triangles at Site Access Intersection



Appendix G

Preliminary Signal Warrant Analysis



Traffic Signal Warrant Analysis



Project: Coho Point Mixed-Use Building
 Date: 4/8/2021
 Scenario: Year 2021 Buildout Conditions - Full Movement Access Scenario

Major Street:	SE Washington Street	Minor Street:	SE Main Street
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	454	PM Peak Hour Volumes:	90

Warrant Used:
 X 100 percent of standard warrants used
 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
Major St.	Minor St.	100% Warrants	70% Warrants	100% Warrants	70% Warrants
WARRANT 1, CONDITION A					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	4,540	8,850	
Minor Street*	900	2,650	No
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	4,540	13,300	
Minor Street*	900	1,350	No
<i>Combination Warrant</i>			
Major Street	4,540	10,640	
Minor Street*	900	2,120	No

* Minor street right-turning traffic volumes reduced by 25%.

Traffic Signal Warrant Analysis



Project: Coho Point Mixed-Use Building
 Date: 4/8/2021
 Scenario: Year 2021 Buildout Conditions - Restricted LT Egress Scenario

Major Street:	SE Washington Street	Minor Street:	SE Main Street
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	482	PM Peak Hour Volumes:	90

Warrant Used:
 100 percent of standard warrants used
 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
Major St.	Minor St.	100% Warrants	70% Warrants	100% Warrants	70% Warrants
WARRANT 1, CONDITION A					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	4,820	8,850	
Minor Street*	900	2,650	No
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	4,820	13,300	
Minor Street*	900	1,350	No
<i>Combination Warrant</i>			
Major Street	4,820	10,640	
Minor Street*	900	2,120	No

* Minor street right-turning traffic volumes reduced by 25%.

Traffic Signal Warrant Analysis



Project: Coho Point Mixed-Use Building
 Date: 4/8/2021
 Scenario: Year 2021 Buildout Conditions - RIRO Access Scenario

Major Street:	SE Washington Street	Minor Street:	SE Main Street
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	482	PM Peak Hour Volumes:	90

Warrant Used:
 X 100 percent of standard warrants used
 70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
Major St.	Minor St.	100% Warrants	70% Warrants	100% Warrants	70% Warrants
WARRANT 1, CONDITION A					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	4,820	8,850	
Minor Street*	900	2,650	No
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	4,820	13,300	
Minor Street*	900	1,350	No
<i>Combination Warrant</i>			
Major Street	4,820	10,640	
Minor Street*	900	2,120	No

* Minor street right-turning traffic volumes reduced by 25%.

Appendix H

Capacity Reports

Queuing Reports





LEVEL OF SERVICE

Level of service is used to describe the quality of traffic flow. Levels of service A to C are considered good, and rural roads are usually designed for level of service C. Urban streets and signalized intersections are typically designed for level of service D. Level of service E is considered to be the limit of acceptable delay. For unsignalized intersections, level of service E is generally considered acceptable. Here is a more complete description of levels of service:

Level of service A: Very low delay at intersections, with all traffic signal cycles clearing and no vehicles waiting through more than one signal cycle. On highways, low volume and high speeds, with speeds not restricted by other vehicles.

Level of service B: Operating speeds beginning to be affected by other traffic; short traffic delays at intersections. Higher average intersection delay than for level of service A resulting from more vehicles stopping.

Level of service C: Operating speeds and maneuverability closely controlled by other traffic; higher delays at intersections than for level of service B due to a significant number of vehicles stopping. Not all signal cycles clear the waiting vehicles. This is the recommended design standard for rural highways.

Level of service D: Tolerable operating speeds; long traffic delays occur at intersections. The influence of congestion is noticeable. At traffic signals many vehicles stop, and the proportion of vehicles not stopping declines. The number of signal cycle failures, for which vehicles must wait through more than one signal cycle, are noticeable. This is typically the design level for urban signalized intersections.

Level of service E: Restricted speeds, very long traffic delays at traffic signals, and traffic volumes near capacity. Flow is unstable so that any interruption, no matter how minor, will cause queues to form and service to deteriorate to level of service F. Traffic signal cycle failures are frequent occurrences. For unsignalized intersections, level of service E or better is generally considered acceptable.

Level of service F: Extreme delays, resulting in long queues which may interfere with other traffic movements. There may be stoppages of long duration, and speeds may drop to zero. There may be frequent signal cycle failures. Level of service F will typically result when vehicle arrival rates are greater than capacity. It is considered unacceptable by most drivers.



*LEVEL OF SERVICE CRITERIA
FOR SIGNALIZED INTERSECTIONS*

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (Seconds)
A	<10
B	10-20
C	20-35
D	35-55
E	55-80
F	>80

*LEVEL OF SERVICE CRITERIA
FOR UNSIGNALIZED INTERSECTIONS*

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (Seconds)
A	<10
B	10-15
C	15-25
D	25-35
E	35-50
F	>50

HCM Signalized Intersection Capacity Analysis

1: OR-99E & SE Harrison Street











11/17/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗	↘	↙	↕		↙	↕		↙	↕	
Traffic Volume (vph)	19	65	160	77	52	23	308	1396	94	89	573	10
Future Volume (vph)	19	65	160	77	52	23	308	1396	94	89	573	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.99	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	
Fr _t		1.00	0.85	1.00	0.96		1.00	0.99		1.00	1.00	
Fl _t Protected		0.99	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1806	1540	1618	1625		1770	3498		1736	3462	
Fl _t Permitted		0.99	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1806	1540	1618	1625		1770	3498		1736	3462	
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)	20	68	168	81	55	24	324	1469	99	94	603	11
RTOR Reduction (vph)	0	0	114	0	12	0	0	3	0	0	1	0
Lane Group Flow (vph)	0	88	54	73	75	0	324	1565	0	94	613	0
Confl. Peds. (#/hr)			8	8					5	5		
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	4%	4%	4%	6%	6%	6%	2%	2%	2%	4%	4%	4%
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)		11.2	38.3	10.9	10.9		27.1	68.0		11.9	52.8	
Effective Green, g (s)		11.2	38.3	10.9	10.9		27.1	68.0		11.9	52.8	
Actuated g/C Ratio		0.09	0.32	0.09	0.09		0.23	0.57		0.10	0.44	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		168	491	146	147		399	1982		172	1523	
v/s Ratio Prot		c0.05	0.02	0.05	c0.05		c0.18	c0.45		0.05	0.18	
v/s Ratio Perm			0.01									
v/c Ratio		0.52	0.11	0.50	0.51		0.81	0.79		0.55	0.40	
Uniform Delay, d1		51.9	28.8	52.0	52.0		44.0	20.4		51.5	22.9	
Progression Factor		1.00	1.00	1.00	1.00		1.12	0.88		1.00	1.00	
Incremental Delay, d2		2.9	0.1	2.7	3.0		9.7	2.6		3.5	0.2	
Delay (s)		54.8	28.9	54.6	55.0		59.0	20.5		55.0	23.0	
Level of Service		D	C	D	D		E	C		E	C	
Approach Delay (s)		37.8			54.8			27.1			27.3	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			29.5			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				18.0		
Intersection Capacity Utilization			69.8%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis












2: OR-99E & SE Monroe Street

11/17/2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	41	17	1786	56	0	810
Future Volume (vph)	41	17	1786	56	0	810
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	0.95			0.95
Frbp, ped/bikes	1.00	0.98	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Fr _t	1.00	0.85	1.00			1.00
Fl _t Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1656	1455	3520			3471
Fl _t Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1656	1455	3520			3471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	43	18	1860	58	0	844
RTOR Reduction (vph)	0	17	1	0	0	0
Lane Group Flow (vph)	43	1	1917	0	0	844
Confl. Peds. (#/hr)	2	3		3	3	
Heavy Vehicles (%)	9%	9%	2%	2%	4%	4%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	7.4	7.4	103.6			103.6
Effective Green, g (s)	7.4	7.4	103.6			103.6
Actuated g/C Ratio	0.06	0.06	0.86			0.86
Clearance Time (s)	4.5	4.5	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	102	89	3038			2996
v/s Ratio Prot	c0.03		c0.54			0.24
v/s Ratio Perm		0.00				
v/c Ratio	0.42	0.01	0.63			0.28
Uniform Delay, d1	54.2	52.9	2.5			1.5
Progression Factor	1.00	1.00	0.84			0.62
Incremental Delay, d2	2.8	0.1	0.6			0.2
Delay (s)	57.0	52.9	2.7			1.1
Level of Service	E	D	A			A
Approach Delay (s)	55.8		2.7			1.1
Approach LOS	E		A			A
Intersection Summary						
HCM 2000 Control Delay			3.4		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.62			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	9.0
Intersection Capacity Utilization			63.9%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						




















HCM 6th Signalized Intersection Summary
 2: OR-99E & SE Monroe Street

11/17/2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	41	17	1786	56	0	810
Future Volume (veh/h)	41	17	1786	56	0	810
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1767	1767	1870	1870	0	1841
Adj Flow Rate, veh/h	43	18	1860	58	0	844
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	9	9	2	2	0	4
Cap, veh/h	62	56	3124	97	0	3105
Arrive On Green	0.04	0.04	1.00	1.00	0.00	0.89
Sat Flow, veh/h	1682	1497	3612	109	0	3681
Grp Volume(v), veh/h	43	18	935	983	0	844
Grp Sat Flow(s),veh/h/ln	1682	1497	1777	1850	0	1749
Q Serve(g_s), s	3.0	1.4	0.0	0.0	0.0	4.3
Cycle Q Clear(g_c), s	3.0	1.4	0.0	0.0	0.0	4.3
Prop In Lane	1.00	1.00		0.06	0.00	
Lane Grp Cap(c), veh/h	62	56	1578	1643	0	3105
V/C Ratio(X)	0.69	0.32	0.59	0.60	0.00	0.27
Avail Cap(c_a), veh/h	262	233	1578	1643	0	3105
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.56	0.56	0.00	0.93
Uniform Delay (d), s/veh	57.1	56.3	0.0	0.0	0.0	1.0
Incr Delay (d2), s/veh	12.6	3.3	0.9	0.9	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.6	0.4	0.4	0.0	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	69.7	59.6	0.9	0.9	0.0	1.2
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	61		1918			844
Approach Delay, s/veh	66.7		0.9			1.2
Approach LOS	E		A			A
Timer - Assigned Phs		2				6
Phs Duration (G+Y+Rc), s		111.0				9.0
Change Period (Y+Rc), s		4.5				4.5
Max Green Setting (Gmax), s		92.3				18.7
Max Q Clear Time (g_c+I1), s		2.0				5.0
Green Ext Time (p_c), s		33.8				0.1
Intersection Summary						
HCM 6th Ctrl Delay			2.4			
HCM 6th LOS			A			

HCM Signalized Intersection Capacity Analysis
3: OR-99E & SE Washington Street

11/17/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	2	0	86	0	70	0	1797	133	77	758	0
Future Volume (vph)	2	2	0	86	0	70	0	1797	133	77	758	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Lane Util. Factor		1.00		1.00		1.00		0.95		1.00	0.95	
Frbp, ped/bikes		1.00		1.00		0.98		1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.98		1.00		1.00		1.00	1.00	
Fr t		1.00		1.00		0.85		0.99		1.00	1.00	
Fl t Protected		0.98		0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1056		1653		1482		3499		1719	3438	
Fl t Permitted		0.98		0.76		1.00		1.00		0.05	1.00	
Satd. Flow (perm)		1056		1314		1482		3499		92	3438	
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)	2	2	0	90	0	73	0	1872	139	80	790	0
RTOR Reduction (vph)	0	0	0	0	0	65	0	4	0	0	0	0
Lane Group Flow (vph)	0	4	0	90	0	8	0	2007	0	80	790	0
Confl. Peds. (#/hr)	3		10	10		3	22		2	2		22
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	75%	75%	75%	7%	7%	7%	2%	2%	2%	5%	5%	5%
Turn Type	Perm	NA		Perm		Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			8		8				6		
Actuated Green, G (s)		13.3		13.3		13.3		87.5		97.7	97.7	
Effective Green, g (s)		13.3		13.3		13.3		87.5		97.7	97.7	
Actuated g/C Ratio		0.11		0.11		0.11		0.73		0.81	0.81	
Clearance Time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Vehicle Extension (s)		3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		117		145		164		2551		152	2799	
v/s Ratio Prot								c0.57		c0.02	0.23	
v/s Ratio Perm		0.00		c0.07		0.01				0.40		
v/c Ratio		0.03		0.62		0.05		0.79		0.53	0.28	
Uniform Delay, d1		47.6		50.9		47.7		10.3		17.9	2.7	
Progression Factor		1.00		1.00		1.00		1.00		2.05	0.70	
Incremental Delay, d2		0.1		8.0		0.1		2.5		3.2	0.2	
Delay (s)		47.7		58.9		47.8		12.9		40.0	2.1	
Level of Service		D		E		D		B		D	A	
Approach Delay (s)		47.7			54.0			12.9			5.6	
Approach LOS		D			D			B			A	
Intersection Summary												
HCM 2000 Control Delay			13.0									B
HCM 2000 Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			120.0							13.5		
Intersection Capacity Utilization			78.1%								D	
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th AWSC
 4: SE Main Street & SE Washington Street

11/17/2020

Intersection

















Intersection Delay, s/veh 9.2
 Intersection LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔			↔			↔	
Traffic Vol, veh/h	32	153	24	12	127	19	19	20	10	7	11	22
Future Vol, veh/h	32	153	24	12	127	19	19	20	10	7	11	22
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	9	9	9	6	6	6	6	6	6	6	6	6
Mvmt Flow	36	174	27	14	144	22	22	23	11	8	13	25
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			2			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			2			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			2		
HCM Control Delay	9.7			9			8.5			8.1		
HCM LOS	A			A			A			A		

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	39%	17%	0%	8%	17%
Vol Thru, %	41%	83%	0%	80%	27%
Vol Right, %	20%	0%	100%	12%	55%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	49	185	24	158	40
LT Vol	19	32	0	12	7
Through Vol	20	153	0	127	11
RT Vol	10	0	24	19	22
Lane Flow Rate	56	210	27	180	45
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.078	0.3	0.033	0.228	0.06
Departure Headway (Hd)	5.012	5.129	4.339	4.573	4.778
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	714	702	825	785	749
Service Time	3.046	2.855	2.065	2.601	2.814
HCM Lane V/C Ratio	0.078	0.299	0.033	0.229	0.06
HCM Control Delay	8.5	10	7.2	9	8.1
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.3	1.3	0.1	0.9	0.2

HCM Signalized Intersection Capacity Analysis
5: SE 21st Avenue & SE Washington Street

11/17/2020

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	14	126	43	9	107	17	40	41	21	9	15	14	
Future Volume (vph)	14	126	43	9	107	17	40	41	21	9	15	14	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.5			4.5			4.5			4.5		
Lane Util. Factor		1.00			1.00			1.00			1.00		
Frbp, ped/bikes		0.99			0.99			0.99			0.98		
Flpb, ped/bikes		1.00			1.00			0.99			1.00		
Fr t		0.97			0.98			0.97			0.95		
Fl t Protected		1.00			1.00			0.98			0.99		
Satd. Flow (prot)		1684			1796			1706			1451		
Fl t Permitted		0.97			0.97			0.86			0.91		
Satd. Flow (perm)		1631			1741			1488			1332		
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	
Adj. Flow (vph)	17	150	51	11	127	20	48	49	25	11	18	17	
RTOR Reduction (vph)	0	22	0	0	11	0	0	18	0	0	12	0	
Lane Group Flow (vph)	0	196	0	0	147	0	0	104	0	0	34	0	
Confl. Peds. (#/hr)	35		8	8		35	51		30	30		51	
Confl. Bikes (#/hr)			2										
Heavy Vehicles (%)	8%	8%	8%	3%	3%	3%	4%	4%	4%	20%	20%	20%	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		4			8			2			6		
Permitted Phases	4			8			2			6			
Actuated Green, G (s)		8.2			8.2			7.2			7.2		
Effective Green, g (s)		8.2			8.2			7.2			7.2		
Actuated g/C Ratio		0.34			0.34			0.30			0.30		
Clearance Time (s)		4.5			4.5			4.5			4.5		
Vehicle Extension (s)		3.0			3.0			3.0			3.0		
Lane Grp Cap (vph)		548			585			439			393		
v/s Ratio Prot													
v/s Ratio Perm		c0.12			0.08			c0.07			0.03		
v/c Ratio		0.36			0.25			0.24			0.09		
Uniform Delay, d1		6.1			5.9			6.5			6.2		
Progression Factor		1.00			1.00			1.00			1.00		
Incremental Delay, d2		0.4			0.2			0.3			0.1		
Delay (s)		6.5			6.1			6.8			6.3		
Level of Service		A			A			A			A		
Approach Delay (s)		6.5			6.1			6.8			6.3		
Approach LOS		A			A			A			A		
Intersection Summary													
HCM 2000 Control Delay			6.4									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.30										
Actuated Cycle Length (s)			24.4									Sum of lost time (s)	9.0
Intersection Capacity Utilization			34.6%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

HCM 6th Signalized Intersection Summary
 5: SE 21st Avenue & SE Washington Street

11/17/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	126	43	9	107	17	40	41	21	9	15	14
Future Volume (veh/h)	14	126	43	9	107	17	40	41	21	9	15	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.93	0.97		0.95	0.93		0.93	0.94		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1781	1781	1856	1856	1856	1841	1841	1841	1604	1604	1604
Adj Flow Rate, veh/h	17	150	51	11	127	20	48	49	25	11	18	17
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	8	8	8	3	3	3	4	4	4	20	20	20
Cap, veh/h	161	395	126	158	491	73	324	284	109	219	243	174
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	55	1205	385	47	1499	224	409	834	320	158	713	511
Grp Volume(v), veh/h	218	0	0	158	0	0	122	0	0	46	0	0
Grp Sat Flow(s),veh/h/ln	1645	0	0	1770	0	0	1563	0	0	1383	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.7	0.0	0.0	1.8	0.0	0.0	1.3	0.0	0.0	0.6	0.0	0.0
Prop In Lane	0.08		0.23	0.07		0.13	0.39		0.20	0.24		0.37
Lane Grp Cap(c), veh/h	682	0	0	722	0	0	717	0	0	635	0	0
V/C Ratio(X)	0.32	0.00	0.00	0.22	0.00	0.00	0.17	0.00	0.00	0.07	0.00	0.00
Avail Cap(c_a), veh/h	1728	0	0	1845	0	0	1556	0	0	1376	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.0	0.0	0.0	6.7	0.0	0.0	6.3	0.0	0.0	6.1	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	0.4	0.0	0.0	0.3	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.3	0.0	0.0	6.9	0.0	0.0	6.4	0.0	0.0	6.1	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		218			158			122			46	
Approach Delay, s/veh		7.3			6.9			6.4			6.1	
Approach LOS		A			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		13.7		13.4		13.7		13.4				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		24.5		26.5		24.5		26.5				
Max Q Clear Time (g_c+I1), s		3.3		4.7		2.6		3.8				
Green Ext Time (p_c), s		0.6		1.3		0.2		0.9				
Intersection Summary												
HCM 6th Ctrl Delay				6.9								
HCM 6th LOS				A								

HCM 6th TWSC
6: Site Access & SE Washington Street

11/17/2020

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	Y	
Traffic Vol, veh/h	209	5	3	165	1	1
Future Vol, veh/h	209	5	3	165	1	1
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	227	5	3	179	1	1

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	232	0	326
Stage 1	-	-	-	-	230
Stage 2	-	-	-	-	96
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1333	-	643
Stage 1	-	-	-	-	786
Stage 2	-	-	-	-	917
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1333	-	642
Mov Cap-2 Maneuver	-	-	-	-	642
Stage 1	-	-	-	-	786
Stage 2	-	-	-	-	915

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	754	-	-	1333	-
HCM Lane V/C Ratio	0.003	-	-	0.002	-
HCM Control Delay (s)	9.8	-	-	7.7	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM Signalized Intersection Capacity Analysis

1: OR-99E & SE Harrison Street











11/17/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	50	374	148	26	27	237	742	103	84	1596	12
Future Volume (vph)	23	50	374	148	26	27	237	742	103	84	1596	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00	0.99	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	
Frft		1.00	0.85	1.00	0.96		1.00	0.98		1.00	1.00	
Flt Protected		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1852	1581	1681	1659		1787	3493		1787	3570	
Flt Permitted		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1852	1581	1681	1659		1787	3493		1787	3570	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	25	54	402	159	28	29	255	798	111	90	1716	13
RTOR Reduction (vph)	0	0	52	0	12	0	0	7	0	0	1	0
Lane Group Flow (vph)	0	79	350	110	94	0	255	902	0	90	1728	0
Confl. Peds. (#/hr)			15	15					5	5		
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)		9.2	35.0	13.1	13.1		25.8	68.4		11.3	53.9	
Effective Green, g (s)		9.2	35.0	13.1	13.1		25.8	68.4		11.3	53.9	
Actuated g/C Ratio		0.08	0.29	0.11	0.11		0.22	0.57		0.09	0.45	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		141	461	183	181		384	1991		168	1603	
v/s Ratio Prot		0.04	c0.16	c0.07	0.06		0.14	0.26		0.05	c0.48	
v/s Ratio Perm			0.06									
v/c Ratio		0.56	0.76	0.60	0.52		0.66	0.45		0.54	1.08	
Uniform Delay, d1		53.4	38.7	51.0	50.5		43.1	15.0		51.8	33.0	
Progression Factor		1.00	1.00	1.00	1.00		1.09	0.83		1.00	1.00	
Incremental Delay, d2		5.0	7.0	5.5	2.7		4.1	0.7		3.3	46.8	
Delay (s)		58.5	45.7	56.4	53.2		51.2	13.2		55.1	79.9	
Level of Service		E	D	E	D		D	B		E	E	
Approach Delay (s)		47.8			54.8			21.5			78.7	
Approach LOS		D			D			C			E	
Intersection Summary												
HCM 2000 Control Delay			55.2				HCM 2000 Level of Service			E		
HCM 2000 Volume to Capacity ratio			0.91									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			18.0		
Intersection Capacity Utilization			86.0%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis











2: OR-99E & SE Monroe Street

11/17/2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	55	26	967	50	0	2176
Future Volume (vph)	55	26	967	50	0	2176
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	0.95			0.95
Frbp, ped/bikes	1.00	0.98	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Fr _t	1.00	0.85	0.99			1.00
Fl _t Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1736	1514	3507			3574
Fl _t Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1736	1514	3507			3574
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	58	27	1018	53	0	2291
RTOR Reduction (vph)	0	25	2	0	0	0
Lane Group Flow (vph)	58	2	1069	0	0	2291
Confl. Peds. (#/hr)	2	5		4	4	
Confl. Bikes (#/hr)		1		1		
Heavy Vehicles (%)	4%	4%	2%	2%	1%	1%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	8.2	8.2	102.8			102.8
Effective Green, g (s)	8.2	8.2	102.8			102.8
Actuated g/C Ratio	0.07	0.07	0.86			0.86
Clearance Time (s)	4.5	4.5	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	118	103	3004			3061
v/s Ratio Prot	c0.03		0.30			c0.64
v/s Ratio Perm		0.00				
v/c Ratio	0.49	0.02	0.36			0.75
Uniform Delay, d1	53.9	52.1	1.8			3.4
Progression Factor	1.00	1.00	0.27			1.02
Incremental Delay, d2	3.2	0.1	0.3			0.5
Delay (s)	57.1	52.2	0.8			4.0
Level of Service	E	D	A			A
Approach Delay (s)	55.5		0.8			4.0
Approach LOS	E		A			A
Intersection Summary						
HCM 2000 Control Delay			4.3		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.73			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	9.0
Intersection Capacity Utilization			73.5%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM 6th Signalized Intersection Summary
 2: OR-99E & SE Monroe Street

11/17/2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	55	26	967	50	0	2176
Future Volume (veh/h)	55	26	967	50	0	2176
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	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	1841	1841	1870	1870	0	1885
Adj Flow Rate, veh/h	58	27	1018	53	0	2291
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	2	2	0	1
Cap, veh/h	83	74	3011	157	0	3143
Arrive On Green	0.05	0.05	1.00	1.00	0.00	0.88
Sat Flow, veh/h	1753	1560	3525	179	0	3770
Grp Volume(v), veh/h	58	27	527	544	0	2291
Grp Sat Flow(s),veh/h/ln	1753	1560	1777	1833	0	1791
Q Serve(g_s), s	3.9	2.0	0.0	0.0	0.0	26.1
Cycle Q Clear(g_c), s	3.9	2.0	0.0	0.0	0.0	26.1
Prop In Lane	1.00	1.00		0.10	0.00	
Lane Grp Cap(c), veh/h	83	74	1559	1609	0	3143
V/C Ratio(X)	0.70	0.36	0.34	0.34	0.00	0.73
Avail Cap(c_a), veh/h	263	234	1559	1609	0	3143
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.89	0.89	0.00	0.12
Uniform Delay (d), s/veh	56.3	55.4	0.0	0.0	0.0	2.5
Incr Delay (d2), s/veh	10.0	3.0	0.5	0.5	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.9	0.2	0.2	0.0	3.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	66.3	58.4	0.5	0.5	0.0	2.7
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	85		1071			2291
Approach Delay, s/veh	63.8		0.5			2.7
Approach LOS	E		A			A
Timer - Assigned Phs		2				6
Phs Duration (G+Y+Rc), s		109.8				10.2
Change Period (Y+Rc), s		4.5				4.5
Max Green Setting (Gmax), s		93.0				18.0
Max Q Clear Time (g_c+I1), s		2.0				5.9
Green Ext Time (p_c), s		9.5				0.1
Intersection Summary						
HCM 6th Ctrl Delay			3.5			
HCM 6th LOS			A			

HCM Signalized Intersection Capacity Analysis

3: OR-99E & SE Washington Street

11/17/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖		↗		↖		↑↔		↖	↖↖	
Traffic Volume (vph)	1	1	0	133	0	45	0	993	100	74	2137	0
Future Volume (vph)	1	1	0	133	0	45	0	993	100	74	2137	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Lane Util. Factor		1.00		1.00		1.00		0.95		1.00	0.95	
Frbp, ped/bikes		1.00		1.00		0.98		1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.98		1.00		1.00		1.00	1.00	
Frt		1.00		1.00		0.85		0.99		1.00	1.00	
Flt Protected		0.98		0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1850		1704		1528		3452		1787	3574	
Flt Permitted		0.98		0.76		1.00		1.00		0.20	1.00	
Satd. Flow (perm)		1850		1357		1528		3452		372	3574	
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)	1	1	0	140	0	47	0	1045	105	78	2249	0
RTOR Reduction (vph)	0	0	0	0	0	40	0	6	0	0	0	0
Lane Group Flow (vph)	0	2	0	140	0	7	0	1144	0	78	2249	0
Confl. Peds. (#/hr)	2		9	9		2	16		1	1		16
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	3%	3%	3%	1%	1%	1%
Turn Type	Perm	NA		Perm		Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			8		8				6		
Actuated Green, G (s)		16.7		16.7		16.7		85.0		94.3	94.3	
Effective Green, g (s)		16.7		16.7		16.7		85.0		94.3	94.3	
Actuated g/C Ratio		0.14		0.14		0.14		0.71		0.79	0.79	
Clearance Time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Vehicle Extension (s)		3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		257		188		212		2445		348	2808	
v/s Ratio Prot								0.33		0.01	c0.63	
v/s Ratio Perm		0.00		c0.10		0.00				0.17		
v/c Ratio		0.01		0.74		0.03		0.47		0.22	0.80	
Uniform Delay, d1		44.5		49.6		44.7		7.6		4.5	7.4	
Progression Factor		1.00		1.00		1.00		1.00		1.17	0.73	
Incremental Delay, d2		0.0		14.8		0.1		0.6		0.2	1.7	
Delay (s)		44.5		64.4		44.7		8.3		5.4	7.2	
Level of Service		D		E		D		A		A	A	
Approach Delay (s)		44.5			59.4			8.3			7.1	
Approach LOS		D			E			A			A	
Intersection Summary												
HCM 2000 Control Delay			10.2		HCM 2000 Level of Service				B			
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			120.0	Sum of lost time (s)					13.5			
Intersection Capacity Utilization			79.2%	ICU Level of Service					D			
Analysis Period (min)	15											
c Critical Lane Group												

HCM 6th AWSC
 4: SE Main Street & SE Washington Street

11/17/2020

Intersection

















Intersection Delay, s/veh 9
 Intersection LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔			↔			↔	
Traffic Vol, veh/h	37	116	37	16	124	20	30	29	15	30	26	36
Future Vol, veh/h	37	116	37	16	124	20	30	29	15	30	26	36
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	5	5	5	5	5	5	2	2	2	3	3	3
Mvmt Flow	40	125	40	17	133	22	32	31	16	32	28	39
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			2			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			2			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			2		
HCM Control Delay	9.3			9.1			8.6			8.6		
HCM LOS	A			A			A			A		

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	41%	24%	0%	10%	33%
Vol Thru, %	39%	76%	0%	78%	28%
Vol Right, %	20%	0%	100%	12%	39%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	74	153	37	160	92
LT Vol	30	37	0	16	30
Through Vol	29	116	0	124	26
RT Vol	15	0	37	20	36
Lane Flow Rate	80	165	40	172	99
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.109	0.242	0.049	0.225	0.132
Departure Headway (Hd)	4.931	5.294	4.468	4.718	4.795
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	725	678	799	759	746
Service Time	2.977	3.034	2.208	2.759	2.838
HCM Lane V/C Ratio	0.11	0.243	0.05	0.227	0.133
HCM Control Delay	8.6	9.7	7.4	9.1	8.6
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.4	0.9	0.2	0.9	0.5

HCM Signalized Intersection Capacity Analysis
 5: SE 21st Avenue & SE Washington Street

11/17/2020

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	18	96	44	10	98	24	31	24	8	12	31	28	
Future Volume (vph)	18	96	44	10	98	24	31	24	8	12	31	28	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.5			4.5			4.5			4.5		
Lane Util. Factor		1.00			1.00			1.00			1.00		
Frbp, ped/bikes		0.99			1.00			1.00			0.98		
Flpb, ped/bikes		1.00			1.00			0.99			1.00		
Fr t		0.96			0.98			0.98			0.95		
Fl t Protected		0.99			1.00			0.98			0.99		
Satd. Flow (prot)		1687			1800			1779			1576		
Fl t Permitted		0.95			0.96			0.81			0.93		
Satd. Flow (perm)		1608			1741			1479			1486		
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)	19	102	47	11	104	26	33	26	9	13	33	30	
RTOR Reduction (vph)	0	29	0	0	16	0	0	6	0	0	22	0	
Lane Group Flow (vph)	0	139	0	0	125	0	0	62	0	0	54	0	
Confl. Peds. (#/hr)	7		5	5		7	35		21	21		35	
Confl. Bikes (#/hr)			1			1						1	
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	1%	1%	1%	11%	11%	11%	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		4			8			2			6		
Permitted Phases	4			8			2			6			
Actuated Green, G (s)		7.2			7.2			6.4			6.4		
Effective Green, g (s)		7.2			7.2			6.4			6.4		
Actuated g/C Ratio		0.32			0.32			0.28			0.28		
Clearance Time (s)		4.5			4.5			4.5			4.5		
Vehicle Extension (s)		3.0			3.0			3.0			3.0		
Lane Grp Cap (vph)		512			554			418			420		
v/s Ratio Prot													
v/s Ratio Perm		c0.09			0.07			c0.04			0.04		
v/c Ratio		0.27			0.22			0.15			0.13		
Uniform Delay, d1		5.7			5.7			6.1			6.0		
Progression Factor		1.00			1.00			1.00			1.00		
Incremental Delay, d2		0.3			0.2			0.2			0.1		
Delay (s)		6.0			5.9			6.2			6.2		
Level of Service		A			A			A			A		
Approach Delay (s)		6.0			5.9			6.2			6.2		
Approach LOS		A			A			A			A		
Intersection Summary													
HCM 2000 Control Delay			6.0									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.21										
Actuated Cycle Length (s)			22.6									Sum of lost time (s)	9.0
Intersection Capacity Utilization			32.8%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

HCM 6th TWSC
 6: Site Access & SE Washington Street

11/17/2020

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	Y	
Traffic Vol, veh/h	187	1	1	190	5	3
Future Vol, veh/h	187	1	1	190	5	3
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	203	1	1	207	5	3

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	204
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	1365
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1365
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-











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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	739	-	-	1365	-
HCM Lane V/C Ratio	0.012	-	-	0.001	-
HCM Control Delay (s)	9.9	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM Signalized Intersection Capacity Analysis

2: OR-99E & SE Monroe Street

04/08/2021











						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	43	19	1832	58	0	838
Future Volume (vph)	43	19	1832	58	0	838
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	0.95			0.95
Frbp, ped/bikes	1.00	0.98	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1656	1455	3520			3471
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1656	1455	3520			3471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	45	20	1908	60	0	873
RTOR Reduction (vph)	0	19	1	0	0	0
Lane Group Flow (vph)	45	1	1967	0	0	873
Confl. Peds. (#/hr)	2	3		3	3	
Heavy Vehicles (%)	9%	9%	2%	2%	4%	4%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	7.6	7.6	103.4			103.4
Effective Green, g (s)	7.6	7.6	103.4			103.4
Actuated g/C Ratio	0.06	0.06	0.86			0.86
Clearance Time (s)	4.5	4.5	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	104	92	3033			2990
v/s Ratio Prot	c0.03		c0.56			0.25
v/s Ratio Perm		0.00				
v/c Ratio	0.43	0.01	0.65			0.29
Uniform Delay, d1	54.1	52.7	2.6			1.5
Progression Factor	1.00	1.00	0.75			0.63
Incremental Delay, d2	2.9	0.1	0.6			0.2
Delay (s)	57.0	52.7	2.6			1.2
Level of Service	E	D	A			A
Approach Delay (s)	55.7		2.6			1.2
Approach LOS	E		A			A

Intersection Summary

HCM 2000 Control Delay	3.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			













HCM 6th Signalized Intersection Summary
 2: OR-99E & SE Monroe Street

04/08/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	43	19	1832	58	0	838
Future Volume (veh/h)	43	19	1832	58	0	838
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1767	1767	1870	1870	0	1841
Adj Flow Rate, veh/h	45	20	1908	60	0	873
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	9	9	2	2	0	4
Cap, veh/h	65	58	3117	97	0	3099
Arrive On Green	0.04	0.04	1.00	1.00	0.00	0.89
Sat Flow, veh/h	1682	1497	3611	110	0	3681
Grp Volume(v), veh/h	45	20	959	1009	0	873
Grp Sat Flow(s),veh/h/ln	1682	1497	1777	1850	0	1749
Q Serve(g_s), s	3.2	1.6	0.0	0.0	0.0	4.5
Cycle Q Clear(g_c), s	3.2	1.6	0.0	0.0	0.0	4.5
Prop In Lane	1.00	1.00		0.06	0.00	
Lane Grp Cap(c), veh/h	65	58	1574	1640	0	3099
V/C Ratio(X)	0.69	0.34	0.61	0.62	0.00	0.28
Avail Cap(c_a), veh/h	262	233	1574	1640	0	3099
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.49	0.49	0.00	0.92
Uniform Delay (d), s/veh	56.9	56.2	0.0	0.0	0.0	1.0
Incr Delay (d2), s/veh	12.0	3.5	0.9	0.9	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.7	0.4	0.4	0.0	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	69.0	59.6	0.9	0.9	0.0	1.2
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	65		1968			873
Approach Delay, s/veh	66.1		0.9			1.2
Approach LOS	E		A			A
Timer - Assigned Phs		2				6
Phs Duration (G+Y+Rc), s		110.8				110.8
Change Period (Y+Rc), s		4.5				4.5
Max Green Setting (Gmax), s		92.3				92.3
Max Q Clear Time (g_c+I1), s		2.0				6.5
Green Ext Time (p_c), s		36.3				7.9
0.1						
Intersection Summary						
HCM 6th Ctrl Delay			2.4			
HCM 6th LOS			A			

HCM Signalized Intersection Capacity Analysis
3: OR-99E & SE Washington Street

04/08/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↙		↗		↕		↙	↕	
Traffic Volume (vph)	2	2	0	103	0	93	0	1823	143	92	774	0
Future Volume (vph)	2	2	0	103	0	93	0	1823	143	92	774	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Lane Util. Factor		1.00		1.00		1.00		0.95		1.00	0.95	
Frbp, ped/bikes		1.00		1.00		0.98		1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.98		1.00		1.00		1.00	1.00	
Frft		1.00		1.00		0.85		0.99		1.00	1.00	
Flt Protected		0.98		0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1056		1653		1482		3496		1719	3438	
Flt Permitted		0.98		0.76		1.00		1.00		0.04	1.00	
Satd. Flow (perm)		1056		1314		1482		3496		81	3438	
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)	2	2	0	107	0	97	0	1899	149	96	806	0
RTOR Reduction (vph)	0	0	0	0	0	85	0	4	0	0	0	0
Lane Group Flow (vph)	0	4	0	107	0	12	0	2044	0	96	806	0
Confl. Peds. (#/hr)	3		10	10		3	22		2	2		22
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	75%	75%	75%	7%	7%	7%	2%	2%	2%	5%	5%	5%
Turn Type	Perm	NA		Perm		Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			8		8				6		
Actuated Green, G (s)		14.4		14.4		14.4		84.9		96.6	96.6	
Effective Green, g (s)		14.4		14.4		14.4		84.9		96.6	96.6	
Actuated g/C Ratio		0.12		0.12		0.12		0.71		0.80	0.80	
Clearance Time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Vehicle Extension (s)		3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		126		157		177		2473		163	2767	
v/s Ratio Prot								c0.58		c0.04	0.23	
v/s Ratio Perm		0.00		c0.08		0.01				0.44		
v/c Ratio		0.03		0.68		0.07		0.83		0.59	0.29	
Uniform Delay, d1		46.6		50.6		46.8		12.4		27.0	3.0	
Progression Factor		1.00		1.00		1.00		1.00		1.51	0.62	
Incremental Delay, d2		0.1		11.5		0.2		3.3		5.2	0.3	
Delay (s)		46.7		62.1		47.0		15.7		46.0	2.1	
Level of Service		D		E		D		B		D	A	
Approach Delay (s)		46.7			54.9			15.7			6.8	
Approach LOS		D			D			B			A	
Intersection Summary												
HCM 2000 Control Delay			15.7				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		13.5			
Intersection Capacity Utilization			81.3%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th AWSC
 4: SE Main Street & SE Washington Street

04/08/2021

Intersection

















Intersection Delay, s/veh 9.7
 Intersection LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔			↔			↔	
Traffic Vol, veh/h	35	170	29	13	163	20	23	24	10	8	12	23
Future Vol, veh/h	35	170	29	13	163	20	23	24	10	8	12	23
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	9	9	9	6	6	6	6	6	6	6	6	6
Mvmt Flow	40	193	33	15	185	23	26	27	11	9	14	26
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			2			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			2			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			2		
HCM Control Delay	10.2			9.6			8.8			8.4		
HCM LOS	B			A			A			A		

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	40%	17%	0%	7%	19%
Vol Thru, %	42%	83%	0%	83%	28%
Vol Right, %	18%	0%	100%	10%	53%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	57	205	29	196	43
LT Vol	23	35	0	13	8
Through Vol	24	170	0	163	12
RT Vol	10	0	29	20	23
Lane Flow Rate	65	233	33	223	49
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.094	0.337	0.04	0.288	0.068
Departure Headway (Hd)	5.206	5.208	4.418	4.66	4.975
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	686	690	809	771	717
Service Time	3.255	2.944	2.154	2.697	3.025
HCM Lane V/C Ratio	0.095	0.338	0.041	0.289	0.068
HCM Control Delay	8.8	10.6	7.3	9.6	8.4
HCM Lane LOS	A	B	A	A	A
HCM 95th-tile Q	0.3	1.5	0.1	1.2	0.2

















HCM Signalized Intersection Capacity Analysis
5: SE 21st Avenue & SE Washington Street

04/08/2021

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (vph)	15	142	49	10	116	19	43	46	22	9	17	15		
Future Volume (vph)	15	142	49	10	116	19	43	46	22	9	17	15		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)		4.5			4.5			4.5			4.5			
Lane Util. Factor		1.00			1.00			1.00			1.00			
Frbp, ped/bikes		0.99			0.99			0.99			0.98			
Flpb, ped/bikes		1.00			1.00			0.99			1.00			
Fr t		0.97			0.98			0.97			0.95			
Fl t Protected		1.00			1.00			0.98			0.99			
Satd. Flow (prot)		1683			1794			1709			1452			
Fl t Permitted		0.97			0.97			0.86			0.91			
Satd. Flow (perm)		1634			1738			1492			1339			
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84		
Adj. Flow (vph)	18	169	58	12	138	23	51	55	26	11	20	18		
RTOR Reduction (vph)	0	22	0	0	10	0	0	18	0	0	13	0		
Lane Group Flow (vph)	0	223	0	0	163	0	0	114	0	0	36	0		
Confl. Peds. (#/hr)	35		8	8		35	51		30	30		51		
Confl. Bikes (#/hr)			2											
Heavy Vehicles (%)	8%	8%	8%	3%	3%	3%	4%	4%	4%	20%	20%	20%		
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA			
Protected Phases		4			8			2			6			
Permitted Phases	4			8			2			6				
Actuated Green, G (s)		8.7			8.7			7.4			7.4			
Effective Green, g (s)		8.7			8.7			7.4			7.4			
Actuated g/C Ratio		0.35			0.35			0.29			0.29			
Clearance Time (s)		4.5			4.5			4.5			4.5			
Vehicle Extension (s)		3.0			3.0			3.0			3.0			
Lane Grp Cap (vph)		566			602			439			394			
v/s Ratio Prot														
v/s Ratio Perm		c0.14			0.09			c0.08			0.03			
v/c Ratio		0.39			0.27			0.26			0.09			
Uniform Delay, d1		6.2			5.9			6.8			6.4			
Progression Factor		1.00			1.00			1.00			1.00			
Incremental Delay, d2		0.5			0.2			0.3			0.1			
Delay (s)		6.7			6.2			7.1			6.5			
Level of Service		A			A			A			A			
Approach Delay (s)		6.7			6.2			7.1			6.5			
Approach LOS		A			A			A			A			
Intersection Summary														
HCM 2000 Control Delay			6.6									HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio			0.33											
Actuated Cycle Length (s)			25.1						9.0					
Intersection Capacity Utilization			36.1%										ICU Level of Service	A
Analysis Period (min)			15											
c Critical Lane Group														

HCM 6th Signalized Intersection Summary
 5: SE 21st Avenue & SE Washington Street

04/08/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	142	49	10	116	19	43	46	22	9	17	15
Future Volume (veh/h)	15	142	49	10	116	19	43	46	22	9	17	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.93	0.97		0.95	0.93		0.92	0.94		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1781	1781	1856	1856	1856	1841	1841	1841	1604	1604	1604
Adj Flow Rate, veh/h	18	169	58	12	138	23	51	55	26	11	20	18
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	8	8	8	3	3	3	4	4	4	20	20	20
Cap, veh/h	157	408	132	155	504	80	314	289	104	207	247	171
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	51	1205	390	46	1486	235	399	860	309	143	735	510
Grp Volume(v), veh/h	245	0	0	173	0	0	132	0	0	49	0	0
Grp Sat Flow(s),veh/h/ln	1645	0	0	1767	0	0	1568	0	0	1389	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.1	0.0	0.0	1.9	0.0	0.0	1.5	0.0	0.0	0.6	0.0	0.0
Prop In Lane	0.07		0.24	0.07		0.13	0.39		0.20	0.22		0.37
Lane Grp Cap(c), veh/h	697	0	0	738	0	0	707	0	0	625	0	0
V/C Ratio(X)	0.35	0.00	0.00	0.23	0.00	0.00	0.19	0.00	0.00	0.08	0.00	0.00
Avail Cap(c_a), veh/h	1693	0	0	1803	0	0	1527	0	0	1350	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.1	0.0	0.0	6.7	0.0	0.0	6.6	0.0	0.0	6.3	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	0.5	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.4	0.0	0.0	6.8	0.0	0.0	6.7	0.0	0.0	6.4	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		245			173			132				49
Approach Delay, s/veh		7.4			6.8			6.7				6.4
Approach LOS		A			A			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		13.8		13.9		13.8		13.9				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		24.5		26.5		24.5		26.5				
Max Q Clear Time (g_c+I1), s		3.5		5.1		2.6		3.9				
Green Ext Time (p_c), s		0.7		1.5		0.2		1.0				
Intersection Summary												
HCM 6th Ctrl Delay				7.0								
HCM 6th LOS				A								

HCM 6th TWSC
 6: Site Access & SE Washington Street

04/08/2021

Intersection

Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	Y	
Traffic Vol, veh/h	234	5	3	206	1	1
Future Vol, veh/h	234	5	3	206	1	1
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	254	5	3	224	1	1

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	259	0	375
Stage 1	-	-	-	-	257
Stage 2	-	-	-	-	118
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1303	-	599
Stage 1	-	-	-	-	762
Stage 2	-	-	-	-	894
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1303	-	597
Mov Cap-2 Maneuver	-	-	-	-	597
Stage 1	-	-	-	-	762
Stage 2	-	-	-	-	891





















Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	717	-	-	1303	-
HCM Lane V/C Ratio	0.003	-	-	0.003	-
HCM Control Delay (s)	10	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM Signalized Intersection Capacity Analysis

1: OR-99E & SE Harrison Street











04/08/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	53	396	154	29	28	257	769	107	87	1642	14
Future Volume (vph)	25	53	396	154	29	28	257	769	107	87	1642	14
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00	0.99	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	
Fr		1.00	0.85	1.00	0.96		1.00	0.98		1.00	1.00	
Flt Protected		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1851	1581	1681	1661		1787	3493		1787	3570	
Flt Permitted		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1851	1581	1681	1661		1787	3493		1787	3570	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	27	57	426	166	31	30	276	827	115	94	1766	15
RTOR Reduction (vph)	0	0	49	0	12	0	0	7	0	0	1	0
Lane Group Flow (vph)	0	84	377	115	100	0	276	935	0	94	1780	0
Confl. Peds. (#/hr)			15	15					5	5		
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)		9.4	36.4	13.5	13.5		27.0	67.6		11.5	52.1	
Effective Green, g (s)		9.4	36.4	13.5	13.5		27.0	67.6		11.5	52.1	
Actuated g/C Ratio		0.08	0.30	0.11	0.11		0.22	0.56		0.10	0.43	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		144	479	189	186		402	1967		171	1549	
v/s Ratio Prot		0.05	c0.18	c0.07	0.06		0.15	0.27		0.05	c0.50	
v/s Ratio Perm			0.06									
v/c Ratio		0.58	0.79	0.61	0.54		0.69	0.48		0.55	1.15	
Uniform Delay, d1		53.4	38.3	50.7	50.3		42.6	15.6		51.8	34.0	
Progression Factor		1.00	1.00	1.00	1.00		1.12	0.85		1.00	1.00	
Incremental Delay, d2		5.9	8.4	5.5	3.2		4.6	0.8		3.6	75.2	
Delay (s)		59.3	46.6	56.2	53.5		52.4	14.0		55.4	109.2	
Level of Service		E	D	E	D		D	B		E	F	
Approach Delay (s)		48.7			54.9			22.7			106.5	
Approach LOS		D			D			C			F	
Intersection Summary												
HCM 2000 Control Delay			69.1				HCM 2000 Level of Service				E	
HCM 2000 Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			18.0		
Intersection Capacity Utilization			89.0%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis











2: OR-99E & SE Monroe Street

04/08/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	57	29	1005	52	0	2237
Future Volume (vph)	57	29	1005	52	0	2237
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	0.95			0.95
Frbp, ped/bikes	1.00	0.98	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Fr _t	1.00	0.85	0.99			1.00
Fl _t Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1736	1514	3507			3574
Fl _t Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1736	1514	3507			3574
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	60	31	1058	55	0	2355
RTOR Reduction (vph)	0	29	2	0	0	0
Lane Group Flow (vph)	60	2	1111	0	0	2355
Confl. Peds. (#/hr)	2	5		4	4	
Confl. Bikes (#/hr)		1		1		
Heavy Vehicles (%)	4%	4%	2%	2%	1%	1%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	8.3	8.3	102.7			102.7
Effective Green, g (s)	8.3	8.3	102.7			102.7
Actuated g/C Ratio	0.07	0.07	0.86			0.86
Clearance Time (s)	4.5	4.5	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	120	104	3001			3058
v/s Ratio Prot	c0.03		0.32			c0.66
v/s Ratio Perm		0.00				
v/c Ratio	0.50	0.02	0.37			0.77
Uniform Delay, d1	53.8	52.1	1.8			3.7
Progression Factor	1.00	1.00	0.19			1.12
Incremental Delay, d2	3.3	0.1	0.3			0.2
Delay (s)	57.1	52.1	0.7			4.3
Level of Service	E	D	A			A
Approach Delay (s)	55.4		0.7			4.3
Approach LOS	E		A			A
Intersection Summary						
HCM 2000 Control Delay			4.4		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.75			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	9.0
Intersection Capacity Utilization			75.2%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						




















HCM 6th Signalized Intersection Summary
 2: OR-99E & SE Monroe Street

04/08/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	57	29	1005	52	0	2237
Future Volume (veh/h)	57	29	1005	52	0	2237
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	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	1841	1841	1870	1870	0	1885
Adj Flow Rate, veh/h	60	31	1058	55	0	2355
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	2	2	0	1
Cap, veh/h	86	77	3006	156	0	3137
Arrive On Green	0.05	0.05	1.00	1.00	0.00	0.88
Sat Flow, veh/h	1753	1560	3525	178	0	3770
Grp Volume(v), veh/h	60	31	548	565	0	2355
Grp Sat Flow(s),veh/h/ln	1753	1560	1777	1833	0	1791
Q Serve(g_s), s	4.0	2.3	0.0	0.0	0.0	28.6
Cycle Q Clear(g_c), s	4.0	2.3	0.0	0.0	0.0	28.6
Prop In Lane	1.00	1.00		0.10	0.00	
Lane Grp Cap(c), veh/h	86	77	1556	1606	0	3137
V/C Ratio(X)	0.70	0.40	0.35	0.35	0.00	0.75
Avail Cap(c_a), veh/h	263	234	1556	1606	0	3137
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.87	0.87	0.00	0.09
Uniform Delay (d), s/veh	56.2	55.3	0.0	0.0	0.0	2.7
Incr Delay (d2), s/veh	9.7	3.4	0.5	0.5	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	1.0	0.2	0.2	0.0	4.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	65.8	58.7	0.5	0.5	0.0	2.9
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	91		1113			2355
Approach Delay, s/veh	63.4		0.5			2.9
Approach LOS	E		A			A
Timer - Assigned Phs		2				6
Phs Duration (G+Y+Rc), s		109.6				10.4
Change Period (Y+Rc), s		4.5				4.5
Max Green Setting (Gmax), s		93.0				18.0
Max Q Clear Time (g_c+I1), s		2.0				30.6
Green Ext Time (p_c), s		10.1				43.7
Intersection Summary						
HCM 6th Ctrl Delay			3.7			
HCM 6th LOS			A			

HCM Signalized Intersection Capacity Analysis
 3: OR-99E & SE Washington Street

04/08/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	1	0	150	0	67	0	1012	121	104	2171	0
Future Volume (vph)	1	1	0	150	0	67	0	1012	121	104	2171	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Lane Util. Factor		1.00		1.00		1.00		0.95		1.00	0.95	
Frbp, ped/bikes		1.00		1.00		0.98		1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.98		1.00		1.00		1.00	1.00	
Fr t		1.00		1.00		0.85		0.98		1.00	1.00	
Fl t Protected		0.98		0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1850		1704		1528		3443		1787	3574	
Fl t Permitted		0.98		0.76		1.00		1.00		0.18	1.00	
Satd. Flow (perm)		1850		1357		1528		3443		341	3574	
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)	1	1	0	158	0	71	0	1065	127	109	2285	0
RTOR Reduction (vph)	0	0	0	0	0	61	0	7	0	0	0	0
Lane Group Flow (vph)	0	2	0	158	0	10	0	1185	0	109	2285	0
Confl. Peds. (#/hr)	2		9	9		2	16		1	1		16
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	3%	3%	3%	1%	1%	1%
Turn Type	Perm	NA		Perm		Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			8		8				6		
Actuated Green, G (s)		17.7		17.7		17.7		82.1		93.3	93.3	
Effective Green, g (s)		17.7		17.7		17.7		82.1		93.3	93.3	
Actuated g/C Ratio		0.15		0.15		0.15		0.68		0.78	0.78	
Clearance Time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Vehicle Extension (s)		3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		272		200		225		2355		345	2778	
v/s Ratio Prot								0.34		0.02	c0.64	
v/s Ratio Perm		0.00		c0.12		0.01				0.23		
v/c Ratio		0.01		0.79		0.05		0.50		0.32	0.82	
Uniform Delay, d1		43.7		49.4		43.9		9.1		5.4	8.2	
Progression Factor		1.00		1.00		1.00		1.00		1.28	0.84	
Incremental Delay, d2		0.0		18.8		0.1		0.8		0.3	1.9	
Delay (s)		43.7		68.2		44.0		9.9		7.3	8.8	
Level of Service		D		E		D		A		A	A	
Approach Delay (s)		43.7			60.7			9.9			8.7	
Approach LOS		D			E			A			A	
Intersection Summary												
HCM 2000 Control Delay			12.2									B
HCM 2000 Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			120.0							13.5		
Intersection Capacity Utilization			81.8%									D
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th AWSC
4: SE Main Street & SE Washington Street

04/08/2021

Intersection

















Intersection Delay, s/veh 9.7
Intersection LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔			↔			↔	
Traffic Vol, veh/h	39	158	44	17	154	22	37	32	17	31	30	38
Future Vol, veh/h	39	158	44	17	154	22	37	32	17	31	30	38
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	5	5	5	5	5	5	2	2	2	3	3	3
Mvmt Flow	42	170	47	18	166	24	40	34	18	33	32	41
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			2			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			2			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			2		
HCM Control Delay	10.1			9.8			9.1			9		
HCM LOS	B			A			A			A		

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	43%	20%	0%	9%	31%
Vol Thru, %	37%	80%	0%	80%	30%
Vol Right, %	20%	0%	100%	11%	38%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	86	197	44	193	99
LT Vol	37	39	0	17	31
Through Vol	32	158	0	154	30
RT Vol	17	0	44	22	38
Lane Flow Rate	92	212	47	208	106
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.133	0.316	0.06	0.28	0.149
Departure Headway (Hd)	5.181	5.377	4.573	4.861	5.044
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	687	665	778	735	706
Service Time	3.251	3.137	2.332	2.923	3.112
HCM Lane V/C Ratio	0.134	0.319	0.06	0.283	0.15
HCM Control Delay	9.1	10.6	7.6	9.8	9
HCM Lane LOS	A	B	A	A	A
HCM 95th-tile Q	0.5	1.4	0.2	1.1	0.5

















HCM Signalized Intersection Capacity Analysis
5: SE 21st Avenue & SE Washington Street

04/08/2021

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (vph)	19	109	49	10	114	26	37	27	9	13	36	29		
Future Volume (vph)	19	109	49	10	114	26	37	27	9	13	36	29		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)		4.5			4.5			4.5			4.5			
Lane Util. Factor		1.00			1.00			1.00			1.00			
Frbp, ped/bikes		0.99			1.00			1.00			0.98			
Flpb, ped/bikes		1.00			1.00			0.99			1.00			
Fr t		0.96			0.98			0.98			0.95			
Fl t Protected		0.99			1.00			0.98			0.99			
Satd. Flow (prot)		1688			1804			1778			1583			
Fl t Permitted		0.95			0.97			0.80			0.93			
Satd. Flow (perm)		1611			1750			1462			1491			
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)	20	116	52	11	121	28	39	29	10	14	38	31		
RTOR Reduction (vph)	0	28	0	0	16	0	0	7	0	0	22	0		
Lane Group Flow (vph)	0	160	0	0	144	0	0	71	0	0	61	0		
Confl. Peds. (#/hr)	7		5	5		7	35		21	21		35		
Confl. Bikes (#/hr)			1			1						1		
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	1%	1%	1%	11%	11%	11%		
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA			
Protected Phases		4			8			2			6			
Permitted Phases	4			8			2			6				
Actuated Green, G (s)		7.5			7.5			6.6			6.6			
Effective Green, g (s)		7.5			7.5			6.6			6.6			
Actuated g/C Ratio		0.32			0.32			0.29			0.29			
Clearance Time (s)		4.5			4.5			4.5			4.5			
Vehicle Extension (s)		3.0			3.0			3.0			3.0			
Lane Grp Cap (vph)		523			568			417			426			
v/s Ratio Prot														
v/s Ratio Perm		c0.10			0.08			c0.05			0.04			
v/c Ratio		0.31			0.25			0.17			0.14			
Uniform Delay, d1		5.8			5.7			6.2			6.1			
Progression Factor		1.00			1.00			1.00			1.00			
Incremental Delay, d2		0.3			0.2			0.2			0.2			
Delay (s)		6.2			6.0			6.4			6.3			
Level of Service		A			A			A			A			
Approach Delay (s)		6.2			6.0			6.4			6.3			
Approach LOS		A			A			A			A			
Intersection Summary														
HCM 2000 Control Delay			6.2									HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio			0.24											
Actuated Cycle Length (s)			23.1						9.0					
Intersection Capacity Utilization			34.8%										ICU Level of Service	A
Analysis Period (min)			15											
c Critical Lane Group														

HCM 6th Signalized Intersection Summary
 5: SE 21st Avenue & SE Washington Street

04/08/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	109	49	10	114	26	37	27	9	13	36	29
Future Volume (veh/h)	19	109	49	10	114	26	37	27	9	13	36	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	0.96		0.95	0.95		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1870	1870	1870	1885	1885	1885	1737	1737	1737
Adj Flow Rate, veh/h	20	116	52	11	121	28	39	29	10	14	38	31
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	7	2	2	2	1	1	1	11	11	11
Cap, veh/h	203	283	117	187	361	80	432	274	68	225	290	195
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	95	1096	455	59	1400	310	562	808	202	108	854	573
Grp Volume(v), veh/h	188	0	0	160	0	0	78	0	0	83	0	0
Grp Sat Flow(s),veh/h/ln	1645	0	0	1769	0	0	1572	0	0	1535	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.1	0.0	0.0	1.6	0.0	0.0	0.7	0.0	0.0	0.8	0.0	0.0
Prop In Lane	0.11		0.28	0.07		0.17	0.50		0.13	0.17		0.37
Lane Grp Cap(c), veh/h	603	0	0	628	0	0	775	0	0	709	0	0
V/C Ratio(X)	0.31	0.00	0.00	0.25	0.00	0.00	0.10	0.00	0.00	0.12	0.00	0.00
Avail Cap(c_a), veh/h	2166	0	0	2318	0	0	1836	0	0	1763	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.9	0.0	0.0	6.8	0.0	0.0	5.1	0.0	0.0	5.1	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.2	0.0	0.0	7.0	0.0	0.0	5.2	0.0	0.0	5.2	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		188			160			78			83	
Approach Delay, s/veh		7.2			7.0			5.2			5.2	
Approach LOS		A			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		12.1		10.3		12.1		10.3				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		23.5		27.5		23.5		27.5				
Max Q Clear Time (g_c+I1), s		2.7		4.1		2.8		3.6				
Green Ext Time (p_c), s		0.4		1.1		0.4		0.9				
Intersection Summary												
HCM 6th Ctrl Delay			6.5									
HCM 6th LOS			A									

HCM 6th TWSC
 6: Site Access & SE Washington Street

04/08/2021

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	Y	
Traffic Vol, veh/h	238	1	1	229	5	3
Future Vol, veh/h	238	1	1	229	5	3
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	259	1	1	249	5	3

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	260
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	1302
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1302
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-





















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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	675	-	-	1302	-
HCM Lane V/C Ratio	0.013	-	-	0.001	-
HCM Control Delay (s)	10.4	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM Signalized Intersection Capacity Analysis

1: OR-99E & SE Harrison Street













04/08/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	70	176	80	55	24	323	1452	98	93	593	11
Future Volume (vph)	22	70	176	80	55	24	323	1452	98	93	593	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00	0.99	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	
Frft		1.00	0.85	1.00	0.96		1.00	0.99		1.00	1.00	
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1806	1539	1618	1626		1770	3498		1736	3461	
Flt Permitted		0.99	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1806	1539	1618	1626		1770	3498		1736	3461	
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)	23	74	185	84	58	25	340	1528	103	98	624	12
RTOR Reduction (vph)	0	0	124	0	12	0	0	4	0	0	1	0
Lane Group Flow (vph)	0	97	61	76	79	0	340	1627	0	98	635	0
Confl. Peds. (#/hr)			8	8					5	5		
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	4%	4%	4%	6%	6%	6%	2%	2%	2%	4%	4%	4%
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)		11.8	39.6	11.2	11.2		27.8	66.9		12.1	51.2	
Effective Green, g (s)		11.8	39.6	11.2	11.2		27.8	66.9		12.1	51.2	
Actuated g/C Ratio		0.10	0.33	0.09	0.09		0.23	0.56		0.10	0.43	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		177	507	151	151		410	1950		175	1476	
v/s Ratio Prot		c0.05	0.03	0.05	c0.05		c0.19	c0.47		0.06	0.18	
v/s Ratio Perm			0.01									
v/c Ratio		0.55	0.12	0.50	0.52		0.83	0.83		0.56	0.43	
Uniform Delay, d1		51.6	28.0	51.8	51.9		43.8	22.0		51.4	24.2	
Progression Factor		1.00	1.00	1.00	1.00		1.10	0.92		1.00	1.00	
Incremental Delay, d2		3.4	0.1	2.6	3.3		10.4	3.4		4.1	0.2	
Delay (s)		55.0	28.2	54.4	55.1		58.4	23.7		55.5	24.4	
Level of Service		E	C	D	E		E	C		E	C	
Approach Delay (s)		37.4			54.8			29.7			28.5	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			31.4				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			18.0		
Intersection Capacity Utilization			72.1%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2: OR-99E & SE Monroe Street

04/08/2021











						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Traffic Volume (vph)	43	19	1850	58	0	843
Future Volume (vph)	43	19	1850	58	0	843
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	0.95			0.95
Frbp, ped/bikes	1.00	0.98	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1656	1455	3520			3471
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1656	1455	3520			3471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	45	20	1927	60	0	878
RTOR Reduction (vph)	0	19	1	0	0	0
Lane Group Flow (vph)	45	1	1986	0	0	878
Confl. Peds. (#/hr)	2	3		3	3	
Heavy Vehicles (%)	9%	9%	2%	2%	4%	4%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	7.6	7.6	103.4			103.4
Effective Green, g (s)	7.6	7.6	103.4			103.4
Actuated g/C Ratio	0.06	0.06	0.86			0.86
Clearance Time (s)	4.5	4.5	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	104	92	3033			2990
v/s Ratio Prot	c0.03		c0.56			0.25
v/s Ratio Perm		0.00				
v/c Ratio	0.43	0.01	0.65			0.29
Uniform Delay, d1	54.1	52.7	2.6			1.5
Progression Factor	1.00	1.00	0.71			0.62
Incremental Delay, d2	2.9	0.1	0.6			0.2
Delay (s)	57.0	52.7	2.5			1.2
Level of Service	E	D	A			A
Approach Delay (s)	55.7		2.5			1.2
Approach LOS	E		A			A

Intersection Summary

HCM 2000 Control Delay	3.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			




















HCM 6th Signalized Intersection Summary
 2: OR-99E & SE Monroe Street

04/08/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	43	19	1850	58	0	843
Future Volume (veh/h)	43	19	1850	58	0	843
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1767	1767	1870	1870	0	1841
Adj Flow Rate, veh/h	45	20	1927	60	0	878
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	9	9	2	2	0	4
Cap, veh/h	65	58	3118	97	0	3099
Arrive On Green	0.04	0.04	1.00	1.00	0.00	0.89
Sat Flow, veh/h	1682	1497	3612	109	0	3681
Grp Volume(v), veh/h	45	20	968	1019	0	878
Grp Sat Flow(s),veh/h/ln	1682	1497	1777	1851	0	1749
Q Serve(g_s), s	3.2	1.6	0.0	0.0	0.0	4.6
Cycle Q Clear(g_c), s	3.2	1.6	0.0	0.0	0.0	4.6
Prop In Lane	1.00	1.00		0.06	0.00	
Lane Grp Cap(c), veh/h	65	58	1574	1640	0	3099
V/C Ratio(X)	0.69	0.34	0.61	0.62	0.00	0.28
Avail Cap(c_a), veh/h	262	233	1574	1640	0	3099
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.47	0.47	0.00	0.92
Uniform Delay (d), s/veh	56.9	56.2	0.0	0.0	0.0	1.0
Incr Delay (d2), s/veh	12.0	3.5	0.9	0.8	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.7	0.4	0.4	0.0	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	69.0	59.6	0.9	0.8	0.0	1.3
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	65		1987			878
Approach Delay, s/veh	66.1		0.8			1.3
Approach LOS	E		A			A
Timer - Assigned Phs		2				6
Phs Duration (G+Y+Rc), s		110.8				110.8
Change Period (Y+Rc), s		4.5				4.5
Max Green Setting (Gmax), s		92.3				92.3
Max Q Clear Time (g_c+I1), s		2.0				6.6
Green Ext Time (p_c), s		37.3				8.0
Intersection Summary						
HCM 6th Ctrl Delay			2.4			
HCM 6th LOS			A			

HCM Signalized Intersection Capacity Analysis
 3: OR-99E & SE Washington Street

04/08/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	2	0	117	0	111	0	1823	146	97	774	0
Future Volume (vph)	2	2	0	117	0	111	0	1823	146	97	774	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Lane Util. Factor		1.00		1.00		1.00		0.95		1.00	0.95	
Frbp, ped/bikes		1.00		1.00		0.98		1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.98		1.00		1.00		1.00	1.00	
Fr t		1.00		1.00		0.85		0.99		1.00	1.00	
Fl t Protected		0.98		0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1056		1653		1482		3496		1719	3438	
Fl t Permitted		0.98		0.76		1.00		1.00		0.05	1.00	
Satd. Flow (perm)		1056		1314		1482		3496		82	3438	
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)	2	2	0	122	0	116	0	1899	152	101	806	0
RTOR Reduction (vph)	0	0	0	0	0	101	0	5	0	0	0	0
Lane Group Flow (vph)	0	4	0	122	0	15	0	2046	0	101	806	0
Confl. Peds. (#/hr)	3		10	10		3	22		2	2		22
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	75%	75%	75%	7%	7%	7%	2%	2%	2%	5%	5%	5%
Turn Type	Perm	NA		Perm		Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			8		8				6		
Actuated Green, G (s)		15.2		15.2		15.2		83.9		95.8	95.8	
Effective Green, g (s)		15.2		15.2		15.2		83.9		95.8	95.8	
Actuated g/C Ratio		0.13		0.13		0.13		0.70		0.80	0.80	
Clearance Time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Vehicle Extension (s)		3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		133		166		187		2444		166	2744	
v/s Ratio Prot								c0.59		c0.04	0.23	
v/s Ratio Perm		0.00		c0.09		0.01				0.45		
v/c Ratio		0.03		0.73		0.08		0.84		0.61	0.29	
Uniform Delay, d1		45.9		50.5		46.2		13.1		28.6	3.2	
Progression Factor		1.00		1.00		1.00		1.00		1.47	0.61	
Incremental Delay, d2		0.1		15.5		0.2		3.6		6.0	0.3	
Delay (s)		46.0		65.9		46.4		16.7		48.0	2.2	
Level of Service		D		E		D		B		D	A	
Approach Delay (s)		46.0			56.4			16.7			7.3	
Approach LOS		D			E			B			A	
Intersection Summary												
HCM 2000 Control Delay			17.0									B
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			120.0							13.5		
Intersection Capacity Utilization			82.9%									E
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th AWSC
 4: SE Main Street & SE Washington Street

04/08/2021

Intersection

















Intersection Delay, s/veh 9.8
 Intersection LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔			↔			↔	
Traffic Vol, veh/h	35	180	34	13	165	20	24	24	10	8	12	23
Future Vol, veh/h	35	180	34	13	165	20	24	24	10	8	12	23
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	9	9	9	6	6	6	6	6	6	6	6	6
Mvmt Flow	40	205	39	15	188	23	27	27	11	9	14	26
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			2			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			2			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			2		
HCM Control Delay	10.3			9.7			8.9			8.4		
HCM LOS	B			A			A			A		

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	41%	16%	0%	7%	19%
Vol Thru, %	41%	84%	0%	83%	28%
Vol Right, %	17%	0%	100%	10%	53%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	58	215	34	198	43
LT Vol	24	35	0	13	8
Through Vol	24	180	0	165	12
RT Vol	10	0	34	20	23
Lane Flow Rate	66	244	39	225	49
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.096	0.354	0.048	0.293	0.068
Departure Headway (Hd)	5.255	5.213	4.427	4.685	5.021
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	680	689	807	765	710
Service Time	3.306	2.948	2.162	2.721	3.076
HCM Lane V/C Ratio	0.097	0.354	0.048	0.294	0.069
HCM Control Delay	8.9	10.8	7.4	9.7	8.4
HCM Lane LOS	A	B	A	A	A
HCM 95th-tile Q	0.3	1.6	0.2	1.2	0.2

HCM Signalized Intersection Capacity Analysis
5: SE 21st Avenue & SE Washington Street

















04/08/2021

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	15	152	49	10	118	19	43	46	22	9	17	15	
Future Volume (vph)	15	152	49	10	118	19	43	46	22	9	17	15	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.5			4.5			4.5			4.5		
Lane Util. Factor		1.00			1.00			1.00			1.00		
Frbp, ped/bikes		0.99			0.99			0.99			0.98		
Flpb, ped/bikes		1.00			1.00			0.99			1.00		
Fr _t		0.97			0.98			0.97			0.95		
Fl _t Protected		1.00			1.00			0.98			0.99		
Satd. Flow (prot)		1687			1795			1708			1452		
Fl _t Permitted		0.97			0.97			0.86			0.91		
Satd. Flow (perm)		1640			1738			1491			1339		
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	
Adj. Flow (vph)	18	181	58	12	140	23	51	55	26	11	20	18	
RTOR Reduction (vph)	0	20	0	0	10	0	0	18	0	0	13	0	
Lane Group Flow (vph)	0	237	0	0	165	0	0	114	0	0	36	0	
Confl. Peds. (#/hr)	35		8	8		35	51		30	30		51	
Confl. Bikes (#/hr)			2										
Heavy Vehicles (%)	8%	8%	8%	3%	3%	3%	4%	4%	4%	20%	20%	20%	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		4			8			2			6		
Permitted Phases	4			8			2			6			
Actuated Green, G (s)		8.9			8.9			7.4			7.4		
Effective Green, g (s)		8.9			8.9			7.4			7.4		
Actuated g/C Ratio		0.35			0.35			0.29			0.29		
Clearance Time (s)		4.5			4.5			4.5			4.5		
Vehicle Extension (s)		3.0			3.0			3.0			3.0		
Lane Grp Cap (vph)		576			611			436			391		
v/s Ratio Prot													
v/s Ratio Perm		c0.14			0.09			c0.08			0.03		
v/c Ratio		0.41			0.27			0.26			0.09		
Uniform Delay, d1		6.2			5.9			6.9			6.5		
Progression Factor		1.00			1.00			1.00			1.00		
Incremental Delay, d2		0.5			0.2			0.3			0.1		
Delay (s)		6.7			6.1			7.2			6.6		
Level of Service		A			A			A			A		
Approach Delay (s)		6.7			6.1			7.2			6.6		
Approach LOS		A			A			A			A		
Intersection Summary													
HCM 2000 Control Delay			6.6									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.34										
Actuated Cycle Length (s)			25.3									Sum of lost time (s)	9.0
Intersection Capacity Utilization			36.6%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

HCM 6th Signalized Intersection Summary

5: SE 21st Avenue & SE Washington Street

04/08/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	152	49	10	118	19	43	46	22	9	17	15
Future Volume (veh/h)	15	152	49	10	118	19	43	46	22	9	17	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.93	0.97		0.95	0.93		0.92	0.94		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/l	1781	1781	1781	1856	1856	1856	1841	1841	1841	1604	1604	1604
Adj Flow Rate, veh/h	18	181	58	12	140	23	51	55	26	11	20	18
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	8	8	8	3	3	3	4	4	4	20	20	20
Cap, veh/h	155	423	128	153	512	80	312	287	103	206	245	170
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	49	1230	373	45	1490	232	399	860	309	143	735	510
Grp Volume(v), veh/h	257	0	0	175	0	0	132	0	0	49	0	0
Grp Sat Flow(s),veh/h/l	1652	0	0	1768	0	0	1568	0	0	1388	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.3	0.0	0.0	2.0	0.0	0.0	1.5	0.0	0.0	0.6	0.0	0.0
Prop In Lane	0.07		0.23	0.07		0.13	0.39		0.20	0.22		0.37
Lane Grp Cap(c), veh/h	706	0	0	745	0	0	702	0	0	621	0	0
V/C Ratio(X)	0.36	0.00	0.00	0.23	0.00	0.00	0.19	0.00	0.00	0.08	0.00	0.00
Avail Cap(c_a), veh/h	1685	0	0	1787	0	0	1513	0	0	1338	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.1	0.0	0.0	6.7	0.0	0.0	6.7	0.0	0.0	6.4	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/l	0.8	0.0	0.0	0.5	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.4	0.0	0.0	6.8	0.0	0.0	6.8	0.0	0.0	6.5	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		257			175			132				49
Approach Delay, s/veh		7.4			6.8			6.8				6.5
Approach LOS		A			A			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		13.8		14.1		13.8		14.1				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		24.5		26.5		24.5		26.5				
Max Q Clear Time (g_c+I1), s		3.5		5.3		2.6		4.0				
Green Ext Time (p_c), s		0.7		1.6		0.2		1.0				
<u>Intersection Summary</u>												
HCM 6th Ctrl Delay				7.0								
HCM 6th LOS				A								

HCM 6th TWSC
6: Site Access & SE Washington Street

04/08/2021

Intersection

Int Delay, s/veh 1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↓	
Traffic Vol, veh/h	233	14	6	206	33	16
Future Vol, veh/h	233	14	6	206	33	16
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	253	15	7	224	36	17

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	268
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	1293
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1293
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	659	-	-	1293	-
HCM Lane V/C Ratio	0.081	-	-	0.005	-
HCM Control Delay (s)	10.9	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

HCM Signalized Intersection Capacity Analysis

1: OR-99E & SE Harrison Street











04/08/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	53	396	154	29	28	257	782	107	87	1663	14
Future Volume (vph)	25	53	396	154	29	28	257	782	107	87	1663	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00	0.99	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	
FrT		1.00	0.85	1.00	0.96		1.00	0.98		1.00	1.00	
FlT Protected		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1851	1581	1681	1661		1787	3494		1787	3570	
FlT Permitted		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1851	1581	1681	1661		1787	3494		1787	3570	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	27	57	426	166	31	30	276	841	115	94	1788	15
RTOR Reduction (vph)	0	0	49	0	12	0	0	7	0	0	1	0
Lane Group Flow (vph)	0	84	377	115	100	0	276	949	0	94	1802	0
Confl. Peds. (#/hr)			15	15					5	5		
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)		9.4	36.4	13.5	13.5		27.0	67.6		11.5	52.1	
Effective Green, g (s)		9.4	36.4	13.5	13.5		27.0	67.6		11.5	52.1	
Actuated g/C Ratio		0.08	0.30	0.11	0.11		0.22	0.56		0.10	0.43	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		144	479	189	186		402	1968		171	1549	
v/s Ratio Prot		0.05	c0.18	c0.07	0.06		0.15	0.27		0.05	c0.50	
v/s Ratio Perm			0.06									
v/c Ratio		0.58	0.79	0.61	0.54		0.69	0.48		0.55	1.16	
Uniform Delay, d1		53.4	38.3	50.7	50.3		42.6	15.7		51.8	34.0	
Progression Factor		1.00	1.00	1.00	1.00		1.15	0.85		1.00	1.00	
Incremental Delay, d2		5.9	8.4	5.5	3.2		4.6	0.8		3.6	81.1	
Delay (s)		59.3	46.6	56.2	53.5		53.5	14.2		55.4	115.1	
Level of Service		E	D	E	D		D	B		E	F	
Approach Delay (s)		48.7			54.9			23.0			112.1	
Approach LOS		D			D			C			F	
Intersection Summary												
HCM 2000 Control Delay			72.0			HCM 2000 Level of Service					E	
HCM 2000 Volume to Capacity ratio			0.96									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)					18.0	
Intersection Capacity Utilization			89.6%			ICU Level of Service					E	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis











2: OR-99E & SE Monroe Street

04/08/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	57	29	1018	52	0	2258
Future Volume (vph)	57	29	1018	52	0	2258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	0.95			0.95
Frbp, ped/bikes	1.00	0.98	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Fr _t	1.00	0.85	0.99			1.00
Fl _t Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1736	1514	3508			3574
Fl _t Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1736	1514	3508			3574
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	60	31	1072	55	0	2377
RTOR Reduction (vph)	0	29	2	0	0	0
Lane Group Flow (vph)	60	2	1125	0	0	2377
Confl. Peds. (#/hr)	2	5		4	4	
Confl. Bikes (#/hr)		1		1		
Heavy Vehicles (%)	4%	4%	2%	2%	1%	1%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	8.3	8.3	102.7			102.7
Effective Green, g (s)	8.3	8.3	102.7			102.7
Actuated g/C Ratio	0.07	0.07	0.86			0.86
Clearance Time (s)	4.5	4.5	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	120	104	3002			3058
v/s Ratio Prot	c0.03		0.32			c0.67
v/s Ratio Perm		0.00				
v/c Ratio	0.50	0.02	0.37			0.78
Uniform Delay, d1	53.8	52.1	1.8			3.7
Progression Factor	1.00	1.00	0.19			1.16
Incremental Delay, d2	3.3	0.1	0.3			0.2
Delay (s)	57.1	52.1	0.7			4.5
Level of Service	E	D	A			A
Approach Delay (s)	55.4		0.7			4.5
Approach LOS	E		A			A
Intersection Summary						
HCM 2000 Control Delay			4.6		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.76			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	9.0
Intersection Capacity Utilization			75.7%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM 6th Signalized Intersection Summary
 2: OR-99E & SE Monroe Street



















04/08/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	57	29	1018	52	0	2258
Future Volume (veh/h)	57	29	1018	52	0	2258
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	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	1841	1841	1870	1870	0	1885
Adj Flow Rate, veh/h	60	31	1072	55	0	2377
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	2	2	0	1
Cap, veh/h	86	77	3008	154	0	3137
Arrive On Green	0.05	0.05	0.88	0.88	0.00	0.88
Sat Flow, veh/h	1753	1560	3528	176	0	3770
Grp Volume(v), veh/h	60	31	554	573	0	2377
Grp Sat Flow(s),veh/h/ln	1753	1560	1777	1834	0	1791
Q Serve(g_s), s	4.0	2.3	6.8	6.8	0.0	29.4
Cycle Q Clear(g_c), s	4.0	2.3	6.8	6.8	0.0	29.4
Prop In Lane	1.00	1.00		0.10	0.00	
Lane Grp Cap(c), veh/h	86	77	1556	1606	0	3137
V/C Ratio(X)	0.70	0.40	0.36	0.36	0.00	0.76
Avail Cap(c_a), veh/h	263	234	1556	1606	0	3137
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.85	0.85	0.00	0.09
Uniform Delay (d), s/veh	56.2	55.3	1.3	1.3	0.0	2.7
Incr Delay (d2), s/veh	9.7	3.4	0.5	0.5	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	1.0	1.2	1.3	0.0	4.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	65.8	58.7	1.9	1.9	0.0	2.9
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	91		1127			2377
Approach Delay, s/veh	63.4		1.9			2.9
Approach LOS	E		A			A
Timer - Assigned Phs		2				6
Phs Duration (G+Y+Rc), s		109.6				10.4
Change Period (Y+Rc), s		4.5				4.5
Max Green Setting (Gmax), s		93.0				18.0
Max Q Clear Time (g_c+I1), s		8.8				6.0
Green Ext Time (p_c), s		10.3				0.2
Intersection Summary						
HCM 6th Ctrl Delay			4.1			
HCM 6th LOS			A			

HCM Signalized Intersection Capacity Analysis

3: OR-99E & SE Washington Street

04/08/2021

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	1	1	0	160	0	80	0	1012	137	125	2171	0	
Future Volume (vph)	1	1	0	160	0	80	0	1012	137	125	2171	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.5		4.5		4.5		4.5		4.5	4.5		
Lane Util. Factor		1.00		1.00		1.00		0.95		1.00	0.95		
Frbp, ped/bikes		1.00		1.00		0.98		1.00		1.00	1.00		
Flpb, ped/bikes		1.00		0.98		1.00		1.00		1.00	1.00		
Frt		1.00		1.00		0.85		0.98		1.00	1.00		
Flt Protected		0.98		0.95		1.00		1.00		0.95	1.00		
Satd. Flow (prot)		1850		1704		1528		3436		1787	3574		
Flt Permitted		0.98		0.76		1.00		1.00		0.17	1.00		
Satd. Flow (perm)		1850		1357		1528		3436		325	3574		
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)	1	1	0	168	0	84	0	1065	144	132	2285	0	
RTOR Reduction (vph)	0	0	0	0	0	71	0	8	0	0	0	0	
Lane Group Flow (vph)	0	2	0	168	0	13	0	1201	0	132	2285	0	
Confl. Peds. (#/hr)	2		9	9		2	16		1	1		16	
Confl. Bikes (#/hr)									2			1	
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	3%	3%	3%	1%	1%	1%	
Turn Type	Perm	NA		Perm		Perm		NA		pm+pt		NA	
Protected Phases		4						2		1		6	
Permitted Phases	4			8		8				6			
Actuated Green, G (s)		18.6		18.6		18.6		80.2		92.4	92.4		
Effective Green, g (s)		18.6		18.6		18.6		80.2		92.4	92.4		
Actuated g/C Ratio		0.16		0.16		0.16		0.67		0.77	0.77		
Clearance Time (s)		4.5		4.5		4.5		4.5		4.5	4.5		
Vehicle Extension (s)		3.0		3.0		3.0		3.0		3.0	3.0		
Lane Grp Cap (vph)		286		210		236		2296		344	2751		
v/s Ratio Prot								0.35		0.02	c0.64		
v/s Ratio Perm		0.00		c0.12		0.01				0.27			
v/c Ratio		0.01		0.80		0.06		0.52		0.38	0.83		
Uniform Delay, d1		42.9		48.9		43.2		10.1		6.3	8.8		
Progression Factor		1.00		1.00		1.00		1.00		1.34	0.93		
Incremental Delay, d2		0.0		19.2		0.1		0.9		0.5	2.0		
Delay (s)		42.9		68.1		43.3		11.0		8.8	10.2		
Level of Service		D		E		D		B		A	B		
Approach Delay (s)		42.9			59.8			11.0			10.1		
Approach LOS		D			E			B			B		
Intersection Summary													
HCM 2000 Control Delay			13.6		HCM 2000 Level of Service						B		
HCM 2000 Volume to Capacity ratio			0.86										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						13.5		
Intersection Capacity Utilization			82.6%		ICU Level of Service						E		
Analysis Period (min)			15										

HCM 6th AWSC
4: SE Main Street & SE Washington Street

04/08/2021

Intersection

Intersection Delay, s/veh 9.9
Intersection LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔			↔			↔	
Traffic Vol, veh/h	39	164	47	17	165	22	43	32	17	31	30	38
Future Vol, veh/h	39	164	47	17	165	22	43	32	17	31	30	38
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	5	5	5	5	5	5	2	2	2	3	3	3
Mvmt Flow	42	176	51	18	177	24	46	34	18	33	32	41
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			2			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			2			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			2		
HCM Control Delay	10.2			10.1			9.2			9.1		
HCM LOS	B			B			A			A		

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	47%	19%	0%	8%	31%
Vol Thru, %	35%	81%	0%	81%	30%
Vol Right, %	18%	0%	100%	11%	38%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	92	203	47	204	99
LT Vol	43	39	0	17	31
Through Vol	32	164	0	165	30
RT Vol	17	0	47	22	38
Lane Flow Rate	99	218	51	219	106
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.144	0.328	0.065	0.298	0.151
Departure Headway (Hd)	5.249	5.409	4.607	4.898	5.107
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	677	661	771	728	696
Service Time	3.329	3.175	2.372	2.967	3.186
HCM Lane V/C Ratio	0.146	0.33	0.066	0.301	0.152
HCM Control Delay	9.2	10.8	7.7	10.1	9.1
HCM Lane LOS	A	B	A	B	A
HCM 95th-tile Q	0.5	1.4	0.2	1.2	0.5

















HCM Signalized Intersection Capacity Analysis
 5: SE 21st Avenue & SE Washington Street

04/08/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	19	115	49	10	125	26	37	27	9	13	36	29
Future Volume (vph)	19	115	49	10	125	26	37	27	9	13	36	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frbp, ped/bikes		0.99			1.00			1.00			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Fr _t		0.96			0.98			0.98			0.95	
Fl _t Protected		0.99			1.00			0.98			0.99	
Satd. Flow (prot)		1691			1808			1778			1582	
Fl _t Permitted		0.95			0.97			0.80			0.93	
Satd. Flow (perm)		1614			1757			1462			1491	
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)	20	122	52	11	133	28	39	29	10	14	38	31
RTOR Reduction (vph)	0	28	0	0	15	0	0	7	0	0	22	0
Lane Group Flow (vph)	0	166	0	0	157	0	0	71	0	0	61	0
Confl. Peds. (#/hr)	7		5	5		7	35		21	21		35
Confl. Bikes (#/hr)			1			1						1
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	1%	1%	1%	11%	11%	11%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.6			7.6			6.6			6.6	
Effective Green, g (s)		7.6			7.6			6.6			6.6	
Actuated g/C Ratio		0.33			0.33			0.28			0.28	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		528			575			415			424	
v/s Ratio Prot												
v/s Ratio Perm		c0.10			0.09			c0.05			0.04	
v/c Ratio		0.32			0.27			0.17			0.14	
Uniform Delay, d1		5.8			5.8			6.2			6.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			0.3			0.2			0.2	
Delay (s)		6.2			6.0			6.4			6.3	
Level of Service		A			A			A			A	
Approach Delay (s)		6.2			6.0			6.4			6.3	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			6.2				HCM 2000 Level of Service		A			
HCM 2000 Volume to Capacity ratio			0.25									
Actuated Cycle Length (s)			23.2				Sum of lost time (s)		9.0			
Intersection Capacity Utilization			35.3%				ICU Level of Service		A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
5: SE 21st Avenue & SE Washington Street

04/08/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	115	49	10	125	26	37	27	9	13	36	29
Future Volume (veh/h)	19	115	49	10	125	26	37	27	9	13	36	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	0.96		0.95	0.95		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1870	1870	1870	1885	1885	1885	1737	1737	1737
Adj Flow Rate, veh/h	20	122	52	11	133	28	39	29	10	14	38	31
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	7	2	2	2	1	1	1	11	11	11
Cap, veh/h	200	292	116	185	374	76	430	273	68	224	289	194
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	91	1116	442	54	1432	289	563	808	201	108	854	573
Grp Volume(v), veh/h	194	0	0	172	0	0	78	0	0	83	0	0
Grp Sat Flow(s),veh/h/ln	1649	0	0	1776	0	0	1572	0	0	1535	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.1	0.0	0.0	1.7	0.0	0.0	0.7	0.0	0.0	0.8	0.0	0.0
Prop In Lane	0.10		0.27	0.06		0.16	0.50		0.13	0.17		0.37
Lane Grp Cap(c), veh/h	608	0	0	635	0	0	772	0	0	706	0	0
V/C Ratio(X)	0.32	0.00	0.00	0.27	0.00	0.00	0.10	0.00	0.00	0.12	0.00	0.00
Avail Cap(c_a), veh/h	2158	0	0	2314	0	0	1825	0	0	1753	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.9	0.0	0.0	6.8	0.0	0.0	5.1	0.0	0.0	5.2	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.2	0.0	0.0	7.0	0.0	0.0	5.2	0.0	0.0	5.3	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		194			172			78			83	
Approach Delay, s/veh		7.2			7.0			5.2			5.3	
Approach LOS		A			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		12.1		10.4		12.1		10.4				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		23.5		27.5		23.5		27.5				
Max Q Clear Time (g_c+I1), s		2.7		4.1		2.8		3.7				
Green Ext Time (p_c), s		0.4		1.2		0.4		1.0				

Intersection Summary

HCM 6th Ctrl Delay	6.5
HCM 6th LOS	A

HCM 6th TWSC
 6: Site Access & SE Washington Street

04/08/2021

Intersection

Int Delay, s/veh 1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑	
Traffic Vol, veh/h	236	40	19	227	30	14
Future Vol, veh/h	236	40	19	227	30	14
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	257	43	21	247	33	15

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	300	0	445
Stage 1	-	-	-	-	279
Stage 2	-	-	-	-	166
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	1258	-	542
Stage 1	-	-	-	-	743
Stage 2	-	-	-	-	846
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1258	-	532
Mov Cap-2 Maneuver	-	-	-	-	532
Stage 1	-	-	-	-	743
Stage 2	-	-	-	-	830






















Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	607	-	-	1258	-
HCM Lane V/C Ratio	0.079	-	-	0.016	-
HCM Control Delay (s)	11.4	-	-	7.9	0.1
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

HCM Signalized Intersection Capacity Analysis

1: OR-99E & SE Harrison Street

04/08/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	70	176	80	55	24	323	1452	98	93	593	11
Future Volume (vph)	22	70	176	80	55	24	323	1452	98	93	593	11
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.99	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	
Fr t		1.00	0.85	1.00	0.96		1.00	0.99		1.00	1.00	
Fl t Protected		0.99	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1806	1539	1618	1626		1770	3498		1736	3461	
Fl t Permitted		0.99	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1806	1539	1618	1626		1770	3498		1736	3461	
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)	23	74	185	84	58	25	340	1528	103	98	624	12
RTOR Reduction (vph)	0	0	124	0	12	0	0	4	0	0	1	0
Lane Group Flow (vph)	0	97	61	76	79	0	340	1627	0	98	635	0
Confl. Peds. (#/hr)			8	8					5	5		
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	4%	4%	4%	6%	6%	6%	2%	2%	2%	4%	4%	4%
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)		11.8	39.6	11.2	11.2		27.8	66.9		12.1	51.2	
Effective Green, g (s)		11.8	39.6	11.2	11.2		27.8	66.9		12.1	51.2	
Actuated g/C Ratio		0.10	0.33	0.09	0.09		0.23	0.56		0.10	0.43	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		177	507	151	151		410	1950		175	1476	
v/s Ratio Prot		c0.05	0.03	0.05	c0.05		c0.19	c0.47		0.06	0.18	
v/s Ratio Perm			0.01									
v/c Ratio		0.55	0.12	0.50	0.52		0.83	0.83		0.56	0.43	
Uniform Delay, d1		51.6	28.0	51.8	51.9		43.8	22.0		51.4	24.2	
Progression Factor		1.00	1.00	1.00	1.00		1.12	0.91		1.00	1.00	
Incremental Delay, d2		3.4	0.1	2.6	3.3		10.3	3.4		4.1	0.2	
Delay (s)		55.0	28.2	54.4	55.1		59.2	23.5		55.5	24.4	
Level of Service		E	C	D	E		E	C		E	C	
Approach Delay (s)		37.4			54.8			29.6			28.5	
Approach LOS		D			D			C			C	

Intersection Summary











HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2: OR-99E & SE Monroe Street

04/08/2021











						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	57	19	1850	58	0	843
Future Volume (vph)	57	19	1850	58	0	843
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	0.95			0.95
Frbp, ped/bikes	1.00	0.98	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1656	1455	3520			3471
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1656	1455	3520			3471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	59	20	1927	60	0	878
RTOR Reduction (vph)	0	19	1	0	0	0
Lane Group Flow (vph)	59	1	1986	0	0	878
Confl. Peds. (#/hr)	2	3		3	3	
Heavy Vehicles (%)	9%	9%	2%	2%	4%	4%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	8.5	8.5	102.5			102.5
Effective Green, g (s)	8.5	8.5	102.5			102.5
Actuated g/C Ratio	0.07	0.07	0.85			0.85
Clearance Time (s)	4.5	4.5	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	117	103	3006			2964
v/s Ratio Prot	c0.04		c0.56			0.25
v/s Ratio Perm		0.00				
v/c Ratio	0.50	0.01	0.66			0.30
Uniform Delay, d1	53.7	51.9	2.9			1.7
Progression Factor	1.00	1.00	0.59			0.60
Incremental Delay, d2	3.4	0.1	0.7			0.2
Delay (s)	57.1	51.9	2.4			1.3
Level of Service	E	D	A			A
Approach Delay (s)	55.8		2.4			1.3
Approach LOS	E		A			A

Intersection Summary

HCM 2000 Control Delay	3.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Signalized Intersection Summary
 2: OR-99E & SE Monroe Street













04/08/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	57	19	1850	58	0	843
Future Volume (veh/h)	57	19	1850	58	0	843
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1767	1767	1870	1870	0	1841
Adj Flow Rate, veh/h	59	20	1927	60	0	878
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	9	9	2	2	0	4
Cap, veh/h	82	73	3084	96	0	3065
Arrive On Green	0.05	0.05	1.00	1.00	0.00	0.88
Sat Flow, veh/h	1682	1497	3612	109	0	3681
Grp Volume(v), veh/h	59	20	968	1019	0	878
Grp Sat Flow(s),veh/h/ln	1682	1497	1777	1851	0	1749
Q Serve(g_s), s	4.1	1.5	0.0	0.0	0.0	5.0
Cycle Q Clear(g_c), s	4.1	1.5	0.0	0.0	0.0	5.0
Prop In Lane	1.00	1.00		0.06	0.00	
Lane Grp Cap(c), veh/h	82	73	1557	1622	0	3065
V/C Ratio(X)	0.72	0.28	0.62	0.63	0.00	0.29
Avail Cap(c_a), veh/h	262	233	1557	1622	0	3065
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.48	0.48	0.00	0.92
Uniform Delay (d), s/veh	56.3	55.1	0.0	0.0	0.0	1.2
Incr Delay (d2), s/veh	11.3	2.0	0.9	0.9	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.6	0.4	0.4	0.0	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	67.6	57.1	0.9	0.9	0.0	1.4
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	79		1987			878
Approach Delay, s/veh	65.0		0.9			1.4
Approach LOS	E		A			A
Timer - Assigned Phs		2				6
Phs Duration (G+Y+Rc), s		109.7				10.3
Change Period (Y+Rc), s		4.5				4.5
Max Green Setting (Gmax), s		92.3				18.7
Max Q Clear Time (g_c+I1), s		2.0				6.1
Green Ext Time (p_c), s		37.3				0.1
Intersection Summary						
HCM 6th Ctrl Delay			2.8			
HCM 6th LOS			A			

HCM Signalized Intersection Capacity Analysis

3: OR-99E & SE Washington Street

04/08/2021

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↖		↗		↖		↕		↗	↕	↖	
Traffic Volume (vph)	2	2	0	103	0	92	0	1823	146	97	788	0	
Future Volume (vph)	2	2	0	103	0	92	0	1823	146	97	788	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.5		4.5		4.5		4.5		4.5	4.5		
Lane Util. Factor		1.00		1.00		1.00		0.95		1.00	0.95		
Frbp, ped/bikes		1.00		1.00		0.98		1.00		1.00	1.00		
Flpb, ped/bikes		1.00		0.98		1.00		1.00		1.00	1.00		
Fr t		1.00		1.00		0.85		0.99		1.00	1.00		
Fl t Protected		0.98		0.95		1.00		1.00		0.95	1.00		
Satd. Flow (prot)		1056		1653		1482		3496		1719	3438		
Fl t Permitted		0.98		0.76		1.00		1.00		0.04	1.00		
Satd. Flow (perm)		1056		1314		1482		3496		81	3438		
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)	2	2	0	107	0	96	0	1899	152	101	821	0	
RTOR Reduction (vph)	0	0	0	0	0	84	0	4	0	0	0	0	
Lane Group Flow (vph)	0	4	0	107	0	12	0	2047	0	101	821	0	
Confl. Peds. (#/hr)	3		10	10		3	22		2	2		22	
Confl. Bikes (#/hr)									2			1	
Heavy Vehicles (%)	75%	75%	75%	7%	7%	7%	2%	2%	2%	5%	5%	5%	
Turn Type	Perm	NA		Perm		Perm		NA		pm+pt	NA		
Protected Phases		4						2		1	6		
Permitted Phases	4			8		8				6			
Actuated Green, G (s)		14.4		14.4		14.4		84.6		96.6	96.6		
Effective Green, g (s)		14.4		14.4		14.4		84.6		96.6	96.6		
Actuated g/C Ratio		0.12		0.12		0.12		0.70		0.80	0.80		
Clearance Time (s)		4.5		4.5		4.5		4.5		4.5	4.5		
Vehicle Extension (s)		3.0		3.0		3.0		3.0		3.0	3.0		
Lane Grp Cap (vph)		126		157		177		2464		167	2767		
v/s Ratio Prot								c0.59		c0.04	0.24		
v/s Ratio Perm		0.00		c0.08		0.01				0.45			
v/c Ratio		0.03		0.68		0.07		0.83		0.60	0.30		
Uniform Delay, d1		46.6		50.6		46.8		12.6		28.4	3.0		
Progression Factor		1.00		1.00		1.00		1.00		1.44	0.57		
Incremental Delay, d2		0.1		11.5		0.2		3.4		5.9	0.3		
Delay (s)		46.7		62.1		47.0		16.0		46.8	2.0		
Level of Service		D		E		D		B		D	A		
Approach Delay (s)		46.7			55.0			16.0			6.9		
Approach LOS		D			D			B			A		
Intersection Summary													
HCM 2000 Control Delay			15.9		HCM 2000 Level of Service						B		
HCM 2000 Volume to Capacity ratio			0.79										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						13.5		
Intersection Capacity Utilization			81.6%		ICU Level of Service						D		
Analysis Period (min)			15										
c Critical Lane Group													

HCM 6th AWSC
 4: SE Main Street & SE Washington Street

04/08/2021

Intersection

Intersection Delay, s/veh 10.3
 Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔			↔			↔	
Traffic Vol, veh/h	68	180	34	12	165	20	24	24	10	8	12	23
Future Vol, veh/h	68	180	34	12	165	20	24	24	10	8	12	23
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	9	9	9	6	6	6	6	6	6	6	6	6
Mvmt Flow	77	205	39	14	188	23	27	27	11	9	14	26
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			2			1			1		
Conflicting Approach Left SB				NB			EB			WB		
Conflicting Lanes Left	1			1			2			1		
Conflicting Approach Right NB				SB			WB			EB		
Conflicting Lanes Right	1			1			1			2		
HCM Control Delay	11.2			9.8			9			8.6		
HCM LOS	B			A			A			A		

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	41%	27%	0%	6%	19%
Vol Thru, %	41%	73%	0%	84%	28%
Vol Right, %	17%	0%	100%	10%	53%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	58	248	34	197	43
LT Vol	24	68	0	12	8
Through Vol	24	180	0	165	12
RT Vol	10	0	34	20	23
Lane Flow Rate	66	282	39	224	49
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.098	0.413	0.048	0.294	0.07
Departure Headway (Hd)	5.353	5.271	4.43	4.734	5.121
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	666	682	806	757	695
Service Time	3.412	3.013	2.171	2.779	3.182
HCM Lane V/C Ratio	0.099	0.413	0.048	0.296	0.071
HCM Control Delay	9	11.7	7.4	9.8	8.6
HCM Lane LOS	A	B	A	A	A
HCM 95th-tile Q	0.3	2	0.2	1.2	0.2

HCM Signalized Intersection Capacity Analysis

5: SE 21st Avenue & SE Washington Street

04/08/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	152	49	10	118	19	43	46	22	9	17	15
Future Volume (vph)	15	152	49	10	118	19	43	46	22	9	17	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frbp, ped/bikes		0.99			0.99			0.99			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Fr t		0.97			0.98			0.97			0.95	
Fl t Protected		1.00			1.00			0.98			0.99	
Satd. Flow (prot)		1687			1795			1708			1452	
Fl t Permitted		0.97			0.97			0.86			0.91	
Satd. Flow (perm)		1640			1738			1491			1339	
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	18	181	58	12	140	23	51	55	26	11	20	18
RTOR Reduction (vph)	0	20	0	0	10	0	0	18	0	0	13	0
Lane Group Flow (vph)	0	237		0	165		0	114		0	36	
Confl. Peds. (#/hr)	35		8	8		35	51		30	30		51
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	8%	8%	8%	3%	3%	3%	4%	4%	4%	20%	20%	20%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.9			8.9			7.4			7.4	
Effective Green, g (s)		8.9			8.9			7.4			7.4	
Actuated g/C Ratio		0.35			0.35			0.29			0.29	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		576			611			436			391	
v/s Ratio Prot												
v/s Ratio Perm		c0.14			0.09			c0.08			0.03	
v/c Ratio		0.41			0.27			0.26			0.09	
Uniform Delay, d1		6.2			5.9			6.9			6.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.5			0.2			0.3			0.1	
Delay (s)		6.7			6.1			7.2			6.6	
Level of Service		A			A			A			A	
Approach Delay (s)		6.7			6.1			7.2			6.6	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay		6.6			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.34										
Actuated Cycle Length (s)		25.3			Sum of lost time (s)			9.0				
Intersection Capacity Utilization		36.6%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
 5: SE 21st Avenue & SE Washington Street

04/08/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	152	49	10	118	19	43	46	22	9	17	15
Future Volume (veh/h)	15	152	49	10	118	19	43	46	22	9	17	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.93	0.97		0.95	0.93		0.92	0.94		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1781	1781	1856	1856	1856	1841	1841	1841	1604	1604	1604
Adj Flow Rate, veh/h	18	181	58	12	140	23	51	55	26	11	20	18
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	8	8	8	3	3	3	4	4	4	20	20	20
Cap, veh/h	155	423	128	153	512	80	312	287	103	206	245	170
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	49	1230	373	45	1490	232	399	860	309	143	735	510
Grp Volume(v), veh/h	257	0	0	175	0	0	132	0	0	49	0	0
Grp Sat Flow(s),veh/h/ln	1652	0	0	1768	0	0	1568	0	0	1388	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.3	0.0	0.0	2.0	0.0	0.0	1.5	0.0	0.0	0.6	0.0	0.0
Prop In Lane	0.07		0.23	0.07		0.13	0.39		0.20	0.22		0.37
Lane Grp Cap(c), veh/h	706	0	0	745	0	0	702	0	0	621	0	0
V/C Ratio(X)	0.36	0.00	0.00	0.23	0.00	0.00	0.19	0.00	0.00	0.08	0.00	0.00
Avail Cap(c_a), veh/h	1685	0	0	1787	0	0	1513	0	0	1338	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.1	0.0	0.0	6.7	0.0	0.0	6.7	0.0	0.0	6.4	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.0	0.5	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.4	0.0	0.0	6.8	0.0	0.0	6.8	0.0	0.0	6.5	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		257			175			132				49
Approach Delay, s/veh		7.4			6.8			6.8				6.5
Approach LOS		A			A			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		13.8		14.1		13.8		14.1				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		24.5		26.5		24.5		26.5				
Max Q Clear Time (g_c+I1), s		3.5		5.3		2.6		4.0				
Green Ext Time (p_c), s		0.7		1.6		0.2		1.0				
Intersection Summary												
HCM 6th Ctrl Delay				7.0								
HCM 6th LOS				A								

HCM 6th TWSC
 6: Site Access & SE Washington Street

04/08/2021

Intersection

Int Delay, s/veh	1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↑
Traffic Vol, veh/h	233	14	6	206	0	49
Future Vol, veh/h	233	14	6	206	0	49
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	253	15	7	224	0	53

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	268	0	- 134
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	- 6.94
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	- 3.32
Pot Cap-1 Maneuver	-	-	1293	-	0 890
Stage 1	-	-	-	-	0 -
Stage 2	-	-	-	-	0 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1293	-	- 890
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	890	-	-	1293	-
HCM Lane V/C Ratio	0.06	-	-	0.005	-
HCM Control Delay (s)	9.3	-	-	7.8	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

HCM Signalized Intersection Capacity Analysis
 1: OR-99E & SE Harrison Street











04/08/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	53	396	154	29	28	257	782	107	87	1663	14
Future Volume (vph)	25	53	396	154	29	28	257	782	107	87	1663	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.99	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	
Fr _t		1.00	0.85	1.00	0.96		1.00	0.98		1.00	1.00	
Fl _t Protected		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1851	1581	1681	1661		1787	3494		1787	3570	
Fl _t Permitted		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1851	1581	1681	1661		1787	3494		1787	3570	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	27	57	426	166	31	30	276	841	115	94	1788	15
RTOR Reduction (vph)	0	0	49	0	12	0	0	7	0	0	1	0
Lane Group Flow (vph)	0	84	377	115	100	0	276	949	0	94	1802	0
Confl. Peds. (#/hr)			15	15					5	5		
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)		9.4	36.4	13.5	13.5		27.0	67.6		11.5	52.1	
Effective Green, g (s)		9.4	36.4	13.5	13.5		27.0	67.6		11.5	52.1	
Actuated g/C Ratio		0.08	0.30	0.11	0.11		0.22	0.56		0.10	0.43	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		144	479	189	186		402	1968		171	1549	
v/s Ratio Prot		0.05	c0.18	c0.07	0.06		0.15	0.27		0.05	c0.50	
v/s Ratio Perm			0.06									
v/c Ratio		0.58	0.79	0.61	0.54		0.69	0.48		0.55	1.16	
Uniform Delay, d ₁		53.4	38.3	50.7	50.3		42.6	15.7		51.8	34.0	
Progression Factor		1.00	1.00	1.00	1.00		1.14	0.85		1.00	1.00	
Incremental Delay, d ₂		5.9	8.4	5.5	3.2		4.6	0.8		3.6	81.1	
Delay (s)		59.3	46.6	56.2	53.5		53.2	14.2		55.4	115.1	
Level of Service		E	D	E	D		D	B		E	F	
Approach Delay (s)		48.7			54.9			23.0			112.1	
Approach LOS		D			D			C			F	
Intersection Summary												
HCM 2000 Control Delay			72.0			HCM 2000 Level of Service				E		
HCM 2000 Volume to Capacity ratio			0.96									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				18.0		
Intersection Capacity Utilization			89.6%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2: OR-99E & SE Monroe Street

04/08/2021











						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	69	29	1018	52	0	2258
Future Volume (vph)	69	29	1018	52	0	2258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	0.95			0.95
Frbp, ped/bikes	1.00	0.98	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Fr _t	1.00	0.85	0.99			1.00
Fl _t Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1736	1515	3508			3574
Fl _t Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1736	1515	3508			3574
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	73	31	1072	55	0	2377
RTOR Reduction (vph)	0	29	2	0	0	0
Lane Group Flow (vph)	73	2	1125	0	0	2377
Confl. Peds. (#/hr)	2	5		4	4	
Confl. Bikes (#/hr)		1		1		
Heavy Vehicles (%)	4%	4%	2%	2%	1%	1%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	9.1	9.1	101.9			101.9
Effective Green, g (s)	9.1	9.1	101.9			101.9
Actuated g/C Ratio	0.08	0.08	0.85			0.85
Clearance Time (s)	4.5	4.5	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	131	114	2978			3034
v/s Ratio Prot	c0.04		0.32			c0.67
v/s Ratio Perm		0.00				
v/c Ratio	0.56	0.02	0.38			0.78
Uniform Delay, d1	53.5	51.3	2.0			4.1
Progression Factor	1.00	1.00	0.15			1.06
Incremental Delay, d2	5.1	0.1	0.3			0.2
Delay (s)	58.6	51.4	0.6			4.5
Level of Service	E	D	A			A
Approach Delay (s)	56.4		0.6			4.5
Approach LOS	E		A			A

Intersection Summary

HCM 2000 Control Delay	4.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Signalized Intersection Summary
 2: OR-99E & SE Monroe Street

04/08/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	69	29	1018	52	0	2258
Future Volume (veh/h)	69	29	1018	52	0	2258
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	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	1841	1841	1870	1870	0	1885
Adj Flow Rate, veh/h	73	31	1072	55	0	2377
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	2	2	0	1
Cap, veh/h	100	89	2980	153	0	3108
Arrive On Green	0.06	0.06	1.00	1.00	0.00	0.87
Sat Flow, veh/h	1753	1560	3528	176	0	3770
Grp Volume(v), veh/h	73	31	554	573	0	2377
Grp Sat Flow(s),veh/h/ln	1753	1560	1777	1834	0	1791
Q Serve(g_s), s	4.9	2.3	0.0	0.0	0.0	31.3
Cycle Q Clear(g_c), s	4.9	2.3	0.0	0.0	0.0	31.3
Prop In Lane	1.00	1.00		0.10	0.00	
Lane Grp Cap(c), veh/h	100	89	1542	1591	0	3108
V/C Ratio(X)	0.73	0.35	0.36	0.36	0.00	0.76
Avail Cap(c_a), veh/h	263	234	1542	1591	0	3108
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.86	0.86	0.00	0.09
Uniform Delay (d), s/veh	55.6	54.4	0.0	0.0	0.0	3.1
Incr Delay (d2), s/veh	9.6	2.3	0.6	0.5	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	1.0	0.2	0.2	0.0	5.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	65.2	56.7	0.6	0.5	0.0	3.3
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	104		1127			2377
Approach Delay, s/veh	62.7		0.6			3.3
Approach LOS	E		A			A
Timer - Assigned Phs		2				6
Phs Duration (G+Y+Rc), s		108.6				108.6
Change Period (Y+Rc), s		4.5				4.5
Max Green Setting (Gmax), s		93.0				93.0
Max Q Clear Time (g_c+I1), s		2.0				33.3
Green Ext Time (p_c), s		10.3				43.0
Intersection Summary						
HCM 6th Ctrl Delay			4.1			
HCM 6th LOS			A			

HCM Signalized Intersection Capacity Analysis
 3: OR-99E & SE Washington Street

04/08/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖		↗		↖		↕		↖	↕	
Traffic Volume (vph)	1	1	0	148	0	64	0	1012	137	125	2183	0
Future Volume (vph)	1	1	0	148	0	64	0	1012	137	125	2183	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Lane Util. Factor		1.00		1.00		1.00		0.95		1.00	0.95	
Frb, ped/bikes		1.00		1.00		0.98		1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.98		1.00		1.00		1.00	1.00	
Fr		1.00		1.00		0.85		0.98		1.00	1.00	
Flt Protected		0.98		0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1850		1704		1528		3436		1787	3574	
Flt Permitted		0.98		0.76		1.00		1.00		0.18	1.00	
Satd. Flow (perm)		1850		1357		1528		3436		330	3574	
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)	1	1	0	156	0	67	0	1065	144	132	2298	0
RTOR Reduction (vph)	0	0	0	0	0	57	0	8	0	0	0	0
Lane Group Flow (vph)	0	2	0	156	0	10	0	1201	0	132	2298	0
Confl. Peds. (#/hr)	2		9	9		2	16		1	1		16
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	3%	3%	3%	1%	1%	1%
Turn Type	Perm	NA		Perm		Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			8		8				6		
Actuated Green, G (s)		17.6		17.6		17.6		81.3		93.4	93.4	
Effective Green, g (s)		17.6		17.6		17.6		81.3		93.4	93.4	
Actuated g/C Ratio		0.15		0.15		0.15		0.68		0.78	0.78	
Clearance Time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Vehicle Extension (s)		3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		271		199		224		2327		349	2781	
v/s Ratio Prot								0.35		0.02	c0.64	
v/s Ratio Perm		0.00		c0.11		0.01				0.27		
v/c Ratio		0.01		0.78		0.04		0.52		0.38	0.83	
Uniform Delay, d1		43.7		49.4		44.0		9.6		5.9	8.3	
Progression Factor		1.00		1.00		1.00		1.00		1.33	0.92	
Incremental Delay, d2		0.0		18.0		0.1		0.8		0.4	1.9	
Delay (s)		43.7		67.4		44.1		10.4		8.2	9.5	
Level of Service		D		E		D		B		A	A	
Approach Delay (s)		43.7			60.4			10.4			9.4	
Approach LOS		D			E			B			A	

Intersection Summary

HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th AWSC
 4: SE Main Street & SE Washington Street

04/08/2021

Intersection

Intersection Delay, s/veh 10.2
 Intersection LOS B

















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔			↔			↔	
Traffic Vol, veh/h	67	164	47	17	165	22	43	32	17	31	30	38
Future Vol, veh/h	67	164	47	17	165	22	43	32	17	31	30	38
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	5	5	5	5	5	5	2	2	2	3	3	3
Mvmt Flow	72	176	51	18	177	24	46	34	18	33	32	41
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			2			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			2			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			2		
HCM Control Delay	10.9			10.2			9.4			9.2		
HCM LOS	B			B			A			A		

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	47%	29%	0%	8%	31%
Vol Thru, %	35%	71%	0%	81%	30%
Vol Right, %	18%	0%	100%	11%	38%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	92	231	47	204	99
LT Vol	43	67	0	17	31
Through Vol	32	164	0	165	30
RT Vol	17	0	47	22	38
Lane Flow Rate	99	248	51	219	106
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.147	0.377	0.065	0.302	0.154
Departure Headway (Hd)	5.337	5.468	4.617	4.949	5.195
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	665	653	769	719	683
Service Time	3.425	3.24	2.388	3.024	3.281
HCM Lane V/C Ratio	0.149	0.38	0.066	0.305	0.155
HCM Control Delay	9.4	11.6	7.7	10.2	9.2
HCM Lane LOS	A	B	A	B	A
HCM 95th-tile Q	0.5	1.8	0.2	1.3	0.5

HCM Signalized Intersection Capacity Analysis

5: SE 21st Avenue & SE Washington Street

04/08/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	115	49	10	125	26	37	27	9	13	36	29
Future Volume (vph)	19	115	49	10	125	26	37	27	9	13	36	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frbp, ped/bikes		0.99			1.00			1.00			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Frft		0.96			0.98			0.98			0.95	
Flt Protected		0.99			1.00			0.98			0.99	
Satd. Flow (prot)		1691			1808			1778			1582	
Flt Permitted		0.95			0.97			0.80			0.93	
Satd. Flow (perm)		1614			1757			1462			1491	
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)	20	122	52	11	133	28	39	29	10	14	38	31
RTOR Reduction (vph)	0	28	0	0	15	0	0	7	0	0	22	0
Lane Group Flow (vph)	0	166	0	0	157	0	0	71	0	0	61	0
Confl. Peds. (#/hr)	7		5	5		7	35		21	21		35
Confl. Bikes (#/hr)			1			1						1
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	1%	1%	1%	11%	11%	11%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.6			7.6			6.6			6.6	
Effective Green, g (s)		7.6			7.6			6.6			6.6	
Actuated g/C Ratio		0.33			0.33			0.28			0.28	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		528			575			415			424	
v/s Ratio Prot												
v/s Ratio Perm		c0.10			0.09			c0.05			0.04	
v/c Ratio		0.32			0.27			0.17			0.14	
Uniform Delay, d1		5.8			5.8			6.2			6.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			0.3			0.2			0.2	
Delay (s)		6.2			6.0			6.4			6.3	
Level of Service		A			A			A			A	
Approach Delay (s)		6.2			6.0			6.4			6.3	
Approach LOS		A			A			A			A	

















Intersection Summary

HCM 2000 Control Delay	6.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	23.2	Sum of lost time (s)	9.0
Intersection Capacity Utilization	35.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Signalized Intersection Summary

5: SE 21st Avenue & SE Washington Street

04/08/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	115	49	10	125	26	37	27	9	13	36	29
Future Volume (veh/h)	19	115	49	10	125	26	37	27	9	13	36	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	0.96		0.95	0.95		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1870	1870	1870	1885	1885	1885	1737	1737	1737
Adj Flow Rate, veh/h	20	122	52	11	133	28	39	29	10	14	38	31
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	7	2	2	2	1	1	1	11	11	11
Cap, veh/h	200	292	116	185	374	76	430	273	68	224	289	194
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	91	1116	442	54	1432	289	563	808	201	108	854	573
Grp Volume(v), veh/h	194	0	0	172	0	0	78	0	0	83	0	0
Grp Sat Flow(s),veh/h/ln	1649	0	0	1776	0	0	1572	0	0	1535	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.1	0.0	0.0	1.7	0.0	0.0	0.7	0.0	0.0	0.8	0.0	0.0
Prop In Lane	0.10		0.27	0.06		0.16	0.50		0.13	0.17		0.37
Lane Grp Cap(c), veh/h	608	0	0	635	0	0	772	0	0	706	0	0
V/C Ratio(X)	0.32	0.00	0.00	0.27	0.00	0.00	0.10	0.00	0.00	0.12	0.00	0.00
Avail Cap(c_a), veh/h	2158	0	0	2314	0	0	1825	0	0	1753	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.9	0.0	0.0	6.8	0.0	0.0	5.1	0.0	0.0	5.2	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.2	0.0	0.0	7.0	0.0	0.0	5.2	0.0	0.0	5.3	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		194			172			78			83	
Approach Delay, s/veh		7.2			7.0			5.2			5.3	
Approach LOS		A			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		12.1		10.4		12.1		10.4				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		23.5		27.5		23.5		27.5				
Max Q Clear Time (g_c+I1), s		2.7		4.1		2.8		3.7				
Green Ext Time (p_c), s		0.4		1.2		0.4		1.0				
Intersection Summary												
HCM 6th Ctrl Delay			6.5									
HCM 6th LOS			A									

HCM 6th TWSC
6: Site Access & SE Washington Street

04/08/2021

Intersection

Int Delay, s/veh	1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↑
Traffic Vol, veh/h	234	42	17	229	0	44
Future Vol, veh/h	234	42	17	229	0	44
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	254	46	18	249	0	48

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	300	0	- 150
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	- 6.94
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	- 3.32
Pot Cap-1 Maneuver	-	-	1258	-	0 870
Stage 1	-	-	-	-	0 -
Stage 2	-	-	-	-	0 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1258	-	- 870
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-













Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	870	-	-	1258	-
HCM Lane V/C Ratio	0.055	-	-	0.015	-
HCM Control Delay (s)	9.4	-	-	7.9	0.1
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

HCM Signalized Intersection Capacity Analysis

1: OR-99E & SE Harrison Street











04/08/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕		↖	↕↗		↖	↕↗	
Traffic Volume (vph)	22	70	176	80	55	24	323	1452	98	93	593	11
Future Volume (vph)	22	70	176	80	55	24	323	1452	98	93	593	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00	0.99	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	
Frft		1.00	0.85	1.00	0.96		1.00	0.99		1.00	1.00	
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1806	1539	1618	1626		1770	3498		1736	3461	
Flt Permitted		0.99	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1806	1539	1618	1626		1770	3498		1736	3461	
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)	23	74	185	84	58	25	340	1528	103	98	624	12
RTOR Reduction (vph)	0	0	124	0	12	0	0	4	0	0	1	0
Lane Group Flow (vph)	0	97	61	76	79	0	340	1627	0	98	635	0
Confl. Peds. (#/hr)			8	8					5	5		
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	4%	4%	4%	6%	6%	6%	2%	2%	2%	4%	4%	4%
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)		11.8	39.6	11.2	11.2		27.8	66.9		12.1	51.2	
Effective Green, g (s)		11.8	39.6	11.2	11.2		27.8	66.9		12.1	51.2	
Actuated g/C Ratio		0.10	0.33	0.09	0.09		0.23	0.56		0.10	0.43	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		177	507	151	151		410	1950		175	1476	
v/s Ratio Prot		c0.05	0.03	0.05	c0.05		c0.19	c0.47		0.06	0.18	
v/s Ratio Perm			0.01									
v/c Ratio		0.55	0.12	0.50	0.52		0.83	0.83		0.56	0.43	
Uniform Delay, d1		51.6	28.0	51.8	51.9		43.8	22.0		51.4	24.2	
Progression Factor		1.00	1.00	1.00	1.00		1.11	0.91		1.00	1.00	
Incremental Delay, d2		3.4	0.1	2.6	3.3		10.3	3.4		4.1	0.2	
Delay (s)		55.0	28.2	54.4	55.1		59.1	23.5		55.5	24.4	
Level of Service		E	C	D	E		E	C		E	C	
Approach Delay (s)		37.4			54.8			29.6			28.5	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			31.4				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			18.0		
Intersection Capacity Utilization			72.1%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2: OR-99E & SE Monroe Street

04/08/2021











						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	63	19	1850	58	0	843
Future Volume (vph)	63	19	1850	58	0	843
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	0.95			0.95
Frbp, ped/bikes	1.00	0.98	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Fr	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1656	1455	3520			3471
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1656	1455	3520			3471
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	66	20	1927	60	0	878
RTOR Reduction (vph)	0	19	1	0	0	0
Lane Group Flow (vph)	66	1	1986	0	0	878
Confl. Peds. (#/hr)	2	3		3	3	
Heavy Vehicles (%)	9%	9%	2%	2%	4%	4%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	8.9	8.9	102.1			102.1
Effective Green, g (s)	8.9	8.9	102.1			102.1
Actuated g/C Ratio	0.07	0.07	0.85			0.85
Clearance Time (s)	4.5	4.5	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	122	107	2994			2953
v/s Ratio Prot	c0.04		c0.56			0.25
v/s Ratio Perm		0.00				
v/c Ratio	0.54	0.01	0.66			0.30
Uniform Delay, d1	53.6	51.5	3.1			1.8
Progression Factor	1.00	1.00	0.57			0.59
Incremental Delay, d2	4.8	0.1	0.7			0.2
Delay (s)	58.4	51.5	2.4			1.3
Level of Service	E	D	A			A
Approach Delay (s)	56.8		2.4			1.3
Approach LOS	E		A			A

Intersection Summary

HCM 2000 Control Delay	3.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Signalized Intersection Summary
 2: OR-99E & SE Monroe Street

04/08/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	63	19	1850	58	0	843
Future Volume (veh/h)	63	19	1850	58	0	843
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1767	1767	1870	1870	0	1841
Adj Flow Rate, veh/h	66	20	1927	60	0	878
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	9	9	2	2	0	4
Cap, veh/h	90	80	3067	95	0	3049
Arrive On Green	0.05	0.05	1.00	1.00	0.00	0.87
Sat Flow, veh/h	1682	1497	3612	109	0	3681
Grp Volume(v), veh/h	66	20	968	1019	0	878
Grp Sat Flow(s),veh/h/ln	1682	1497	1777	1851	0	1749
Q Serve(g_s), s	4.6	1.5	0.0	0.0	0.0	5.2
Cycle Q Clear(g_c), s	4.6	1.5	0.0	0.0	0.0	5.2
Prop In Lane	1.00	1.00		0.06	0.00	
Lane Grp Cap(c), veh/h	90	80	1549	1613	0	3049
V/C Ratio(X)	0.74	0.25	0.62	0.63	0.00	0.29
Avail Cap(c_a), veh/h	262	233	1549	1613	0	3049
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.48	0.48	0.00	0.92
Uniform Delay (d), s/veh	56.0	54.5	0.0	0.0	0.0	1.3
Incr Delay (d2), s/veh	11.1	1.6	0.9	0.9	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.6	0.4	0.4	0.0	0.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	67.0	56.1	0.9	0.9	0.0	1.5
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	86		1987			878
Approach Delay, s/veh	64.5		0.9			1.5
Approach LOS	E		A			A
Timer - Assigned Phs		2				6
Phs Duration (G+Y+Rc), s		109.1				109.1
Change Period (Y+Rc), s		4.5				4.5
Max Green Setting (Gmax), s		92.3				92.3
Max Q Clear Time (g_c+I1), s		2.0				7.2
Green Ext Time (p_c), s		37.3				8.0
Intersection Summary						
HCM 6th Ctrl Delay			3.0			
HCM 6th LOS			A			

HCM Signalized Intersection Capacity Analysis 3: OR-99E & SE Washington Street

04/08/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕		↕		↕↔		↕	↕↕	
Traffic Volume (vph)	2	2	0	103	0	92	0	1823	146	103	788	0
Future Volume (vph)	2	2	0	103	0	92	0	1823	146	103	788	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Lane Util. Factor		1.00		1.00		1.00		0.95		1.00	0.95	
Frbp, ped/bikes		1.00		1.00		0.98		1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.98		1.00		1.00		1.00	1.00	
Frft		1.00		1.00		0.85		0.99		1.00	1.00	
Flt Protected		0.98		0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1056		1653		1482		3496		1719	3438	
Flt Permitted		0.98		0.76		1.00		1.00		0.04	1.00	
Satd. Flow (perm)		1056		1314		1482		3496		81	3438	
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)	2	2	0	107	0	96	0	1899	152	107	821	0
RTOR Reduction (vph)	0	0	0	0	0	84	0	4	0	0	0	0
Lane Group Flow (vph)	0	4	0	107	0	12	0	2047	0	107	821	0
Confl. Peds. (#/hr)	3		10	10		3	22		2	2		22
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	75%	75%	75%	7%	7%	7%	2%	2%	2%	5%	5%	5%
Turn Type	Perm	NA		Perm		Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			8		8				6		
Actuated Green, G (s)		14.4		14.4		14.4		84.4		96.6	96.6	
Effective Green, g (s)		14.4		14.4		14.4		84.4		96.6	96.6	
Actuated g/C Ratio		0.12		0.12		0.12		0.70		0.80	0.80	
Clearance Time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Vehicle Extension (s)		3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		126		157		177		2458		170	2767	
v/s Ratio Prot								c0.59		c0.04	0.24	
v/s Ratio Perm		0.00		c0.08		0.01				0.46		
v/c Ratio		0.03		0.68		0.07		0.83		0.63	0.30	
Uniform Delay, d1		46.6		50.6		46.8		12.7		29.9	3.0	
Progression Factor		1.00		1.00		1.00		1.00		1.38	0.58	
Incremental Delay, d2		0.1		11.5		0.2		3.5		6.9	0.3	
Delay (s)		46.7		62.1		47.0		16.2		48.3	2.0	
Level of Service		D		E		D		B		D	A	
Approach Delay (s)		46.7			55.0			16.2			7.3	
Approach LOS		D			D			B			A	
Intersection Summary												
HCM 2000 Control Delay			16.1				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			13.5		
Intersection Capacity Utilization			82.0%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th AWSC
 4: SE Main Street & SE Washington Street

04/08/2021

Intersection

Intersection Delay, s/veh 10.3


















Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔			↔			↔	
Traffic Vol, veh/h	68	180	34	13	160	25	23	25	10	8	12	23
Future Vol, veh/h	68	180	34	13	160	25	23	25	10	8	12	23
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	9	9	9	6	6	6	6	6	6	6	6	6
Mvmt Flow	77	205	39	15	182	28	26	28	11	9	14	26
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			2			1			1		
Conflicting Approach Left SB				NB			EB			WB		
Conflicting Lanes Left	1			1			2			1		
Conflicting Approach Right NB				SB			WB			EB		
Conflicting Lanes Right	1			1			1			2		
HCM Control Delay	11.2			9.7			9			8.6		
HCM LOS	B			A			A			A		

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	40%	27%	0%	7%	19%
Vol Thru, %	43%	73%	0%	81%	28%
Vol Right, %	17%	0%	100%	13%	53%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	58	248	34	198	43
LT Vol	23	68	0	13	8
Through Vol	25	180	0	160	12
RT Vol	10	0	34	25	23
Lane Flow Rate	66	282	39	225	49
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.098	0.413	0.048	0.295	0.07
Departure Headway (Hd)	5.351	5.272	4.43	4.72	5.123
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	666	682	806	758	695
Service Time	3.41	3.014	2.172	2.765	3.183
HCM Lane V/C Ratio	0.099	0.413	0.048	0.297	0.071
HCM Control Delay	9	11.7	7.4	9.7	8.6
HCM Lane LOS	A	B	A	A	A
HCM 95th-tile Q	0.3	2	0.2	1.2	0.2

HCM Signalized Intersection Capacity Analysis
5: SE 21st Avenue & SE Washington Street

04/08/2021

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	15	152	49	10	118	19	43	46	22	9	17	15	
Future Volume (vph)	15	152	49	10	118	19	43	46	22	9	17	15	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.5			4.5			4.5			4.5		
Lane Util. Factor		1.00			1.00			1.00			1.00		
Frbp, ped/bikes		0.99			0.99			0.99			0.98		
Flpb, ped/bikes		1.00			1.00			0.99			1.00		
Fr t		0.97			0.98			0.97			0.95		
Fl t Protected		1.00			1.00			0.98			0.99		
Satd. Flow (prot)		1687			1795			1708			1452		
Fl t Permitted		0.97			0.97			0.86			0.91		
Satd. Flow (perm)		1640			1738			1491			1339		
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	
Adj. Flow (vph)	18	181	58	12	140	23	51	55	26	11	20	18	
RTOR Reduction (vph)	0	20	0	0	10	0	0	18	0	0	13	0	
Lane Group Flow (vph)	0	237	0	0	165	0	0	114	0	0	36	0	
Confl. Peds. (#/hr)	35		8	8		35	51		30	30		51	
Confl. Bikes (#/hr)			2										
Heavy Vehicles (%)	8%	8%	8%	3%	3%	3%	4%	4%	4%	20%	20%	20%	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		4			8			2			6		
Permitted Phases	4			8			2			6			
Actuated Green, G (s)		8.9			8.9			7.4			7.4		
Effective Green, g (s)		8.9			8.9			7.4			7.4		
Actuated g/C Ratio		0.35			0.35			0.29			0.29		
Clearance Time (s)		4.5			4.5			4.5			4.5		
Vehicle Extension (s)		3.0			3.0			3.0			3.0		
Lane Grp Cap (vph)		576			611			436			391		
v/s Ratio Prot													
v/s Ratio Perm		c0.14			0.09			c0.08			0.03		
v/c Ratio		0.41			0.27			0.26			0.09		
Uniform Delay, d1		6.2			5.9			6.9			6.5		
Progression Factor		1.00			1.00			1.00			1.00		
Incremental Delay, d2		0.5			0.2			0.3			0.1		
Delay (s)		6.7			6.1			7.2			6.6		
Level of Service		A			A			A			A		
Approach Delay (s)		6.7			6.1			7.2			6.6		
Approach LOS		A			A			A			A		
Intersection Summary													
HCM 2000 Control Delay			6.6									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.34										
Actuated Cycle Length (s)			25.3									Sum of lost time (s)	9.0
Intersection Capacity Utilization			36.6%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

HCM 6th Signalized Intersection Summary
 5: SE 21st Avenue & SE Washington Street

04/08/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	152	49	10	118	19	43	46	22	9	17	15
Future Volume (veh/h)	15	152	49	10	118	19	43	46	22	9	17	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.93	0.97		0.95	0.93		0.92	0.94		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1781	1781	1856	1856	1856	1841	1841	1841	1604	1604	1604
Adj Flow Rate, veh/h	18	181	58	12	140	23	51	55	26	11	20	18
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	8	8	8	3	3	3	4	4	4	20	20	20
Cap, veh/h	155	423	128	153	512	80	312	287	103	206	245	170
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	49	1230	373	45	1490	232	399	860	309	143	735	510
Grp Volume(v), veh/h	257	0	0	175	0	0	132	0	0	49	0	0
Grp Sat Flow(s),veh/h/ln	1652	0	0	1768	0	0	1568	0	0	1388	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.3	0.0	0.0	2.0	0.0	0.0	1.5	0.0	0.0	0.6	0.0	0.0
Prop In Lane	0.07		0.23	0.07		0.13	0.39		0.20	0.22		0.37
Lane Grp Cap(c), veh/h	706	0	0	745	0	0	702	0	0	621	0	0
V/C Ratio(X)	0.36	0.00	0.00	0.23	0.00	0.00	0.19	0.00	0.00	0.08	0.00	0.00
Avail Cap(c_a), veh/h	1685	0	0	1787	0	0	1513	0	0	1338	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.1	0.0	0.0	6.7	0.0	0.0	6.7	0.0	0.0	6.4	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.0	0.5	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.4	0.0	0.0	6.8	0.0	0.0	6.8	0.0	0.0	6.5	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		257			175			132			49	
Approach Delay, s/veh		7.4			6.8			6.8			6.5	
Approach LOS		A			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		13.8		14.1		13.8		14.1				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		24.5		26.5		24.5		26.5				
Max Q Clear Time (g_c+I1), s		3.5		5.3		2.6		4.0				
Green Ext Time (p_c), s		0.7		1.6		0.2		1.0				
Intersection Summary												
HCM 6th Ctrl Delay				7.0								
HCM 6th LOS				A								

HCM 6th TWSC
 6: Site Access & SE Washington Street

04/08/2021

Intersection

Int Delay, s/veh 0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↑
Traffic Vol, veh/h	233	20	0	206	0	49
Future Vol, veh/h	233	20	0	206	0	49
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	253	22	0	224	0	53

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	-	0	0
Stage 1	-	0	0
Stage 2	-	0	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	885	-	-	-
HCM Lane V/C Ratio	0.06	-	-	-
HCM Control Delay (s)	9.3	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

HCM Signalized Intersection Capacity Analysis
1: OR-99E & SE Harrison Street











04/08/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗	↘	↔		↖	↕		↘	↕	
Traffic Volume (vph)	25	53	396	154	29	28	257	782	107	87	1663	14
Future Volume (vph)	25	53	396	154	29	28	257	782	107	87	1663	14
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.99	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	
Fr		1.00	0.85	1.00	0.96		1.00	0.98		1.00	1.00	
Fl		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1851	1581	1681	1661		1787	3494		1787	3570	
Flt Permitted		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1851	1581	1681	1661		1787	3494		1787	3570	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	27	57	426	166	31	30	276	841	115	94	1788	15
RTOR Reduction (vph)	0	0	49	0	12	0	0	7	0	0	1	0
Lane Group Flow (vph)	0	84	377	115	100	0	276	949	0	94	1802	0
Confl. Peds. (#/hr)			15	15					5	5		
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4	5	8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)		9.4	36.4	13.5	13.5		27.0	67.6		11.5	52.1	
Effective Green, g (s)		9.4	36.4	13.5	13.5		27.0	67.6		11.5	52.1	
Actuated g/C Ratio		0.08	0.30	0.11	0.11		0.22	0.56		0.10	0.43	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		144	479	189	186		402	1968		171	1549	
v/s Ratio Prot		0.05	c0.18	c0.07	0.06		0.15	0.27		0.05	c0.50	
v/s Ratio Perm			0.06									
v/c Ratio		0.58	0.79	0.61	0.54		0.69	0.48		0.55	1.16	
Uniform Delay, d1		53.4	38.3	50.7	50.3		42.6	15.7		51.8	34.0	
Progression Factor		1.00	1.00	1.00	1.00		1.14	0.85		1.00	1.00	
Incremental Delay, d2		5.9	8.4	5.5	3.2		4.6	0.8		3.6	81.1	
Delay (s)		59.3	46.6	56.2	53.5		53.3	14.1		55.4	115.1	
Level of Service		E	D	E	D		D	B		E	F	
Approach Delay (s)		48.7			54.9			22.9			112.1	
Approach LOS		D			D			C			F	
Intersection Summary												
HCM 2000 Control Delay			72.0				HCM 2000 Level of Service				E	
HCM 2000 Volume to Capacity ratio			0.96									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)				18.0	
Intersection Capacity Utilization			89.6%				ICU Level of Service				E	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2: OR-99E & SE Monroe Street

04/08/2021











						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	86	29	1018	52	0	2258
Future Volume (vph)	86	29	1018	52	0	2258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	0.95			0.95
Frbp, ped/bikes	1.00	0.98	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	0.99			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1736	1516	3508			3574
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1736	1516	3508			3574
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	91	31	1072	55	0	2377
RTOR Reduction (vph)	0	28	2	0	0	0
Lane Group Flow (vph)	91	3	1125	0	0	2377
Confl. Peds. (#/hr)	2	5		4	4	
Confl. Bikes (#/hr)		1		1		
Heavy Vehicles (%)	4%	4%	2%	2%	1%	1%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	11.6	11.6	99.4			99.4
Effective Green, g (s)	11.6	11.6	99.4			99.4
Actuated g/C Ratio	0.10	0.10	0.83			0.83
Clearance Time (s)	4.5	4.5	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	167	146	2905			2960
v/s Ratio Prot	c0.05		0.32			c0.67
v/s Ratio Perm		0.00				
v/c Ratio	0.54	0.02	0.39			0.80
Uniform Delay, d1	51.7	49.1	2.6			5.3
Progression Factor	1.00	1.00	0.17			0.96
Incremental Delay, d2	3.6	0.1	0.3			0.2
Delay (s)	55.3	49.1	0.8			5.3
Level of Service	E	D	A			A
Approach Delay (s)	53.7		0.8			5.3
Approach LOS	D		A			A

Intersection Summary

HCM 2000 Control Delay	5.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Signalized Intersection Summary
 2: OR-99E & SE Monroe Street













04/08/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	86	29	1018	52	0	2258
Future Volume (veh/h)	86	29	1018	52	0	2258
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	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	1841	1841	1870	1870	0	1885
Adj Flow Rate, veh/h	91	31	1072	55	0	2377
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	2	2	0	1
Cap, veh/h	120	106	2943	151	0	3069
Arrive On Green	0.07	0.07	0.86	0.86	0.00	0.86
Sat Flow, veh/h	1753	1560	3528	176	0	3770
Grp Volume(v), veh/h	91	31	554	573	0	2377
Grp Sat Flow(s),veh/h/ln	1753	1560	1777	1834	0	1791
Q Serve(g_s), s	6.1	2.3	7.8	7.8	0.0	33.9
Cycle Q Clear(g_c), s	6.1	2.3	7.8	7.8	0.0	33.9
Prop In Lane	1.00	1.00		0.10	0.00	
Lane Grp Cap(c), veh/h	120	106	1522	1571	0	3069
V/C Ratio(X)	0.76	0.29	0.36	0.36	0.00	0.77
Avail Cap(c_a), veh/h	263	234	1522	1571	0	3069
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.85	0.85	0.00	0.09
Uniform Delay (d), s/veh	55.0	53.2	1.8	1.8	0.0	3.7
Incr Delay (d2), s/veh	9.5	1.5	0.6	0.6	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.9	1.8	1.8	0.0	6.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	64.5	54.7	2.4	2.3	0.0	3.8
LnGrp LOS	E	D	A	A	A	A
Approach Vol, veh/h	122		1127			2377
Approach Delay, s/veh	62.0		2.4			3.8
Approach LOS	E		A			A
Timer - Assigned Phs		2				6
Phs Duration (G+Y+Rc), s		107.3				12.7
Change Period (Y+Rc), s		4.5				4.5
Max Green Setting (Gmax), s		93.0				18.0
Max Q Clear Time (g_c+I1), s		9.8				8.1
Green Ext Time (p_c), s		10.3				0.2
Intersection Summary						
HCM 6th Ctrl Delay			5.3			
HCM 6th LOS			A			

HCM Signalized Intersection Capacity Analysis

3: OR-99E & SE Washington Street

04/08/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖		↗		↖		↑↔		↗	↑↑	
Traffic Volume (vph)	1	1	0	148	0	64	0	1012	137	142	2183	0
Future Volume (vph)	1	1	0	148	0	64	0	1012	137	142	2183	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Lane Util. Factor		1.00		1.00		1.00		0.95		1.00	0.95	
Frbp, ped/bikes		1.00		1.00		0.98		1.00		1.00	1.00	
Flpb, ped/bikes		1.00		0.98		1.00		1.00		1.00	1.00	
Fr _t		1.00		1.00		0.85		0.98		1.00	1.00	
Fl _t Protected		0.98		0.95		1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1850		1704		1528		3436		1787	3574	
Fl _t Permitted		0.98		0.76		1.00		1.00		0.17	1.00	
Satd. Flow (perm)		1850		1357		1528		3436		328	3574	
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)	1	1	0	156	0	67	0	1065	144	149	2298	0
RTOR Reduction (vph)	0	0	0	0	0	57	0	8	0	0	0	0
Lane Group Flow (vph)	0	2	0	156	0	10	0	1201	0	149	2298	0
Confl. Peds. (#/hr)	2		9	9		2	16		1	1		16
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	3%	3%	3%	1%	1%	1%
Turn Type	Perm	NA		Perm		Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			8		8				6		
Actuated Green, G (s)		17.6		17.6		17.6		80.9		93.4	93.4	
Effective Green, g (s)		17.6		17.6		17.6		80.9		93.4	93.4	
Actuated g/C Ratio		0.15		0.15		0.15		0.67		0.78	0.78	
Clearance Time (s)		4.5		4.5		4.5		4.5		4.5	4.5	
Vehicle Extension (s)		3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		271		199		224		2316		352	2781	
v/s Ratio Prot								0.35		0.03	c0.64	
v/s Ratio Perm		0.00		c0.11		0.01				0.30		
v/c Ratio		0.01		0.78		0.04		0.52		0.42	0.83	
Uniform Delay, d1		43.7		49.4		44.0		9.8		6.1	8.3	
Progression Factor		1.00		1.00		1.00		1.00		1.33	0.89	
Incremental Delay, d2		0.0		18.0		0.1		0.8		0.5	1.8	
Delay (s)		43.7		67.4		44.1		10.6		8.6	9.1	
Level of Service		D		E		D		B		A	A	
Approach Delay (s)		43.7			60.4			10.6			9.1	
Approach LOS		D			E			B			A	
Intersection Summary												
HCM 2000 Control Delay			12.5									B
HCM 2000 Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			120.0							13.5		
Intersection Capacity Utilization			81.9%									D
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th AWSC
4: SE Main Street & SE Washington Street

04/08/2021

Intersection

















Intersection Delay, s/veh 10.2
Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔			↔			↔	
Traffic Vol, veh/h	67	164	47	17	154	33	37	38	17	31	30	38
Future Vol, veh/h	67	164	47	17	154	33	37	38	17	31	30	38
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	5	5	5	5	5	5	2	2	2	3	3	3
Mvmt Flow	72	176	51	18	166	35	40	41	18	33	32	41
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0
Approach	EB		WB			NB			SB			
Opposing Approach	WB		EB			SB			NB			
Opposing Lanes	1		2			1			1			
Conflicting Approach Left	SB		NB			EB			WB			
Conflicting Lanes Left	1		1			2			1			
Conflicting Approach Right	NB		SB			WB			EB			
Conflicting Lanes Right	1		1			1			2			
HCM Control Delay	10.9		10.1			9.3			9.2			
HCM LOS	B		B			A			A			

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	40%	29%	0%	8%	31%
Vol Thru, %	41%	71%	0%	75%	30%
Vol Right, %	18%	0%	100%	16%	38%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	92	231	47	204	99
LT Vol	37	67	0	17	31
Through Vol	38	164	0	154	30
RT Vol	17	0	47	33	38
Lane Flow Rate	99	248	51	219	106
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.146	0.377	0.065	0.299	0.153
Departure Headway (Hd)	5.32	5.465	4.613	4.914	5.19
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	668	653	770	726	684
Service Time	3.405	3.234	2.382	2.987	3.275
HCM Lane V/C Ratio	0.148	0.38	0.066	0.302	0.155
HCM Control Delay	9.3	11.5	7.7	10.1	9.2
HCM Lane LOS	A	B	A	B	A
HCM 95th-tile Q	0.5	1.8	0.2	1.3	0.5

















HCM Signalized Intersection Capacity Analysis
5: SE 21st Avenue & SE Washington Street

04/08/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	115	49	10	125	26	37	27	9	13	36	29
Future Volume (vph)	19	115	49	10	125	26	37	27	9	13	36	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frbp, ped/bikes		0.99			1.00			1.00			0.98	
Flpb, ped/bikes		1.00			1.00			0.99			1.00	
Fr t		0.96			0.98			0.98			0.95	
Fl t Protected		0.99			1.00			0.98			0.99	
Satd. Flow (prot)		1691			1808			1778			1582	
Fl t Permitted		0.95			0.97			0.80			0.93	
Satd. Flow (perm)		1614			1757			1462			1491	
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)	20	122	52	11	133	28	39	29	10	14	38	31
RTOR Reduction (vph)	0	28	0	0	15	0	0	7	0	0	22	0
Lane Group Flow (vph)	0	166		0	157		0	71		0	61	
Confl. Peds. (#/hr)	7		5	5		7	35		21	21		35
Confl. Bikes (#/hr)			1			1						1
Heavy Vehicles (%)	7%	7%	7%	2%	2%	2%	1%	1%	1%	11%	11%	11%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.6			7.6			6.6			6.6	
Effective Green, g (s)		7.6			7.6			6.6			6.6	
Actuated g/C Ratio		0.33			0.33			0.28			0.28	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		528			575			415			424	
v/s Ratio Prot												
v/s Ratio Perm		c0.10			0.09			c0.05			0.04	
v/c Ratio		0.32			0.27			0.17			0.14	
Uniform Delay, d1		5.8			5.8			6.2			6.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			0.3			0.2			0.2	
Delay (s)		6.2			6.0			6.4			6.3	
Level of Service		A			A			A			A	
Approach Delay (s)		6.2			6.0			6.4			6.3	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			6.2		HCM 2000 Level of Service				A			
HCM 2000 Volume to Capacity ratio			0.25									
Actuated Cycle Length (s)			23.2		Sum of lost time (s)				9.0			
Intersection Capacity Utilization			35.3%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
5: SE 21st Avenue & SE Washington Street

04/08/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	115	49	10	125	26	37	27	9	13	36	29
Future Volume (veh/h)	19	115	49	10	125	26	37	27	9	13	36	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	0.96		0.95	0.95		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/l	1796	1796	1796	1870	1870	1870	1885	1885	1885	1737	1737	1737
Adj Flow Rate, veh/h	20	122	52	11	133	28	39	29	10	14	38	31
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	7	2	2	2	1	1	1	11	11	11
Cap, veh/h	200	292	116	185	374	76	430	273	68	224	289	194
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	91	1116	442	54	1432	289	563	808	201	108	854	573
Grp Volume(v), veh/h	194	0	0	172	0	0	78	0	0	83	0	0
Grp Sat Flow(s),veh/h/l	1649	0	0	1776	0	0	1572	0	0	1535	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.1	0.0	0.0	1.7	0.0	0.0	0.7	0.0	0.0	0.8	0.0	0.0
Prop In Lane	0.10		0.27	0.06		0.16	0.50		0.13	0.17		0.37
Lane Grp Cap(c), veh/h	608	0	0	635	0	0	772	0	0	706	0	0
V/C Ratio(X)	0.32	0.00	0.00	0.27	0.00	0.00	0.10	0.00	0.00	0.12	0.00	0.00
Avail Cap(c_a), veh/h	2158	0	0	2314	0	0	1825	0	0	1753	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.9	0.0	0.0	6.8	0.0	0.0	5.1	0.0	0.0	5.2	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/l	0.5	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.2	0.0	0.0	7.0	0.0	0.0	5.2	0.0	0.0	5.3	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		194			172			78			83	
Approach Delay, s/veh		7.2			7.0			5.2			5.3	
Approach LOS		A			A			A			A	
Timer - Assigned Phs		2			4			6			8	
Phs Duration (G+Y+Rc), s		12.1			10.4			12.1			10.4	
Change Period (Y+Rc), s		4.5			4.5			4.5			4.5	
Max Green Setting (Gmax), s		23.5			27.5			23.5			27.5	
Max Q Clear Time (g_c+I1), s		2.7			4.1			2.8			3.7	
Green Ext Time (p_c), s		0.4			1.2			0.4			1.0	
Intersection Summary												
HCM 6th Ctrl Delay			6.5									
HCM 6th LOS			A									

HCM 6th TWSC
 6: Site Access & SE Washington Street

04/08/2021

Intersection

Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↑
Traffic Vol, veh/h	234	59	0	229	0	44
Future Vol, veh/h	234	59	0	229	0	44
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	254	64	0	249	0	48

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	-	-	0
Stage 1	-	-	0
Stage 2	-	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	858	-	-	-
HCM Lane V/C Ratio	0.056	-	-	-
HCM Control Delay (s)	9.4	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

2. SE Monroe Street at OR-99E

Intersection v/c

APM Section 13.4.4: Critical Intersection v/c ratio

Method: Determine Critical Movements in HCM 2000 reports
 HCM 6th reports, determine adjusted and sat flow rates
 Adjust Flow/Sat Flow
 Sum up Crit Movement Flow Rates
 X_c of intersection = $\text{sum}(\text{crit.move. Flow rates} * (C / (C-L)))$

AM Peak Hour											
	Critical Movement	Adjust Flow		Saturated Flow		Adj/Sat Flows			C	L	Xc
		NBTh+RT	WBL	NBTh+RT	WBL	NBTh+RT	WBL	Sum			
Existing		1918	43	3721	1682	0.515453	0.025565	0.541018	120	9	0.585
Background		1968	45	3721	1682	0.52889	0.026754	0.555644	120	9	0.601
Buildout (Full-Movement)	NBTh+RT WBL	1987	45	3721	1682	0.533996	0.026754	0.56075	120	9	0.606
Buildout (No Left-Out)		1987	59	3721	1682	0.533996	0.035077	0.569074	120	9	0.615
Buildout (RIRO)		1987	66	3721	1682	0.533996	0.039239	0.573235	120	9	0.62

2. SE Monroe Street at OR-99E

Intersection v/c

APM Section 13.4.4: Critical Intersection v/c ratio

Method: Determine Critical Movements in HCM 2000 reports
 HCM 6th reports, determine adjusted and sat flow rates
 Adjust Flow/Sat Flow
 Sum up Crit Movement Flow Rates
 $X_c \text{ of intersection} = \text{sum}(\text{crit.move. Flow rates} * (C / (C-L)))$

PM Peak Hour											
	Critical Movement	Adjust Flow		Saturated Flow		Adj/Sat Flows			C	L	Xc
		SBTh	WBL	SBTh	WBL	SBTh	WBL	Sum			
Existing		2291	58	3770	1753	0.607692	0.033086	0.640778	120	9	0.693
Background		2355	60	3770	1753	0.624668	0.034227	0.658895	120	9	0.712
Buildout (Full-Movement)	SBTh WBL	2377	60	3770	1753	0.630504	0.034227	0.664731	120	9	0.719
Buildout (No Left-Out)		2377	73	3770	1753	0.630504	0.041643	0.672147	120	9	0.727
Buildout (RIRO)		2377	91	3770	1753	0.630504	0.051911	0.682415	120	9	0.738

5. SE Washington Street at SE 21st Avenue

Intersection v/c

APM Section 13.4.4: Critical Intersection v/c ratio

Method: Determine Critical Movements in HCM 2000 reports
 HCM 6th reports, determine adjusted and sat flow rates
 Adjust Flow/Sat Flow
 Sum up Crit Movement Flow Rates
 $X_c \text{ of intersection} = \text{sum}(\text{crit.move. Flow rates} * (C / (C-L)))$

AM Peak Hour												
	Critical Movement		Adjust Flow		Saturated Flow		Adj/Sat Flows			C	L	Xc
			EB	NB	EB	NB	EB	NB	Sum			
Existing			218	122	1645	1563	0.132523	0.078055	0.210578	60	9	0.248
Background			245	132	1646	1568	0.148846	0.084184	0.233029	60	9	0.274
Buildout (Full-Movement)	EB	NB	257	132	1652	1568	0.155569	0.084184	0.239753	60	9	0.282
Buildout (No Left-Out)			257	132	1652	1568	0.155569	0.084184	0.239753	60	9	0.282
Buildout (RIRO)			257	132	1652	1568	0.155569	0.084184	0.239753	60	9	0.282

5. SE Washington Street at SE 21st Avenue

Intersection v/c

APM Section 13.4.4: Critical Intersection v/c ratio

Method: Determine Critical Movements in HCM 2000 reports
 HCM 6th reports, determine adjusted and sat flow rates
 Adjust Flow/Sat Flow
 Sum up Crit Movement Flow Rates
 $X_c \text{ of intersection} = \text{sum}(\text{crit.move. Flow rates} * (C / (C-L)))$

PM Peak Hour											
	Critical Movement	Adjust Flow		Saturated Flow		Adj/Sat Flows			C	L	Xc
		EB	NB	EB	NB	EB	NB	Sum			
Existing		168	68	1644	1584	0.10219	0.042929	0.145119	60	9	0.171
Background		188	78	1646	1572	0.114216	0.049618	0.163835	60	9	0.193
Buildout (Full-Movement)	EB NB	194	78	1649	1572	0.117647	0.049618	0.167265	60	9	0.197
Buildout (No Left-Out)		194	78	1649	1572	0.117647	0.049618	0.167265	60	9	0.197
Buildout (RIRO)		194	78	1649	1572	0.117647	0.049618	0.167265	60	9	0.197

Queuing and Blocking Report
2022 Buildout Conditions - AM Peak Hour (Full Movement)

04/08/2021

Intersection: 6: Site Access & SE Washington Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	32	62
Average Queue (ft)	2	29
95th Queue (ft)	15	55
Link Distance (ft)	1092	353
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

Queuing and Blocking Report
2022 Buildout Conditions - PM Peak Hour (Full Movement)

04/08/2021

Intersection: 6: Site Access & SE Washington Street

Movement	EB	EB	WB	NB
Directions Served	T	TR	LT	LR
Maximum Queue (ft)	2	2	44	59
Average Queue (ft)	0	0	5	28
95th Queue (ft)	2	2	26	53
Link Distance (ft)	551	551	1097	353
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

Queuing and Blocking Report
2022 Buildout Conditions - AM Peak Hour (Restricted LT Egress)

04/08/2021

Intersection: 6: Site Access & SE Washington Street

Movement	WB	NB
Directions Served	LT	R
Maximum Queue (ft)	32	50
Average Queue (ft)	2	25
95th Queue (ft)	15	47
Link Distance (ft)	1083	352
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

Queuing and Blocking Report
2022 Buildout Conditions - PM Peak Hour (Restricted LT Egress)

04/08/2021

Intersection: 6: Site Access & SE Washington Street

Movement	EB	WB	NB
Directions Served	TR	LT	R
Maximum Queue (ft)	2	45	58
Average Queue (ft)	0	5	25
95th Queue (ft)	2	25	50
Link Distance (ft)	567	1093	352
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

Queuing and Blocking Report
2022 Buildout Conditions - AM Peak Hour (RIRO)

04/08/2021

Intersection: 6: Site Access & SE Washington Street

Movement	NB
Directions Served	R
Maximum Queue (ft)	59
Average Queue (ft)	26
95th Queue (ft)	50
Link Distance (ft)	352
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 0

Queuing and Blocking Report
2022 Buildout Conditions - PM Peak Hour (RIRO)

04/08/2021

Intersection: 6: Site Access & SE Washington Street

Movement	NB
Directions Served	R
Maximum Queue (ft)	54
Average Queue (ft)	23
95th Queue (ft)	49
Link Distance (ft)	352
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 0