City *of* Tigard

Tigard Triangle

TPR Traffic Analysis

January 2018

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Introduction

This report documents the Transportation Planning Rule (TPR) traffic analysis for the Tigard Triangle to identify the potential impacts associated with a proposal by the City of Tigard to change the zoning and development standards for the area. If the Proposed Zoning meets the following targets for trip generation, mobility, and queuing, it has no significant impact on the transportation system. Thereby meeting the requirements of the TPR, as dictated in section 660-012-0060 of the Oregon Administrative Rule (OAR).

- **Trip Generation**
  - Generate the same or less trips than the Current Zoning.
  - Evaluate mobility impacts, if Proposed Zoning has more trips than Current Zoning.
- **Mobility**
  - Meet intersection volume to capacity (v/c) mobility targets with Proposed Zoning.
  - Maintain Current Zoning v/c ratios, if Current Zoning is above mobility targets.
    - 0.03 v/c ration increase or less considered no impact
- **Queuing**
  - Provide Safe Stopping Site distance (SSD) on exit ramps with Proposed Zoning
  - Maintain Current Zoning queue length on exit ramps, if Current Zoning is beyond SSD
    - Increase within standard deviation of simulation runs considered no impact

Study Area

The study area is shown in **Figure 1**. The proposed zone change area is roughly bounded by I-5 on the east, OR 217 on the south, and a block south of Barbur/OR-99W on the north. The mobility and queuing analysis is focused on interchanges serving ODOT facilities and evaluates the following eleven intersections:

1. OR-217 NB Ramps @ OR-99W
2. OR-217 SB Ramps @ OR-99W
3. OR-217 NB Ramps @ SW 72nd Ave
4. SW Hunziker St @ SW 72nd Ave
5. OR-217 SB Ramps/SW Varns St @ SW 72nd Ave
6. I-5 NB Ramps @ SW 60th Ave
7. Barbur Blvd @ SW 60th Ave

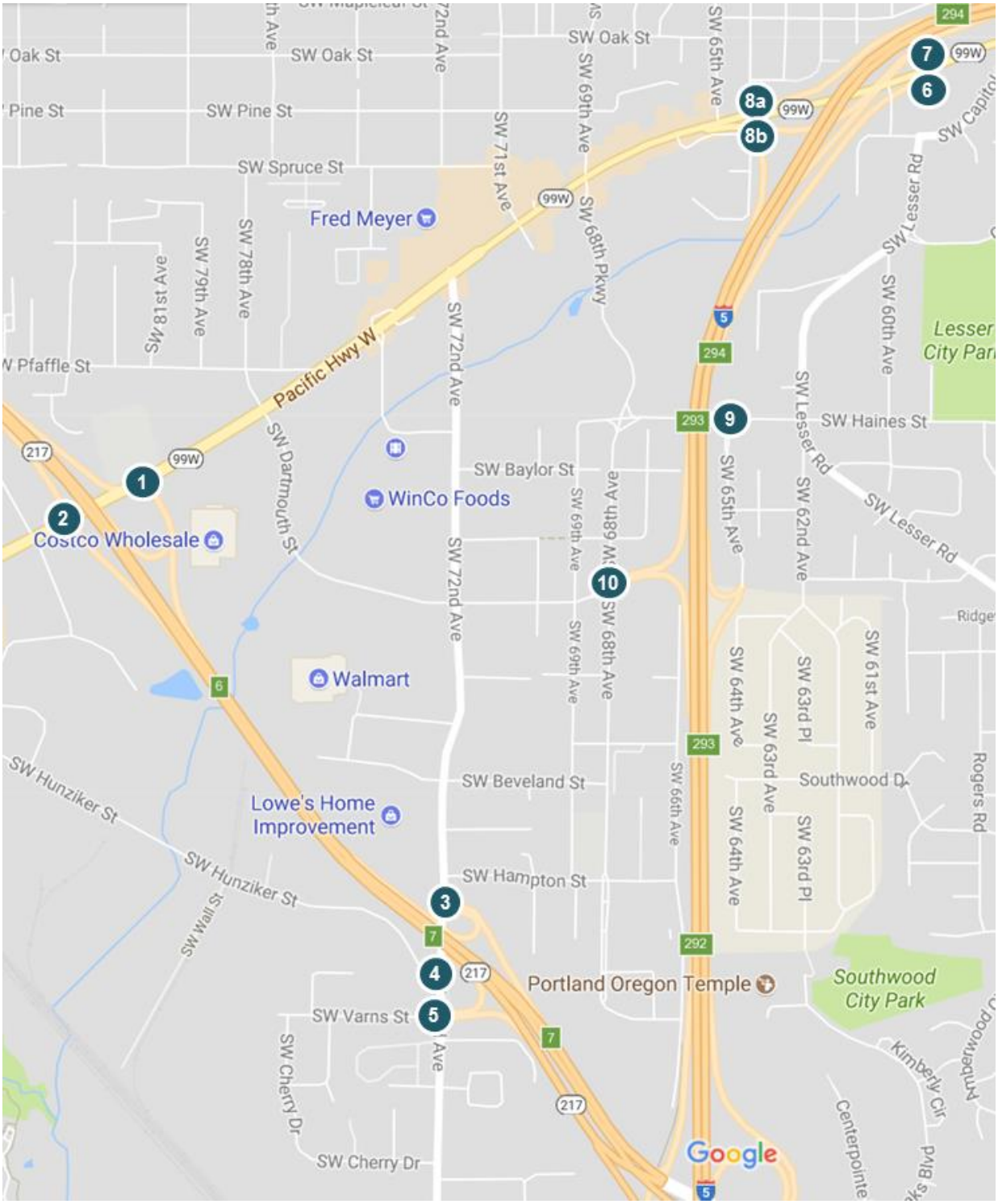
8a. I-5 SB Exit Ramp @ Barbur/OR-99W

8b. I-5 SB&NB Entrance Ramps @ Barbur/OR-99W

9. I-5 NB Ramps/SW65th Ave @ SW Haines St.
10. I-5 SB Ramps @ SW 68th Ave

Intersections 6, 7, 8 and 9 are outside the city limits of the City of Tigard.

Figure 1. Study Area



Study area intersection

Current and Proposed Zoning Overview

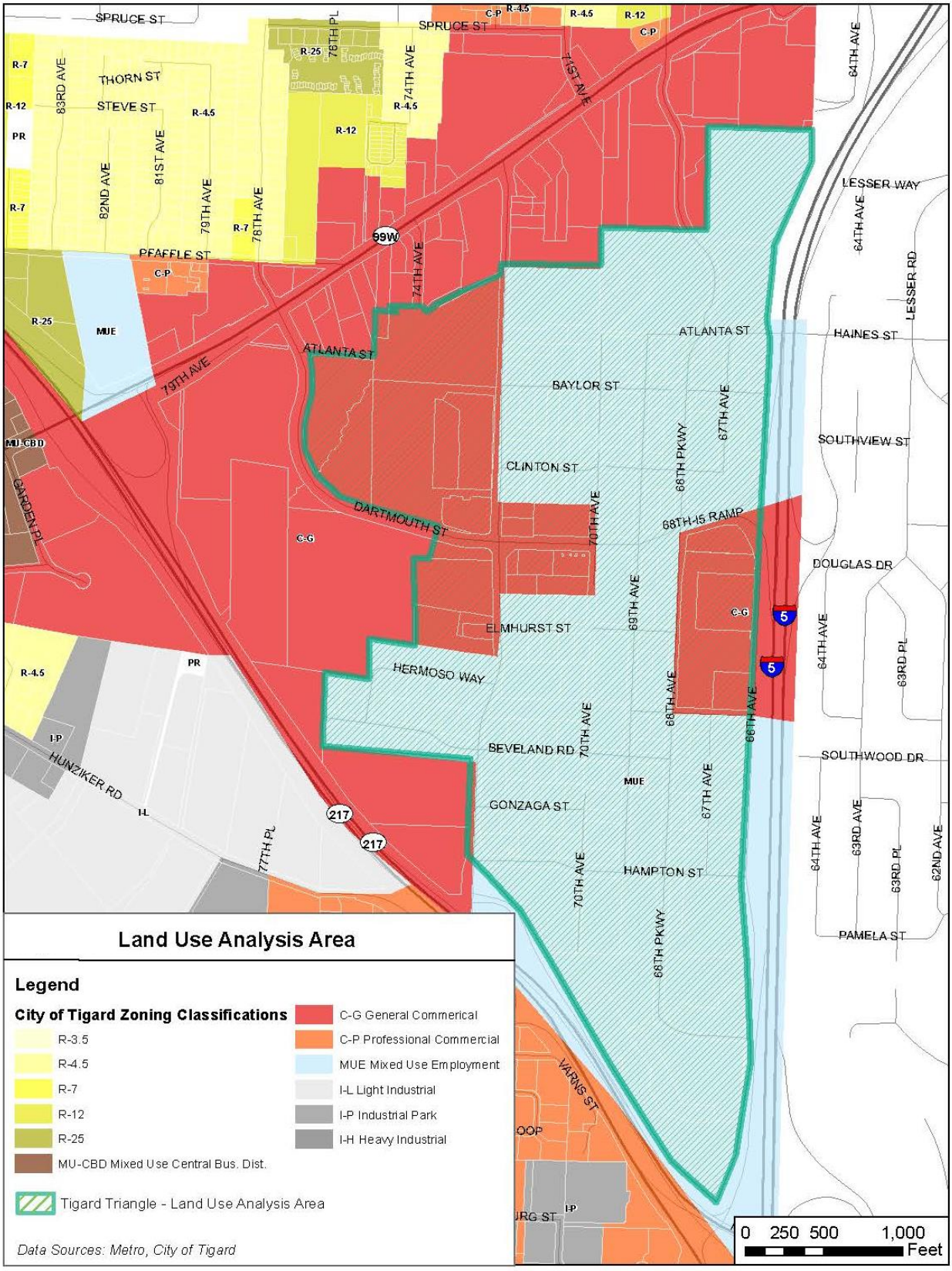
This section provides a summary of the Current and Proposed Zoning for the Tigard Triangle.

Current Zoning

The Existing Conditions Report (September 2013), which was prepared as part of the Tigard Triangle Strategic Plan (TTSP), provides an analysis of the Current Zoning and development standards within the Triangle. As shown in **Figure 2**, Current Zoning in the Tigard Triangle is primarily composed of Mixed-Use Employment (MUE), which permits both commercial and multifamily residential development, and General Commercial (C-G), which permits large format retail development. The C-G zone also permits a limited amount of multifamily residential uses as part of a planned development.

The Tigard Community Development Code also includes MUE and C-G development standards (building height, setbacks, and landscaping) and citywide requirements related to parking, tree canopy, and street/utility improvements. In addition, there are site and building design standards specific to properties within the Triangle.

Figure 2. Current Zoning



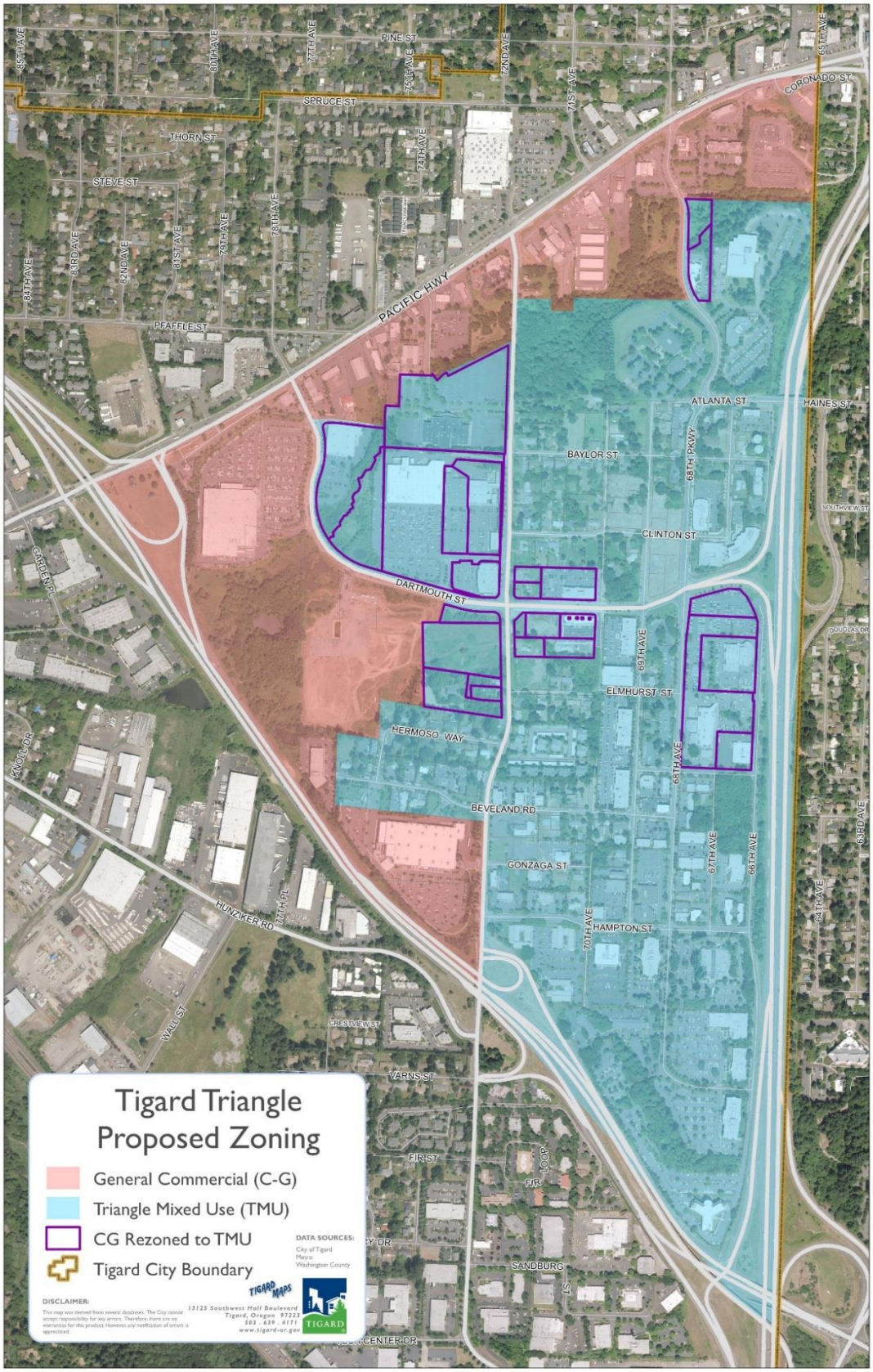
Proposed Zoning

As shown in **Figure 3,** the Proposed Zoning creates a new Triangle Mixed-use (TMU) zone that replaces the Current MUE zone in the Triangle and changes the zoning for some C-G-zoned properties to the new TMU zone. Densities proposed are similar to other mixed-use areas of Tigard such as Washington Square and Downtown Tigard. Key components of the proposed TMU zone include:

- Enlargement of the zone boundary
- Increase to building height limits
- Removal of floor area ratio (FAR) maximums
- Allowance for a greater number of outright permitted uses

The TMU boundary that is currently proposed is similar to the Recommended Option from the TTSP; however, there have been minor modifications since the drafting of the TTSP. These include the addition of two parcels east of SW 68th Parkway (WCTM 1S136DA Tax Lots 2500 & 2600) and all of tax lot 902; the TTSP recommended option only included a portion of this site. These modifications do not change the land use development assumptions because the additions are all areas that are assumed open space (lot 902) or unlikely to be significantly redeveloped due to sensitive lands (lot 2500) or existing buildings (lot 2600).

Figure 3. Proposed Zoning



Comparison of Current and Proposed Development Options

Table 1 shows how the Triangle would likely develop under the Current and Proposed Zoning. It considers current and proposed development, the location of the Triangle in the region, and market assumptions about the demand for specific types of development. Because mixed-use Zoning allows a variety of permitted uses at a range of densities, this report relies upon the development assumptions in the Development Feasibility Analysis Report (May 2014) completed for the TTSP. The development assumptions shown in Table 3 are not representative of zoning code requirements; they are just assumptions for developing trip generations.

Table 1. Land Use Development Assumptions

	Current Zoning		Proposed Zoning			
	MUE	CG	Triangle Mixed-Use (TMU)			
	Mixed-use-Employment	General Commercial	Townhome / Apartments	Mixed-use	Mixed-use-High	Campus and Education
Residential Density du/acre	25 du/acre	0	16 du/ac	30 du/ac	50 du/ac	NA
Maximum Building Heights	45 feet		55 feet	55 feet	75 feet	75 feet
Floor Area Ratio	.40:1[4]		NA (residential only)	1.0:1[1]	1.5:1[2]	0.4:1[3]
Ground Floor Retail/Flex space		NA	NA	10% of ground floor		NA

1. Assumes that 100 percent of development will be mixed-use residential or residential mixed-use. No office is assumed.
2. Assumes that 20 percent of mixed-use is office, with the remaining 80 percent being mixed-use residential.
3. Assumes that 100 percent of development will be mixed-use office. No residential is assumed.
4. Assumes that 20 percent of the floor area is retail.

Determination of the amount of development potential is based on the assumptions identified in **Table 1** and other variables that affect the amount of land available within the area proposed for zoning and site development modifications. Additional assumptions include:

- Parcels with high improvement values that are already at the densities proposed under the Recommended Option in the TTSP were assumed to remain as they are today.
- All general commercial (C-G) zoned land within the study boundary (Figure 1) is assumed to redevelop.
- For vacant and re-developable parcels, 25 percent of the gross acreage was removed to account for parks, off-street parking, landscaping, etc. Street right-of-way was removed prior to calculating development potential.
- Maximum residential densities identified in Table 3 were used to calculate the number of residential units rather than assuming high or low units per acre.
- Commercial and institutional square footage amounts were developed by calculating the average number of floors and parcel coverage. Floor area ratios coupled with maximum heights by subarea were used to determine the potential office square footage.

These assumptions resulted in the total square footage and the number of residential units for each zoning scenario as shown in **Table 2**. The land uses were evaluated using GIS based scenario planning

tools that take into account a number of variables such as constrained lands, floor area ratio, parcel coverage, building heights, and other development assumptions.

Table 2.Net New Development Potential by Zoning Scenario

Scenario	Buildable Area Gross Area (sq. ft.)	Buildable Area Net Area (sq. ft.)	Potential New Dwelling Units	Potential General Commercial (sq. ft.)	Potential Office (sq. ft.)	Potential Retail Mixed-use Flex Space (sq. ft.)
Current Zoning	8,508,713	5,944,829	1,326	383,022	406,073	0
Proposed Zoning	8,487,764	5,923,881	2,195	0	1,087,930	240,275

Evaluation of Trip Generation Impacts

This section evaluates the potential impacts to the transportation system associated with the trip generation of the Proposed Zoning land use development assumptions. If the proposed scenario generates the same or less trips than the Current Zoning, then it is considered not to have a significant impact on the transportation system and no transportation analysis will be performed. If the Proposed Zoning trip generation is higher, there is a potential for transportation impacts and intersection level traffic analysis will be completed to determine if there is a significant impact to the transportation system. Trip generation is based on the Institute of Transportation Engineers (ITE) Trip Generation Handbook (9th Edition).

The determination of potential transportation impacts for the Proposed Zoning is based on the net new trips for the Proposed Zoning compared to Current Zoning. See Appendix A for detailed trip generation calculations.

Current Zoning Trip Generation

The Current Zoning follows standard ITE procedures as follows:

1. Gross trip generation
2. Internal trip reduction
3. Pass-by trip reduction
4. Net new trip generation

Gross Trip Generation

Gross trip generation for the Current Zoning is based on trip generation rates from the ITE Trip Generation Handbook (9th Edition). Both daily and PM peak hour trip generations were calculated. **Table 3** provides a summary of the assumed gross trip generation rates for the Current Zoning land use types.

Table 3. ITE Trip Generation Rates

Land Use	ITE Code	ITE Rate*	
		PM Peak Hour	Daily
Office **(Per 1,000 sq. ft.)**	710 General Office	1.49	11.03
General Commercial **(Per 1,000 sq. ft.)**	820 Shopping Center	3.71	42.7
Condo/Townhouse **(Per Dwelling Unit)**	230 Condo/Townhouse	0.52	5.81
Retail Mixed-use Flex Space Office **(Per 1,000 sq. ft.)**	826 Specialty Retail	2.71	44.32

The ITE trip rates were applied to the land used as shown in **Table 4** to calculate the gross vehicle trips. The vehicle trips were converted to person trips using an average occupancy of 1.40 persons per vehicle to facilitate the application of the internal trip reductions.

Table 4. Current Zoning Gross Trip Generation Summary

Current Trip Generation Type	ITE Code	Units	Daily	PM Total	Entering	Exiting
Office	710 General Office	406,073 sf	4,479	605 veh	103 veh	502 veh
General Commercial	820 Shopping Center	383,022 sf	16,355	1,421 veh	696 veh	725 veh
Housing	230 Condo/Townhouse	1,326 units	7,704	690 veh	462 veh	228 veh
Retail Flex Space	826 Specialty Retail	0 sf	0	0 veh	0 veh	0 veh
Gross Vehicle Trips				2,716 veh	1,261 veh	1,455 veh
Gross Person Trips	1.40 persons per vehicle			**3,802 per**	**1,765 per**	**2,037 per**

Internal Trip Reduction

ITE trip generation methodology allows for a reduction in the gross trip production for trips that are internal to the project area and do not affect the transportation system outside the project area. ITE provides a procedure to calculate internal trip reductions based on the amount of compatible land uses in the project area. For example, a home to office trip or office to restaurant trip could be made internal to the project area.

The NCHRP Report 684 trip generation spreadsheet (see attached) was used to determine the internal trip reduction rate for the Current and Proposed Zonings. The ITE *Trip Generation Handbook*, 3rd Edition references the spreadsheet in Section 6.5 as a tool to calculate the internal trip reduction rates taking into account the base vehicle trips, mode split, vehicle occupancy, and walking distances between land uses. Base vehicle trips were calculated as described in the Gross Trip Generation section above.

Mode Split

Mode split percentages for the Current Zoning are based on the 2011 Metro travel activity survey. Using the survey data it is estimated that under Current Zoning the transit mode split will be 4 percent, which is similar to the suburban rate in the survey, and a non-motorized (bicycle and pedestrian) mode split will be 3 percent. The non-motorized and transit person trips are separated from the gross person trips to calculate the vehicle person trips. **Table 5** shows a summary of the mode split assumptions.

Table 5. Mode Split Summary

Mode Split	Transit	Non-Motorized
Current Zoning	4%	3%

Vehicle Occupancy

A typical vehicle occupancy of 1.40 was used for both the Current and proposed Zoning.

Internal Walking Distance

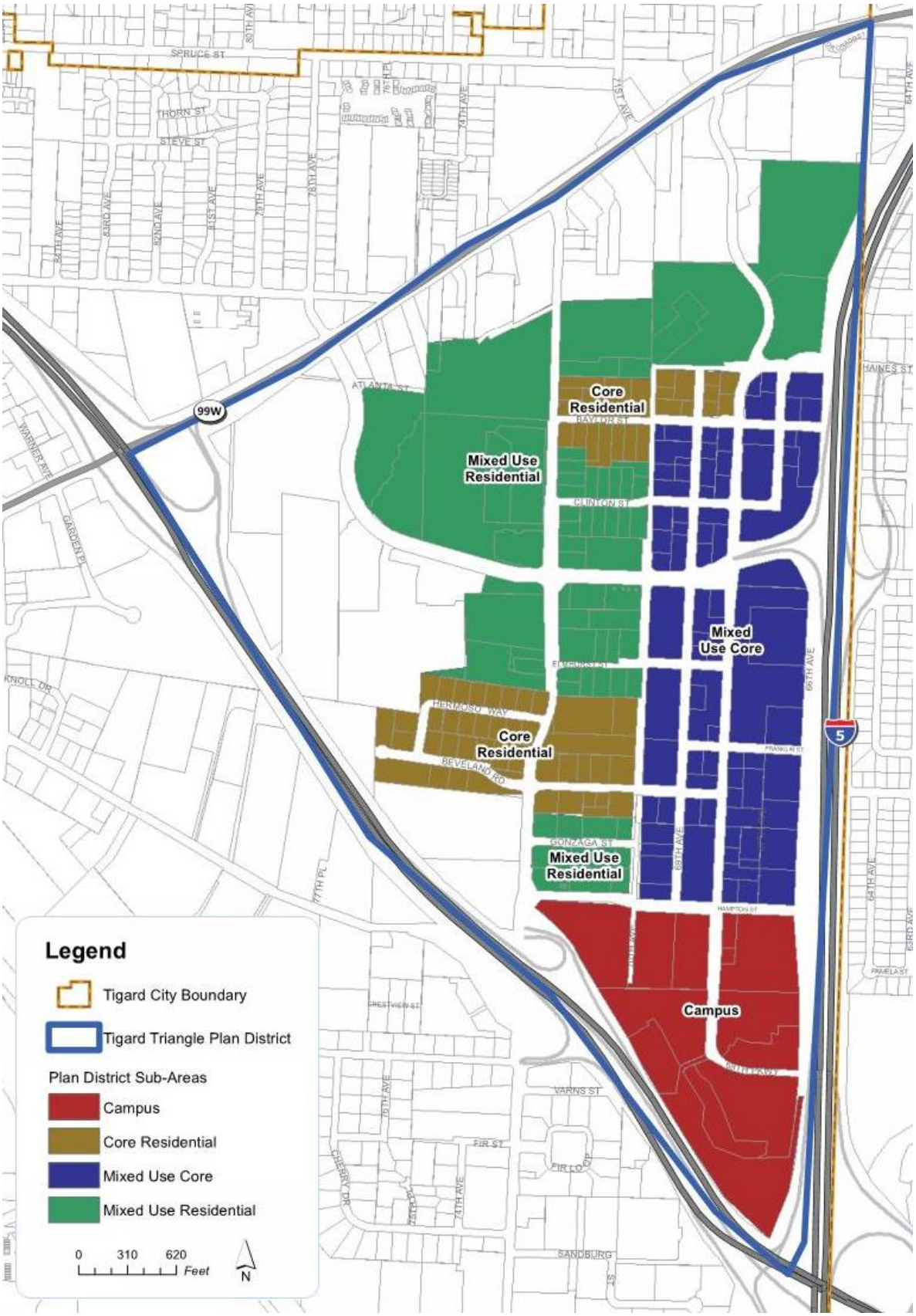
For the average walking distances between land uses, the study area was divided into 22 subzones. The Current Zoning includes general commercial and mixed-use employment zoning as shown in **Figure 4**. The only internal trips assumed to occur are Office to residential, which is an average of the distances from each general commercial subzone to each mixed-use employment subzone, and the distances from each mixed-use employment subzone to every other mixed-use employment subzone. The average walking distance was estimated at 1,689 feet.

The resulting internal trip reduction rates calculated from the NCHRP Report 684 trip generation estimator spreadsheet for each land use scenario are shown in **Table 6**.

Table 6. Internal Trip Reduction Rate

Internal Trip Reduction Rate	Total	Entering	Exiting
Current Zoning	5%	5%	4%

Figure 4. Subzones for Internal Walking Distance Calculations



Pass-by Trip Reduction

Pass-by trips are vehicle trips that are already on the roadway for a different primary trip purpose but also represent a trip to a Tigard Triangle land use as a secondary trip. An example would be a driver stopping at a convenience store on their way home from work. The trips from work to home are the primary trips and would be made regardless of whether or not the convenience store was there. Stopping at the convenience store is also a trip but it is not a new trip and does not add additional impact on the transportation system outside of the additional turns in and out of the convenience store. The trip to the convenience store is a pass-by trip and is subtracted from the non-internal trips to calculate net new trips on the transportation system.

The ITE Trip Generation Handbook provides pass-by rates for some land use types. **Table 7** shows the pass-by trip reduction rates for several land uses that could potentially be part of the general commercial space in the Current Zoning, or the retail flex space in the proposed Zoning.

Table 7. Pass-by Trip Reduction Rate by Land Use

Land Use	Pass-by Reduction Rate*
816 – Hardware/Paint Store	26 %
820 – Shopping Center	34 %
850 – Supermarket	36 %
851 – Convenience Market	61 %
880 – Pharmacy/Drugstore w/o Drive Thru	53 %
912 – Drive-In Bank	47 %
931 – Quality Restaurant	44 %
932 – High-Turnover (Sit-Down) Restaurant	43 %

*Rate includes pass-by and diverted link trips

For this report, the shopping center rate (code 820) was used for the general commercial, as it is the most representative of the land use types available. The average shopping center pass-by rate of 34 percent was used for the Current Zoning based on table F.9 of the Trip Generation Handbook, 3rd Edition. **Table 8** shows the pass-by reduction rate used.

Table 8. Pass-by Trip Reduction Rate

Pass-by Reduction	Rate	Trips
Current Zoning	34%	434 veh

*Rate includes pass-by and diverted link trips

A 34 percent pass-by reduction for the general commercial land uses results in a total of 434 trips taken away from the Current Zoning scenario.

Current Zoning Net New Trips

With the gross trip generation calculated (**Table 4**) and trip reduction percentages determined (**Tables 5**, **6** and **8**) the next step is calculating the net new trips on the transportation system. The internal person trips, transit person trips and non-motorized person trips are first separated from the gross person trips to get external vehicle person trips. The external vehicle person trips are then converted back to vehicle trips and pass-by vehicle trips are removed to get the net new vehicle trips, as shown in **Table 9.**

Table 9. Current Zoning Net New Trip Generation Summary

Current Trip Generation Type	Units or Conversion	Daily	PM Total	Entering	Exiting
Gross Person Trips	1.40 persons per vehicle		**3,802 per**	**1,765 per**	**2,037 per**
Internal Person Trip Reduction	5%, 5%, 4%		169 per	88 per	81 per
External Person Trips			**3,633 per**	**1,677 per**	**1,956 per**
Transit Trip Separation	4%		144 per	66 per	78 per
Non-Motorized Trip Separation	3%		109 per	50 per	59 per
External Vehicle Trips	1.40 persons per vehicle		**2,410 veh**	**1,115 veh**	**1,295 veh**
Pass-By Trip Reduction	34% of Retail		434 veh	216 veh	218 veh
Net New Vehicle Trips			**1,976 veh**	**899 veh**	**1,077 veh**

The ITE person based method used to calculate net new trips in **Table 9** is not adopted in the current ODOT Analysis Procedures Manual (APM). ODOT requested that the net new trips for the Current Zoning also be calculated using a 30 percent reduction below the vehicular trip generation rates recommended by ITE based on Title 6 of Metro's Urban Growth Management Functional Plan. **Table 10** shows the small difference in net new trips between the two methods.

Table 10. Current Zoning Net New Vehicle Trip Comparison

Current Zoning Net New Trips Method	PM Peak Hour		
	Total	Entering	Exiting
ITE Reduction Net New Vehicle Trips	1,976	899	1,077
Metro Mixed-Use Reduction Net New Vehicle Trips	1,902	883	1,019
Change relative to ITE Method	**-74**	**-16**	**-58**

For this report, the ITE method is used for the traffic analysis and determination of mitigation. The Metro 30 percent reduction method is used as the basis for TPR compliance with the ITE analysis assumed to represent both methods given the small difference in trips.

Proposed Zoning

The Proposed Zoning uses standard ITE rates for the gross trip generation but then uses a general reduction of 30 percent below the gross vehicular trips pursuant to Title 6 of Metro's Urban Growth Management Functional Plan, rather than ITE calculated internal and pass-by trip reductions to get the net new trips.

1. Gross trip generation
2. Metro 30% mixed-use reduction
3. Net new trip generation

Gross Trip Generations

Table 11 provides a summary of the assumed gross trip generation rates for the Proposed Zoning land use types.

Table 11. ITE Trip Generation Rates

Land Use	ITE Code	ITE Rate*	
		PM Peak Hour	Daily
Office **(Per 1,000 sq. ft.)**	710 General Office	1.49	11.03
General Commercial **(Per 1,000 sq. ft.)**	820 Shopping Center	3.71	42.7
High-Rise Condo **(Per Dwelling Unit)**	232 Condo/Townhouse	0.38	4.18
Condo/Townhouse **(Per Dwelling Unit)**	230 Condo/Townhouse	0.52	5.81
Retail Mixed-use Flex Space Office **(Per 1,000 sq. ft.)**	826 Specialty Retail	2.71	44.32

The ITE trip rates were applied to the Proposed Zoning land uses as shown in **Table 12** to calculate the gross vehicle trips.

Table 12. Proposed Zoning Gross Trip Generation Summary

Current Trip Generation Type	ITE Code	Units or Conversion	Daily Vehicles	PM Total	Entering	Exiting
Office	710 General Office	1,087,930 sf	12,000	1,621 veh	276 veh	1,345 veh
General Commercial	820 Shopping Center	0 sf	0	0 veh	0 veh	0 veh
High-Rise Housing	232 High-Rise Condo/ Townhouse	2,012 units	8,410	765 veh	512 veh	253 veh
Housing	230 Condo/Townhouse	183 units	1,063	95 veh	64 veh	31 veh
Retail Flex Space	826 Specialty Retail	240,275 sf	10,649	652 veh	287 veh	365 veh
Gross Vehicle Trips				**3,133 veh**	**1,139 veh**	**1,994 veh**

Mixed-use Reduction

Title 6 of Metro's Urban Growth Management Functional Plan (Metro Code Sections 3.07.610 – 3.07.650) allows Centers, Corridors, Station Communities, and Main Streets to take an automatic reduction of 30 percent below the vehicular trip generation rates recommended by the Institute of Transportation Engineers. This is allowed when analyzing the traffic impacts, pursuant to OAR 660-012-0060, if the jurisdiction adopts a boundary for the area, land use regulations that allow and promote a mix of uses, and a plan to achieve the non-single occupancy vehicle mode share targets in the Regional Transportation Functional Plan including:

1. Transportation system designs for streets, transit, bicycles, and pedestrians;
2. A transportation system or demand management plan; and
3. A parking management program for the Center, Corridor, Station Community or Main Street.

The Proposed Zoning meets the requirements of Metro's Urban Growth Management Functional Plan because:

- Auto dependent uses will be restricted;
- The proposed land use development pattern is pedestrian focused and transit supportive;
- Off-street parking minimums are proposed to be eliminated. Additionally, a long-term parking management plan that identifies steps to manage parking demand is in development;
- Additional road, bicycle and pedestrian connections will be incorporated into the City's Transportation System Plan, Parks and Trails Master Plans.

For these reasons, applying the 30 percent mixed-use reduction for the proposed zoning is warranted. **Table 13** shows the mixed-use reduction rate used.

Table 13. Mixed-use Reduction Rate

Land Use	Pass-by Reduction Rate
Current Zoning	0 %
Proposed Zoning	30 %

Proposed Zoning Net New Trips

With the gross trip generation calculated (**Table 12**), the next step is calculating the net new trips on the transportation system by simply reduced gross trips by 30 percent to get the net new vehicle trips, as shown in **Table 14.**

Table 14. Proposed Zoning Net New Trip Generation Summary

Current Trip Generation Type	Units or Conversion	Daily Vehicles	PM Total	Entering	Exiting
Gross Vehicle Trips			**3,133 veh**	**1,139 veh**	**1,994 veh**
Metro Mixed-use Reduction	30%		940 veh	342 veh	598 veh
Net New Vehicle Trips			**2,193 veh**	**797 veh**	**1,396 veh**

Net New Trips Comparison

As shown in **Table 15** the Proposed Zoning generate more trips than the Current Zoning by 217 total PM Peak Hour trips.

Table 15. Trip Generation Summary

Zoning Scenarios	PM Peak Hour		
	Total	Entering	Exiting
Current Zoning	1,976	899	1,077
Proposed Zoning	2,193	797	1,396
Change relative to Current Zoning	**217**	**-102**	**319**

The increase indicates a potential for significant impacts and triggers the need for transportation operations analysis to determine if there are mobility impacts.

Evaluation of Mobility Impacts

Using the ITE based trip generation rates, year 2040 PM Peak Hour intersection turn movement volumes were developed for the eleven study area intersections using trip distribution from the Metro regional travel demand model.

2040 Transportation Network

The 2040 transportation network is based on the Regional Transportation Plan (RTP) federal financially constrained project list. **Table 16** provides a list in the projects in Tigard Triangle area. The RTP also includes the Southwest Corridor HCT line through Tigard Triangle.

Table 16. Tigard Triangle Area RTP Financially Constrained Projects

Project	Description	Evaluation Approach
Highway 217 Overcrossing Hunziker Road to 72nd Avenue (RTP 10751)	New overcrossing of Hwy 217 connecting Hunziker Road and 72nd Avenue with closure of exiting Hunziker connection to 72nd Avenue.	Evaluated with new overcrossing and existing Hunziker/72nd intersection similar to SW Corridor Project
Widen 72nd Avenue 99W to Hunziker Road (RTP 10755)	Widen to five lanes with bikeways and sidewalks.	Five-lane Traffic demand. Traffic analysis assumes 72nd is three lanes.
Widen Dartmouth Street 72nd Avenue to 68th Avenue (RTP 10759)	Widen to four lanes with turn lanes and sidewalks	Included as planned project in all analysis
Hwy 217/72nd Avenue Interchange Improvements (RTP 10599)	Unspecified capacity improvements.	Not included. Specific improvements are identified as part of the mitigation
99W Intersection Improvements 64th Avenue to Durham Road (RTP 10770	Project development phase to determine improvements.	Not included. Specific improvements are identified as part of the mitigation

The RTP federal financially constrained project list is based on input from local agencies including the City of Tigard. The City of Tigard Transportation System Plan (TSP) includes additional projects descriptions for the 99W intersection improvements (RTP 10770) noted in the RTP. The TSP identified improvements shown in **Table 17** are not included in the travel demand model but are used as a guide for the identification of specific intersection mitigation.

Table 17. Tigard Triangle Area City of Tigard TSP Projects

Project	Description	Evaluation Approach
Pacific Highway/I-5 SB (TSP 66D)	Increase capacity of intersection with dual northbound through lanes on Pacific Highway and dual lanes for I-5 ramps	Project is complete and included as an existing condition
Highway 217 NB Ramps/Pacific Highway (TSP 66C)	Intersection capacity improvements such as a second northbound left turn lane	Included as planned project in all analysis
Highway 217 SB Ramps/Pacific Highway (TSP 66B)	Intersection capacity improvements such as a second right turn lane from off ramp	Not included, as noted second right turn does not improve intersection v/c

Both the RTP and TSP list an extension of Atlanta Street from 69th Avenue to the 74th Avenue (TSP) or Dartmouth Street (RTP). However, that extension was not included in the analysis.

2040 Volume Development

The volume development process is based on the methodology and procedures outlined in ODOT's Transportation Planning and Analysis Unit's (TPAU) Analysis Procedures Manual (APM) and NCHRP 255. The seven steps are summarized below:

- Determine Existing Peak Hour
- Seasonally Adjust Existing Traffic Counts
- Determine Background Growth using Metro's Regional Travel Demand Model
- Grow Existing Volumes to 2040 Background Volumes
- Determine Trip Distribution for Tigard Triangle Zone Change
- Apply Trip Distribution to Trips from Tigard Triangle Zone Change
- Add Tigard Triangle Zone Change Trips to 2040 Background Volumes

See Appendix B for detailed volume development.

Determine Existing Peak Hour

Existing count data is from two different sources. For the intersections of OR-217 with 99W, the counts will be based on Figure 9 of the Costco Fuel Station TIA completed in August 2013. Figure 9 provides 2014 count data with the addition of the Costco gas station.

For the intersections of OR-217 with SW 72nd Avenue, the City of Tigard provided counts collected in January of 2015. A common peak hour for the three intersections will be determined based on the highest common peak hour.

Seasonally Adjust Existing Traffic Counts

For the count data provided from the Costco Fuel Station TIA, it is assumed the volumes have been seasonally adjusted. No additional adjustments to those counts will be performed.

New traffic volumes were collected in January 2015 on SW 72nd Avenue at SW Varns Street, SW Hunziker Street, and at the Northbound Ramp Terminal. These counts will be seasonally adjusted following the methodologies outlined in the APM.

Since traffic counts are taken during various times of the year, data from varying months may need to be converted to peak month equivalents using calculated seasonal adjustment factors. TPAU has three

methods for developing seasonal factors: On-Site ATR Method, ATR Characteristic Table Method, and ATR Seasonal Trend Table Method.

There is no on-site ATR and there is not an ATR representative of the study area, therefore the seasonal trend table was used for the SW 72nd Avenue movements. Since SW 72nd Avenue operates mostly as a commuter route within the study area, the commuter trends was used.

Seasonal factors were calculated for the count date of January 14. Factoring count data to the peak month requires dividing the seasonal factor for the count period by the seasonal factor for the peak period. It is assumed the seasonal factor for the 15th of the month is representative of the 14th. The seasonal factor was calculated to be 1.1766. See **Table 18** for the applicable data from the 2014 Seasonal Trend Table.

Table 18. Applicable 2014 Seasonal Trend Data

TREND	15-JAN	PEAK PERIOD SEASONAL FACTOR
Commuter	1.0591	0.9001
JANUARY 14, 2014 SEASONAL ADJUSTMENT FACTOR: 1.1766		

Determine Background Growth

Background growth rates will be calculated using forecast volumes from Metro's Regional Travel Demand model. The currently adopted Federal Regional Transportation Plan (RTP) model uses a base year of 2010 with a 2040 forecast year. The 2040 future year model is based on the federally approved 2040 RTP financially constrained project list.

To determine the growth rate, the following steps were used:

- Determine the 2010 model volume by intersection approach
- Determine the 2010 Tigard Triangle Study Area trip distribution by approach
    - Distribution based on origin and destination trips from TAZs 1037, 1038, and 1044
    - Because TAZs are larger than the rezone area, fifty percent of the TAZs volume is assumed to be from the rezone area.
- Determine the 2010 model volume without Tigard Triangle Study Area trips (background volume) by subtracting fifty percent of the TAZs volume from the total 2010 model volumes.
- Determine the 2040 model volume by intersection approach
- Determine the 2040 Tigard Triangle Study Area trip distribution by approach
    - Distribution based on origin and destination trips from TAZs 1037, 1038, and 1044
    - Because TAZs are larger than the rezone area, fifty percent of the TAZs volume is assumed to be from the rezone area.
- Determine the 2040 model volume without Tigard Triangle Study Area trips (Background volume) by subtracting fifty percent of the TAZs volume from the total 2040 model volumes.
- Calculate background growth by link using the 2040 model volumes without Tigard Triangle Study Area trips and the 2010 model volumes without Tigard Triangle.

Grow Existing Volumes to 2040 Background Volumes

The seasonally adjusted counts were grown from their count year to a forecast year of 2040 by link using NCHRP 255 methodology. Forecast volumes were then balanced according section 5.5.1 of the APM.

Determine Trip Distribution for Tigard Triangle Zone Change Area

Distribution and assignment of the zone change is be based on Metro's 20405 Travel Demand Model. A select zone of TAZs 1037, 1038, and 1044 was used to determine the origin and destination total trip percentage of trips heading north, south, east, and west through each of the study area intersections.

Apply Trip Distribution to Trip Generation for Each Zoning Scenario

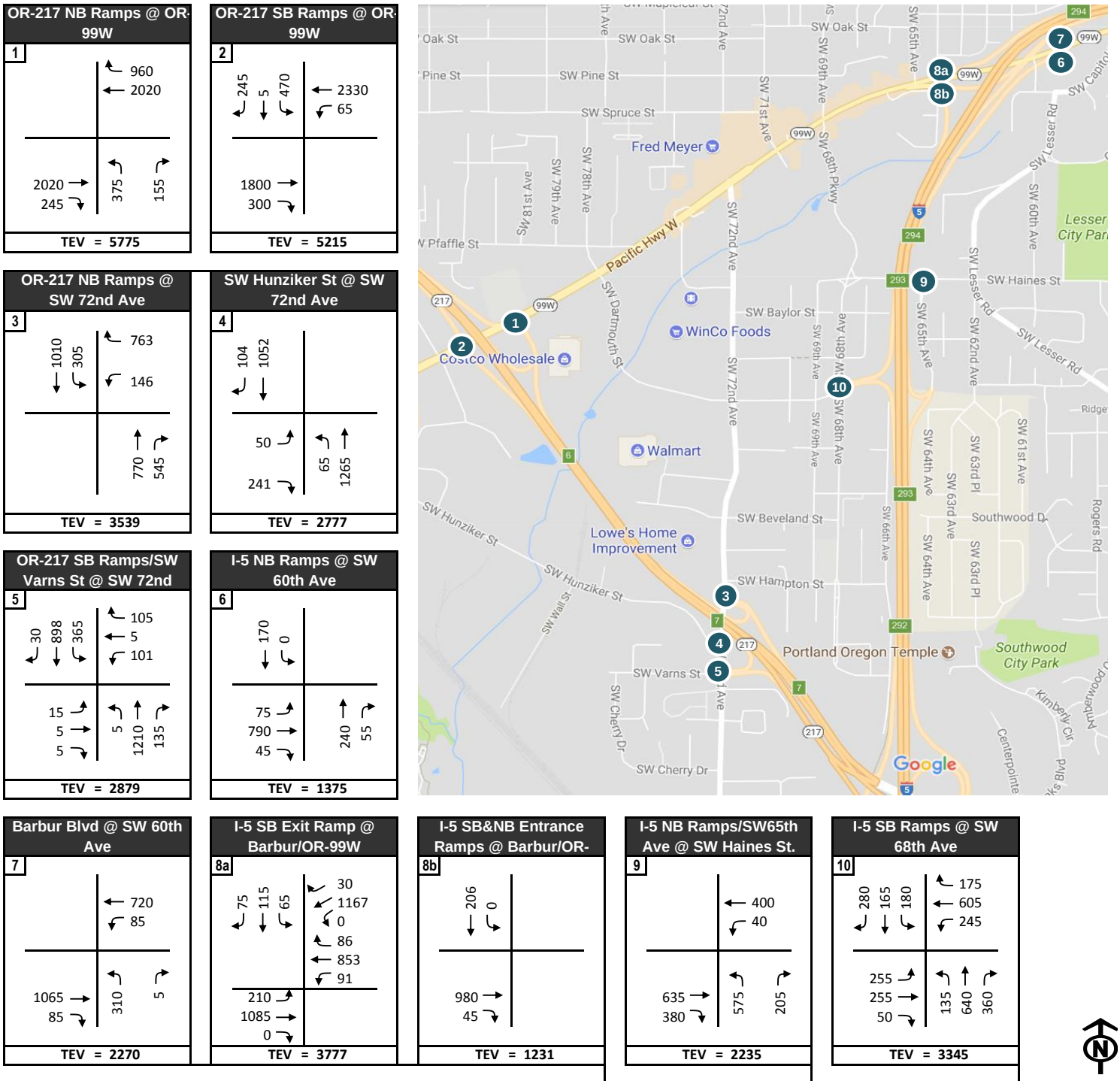
The 2040 model trip distribution was applied to the ITE based trip generation for the Current and Proposed Zoning to generate Tigard Triangle Zone Change traffic volumes for each zoning scenario.

Calculate Total 2040 Traffic Volumes for Each Zoning Scenario

The Tigard Triangle Zone Change traffic volumes for each zoning scenario was added to the 2040 background volumes to create the total 2040 total traffic volumes for the Current Zoning and Proposed Zoning. These volumes will be used to conduct the mobility and queuing analysis of study area intersections using Synchro/SimTraffic.

2040 Volumes

The PM Peak Hour 2040 Current Zoning volumes at the eleven study area intersection are shown in **Figure 5**. The Proposed Zoning volumes are shown in **Figure 6**. The change in 2040 PM Peak Hour volume from the Current Zoning to the Proposed Zoning is shown in **Figure 7**.



Tigard Triangle TPR Compliance

Legend

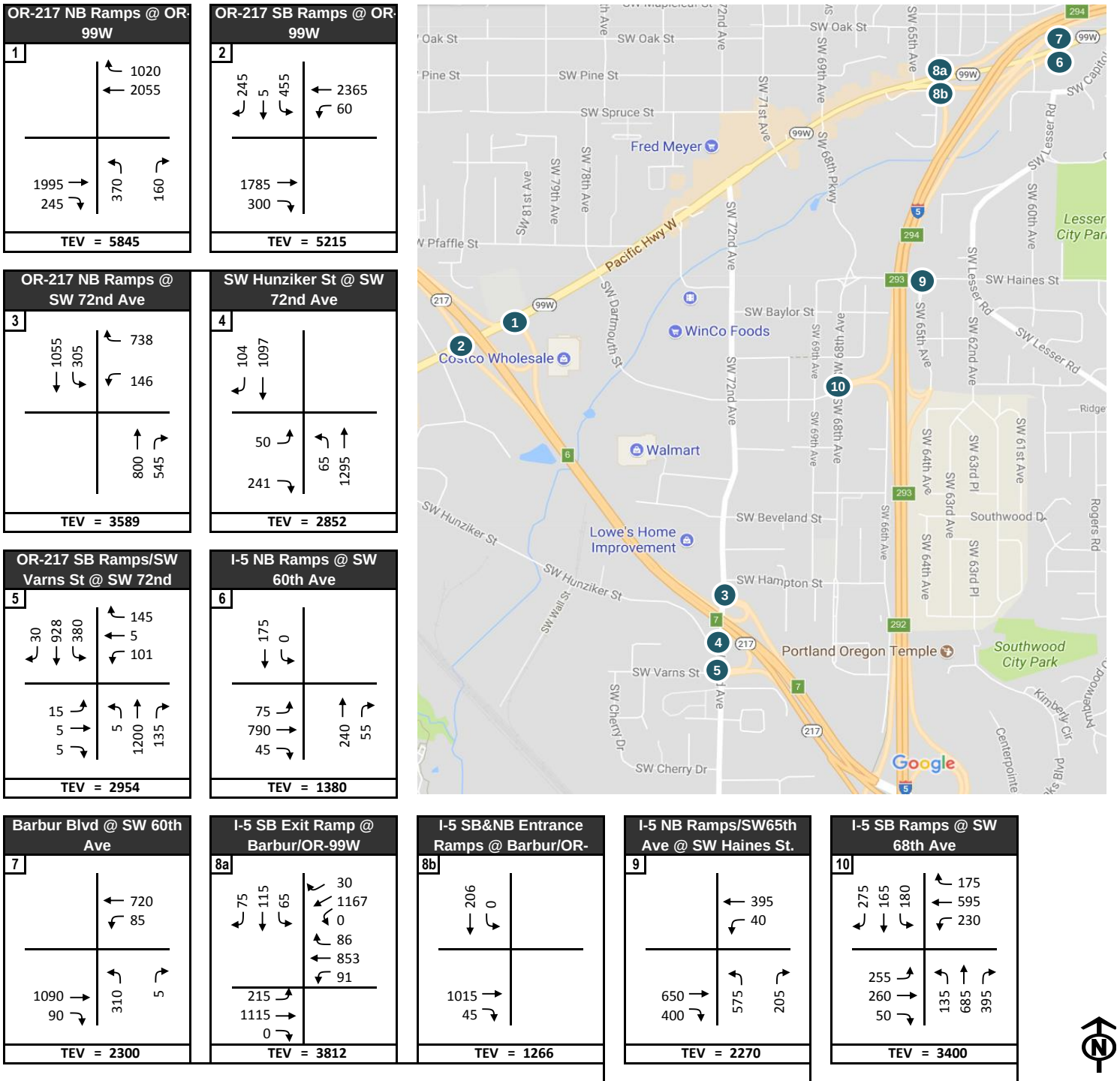
Turning Movement

PM Peak Hour Volume

TEV: Total Entering Volume

Intersection Number

Figure 5
Current Zoning
2040 PM Peak Hour Traffic Volumes

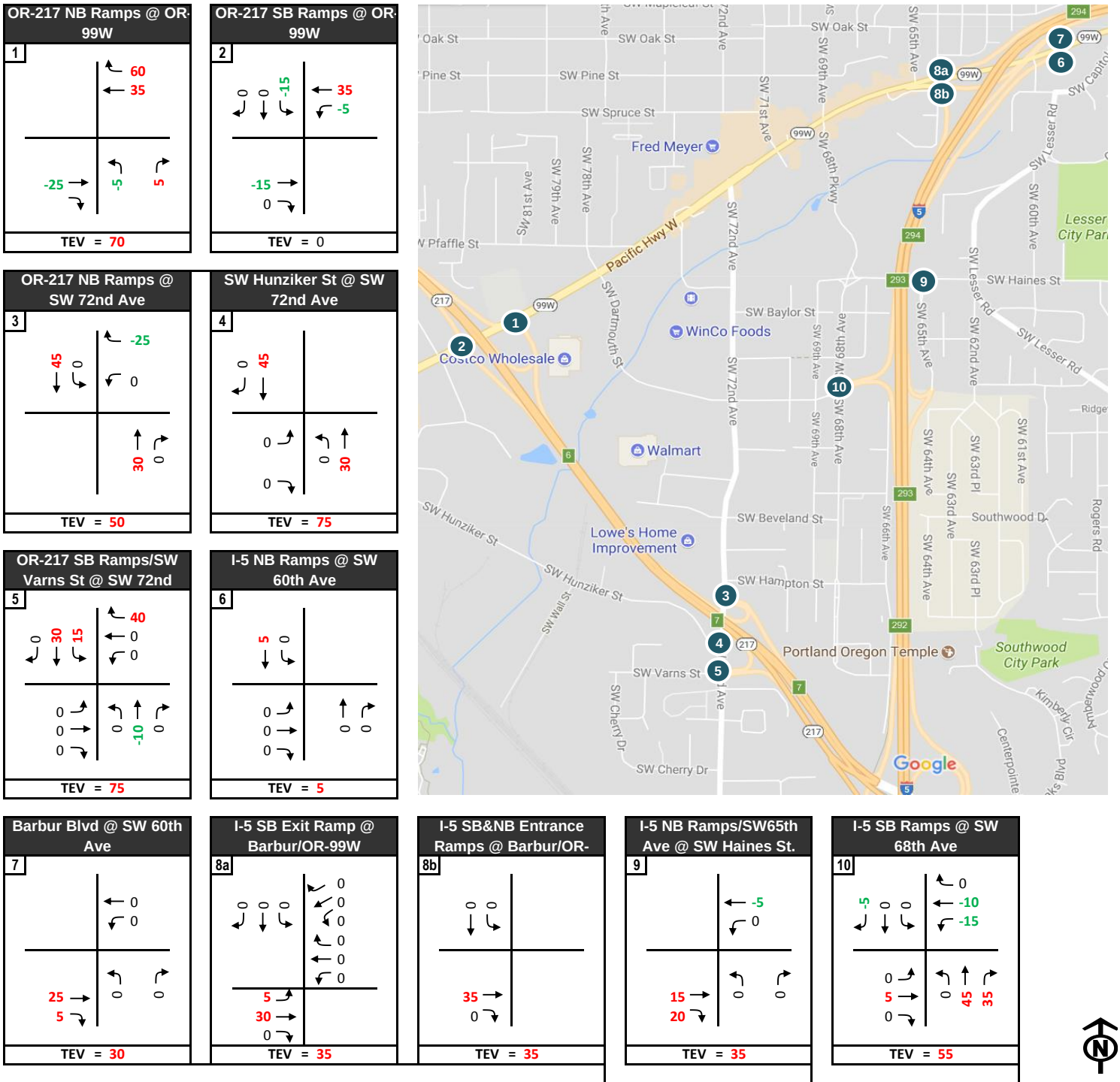


Tigard Triangle TPR Compliance

Legend

- Turning Movement
- ### PM Peak Hour Volume
- TEV: Total Entering Volume
- # Intersection Number

Figure 6
Proposed Zoning
2040 PM Peak Hour Traffic Volumes



Tigard Triangle TPR Compliance

Legend

Turning Movement

PM Peak Hour Volume

TEV: Total Entering Volume

(#) Intersection Number

Figure 7
Change in Volume due to Proposed Zoning
2040 PM Peak Hour

Mobility Targets

The eleven study area intersection are governed by the following agency mobility targets.

- ODOT Ramps have a peak hour v/c of 0.85 (10 of 11 intersections)
- ODOT/PBOT peak hour v/c of 0.99 (Barbur Blvd at SW 60th Ave)

Mitigation Triggers

The traffic operations associated with the Current and Proposed Zoning will be analyzed using the calculated future 2040 volumes. The Oregon Highway Plan (OHP) allows for a small increase in traffic at higher volume intersections to avoid triggering mitigation. However, if the increase in traffic between the Current Zoning and the Proposed Zoning is more than 1000 average daily trips, which it is in this case then it is not considered a small increase in traffic.

Mitigation is triggered if, under the Proposed Zoning, an intersection exceeds the adopted performance standard or experiences excessive interchange ramp queuing. The language of the Transportation Planning Rule (TPR) and OHP requires that the mitigation allow the intersection to operate at either the applicable standard, or the level of the Current Zoning, whichever is worse. A v/c ratio increase of 0.03 or less above the mobility target is considered no impact.

Example 1: The v/c standard of a given intersection is 0.85. The Current Zoning results in demands that cause the intersection to operate at a v/c of 1.07. The Proposed Zoning results in demands that cause the intersection to operate at a v/c of 1.12. The mitigation measure(s) would allow the intersection to operate at a v/c of 1.07 or lower.

Example 2: The v/c standard of a given intersection is 0.85. The Current Zoning results in demands that cause the intersection to operate at a v/c of 0.80. The Proposed Zoning results in demands that cause the intersection to operate at a v/c of 1.12. The mitigation measure(s) would allow the intersection to operate at a v/c of 0.88 (0.03 above the mobility target of 0.85) or lower.

Intersection Operations

Traffic operations are based on the Highway Capacity Manual (HCM) calculation of overall intersection v/c ratios using Synchro traffic analysis software. As shown in **Table 19**, the overall intersection v/c ratios are compared to the mobility target to determine if the intersections are TPR compliant. See Appendix C for detailed intersection traffic analysis.

Table 19. Intersection Mobility Summary

	Intersection	Mobility Target		Control	2040 Current Zoning			2040 Proposed Zoning			V/C Delta	TPR Compliance
					PM			PM				
					Delay	LOS	V/C	Delay	LOS	V/C		
1	OR-217 NB Ramps @ OR-99W	ODOT Ramp	0.85	Signal	18.8	B	0.82	18.7	B	0.84	0.02	**Yes**
2	OR-217 SB Ramps @ OR-99W	ODOT Ramp	0.85	Signal	33.0	C	0.95	32.9	C	0.96	0.01	**No Significant Effect***
3	OR-217 NB Ramps @ SW 72nd Ave	ODOT Ramp	0.85	Signal	**67.5**	**E**	**1.02**	**64.4**	**E**	**1.03**	0.01	**No**
4	SW Hunziker St @ SW 72nd Ave	ODOT Ramp	0.85	Signal	12.9	B	0.77	13.6	B	0.80	0.03	**Yes**
5	OR-217 SB Ramps/SW Varns St @ SW 72nd Ave	ODOT Ramp	0.85	Signal	23.7	C	0.82	23.9	C	0.83	0.01	**Yes**
6	I-5 NB Ramps @ SW 60th Ave	ODOT Ramp	0.85	Signal	122.8	F	0.60	122.4	F	0.60	0.00	**Yes**
7	Barbur Blvd @ SW 60th Ave	ODOT Ramp	0.85	Signal	31.0	C	0.66	31.5	C	0.67	0.01	**Yes**
8a	I-5 SB Exit Ramp @ Barbur/OR-99W	ODOT Ramp	0.85	Signal	**84.4**	**F**	**1.04**	**85.3**	**F**	**1.05**	0.01	**No**
8b	I-5 SB&NB Entrance Ramps @ Barbur/OR-99W	ODOT Ramp	0.85	Signal	7.9	A	0.49	8.0	A	0.50	0.01	**Yes**
9	I-5 NB Ramps/SW65th Ave @ SW Haines St.	ODOT Ramp	0.85	AWSC	**153.4 [NBL 248.2]**	**F [F]**	**EBL 1.54**	**155.8 [NBL 246.9]**	**F [F]**	**EBL 1.56**	0.02	**No**
10	I-5 SB Ramps @ SW 68th Ave	ODOT Ramp	0.85	Signal	**178.9**	**F**	**1.38**	**186.6**	**F**	**1.39**	0.01	**No**

Key: V/C represents intersection average for signals and worst stop-controlled movement for intersections
Delay and Level of Service (LOS) represent intersection average for signals and worst stop-controlled movement and intersection average for All Way Stop Controlled (AWSC) intersections

* Proposed zoning has no significant effect because total entering volume is unchanged with the zone change

As shown in **Table 19**, six of the eleven study area intersections meet mobility targets under the Current and Proposed Zoning indicating TPR compliance. Intersection 2 exceeds mobility targets but is TPR compliant because the Proposed Zoning does not add traffic volume to the intersection and therefore has no significant effect on the operations of the intersection. Four intersections (3, 8a, 9 and 10), are over the mobility target in both the Current and Proposed Zoning indicating the need for mitigation to reach mobility targets and compliance with TPR.

Evaluation of Queuing

Queuing evaluation was conducted using SimTraffic analysis software. The significant congestion and associated queuing under both the Current Zoning and Proposed Zoning limits the accuracy of SimTraffic queuing analysis. The determination of potential queuing impacts for the Proposed Zoning is based on the following.

- Provide Safe Stopping Site distance (SSD) on exit ramps with Proposed Zoning
- Maintain Current Zoning queue length on exit ramps, if Current Zoning is beyond SSD
    - Increase within standard deviation of simulation runs considered no impact

As shown in **Table 20**, the 95th percentile SimTraffic queue lengths at the eight exit ramps are compared to the SSD under the Current and Proposed Zoning to determine TPR compliance. See Appendix D for detailed queuing analysis.

Table 20. SimTraffic Exit Ramp Queuing Summary

	Intersection	Control	Movement	SSD	SSD Allowable Queue	SimTraffic Queuing (ft)		TPR Compliance
						2040 Current Zoning	2040 Proposed Zoning	Queue
1	OR-217 NB Ramps @ OR-99W	Signal	NB 217 to 99W	495	**1,365**	235	230	**Yes**
2	OR-217 SB Ramps @ OR-99W	Signal	SB 217 to 99W	495	**775**	270	275	**Yes**
3	OR-217 NB Ramps @ SW 72nd Ave	Signal	NB 217 to 72nd	495	**1,105**	**>1,600***	**>1,600***	**No**
5	OR-217 SB Ramps/SW Varns St @ SW 72nd Ave	Signal	SB 217 to 72nd	495	**295**	135	130	**Yes**
6	I-5 NB Ramps @ SW 60th Ave	Signal	NB I-5 to 99W	495	**2,165**	**>3,000****	**>3,000****	**No**
8a	I-5 SB Exit Ramp @ Barbur/OR-99W	Signal	SB I-5 to 99W	495	**1,065**	520	535	**Yes**
9	I-5 NB Ramps/SW65th Ave @ SW Haines St.	AWSC	NB I-5 to Haines St.	495	**1,930**	**>3,000***	**>3,000***	**No**
10	I-5 SB Ramps @ SW 68th Ave	Signal	SB I-5 to Haines St.	495	**1,160**	**>1,300***	**>1,300***	**No**

Key: * Volume exceeds capacity, 95th percentile queue may be longer
** Volume exceeds capacity at Intersection 8a causing excessive queuing on Intersection 6 exit ramp, 95th percentile queue may be longer

As shown in **Table 20** the queuing at four of the eight exit ramps provide for a SSD under the Current and Proposed Zoning indicating TPR compliance. The queue length at four exit ramps (Intersections 3, 6, 9 and 10), do not provide a SSD in both the Current and Proposed Zoning indicating the need for mitigation to meet TPR compliance. The queue failure at Intersections 3, 9 and 10 are due to overcapacity traffic operations at those intersections. The queue failure at Intersection 6 is due to overcapacity operations at Intersection 8a creating queuing that spills back and affects the operation of Intersection 6.

Potential Mitigation

Four intersections are over the mobility target in both the Current and Proposed Zoning and have an increase in volume through the intersection under the Proposed Zoning indicating the need for mitigation to reach mobility targets and compliance with TPR. This report does not identify specific intersection improvements but identifies potential mitigations that meet ODOT mobility and queuing targets. **Table 21,** outlines the potential mitigations and the resulting TPR compliant v/c ratios.

Table 21. Mitigated Intersection Mobility Summary

Intersection		Mobility Target		Potential Mitigation	Control	2040 Proposed Zoning Mitigated			TPR Compliance
						PM			
						Delay	LOS	V/C	V/C
3	OR-217 NB Ramps @ SW 72nd Ave	ODOT Ramp	0.85	**Second NBR**	Signal	28.6	C	0.79	**Yes**
8a	I-5 SB Exit Ramp @ Barbur/OR-99W	ODOT Ramp	0.85	**Remove NBL movement. Demand shifts South to 69th Ave.**	Signal	38.9	D	0.87	**Yes**
9	I-5 NB Ramps/SW 65th Ave @ SW Haines St.	ODOT Ramp	0.85	**Signalize & add NBR**	Signal	16.0	B	0.78	**Yes**
10	I-5 SB Ramps @ SW 68th Ave	ODOT Ramp	0.85	**Second WBT, dedicated WBL and permitted-protected left turn phasing on all approaches**	Signal	37.4	D	0.87	**Yes***

Key: Delay, LOS, and V/C represent intersection average for signals

* 0.03 V/C ratio increase or less above mobility target considered no impact

The queue length at four exit ramps in both the Current and Proposed Zoning do not provide a SSD indicating the need for mitigation to be TPR compliant. With the potential mitigations outlined in **Table 21,** the four failing exit ramps have reduced queue length that provide for a SSD and are TPR complainant, as shown in **Table 22**.

Table 22. SimTraffic Mitigated Exit Ramp Queuing Summary

Intersection		Control	Movement	SSD	SSD Allowable Queue	Mitigated SimTraffic Queuing (ft)		TPR Compliance
						2040 Current Zoning	2040 Proposed Zoning	Queue
3	OR-217 NB Ramps @ SW 72nd Ave	Signal	NB 217 to 72nd	495	**1,105**	255	275	**Yes**
6	I-5 NB Ramps @ SW 60th Ave	Signal	NB I-5 to 99W	495	**2,165**	635	780	**Yes**
9	I-5 NB Ramps/SW65th Ave @ SW Haines St.	AWSC	NB I-5 to Haines St.	495	**1,930**	300	335	**Yes**
10	I-5 SB Ramps @ SW 68th Ave	Signal	SB I-5 to Haines St.	495	**1,160**	255	245	**Yes**

Implementation

The Proposed Zoning change for the Tigard Triangle will support development of a more pedestrian and transit oriented mixed-use urban area with less dependent on automobile traffic. The Proposed Zoning does allow for increased development density which results in an increase in total trip generation of 217 PM Peak hour trips.

Under Proposed Zoning, four of the eleven study area intersections require some capacity improvements to mitigate impacts on traffic operations. This report does not identify specific intersections improvements but identifies potential mitigations that meet ODOT mobility and queuing targets. Suggested changes to the City of Tigard TSP and/or Metro RTP are described below along with implementing steps.

- **Int. 3, OR-217 NB Ramps at SW 72nd Ave**: Modify City TSP Project 4 and Metro RTP Project 10599 to show the potential addition of a second northbound right as part of the potential overall interchange improvement description.
- **Int. 8a, I-5 SB Exit Ramp at Barbur/OR-99W**: Modify City TSP Project 66Dand Metro RTP Project 10770 to show the potential removal of the northbound left turn or other capacity improvement to Intersection 8a as part of the overall 99W access management improvements. Left turn traffic demand will likely shift to the signal at 69th Avenue or continue North on 99W. This improvement increases capacity on southbound 99W and eliminates queue failure on the northbound I-5 Exit ramp to Intersection 6. Project is outside the City of Tigard and requires coordination and support from City of Portland and ODOT for RTP adoption.
- **Int. 9, I-5 NB Ramps/SW 65th Ave at SW Haines St.**: Add new City TSP Project. Signalization of this intersection is an identified mitigation for the TriMet Southwest Corridor project. The signal and addition of a northbound right turn meets mobility and queuing targets for the Proposed Zoning. Project is outside the City of Tigard and requires coordination and support from City of Portland and ODOT for RTP adoption. It is assumed the signal will be completed as part of the TriMet SW Corridor Project.
- **Int. 10, I-5 SB Ramps at SW 68th Ave**: Modify City TSP Project 38 and Metro RTP Project 10759 to show the potential addition of a second westbound through lane and dedicated westbound left-turn lane to the intersection with protected/permitted left-turn phasing on all approaches to take advantage of the additional planned lanes on Dartmouth Street to add capacity and improve signal operation efficiency.

The identified mitigations address the mobility and queuing failures under the Proposed Zoning. As a result, this analysis finds that the Proposed Zoning with the identified mitigations has limited impacts with no significant effect on the transportation network and meets the requirements of the TPR, as described in section 660-012-0060 of the Oregon Administrative Rule (OAR).

Appendices

Appendix A: **Trip Generation**

Appendix B: **Volume Development**

Appendix C: **Traffic Analysis**

Appendix D: **Queuing Analysis**

Appendix A: Trip Generation

Tigard Triangle Trip Generation Current Zoning

Land Use	ITE Code	Units	PM Peak Hour	Daily	PM - in	PM - out
Office	710 General Office	406,073 s.f.	605	4479	103	502
General Commercial	820 Shopping Center	383,022 s.f.	1421	16355	696	725
Dwelling Units	230 Condo/Townhouse	1,326 Units	690	7704	462	228
Retail Flex space	826 Specialty Retial	0 s.f.	0	0	0	0
Trips Generated			2716	28538	1261	1454

Using 30% mixed use reduction

Trips Generated	2716	28538
Mixed use reduction (30%)	*815*	*8561*
Pass-By Trips	*0*	*0*
Net New Trips	1901	19977

NOTES:

* Internal trips based on 2010 VISUM travel demand model for Tigard Triangle area

** ITE Trip generation handbook second edition, Tables 5.5, 5.6, 5.10, 5.11, 5.17, 5.20, 5.21, & 5.22, average Pass-By trip percentages of codes 816, 820, 850, 851, 880, 912, 931, & 932.

Pass-by Land Uses:	Pass-by Percentage
816 - Hardware/Paint Store	26%
820 - Shopping Center	34%
850 - Supermarket	36%
851 - Convenience Market	61%
880 - Pharmacy/Drugstore w/o Drive Thru	53%
912 - Drive-In Bank	47%
931 - Quality Restaurant	44%
932 - High-Turnover (Sit-Down) Restaurant	43%
AVERAGE	**43%**

Tigard Triangle Trip Generation Proposed Zoning

Land Use	ITE Code	Units	PM Peak Hour	Daily	PM - in	PM - out
Office	710 Genral Office	1,087,930 s.f.	1621	12000	276	1345
*Internal Trips (9%)**			*940*	*9637*		
Net New Trips			*0*	*0*		
General Commercial	820 Shopping Center	0 s.f.	0	0	0	0
Dwelling Units	232 High-Rise Condo/Townhouse	2,012 Units	765	8410	512	252
Dwelling Units	230 Condo/Townhouse	183 Units	95	1063	64	31
Retail Flex space	826 Specialty Retial	240,275 s.f.	652	10649	287	366
Trips Generated			3133	32122	1139	1995

Using 30% mixed use reduction

Trips Generated	3133	32122
Mixed use reduction (30%)	*940*	*9637*
Pass-By Trips	*0*	*0*
Net New Trips	2193	22486

NOTES:

* Internal trips based on 2035 VISUM travel demand model for Tigard Triangle area

** ITE Trip generation handbook second edition, Tables 5.5, 5.6, 5.10, 5.11, 5.17, 5.20, 5.21, & 5.22, average Pass-By trip percentages of codes 816, 820, 850, 851, 880, 912, 931, & 932.

Tigard Triangle Trip Generation Summary

Current Zoning **ITE Method**	**PM Peak Hour**		
	Total	**Entering**	**Exiting**
All Person-Trips Generated	3802	1765	2037
Internal Person Trips (5,5,4%)	*169*	*88*	*81*
External Transit Person Trips (4%)	*144*	*66*	*78*
External Non-Motorized Person Trips (3%)	*109*	*50*	*59*
External Vehicle Trips (1.4 person/veh)	***2410***	***1115***	***1295***
Pass-By Trips (34% of retail)	*434*	*216*	*218*
Net New Vehicle Trips	1976	899	1077

Current Zoning **30 Percent Redution Method**	**PM Peak Hour**		
	Total	**Entering**	**Exiting**
All Vehicle-Trips Generated	2716	1261	1455
Metro Mixed Use Reduction (30%)	*815*	*378*	*437*
Net New Vehicle Trips	1902	883	1019

Proposed Zoning **ITE Method**	**PM Peak Hour**		
	Total	**Entering**	**Exiting**
All Person-Trips Generated	4386	1594	2792
Internal Person Trips (9,12,7%)	*386*	*191*	*195*
External Transit Person Trips (11%)	*441*	*155*	*286*
External Non-Motorized Person Trips (8%)	*320*	*112*	*208*
External Vehicle Trips (1.4 person/veh)	***2315***	***811***	***1504***
Pass-By Trips (34% of retail)	*151*	*71*	*80*
Net New Vehicle Trips	2164	740	1424

Proposed Zoning **30 Percent Redution Method**	**PM Peak Hour**		
	Total	**Entering**	**Exiting**
All Vehicle-Trips Generated	3133	1139	1994
Metro Mixed Use Reduction (30%)	*940*	*342*	*598*
Net New Vehicle Trips	2193	797	1396

Existing

Retial Trips	Entering	Exiting
total veh trips	696	725
person trips	974.4	1015
Internal %	2%	5%
Internal persons	19.488	50.75
External persons	954.912	964.25
Transit 4%	38.19648	38.57
Non-motorized 3%	28.64736	28.9275
External Veh Person trips	888.0682	896.7525
External Veh trips	634.3344	640.5375
Pass-By 34%	215.6737	217.7828

Proposed

Retail Trips	Entering	Exiting
total veh trips	287	365
person trips	401.8	511
Internal %	10%	21%
Internal persons	40.18	107.31
External persons	361.62	403.69
Transit 11%	39.7782	44.4059
Non-motorized 8%	28.9296	32.2952
External Veh Person trips	292.9122	326.9889
External Veh trips	209.223	233.5635
Pass-By 34%	71.13582	79.41159

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Tigard Triangle	**Organization:**	David Evans & Associates
Project Location:	Tigard, OR	**Performed By:**	Scott Harmon/Dana Shuff
Scenario Description:	Existing	**Date:**	4/21/2017
Analysis Year:	2017	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	406073	0	605	103	502
Retail	820	383022	0	1,421	696	725
Restaurant	0	-	0	0	0	0
Cinema/Entertainment	0	-	0	0	0	0
Residential	230	-	1326	690	462	228
Hotel	0	-	0	0	0	0
All Other Land Uses[2]	0	-	0	0	0	0
				2,716	1,261	1,455

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.40	4%	3%	1.40	4%	3%
Retail	1.40	4%	3%	1.40	4%	3%
Restaurant	0.00	4%	3%	0.00	4%	3%
Cinema/Entertainment	0.00	4%	3%	0.00	4%	3%
Residential	1.40	4%	3%	1.40	4%	3%
Hotel	0.00	4%	3%	0.00	4%	3%
All Other Land Uses[2]	0.00	4%	3%	0.00	4%	3%

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		-	-		1689	
Retail					-	
Restaurant					-	
Cinema/Entertainment					-	
Residential		-	-			
Hotel					-	

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		8	0	0	10	0
Retail	20		0	0	26	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	13	10	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	3,802	1,765	2,037
Internal Capture Percentage	5%	5%	4%
External Vehicle-Trips[5]	2,410	1,115	1,295
External Transit-Trips[6]	144	66	78
External Non-Motorized Trips[6]	109	50	59

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	23%	3%
Retail	2%	5%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	6%	7%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Project Name:	Tigard Triangle
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends							
Land Use	Table 7-P (D): Entering Trips				Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*		Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.40	103	144		1.40	502	703
Retail	1.40	696	974		1.40	725	1015
Restaurant	1.00	0	0		1.00	0	0
Cinema/Entertainment	1.00	0	0		1.00	0	0
Residential	1.40	462	647		1.40	228	319
Hotel	1.00	0	0		1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		14	3	0	10	0
Retail	20		294	41	26	51
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	13	13	7	0		10
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		8	0	0	26	0
Retail	45		0	0	298	0
Restaurant	43	487		0	104	0
Cinema/Entertainment	9	39	0		26	0
Residential	82	10	0	0		0
Hotel	0	19	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)							
Destination Land Use	Person-Trip Estimates				External Trips by Mode*		
	Internal	External	Total		Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	33	111	144		74	4	3
Retail	18	956	974		635	38	29
Restaurant	0	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0	0
Residential	36	611	647		406	24	18
Hotel	0	0	0		0	0	0
All Other Land Uses[3]	0	0	0		0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)							
Origin Land Use	Person-Trip Estimates				External Trips by Mode*		
	Internal	External	Total		Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	18	685	703		455	27	21
Retail	46	969	1015		644	39	29
Restaurant	0	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0	0
Residential	23	296	319		196	12	9
Hotel	0	0	0		0	0	0
All Other Land Uses[3]	0	0	0		0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Table 7.1a Adjusted Internal Trip Capture Rates for Trip Origins within a Multi-Use Development			
Land Use Pairs		Weekday	
		AM Peak Hour	PM Peak Hour
From OFFICE	To Office	0.0%	0.0%
	To Retail	28.0%	2.0%
	To Restaurant	63.0%	0.4%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	1.0%	1.4%
	To Hotel	0.0%	0.0%
From RETAIL	To Office	29.0%	2.0%
	To Retail	0.0%	0.0%
	To Restaurant	13.0%	29.0%
	To Cinema/Entertainment	0.0%	4.0%
	To Residential	14.0%	2.6%
	To Hotel	0.0%	5.0%
From RESTAURANT	To Office	31.0%	3.0%
	To Retail	14.0%	41.0%
	To Restaurant	0.0%	0.0%
	To Cinema/Entertainment	0.0%	8.0%
	To Residential	4.0%	1.8%
	To Hotel	3.0%	7.0%
From CINEMA/ENTERTAINMENT	To Office	0.0%	2.0%
	To Retail	0.0%	21.0%
	To Restaurant	0.0%	31.0%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	0.0%	0.8%
	To Hotel	0.0%	2.0%
From RESIDENTIAL	To Office	2.0%	4.0%
	To Retail	1.0%	4.2%
	To Restaurant	20.0%	2.1%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	0.0%	0.0%
	To Hotel	0.0%	3.0%
From HOTEL	To Office	75.0%	0.0%
	To Retail	14.0%	16.0%
	To Restaurant	9.0%	68.0%
	To Cinema/Entertainment	0.0%	0.0%
	To Residential	0.0%	0.2%
	To Hotel	0.0%	0.0%

Table 7.2a Adjusted Internal Trip Capture Rates for Trip Destinations within a Multi-Use Development			
Land Use Pairs		Weekday	
		AM Peak Hour	PM Peak Hour
To OFFICE	From Office	0.0%	0.0%
	From Retail	4.0%	31.0%
	From Restaurant	14.0%	30.0%
	From Cinema/Entertainment	0.0%	6.0%
	From Residential	3.0%	57.0%
	From Hotel	3.0%	0.0%
To RETAIL	From Office	32.0%	0.8%
	From Retail	0.0%	0.0%
	From Restaurant	8.0%	50.0%
	From Cinema/Entertainment	0.0%	4.0%
	From Residential	17.0%	1.0%
	From Hotel	4.0%	2.0%
To RESTAURANT	From Office	23.0%	0.2%
	From Retail	50.0%	29.0%
	From Restaurant	0.0%	0.0%
	From Cinema/Entertainment	0.0%	3.0%
	From Residential	20.0%	1.4%
	From Hotel	6.0%	5.0%
To CINEMA/ENTERTAINMENT	From Office	0.0%	1.0%
	From Retail	0.0%	26.0%
	From Restaurant	0.0%	32.0%
	From Cinema/Entertainment	0.0%	0.0%
	From Residential	0.0%	0.0%
	From Hotel	0.0%	0.0%
To RESIDENTIAL	From Office	0.0%	4.0%
	From Retail	2.0%	46.0%
	From Restaurant	5.0%	16.0%
	From Cinema/Entertainment	0.0%	4.0%
	From Residential	0.0%	0.0%
	From Hotel	0.0%	0.0%
To HOTEL	From Office	0.0%	0.0%
	From Retail	0.0%	17.0%
	From Restaurant	4.0%	71.0%
	From Cinema/Entertainment	0.0%	1.0%
	From Residential	0.0%	12.0%
	From Hotel	0.0%	0.0%

Appendix B: Volume Development

Project: Tigard Triangle TPR Analysis
Job #: TIGX0000-0001
Subject: ***Current Zoning PM Turning Movement Volume Development***
Created: 9/13/2017
Rev. Date: 11/14/2017

% of TAZ 0.5 | % of TAZ 0.5 Less than 2010 = | Proposed Zoning Trip Generation = 899 Destinations (In) 1,077 Origins (Out) Total 1,976

	Synchro ID	Intersection	Direction	Movement	Existing Traffic Count	Seasonal Adjustment Factor	Existing Unbalanced Count Seasonally Adjusted	Volume Adjustements for Balancing	Existing Balanced Count Seasonally Adjusted	2010 Model Volume	2010 Tigard Triangle Flow Bundle Volume	2010 Zone Change Volume	2010 Model Volume w/o Tigard Triangle	2040 Model Volume	2040 Tigard Triangle Flow Bundle Volume	2040 Zone Change Volume	2040 Model Volume w/o Tigard Triangle	2040 Background Volume	Volume Adjustements for Balancing	2040 Balanced Background Volumes	2040 Tigard Triangle Destinations (In) Distribution	2040 Unbalanced Tigard Triangle Destinations Assignment	2040 Tigard Triangle Origins (Out) Distribution	2040 Unbalanced Tigard Triangle Origins (Out) Assignment	2040 Unbalanced Tigard Triangle Trips (O+D)	Volume Adjustements for Balancing	2040 Balanced Tigard Triangle Trips (O+D)	2040 w/Tigard Triangle Trips (Total Trips)
1	10	OR-217 NB Ramps @ OR-99W		EBL	0	1.0000	0		0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	10		EB	EBT	1,725	1.0000	1,725		1,725	1,767	253	127	1641	1871	393	197	1675	1,757		1,755	23.23%	209	0.00%	0	209	55	265	2,020
	10	Count Date: Costco Gas TIA (Figure 9)		EBR	345	1.0000	345		345	147	0	0	147	79	0	0	79	246		245	0.00%	0	0.00%	0	0		0	245
	10	2014		WBL	0	1.0000	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	10	Already seasonally adjusted	WB	WBT	1,755	1.0000	1,755		1,755	1,500	176	88	1412	1721	326	163	1558	1,891	5	1,895	0.00%	0	11.56%	125	125		125	2,020
	10			WBR	685	1.0000	685		685	544	250	125	419	740	502	251	489	765		765	0.00%	0	17.80%	192	192		195	960
	10			NBL	245	1.0000	245		245	260	9	5	256	380	0	0	380	367		365	0.00%	0	0.00%	0	0	10	10	375
	10	PM Peak Hour Used: 4:20-5:20 PM	NB	NBT	0	1.0000	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	10			NBR	125	1.0000	125		125	40	5	3	38	71	0	0	71	155		155	0.00%	0	0.00%	0	0		0	155
	10			SBL	0	1.0000	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	10	PHF:	SB	SBT	0	1.0000	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	10	0.95		SBR	0	1.0000	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	10		**TEV**	**TEV**	**4,880**		**4,880**		**4,880**	**4,258**	**693**	**347**	**3,912**	**4862**	**1221**	**611**	**4252**	**5,181**		**5,180**		**209**		**316**	**525**		**595**	**5,775**
2	20	OR-217 SB Ramps @ OR-99W		EBL	0	1.0000	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	20		EB	EBT	1,535	1.0000	1,535		1,535	1,281	107	54	1228	1505	199	100	1406	1,674	15	1,690	11.76%	106	0.00%	0	106		110	1,800
	20	Count Date: Costco Gas TIA (Figure 9)		EBR	240	1.0000	240		240	303	2	1	302	352	1	1	352	295		295	0.06%	1	0.00%	0	1		5	300
	20	2014		WBL	60	1.0000	60		60	6	0	0	6	16	10	5	11	53		55	0.00%	0	0.35%	4	4	5	10	65
	20	Already seasonally adjusted	WB	WBT	1,940	1.0000	1,940		1,940	1,753	184	92	1661	2085	316	158	1927	2,215		2,215	0.00%	0	11.21%	121	121	-10	115	2,330
	20			WBR	0	1.0000	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	20			NBL	0	1.0000	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	20	PM Peak Hour Used: 4:15-5:15 PM	NB	NBT	0	1.0000	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	20			NBR	0	1.0000	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	20			SBL	535	1.0000	535		535	632	146	73	559	444	194	97	347	364		385	11.47%	103	0.00%	0	103		105	470
	20	PHF:	SB	SBT	5	1.0000	5		5	0	0	0	0	0	0	0	0	4		5	0.00%	0	0.00%	0	0		0	5
	20	0.95		SBR	245	1.0000	245		245	166	0	0	166	186	0	0	186	242		240	0.00%	0	0.00%	0	0	5	5	245
	20		**TEV**	**TEV**	**4,560**		**4,560**		**4,560**	**4,141**	**439**	**220**	**3,922**	**4588**	**720**	**360**	**4228**	**4,847**		**4,865**		**209**		**125**	**334**		**350**	**5,215**
3	30	OR-217 NB Ramps @ SW 72nd Ave		EBL	0	1.1766	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	30		EB	EBT	0	1.1766	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	30	Count Date: 1/14/15		EBR	0	1.1766	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	30	2015		WBL	306	1.1766	360		360	219	0	0	219	126	0	0	126	381	-254	126	0.00%	0	0.00%	0	0	20	20	146
	30		WB	WBT	0	1.1766	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	30			WBR	238	1.1766	280		280	366	218	109	257	747	390	195	552	427	128	553	23.05%	207	0.00%	0	207		210	763
	30			NBL	0	1.1766	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	30	PM Peak Hour Used: 4:35-5:35 PM	NB	NBT	387	1.1766	455		455	301	165	83	219	490	256	128	362	673		675	15.13%	136	0.00%	0	136	-45	95	770
	30			NBR	407	1.1766	480		480	392	0	0	392	586	0	0	586	543		545	0.00%	0	0.00%	0	0		0	545
	30			SBL	207	1.1766	245		245	141	141	71	71	18	18	9	9	293		295	0.00%	0	0.64%	7	7		10	305
	30	PHF:	SB	SBT	657	1.1766	775		775	672	290	145	527	941	433	217	725	840		840	0.00%	0	15.36%	165	165		170	1,010
	30	0.88		SBR	0	1.1766	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	30		**TEV**	**TEV**	**2,202**		**2,595**		**2,595**	**2,091**	**814**	**407**	**1,684**	**2908**	**1097**	**549**	**2360**	**3,157**		**3,034**		**343**		**172**	**516**		**505**	**3,539**
4	40	SW Hunziker St @ SW 72nd Ave		EBL	125	1.1766	145		145	94	41	21	74	1	0	0	1	93	-94	1	0.00%	0	0.00%	0	0	49	49	50
	40		EB	EBT	0	1.1766	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	40	Count Date: 1/14/15		EBR	210	1.1766	245		245	343	0	0	343	241	0	0	241	152	91	241	0.00%	0	0.00%	0	0		0	241
	40	2015		WBL	0	1.1766	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	40		WB	WBT	0	1.1766	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	40			WBR	0	1.1766	0		0	0	0	0	0	242	0	0	242	0		0	0.00%	0	0.00%	0	0		0	0
	40			NBL	113	1.1766	135		135	165	0	0	165	62	0	0	62	65		65	0.00%	0	0.00%	0	0		0	65
	40	PM Peak Hour Used: 4:35-5:35 PM	NB	NBT	661	1.1766	780	10	790	599	124	62	537	1076	256	128	948	1,123		1,125	15.13%	136	0.00%	0	136		140	1,265
	40			NBR	0	1.1766	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	40			SBL	0	1.1766	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	40	PHF:	SB	SBT	511	1.1766	600	10	610	489	235	118	372	963	433	217	747	934		935	0.00%	0	15.36%	165	165	-53	117	1,052
	40	0.90		SBR	448	1.1766	525		525	403	55	28	376	104	0	0	104	283	-181	104	0.00%	0	0.00%	0	0		0	104
	40		**TEV**	**TEV**	**2,068**		**2,430**		**2,450**	**2,093**	**455**	**228**	**1,866**	**2689**	**689**	**345**	**2345**	**2,650**		**2,471**		**136**		**165**	**301**		**306**	**2,777**
5	50	OR-217 SB Ramps/SW Varns St @ SW 72nd Av		EBL	11	1.1766	15		15	1	0	0	1	1	0	0	1	16		15	0.00%	0	0.00%	0	0		0	15
	50		EB	EBT	2	1.1766	0	5	5	1	0	0	1	1	0	0	1	4		5	0.00%	0	0.00%	0	0		0	5
	50	Count Date: 1/14/15		EBR	5	1.1766	5		5	1	0	0	1	1	0	0	1	5		5	0.00%	0	0.00%	0	0		0	5
	50	2015		WBL	101	1.1766	120		120	315	0	0	315	255	0	0	255	93	6	101	0.00%	0	0.00%	0	0		0	101
	50		WB	WBT	4	1.1766	5		5	5	0	0	5	10	0	0	10	4		5	0.00%	0	0.00%	0	0		0	5
	50			WBR	62	1.1766	75		75	40	40	20	20	54	54	27	27	63		65	3.19%	29	0.00%	0	29	10	40	105
	50			NBL	0	1.1766	0		0	5	0	0	5	5	0	0	5	0	5	5	0.00%	0	0.00%	0	0		0	5
	50	PM Peak Hour Used: 4:35-5:35 PM	NB	NBT	697	1.1766	820	15	835	724	84	42	682	1084	202	101	983	1,102		1,100	11.94%	107	0.00%	0	107		110	1,210
	50			NBR	117	1.1766	140		140	185	0	0	185	195	0	0	195	134		135	0.00%	0	0.00%	0	0		0	135
	50			SBL	240	1.1766	280		280	272	77	39	234	320	161	81	240	301		300	0.00%	0	5.71%	61	61		65	365
	50	PHF:	SB	SBT	458	1.1766	540	15	555	560	157	79	482	884	273	137	748	754		755	0.00%	0	9.68%	104	104	38	143	898
	50	0.90		SBR	18	1.1766	20		20	5	0	0	5	10	0	0	10	29		30	0.00%	0	0.00%	0	0		0	30
	50		**TEV**	**TEV**	**1,715**		**2,020**		**2,055**	**2,114**	**358**	**179**	**1,935**	**2820**	**690**	**345**	**2475**	**2,505**		**2,521**		**136**		**166**	**302**		**358**	**2,879**
6	60	I-5 NB Ramps @ SW 60th Ave		EBL	112	1	110		110	120	0	0	120	89	0	0	89	76		75	0.00%	0	0.00%	0	0		0	75
	60		EB	EBT	472	1	470		470	459	0	0	459	844	15	8	837	781		780	0.00%	0	0.53%	6	6		10	790
	60	Count Date: 4/7/15		EBR	27	1	25		25	59	0	0	59	58	0	0	58	44		45	0.00%	0	0.00%	0	0		0	45
	60	2015		WBL	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	60		WB	WBT	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	60			WBR	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	60			NBL	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	60	PM Peak Hour Used: 4:55-5:55 PM	NB	NBT	153	1	155		155	327	0	0	327	416	4	2	414	228	5	235	0.24%	2	0.00%	0	2		5	240
	60			NBR	17	1	15		15	36	0	0	36	121	0	0	121	53		55	0.00%	0	0.00%	0	0		0	55
	60			SBL	1	1	0		0	43	6	3	40	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	60	PHF:	SB	SBT	142	1	140		140	603	11	6	598	680	32	16	664	156		155	0.53%	5	0.78%	8	13		15	170
	60	0.89		SBR	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	60		**TEV**	**TEV**	**924**		**915**		**915**	**1,647**	**17**	**9**	**1,639**	**2208**	**51**	**26**	**2183**	**1,338**		**1,345**		**7**		**14**	**21**		**30**	**1,375**
7	70	Barbur Blvd @ SW 60th Ave		EBL	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	70		EB	EBT	803	1	805		805	698	110	55	643	971	186	93	878	993		995	0.00%	0	6.60%	71	71	-5	70	1,065
	70	Count Date: 4/7/15		EBR	115	1	115		115	532	16	8	524	409	22	11	398	76		75	0.00%	0	0.78%	8	8		10	85
	70	2015		WBL	29	1	30		30	114	0	0	114	271	9	5	267	78		80	0.53%	5	0.00%	0	5		5	85
	70		WB	WBT	647	1	645		645	890	24	12	878	929	32	16	913	706		705	1.89%	17	0.00%	0	17	-5	15	720
	70			WBR	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	70			NBL	264	1	265		265	333	0	0	333	416	4	2	414	292		290	0.24%	2	0.00%	0	2		20	310
	70	PM Peak Hour Used: 4:55-5:55 PM	NB	NBT	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	70			NBR	1	1	0		0	114	0	0	114	89	0	0	89	0	5	5	0.00%	0	0.00%	0	0		0	5
	70			SBL	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	70	PHF:	SB	SBT	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	70	0.86		SBR	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	70		**TEV**	**TEV**	**1,859**		**1,860**		**1,860**	**2,681**	**150**	**75**	**2,606**	**3085**	**253**	**127**	**2959**	**2,145**		**2,150**		**24**		**79**	**103**		**120**	**2,270**

Project: Tigard Triangle TPR Analysis
Job #: TIGX0000-0001
Subject: ***Current Zoning PM Turning Movement Volume Development***
Created: 9/13/2017
Rev. Date: 11/14/2017

% of TAZ 0.5 | % of TAZ 0.5 | Less than 2010 = | Proposed Zoning Trip Generation = 899 Destinations (In) 1,077 Origins (Out) Total 1,976

Synchro ID		Intersection	Direction	Movement	Existing Traffic Count	Seasonal Adjustment Factor	Existing Unbalanced Count Seasonally Adjusted	Volume Adjustements for Balancing	Existing Balanced Count Seasonally Adjusted	2010 Model Volume	2010 Tigard Triangle Flow Bundle Volume	2010 Zone Change Volume	2010 Model Volume w/o Tigard Triangle	2040 Model Volume	2040 Tigard Triangle Flow Bundle Volume	2040 Zone Change Volume	2040 Model Volume w/o Tigard Triangle	2040 Background Volume	Volume Adjustements for Balancing	2040 Balanced Background Volumes	2040 Tigard Triangle Destinations (In) Distribution	2040 Unbalanced Tigard Triangle Destinations Assignment	2040 Tigard Triangle Origins (Out) Distribution	2040 Unbalanced Tigard Triangle Origins (Out) Assignment	2040 Unbalanced Tigard Triangle Trips (O+D)	Volume Adjustements for Balancing	2040 Balanced Tigard Triangle Trips (O+D)	2040 w/Tigard Triangle Trips (Total Trips)
8	80	I-5 SB Ramps @ Barbur/OR-99W	EB	EBL	93	1	95		95	126	23	12	115	234	56	28	206	187		185	0.00%	0	1.99%	21	21		25	210
	80			EBT	862	1	860		860	1,069	126	63	1006	1315	208	104	1211	1,065	-60	1,005	0.00%	0	7.38%	79	79		80	1,085
	85			EBR	676	1	675		675	1,072	156	78	994	1333	297	149	1185	866		865	0.00%	0	10.53%	113	113		115	980
	85	Count Date: 1/14/15		EBR2	0	1	0		0	3	0	0	3	44	1	1	44	41		40	0.06%	1	0.00%	0	1		5	45
	80	2015	WB	WBU	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	80			WBL	88	1	90		90	354	19	10	345	312	13	7	306	51	31	81	0.77%	7	0.00%	0	7		10	91
	80			WBT	731	1	730		730	822	5	3	820	1005	23	12	994	904	-67	838	1.36%	12	0.00%	0	12		15	853
	80			WBR	86	1	85		85	48	0	0	48	28	0	0	28	65	21	86	0.00%	0	0.00%	0	0		0	86
	80		WB2	WB2L	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	80	PM Peak Hour Used: 4:25-5:20 PM		WB2T	1,163	1	1,165		1,165	661	2	1	660	591	3	2	590	1,095	67	1,162	0.18%	2	0.00%	0	2		5	1,167
	80			WB2R	31	1	30		30	0	0	0	0	0	0	0	0	30		30	0.00%	0	0.00%	0	0		0	30
	80		NB	NBL	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	80			NBT	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	80			NBR	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	80		SB	SBL	34	1	35		35	33	0	0	33	61	0	0	61	63		65	0.00%	0	0.00%	0	0		0	65
	80			SBT	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	80	PHF:		SBT2	43	1	45		45	54	4	2	52	118	6	3	115	108		110	0.35%	3	0.00%	0	3		5	115
	80	0.89		SBR	48	1	50		50	17	1	1	17	38	5	3	36	69		70	0.30%	3	0.00%	0	3		5	75
	80		**TEV**	**TEV**	**3,855**		**3,860**		**3,860**	**4,259**	**336**	**168**	**4,091**	**5079**	**612**	**306**	**4773**	**4,542**		**4,537**		**27**		**214**	**241**		**265**	**4,802**
9	90	I-5 NB Ramps/SW65th Ave @ SW Haines St.	EB	EBL	0	1.28	0		0	5	0	0	5	5	0	0	5	0		0	0.00%	0	0.00%	0	0		0	0
	90			EBT	371	1.28	475		475	231	57	29	203	295	111	56	240	589		590	0.00%	0	3.94%	42	42		45	635
	90	Count Date: 3/15/17		EBR	286	1.28	365		365	128	128	64	64	163	154	77	86	322		320	0.00%	0	5.46%	59	59		60	380
	90	2017	WB	WBL	51	1.28	65		65	149	0	0	149	75	0	0	75	41		40	0.00%	0	0.00%	0	0		0	40
	90			WBT	270	1.28	345		345	512	27	14	499	616	49	25	592	368		370	2.90%	26	0.00%	0	26		30	400
	90			WBR	0	1.28	0		0	5	0	0	5	5	0	0	5	0		0	0.00%	0	0.00%	0	0		0	0
	90		NB	NBL	379	1.28	485		485	6	0	0	6	13	0	0	13	576		575	0.00%	0	0.00%	0	0		0	575
	90	PM Peak Hour Used: 4:45-5:45 PM		NBT	0	1.28	0		0	5	0	0	5	5	0	0	5	0		0	0.00%	0	0.00%	0	0		0	0
	90			NBR	159	1.28	205		205	255	0	0	255	324	0	0	324	204		205	0.00%	0	0.00%	0	0		0	205
	90		SB	SBL	1	1.28	0		0	5	0	0	5	5	0	0	5	0		0	0.00%	0	0.00%	0	0		0	0
	90	PHF:		SBT	1	1.28	0		0	5	0	0	5	5	0	0	5	0		0	0.00%	0	0.00%	0	0		0	0
	90	0.93		SBR	1	1.28	0		0	5	0	0	5	5	0	0	5	0		0	0.00%	0	0.00%	0	0		0	0
	90		**TEV**	**TEV**	**1,519**		**1,940**		**1,940**	**1,311**	**212**	**106**	**1,205**	**1516**	**314**	**157**	**1359**	**2,100**		**2,100**		**26**		**101**	**127**		**135**	**2,235**
10	100	I-5 SB Ramps @ SW 68th Ave	EB	EBL	158	1.28	200		200	41	22	11	30	56	29	15	42	242		240	0.00%	0	1.03%	11	11		15	255
	100			EBT	185	1.28	235		235	192	86	43	149	192	79	40	153	219		220	0.00%	0	2.80%	30	30		35	255
	100	Count Date: 3/15/17		EBR	17	1.28	20		20	0	0	0	0	16	16	8	8	39		40	0.95%	9	0.00%	0	9		10	50
	100	2017	WB	WBL	35	1.28	45		45	140	140	70	70	307	282	141	166	94		95	16.67%	150	0.00%	0	150		150	245
	100			WBT	341	1.28	435		435	472	95	48	425	566	105	53	514	545		545	6.21%	56	0.00%	0	56		60	605
	100			WBR	104	1.28	135		135	0	0	0	0	4	0	0	4	176		175	0.00%	0	0.00%	0	0		0	175
	100		NB	NBL	59	1.28	75		75	0	0	0	0	27	27	14	14	122		120	0.00%	0	0.96%	10	10		15	135
	100	PM Peak Hour Used: 4:45-5:45 PM		NBT	219	1.28	280		280	217	216	108	109	423	423	212	212	474		475	0.00%	0	15.00%	162	162		165	640
	100			NBR	147	1.28	190		190	175	175	88	88	287	287	144	144	248		250	0.00%	0	10.18%	110	110		110	360
	100		SB	SBL	154	1.28	195		195	106	0	0	106	68	0	0	68	179		180	0.00%	0	0.00%	0	0		0	180
	100	PHF:		SBT	57	1.28	75		75	19	18	9	10	38	36	18	20	143		145	2.13%	19	0.00%	0	19		20	165
	100	0.98		SBR	184	1.28	235		235	114	10	5	109	194	11	6	189	268		270	0.65%	6	0.00%	0	6		10	280
	100		**TEV**	**TEV**	**1,660**		**2,120**		**2,120**	**1,476**	**762**	**381**	**1,095**	**2178**	**1295**	**648**	**1531**	**2,748**		**2,755**		**239**		**323**	**562**		**590**	**3,345**

Project: Tigard Triangle TPR Analysis
Job #: TIGX0000-0001
Subject: ***Proposed Zoning PM Turning Movement Volume Development***
Created: 9/13/2017
Rev. Date: 11/14/2017

% of TAZ 0.5 | % of TAZ 0.5 Less than 2010 = | Proposed Zoning Trip Generation = 797 Destinations (In) 1,396 Origins (Out) Total 2,193

Synchro ID	Intersection	Direction	Movement	Existing Traffic Count	Seasonal Adjustment Factor	Existing Unbalanced Count Seasonally Adjusted	Volume Adjustements for Balancing	Existing Balanced Count Seasonally Adjusted	2010 Model Volume	2010 Tigard Triangle Flow Bundle Volume	2010 Zone Change Volume	2010 Model Volume w/o Tigard Triangle	2040 Model Volume	2040 Tigard Triangle Flow Bundle Volume	2040 Zone Change Volume	2040 Model Volume w/o Tigard Triangle	2040 Background Volume	Volume Adjustements for Balancing	2040 Balanced Background Volumes	2040 Tigard Triangle Destinations (In) Distribution	2040 Unbalanced Tigard Triangle Destinations Assignment	2040 Tigard Triangle Origins (Out) Distribution	2040 Unbalanced Tigard Triangle Origins (Out) Assignment	2040 Unbalanced Tigard Triangle Trips (O+D)	Volume Adjustements for Balancing	2040 Balanced Tigard Triangle Trips (O+D)	2040 w/Tigard Triangle Trips (Total Trips)
1	OR-217 NB Ramps @ OR-99W		EBL	0	1.0000	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
10		EB	EBT	1,725	1.0000	1,725		1,725	1,767	253	127	1641	1871	393	197	1675	1,757		1,755	23.23%	185	0.00%	0	185	50	240	1,995
10	Count Date: Costco Gas TIA (Figure 9)		EBR	345	1.0000	345		345	147	0	0	147	79	0	0	79	246		245	0.00%	0	0.00%	0	0		0	245
10	2014		WBL	0	1.0000	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
10	Already seasonally adjusted	WB	WBT	1,755	1.0000	1,755		1,755	1,500	176	88	1412	1721	326	163	1558	1,891	5	1,895	0.00%	0	11.56%	161	161	-5	160	2,055
10			WBR	685	1.0000	685		685	544	250	125	419	740	502	251	489	765		765	0.00%	0	17.80%	249	249	5	255	1,020
10			NBL	245	1.0000	245		245	260	9	5	256	380	0	0	380	367		365	0.00%	0	0.00%	0	0	5	5	370
10	PM Peak Hour Used: 4:20-5:20 PM	NB	NBT	0	1.0000	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
10			NBR	125	1.0000	125		125	40	5	3	38	71	0	0	71	155		155	0.00%	0	0.00%	0	0	5	5	160
10			SBL	0	1.0000	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
10	PHF:	SB	SBT	0	1.0000	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
10	0.95		SBR	0	1.0000	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
10		**TEV**	**TEV**	**4,880**		**4,880**		**4,880**	**4,258**	**693**	**347**	**3,912**	**4862**	**1221**	**611**	**4252**	**5,181**		**5,180**		**185**		**410**	**595**		**665**	**5,845**
2	OR-217 SB Ramps @ OR-99W		EBL	0	1.0000	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
20		EB	EBT	1,535	1.0000	1,535		1,535	1,281	107	54	1228	1505	199	100	1406	1,674	15	1,690	11.76%	94	0.00%	0	94		95	1,785
20	Count Date: Costco Gas TIA (Figure 9)		EBR	240	1.0000	240		240	303	2	1	302	352	1	1	352	295		295	0.06%	0	0.00%	0	0		5	300
20	2014		WBL	60	1.0000	60		60	6	0	0	6	16	10	5	11	53		55	0.00%	0	0.35%	5	5		5	60
20	Already seasonally adjusted	WB	WBT	1,940	1.0000	1,940		1,940	1,753	184	92	1661	2085	316	158	1927	2,215		2,215	0.00%	0	11.21%	156	156	-10	150	2,365
20			WBR	0	1.0000	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
20			NBL	0	1.0000	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
20	PM Peak Hour Used: 4:15-5:15 PM	NB	NBT	0	1.0000	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
20			NBR	0	1.0000	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
20			SBL	535	1.0000	535		535	632	146	73	559	444	194	97	347	364		385	11.47%	91	0.00%	0	91	-5	90	455
20	PHF:	SB	SBT	5	1.0000	5		5	0	0	0	0	0	0	0	0	4		5	0.00%	0	0.00%	0	0		0	5
20	0.95		SBR	245	1.0000	245		245	166	0	0	166	186	0	0	186	242		240	0.00%	0	0.00%	0	0	5	5	245
20		**TEV**	**TEV**	**4,560**		**4,560**		**4,560**	**4,141**	**439**	**220**	**3,922**	**4588**	**720**	**360**	**4228**	**4,847**		**4,865**		**186**		**161**	**347**		**350**	**5,215**
3	OR-217 NB Ramps @ SW 72nd Ave		EBL	0	1.1766	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
30		EB	EBT	0	1.1766	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
30	Count Date: 1/14/15		EBR	0	1.1766	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
30	2015		WBL	306	1.1766	360		360	219	0	0	219	126	0	0	126	381	-254	126	0.00%	0	0.00%	0	0	20	20	146
30		WB	WBT	0	1.1766	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
30			WBR	238	1.1766	280		280	366	218	109	257	747	390	195	552	427	128	553	23.05%	184	0.00%	0	184		185	738
30			NBL	0	1.1766	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
30	PM Peak Hour Used: 4:35-5:35 PM	NB	NBT	387	1.1766	455		455	301	165	83	219	490	256	128	362	673		675	15.13%	121	0.00%	0	121		125	800
30			NBR	407	1.1766	480		480	392	0	0	392	586	0	0	586	543		545	0.00%	0	0.00%	0	0		0	545
30			SBL	207	1.1766	245		245	141	141	71	71	18	18	9	9	293		295	0.00%	0	0.64%	9	9		10	305
30	PHF:	SB	SBT	657	1.1766	775		775	672	290	145	527	941	433	217	725	840		840	0.00%	0	15.36%	214	214		215	1,055
30	0.88		SBR	0	1.1766	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
30		**TEV**	**TEV**	**2,202**		**2,595**		**2,595**	**2,091**	**814**	**407**	**1,684**	**2908**	**1097**	**549**	**2360**	**3,157**		**3,034**		**304**		**223**	**528**		**555**	**3,589**
4	SW Hunziker St @ SW 72nd Ave		EBL	125	1.1766	145		145	94	41	21	74	1	0	0	1	93	-94	1	0.00%	0	0.00%	0	0	49	49	50
40		EB	EBT	0	1.1766	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
40	Count Date: 1/14/15		EBR	210	1.1766	245		245	343	0	0	343	241	0	0	241	152	91	241	0.00%	0	0.00%	0	0		0	241
40	2015		WBL	0	1.1766	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
40		WB	WBT	0	1.1766	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
40			WBR	0	1.1766	0		0	0	0	0	0	242	0	0	242	0		0	0.00%	0	0.00%	0	0		0	0
40			NBL	113	1.1766	135		135	165	0	0	165	62	0	0	62	65		65	0.00%	0	0.00%	0	0		0	65
40	PM Peak Hour Used: 4:35-5:35 PM	NB	NBT	661	1.1766	780	10	790	599	124	62	537	1076	256	128	948	1,123		1,125	15.13%	121	0.00%	0	121	45	170	1,295
40			NBR	0	1.1766	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
40			SBL	0	1.1766	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
40	PHF:	SB	SBT	511	1.1766	600	10	610	489	235	118	372	963	433	217	747	934		935	0.00%	0	15.36%	214	214	-53	162	1,097
40	0.90		SBR	448	1.1766	525		525	403	55	28	376	104	0	0	104	283	-181	104	0.00%	0	0.00%	0	0		0	104
40		**TEV**	**TEV**	**2,068**		**2,430**		**2,450**	**2,093**	**455**	**228**	**1,866**	**2689**	**689**	**345**	**2345**	**2,650**		**2,471**		**121**		**214**	**335**		**381**	**2,852**
5	OR-217 SB Ramps/SW Varns St @ SW 72nd Av		EBL	11	1.1766	15		15	1	0	0	1	1	0	0	1	16		15	0.00%	0	0.00%	0	0		0	15
50		EB	EBT	2	1.1766	0	5	5	1	0	0	1	1	0	0	1	4		5	0.00%	0	0.00%	0	0		0	5
50	Count Date: 1/14/15		EBR	5	1.1766	5		5	1	0	0	1	1	0	0	1	5		5	0.00%	0	0.00%	0	0		0	5
50	2015		WBL	101	1.1766	120		120	315	0	0	315	255	0	0	255	93	6	101	0.00%	0	0.00%	0	0		0	101
50		WB	WBT	4	1.1766	5		5	5	0	0	5	10	0	0	10	4		5	0.00%	0	0.00%	0	0		0	5
50			WBR	62	1.1766	75		75	40	40	20	20	54	54	27	27	63		65	3.19%	25	0.00%	0	25	50	80	145
50			NBL	0	1.1766	0		0	5	0	0	5	5	0	0	5	0	5	5	0.00%	0	0.00%	0	0		0	5
50	PM Peak Hour Used: 4:35-5:35 PM	NB	NBT	697	1.1766	820	15	835	724	84	42	682	1084	202	101	983	1,102		1,100	11.94%	95	0.00%	0	95		100	1,200
50			NBR	117	1.1766	140		140	185	0	0	185	195	0	0	195	134		135	0.00%	0	0.00%	0	0		0	135
50			SBL	240	1.1766	280		280	272	77	39	234	320	161	81	240	301		300	0.00%	0	5.71%	80	80		80	380
50	PHF:	SB	SBT	458	1.1766	540	15	555	560	157	79	482	884	273	137	748	754		755	0.00%	0	9.68%	135	135	33	173	928
50	0.90		SBR	18	1.1766	20		20	5	0	0	5	10	0	0	10	29		30	0.00%	0	0.00%	0	0		0	30
50		**TEV**	**TEV**	**1,715**		**2,020**		**2,055**	**2,114**	**358**	**179**	**1,935**	**2820**	**690**	**345**	**2475**	**2,505**		**2,521**		**121**		**215**	**335**		**433**	**2,954**
6	I-5 NB Ramps @ SW 60th Ave		EBL	112	1	110		110	120	0	0	120	89	0	0	89	76		75	0.00%	0	0.00%	0	0		0	75
60		EB	EBT	472	1	470		470	459	0	0	459	844	15	8	837	781		780	0.00%	0	0.53%	7	7		10	790
60	Count Date: 4/7/15		EBR	27	1	25		25	59	0	0	59	58	0	0	58	44		45	0.00%	0	0.00%	0	0		0	45
60	2015		WBL	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
60		WB	WBT	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
60			WBR	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
60			NBL	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
60	PM Peak Hour Used: 4:55-5:55 PM	NB	NBT	153	1	155		155	327	0	0	327	416	4	2	414	228	5	235	0.24%	2	0.00%	0	2		5	240
60			NBR	17	1	15		15	36	0	0	36	121	0	0	121	53		55	0.00%	0	0.00%	0	0		0	55
60			SBL	1	1	0		0	43	6	3	40	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
60	PHF:	SB	SBT	142	1	140		140	603	11	6	598	680	32	16	664	156		155	0.53%	4	0.78%	11	15		20	175
60	0.89		SBR	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
60		**TEV**	**TEV**	**924**		**915**		**915**	**1,647**	**17**	**9**	**1,639**	**2208**	**51**	**26**	**2183**	**1,338**		**1,345**		**6**		**18**	**24**		**35**	**1,380**
7	Barbur Blvd @ SW 60th Ave		EBL	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
70		EB	EBT	803	1	805		805	698	110	55	643	971	186	93	878	993		995	0.00%	0	6.60%	92	92		95	1,090
70	Count Date: 4/7/15		EBR	115	1	115		115	532	16	8	524	409	22	11	398	76		75	0.00%	0	0.78%	11	11		15	90
70	2015		WBL	29	1	30		30	114	0	0	114	271	9	5	267	78		80	0.53%	4	0.00%	0	4		5	85
70		WB	WBT	647	1	645		645	890	24	12	878	929	32	16	913	706		705	1.89%	15	0.00%	0	15	-5	15	720
70			WBR	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
70			NBL	264	1	265		265	333	0	0	333	416	4	2	414	292		290	0.24%	2	0.00%	0	2		20	310
70	PM Peak Hour Used: 4:55-5:55 PM	NB	NBT	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
70			NBR	1	1	0		0	114	0	0	114	89	0	0	89	0	5	5	0.00%	0	0.00%	0	0		0	5
70			SBL	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
70	PHF:	SB	SBT	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
70	0.86		SBR	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
70		**TEV**	**TEV**	**1,859**		**1,860**		**1,860**	**2,681**	**150**	**75**	**2,606**	**3085**	**253**	**127**	**2959**	**2,145**		**2,150**		**21**		**103**	**124**		**150**	**2,300**

Project: Tigard Triangle TPR Analysis
Job #: TIGX0000-0001
Subject: ***Proposed Zoning PM Turning Movement Volume Development***
Created: 9/13/2017
Rev. Date: 11/14/2017

% of TAZ 0.5 | % of TAZ 0.5 | Less than 2010 = | Proposed Zoning Trip Generation = 797 Destinations (In) 1,396 Origins (Out) Total 2,193

Synchro ID		Intersection	Direction	Movement	Existing Traffic Count	Seasonal Adjustment Factor	Existing Unbalanced Count Seasonally Adjusted	Volume Adjustements for Balancing	Existing Balanced Count Seasonally Adjusted	2010 Model Volume	2010 Tigard Triangle Flow Bundle Volume	2010 Zone Change Volume	2010 Model Volume w/o Tigard Triangle	2040 Model Volume	2040 Tigard Triangle Flow Bundle Volume	2040 Zone Change Volume	2040 Model Volume w/o Tigard Triangle	2040 Background Volume	Volume Adjustements for Balancing	2040 Balanced Background Volumes	2040 Tigard Triangle Destinations (In) Distribution	2040 Unbalanced Tigard Triangle Destinations Assignment	2040 Tigard Triangle Origins (Out) Distribution	2040 Unbalanced Tigard Triangle Origins (Out) Assignment	2040 Unbalanced Tigard Triangle Trips (O+D)	Volume Adjustements for Balancing	2040 Balanced Tigard Triangle Trips (O+D)	2040 w/Tigard Triangle Trips (Total Trips)
8	80	I-5 SB Ramps @ Barbur/OR-99W	EB	EBL	93	1	95		95	126	23	12	115	234	56	28	206	187		185	0.00%	0	1.99%	28	28		30	215
	80			EBT	862	1	860		860	1,069	126	63	1006	1315	208	104	1211	1,065	-60	1,005	0.00%	0	7.38%	103	103	5	110	1,115
	85			EBR	676	1	675		675	1,072	156	78	994	1333	297	149	1185	866		865	0.00%	0	10.53%	147	147		150	1,015
	85	Count Date: 1/14/15		EBR2	0	1	0		0	3	0	0	3	44	1	1	44	41		40	0.06%	0	0.00%	0	0		5	45
	80	2015		WBU	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	80		WB	WBL	88	1	90		90	354	19	10	345	312	13	7	306	51	31	81	0.77%	6	0.00%	0	6		10	91
	80			WBT	731	1	730		730	822	5	3	820	1005	23	12	994	904	-67	838	1.36%	11	0.00%	0	11		15	853
	80			WBR	86	1	85		85	48	0	0	48	28	0	0	28	65	21	86	0.00%	0	0.00%	0	0		0	86
	80			WB2L	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	80	PM Peak Hour Used: 4:25-5:20 PM	WB2	WB2T	1,163	1	1,165		1,165	661	2	1	660	591	3	2	596	1,095	67	1,162	0.18%	1	0.00%	0	1		5	1,167
	80			WB2R	31	1	30		30	0	0	0	0	0	0	0	0	30		30	0.00%	0	0.00%	0	0		0	30
	80			NBL	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	80		NB	NBT	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	80			NBR	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	80			SBL	34	1	35		35	33	0	0	33	61	0	0	61	63		65	0.00%	0	0.00%	0	0		0	65
	80		SB	SBT	0	1	0		0	0	0	0	0	0	0	0	0	0		0	0.00%	0	0.00%	0	0		0	0
	80	PHF:		SBT2	43	1	45		45	54	4	2	52	118	6	3	115	108		110	0.35%	3	0.00%	0	3		5	115
	80	0.89		SBR	48	1	50		50	17	1	1	17	38	5	3	36	69		70	0.30%	2	0.00%	0	2		5	75
	80		**TEV**	**TEV**	**3,855**		**3,860**		**3,860**	**4,259**	**336**	**168**	**4,091**	**5079**	**612**	**306**	**4773**	**4,542**		**4,537**		**24**		**278**	**302**		**335**	**4,872**
9	90	I-5 NB Ramps/SW65th Ave @ SW Haines St.	EB	EBL	0	1.28	0		0	5	0	0	5	5	0	0	5	0		0	0.00%	0	0.00%	0	0		0	0
	90			EBT	371	1.28	475		475	231	57	29	203	295	111	56	240	589		590	0.00%	0	3.94%	55	55	5	60	650
	90	Count Date: 3/15/17		EBR	286	1.28	365		365	128	128	64	64	163	154	77	86	322		320	0.00%	0	5.46%	76	76		80	400
	90	2017		WBL	51	1.28	65		65	149	0	0	149	75	0	0	75	41		40	0.00%	0	0.00%	0	0		0	40
	90		WB	WBT	270	1.28	345		345	512	27	14	499	616	49	25	592	368		370	2.90%	23	0.00%	0	23		25	395
	90			WBR	0	1.28	0		0	5	0	0	5	5	0	0	5	0		0	0.00%	0	0.00%	0	0		0	0
	90			NBL	379	1.28	485		485	6	0	0	6	13	0	0	13	576		575	0.00%	0	0.00%	0	0		0	575
	90	PM Peak Hour Used: 4:45-5:45 PM	NB	NBT	0	1.28	0		0	5	0	0	5	5	0	0	5	0	5	5	0.00%	0	0.00%	0	0		0	5
	90			NBR	159	1.28	205		205	255	0	0	255	324	0	0	324	204		205	0.00%	0	0.00%	0	0		0	205
	90			SBL	1	1.28	0		0	5	0	0	5	5	0	0	5	0		0	0.00%	0	0.00%	0	0		0	0
	90	PHF:	SB	SBT	1	1.28	0		0	5	0	0	5	5	0	0	5	0		0	0.00%	0	0.00%	0	0		0	0
	90	0.93		SBR	1	1.28	0		0	5	0	0	5	5	0	0	5	0		0	0.00%	0	0.00%	0	0		0	0
	90		**TEV**	**TEV**	**1,519**		**1,940**		**1,940**	**1,311**	**212**	**106**	**1,205**	**1516**	**314**	**157**	**1359**	**2,100**		**2,105**		**23**		**131**	**154**		**165**	**2,270**
10	100	I-5 SB Ramps @ SW 68th Ave	EB	EBL	158	1.28	200		200	41	22	11	30	56	29	15	42	242		240	0.00%	0	1.03%	14	14		15	255
	100			EBT	185	1.28	235		235	192	86	43	149	192	79	40	153	219		220	0.00%	0	2.80%	39	39		40	260
	100	Count Date: 3/15/17		EBR	17	1.28	20		20	0	0	0	0	16	16	8	8	39		40	0.95%	8	0.00%	0	8		10	50
	100	2017		WBL	35	1.28	45		45	140	140	70	70	307	282	141	166	94		95	16.67%	133	0.00%	0	133		135	230
	100		WB	WBT	341	1.28	435		435	472	95	48	425	566	105	53	514	545		545	6.21%	49	0.00%	0	49		50	595
	100			WBR	104	1.28	135		135	0	0	0	0	4	0	0	4	176		175	0.00%	0	0.00%	0	0		0	175
	100			NBL	59	1.28	75		75	0	0	0	0	27	27	14	14	122		120	0.00%	0	0.96%	13	13		15	135
	100	PM Peak Hour Used: 4:45-5:45 PM	NB	NBT	219	1.28	280		280	217	216	108	109	423	423	212	212	474		475	0.00%	0	15.00%	209	209		210	685
	100			NBR	147	1.28	190		190	175	175	88	88	287	287	144	144	248		250	0.00%	0	10.18%	142	142		145	395
	100			SBL	154	1.28	195		195	106	0	0	106	68	0	0	68	179		180	0.00%	0	0.00%	0	0		0	180
	100	PHF:	SB	SBT	57	1.28	75		75	19	18	9	10	38	36	18	20	143		145	2.13%	17	0.00%	0	17		20	165
	100	0.98		SBR	184	1.28	235		235	114	10	5	109	194	11	6	189	268		270	0.65%	5	0.00%	0	5	-5	5	275
	100		**TEV**	**TEV**	**1,660**		**2,120**		**2,120**	**1,476**	**762**	**381**	**1,095**	**2178**	**1295**	**648**	**1531**	**2,748**		**2,755**		**212**		**418**	**630**		**645**	**3,400**

Appendix C: Traffic Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑↑	↰↰	↱
Traffic Volume (vph)	2020	245	0	2980	375	155
Future Volume (vph)	2020	245	0	2980	375	155
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	5.0		4.0	4.0	4.0
Lane Util. Factor	0.95	1.00		0.91	0.97	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	1.00	1.00		1.00	0.95	1.00
Satd. Flow (prot)	3228	1444		4684	3162	1473
Flt Permitted	1.00	1.00		1.00	0.95	1.00
Satd. Flow (perm)	3228	1444		4684	3162	1473
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2020	245	0	2980	375	155
RTOR Reduction (vph)	0	0	0	0	0	28
Lane Group Flow (vph)	2020	245	0	2980	375	127
Confl. Peds. (#/hr)		1				
Confl. Bikes (#/hr)		4				
Heavy Vehicles (%)	3%	3%	0%	2%	2%	1%
Turn Type	NA	custom		NA	Prot	Perm
Protected Phases	2	8 9		6	8	
Permitted Phases						8
Actuated Green, G (s)	116.4	94.6		116.4	14.1	14.1
Effective Green, g (s)	116.9	90.1		116.9	15.1	15.1
Actuated g/C Ratio	0.84	0.64		0.84	0.11	0.11
Clearance Time (s)	4.5			4.5	5.0	5.0
Vehicle Extension (s)	4.6			5.2	2.3	2.3
Lane Grp Cap (vph)	2695	929		3911	341	158
v/s Ratio Prot	0.63	0.17		c0.64	c0.12	
v/s Ratio Perm						0.09
v/c Ratio	0.75	0.26		0.76	1.10	0.81
Uniform Delay, d1	5.1	10.7		5.2	62.5	61.0
Progression Factor	1.74	1.01		1.00	1.00	1.00
Incremental Delay, d2	1.2	0.1		1.5	78.3	24.2
Delay (s)	10.0	10.9		6.7	140.7	85.2
Level of Service	B	B		A	F	F
Approach Delay (s)	10.1			6.7	124.5	
Approach LOS	B			A	F	

Intersection Summary			
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1795	300	65	2330	0	0	0	0	470	5	245
Future Volume (vph)	0	1795	300	65	2330	0	0	0	0	470	5	245
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.97	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
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3228	1418	1630	3260					1548	1555	1444
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3228	1418	1630	3260					1548	1555	1444
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1795	300	65	2330	0	0	0	0	470	5	245
RTOR Reduction (vph)	0	0	70	0	0	0	0	0	0	0	0	38
Lane Group Flow (vph)	0	1795	230	65	2330	0	0	0	0	240	235	207
Confl. Peds. (#/hr)			2									
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	0%	3%	2%	2%	2%	0%	0%	0%	0%	2%	0%	3%
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		90.2	90.2	8.8	103.5					27.0	27.0	27.0
Effective Green, g (s)		90.7	90.7	9.3	104.0					28.0	28.0	28.0
Actuated g/C Ratio		0.65	0.65	0.07	0.74					0.20	0.20	0.20
Clearance Time (s)		4.5	4.5	4.5	4.5					5.0	5.0	5.0
Vehicle Extension (s)		4.8	4.8	2.5	4.8					2.3	2.3	2.3
Lane Grp Cap (vph)		2091	918	108	2421					309	311	288
v/s Ratio Prot		0.56		0.04	c0.71							
v/s Ratio Perm			0.16							c0.15	0.15	0.14
v/c Ratio		0.86	0.25	0.60	0.96					0.78	0.76	0.72
Uniform Delay, d1		19.6	10.4	63.5	16.2					53.0	52.8	52.3
Progression Factor		1.00	1.00	0.96	1.49					1.00	1.00	1.00
Incremental Delay, d2		4.9	0.7	5.1	8.2					10.9	9.3	7.7
Delay (s)		24.4	11.0	66.1	32.5					64.0	62.1	60.1
Level of Service		C	B	E	C					E	E	E
Approach Delay (s)		22.5			33.4			0.0			62.0	
Approach LOS		C			C			A			E	

Intersection Summary			
HCM 2000 Control Delay	33.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	146	763	770	545	305	1010
Future Volume (vph)	146	763	770	545	305	1010
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	1.00
Frpb, ped/bikes	1.00	0.99	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.94		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1630	1466	3087		1662	1733
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1630	1466	3087		1662	1733
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	146	763	770	545	305	1010
RTOR Reduction (vph)	0	309	140	0	0	0
Lane Group Flow (vph)	146	454	1175	0	305	1010
Confl. Peds. (#/hr)		2				
Heavy Vehicles (%)	2%	0%	1%	1%	0%	1%
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	4		6		5	2
Permitted Phases		4				
Actuated Green, G (s)	23.4	23.4	44.6		19.0	67.6
Effective Green, g (s)	23.9	23.9	45.1		19.0	68.1
Actuated g/C Ratio	0.24	0.24	0.45		0.19	0.68
Clearance Time (s)	4.5	4.5	4.5		4.0	4.5
Vehicle Extension (s)	2.3	2.3	6.2		2.3	6.2
Lane Grp Cap (vph)	389	350	1392		315	1180
v/s Ratio Prot	0.09		0.38		c0.18	c0.58
v/s Ratio Perm		c0.31				
v/c Ratio	0.38	1.30	0.84		0.97	0.86
Uniform Delay, d1	31.8	38.0	24.3		40.2	12.2
Progression Factor	1.00	1.00	1.10		1.00	1.00
Incremental Delay, d2	0.4	153.3	5.9		41.6	8.1
Delay (s)	32.2	191.4	32.5		81.8	20.3
Level of Service	C	F	C		F	C
Approach Delay (s)	165.8		32.5			34.5
Approach LOS	F		C			C

Intersection Summary			
HCM 2000 Control Delay	67.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	50	241	65	1265	1052	104
Future Volume (vph)	50	241	65	1265	1052	104
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.97	1.00	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1599	1436	1630	3292	1733	1400
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1599	1436	1630	3292	1733	1400
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	241	65	1265	1052	104
RTOR Reduction (vph)	0	223	0	0	0	7
Lane Group Flow (vph)	50	18	65	1265	1052	97
Confl. Peds. (#/hr)						8
Confl. Bikes (#/hr)		1				2
Heavy Vehicles (%)	4%	1%	2%	1%	1%	2%
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	8		1	6	2	
Permitted Phases		8				2
Actuated Green, G (s)	7.4	7.4	7.7	84.1	72.4	72.4
Effective Green, g (s)	7.4	7.4	7.7	84.6	72.9	72.9
Actuated g/C Ratio	0.07	0.07	0.08	0.85	0.73	0.73
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	2.3	2.3	2.3	4.6	4.1	4.1
Lane Grp Cap (vph)	118	106	125	2785	1263	1020
v/s Ratio Prot	c0.03		0.04	c0.38	c0.61	
v/s Ratio Perm		0.01				0.07
v/c Ratio	0.42	0.17	0.52	0.45	0.83	0.09
Uniform Delay, d1	44.3	43.4	44.4	1.9	9.3	3.9
Progression Factor	1.00	1.00	1.44	0.07	1.33	0.94
Incremental Delay, d2	1.4	0.4	1.6	0.3	4.3	0.1
Delay (s)	45.7	43.9	65.4	0.5	16.8	3.8
Level of Service	D	D	E	A	B	A
Approach Delay (s)	44.2			3.6	15.6	
Approach LOS	D			A	B	

Intersection Summary			
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	5	5	101	5	105	5	1210	135	365	898	30
Future Volume (vph)	15	5	5	101	5	105	5	1210	135	365	898	30
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	1.00	
Frpb, ped/bikes		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.97			1.00	0.85	1.00	0.98		1.00	1.00	
Flt Protected		0.97			0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1583			1592	1458	1662	3236		1646	1722	
Flt Permitted		0.84			0.72	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1365			1197	1458	1662	3236		1646	1722	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	5	5	101	5	105	5	1210	135	365	898	30
RTOR Reduction (vph)	0	4	0	0	0	33	0	8	0	0	1	0
Lane Group Flow (vph)	0	21	0	0	106	72	5	1337	0	365	927	0
Confl. Peds. (#/hr)			1	1								13
Confl. Bikes (#/hr)												3
Heavy Vehicles (%)	0%	0%	20%	5%	0%	2%	0%	1%	3%	1%	1%	0%
Turn Type	Perm	NA		Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		8			4	5	1	6		5	2	
Permitted Phases	8			4		4						
Actuated Green, G (s)		14.6			14.6	40.5	1.2	47.5		25.9	71.7	
Effective Green, g (s)		14.6			14.6	40.5	1.2	47.5		25.9	72.2	
Actuated g/C Ratio		0.15			0.15	0.40	0.01	0.48		0.26	0.72	
Clearance Time (s)		4.0			4.0	4.0	4.0	4.0		4.0	4.5	
Vehicle Extension (s)		2.5			2.5	2.3	2.3	4.6		2.3	4.6	
Lane Grp Cap (vph)		199			174	648	19	1537		426	1243	
v/s Ratio Prot						0.03	0.00	c0.41		c0.22	0.54	
v/s Ratio Perm		0.02			c0.09	0.02						
v/c Ratio		0.10			0.61	0.11	0.26	0.87		0.86	0.75	
Uniform Delay, d1		37.0			40.0	18.5	49.0	23.5		35.3	8.4	
Progression Factor		1.00			1.00	1.00	1.00	1.00		0.81	0.38	
Incremental Delay, d2		0.2			5.0	0.0	4.3	7.0		10.0	2.6	
Delay (s)		37.2			45.0	18.6	53.2	30.5		38.5	5.8	
Level of Service		D			D	B	D	C		D	A	
Approach Delay (s)		37.2			31.9			30.6			15.0	
Approach LOS		D			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	23.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	790	45	0	0	0	0	240	55	0	170	0
Future Volume (vph)	75	790	45	0	0	0	0	240	55	0	170	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frpb, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.99						0.97			1.00	
Flt Protected		1.00						1.00			1.00	
Satd. Flow (prot)		3245						1747			1782	
Flt Permitted		1.00						1.00			1.00	
Satd. Flow (perm)		3245						1747			1782	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	75	790	45	0	0	0	0	240	55	0	170	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	910	0	0	0	0	0	295	0	0	170	0
Confl. Peds. (#/hr)	5		5				5		5	5		5
Heavy Vehicles (%)	4%	4%	4%	0%	0%	0%	0%	0%	0%	1%	1%	1%
Turn Type	Split	NA						NA			NA	
Protected Phases	4	4						8			1 2 8	
Permitted Phases										1 2 8		
Actuated Green, G (s)		35.7						16.0			93.7	
Effective Green, g (s)		37.0						17.0			89.7	
Actuated g/C Ratio		0.26						0.12			0.64	
Clearance Time (s)		5.3						5.0				
Vehicle Extension (s)		6.4						2.3				
Lane Grp Cap (vph)		857						212			1141	
v/s Ratio Prot		c0.28						c0.17			c0.10	
v/s Ratio Perm												
v/c Ratio		1.06						1.39			0.15	
Uniform Delay, d1		51.5						61.5			10.0	
Progression Factor		1.00						1.00			0.01	
Incremental Delay, d2		48.5						202.4			0.0	
Delay (s)		100.0						263.9			0.1	
Level of Service		F						F			A	
Approach Delay (s)		100.0			0.0			263.9			0.1	
Approach LOS		F			A			F			A	

Intersection Summary			
HCM 2000 Control Delay	122.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.3
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	310	5	1065	85	85	720
Future Volume (vph)	310	5	1065	85	85	720
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	0.95
Frpb, ped/bikes	1.00		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	1.00		0.99		1.00	1.00
Flt Protected	0.95		1.00		0.95	1.00
Satd. Flow (prot)	1694		3306		1660	3320
Flt Permitted	0.95		1.00		0.95	1.00
Satd. Flow (perm)	1694		3306		1660	3320
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	310	5	1065	85	85	720
RTOR Reduction (vph)	1	0	4	0	0	0
Lane Group Flow (vph)	314	0	1146	0	85	720
Confl. Peds. (#/hr)		5		5	5	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	2%	2%	3%	3%
Turn Type	Prot		NA		Prot	NA
Protected Phases	4 8		2		1	6
Permitted Phases						
Actuated Green, G (s)	57.0		59.1		9.1	72.7
Effective Green, g (s)	58.3		60.4		9.6	74.0
Actuated g/C Ratio	0.42		0.43		0.07	0.53
Clearance Time (s)			5.3		4.5	5.3
Vehicle Extension (s)			4.7		2.3	4.7
Lane Grp Cap (vph)	705		1426		113	1754
v/s Ratio Prot	c0.19		c0.35		c0.05	0.22
v/s Ratio Perm						
v/c Ratio	0.45		0.80		0.75	0.41
Uniform Delay, d1	29.3		34.6		64.0	19.9
Progression Factor	0.63		0.94		1.00	1.00
Incremental Delay, d2	0.1		4.3		22.7	0.7
Delay (s)	18.5		36.8		86.7	20.6
Level of Service	B		D		F	C
Approach Delay (s)	18.5		36.8			27.6
Approach LOS	B		D			C

Intersection Summary			
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.7
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	NBL2	NBT	SBL	SBT	SBR	SER	SER2
Lane Configurations										
Traffic Volume (vph)	65	115	75	210	1085	91	853	86	1167	30
Future Volume (vph)	65	115	75	210	1085	91	853	86	1167	30
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.0		4.0	4.0	4.0	4.0		4.0	
Lane Util. Factor		1.00		1.00	0.95	1.00	0.95		*0.95	
Frpb, ped/bikes		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	
Frt		0.96		1.00	1.00	1.00	0.99		1.00	
Flt Protected		0.99		0.95	1.00	0.95	1.00		1.00	
Satd. Flow (prot)		1662		1676	3353	1676	3294		3320	
Flt Permitted		0.99		0.95	1.00	0.95	1.00		1.00	
Satd. Flow (perm)		1662		1676	3353	1676	3294		3320	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	65	115	75	210	1085	91	853	86	1167	30
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	255	0	210	1085	91	939	0	1197	0
Confl. Peds. (#/hr)								5		
Heavy Vehicles (%)	3%	3%	2%	2%	2%	2%	2%	2%	3%	3%
Turn Type	Perm	NA		Prot	NA	Prot	NA		Prot	
Protected Phases		4		3	3 6	5	1		2	
Permitted Phases	4									
Actuated Green, G (s)		14.0		9.0	100.2	11.3	38.2		59.2	
Effective Green, g (s)		15.0		10.0	98.2	11.8	39.0		60.0	
Actuated g/C Ratio		0.11		0.07	0.70	0.08	0.28		0.43	
Clearance Time (s)		5.0		5.0		4.5	4.8		4.8	
Vehicle Extension (s)		2.3		2.3		2.3	4.8		4.8	
Lane Grp Cap (vph)		178		119	2351	141	917		1422	
v/s Ratio Prot				c0.13	0.32	0.05	c0.29		c0.36	
v/s Ratio Perm		0.15								
v/c Ratio		1.43		1.76	0.46	0.65	1.02		0.84	
Uniform Delay, d1		62.5		65.0	9.2	62.1	50.5		35.8	
Progression Factor		1.00		1.00	1.00	0.93	1.14		1.00	
Incremental Delay, d2		223.8		376.1	0.1	7.5	34.8		6.2	
Delay (s)		286.3		441.1	9.3	65.1	92.5		42.0	
Level of Service		F		F	A	E	F		D	
Approach Delay (s)		286.3			79.3		90.1			
Approach LOS		F			E		F			

Intersection Summary			
HCM 2000 Control Delay	84.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	112.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	206	0	0	0	0	0	980	45	0	0	0
Future Volume (vph)	0	206	0	0	0	0	0	980	45	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.0						4.0				
Lane Util. Factor		1.00						0.95				
Frpb, ped/bikes		1.00						1.00				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.99				
Flt Protected		1.00						1.00				
Satd. Flow (prot)		1765						3331				
Flt Permitted		1.00						1.00				
Satd. Flow (perm)		1765						3331				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	206	0	0	0	0	0	980	45	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	206	0	0	0	0	0	1025	0	0	0	0
Confl. Peds. (#/hr)			10	10								
Turn Type	Perm	NA						NA				
Protected Phases		4 5						3 6				
Permitted Phases	4 5											
Actuated Green, G (s)		30.3						100.2				
Effective Green, g (s)		31.3						98.2				
Actuated g/C Ratio		0.22						0.70				
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)		394						2336				
v/s Ratio Prot		c0.12						c0.31				
v/s Ratio Perm												
v/c Ratio		0.52						0.44				
Uniform Delay, d1		47.8						9.0				
Progression Factor		0.04						1.00				
Incremental Delay, d2		0.1						0.1				
Delay (s)		1.9						9.1				
Level of Service		A						A				
Approach Delay (s)		1.9			0.0			9.1			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.6
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	153.4
Intersection LOS	F

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBU	NBL	NBR
Lane Configurations									
Traffic Vol, veh/h	0	635	380	0	40	400	0	575	205
Future Vol, veh/h	0	635	380	0	40	400	0	575	205
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	1	0	2	2	1	2	1	0
Mvmt Flow	0	635	380	0	40	400	0	575	205
Number of Lanes	0	1	1	0	0	1	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	126.2	47.9	248.2
HCM LOS	F	E	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	74%	0%	0%	9%
Vol Thru, %	0%	100%	0%	91%
Vol Right, %	26%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	780	635	380	440
LT Vol	575	0	0	40
Through Vol	0	635	0	400
RT Vol	205	0	380	0
Lane Flow Rate	780	635	380	440
Geometry Grp	2	7	7	5
Degree of Util (X)	1.485	1.317	0.712	0.873
Departure Headway (Hd)	7.093	8.878	8.131	8.63
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	523	413	448	422
Service Time	5.093	6.578	5.831	6.63
HCM Lane V/C Ratio	1.491	1.538	0.848	1.043
HCM Control Delay	248.2	184.6	28.5	47.9
HCM Lane LOS	F	F	D	E
HCM 95th-tile Q	38.2	24.3	5.5	8.8

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	780	0	0	420
Future Vol, veh/h	0	0	780	0	0	420
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	780	0	0	420

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1200	780	0	0	780	0
Stage 1	780	-	-	-	-	-
Stage 2	420	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	204	395	-	-	837	-
Stage 1	452	-	-	-	-	-
Stage 2	663	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	204	395	-	-	837	-
Mov Cap-2 Maneuver	204	-	-	-	-	-
Stage 1	452	-	-	-	-	-
Stage 2	663	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	837	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	780	420	0
Future Volume (vph)	0	0	0	780	420	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	
Lane Util. Factor				1.00	1.00	
Frt				1.00	1.00	
Flt Protected				1.00	1.00	
Satd. Flow (prot)				1863	1863	
Flt Permitted				1.00	1.00	
Satd. Flow (perm)				1863	1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	780	420	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	780	420	0
Turn Type				NA	NA	
Protected Phases				6	2	
Permitted Phases						
Actuated Green, G (s)				30.0	30.0	
Effective Green, g (s)				30.0	30.0	
Actuated g/C Ratio				1.00	1.00	
Clearance Time (s)				4.0	4.0	
Vehicle Extension (s)				2.5	2.5	
Lane Grp Cap (vph)				1863	1863	
v/s Ratio Prot				c0.42	0.23	
v/s Ratio Perm						
v/c Ratio				0.42	0.23	
Uniform Delay, d1				0.0	0.0	
Progression Factor				1.00	1.00	
Incremental Delay, d2				0.1	0.0	
Delay (s)				0.1	0.0	
Level of Service				A	A	
Approach Delay (s)	0.0			0.1	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM 2000 Control Delay	0.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	30.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	255	255	50	245	605	175	135	640	360	180	165	280
Future Volume (vph)	255	255	50	245	605	175	135	640	360	180	165	280
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	4.8	4.8	4.5	4.8	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98			1.00	0.85	1.00	1.00	0.85	1.00	0.91	
Flt Protected	0.95	1.00			0.99	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	1838			1844	1615	1752	1863	1615	1787	1685	
Flt Permitted	0.95	1.00			0.99	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1787	1838			1844	1615	1752	1863	1615	1787	1685	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	255	255	50	245	605	175	135	640	360	180	165	280
RTOR Reduction (vph)	0	9	0	0	0	55	0	0	132	0	80	0
Lane Group Flow (vph)	255	296	0	0	850	120	135	640	228	180	365	0
Heavy Vehicles (%)	1%	1%	0%	3%	1%	0%	3%	2%	0%	1%	4%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Prot	Prot	NA	
Protected Phases	4	4		3	3	3 1	5	2	2	1	6	
Permitted Phases												
Actuated Green, G (s)	14.2	14.2			25.0	32.6	7.5	15.8	15.8	7.6	15.9	
Effective Green, g (s)	14.2	14.2			25.0	32.6	7.5	15.8	15.8	7.6	15.9	
Actuated g/C Ratio	0.18	0.18			0.31	0.40	0.09	0.20	0.20	0.09	0.20	
Clearance Time (s)	4.5	4.5			4.5		4.5	4.8	4.8	4.5	4.8	
Vehicle Extension (s)	2.3	2.3			2.5		2.3	4.7	4.7	2.3	4.7	
Lane Grp Cap (vph)	313	322			569	650	162	363	315	167	331	
v/s Ratio Prot	0.14	c0.16			c0.46	0.07	0.08	c0.34	0.14	c0.10	0.22	
v/s Ratio Perm												
v/c Ratio	0.81	0.92			1.49	0.18	0.83	1.76	0.72	1.08	1.10	
Uniform Delay, d1	32.1	32.8			28.0	15.6	36.1	32.6	30.5	36.7	32.5	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	14.4	29.7			231.4	0.1	28.4	354.5	9.3	91.9	80.4	
Delay (s)	46.5	62.5			259.4	15.7	64.5	387.0	39.8	128.6	112.9	
Level of Service	D	E			F	B	E	F	D	F	F	
Approach Delay (s)		55.2			217.8			238.5			117.4	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	178.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	80.9	Sum of lost time (s)	18.3
Intersection Capacity Utilization	120.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations					↑↑	
Traffic Volume (vph)	0	0	0	0	795	0
Future Volume (vph)	0	0	0	0	795	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	
Lane Util. Factor					0.95	
Frt					1.00	
Flt Protected					1.00	
Satd. Flow (prot)					3539	
Flt Permitted					1.00	
Satd. Flow (perm)					3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	795	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	795	0
Turn Type					NA	
Protected Phases					2	
Permitted Phases						
Actuated Green, G (s)					26.4	
Effective Green, g (s)					26.4	
Actuated g/C Ratio					1.00	
Clearance Time (s)					4.0	
Vehicle Extension (s)					2.5	
Lane Grp Cap (vph)					3539	
v/s Ratio Prot					c0.22	
v/s Ratio Perm						
v/c Ratio					0.22	
Uniform Delay, d1					0.0	
Progression Factor					1.00	
Incremental Delay, d2					0.0	
Delay (s)					0.0	
Level of Service					A	
Approach Delay (s)	0.0			0.0	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM 2000 Control Delay	0.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	26.4	Sum of lost time (s)	4.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑↑	↰↰	↱
Traffic Volume (vph)	1995	245	0	3075	370	160
Future Volume (vph)	1995	245	0	3075	370	160
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	5.0		4.0	4.0	4.0
Lane Util. Factor	0.95	1.00		0.91	0.97	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	1.00	1.00		1.00	0.95	1.00
Satd. Flow (prot)	3228	1444		4684	3162	1473
Flt Permitted	1.00	1.00		1.00	0.95	1.00
Satd. Flow (perm)	3228	1444		4684	3162	1473
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1995	245	0	3075	370	160
RTOR Reduction (vph)	0	0	0	0	0	29
Lane Group Flow (vph)	1995	245	0	3075	370	131
Confl. Peds. (#/hr)		1				
Confl. Bikes (#/hr)		4				
Heavy Vehicles (%)	3%	3%	0%	2%	2%	1%
Turn Type	NA	custom		NA	Prot	Perm
Protected Phases	2	8 9		6	8	
Permitted Phases						8
Actuated Green, G (s)	116.4	94.6		116.4	14.1	14.1
Effective Green, g (s)	116.9	90.1		116.9	15.1	15.1
Actuated g/C Ratio	0.84	0.64		0.84	0.11	0.11
Clearance Time (s)	4.5			4.5	5.0	5.0
Vehicle Extension (s)	4.6			5.2	2.3	2.3
Lane Grp Cap (vph)	2695	929		3911	341	158
v/s Ratio Prot	0.62	0.17		c0.66	c0.12	
v/s Ratio Perm						0.09
v/c Ratio	0.74	0.26		0.79	1.09	0.83
Uniform Delay, d1	5.0	10.7		5.5	62.5	61.2
Progression Factor	1.73	1.01		1.00	1.00	1.00
Incremental Delay, d2	1.1	0.1		1.7	73.4	28.8
Delay (s)	9.8	10.9		7.2	135.8	90.0
Level of Service	A	B		A	F	F
Approach Delay (s)	9.9			7.2	122.0	
Approach LOS	A			A	F	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	82.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1785	300	60	2365	0	0	0	0	455	5	245
Future Volume (vph)	0	1785	300	60	2365	0	0	0	0	455	5	245
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.97	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
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3228	1418	1630	3260					1548	1555	1444
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3228	1418	1630	3260					1548	1555	1444
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1785	300	60	2365	0	0	0	0	455	5	245
RTOR Reduction (vph)	0	0	70	0	0	0	0	0	0	0	0	38
Lane Group Flow (vph)	0	1785	230	60	2365	0	0	0	0	232	228	207
Confl. Peds. (#/hr)			2									
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	0%	3%	2%	2%	2%	0%	0%	0%	0%	2%	0%	3%
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		90.9	90.9	8.7	104.1					26.4	26.4	26.4
Effective Green, g (s)		91.4	91.4	9.2	104.6					27.4	27.4	27.4
Actuated g/C Ratio		0.65	0.65	0.07	0.75					0.20	0.20	0.20
Clearance Time (s)		4.5	4.5	4.5	4.5					5.0	5.0	5.0
Vehicle Extension (s)		4.8	4.8	2.5	4.8					2.3	2.3	2.3
Lane Grp Cap (vph)		2107	925	107	2435					302	304	282
v/s Ratio Prot		0.55		0.04	c0.73							
v/s Ratio Perm			0.16							c0.15	0.15	0.14
v/c Ratio		0.85	0.25	0.56	0.97					0.77	0.75	0.73
Uniform Delay, d1		18.9	10.1	63.4	16.3					53.3	53.1	52.9
Progression Factor		1.00	1.00	0.98	1.49					1.00	1.00	1.00
Incremental Delay, d2		4.4	0.6	3.3	9.1					10.4	9.3	8.7
Delay (s)		23.3	10.7	65.3	33.3					63.7	62.3	61.6
Level of Service		C	B	E	C					E	E	E
Approach Delay (s)		21.5			34.1			0.0			62.5	
Approach LOS		C			C			A			E	

Intersection Summary			
HCM 2000 Control Delay	32.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	94.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	146	738	800	545	305	1055
Future Volume (vph)	146	738	800	545	305	1055
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	0.95		1.00	1.00
Frpb, ped/bikes	1.00	0.99	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.94		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1630	1466	3092		1662	1733
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1630	1466	3092		1662	1733
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	146	738	800	545	305	1055
RTOR Reduction (vph)	0	306	130	0	0	0
Lane Group Flow (vph)	146	432	1215	0	305	1055
Confl. Peds. (#/hr)		2				
Heavy Vehicles (%)	2%	0%	1%	1%	0%	1%
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	4		6		5	2
Permitted Phases		4				
Actuated Green, G (s)	22.6	22.6	45.4		19.0	68.4
Effective Green, g (s)	23.1	23.1	45.9		19.0	68.9
Actuated g/C Ratio	0.23	0.23	0.46		0.19	0.69
Clearance Time (s)	4.5	4.5	4.5		4.0	4.5
Vehicle Extension (s)	2.3	2.3	6.2		2.3	6.2
Lane Grp Cap (vph)	376	338	1419		315	1194
v/s Ratio Prot	0.09		0.39		c0.18	c0.61
v/s Ratio Perm		c0.29				
v/c Ratio	0.39	1.28	0.86		0.97	0.88
Uniform Delay, d1	32.5	38.5	24.1		40.2	12.4
Progression Factor	1.00	1.00	1.03		1.00	1.00
Incremental Delay, d2	0.4	146.0	6.2		41.6	9.7
Delay (s)	32.9	184.5	31.2		81.8	22.0
Level of Service	C	F	C		F	C
Approach Delay (s)	159.4		31.2			35.4
Approach LOS	F		C			D

Intersection Summary			
HCM 2000 Control Delay	64.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	50	241	65	1295	1097	104
Future Volume (vph)	50	241	65	1295	1097	104
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1599	1436	1630	3292	1733	1400
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1599	1436	1630	3292	1733	1400
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	241	65	1295	1097	104
RTOR Reduction (vph)	0	218	0	0	0	7
Lane Group Flow (vph)	50	23	65	1295	1097	97
Confl. Peds. (#/hr)						8
Confl. Bikes (#/hr)		1				2
Heavy Vehicles (%)	4%	1%	2%	1%	1%	2%
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	8		1	6	2	
Permitted Phases		8				2
Actuated Green, G (s)	7.5	7.5	7.7	84.0	72.3	72.3
Effective Green, g (s)	7.5	7.5	7.7	84.5	72.8	72.8
Actuated g/C Ratio	0.08	0.08	0.08	0.84	0.73	0.73
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	2.3	2.3	2.3	4.6	4.1	4.1
Lane Grp Cap (vph)	119	107	125	2781	1261	1019
v/s Ratio Prot	c0.03		0.04	c0.39	c0.63	
v/s Ratio Perm		0.02				0.07
v/c Ratio	0.42	0.21	0.52	0.47	0.87	0.10
Uniform Delay, d1	44.2	43.5	44.4	2.0	10.1	4.0
Progression Factor	1.00	1.00	1.41	0.09	1.34	0.92
Incremental Delay, d2	1.4	0.6	1.6	0.4	5.3	0.1
Delay (s)	45.6	44.1	64.4	0.5	18.8	3.8
Level of Service	D	D	E	A	B	A
Approach Delay (s)	44.3			3.6	17.5	
Approach LOS	D			A	B	

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	5	5	101	5	145	5	1200	135	380	928	30
Future Volume (vph)	15	5	5	101	5	145	5	1200	135	380	928	30
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	1.00	
Frpb, ped/bikes		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.97			1.00	0.85	1.00	0.98		1.00	1.00	
Flt Protected		0.97			0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1583			1592	1458	1662	3236		1646	1722	
Flt Permitted		0.84			0.72	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1365			1197	1458	1662	3236		1646	1722	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	5	5	101	5	145	5	1200	135	380	928	30
RTOR Reduction (vph)	0	4	0	0	0	33	0	8	0	0	1	0
Lane Group Flow (vph)	0	21	0	0	106	112	5	1327	0	380	957	0
Confl. Peds. (#/hr)			1	1								13
Confl. Bikes (#/hr)												3
Heavy Vehicles (%)	0%	0%	20%	5%	0%	2%	0%	1%	3%	1%	1%	0%
Turn Type	Perm	NA		Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		8			4	5	1	6		5	2	
Permitted Phases	8			4		4						
Actuated Green, G (s)		14.6			14.6	40.9	1.2	47.1		26.3	71.7	
Effective Green, g (s)		14.6			14.6	40.9	1.2	47.1		26.3	72.2	
Actuated g/C Ratio		0.15			0.15	0.41	0.01	0.47		0.26	0.72	
Clearance Time (s)		4.0			4.0	4.0	4.0	4.0		4.0	4.5	
Vehicle Extension (s)		2.5			2.5	2.3	2.3	4.6		2.3	4.6	
Lane Grp Cap (vph)		199			174	654	19	1524		432	1243	
v/s Ratio Prot						0.05	0.00	c0.41		c0.23	0.56	
v/s Ratio Perm		0.02			c0.09	0.03						
v/c Ratio		0.10			0.61	0.17	0.26	0.87		0.88	0.77	
Uniform Delay, d1		37.0			40.0	18.8	49.0	23.7		35.3	8.7	
Progression Factor		1.00			1.00	1.00	1.00	1.00		0.79	0.38	
Incremental Delay, d2		0.2			5.0	0.1	4.3	7.1		11.2	2.7	
Delay (s)		37.2			45.0	18.9	53.2	30.8		39.3	6.0	
Level of Service		D			D	B	D	C		D	A	
Approach Delay (s)		37.2			29.9			30.9			15.5	
Approach LOS		D			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	23.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	790	45	0	0	0	0	240	55	0	175	0
Future Volume (vph)	75	790	45	0	0	0	0	240	55	0	175	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frpb, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.99						0.97			1.00	
Flt Protected		1.00						1.00			1.00	
Satd. Flow (prot)		3245						1747			1782	
Flt Permitted		1.00						1.00			1.00	
Satd. Flow (perm)		3245						1747			1782	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	75	790	45	0	0	0	0	240	55	0	175	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	910	0	0	0	0	0	295	0	0	175	0
Confl. Peds. (#/hr)	5		5				5		5	5		5
Heavy Vehicles (%)	4%	4%	4%	0%	0%	0%	0%	0%	0%	1%	1%	1%
Turn Type	Split	NA						NA			NA	
Protected Phases	4	4						8			1 2 8	
Permitted Phases										1 2 8		
Actuated Green, G (s)		35.7						16.0			93.7	
Effective Green, g (s)		37.0						17.0			89.7	
Actuated g/C Ratio		0.26						0.12			0.64	
Clearance Time (s)		5.3						5.0				
Vehicle Extension (s)		6.4						2.3				
Lane Grp Cap (vph)		857						212			1141	
v/s Ratio Prot		c0.28						c0.17			c0.10	
v/s Ratio Perm												
v/c Ratio		1.06						1.39			0.15	
Uniform Delay, d1		51.5						61.5			10.0	
Progression Factor		1.00						1.00			0.03	
Incremental Delay, d2		48.5						202.4			0.0	
Delay (s)		100.0						263.9			0.3	
Level of Service		F						F			A	
Approach Delay (s)		100.0			0.0			263.9			0.3	
Approach LOS		F			A			F			A	

Intersection Summary			
HCM 2000 Control Delay	122.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.3
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	310	5	1090	90	85	720
Future Volume (vph)	310	5	1090	90	85	720
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	0.95
Frpb, ped/bikes	1.00		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	1.00		0.99		1.00	1.00
Flt Protected	0.95		1.00		0.95	1.00
Satd. Flow (prot)	1694		3305		1660	3320
Flt Permitted	0.95		1.00		0.95	1.00
Satd. Flow (perm)	1694		3305		1660	3320
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	310	5	1090	90	85	720
RTOR Reduction (vph)	1	0	5	0	0	0
Lane Group Flow (vph)	314	0	1175	0	85	720
Confl. Peds. (#/hr)		5		5	5	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	2%	2%	3%	3%
Turn Type	Prot		NA		Prot	NA
Protected Phases	4 8		2		1	6
Permitted Phases						
Actuated Green, G (s)	57.0		59.1		9.1	72.7
Effective Green, g (s)	58.3		60.4		9.6	74.0
Actuated g/C Ratio	0.42		0.43		0.07	0.53
Clearance Time (s)			5.3		4.5	5.3
Vehicle Extension (s)			4.7		2.3	4.7
Lane Grp Cap (vph)	705		1425		113	1754
v/s Ratio Prot	c0.19		c0.36		c0.05	0.22
v/s Ratio Perm						
v/c Ratio	0.45		0.82		0.75	0.41
Uniform Delay, d1	29.3		35.1		64.0	19.9
Progression Factor	0.63		0.93		1.00	1.00
Incremental Delay, d2	0.1		4.9		22.7	0.7
Delay (s)	18.5		37.7		86.7	20.6
Level of Service	B		D		F	C
Approach Delay (s)	18.5		37.7			27.6
Approach LOS	B		D			C

Intersection Summary			
HCM 2000 Control Delay	31.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.7
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	NBL2	NBT	SBL	SBT	SBR	SER	SER2
Lane Configurations										
Traffic Volume (vph)	65	115	75	215	1115	91	853	86	1167	30
Future Volume (vph)	65	115	75	215	1115	91	853	86	1167	30
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.0		4.0	4.0	4.0	4.0		4.0	
Lane Util. Factor		1.00		1.00	0.95	1.00	0.95		*0.95	
Frpb, ped/bikes		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	
Frt		0.96		1.00	1.00	1.00	0.99		1.00	
Flt Protected		0.99		0.95	1.00	0.95	1.00		1.00	
Satd. Flow (prot)		1662		1676	3353	1676	3294		3320	
Flt Permitted		0.99		0.95	1.00	0.95	1.00		1.00	
Satd. Flow (perm)		1662		1676	3353	1676	3294		3320	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	65	115	75	215	1115	91	853	86	1167	30
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	255	0	215	1115	91	939	0	1197	0
Confl. Peds. (#/hr)								5		
Heavy Vehicles (%)	3%	3%	2%	2%	2%	2%	2%	2%	3%	3%
Turn Type	Perm	NA		Prot	NA	Prot	NA		Prot	
Protected Phases		4		3	3 6	5	1		2	
Permitted Phases	4									
Actuated Green, G (s)		14.0		9.0	100.2	11.3	38.2		59.2	
Effective Green, g (s)		15.0		10.0	98.2	11.8	39.0		60.0	
Actuated g/C Ratio		0.11		0.07	0.70	0.08	0.28		0.43	
Clearance Time (s)		5.0		5.0		4.5	4.8		4.8	
Vehicle Extension (s)		2.3		2.3		2.3	4.8		4.8	
Lane Grp Cap (vph)		178		119	2351	141	917		1422	
v/s Ratio Prot				c0.13	0.33	0.05	c0.29		c0.36	
v/s Ratio Perm		0.15								
v/c Ratio		1.43		1.81	0.47	0.65	1.02		0.84	
Uniform Delay, d1		62.5		65.0	9.4	62.1	50.5		35.8	
Progression Factor		1.00		1.00	1.00	0.93	1.14		1.00	
Incremental Delay, d2		223.8		394.2	0.1	7.5	34.8		6.2	
Delay (s)		286.3		459.2	9.4	65.1	92.5		42.0	
Level of Service		F		F	A	E	F		D	
Approach Delay (s)		286.3			82.1		90.1			
Approach LOS		F			F		F			

Intersection Summary			
HCM 2000 Control Delay	85.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	112.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	206	0	0	0	0	0	1015	45	0	0	0
Future Volume (vph)	0	206	0	0	0	0	0	1015	45	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.0						4.0				
Lane Util. Factor		1.00						0.95				
Frpb, ped/bikes		1.00						1.00				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.99				
Flt Protected		1.00						1.00				
Satd. Flow (prot)		1765						3332				
Flt Permitted		1.00						1.00				
Satd. Flow (perm)		1765						3332				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	206	0	0	0	0	0	1015	45	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	206	0	0	0	0	0	1060	0	0	0	0
Confl. Peds. (#/hr)			10	10								
Turn Type	Perm	NA						NA				
Protected Phases		4 5						3 6				
Permitted Phases	4 5											
Actuated Green, G (s)		30.3						100.2				
Effective Green, g (s)		31.3						98.2				
Actuated g/C Ratio		0.22						0.70				
Clearance Time (s)												
Vehicle Extension (s)												
Lane Grp Cap (vph)		394						2337				
v/s Ratio Prot		c0.12						c0.32				
v/s Ratio Perm												
v/c Ratio		0.52						0.45				
Uniform Delay, d1		47.8						9.2				
Progression Factor		0.04						1.00				
Incremental Delay, d2		0.1						0.1				
Delay (s)		1.9						9.2				
Level of Service		A						A				
Approach Delay (s)		1.9			0.0			9.2			0.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.6
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	155.8
Intersection LOS	F

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBU	NBL	NBR
Lane Configurations									
Traffic Vol, veh/h	0	650	400	0	40	395	0	575	205
Future Vol, veh/h	0	650	400	0	40	395	0	575	205
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	1	0	2	2	1	2	1	0
Mvmt Flow	0	650	400	0	40	395	0	575	205
Number of Lanes	0	1	1	0	0	1	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	133.4	46.5	246.9
HCM LOS	F	E	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	74%	0%	0%	9%
Vol Thru, %	0%	100%	0%	91%
Vol Right, %	26%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	780	650	400	435
LT Vol	575	0	0	40
Through Vol	0	650	0	395
RT Vol	205	0	400	0
Lane Flow Rate	780	650	400	435
Geometry Grp	2	7	7	5
Degree of Util (X)	1.482	1.346	0.748	0.864
Departure Headway (Hd)	7.076	8.856	8.108	8.616
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	523	416	452	426
Service Time	5.076	6.556	5.808	6.616
HCM Lane V/C Ratio	1.491	1.563	0.885	1.021
HCM Control Delay	246.9	196.3	31.2	46.5
HCM Lane LOS	F	F	D	E
HCM 95th-tile Q	38.1	25.6	6.2	8.6

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	780	0	0	440
Future Vol, veh/h	0	0	780	0	0	440
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	780	0	0	440

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1220	780	0	0	780	0
Stage 1	780	-	-	-	-	-
Stage 2	440	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	199	395	-	-	837	-
Stage 1	452	-	-	-	-	-
Stage 2	649	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	199	395	-	-	837	-
Mov Cap-2 Maneuver	199	-	-	-	-	-
Stage 1	452	-	-	-	-	-
Stage 2	649	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	837	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	780	440	0
Future Volume (vph)	0	0	0	780	440	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	
Lane Util. Factor				1.00	1.00	
Frt				1.00	1.00	
Flt Protected				1.00	1.00	
Satd. Flow (prot)				1863	1863	
Flt Permitted				1.00	1.00	
Satd. Flow (perm)				1863	1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	780	440	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	780	440	0
Turn Type				NA	NA	
Protected Phases				6	2	
Permitted Phases						
Actuated Green, G (s)				30.0	30.0	
Effective Green, g (s)				30.0	30.0	
Actuated g/C Ratio				1.00	1.00	
Clearance Time (s)				4.0	4.0	
Vehicle Extension (s)				2.5	2.5	
Lane Grp Cap (vph)				1863	1863	
v/s Ratio Prot				c0.42	0.24	
v/s Ratio Perm						
v/c Ratio				0.42	0.24	
Uniform Delay, d1				0.0	0.0	
Progression Factor				1.00	1.00	
Incremental Delay, d2				0.1	0.0	
Delay (s)				0.1	0.0	
Level of Service				A	A	
Approach Delay (s)	0.0			0.1	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM 2000 Control Delay	0.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	30.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	255	260	50	230	595	175	135	685	395	180	165	275
Future Volume (vph)	255	260	50	230	595	175	135	685	395	180	165	275
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	4.8	4.8	4.5	4.8	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98			1.00	0.85	1.00	1.00	0.85	1.00	0.91	
Flt Protected	0.95	1.00			0.99	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	1839			1845	1615	1752	1863	1615	1787	1686	
Flt Permitted	0.95	1.00			0.99	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1787	1839			1845	1615	1752	1863	1615	1787	1686	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	255	260	50	230	595	175	135	685	395	180	165	275
RTOR Reduction (vph)	0	9	0	0	0	55	0	0	135	0	78	0
Lane Group Flow (vph)	255	301	0	0	825	120	135	685	260	180	362	0
Heavy Vehicles (%)	1%	1%	0%	3%	1%	0%	3%	2%	0%	1%	4%	1%
Turn Type	Split	NA		Split	NA	pt+ov	Prot	NA	Prot	Prot	NA	
Protected Phases	4	4		3	3	3 1	5	2	2	1	6	
Permitted Phases												
Actuated Green, G (s)	14.2	14.2			25.0	32.6	7.5	15.8	15.8	7.6	15.9	
Effective Green, g (s)	14.2	14.2			25.0	32.6	7.5	15.8	15.8	7.6	15.9	
Actuated g/C Ratio	0.18	0.18			0.31	0.40	0.09	0.20	0.20	0.09	0.20	
Clearance Time (s)	4.5	4.5			4.5		4.5	4.8	4.8	4.5	4.8	
Vehicle Extension (s)	2.3	2.3			2.5		2.3	4.7	4.7	2.3	4.7	
Lane Grp Cap (vph)	313	322			570	650	162	363	315	167	331	
v/s Ratio Prot	0.14	c0.16			c0.45	0.07	0.08	c0.37	0.16	c0.10	0.21	
v/s Ratio Perm												
v/c Ratio	0.81	0.93			1.45	0.18	0.83	1.89	0.82	1.08	1.09	
Uniform Delay, d1	32.1	32.9			28.0	15.6	36.1	32.6	31.2	36.7	32.5	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	14.4	33.1			211.1	0.1	28.4	409.5	17.4	91.9	77.0	
Delay (s)	46.5	66.0			239.0	15.7	64.5	442.0	48.7	128.6	109.5	
Level of Service	D	E			F	B	E	F	D	F	F	
Approach Delay (s)		57.2			199.9			272.2			115.0	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	186.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.39		
Actuated Cycle Length (s)	80.9	Sum of lost time (s)	18.3
Intersection Capacity Utilization	122.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations					↑↑	
Traffic Volume (vph)	0	0	0	0	835	0
Future Volume (vph)	0	0	0	0	835	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	
Lane Util. Factor					0.95	
Frt					1.00	
Flt Protected					1.00	
Satd. Flow (prot)					3539	
Flt Permitted					1.00	
Satd. Flow (perm)					3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	835	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	835	0
Turn Type					NA	
Protected Phases					2	
Permitted Phases						
Actuated Green, G (s)					26.5	
Effective Green, g (s)					26.5	
Actuated g/C Ratio					1.00	
Clearance Time (s)					4.0	
Vehicle Extension (s)					2.5	
Lane Grp Cap (vph)					3539	
v/s Ratio Prot					c0.24	
v/s Ratio Perm						
v/c Ratio					0.24	
Uniform Delay, d1					0.0	
Progression Factor					1.00	
Incremental Delay, d2					0.0	
Delay (s)					0.0	
Level of Service					A	
Approach Delay (s)	0.0			0.0	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM 2000 Control Delay	0.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	26.5	Sum of lost time (s)	4.0
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑↑	↰↰	↱
Traffic Volume (vph)	1995	245	0	3075	370	160
Future Volume (vph)	1995	245	0	3075	370	160
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	5.0		4.0	4.0	4.0
Lane Util. Factor	0.95	1.00		0.91	0.97	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	1.00	1.00		1.00	0.95	1.00
Satd. Flow (prot)	3228	1444		4684	3162	1473
Flt Permitted	1.00	1.00		1.00	0.95	1.00
Satd. Flow (perm)	3228	1444		4684	3162	1473
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1995	245	0	3075	370	160
RTOR Reduction (vph)	0	0	0	0	0	29
Lane Group Flow (vph)	1995	245	0	3075	370	131
Confl. Peds. (#/hr)		1				
Confl. Bikes (#/hr)		4				
Heavy Vehicles (%)	3%	3%	0%	2%	2%	1%
Turn Type	NA	custom		NA	Prot	Perm
Protected Phases	2	8 9		6	8	
Permitted Phases						8
Actuated Green, G (s)	116.4	99.6		116.4	14.1	14.1
Effective Green, g (s)	116.9	95.1		116.9	15.1	15.1
Actuated g/C Ratio	0.84	0.68		0.84	0.11	0.11
Clearance Time (s)	4.5			4.5	5.0	5.0
Vehicle Extension (s)	4.6			5.2	2.3	2.3
Lane Grp Cap (vph)	2695	980		3911	341	158
v/s Ratio Prot	0.62	0.17		c0.66	c0.12	
v/s Ratio Perm						0.09
v/c Ratio	0.74	0.25		0.79	1.09	0.83
Uniform Delay, d1	5.0	8.7		5.5	62.5	61.2
Progression Factor	1.73	1.02		1.00	1.00	1.00
Incremental Delay, d2	1.1	0.0		1.7	73.4	28.8
Delay (s)	9.8	8.9		7.2	135.8	90.0
Level of Service	A	A		A	F	F
Approach Delay (s)	9.7			7.2	122.0	
Approach LOS	A			A	F	

Intersection Summary			
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	82.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1785	300	60	2365	0	0	0	0	455	5	245
Future Volume (vph)	0	1785	300	60	2365	0	0	0	0	455	5	245
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.91					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.97	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
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3228	1418	1630	4684					1548	1555	1444
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3228	1418	1630	4684					1548	1555	1444
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1785	300	60	2365	0	0	0	0	455	5	245
RTOR Reduction (vph)	0	0	70	0	0	0	0	0	0	0	0	38
Lane Group Flow (vph)	0	1785	230	60	2365	0	0	0	0	232	228	207
Confl. Peds. (#/hr)			2									
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	0%	3%	2%	2%	2%	0%	0%	0%	0%	2%	0%	3%
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		90.9	90.9	8.7	104.1					26.4	26.4	26.4
Effective Green, g (s)		91.4	91.4	9.2	104.6					27.4	27.4	27.4
Actuated g/C Ratio		0.65	0.65	0.07	0.75					0.20	0.20	0.20
Clearance Time (s)		4.5	4.5	4.5	4.5					5.0	5.0	5.0
Vehicle Extension (s)		4.8	4.8	2.5	4.8					2.3	2.3	2.3
Lane Grp Cap (vph)		2107	925	107	3499					302	304	282
v/s Ratio Prot		c0.55		0.04	c0.50							
v/s Ratio Perm			0.16							c0.15	0.15	0.14
v/c Ratio		0.85	0.25	0.56	0.68					0.77	0.75	0.73
Uniform Delay, d1		18.9	10.1	63.4	9.0					53.3	53.1	52.9
Progression Factor		1.00	1.00	0.98	1.52					1.00	1.00	1.00
Incremental Delay, d2		4.4	0.6	3.3	0.7					10.4	9.3	8.7
Delay (s)		23.3	10.7	65.3	14.4					63.7	62.3	61.6
Level of Service		C	B	E	B					E	E	E
Approach Delay (s)		21.5			15.6			0.0			62.5	
Approach LOS		C			B			A			E	

Intersection Summary			
HCM 2000 Control Delay	24.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	146	738	800	545	305	1055
Future Volume (vph)	146	738	800	545	305	1055
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.88	0.95		1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.94		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1630	2554	3092		1662	1733
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1630	2554	3092		1662	1733
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	146	738	800	545	305	1055
RTOR Reduction (vph)	0	596	117	0	0	0
Lane Group Flow (vph)	146	142	1228	0	305	1055
Confl. Peds. (#/hr)		2				
Heavy Vehicles (%)	2%	0%	1%	1%	0%	1%
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	4		6		5	2
Permitted Phases		4				
Actuated Green, G (s)	14.3	14.3	50.9		21.8	76.7
Effective Green, g (s)	14.8	14.8	51.4		21.8	77.2
Actuated g/C Ratio	0.15	0.15	0.51		0.22	0.77
Clearance Time (s)	4.5	4.5	4.5		4.0	4.5
Vehicle Extension (s)	2.3	2.3	6.2		2.3	6.2
Lane Grp Cap (vph)	241	377	1589		362	1337
v/s Ratio Prot	c0.09		0.40		0.18	c0.61
v/s Ratio Perm		0.06				
v/c Ratio	0.61	0.38	0.77		0.84	0.79
Uniform Delay, d1	39.9	38.4	19.6		37.5	6.7
Progression Factor	1.00	1.00	1.32		1.00	1.00
Incremental Delay, d2	3.3	0.4	3.4		15.8	4.8
Delay (s)	43.2	38.8	29.3		53.2	11.4
Level of Service	D	D	C		D	B
Approach Delay (s)	39.5		29.3			20.8
Approach LOS	D		C			C

Intersection Summary			
HCM 2000 Control Delay	28.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	50	241	65	1295	1097	104
Future Volume (vph)	50	241	65	1295	1097	104
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1599	1436	1630	3292	1733	1400
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1599	1436	1630	3292	1733	1400
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	241	65	1295	1097	104
RTOR Reduction (vph)	0	218	0	0	0	7
Lane Group Flow (vph)	50	23	65	1295	1097	97
Confl. Peds. (#/hr)						8
Confl. Bikes (#/hr)		1				2
Heavy Vehicles (%)	4%	1%	2%	1%	1%	2%
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	8		1	6	2	
Permitted Phases		8				2
Actuated Green, G (s)	7.5	7.5	7.7	84.0	72.3	72.3
Effective Green, g (s)	7.5	7.5	7.7	84.5	72.8	72.8
Actuated g/C Ratio	0.08	0.08	0.08	0.84	0.73	0.73
Clearance Time (s)	4.0	4.0	4.0	4.5	4.5	4.5
Vehicle Extension (s)	2.3	2.3	2.3	4.6	4.1	4.1
Lane Grp Cap (vph)	119	107	125	2781	1261	1019
v/s Ratio Prot	c0.03		0.04	c0.39	c0.63	
v/s Ratio Perm		0.02				0.07
v/c Ratio	0.42	0.21	0.52	0.47	0.87	0.10
Uniform Delay, d1	44.2	43.5	44.4	2.0	10.1	4.0
Progression Factor	1.00	1.00	1.41	0.09	1.33	1.06
Incremental Delay, d2	1.4	0.6	1.6	0.4	5.6	0.1
Delay (s)	45.6	44.1	64.4	0.5	19.0	4.3
Level of Service	D	D	E	A	B	A
Approach Delay (s)	44.3			3.6	17.7	
Approach LOS	D			A	B	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	5	5	101	5	145	5	1200	135	380	928	30
Future Volume (vph)	15	5	5	101	5	145	5	1200	135	380	928	30
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	1.00	
Frpb, ped/bikes		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.97			1.00	0.85	1.00	0.98		1.00	1.00	
Flt Protected		0.97			0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1583			1592	1458	1662	3236		1646	1722	
Flt Permitted		0.84			0.72	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1365			1197	1458	1662	3236		1646	1722	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	5	5	101	5	145	5	1200	135	380	928	30
RTOR Reduction (vph)	0	4	0	0	0	33	0	8	0	0	1	0
Lane Group Flow (vph)	0	21	0	0	106	112	5	1327	0	380	957	0
Confl. Peds. (#/hr)			1	1								13
Confl. Bikes (#/hr)												3
Heavy Vehicles (%)	0%	0%	20%	5%	0%	2%	0%	1%	3%	1%	1%	0%
Turn Type	Perm	NA		Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		8			4	5	1	6		5	2	
Permitted Phases	8			4		4						
Actuated Green, G (s)		14.6			14.6	40.9	1.2	47.1		26.3	71.7	
Effective Green, g (s)		14.6			14.6	40.9	1.2	47.1		26.3	72.2	
Actuated g/C Ratio		0.15			0.15	0.41	0.01	0.47		0.26	0.72	
Clearance Time (s)		4.0			4.0	4.0	4.0	4.0		4.0	4.5	
Vehicle Extension (s)		2.5			2.5	2.3	2.3	4.6		2.3	4.6	
Lane Grp Cap (vph)		199			174	654	19	1524		432	1243	
v/s Ratio Prot						0.05	0.00	c0.41		c0.23	0.56	
v/s Ratio Perm		0.02			c0.09	0.03						
v/c Ratio		0.10			0.61	0.17	0.26	0.87		0.88	0.77	
Uniform Delay, d1		37.0			40.0	18.8	49.0	23.7		35.3	8.7	
Progression Factor		1.00			1.00	1.00	1.00	1.00		0.79	0.42	
Incremental Delay, d2		0.2			5.0	0.1	4.3	7.1		11.2	2.7	
Delay (s)		37.2			45.0	18.9	53.2	30.8		39.3	6.4	
Level of Service		D			D	B	D	C		D	A	
Approach Delay (s)		37.2			29.9			30.9			15.7	
Approach LOS		D			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	790	45	0	0	0	0	240	55	0	175	0
Future Volume (vph)	75	790	45	0	0	0	0	240	55	0	175	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frpb, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.99						0.97			1.00	
Flt Protected		1.00						1.00			1.00	
Satd. Flow (prot)		3245						1748			1782	
Flt Permitted		1.00						1.00			1.00	
Satd. Flow (perm)		3245						1748			1782	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	75	790	45	0	0	0	0	240	55	0	175	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	910	0	0	0	0	0	295	0	0	175	0
Confl. Peds. (#/hr)	5		5				5		5	5		5
Heavy Vehicles (%)	4%	4%	4%	0%	0%	0%	0%	0%	0%	1%	1%	1%
Turn Type	Split	NA						NA			NA	
Protected Phases	4	4						8			1 2 8	
Permitted Phases										1 2 8		
Actuated Green, G (s)		39.3						23.0			90.1	
Effective Green, g (s)		40.6						24.0			86.1	
Actuated g/C Ratio		0.29						0.17			0.61	
Clearance Time (s)		5.3						5.0				
Vehicle Extension (s)		6.4						2.3				
Lane Grp Cap (vph)		941						299			1095	
v/s Ratio Prot		c0.28						c0.17			c0.10	
v/s Ratio Perm												
v/c Ratio		0.97						0.99			0.16	
Uniform Delay, d1		49.0						57.8			11.5	
Progression Factor		1.00						1.00			0.08	
Incremental Delay, d2		22.1						47.9			0.0	
Delay (s)		71.2						105.7			1.0	
Level of Service		E						F			A	
Approach Delay (s)		71.2			0.0			105.7			1.0	
Approach LOS		E			A			F			A	

Intersection Summary			
HCM 2000 Control Delay	69.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.3
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	310	5	1090	90	85	720
Future Volume (vph)	310	5	1090	90	85	720
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0		4.0		4.0	4.0
Lane Util. Factor	1.00		0.95		1.00	0.95
Frpb, ped/bikes	1.00		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	1.00		0.99		1.00	1.00
Flt Protected	0.95		1.00		0.95	1.00
Satd. Flow (prot)	1694		3305		1660	3320
Flt Permitted	0.95		1.00		0.95	1.00
Satd. Flow (perm)	1694		3305		1660	3320
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	310	5	1090	90	85	720
RTOR Reduction (vph)	1	0	4	0	0	0
Lane Group Flow (vph)	314	0	1176	0	85	720
Confl. Peds. (#/hr)		5		5	5	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	1%	1%	2%	2%	3%	3%
Turn Type	Prot		NA		Prot	NA
Protected Phases	4 8		2		1	6
Permitted Phases						
Actuated Green, G (s)	67.6		49.7		7.9	62.1
Effective Green, g (s)	68.9		51.0		8.4	63.4
Actuated g/C Ratio	0.49		0.36		0.06	0.45
Clearance Time (s)			5.3		4.5	5.3
Vehicle Extension (s)			4.7		2.3	4.7
Lane Grp Cap (vph)	833		1203		99	1503
v/s Ratio Prot	c0.19		c0.36		c0.05	0.22
v/s Ratio Perm						
v/c Ratio	0.38		0.98		0.86	0.48
Uniform Delay, d1	22.2		43.9		65.2	26.8
Progression Factor	0.22		1.32		1.00	1.00
Incremental Delay, d2	0.2		19.2		47.1	1.1
Delay (s)	5.2		77.3		112.3	27.9
Level of Service	A		E		F	C
Approach Delay (s)	5.2		77.3			36.8
Approach LOS	A		E			D

Intersection Summary			
HCM 2000 Control Delay	53.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.7
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	NBT	SBL	SBT	SBR	SER	SER2
Lane Configurations									
Traffic Volume (vph)	65	115	75	1115	91	853	86	1167	30
Future Volume (vph)	65	115	75	1115	91	853	86	1167	30
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.0		3.0	4.0	4.0		4.0	
Lane Util. Factor		1.00		0.95	1.00	0.95		*0.95	
Frpb, ped/bikes		1.00		1.00	1.00	1.00		1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00	
Frt		0.96		1.00	1.00	0.99		1.00	
Flt Protected		0.99		1.00	0.95	1.00		1.00	
Satd. Flow (prot)		1662		3353	1676	3294		3320	
Flt Permitted		0.99		1.00	0.95	1.00		1.00	
Satd. Flow (perm)		1662		3353	1676	3294		3320	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	65	115	75	1115	91	853	86	1167	30
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	255	0	1115	91	939	0	1197	0
Confl. Peds. (#/hr)							5		
Heavy Vehicles (%)	3%	3%	2%	2%	2%	2%	2%	3%	3%
Turn Type	Perm	NA		NA	Prot	NA		Prot	
Protected Phases		4		6	5	1		2	
Permitted Phases	4								
Actuated Green, G (s)		23.4		91.1	12.0	41.9		60.1	
Effective Green, g (s)		24.4		92.1	12.5	42.7		60.9	
Actuated g/C Ratio		0.17		0.66	0.09	0.31		0.43	
Clearance Time (s)		5.0		4.0	4.5	4.8		4.8	
Vehicle Extension (s)		2.3		4.8	2.3	4.8		4.8	
Lane Grp Cap (vph)		289		2205	149	1004		1444	
v/s Ratio Prot				0.33	0.05	c0.29		c0.36	
v/s Ratio Perm		0.15							
v/c Ratio		0.88		0.51	0.61	0.94		0.83	
Uniform Delay, d1		56.4		12.3	61.4	47.3		34.9	
Progression Factor		1.00		1.00	0.70	0.85		1.00	
Incremental Delay, d2		25.2		0.8	5.3	14.5		5.6	
Delay (s)		81.6		13.1	48.1	55.0		40.6	
Level of Service		F		B	D	D		D	
Approach Delay (s)		81.6		13.1		54.4			
Approach LOS		F		B		D			

Intersection Summary			
HCM 2000 Control Delay	38.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	97.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	206	0	0	0	0	0	1015	45	0	0	0
Future Volume (vph)	0	206	0	0	0	0	0	1015	45	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.0						3.0				
Lane Util. Factor		1.00						0.95				
Frpb, ped/bikes		1.00						1.00				
Flpb, ped/bikes		1.00						1.00				
Frt		1.00						0.99				
Flt Protected		1.00						1.00				
Satd. Flow (prot)		1765						3332				
Flt Permitted		1.00						1.00				
Satd. Flow (perm)		1765						3332				
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	206	0	0	0	0	0	1015	45	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	206	0	0	0	0	0	1060	0	0	0	0
Confl. Peds. (#/hr)			10	10								
Turn Type	Perm	NA						NA				
Protected Phases		4 5						6				
Permitted Phases	4 5											
Actuated Green, G (s)		40.4						91.1				
Effective Green, g (s)		41.4						92.1				
Actuated g/C Ratio		0.30						0.66				
Clearance Time (s)								4.0				
Vehicle Extension (s)								4.8				
Lane Grp Cap (vph)		521						2191				
v/s Ratio Prot		c0.12						c0.32				
v/s Ratio Perm												
v/c Ratio		0.40						0.48				
Uniform Delay, d1		39.3						12.0				
Progression Factor		0.02						1.00				
Incremental Delay, d2		0.2						0.8				
Delay (s)		0.8						12.8				
Level of Service		A						B				
Approach Delay (s)		0.8			0.0			12.8			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.6
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	650	400	40	395	575	205
Future Volume (vph)	650	400	40	395	575	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	1.00	1.00		1.00	0.95	1.00
Satd. Flow (prot)	1881	1615		1871	1787	1615
Flt Permitted	1.00	1.00		0.74	0.95	1.00
Satd. Flow (perm)	1881	1615		1389	1787	1615
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	650	400	40	395	575	205
RTOR Reduction (vph)	0	226	0	0	0	101
Lane Group Flow (vph)	650	174	0	435	575	104
Heavy Vehicles (%)	1%	0%	2%	1%	1%	0%
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)	24.5	24.5		24.5	23.7	23.7
Effective Green, g (s)	24.5	24.5		24.5	23.7	23.7
Actuated g/C Ratio	0.44	0.44		0.44	0.42	0.42
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	820	704		605	753	681
v/s Ratio Prot	c0.35				c0.32	
v/s Ratio Perm		0.11		0.31		0.06
v/c Ratio	0.79	0.25		0.72	0.76	0.15
Uniform Delay, d1	13.7	10.0		13.0	13.9	10.0
Progression Factor	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.1	0.1		3.8	4.4	0.1
Delay (s)	18.8	10.2		16.8	18.3	10.1
Level of Service	B	B		B	B	B
Approach Delay (s)	15.5			16.8	16.1	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	56.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	92.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	780	0	0	440
Future Vol, veh/h	0	0	780	0	0	440
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	780	0	0	440

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1220	780	0	0	780	0
Stage 1	780	-	-	-	-	-
Stage 2	440	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	199	395	-	-	837	-
Stage 1	452	-	-	-	-	-
Stage 2	649	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	199	395	-	-	837	-
Mov Cap-2 Maneuver	199	-	-	-	-	-
Stage 1	452	-	-	-	-	-
Stage 2	649	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	837	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↑	↑	
Traffic Volume (vph)	0	0	0	780	440	0
Future Volume (vph)	0	0	0	780	440	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	
Lane Util. Factor				1.00	1.00	
Frt				1.00	1.00	
Flt Protected				1.00	1.00	
Satd. Flow (prot)				1863	1863	
Flt Permitted				1.00	1.00	
Satd. Flow (perm)				1863	1863	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	780	440	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	780	440	0
Turn Type				NA	NA	
Protected Phases				6	2	
Permitted Phases						
Actuated Green, G (s)				30.0	30.0	
Effective Green, g (s)				30.0	30.0	
Actuated g/C Ratio				1.00	1.00	
Clearance Time (s)				4.0	4.0	
Vehicle Extension (s)				2.5	2.5	
Lane Grp Cap (vph)				1863	1863	
v/s Ratio Prot				c0.42	0.24	
v/s Ratio Perm						
v/c Ratio				0.42	0.24	
Uniform Delay, d1				0.0	0.0	
Progression Factor				1.00	1.00	
Incremental Delay, d2				0.1	0.0	
Delay (s)				0.1	0.0	
Level of Service				A	A	
Approach Delay (s)	0.0			0.1	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM 2000 Control Delay	0.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	30.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	255	260	50	230	595	175	135	685	395	180	165	275
Future Volume (vph)	255	260	50	230	595	175	135	685	395	180	165	275
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	4.8	4.8	4.5	4.8	
Lane Util. Factor	1.00	1.00		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	1839		1752	3574	1615	1752	1863	1615	1787	1686	
Flt Permitted	0.17	1.00		0.33	1.00	1.00	0.32	1.00	1.00	0.09	1.00	
Satd. Flow (perm)	313	1839		614	3574	1615	585	1863	1615	171	1686	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	255	260	50	230	595	175	135	685	395	180	165	275
RTOR Reduction (vph)	0	6	0	0	0	86	0	0	91	0	48	0
Lane Group Flow (vph)	255	304	0	230	595	89	135	685	304	180	392	0
Heavy Vehicles (%)	1%	1%	0%	3%	1%	0%	3%	2%	0%	1%	4%	1%
Turn Type	pm+pt	NA		pm+pt	NA	pt+ov	pm+pt	NA	pt+ov	pm+pt	NA	
Protected Phases	7	4		3	8	8 1	5	2	2 3	1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	43.5	27.1		37.9	24.3	37.2	51.5	43.6	62.0	52.5	44.1	
Effective Green, g (s)	43.5	27.1		37.9	24.3	37.2	51.5	43.6	62.0	52.5	44.1	
Actuated g/C Ratio	0.39	0.24		0.34	0.22	0.34	0.46	0.39	0.56	0.47	0.40	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.8		4.5	4.8	
Vehicle Extension (s)	2.5	2.3		2.5	2.5		2.3	4.7		2.3	4.7	
Lane Grp Cap (vph)	340	448		349	782	541	354	731	902	203	669	
v/s Ratio Prot	c0.11	0.17		0.08	0.17	0.05	0.03	c0.37	0.19	c0.07	0.23	
v/s Ratio Perm	c0.18			0.14			0.15			0.35		
v/c Ratio	0.75	0.68		0.66	0.76	0.16	0.38	0.94	0.34	0.89	0.59	
Uniform Delay, d1	25.7	38.0		28.3	40.6	26.0	18.7	32.4	13.3	25.9	26.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	8.6	3.5		4.0	4.2	0.1	0.4	19.9	0.4	33.4	1.9	
Delay (s)	34.3	41.5		32.3	44.8	26.1	19.1	52.2	13.7	59.3	28.2	
Level of Service	C	D		C	D	C	B	D	B	E	C	
Approach Delay (s)		38.3			38.7			36.0			37.2	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	37.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	111.0	Sum of lost time (s)	18.3
Intersection Capacity Utilization	91.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations					↑↑	
Traffic Volume (vph)	0	0	0	0	835	0
Future Volume (vph)	0	0	0	0	835	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	
Lane Util. Factor					0.95	
Frt					1.00	
Flt Protected					1.00	
Satd. Flow (prot)					3539	
Flt Permitted					1.00	
Satd. Flow (perm)					3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	0	835	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	835	0
Turn Type					NA	
Protected Phases					2	
Permitted Phases						
Actuated Green, G (s)					26.5	
Effective Green, g (s)					26.5	
Actuated g/C Ratio					1.00	
Clearance Time (s)					4.0	
Vehicle Extension (s)					2.5	
Lane Grp Cap (vph)					3539	
v/s Ratio Prot					c0.24	
v/s Ratio Perm						
v/c Ratio					0.24	
Uniform Delay, d1					0.0	
Progression Factor					1.00	
Incremental Delay, d2					0.0	
Delay (s)					0.0	
Level of Service					A	
Approach Delay (s)	0.0			0.0	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM 2000 Control Delay	0.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	26.5	Sum of lost time (s)	4.0
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Appendix D: Queuing Analysis

Intersection: 10: 217 NB off-ramp & 99W

Movement	EB	EB	EB	WB	WB	WB	B15	B15	B16	B16	NB	NB
Directions Served	T	T	R	T	T	T	T	T	T	T	L	L
Maximum Queue (ft)	284	278	172	532	549	518	54	199	82	152	252	260
Average Queue (ft)	225	220	18	247	264	229	3	4	4	13	149	162
95th Queue (ft)	321	316	113	463	478	449	64	81	39	79	223	235
Link Distance (ft)	205	205	205	908	908	908	799	799	144	144		1710
Upstream Blk Time (%)	9	9	1					0	0	0		
Queuing Penalty (veh)	69	68	7					0	0	0		
Storage Bay Dist (ft)											1000	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 10: 217 NB off-ramp & 99W

Movement	NB
Directions Served	R
Maximum Queue (ft)	206
Average Queue (ft)	91
95th Queue (ft)	165
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	1000
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: 99W

Movement	EB	EB	WB	WB
Directions Served	T	T	T	T
Maximum Queue (ft)	266	299	297	308
Average Queue (ft)	62	73	117	136
95th Queue (ft)	201	225	306	330
Link Distance (ft)	332	332	205	205
Upstream Blk Time (%)	0	0	5	7
Queuing Penalty (veh)	0	1	59	78
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 15: Bend

Movement	EB
Directions Served	T
Maximum Queue (ft)	7
Average Queue (ft)	0
95th Queue (ft)	5
Link Distance (ft)	908
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 20: 217 SB off/on-ramps & 99W

Movement	EB	EB	EB	B26	B26	WB	WB	WB	SB	SB	SB
Directions Served	T	T	R	T	T	L	T	T	L	LT	R
Maximum Queue (ft)	581	590	151	8	33	331	419	414	277	288	162
Average Queue (ft)	294	320	34	0	2	94	361	372	175	189	71
95th Queue (ft)	482	506	106	8	16	253	458	451	254	267	123
Link Distance (ft)	1589	1589	1589	125	125		332	332	1343	1343	1343
Upstream Blk Time (%)						0	14	17			
Queuing Penalty (veh)						0	163	203			
Storage Bay Dist (ft)						350					
Storage Blk Time (%)						0	14				
Queuing Penalty (veh)						1	9				

Intersection: 25: Bend

Movement	WB	WB
Directions Served	T	T
Maximum Queue (ft)	249	246
Average Queue (ft)	11	11
95th Queue (ft)	199	197
Link Distance (ft)	1589	1589
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 30: SW 72nd Ave & 217 NB

Movement	WB	WB	B33	B33	NB	NB	SB	SB	B31
Directions Served	L	R	T	T	T	TR	L	T	T
Maximum Queue (ft)	1236	1358	168	201	432	467	250	1092	766
Average Queue (ft)	549	997	28	42	206	270	238	1050	726
95th Queue (ft)	1315	1636	165	196	359	434	293	1194	856
Link Distance (ft)	1350	1350	2180	2180	473	473		990	720
Upstream Blk Time (%)	4	23			0	1		59	71
Queuing Penalty (veh)	0	0			1	4		0	0
Storage Bay Dist (ft)							225		
Storage Blk Time (%)							15	44	
Queuing Penalty (veh)							153	133	

Intersection: 31: Bend

Movement	NB
Directions Served	T
Maximum Queue (ft)	6
Average Queue (ft)	0
95th Queue (ft)	6
Link Distance (ft)	990
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 40: SW 72nd Ave & SW Hunziker St

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	T	R
Maximum Queue (ft)	393	275	109	120	158	490	75
Average Queue (ft)	107	198	53	19	35	410	55
95th Queue (ft)	337	305	98	76	105	619	86
Link Distance (ft)	810		203	203	203	473	
Upstream Blk Time (%)					0	11	
Queuing Penalty (veh)					0	124	
Storage Bay Dist (ft)		250					50
Storage Blk Time (%)	0	15				43	1
Queuing Penalty (veh)	0	7				44	9

Intersection: 50: SW 72nd Ave & SW Varns St/217 SB

Movement	EB	WB	WB	NB	NB	NB	B55	SB	SB
Directions Served	LTR	LT	R	L	T	TR	T	L	TR
Maximum Queue (ft)	73	165	88	44	1109	150	1007	203	277
Average Queue (ft)	23	71	38	5	972	148	748	180	216
95th Queue (ft)	60	132	74	25	1352	155	1532	220	301
Link Distance (ft)	689	1107	1107		1010		1095		203
Upstream Blk Time (%)					25		27	6	17
Queuing Penalty (veh)					0		0	0	222
Storage Bay Dist (ft)				40		125		280	
Storage Blk Time (%)				0	34	24		6	17
Queuing Penalty (veh)				2	251	148		53	63

Intersection: 60: SW 60th Ave & I-5 Off Ramp/SW Barbur Blvd

Movement	EB	EB	NB	SB
Directions Served	LT	TR	TR	LT
Maximum Queue (ft)	4189	4185	1178	29
Average Queue (ft)	2528	2532	1147	6
95th Queue (ft)	4751	4733	1316	23
Link Distance (ft)	4613	4613	1163	20
Upstream Blk Time (%)	10	9	89	5
Queuing Penalty (veh)	0	0	0	9
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 70: SW Barbur Blvd (Hwy 99W) & SW 60th Ave

Movement	WB	NB	NB	SB	SB	SB
Directions Served	LR	T	TR	L	T	T
Maximum Queue (ft)	59	269	302	350	3863	3882
Average Queue (ft)	33	148	172	155	1982	1987
95th Queue (ft)	52	245	268	385	4052	4055
Link Distance (ft)	20	939	939		6348	6348
Upstream Blk Time (%)	79					
Queuing Penalty (veh)	248					
Storage Bay Dist (ft)				270		
Storage Blk Time (%)					77	
Queuing Penalty (veh)					66	

Intersection: 80: SW Barbur Blvd (Hwy 99W) & SW 64th Ave & I-5 SB Off-Ramp

Movement	EB	NB	NB	NB	SB	SB	SB	SE	SE
Directions Served	LTR	<	T	T	L	T	TR	R	R>
Maximum Queue (ft)	346	250	344	263	500	960	962	491	511
Average Queue (ft)	314	244	322	70	232	930	929	235	248
95th Queue (ft)	335	256	337	212	589	1035	1029	497	517
Link Distance (ft)	304		314	314		939	939	3926	3926
Upstream Blk Time (%)	99		89	0		63	60		
Queuing Penalty (veh)	0		579	1		327	310		
Storage Bay Dist (ft)		200			400				
Storage Blk Time (%)		99	0			86			
Queuing Penalty (veh)		537	0			78			

Intersection: 83: SW Barbur Blvd (Hwy 99W) & I-5 NB On-Ramp

Movement	NB	NB
Directions Served	T	TR
Maximum Queue (ft)	3156	3153
Average Queue (ft)	3088	3088
95th Queue (ft)	3366	3362
Link Distance (ft)	3099	3099
Upstream Blk Time (%)	93	89
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 85: I-5 NB On-Ramp/I-5 On Ramp & SW 64th Ave

Movement	EB	EB	NB	NB
Directions Served	L	T	T	TR
Maximum Queue (ft)	59	33	123	140
Average Queue (ft)	8	11	37	49
95th Queue (ft)	38	33	106	130
Link Distance (ft)	36	36	314	314
Upstream Blk Time (%)	11	1		
Queuing Penalty (veh)	11	1		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 90: SW 65th Ave & SW Haines St

Movement	EB	EB	WB	NB
Directions Served	T	R	LT	LR
Maximum Queue (ft)	1114	1109	286	635
Average Queue (ft)	962	840	123	630
95th Queue (ft)	1375	1555	227	632
Link Distance (ft)	1077	1077	527	629
Upstream Blk Time (%)	67	51		24
Queuing Penalty (veh)	0	0		184
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 93: I-5 Haines NB Ramp/SW 65th Ave & S/S

Movement	NB
Directions Served	TR
Maximum Queue (ft)	329
Average Queue (ft)	321
95th Queue (ft)	327
Link Distance (ft)	314
Upstream Blk Time (%)	38
Queuing Penalty (veh)	295
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 95: I-5 Haines NB Ramp

Movement	NB
Directions Served	T
Maximum Queue (ft)	185
Average Queue (ft)	176
95th Queue (ft)	191
Link Distance (ft)	168
Upstream Blk Time (%)	29
Queuing Penalty (veh)	226
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 96: SW 65th Ave/I-5 Haines NB Ramp

Movement	NB
Directions Served	T
Maximum Queue (ft)	2660
Average Queue (ft)	2217
95th Queue (ft)	3371
Link Distance (ft)	2608
Upstream Blk Time (%)	60
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 100: SW 68th Ave & SW Dartmouth St

Movement	EB	EB	B101	B101	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	T	T	LT	R	L	T	R	L	TR
Maximum Queue (ft)	271	298	170	205	294	130	200	517	200	300	445
Average Queue (ft)	157	231	41	82	285	6	121	490	189	270	390
95th Queue (ft)	266	335	215	287	293	74	261	504	251	370	480
Link Distance (ft)	218	218	371	371	274	274		472			399
Upstream Blk Time (%)	9	42	3	4	57	0		79			43
Queuing Penalty (veh)	0	0	0	0	293	2		0			0
Storage Bay Dist (ft)							100		100	200	
Storage Blk Time (%)							3	81	16	31	65
Queuing Penalty (veh)							25	400	126	136	116

Intersection: 105: SW Dartmouth St

Movement	SW	SW	B106
Directions Served	R	R	T
Maximum Queue (ft)	434	395	701
Average Queue (ft)	406	343	669
95th Queue (ft)	418	392	694
Link Distance (ft)	340	340	646
Upstream Blk Time (%)	67	9	88
Queuing Penalty (veh)	0	0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 109:

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 5842

Intersection: 10: 217 NB off-ramp & 99W

Movement	EB	EB	EB	WB	WB	WB	B15	B15	B16	B16	NB	NB
Directions Served	T	T	R	T	T	T	T	T	T	T	L	L
Maximum Queue (ft)	295	292	106	329	347	304	60	133	121	130	247	254
Average Queue (ft)	216	215	5	175	191	169	2	5	6	12	153	159
95th Queue (ft)	325	318	61	286	312	287	55	91	51	72	228	234
Link Distance (ft)	205	205	205	908	908	908	799	799	144	144	1710	1710
Upstream Blk Time (%)	8	8	0						0	0		
Queuing Penalty (veh)	61	60	1						0	0		
Storage Bay Dist (ft)												
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 10: 217 NB off-ramp & 99W

Movement	NB
Directions Served	R
Maximum Queue (ft)	201
Average Queue (ft)	95
95th Queue (ft)	166
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	500
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: 99W

Movement	EB	EB	WB	WB
Directions Served	T	T	T	T
Maximum Queue (ft)	292	299	31	19
Average Queue (ft)	61	68	1	1
95th Queue (ft)	210	230	16	10
Link Distance (ft)	326	326	205	205
Upstream Blk Time (%)	0	0		
Queuing Penalty (veh)	1	1		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 15: Bend

Movement	EB
Directions Served	T
Maximum Queue (ft)	4
Average Queue (ft)	0
95th Queue (ft)	4
Link Distance (ft)	908
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 20: 217 SB off/on-ramps & 99W

Movement	EB	EB	EB	B26	WB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	R	T	L	T	T	T	L	LT	R
Maximum Queue (ft)	550	569	139	21	164	379	370	324	305	330	251
Average Queue (ft)	303	331	37	1	56	214	212	191	184	199	127
95th Queue (ft)	512	531	90	13	123	356	354	328	269	289	220
Link Distance (ft)	1589	1589	1589	125		326	326	326	1341	1341	1341
Upstream Blk Time (%)					0	1	0	0			
Queuing Penalty (veh)					0	6	3	1			
Storage Bay Dist (ft)					350						
Storage Blk Time (%)					0	1					
Queuing Penalty (veh)					0	0					

Intersection: 25: Bend

Movement	WB
Directions Served	T
Maximum Queue (ft)	160
Average Queue (ft)	6
95th Queue (ft)	161
Link Distance (ft)	1589
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 30: SW 72nd Ave & 217 NB

Movement	WB	WB	WB	NB	NB	SB	SB	B31
Directions Served	L	R	R	T	TR	L	T	T
Maximum Queue (ft)	307	170	200	369	447	250	1077	768
Average Queue (ft)	123	98	113	186	263	239	1044	727
95th Queue (ft)	252	154	177	308	396	296	1140	857
Link Distance (ft)	1350	1350	1350	473	473		978	720
Upstream Blk Time (%)				0	0		59	70
Queuing Penalty (veh)				0	1		0	0
Storage Bay Dist (ft)						225		
Storage Blk Time (%)						15	44	
Queuing Penalty (veh)						151	135	

Intersection: 40: SW 72nd Ave & SW Hunziker St

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	T	R
Maximum Queue (ft)	456	275	136	117	133	490	75
Average Queue (ft)	128	214	55	15	29	450	57
95th Queue (ft)	380	308	105	66	92	584	88
Link Distance (ft)	810		203	203	203	473	
Upstream Blk Time (%)					0	15	
Queuing Penalty (veh)					0	171	
Storage Bay Dist (ft)		250					50
Storage Blk Time (%)	0	19				45	1
Queuing Penalty (veh)	0	9				47	9

Intersection: 50: SW 72nd Ave & SW Varns St/217 SB

Movement	EB	WB	WB	NB	NB	NB	B55	SB	SB
Directions Served	LTR	LT	R	L	T	TR	T	L	TR
Maximum Queue (ft)	66	157	101	43	1117	150	1142	203	282
Average Queue (ft)	21	69	41	5	1036	149	868	178	215
95th Queue (ft)	52	129	81	25	1274	153	1502	222	306
Link Distance (ft)	689	1107	1107		1010		1095		203
Upstream Blk Time (%)					28		26	5	17
Queuing Penalty (veh)					0		0	0	225
Storage Bay Dist (ft)				40		125		280	
Storage Blk Time (%)				1	33	25		5	17
Queuing Penalty (veh)				10	247	150		44	64

Intersection: 60: SW 60th Ave & I-5 Off Ramp/SW Barbur Blvd

Movement	EB	EB	NB	SB
Directions Served	LT	TR	TR	LT
Maximum Queue (ft)	653	677	1116	28
Average Queue (ft)	409	421	908	3
95th Queue (ft)	620	634	1429	15
Link Distance (ft)	4613	4613	1163	20
Upstream Blk Time (%)			44	2
Queuing Penalty (veh)			0	3
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 70: SW Barbur Blvd (Hwy 99W) & SW 60th Ave

Movement	WB	NB	NB	SB	SB	SB
Directions Served	LR	T	TR	L	T	T
Maximum Queue (ft)	31	746	769	196	288	312
Average Queue (ft)	5	525	545	91	175	187
95th Queue (ft)	23	787	806	165	267	278
Link Distance (ft)	20	939	939		6348	6348
Upstream Blk Time (%)	8	1	2			
Queuing Penalty (veh)	24	8	9			
Storage Bay Dist (ft)				270		
Storage Blk Time (%)					1	
Queuing Penalty (veh)					1	

Intersection: 80: SW Barbur Blvd (Hwy 99W) & SW 64th Ave & I-5 SB Off-Ramp

Movement	EB	NB	NB	SB	SB	SB	SE	SE
Directions Served	LTR	T	T	L	T	TR	R	R>
Maximum Queue (ft)	481	314	318	294	544	538	556	574
Average Queue (ft)	276	179	184	73	361	377	354	370
95th Queue (ft)	457	286	285	208	545	555	485	503
Link Distance (ft)	1218	332	332		939	939	3926	3926
Upstream Blk Time (%)		1	1					
Queuing Penalty (veh)		6	5					
Storage Bay Dist (ft)				400				
Storage Blk Time (%)					6			
Queuing Penalty (veh)					5			

Intersection: 83: SW Barbur Blvd (Hwy 99W) & I-5 NB On-Ramp

Movement	NB	NB
Directions Served	T	TR
Maximum Queue (ft)	282	319
Average Queue (ft)	18	24
95th Queue (ft)	219	275
Link Distance (ft)	3099	3099
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 85: I-5 NB On-Ramp/I-5 On Ramp & SW 64th Ave

Movement	EB	EB	NB	NB
Directions Served	L	T	T	TR
Maximum Queue (ft)	66	36	262	268
Average Queue (ft)	10	16	161	181
95th Queue (ft)	43	39	248	260
Link Distance (ft)	37	37	333	333
Upstream Blk Time (%)	6	2		
Queuing Penalty (veh)	6	2		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 90: SW 65th Ave & SW Haines St

Movement	EB	EB	WB	NB	NB
Directions Served	T	R	LT	L	R
Maximum Queue (ft)	451	88	538	345	158
Average Queue (ft)	244	3	291	181	61
95th Queue (ft)	401	60	525	300	120
Link Distance (ft)	1077	1077	515	629	629
Upstream Blk Time (%)			9		
Queuing Penalty (veh)			0		
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 93: I-5 Haines NB Ramp/SW 65th Ave & S/S

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 95: I-5 Haines NB Ramp

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 96: SW 65th Ave/I-5 Haines NB Ramp

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 100: SW 68th Ave & SW Dartmouth St

Movement	EB	EB	B101	B101	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	TR	T	T	L	T	T	R	L	T	R	L
Maximum Queue (ft)	254	294	18	213	251	269	269	167	200	510	200	300
Average Queue (ft)	143	256	1	50	133	178	175	19	108	489	163	287
95th Queue (ft)	234	331	11	157	226	255	252	100	234	501	283	352
Link Distance (ft)	218	218	371	371	268	268	268	268		472		
Upstream Blk Time (%)	3	36			0	1	0			48		
Queuing Penalty (veh)	0	0			1	1	1			0		
Storage Bay Dist (ft)									100		100	200
Storage Blk Time (%)									3	52	2	81
Queuing Penalty (veh)									29	258	17	362

Intersection: 100: SW 68th Ave & SW Dartmouth St

Movement	SB
Directions Served	TR
Maximum Queue (ft)	428
Average Queue (ft)	392
95th Queue (ft)	460
Link Distance (ft)	385
Upstream Blk Time (%)	60
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	39
Queuing Penalty (veh)	71

Intersection: 105: SW Dartmouth St

Movement	SW	SW
Directions Served	R	R
Maximum Queue (ft)	37	33
Average Queue (ft)	2	2
95th Queue (ft)	24	19
Link Distance (ft)	340	340
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 109:

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 2209

Intersection: 10: 217 NB off-ramp & 99W

Movement	EB	EB	EB	WB	WB	WB	B15	B15	B16	B16	NB	NB
Directions Served	T	T	R	T	T	T	T	T	T	T	L	L
Maximum Queue (ft)	288	276	109	506	505	509	228	166	118	134	240	249
Average Queue (ft)	211	215	5	236	259	229	8	9	8	10	147	160
95th Queue (ft)	316	314	51	443	464	443	129	133	62	65	219	230
Link Distance (ft)	205	205	205	908	908	908	799	799	144	144		1710
Upstream Blk Time (%)	7	8	0				0		0	0		
Queuing Penalty (veh)	55	60	1				0		0	0		
Storage Bay Dist (ft)											1000	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 10: 217 NB off-ramp & 99W

Movement	NB
Directions Served	R
Maximum Queue (ft)	203
Average Queue (ft)	100
95th Queue (ft)	173
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	1000
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: 99W

Movement	EB	EB	WB	WB
Directions Served	T	T	T	T
Maximum Queue (ft)	250	263	288	292
Average Queue (ft)	51	60	102	120
95th Queue (ft)	176	200	292	313
Link Distance (ft)	332	332	205	205
Upstream Blk Time (%)	0	0	5	6
Queuing Penalty (veh)	0	0	55	68
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 15: Bend

Movement	EB
Directions Served	T
Maximum Queue (ft)	6
Average Queue (ft)	0
95th Queue (ft)	6
Link Distance (ft)	908
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 20: 217 SB off/on-ramps & 99W

Movement	EB	EB	EB	B26	B26	WB	WB	WB	SB	SB	SB
Directions Served	T	T	R	T	T	L	T	T	L	LT	R
Maximum Queue (ft)	501	515	175	12	21	331	403	416	306	309	144
Average Queue (ft)	272	295	38	0	1	86	346	359	182	184	69
95th Queue (ft)	444	469	111	10	16	246	463	464	270	273	117
Link Distance (ft)	1589	1589	1589	125	125		332	332	1343	1343	1343
Upstream Blk Time (%)					0	0	12	15			
Queuing Penalty (veh)					0	0	143	184			
Storage Bay Dist (ft)						350					
Storage Blk Time (%)						0	12				
Queuing Penalty (veh)						1	7				

Intersection: 25: Bend

Movement	WB	WB
Directions Served	T	T
Maximum Queue (ft)	51	52
Average Queue (ft)	2	2
95th Queue (ft)	51	52
Link Distance (ft)	1589	1589
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 30: SW 72nd Ave & 217 NB

Movement	WB	WB	B33	B33	NB	NB	SB	SB	B31
Directions Served	L	R	T	T	T	TR	L	T	T
Maximum Queue (ft)	1204	1316	166	190	427	473	250	1091	770
Average Queue (ft)	636	1025	60	85	206	273	240	1057	720
95th Queue (ft)	1517	1720	228	280	342	423	290	1159	890
Link Distance (ft)	1350	1350	258	258	473	473		990	720
Upstream Blk Time (%)	10	37	5	10	0	0		61	72
Queuing Penalty (veh)	0	0	0	0	0	3		0	0
Storage Bay Dist (ft)							225		
Storage Blk Time (%)							13	46	
Queuing Penalty (veh)							138	142	

Intersection: 40: SW 72nd Ave & SW Hunziker St

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	T	R
Maximum Queue (ft)	430	275	124	112	143	490	75
Average Queue (ft)	115	206	51	18	37	412	56
95th Queue (ft)	344	309	101	70	102	630	88
Link Distance (ft)	810		203	203	203	473	
Upstream Blk Time (%)					0	12	
Queuing Penalty (veh)					0	147	
Storage Bay Dist (ft)		250					50
Storage Blk Time (%)	0	17				43	1
Queuing Penalty (veh)	0	9				45	9

Intersection: 50: SW 72nd Ave & SW Varns St/217 SB

Movement	EB	WB	WB	NB	NB	NB	B55	SB	SB
Directions Served	LTR	LT	R	L	T	TR	T	L	TR
Maximum Queue (ft)	78	154	113	47	1112	150	1081	203	270
Average Queue (ft)	23	66	50	6	954	149	708	178	216
95th Queue (ft)	58	126	95	29	1368	154	1511	219	303
Link Distance (ft)	689	1107	1107		1010		1095		203
Upstream Blk Time (%)					24		23	5	17
Queuing Penalty (veh)					0		0	0	225
Storage Bay Dist (ft)				40		125		280	
Storage Blk Time (%)				0	33	24		5	17
Queuing Penalty (veh)				4	247	146		45	64

Intersection: 60: SW 60th Ave & I-5 Off Ramp/SW Barbur Blvd

Movement	EB	EB	NB	SB
Directions Served	LT	TR	TR	LT
Maximum Queue (ft)	2943	2944	1877	26
Average Queue (ft)	2109	2101	1671	6
95th Queue (ft)	3505	3479	2280	24
Link Distance (ft)	2899	2899	1862	20
Upstream Blk Time (%)	35	34	67	5
Queuing Penalty (veh)	0	0	0	9
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 70: SW Barbur Blvd (Hwy 99W) & SW 60th Ave

Movement	WB	NB	NB	SB	SB	SB
Directions Served	LR	T	TR	L	T	T
Maximum Queue (ft)	62	275	294	350	3799	3808
Average Queue (ft)	33	142	163	166	2065	2072
95th Queue (ft)	53	271	296	395	3990	3998
Link Distance (ft)	20	939	939		6348	6348
Upstream Blk Time (%)	79					
Queuing Penalty (veh)	248					
Storage Bay Dist (ft)				270		
Storage Blk Time (%)				1	81	
Queuing Penalty (veh)				2	69	

Intersection: 80: SW Barbur Blvd (Hwy 99W) & SW 64th Ave & I-5 SB Off-Ramp

Movement	EB	NB	NB	NB	SB	SB	SB	SE	SE
Directions Served	LTR	<	T	T	L	T	TR	R	R>
Maximum Queue (ft)	339	250	349	172	500	959	960	512	529
Average Queue (ft)	313	243	323	48	220	940	939	247	259
95th Queue (ft)	333	257	339	147	571	988	986	511	535
Link Distance (ft)	305		314	314		939	939	2253	2253
Upstream Blk Time (%)	98		92			64	62		
Queuing Penalty (veh)	0		609			332	320		
Storage Bay Dist (ft)		200			400				
Storage Blk Time (%)		99				87			
Queuing Penalty (veh)		552				79			

Intersection: 83: SW Barbur Blvd (Hwy 99W) & I-5 NB On-Ramp

Movement	NB	NB
Directions Served	T	TR
Maximum Queue (ft)	3154	3152
Average Queue (ft)	3000	3004
95th Queue (ft)	3628	3604
Link Distance (ft)	3099	3099
Upstream Blk Time (%)	86	83
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 85: I-5 NB On-Ramp/I-5 On Ramp & SW 64th Ave

Movement	EB	EB	NB	NB
Directions Served	L	T	T	TR
Maximum Queue (ft)	55	33	141	163
Average Queue (ft)	9	13	36	46
95th Queue (ft)	39	34	118	141
Link Distance (ft)	36	36	314	314
Upstream Blk Time (%)	15	1		
Queuing Penalty (veh)	15	1		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 90: SW 65th Ave & SW Haines St

Movement	EB	EB	WB	NB
Directions Served	T	R	LT	LR
Maximum Queue (ft)	1112	1108	232	634
Average Queue (ft)	995	888	111	630
95th Queue (ft)	1335	1523	188	630
Link Distance (ft)	1077	1077	1765	629
Upstream Blk Time (%)	67	52		23
Queuing Penalty (veh)	0	0		183
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 93: I-5 Haines NB Ramp/SW 65th Ave & S/S

Movement	NB
Directions Served	TR
Maximum Queue (ft)	328
Average Queue (ft)	321
95th Queue (ft)	326
Link Distance (ft)	314
Upstream Blk Time (%)	38
Queuing Penalty (veh)	295
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 95: I-5 Haines NB Ramp

Movement	NB
Directions Served	T
Maximum Queue (ft)	188
Average Queue (ft)	183
95th Queue (ft)	187
Link Distance (ft)	168
Upstream Blk Time (%)	44
Queuing Penalty (veh)	345
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 96: SW 65th Ave/I-5 Haines NB Ramp

Movement	NB
Directions Served	T
Maximum Queue (ft)	939
Average Queue (ft)	885
95th Queue (ft)	1065
Link Distance (ft)	885
Upstream Blk Time (%)	92
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 100: SW 68th Ave & SW Dartmouth St

Movement	EB	EB	B101	B101	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	T	T	LT	R	L	T	R	L	TR
Maximum Queue (ft)	258	305	283	349	296	140	200	1435	200	300	861
Average Queue (ft)	149	250	84	128	283	11	120	1406	191	263	532
95th Queue (ft)	242	341	372	418	291	90	258	1424	246	381	891
Link Distance (ft)	218	218	1658	1658	274	274		1385			1039
Upstream Blk Time (%)	5	54			57	0		98			3
Queuing Penalty (veh)	0	0			283	1		0			0
Storage Bay Dist (ft)							100		100	200	
Storage Blk Time (%)							1	80	19	23	62
Queuing Penalty (veh)							15	422	156	100	111

Intersection: 105: SW Dartmouth St

Movement	SW	SW	B106
Directions Served	R	R	T
Maximum Queue (ft)	432	390	699
Average Queue (ft)	406	341	668
95th Queue (ft)	418	401	689
Link Distance (ft)	340	340	646
Upstream Blk Time (%)	68	9	88
Queuing Penalty (veh)	0	0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 109:

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 5944

Intersection: 10: 217 NB off-ramp & 99W

Movement	EB	EB	EB	WB	WB	WB	B15	B15	B16	B16	NB	NB
Directions Served	T	T	R	T	T	T	T	T	T	T	L	L
Maximum Queue (ft)	287	286	115	339	344	342	144	243	126	135	254	261
Average Queue (ft)	212	209	9	174	197	182	5	9	10	13	145	159
95th Queue (ft)	324	317	78	296	320	317	104	140	72	78	220	233
Link Distance (ft)	205	205	205	908	908	908	799	799	144	144		1710
Upstream Blk Time (%)	7	7	0					0	0	0		
Queuing Penalty (veh)	56	56	3					0	0	0		
Storage Bay Dist (ft)											1000	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 10: 217 NB off-ramp & 99W

Movement	NB
Directions Served	R
Maximum Queue (ft)	206
Average Queue (ft)	95
95th Queue (ft)	169
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	1000
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: 99W

Movement	EB	EB	WB	WB
Directions Served	T	T	T	T
Maximum Queue (ft)	243	248	24	18
Average Queue (ft)	47	53	1	1
95th Queue (ft)	171	187	18	12
Link Distance (ft)	326	326	205	205
Upstream Blk Time (%)	0	0		
Queuing Penalty (veh)	0	1		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 15: Bend

Movement	EB
Directions Served	T
Maximum Queue (ft)	2
Average Queue (ft)	0
95th Queue (ft)	2
Link Distance (ft)	908
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 20: 217 SB off/on-ramps & 99W

Movement	EB	EB	EB	B26	WB	WB	WB	WB	SB	SB	SB	B22
Directions Served	T	T	R	T	L	T	T	T	L	LT	R	T
Maximum Queue (ft)	534	547	111	12	145	353	354	321	298	309	286	4
Average Queue (ft)	284	311	35	0	56	197	196	176	190	192	131	0
95th Queue (ft)	479	502	78	6	119	333	331	305	278	280	238	4
Link Distance (ft)	1589	1589	1589	125		326	326	326	1341	1341	1341	95
Upstream Blk Time (%)						1	0	0				
Queuing Penalty (veh)						4	2	1				
Storage Bay Dist (ft)					350							
Storage Blk Time (%)						1						
Queuing Penalty (veh)						0						

Intersection: 25: Bend

Movement	WB
Directions Served	T
Maximum Queue (ft)	4
Average Queue (ft)	0
95th Queue (ft)	5
Link Distance (ft)	1589
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 30: SW 72nd Ave & 217 NB

Movement	WB	WB	WB	NB	NB	SB	SB	B31
Directions Served	L	R	R	T	TR	L	T	T
Maximum Queue (ft)	339	196	200	360	436	250	1078	768
Average Queue (ft)	130	112	111	187	258	242	1044	720
95th Queue (ft)	273	168	171	302	381	291	1135	896
Link Distance (ft)		1350		473	473		978	720
Upstream Blk Time (%)				0	0		66	76
Queuing Penalty (veh)				0	1		0	0
Storage Bay Dist (ft)	1000		1000			225		
Storage Blk Time (%)						12	51	
Queuing Penalty (veh)						130	156	

Intersection: 40: SW 72nd Ave & SW Hunziker St

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	T	R
Maximum Queue (ft)	424	274	110	112	135	490	74
Average Queue (ft)	127	210	51	16	35	458	55
95th Queue (ft)	410	304	96	67	99	573	88
Link Distance (ft)	810		203	203	203	473	
Upstream Blk Time (%)					0	16	
Queuing Penalty (veh)					0	189	
Storage Bay Dist (ft)		250					50
Storage Blk Time (%)	0	19				48	1
Queuing Penalty (veh)	0	9				50	9

Intersection: 50: SW 72nd Ave & SW Varns St/217 SB

Movement	EB	WB	WB	NB	NB	NB	B55	SB	SB
Directions Served	LTR	LT	R	L	T	TR	T	L	TR
Maximum Queue (ft)	65	157	118	57	1116	150	1138	203	275
Average Queue (ft)	19	71	51	6	1025	148	810	180	227
95th Queue (ft)	53	130	93	30	1324	155	1502	220	298
Link Distance (ft)	689	1107	1107		1010		1095		203
Upstream Blk Time (%)					29		26	6	19
Queuing Penalty (veh)					0		0	0	253
Storage Bay Dist (ft)				40		125		280	
Storage Blk Time (%)				0	35	25		6	19
Queuing Penalty (veh)				2	256	150		55	72

Intersection: 60: SW 60th Ave & I-5 Off Ramp/SW Barbur Blvd

Movement	EB	EB	NB	SB
Directions Served	LT	TR	TR	LT
Maximum Queue (ft)	702	714	1111	30
Average Queue (ft)	468	485	847	10
95th Queue (ft)	761	776	1359	31
Link Distance (ft)	2727	2727	1163	20
Upstream Blk Time (%)			26	11
Queuing Penalty (veh)			0	20
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 70: SW Barbur Blvd (Hwy 99W) & SW 60th Ave

Movement	WB	NB	NB	SB	SB	SB
Directions Served	LR	T	TR	L	T	T
Maximum Queue (ft)	75	816	829	200	274	303
Average Queue (ft)	44	600	620	94	173	191
95th Queue (ft)	72	898	913	176	256	277
Link Distance (ft)	20	939	939		6348	6348
Upstream Blk Time (%)	47	2	2			
Queuing Penalty (veh)	149	12	14			
Storage Bay Dist (ft)				270		
Storage Blk Time (%)					0	
Queuing Penalty (veh)					0	

Intersection: 80: SW Barbur Blvd (Hwy 99W) & SW 64th Ave & I-5 SB Off-Ramp

Movement	EB	NB	NB	SB	SB	SB	SE	SE
Directions Served	LTR	T	T	L	T	TR	R	R>
Maximum Queue (ft)	513	316	315	331	576	587	519	548
Average Queue (ft)	318	189	195	109	405	420	355	370
95th Queue (ft)	610	304	304	333	627	636	491	504
Link Distance (ft)	732	332	332		939	939	2253	2253
Upstream Blk Time (%)	3	1	1					
Queuing Penalty (veh)	0	7	7					
Storage Bay Dist (ft)				400				
Storage Blk Time (%)					10			
Queuing Penalty (veh)					9			

Intersection: 83: SW Barbur Blvd (Hwy 99W) & I-5 NB On-Ramp

Movement	NB	NB
Directions Served	T	TR
Maximum Queue (ft)	267	287
Average Queue (ft)	36	42
95th Queue (ft)	323	343
Link Distance (ft)	3099	3099
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 85: I-5 NB On-Ramp/I-5 On Ramp & SW 64th Ave

Movement	EB	EB	NB	NB
Directions Served	L	T	T	TR
Maximum Queue (ft)	58	38	280	288
Average Queue (ft)	9	17	171	191
95th Queue (ft)	42	40	251	269
Link Distance (ft)	37	37	333	333
Upstream Blk Time (%)	5	2		0
Queuing Penalty (veh)	6	3		0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 90: SW 65th Ave & SW Haines St

Movement	EB	EB	WB	NB	NB
Directions Served	T	R	LT	L	R
Maximum Queue (ft)	499	136	770	379	155
Average Queue (ft)	260	7	356	201	65
95th Queue (ft)	413	74	698	334	123
Link Distance (ft)	1077	1077	1315	629	629
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 93: I-5 Haines NB Ramp/SW 65th Ave & S/S

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 95: I-5 Haines NB Ramp

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 96: SW 65th Ave/I-5 Haines NB Ramp

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 100: SW 68th Ave & SW Dartmouth St

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	T	T	R	L	T	R	L	TR
Maximum Queue (ft)	308	511	263	263	261	115	200	1160	200	300	1075
Average Queue (ft)	143	318	130	172	172	10	103	1132	161	292	944
95th Queue (ft)	257	472	221	245	245	71	232	1149	284	336	1315
Link Distance (ft)	681	681	267	267	267	267		1113			1026
Upstream Blk Time (%)			0	0	0			58			70
Queuing Penalty (veh)			1	1	0			0			0
Storage Bay Dist (ft)							100		100	200	
Storage Blk Time (%)							2	52	3	90	37
Queuing Penalty (veh)							17	276	24	397	67

Intersection: 101: Bend

Movement	WB
Directions Served	T
Maximum Queue (ft)	4
Average Queue (ft)	0
95th Queue (ft)	4
Link Distance (ft)	681
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 105: SW Dartmouth St

Movement	SW	SW
Directions Served	R	R
Maximum Queue (ft)	24	19
Average Queue (ft)	1	1
95th Queue (ft)	13	10
Link Distance (ft)	340	340
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 109:

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 2465